MIZUHO RESEARCH PAPER

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The Economic Consequences of Japan's Dwindling Birthrate and Aging Population

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Summary

1. Japan's demographic trends clearly indicate that the country has already entered an age beset by a dwindling birth rate and aging population. In the latter half of the 1990s, the working-age population started to decline and the rise in number of households headed by household heads aged 65 and above surpassed the rise in number of households headed by those aged 64 or younger.

2. Around when and to what degree will the dwindling birthrate and aging population have an impact upon the economy? A key to this question is the ratio of workers to dependents or the "support ratio" (derived by dividing the working-age population by the total population). For a more accurate understanding of the impact of the actual burden, we traced the shifts in the support ratio adjusted by weighting the working-age population by the labor force participation rate and wages (referred to hereinbelow as the "effective labor force") and weighting the population by consumption needs. By looking at the trends in the adjusted support ratio, we found that Japan's demographic factor actually served to mitigate the support burden up to the first half of the 1990s. However, from the second half of the 1990s, the support burden started to climb for the first time since the end of World War II, creating a heavier sense of burden from the year 2000 onward. According to this indicator, the support ratio will rise most sharply during the period from 2000 to 2015.

3. Turning to actual labor market trends, the growth of Japan's effective labor force slowed sharply in the early 1990s due to factors such as the decline of real wages and employment rate. In the second half of the 1990s, the year-on-year growth of the effective labor force fell in to negative territory. In recent years, the slumping population growth and the decline of the labor force participation rate are also serving as negative pressures upon the effective labor force. The sharp fall of the labor force participation rate is due primarily to the decline of the labor force participation

rate of the elderly population, which in turn stems from the increase of self-employed workers going out of business. The effective labor force will remain subject to negative pressures stemming from the dwindling birthrate, the aging society and the declining population. The fall would only be mitigated by a small degree even when considering the labor force participation of women and older adults. The rise of wages in real terms would be indispensable in order to raise the work-related income of households.

4. In terms of the impact upon disposable income, while Japan's demographic factor served as a drag upon income in the 1990s, its direct negative impact upon disposable income is not so large in terms of an annual average. This is due to the increase of elderly households - having a large proportion of non-work-related income - thus serving to mitigate the drop of work-related income. Actual developments since the 1990s also show that the increase of income unaffected by economic conditions - such as retirement income and pension benefits - are contributing to the depth and stability of household income.

5. The rise of consumer spending stemming from Japan's demographic factor ebbed sharply from the 1980s and dropped into negative territory in the 1990s. This is due to the rise in proportion of elderly households having a smaller volume of per-household spending. Meanwhile, actual consumer spending has been steady since the 1990s. Spending by households headed by those aged 60 and above remained steady because retirement income and pension benefits served to buttress the income levels of elderly households. While the negative impact of the demographic factor upon consumer spending should gradually diminish, the negative impact will linger up to the first half of the 2010s in terms of consumption expenditures excluding government-funded medical expenses and imputed rent of owner-occupied housing. Nevertheless, it should also be noted that the elderly are bigger spenders in certain areas. From the perspective of consumer needs, the negative impact stemming from the aging

population is not so much of a concern for the time being.

6. To provide a perspective view of the future investment-savings (IS) balance of the household sector, we estimated the future course of disposable income taking into consideration of the impact of the pending amendments of Japan's social security system. As a result, we found that disposal income would take an upward turn from the mid-2000s because of the recovery of economic conditions and the rise of retirement income and subsequently fall into a gradual downward trajectory. Depending upon the rise of consumer spending, Japan's savings rate may well sink into negative territory.

7. While the impact of the aging population is a real and impending issue already and should intensify during the period from 2000 to 2015, the direct impact is mitigated for the time being by non-work-related income such as retirement income and public benefits. Even so, since the ultimate source of non-work-related income is work-related income, the effect of economic cycles may not be eliminated entirely. In the event of a protracted economic slump or if demographic shifts create a gaping gap between Japan's social security system and society, Japan may be creating an even larger burden for future generations by postponing the negative impact by its stabilizer function. Japan must rebuild a sustainable social security system while the economy is strong enough to absorb the accompanying shocks and it is paramount for its people to build up their savings and assets in the face of such a seismic change. The current pace of Japan's reforms is far too slow.

8. Although consumer spending and housing investment will inevitably slow over the mid- to long-term perspective, it is still possible to stimulate demand by developing new goods and services serving the needs of an aging society. In turn, this will lead to a higher level of welfare of the household sector. However, this may serve to speed up the decline of the savings rate. Thus, the nature of Japan's economy must be evolved so as to enable households to subsist on a low savings rate by improving the

efficiency of investments and the utilization of overseas funds.

9. Lastly, it is necessary to bolster the population's work-related income to realize a sustained recovery of disposable income. Given the difficulty to attain this goal by augmenting the labor force, Japan would have to raise the level of real wages. To do so, Japan must address issues including measures to utilize non-seniors and in particular the qualitative improvement of labor among the young generation.

1. Introduction

The slow recovery of consumer spending in Japan is often attributed to the sluggish recovery of employment and wages because of excess labor in the corporate sector and weak consumer confidence stemming from concerns regarding the future rise of public welfare burdens and unemployment. Nevertheless, the ratio of job offers to applicants has been rising, the employment rate has been declining and the propensity to consume has been climbing. At a glance, all these statistical releases seem to depict a contradicting story. As a plausible reason for the coexistence of these apparently conflicting symptoms, we suspect that the declining birthrate and the aging of Japan's population is starting to have a heavier impact upon household demand.

In the first section of this paper, we examined the current situation regarding Japan's declining birthrate and aging population and gauged its impact using the concept of the support ratio as the measuring stick. Next, we estimated the impact of the declining birthrate and aging population upon both the labor market and the household sector taking into consideration the age-based structure of Japan's population. We then compared our findings this with the actual trends since the 1990s and looked for the reasons for the results. In the final section, we have set forth an outlook on the basis

of our findings and what is necessary for a genuine recovery of consumer spending in Japan.

2. The current situation: how fast is Japan's birthrate declining and how fast is its population growing older?
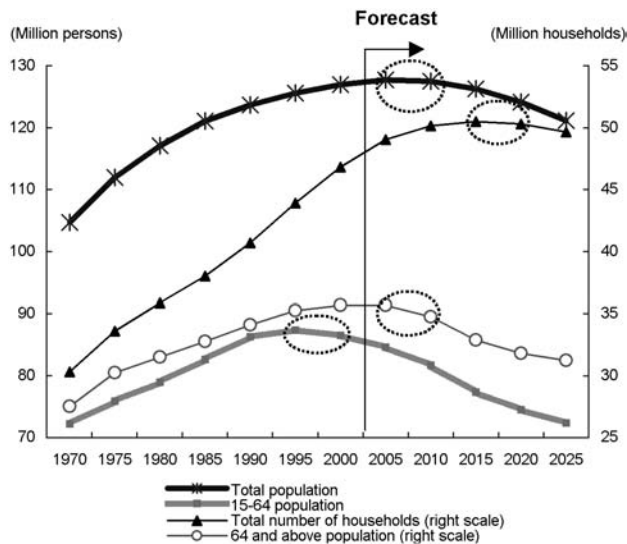
(1) The population (by age group) and number of households
Chart 1 sets forth the trends in Japan's population and number of households according to the latest population statistics released by the National Institute of Population and Social Security Research. Note first that the working-age population (15~64) took a dip in the second half of the 1990s. The total population started to decrease while households headed by persons aged up to 64 started to decline from around 2005. The total number of households will start to fall from around the mid-2010s.

Looking closer at the breakdown of the households, the pace of increase of households headed by the younger-old aged (65~74) overtook that of households headed by persons aged up to 64 in the first half of the 1990s. In the second half of the 1990s, the rise of households headed by persons up to 64 slowed sharply while households headed by the older-old aged (75 and above) increased (Chart 2). The proportion of older-old age households in the total number of households will most likely grow largest around the first half of the 2000s and is projected to keep rising at a high pace. As we shall comment in more detail later, the economic characteristic of the elderly - a low level of employment, a high ratio of non-work related income in total income, low level of consumption expenditures and high government-funded consumption expenditures - turns even more conspicuous among the older-old age population. This suggests a high probability that the impact of the aging population will intensify along with the increase of the older-old age population.

The foregoing indicates that the impact of the aging population is not a future concern but a current issue which has been growing from around the second half of the 1990s. The question is not "from when" but rather "how fast" the impact will intensify.

Chart 1: The Population and Number of Households

Source: National Institute of Population and Social Security Research.

Chart 2: The Number of Households by Age Group

Source: National Institute of Population and Social Security Research.

（2）The support ratio
From around when and to what degree will the foregoing demographic shift have an impact upon the household sector? In this paper, we used the concept of the support ratio as a key to this question.

The most commonly used definition of the support ratio is the working age population divided by the total population. However, this definition assumes that there are no differences in labor supply and per capita consumption needs among different age groups. To provide a more accurate estimate of the actual burden, we adjusted both the numerator and the denominator closer to reality.

a. The population weighted by consumption needs
Firstly, the denominator is weighted by the per capita amount of consumption by age group.

Several estimates on the per capita amount of consumption by age group conducted in the past reveal a general tendency where the consumption levels of children are lower than the working-age generation and that the consumption level of the elderly is relatively high (Chart 3). Since there is no available data on an individual basis, it is necessary to set forth several premises in order to calculate the level of per capita consumption. To gauge the impact of the rise of the older-old age population, we differentiated between the expenditures of those aged 65~74 and those aged 75 and above. As a result, we found that the per capita consumption of the elderly including the portion funded by the government is larger than the working generation. Conversely, the level of actual consumption expenditures - excluding government-funded expenditures and imputed rent of owner-occupied housing - fall below the working-age generation along with the rise of the age level. This suggests that the proportion of consumption expenditures funded by the public sector and imputed rent in total consumption grows larger while actual consumption expenditures shown in retail statistics decline along with the aging of the population.

Chart 3: Estimated Per Capita Amount of Consumption by Age Group

Ratio of per capita consumption by age group

	MHRI (2004) A	Muto et al (2001) B	Cabinet Office (1995) C	Cutler et al (1990)
0－14	0.80	0.71	0.56	0.72
15－64	1.00	1.00	1.00	1.00
65 and over	1.09	1.47	1.21	1.27
65-74	1.04			
75 and over	1.13			

Notes: 1. The per-capita consumption of the 15-64 age group is set forth as 1.
2. Data by Cutler et al pertain to the United States of America.

Sources: Ministry of Public Management, Home Affairs, Posts and Telecommunications,
Culter, D.M.,J.M.Poterba, L.M.Sheiner and L..H.Summers *An Aging Society:*
Opportunity or Challenge? , Brookings Papers on Economic Activity, 1 (1990)
Cabinet Office, *White Paper on Japanese Economy (1995).*
Hiromichi Muto, Nobuyuki Harada, *Shoshi Koreika ga Shouhi-suijun ni Oyobosu Eikyo,* (2001).

Formula for calculation
MHRI (A):
· Child-related: Calculated on the basis of salaried households comprised of a married couple and children in the
National Survey of Family Income and Expenditure.
(consumption expenditures (excluding educational expenses and insurance & medical expenses) + imputed rent)/
number of household members + educational expenses per child
+ government-funded educational expenses per child + medical expenses per child
· Adult-related: Calculated on the basis of salaried households comprised only of married couples where the wife is 64 or younger
in the National Survey of Family Income and Expenditure.
(consumption expenditures (excluding educational expenses and insurance & medical costs) + imputed rent)/
number of household members + medical expenses per person
· 65 and above: Calculated on the basis of salaried households comprised only of married couples aged 65 or over in the
National Survey of Family Income and Expenditure.
(consumption expenditures (excluding educational expenses and insurance & medical expenses) + imputed rent)/
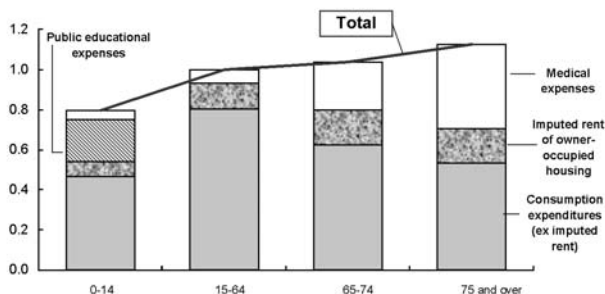number of household members + medical expenses per person
Muto et al (B):
· Child-related: Calculated by dividing consumption expenditures on an "all-households" basis n the Family Income and Expenditure Survey
into child-related expenditures and expenditures other than those pertaining to children and using the portion inherent to
children + the portion common with the parents.
· Adult-related: Calculated on the basis of the portion excluding child-related expenditures.
· 65 and above: Calculated on the basis of consumption expenditures of unemployed elderly married couples.
· Medical expenses per person in terms of age group are apportioned to each of the foregoing categories.
Cabinet Office (C):
· Child-related: Calculated on the basis of single-person family expenditures in the National Survey of Family Income and Expenditures
(excluding medical expenses) of which are unrelated to children.
Compulsory education expenses per child and medical expenses per child are added to the foregoing.
· Adult-related: Single-person family expenditures in the National Survey of Family Income and Expenditures (excluding medical expenses) +
medical expenses per person.
· 65 and above: Single-person family expenditures in the National Survey of Family Income and Expenditures (excluding medical expenses) +
medical expenses per person + disbursements related to old age.

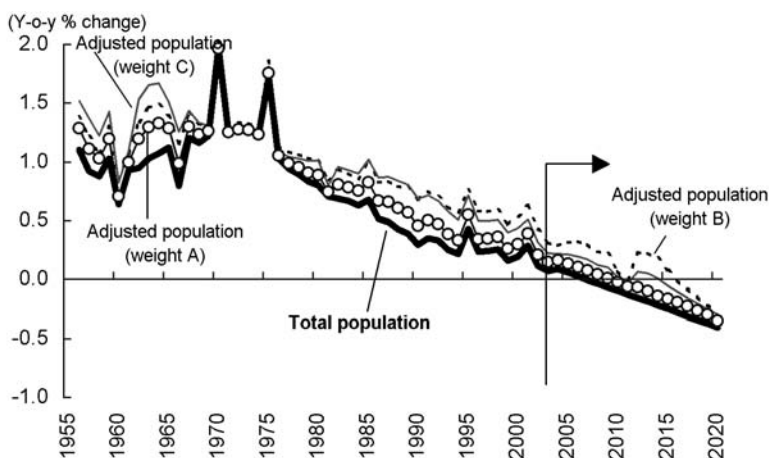Estimate of Per Capita Consumption Expenditures (monthly average, 1999)

Note: Per capita consumption expenditures of 15-64 age group is indicated as 1.
Sources: Ministry of Public Management, Home Affairs, Posts and Telecommunications, *National Survey of Family*
Income and Expenditure, Ministry of Health, Labor and Welfare,

We then weighted the population by consumption needs using three estimate values (A~C) set forth in Chart 3. We found that up to around 2000, the weighted population climbs at a faster pace than the total unweighted population as the weight of young children (with low consumption levels) declines (Chart 4). From then onward, when we applied a lower weight on the elderly, the weighted population followed a similar path as the total unweighted population. The point at which population growth turns negative is 2010, slightly later than 2006 when total population growth dips into negative territory. When we applied a heavier consumption weight upon the elderly, the growth rate is higher than the total population and falls into negative territory from around 2015.

Chart 4: Population Growth Weighted by Consumption Needs

Note: The weights alotted for amount of consumption are as follows:
(A 0~14: 15~64: 65~74: 75 and above. B, C 0~14: 15~64: 65 and above)
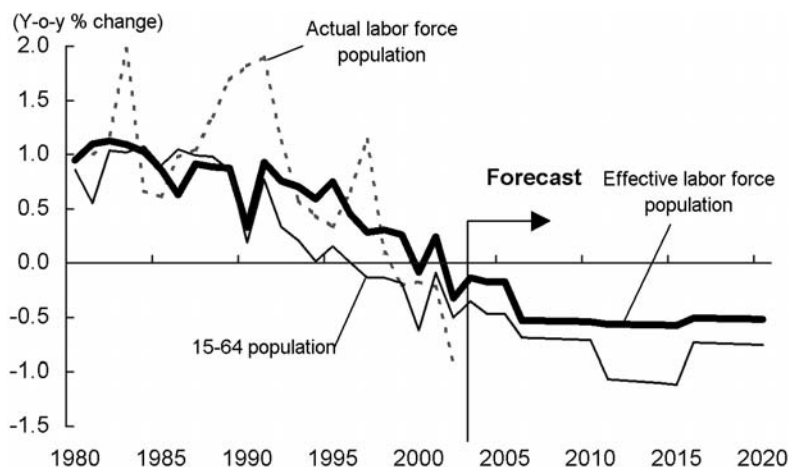A: 0. 8 :1. 0 : 1. 04 :1.13   B : 0. 7: 1. 0 :1. 47   C : 0. 5 6 :1. 0 : 1. 21
Source: National Institute of Population and Social Security Research,
2002 Population Projections for Japan .

b. The working-age population weighted by the labor force participation rate and wages (the effective labor force)

Next, we weighted the numerator, focusing upon fact that the labor force participation rate and the quality of labor differ by age group. We calculated the adjusted working-age population by multiplying the population (by gender and age group) by (i) the labor force participation rate (by gender and age group) as of 2000 and (ii) by the average wage (by gender and age group) as of 1999. The adjusted working-age population is referred to below as the effective labor force. The weights for women and the elderly are smaller in consideration of the fact that the labor force participation rate is lower and that the average wage level is lower because of a higher proportion of part-timer workers in this sub-sector of the population. By doing so, we are able to factor in the impact of the relatively high employment rate of the elderly and the declining employment rate along with the aging of the population.

The effective labor force calculated in this way is slightly higher than the working-age population (15~64) from around 1990 and only starts to decline from around 2000 given the rise of average wage levels due to the extension of the average length of employment along with the aging of the population (Chart 5). Although the effective labor force will continue to decline and the breadth of the fall is projected to widen from around the second half of the 2000s, the pace of decline is milder in comparison with the working-age population.

Chart 5: The Effective Labor Force Population

(Y-o-y % change)

Note: The effective labor force population is calculated by multiplying the gender-based
and age-based population by the labor force participation rate in 2000 and
average wages in 1999.

Sources: National Institute of Population and Social Security Research, *2002 Population
Projections for Japan*, Ministry of Public Management, Home Affairs, Posts and
Telecommunications, *Labor Force Survey, Population Census of Japan*,
Ministry of Health, Labor and Welfare, *Basic Survey on Employment Structure*.

c. The impact of the aging population in terms of the adjusted support ratio

Having adjusted the support ratio, we examined the future course of
the adjusted support ratio.

We looked first at the path followed by the popular definition of the
support ratio which is calculated by dividing the 15~64 year old
population by the total population. We found that the support ratio
rose sharply up to around 1970 and fell into a mild descent until a
subsequent upturn in the 1980s. From around 1990, the support ratio
slid into a downhill path, dropping to the level around 1980. The ratio
should continue to decline and reach a historical low around 2015. In
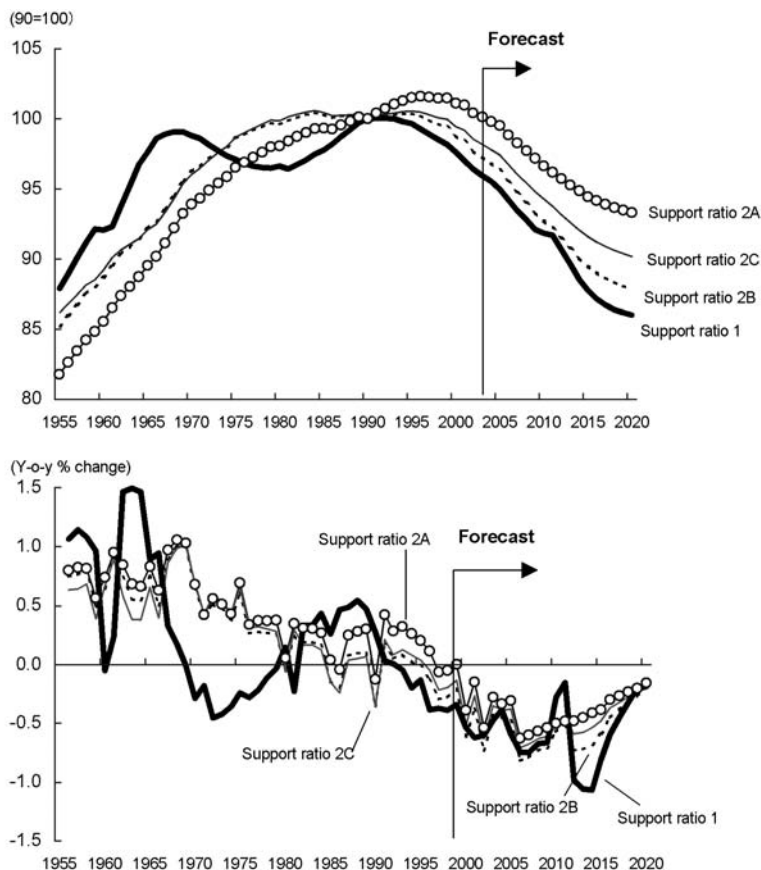terms of the rate of change from the previous year, the pace of

decline in the mid-1990s is comparable to the pace experienced in the 1970s. However, the pace of decline from the 2000s is unparalleled in history and is forecast to accelerate toward 2015.

In Chart 6, we set forth the trajectories of the adjusted support ratio, calculated by dividing the effective labor force population by the population weighted by consumption needs. When we attributed a small consumption weight upon the younger age population and a large consumption weight upon the elderly (the support ratios B and C), we found that the support ratios continued to rise up to around 1980, leveled out thereafter up to 1995 and fell in the second half of the 1990s. Support ratio A is a case where there is not much of difference between the weights for the younger population and the elderly population. In this case, support ratio A rises up to around 1995 and slides into a downward trajectory only in the 2000s. In either of the cases A, B and C, the current level is still quite high in comparison to the past. Nevertheless, the pace of change from the previous year falls into negative territory in the second half of the 1990s in the case of support ratios B and C and around 2000 in the case of support ratio A. Currently, the pace of decline is accelerating. Looking forward, the pace of decline should continue up to around 2010 to 2015. From then onward, the breadth of the fall is projected to narrow gradually.

The foregoing shows that the population factor actually served to raise the support ratio (which means that support burdens grow lighter) up to the mid-1990s because of reasons such as the decline of the younger age population with small consumption levels and the rise of average wages along with the aging of society. From the mid-1990s onward however, the support ratio turned downward for the first time since the end of World War II. The subsequent pace of decline is accelerating from 2000 onward. No doubt, this phenomenon is having an unprecedented effect upon the economy. As far as this indicator is concerned, it should be noted that the support ratio will decline at the fastest pace during the period from 2000 to 2015.

In the following section, we examined the actual labor market and household sector trends from the 1990s when the support ratio took a downturn.

Chart 6: The Support ratio

Note: Support ratio 1= 15~64 population/population.
      Support ratio 2 = adjusted working-age population/population weighted by consumption amount.
      A~C are derived by applying the consumption weights in Chart 4.
      (A 0~14: 15~64: 65~74: 75 and above. B, C 0~14: 15~64: 65 and above)
      A: 0. 8 : 1. 0 : 1. 04 : 1. 13 B : 0. 7 : 1. 0 : 1. 47 C : 0. 56 : 1. 0 : 1.21
Source: National Institute of Population and Social Security Research,
        2002 Population Projections for Japan, Ministry of Public Management, Home Affairs, Posts
        and Telecommunications, *National Survey of Family Income and Expenditure,* and others.

3. The impact of the aging population upon the labor market

(1) Trends from the 1990s

In this section, we compared the trends in the labor market in the 1990s with the effective labor force population in Chart 5. By calculating the actual labor force population by multiplying the number of persons at work (by gender and age) by average real wages (by gender and age), we found that the actual labor force population grew at a pace of roughly 3% y-o-y in the 1980s but dropped sharply in the 1990s and fell sharply from the previous year in the second half of the 1990s.

Looking closer at the causes for the change in the effective labor force population, the slump in the 1990s is due largely to economic factors such as the decline of real wages and the fall of the employment rate. This indicates that the labor supply can still be raised significantly by reducing the unemployment rate and raising the level of real wages. However, even if we disregard these factors, the growth of the 15 and older population is slowing and the decline of the labor force participation rate is a major drag upon the supply of labor in the second half of the 1990s. While the decline of the labor force participation rate may be attributed partially to economic factors (in the event of a protracted economic slump, more people would give up looking for jobs), there is a possibility that the increase of the older-old age population - having a low employment rate - may be serving as a structural factor dragging down the labor force participation rate.

When we fix the labor force participation rate by gender and age at the level as of 1980, the labor force participation rate in 2003 is 3.8% lower than in 1980. This may be deemed as the negative pressure upon the labor force participation rate by the aging of the population. Note however that the actual rate of change of the labor force participation is only 2.1% (Chart 7).

Chart 7: The Percentage Change of the Labor Force Participation Rate

(%)

		1980/2003		1980/1990		1990/2003	
		Labor force participation rate (change)		Labor force participation rate (change)		Labor force participation rate (change)	
			of which is attributed to the aging factor		of which is attributed to the aging factor		of which is attributed to the aging factor
Total		-2.1	-3.8	-0.1	-2.2	-2.0	-1.7
	Men	-5.6	-3.3	-2.6	-2.4	-3.0	-0.9
	Women	1.2	-4.3	2.2	-1.9	-1.0	-2.4

Notes: 1. Labor force participation rate = labor force population/15 and older population.
2. The "aging factor" = percentage change of the labor force participation rate on the basis of the labor force population calculated on the assumption that the labor force participation rate in each of the age groups trends at the level in 1980.

Source: Ministry of Public Management, Hyome Affairs, Posts and Telecommunications, *Labor Force Survey*.

The discrepancy can be explained by the rise of the labor force participation among women, which served to offset and overcome the negative pressures stemming from the aging population. Meanwhile, although the labor force participation rate among men fell at a pace roughly equivalent to the decline attributed to the aging of the population in the 1980s, the decline of the labor force participation rate among men has been outpacing the latter since the 1990s. In terms of age groups, the fall of the labor force participation rate is steepest among the younger generation and men aged 65 and above.

Looking closer at the employment structure of elderly men, we found a decline of the employment rate among men aged 65 and above in addition to a sharp decline of the self-employed. We suspect that the prolonged economic slump in the 1990s led to the deterioration of the business environment and pushed elderly self-employed workers out of businesses. Japan's labor force participation rate of elderly men has been high even in terms of global standards precisely because of a large proportion of the self-employed. In the 1990s, the aging of the population as well as the stagnation of the economy led to a contraction of the labor force

population, serving as a drag upon the labor force participation rate.

(2) The future outlook: is it possible to increase the effective labor force?

There are many who believe that it is possible to raise the labor supply even with a stagnant growth of the population aged 15 and above and an accelerating decline of the working age population (15~64) (Note 1). To what extent and to what degree can we increase the effective labor force?

We looked first at the elderly population aged 65 and above. Firstly, when the proportion of the older-old aged population rises, the labor force participation rate automatically drops even when the labor force participation rates in each of the age groups are flat. Projecting the future using the same method in Chart 7, the negative pressure upon the labor force participation rate among those aged 65 and above during the period from 2005 to 2020 would be 2.1% point. Secondly, of the non-labor force population aged 65 and above, only 3% of men and 1% of the women wish to work, indicating that the elderly do not necessarily want to work. Thirdly, while we suspect that the closure of self-owned businesses is a major background factor for the sharp drop of the labor force participation rate among elderly men, those who closed their businesses do not necessary return to the labor market by resuming their businesses even when the business climate improves. In view of the foregoing, it would be a difficult task to raise the labor force participation rate of the 65 and older population.

However, the population aged 60 to 64 is a different story. We believe that the labor force participation rate may be raised back at least to the level around the 1970s before the major overhaul of the pension system because of the following reasons: (1) predictions that the eligible age for employee pension benefits will be gradually raised from around 2025 and that pension benefits from then onward will be lower than the present level, (2) deliberations on raising the
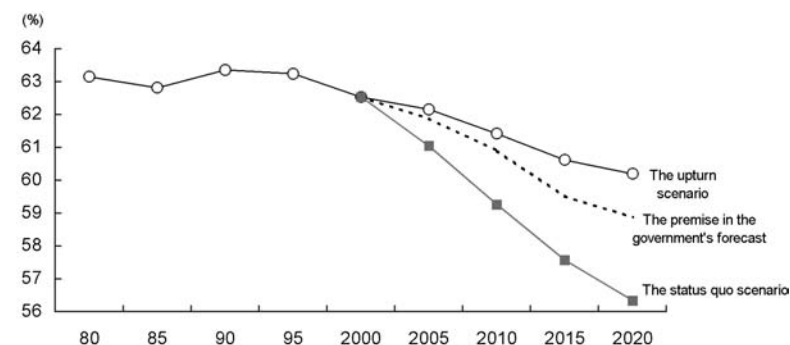
compulsory retirement age to 65, and (3) the rise of average life expectancy and the improvement of the health conditions of the elderly.

Turning to the female population, the proportion of those who wish to work surpasses 35% in the non-labor force population aged 25~54. Even among the 45~54 year old female non-labor force population, the percentage is over 20%. We are inclined to believe that the employment of these people is hindered at present by impediments such as (1) the burden of childcare, nursing care and housework, and (2) shortcomings stemming from an absence from the labor market. If these impediments may be alleviated in some way, Japan would be able to raise the labor force participation rate among the women.

Looking forward, in the event the labor force participation rates in each of the age groups remain at the levels as of 2000, the labor force participation rate would fall from 63% in 2000 to 56% in 2020 (Chart 8). On the basis of preconditions assuming that the labor force participation rate rises to a maximum degree (Note 2), the labor force participation rate in 2020 would be 61%. Although the breadth of the fall will narrow, a decline of the labor force participation rate would still be inevitable.

The premises set forth by the Japanese government with respect to its public pension finances fall between the two cases above, leaning slightly toward the optimistic.

Chart 8: Forecast of the Labor Force Participation Rate

Notes: 1. The "status quo scenario": the gender-based and age group-based labor force participation rates remain at the same level as 2000.
 2. The "upturn scenario" is calculated on the basis of the following assumptions:
  1) the gender-based and age group-based labor force participation rates of those aged 65 and older revisit the level as of 1990 in 2005.
  2) The labor force participation rate of men aged 60~64 revisits the level as of 1970 around the year 2020.
  3) The labor force participation rate of men aged 25~59 remains at the same level as 2000.
  4) As for the labor force participation rate of men aged 24 and younger and women aged 64 or younger, all those seeking employment in the non-labor force population will all form part of the labor force population around the year 2020.
 3. The premise in the government forecast is the precondition in the public pension forecast in the 2004 actuarial review (by the Ministry of Health, Labor and Welfare, Employment Security Bureau in July 2002).
Sources: Ministry of Public Management, Home Affairs, Posts and Telecommunications, *Labor Force Survey*, *Population Census of Japan*, Ministry of Health, Labor and Welfare.

If we cannot raise the labor force participation rate, the next available step would be either to accept more immigrants to Japan or raise the quality of the labor force (raise the level of wages). Given the lack of a national consensus on Japan's immigration policy (Note 3), the government would have to pursue the latter alternative for the time being.

We have set forth several cases to project the future course of Japan's effective labor force (the working population by age group multiplied by total sum of real wages).

The first case is a status quo scenario where we assume that the labor force participation rate, the employment rate and real wages in terms of gender and age group all remain flat. In this case, the effective labor force contracts at a moderate pace averaging 0.5% per

year (Chart 9).

Next, we looked at several cases to stop the contraction of the effective labor force. Case 1 is a scenario where the labor force participation rate rises in accordance with the preconditions in the government's forecast shown in Chart 8. However, given a high proportion of part-time workers in the gender and age groups in which we expect a surge of the labor participation rate, the effective labor force does not have much leeway to rise further. At best, the breadth of the decline would narrow slightly. In Case 2, we assume that the labor force participation rate rises as in Case 1 and the wage gap between part-time and full-time workers in the core labor force population (25~59) dissolves by 2020 (meaning that in all of the age groups, part-time wages climb to the level of full-time wages). Even in this scenario, the growth of the effective labor would only rise to around zero percent. Nevertheless, since the gap in wages between male and female workers is left unchanged, if this gap starts to shrink, there is still a chance for the growth rate to turn positive. In Case 3, we assume that real wages rise according to the preconditions in the government forecast in addition to the rise of the labor force participation rate. The year-on-year percentage change of the effective labor force finally turns positive as a result of these preconditions. However, given the modest assumption that real wages would rise only at a moderate annual rate of 1.1% over the long term, the labor supply would only grow at a pace of approximately 0.7% per annum.

Chart 9: Forecast on the Growth of the Effective Labor Force

Notes: 1. The "status quo scenario": the gender-based and age group-based labor force participation rate, employment rate and real wages remain at the same level as 2000.
2. Case 1: the labor force participation rate rises in accordance to the premise set forth in the government forecast while the employment rate and real wages remain at the same level as 2000.
3. Case 2: in addition to the conditions in Case 1, gender-based and age group-based real wages of part-time workers aged 25~59 rise to the respective levels of regular workers by the year 2020.
4. Case 3: in addition to the conditions in Case 1, gender-based and age group-based real wages rise in accordance to the premise set forth in the government forecast (0.8% in 2004~2008 and 1.1% from then onward).

Sources: same as Chart 8.

The foregoing shows that the effective labor force would remain under negative pressures stemming from the declining and aging population and that raising the labor force participation rate alone would only achieve a modest slowdown of the pace of decline. In order to raise the household sector's work-related income, it would be necessary to eliminate the inequality in wages and raise the level of real wages.

4. The impact of the aging population upon the household sector
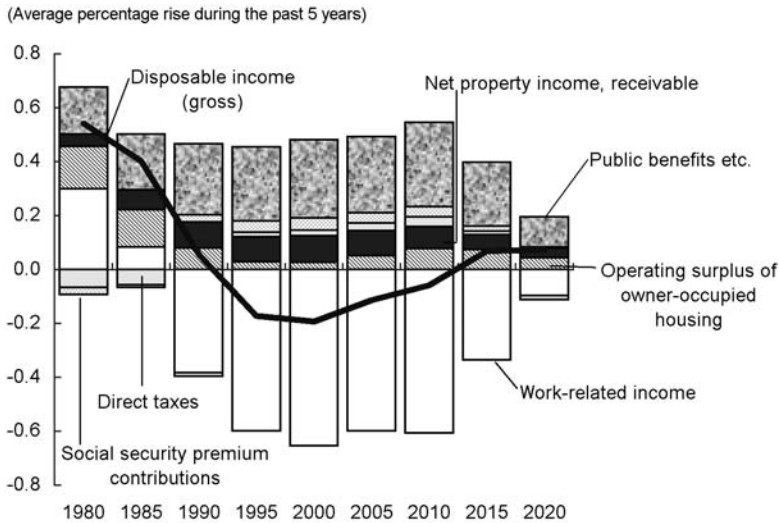
(1) The impact upon disposable income
In this section, we examined the income structure of the population by age to discern the plausible impact of the aging population.

In spite of a wide range of statistics on age-based income in Japan, many differ from the concept of disposable income in the SNA statistics and are limited in terms of coverage. In this paper, we used the *Estimation of the Household Sub-sector Accounts of SNA* by Kouji Hamada of the Economic and Social Research Institute (Economic Analysis No. 167, 2003) (Note 4). According to this estimation, we found that the age-based income structure of Japan's population is characterized as follows. (1) While the level of household disposable income starts to decline after the household head reaches the mid-50s, the level of disposable income among those aged 70 is still higher than those in the mid-30s. (2) Wages and salaries peak in the mid-50s and declines sharply in the 60s. (3) The proportion of public benefits in income rises as one grows older and reaches almost half of disposable income among those over 70. (4) The proportion of mixed income is largest among households in the 50~60s. (5) The proportion of net property income is small and concentrated among elderly households. In the background to this phenomenon is the concentration of financial assets among elderly households. Furthermore, the fall of deposit interest rates are outpacing the fall of housing loan interest rates, thus serving as negative pressures upon net property income among households in the middle-range bracket and below. (6) Although there is not much of a difference in the burden of social security premiums among households in the 30~50s, it is a large proportion of income among households in the 30s or younger because of the low level of income in this age group. (7) The burden of direct taxes increases toward the 50s and starts to contract after the age of 60.

In Chart 10, we calculated disposable income by changing only the composition of households and keeping the age-based income structure constant as of 1999. We found that along with the increase of elderly households with low disposable income levels, the growth attributed to the population factor (the rate of growth of disposable income represented by the line graph in Chart 10) - averaging 0.4% per annum in the first half of the 1980s - slowed and turned negative

in the 1990s. However, the breadth of the fall is small - only an annual average of 0.2% or so even in the 1990s when the fall was the sharpest. The decline starts to slow in the 2000s and turns positive again in the first half of the 2010s. In comparison to the forecast of the effective labor force in Chart 9, the negative impact is smaller and turns positive again in ten years. This may be attributed to the fact that disposable income includes non-work related income such as public benefits and net property income as well as work-related income (wages & salaries and mixed income) reflected in the concept of the effective labor force. Given the high proportion of such non-work related income in elderly households, a larger proportion of elderly households offset to some degree the drop of work-related income.

Chart 10: Trends in Disposable Income on the Basis of Age-Based Household Structure

(Average percentage rise during the past 5 years)

Notes: 1. Work-related income = wages & salaries + mixed income.
      2. Trends in the disposable income of the entire houshold sector derived by multiplying the disposable income of households based upon the age of the household head by the number of households at each point in time.

Source: Kouji Hamada, *The Estimation of the Household Sub-sector Accounts of SNA,* Economic and Social Research Institute, Cabinet Office (*Economic Analysis No. 167, 2003*).

The actual course of disposable income is set forth in Chart 11. In the chart, D is derived by subtracting B (the price rise factor) and C (the household shift factor) from A (the percentage change of disposable income) and shows the real rate of change excluding the household factor (Note 5). Looking closer at disposable income, the proportion represented by D shrank sharply in the 1990s, shrinking to almost zero by 2000~2002. In the background is the sluggish rise of work-related income stemming from the economic slump and the reduction of property income along with the fall of interest rates. Even so, the accompanying reduction of the tax and social security burden and increase of the real value of public benefits and operating surplus of owner-occupied housing are serving to alleviate the income decline stemming from the stagnation of the economy.

Chart 11: Trends in Disposable Income

(Average annual % change)

	Disposable income (gross)	Wages & salaries	Mixed income (gross)	Operating surplus of owner-occupied housing (gross)	Public benefits	Net property income, receivable	Direct taxes	Social security premium contributions
(A) Disposable income (y-o-y)								
1981~85	5.4	5.2	2.4	7.4	8.3	11.6	7.8	8.9
86~90	5.3	5.5	1.6	8.0	5.5	13.3	10.1	7.3
91~95	2.7	3.1	-0.3	6.2	6.7	-10.1	-3.5	5.0
96~00	0.2	0.3	-5.1	2.6	3.4	-9.2	-0.5	1.5
00~02	-1.6	-2.5	-5.9	1.8	3.1	-29.0	-9.0	1.5
(B) Deflator (y-o-y)								
1981~85	2.6	2.6	2.6	3.7	2.6	2.6	2.6	2.6
86~90	1.5	1.5	1.5	2.7	1.5	1.5	1.5	1.5
91~95	1.0	1.0	1.0	2.3	1.0	1.0	1.0	1.0
96~00	-0.3	-0.3	-0.3	0.7	-0.3	-0.3	-0.3	-0.3
00~02	-1.3	-1.3	-1.3	0.2	-1.3	-1.3	-1.3	-1.3
(C) Shift in composition of households								
1981~85	0.4	0.0	1.2	0.9	2.0		0.7	0.1
86~90	0.1	-0.5	0.7	0.5	2.4	33.7	0.2	-0.3
91~95	-0.2	-0.8	0.2	0.2	2.2	11.6	-0.2	-0.5
96~00	-0.2	-0.9	0.2	0.2	2.1	7.7	-0.3	-0.5
00~02	-0.2	-1.0	0.1	0.3	2.2	5.9	-0.5	-0.6
(D) Other factors								
1981~85	2.4	2.7	-1.4	2.7	3.6		4.5	6.2
86~90	3.8	4.6	-0.6	4.7	1.6	-21.9	8.5	6.1
91~95	1.9	2.9	-1.5	3.7	3.5	-22.8	-4.3	4.5
96~00	0.6	1.4	-5.1	1.8	1.5	-16.7	0.0	2.2
00~02	-0.1	-0.2	-4.8	1.4	2.2	-33.5	-7.2	3.4

Notes: 1. (A) represents the average annual rate of growth of consumption in actual SNA statistics.
2. (B) represents the deflator for the imputed rent of owner-occupied housing for the imputed rent of owner-occupied housing and the deflator for household final consumption expenditure for all other items.
3. (C) represents the impact of the change in composition of households set forth in Chart 10.
4. (D) is derived by subtracting (B) and (C) from (A).
Source: Compiled by MHRI on the basis of statistics such as the Cabinet Office, *Annual Report on National Accounts*.

As a result of these developments, a comparison of the breakdown of disposable income in FY2002 with FY1990 reveals: (1) a decline of the proportion of work-related income such as wages & salaries and mixed income and net property income, (2) a larger burden of social security payments, (3) a rise in proportion of operating surplus of owner-occupied housing, retirement benefits and public benefits, and (4) a reduction of the burden of direct taxes (Chart 12). Retirement income etc. was not reflected in past statistics because they were not included in the estimations of age-based income. It should be noted that retirement benefits - including benefits such as lump sum retirement allowances and corporation pension benefits - rise regardless of economic trends as the population grows older.

Summarizing the foregoing, the increase of elderly households has served to reinforce the built-in stabilizer function - switching on in times of economic recession - and has managed so far to add depth and stability to household income.

Chart 12: Change in Breakdown of Disposable Income

(Trillion yen, %)

		FY1980	FY1990	FY2002
Disposable income		158.2	266.0	295.5
		(100.0)	(100.0)	(100.0)
	Work-related income	144.4	229.6	243.9
		(91.3)	(86.3)	(82.5)
	Retirement income etc.	5.4	13.4	18.4
		(3.4)	(5.0)	(6.2)
	Public benefits	15.3	29.7	51.6
		(9.7)	(11.2)	(17.5)
	Operating surplus of owner-occupied housing	8.7	19.6	31.7
		(5.5)	(7.4)	(10.7)
	Net property income	10.4	33.8	6.1
		(6.6)	(12.7)	(2.1)
	Direct taxes	−15.3	−36.1	−24.4
		−(9.7)	−(13.6)	−(8.3)
	Social insurance premiums etc.	−9.2	−20.1	−28.5
		−(5.8)	−(7.6)	−(9.6)

Notes: 1. Figures in parentheses represent the percentage share of each of the components in disposable income.
2. Work-related income = wages & salary + mixed income.
3. Retirement income etc. = employers' imputed social contributions + social benefits in cash.
4. Public benefits = social security benefits in cash + social assistance benefits.
5. Net property income = property income receivable - property income payable.
6. Social security premiums = employers' social contributions.
7. Deductions in direct taxes and social security premiums are designated as negative figures.
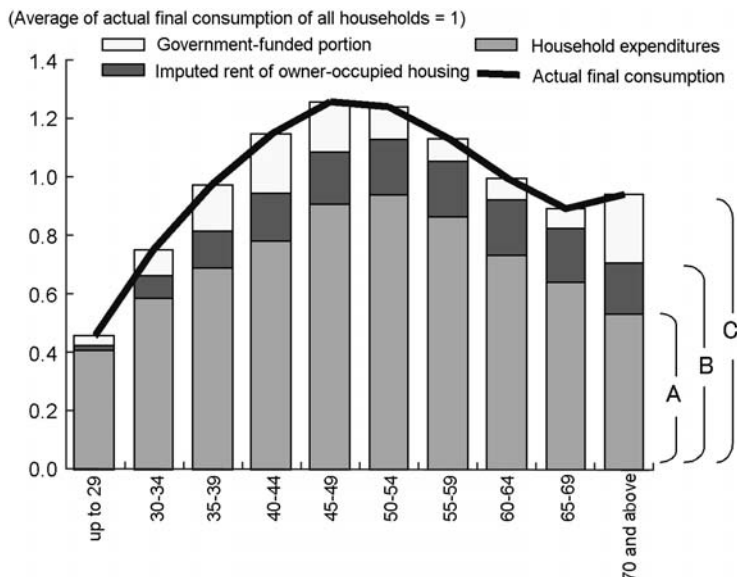Source: Cabinet Office, *Annual Report on National Accounts*.

（2）The impact upon consumer spending
Next, we examined the impact of the aging population upon consumer spending on the basis of the aged-based consumption per household.

To discern the future course of SNA-based consumption, we resorted to the concept of per-household consumption in the estimate we used to examine disposable income. From Chart 13, the characteristics of consumption expenditures of households (by age group) may be summarized as follows. (1) Consumption is largest among households headed by persons aged 45~54 and gradually declines as the household head grows older. (2) In terms of actual final consumption (C in Chart 13), consumption among households headed by those aged 70 and above is larger than 65~69 households. (3) The amount of imputed rent of owner-occupied housing starts to grow larger from around 30. (4) Government-funded consumption is large in households in the 35~49 and 70-and-above age groups. This is caused by the rise of education and medical costs for children among middle-aged households and the increase of medical costs for those aged 70 and above. (5) The reason why per capita spending among the elderly is higher than spending among those aged 15~64 may be attributed to the smaller number of people comprising elderly households and thus a larger amount of basic per capita consumption.

Chart 13: Consumption Expenditures of Households by Age Groups (1999)

(Average of actual final consumption of all households = 1)

Legend:
- Government-funded portion
- Imputed rent of owner-occupied housing
- Household expenditures
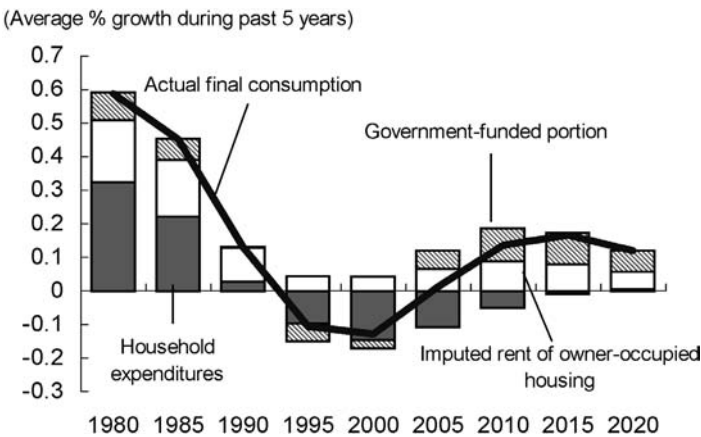- Actual final consumption

Note: 1. Household expenditures = individual final consumption - imputed rent of owner-occupied housing.
2. Government-funded portion = actual final consumption - individual final consumption.
Source: Kouji Hamada, *The Estimation of the Household Sub-sector Accounts of SNA*, Economic and Social Research Institute, Cabinet Office (Economic Analysis No. 167, 2003).

In Chart 14, we calculated the change in consumption by changing only the composition of households and keeping the age-based consumption structure constant as of 1999. We found that along with the increase of elderly households with low consumption levels, the growth attributed to the population factor (the rate of growth of consumption expenditures represented by the line graph in Chart 14) - averaging 0.6% per annum in the first half of the 1980s - slowed and turned negative in the 1990s. The breadth of the fall is small - only an annual average of -0.1% or so even in the second half of the 1990s when the fall was the sharpest - and rises to positive territory again in the second half of the 2000s. However, this is caused mainly by the

increase of imputed rent of owner-occupied housing and government-funded consumption. Depending upon the course of Japan's healthcare reforms, it is unlikely that government-funded medical expenditures will rise as much as the foregoing estimate. Medical expenses shouldered by the household sector (A in Chart 13) will likely remain under negative pressure up to the first half of the 2010s.

Chart 14: Trends in Consumption on the Basis of the Age-Based Consumption Structure

(Average % growth during past 5 years)

Next, we used the same method in Chart 11 to calculate the actual consumption of households (Chart 15). In Chart 15, D indicates the real rate of growth of each of the items set forth in the columns. According to the chart, consumption started to decline subsequent to a peak in the second half of the 1980s and fell further from the second half of the 1990s. Note however that consumption has managed to stay positive in the 2000s, showing that consumption has been rising at a pace surpassing the growth of disposable income. However, the chart also reveals that the highest growing components of growth are government-funded consumption and imputed rent of owner-occupied housing and that household expenditures in real terms is lower at approximately 1%.

Chart 15: Trends in Actual Consumption Expenditures

(Average annual % change)

	Actual final consumption	Government-funded portion	Individual final consumption	Household expenditures	Imputed rent of owner-occupied housing
(A) Consumption expenditure (y-o-y)					
1981~85	5.9	6.0	5.9	5.7	7.3
86~90	5.8	5.4	5.9	5.6	7.4
91~95	3.4	5.2	3.2	2.7	6.0
96~00	0.9	3.2	0.5	0.0	2.6
00~02	-0.1	1.3	-0.3	-0.8	1.9
(B) Deflator (y-o-y)					
1981~85	2.6	2.1	2.7	2.5	3.7
86~90	1.5	1.5	1.5	1.3	2.7
91~95	1.0	1.4	0.9	0.7	2.3
96~00	-0.3	0.1	-0.3	-0.5	0.7
00~02	-1.3	-0.9	-1.4	-1.7	0.2
(C) Shift in composition of households					
1981~85	0.4	0.5	0.4	0.3	1.0
86~90	0.1	0.0	0.1	0.0	0.6
91~95	-0.1	-0.4	-0.1	-0.1	0.3
96~00	-0.1	-0.2	-0.1	-0.2	0.2
00~02	0.0	0.3	-0.1	-0.2	0.3
(D) Other factors					
1981~85	2.9	3.5	2.8	2.8	2.6
86~90	4.2	3.9	4.2	4.3	4.1
91~95	2.5	4.3	2.3	2.1	3.4
96~00	1.3	3.4	0.9	0.8	1.7
00~02	1.3	1.8	1.1	1.1	1.4

Notes: 1. (A) represents the average annual rate of growth of consumption in actual SNA statistics.
2. (B) represents the deflator for the imputed rent of owner-occupied housing for the operating surplus of owner-occupied housing and the deflator for household final consumption expenditure for all other items.
3. (C) represents the impact of the change in composition of households set forth in Chart 14.
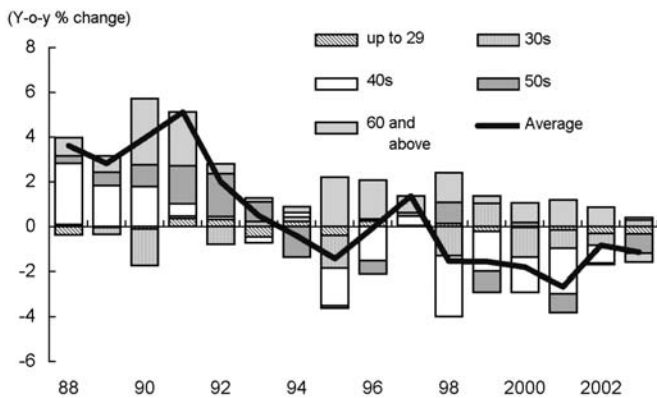4. (D) is derived by subtracting (B) and (C) from (A).
Source: Compiled by MHRI on the basis of statistics such as the Cabinet Office, *Annual Report on National Accounts*.

Since estimates on age-based household consumption is available only with respect to 1994 and 1999, we used the *Family Income and Expenditure Survey* of the Ministry of Public Management, Home Affairs, Posts and Telecommunications to ascertain the reasons for the increase in consumption. According to the trends in total consumption derived by multiplying the consumption per household on an "all-households" basis by the number of households, consumption since the mid-1990s was driven mainly by households headed by those aged 60 and above and that consumption among households headed by those aged 50 or younger grew smaller

(Chart 16). In addition to the rise in proportion of elderly households in the population, non-work related income such as retirement income and pension benefits of elderly households remained stable in contrast to the fall of work-related income among the working-age generation. This supported elderly household incomes, which in turn provided the basic underpinnings of consumption.

Chart 16: Trends in Consumption Expenditures of Households by Age Group

Note: The line represents the year-on-year change of nominal consumption expenditures (all households) in the *Family Income and Expenditure Survey* and the bars represent the degree of contribution by each of the age groups.

Source: Ministry of Public Management, Home Affairs, Posts and Telecommunications, *Family Income and Expenditure Survey.*

In summary, the positive effect upon consumption by the population factor diminished most sharply from the 1980s to the first half of the 1990s. Consumption levels also indicate that the negative impact upon consumption was greatest in the 1990s and that the negative effect would start to abate from around 2000. In the 1990s, when the population factor's negative impact upon consumption was the greatest, non-work related income served to prop up income amid the sluggish growth of work-related income in a stagnating economy. In short, elderly households acted as the drivers of consumer

spending. Thus from the perspective of consumption needs, perhaps we do not need to be so concerned about the negative impact stemming from the aging population, at least for the time being.

Even so, consumption levels are not determined entirely independent of income. The effect of the aging population upon income will inevitably affect the impact of the aging population upon consumption. To provide a forecast on the impact of the aging population upon consumption, we must examine the impact of the aging population upon income.
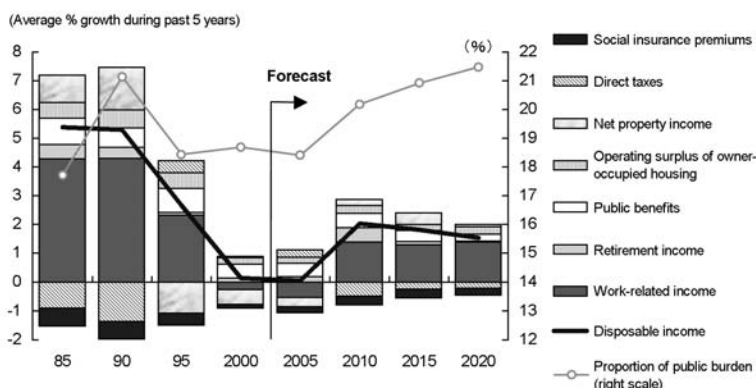
(3) The future outlook
In the final section of this paper, we have set forth our future outlook on the basis of findings in the previous sections. The future household sector envisaged would differ depending upon the state of the economy in the assumption. In this paper, we estimated the future course of income in consideration of the change in the household sector and the impact of Japan's pending social security system reforms. For basic conditions such as prices, wages, long-term interest rates and GDP growth rates, we referred to the base data in the government's *Structural Reform and Medium-Term Economic and Fiscal Perspectives* and the FY2004 actuarial review. As for work-related income, we resorted to the scenario set forth under Case 3 (the scenario where the labor force participation rate and real wages rise according to government assumptions) of Chart 9 in Chapter 3.

As a result, we found that household disposable income will recover along with the improvement of economic conditions in the second half of the 2000s and gradually start to slow from then onward (Chart 17). By the second half of the 2000s, work-related income and property income will start to recover along with the Japan's economic recovery and the rise of interest rates and the stock market. Retirement income will also increase as the baby boom generation reaches retirement age, thus underpinning disposable

income. Meanwhile, the growth of public pension benefits will be subdued in comparison to the past because the eligible age for pension benefits will be raised and pension benefits will be indexed to macroeconomic conditions. From the second half of FY2000, direct tax burdens will rise due to a smaller tax cut. Although Japan managed to suppress the rise of the proportion of public burdens (direct taxes and social security premiums) in disposable income from the second half of the 1990s, the proportion will start to rise again from the second half of the 2000s and continue to follow a gradual upward path. Although we have not factored in the rise of public burdens which have not materialized to date, public burdens may increase in the event premiums on health and nursing care insurance are raised in the future course of Diet deliberations.

Chart 17: Forecast on Disposable Income

Notes: 1. In the estimate from 2005 onward, the number of employed persons are estimated on the basis of the figures in the case assuming the rise of both the labor force participation rate and wages in Chart 9. Forecasts on prices, wages, long-term interest rates, public benefits and contributions are based upon the premises set forth in the government's *Structural Reform and Medium-Term Economic and Fiscal Perspectives* and FY2004 actuarial review. All other premises and estimation methods are as follows.
    Retirement income: employers' imputed social contributions (lump-sum retirement allowance) are estimated on the basis of the y-o-y change of the 60~64 male population + percentage rise of consumer prices. Pension fund benefits (corporate pensions) are estimated on the basis of the 60 and over male population and the percentage rise of consumer prices.
    Public benefits: social assistance benefits (welfare benefits) are estimated on the basis of the percentage rise consumer prices at around 1% or more.
    Operating surplus of owner-occupied housing: estimated on the basis of the number of households residing in owner-occupied houses (number of households by age group x rate of home ownership by age group), consumer prices and the qualitative improvement of owner-occupied houses.
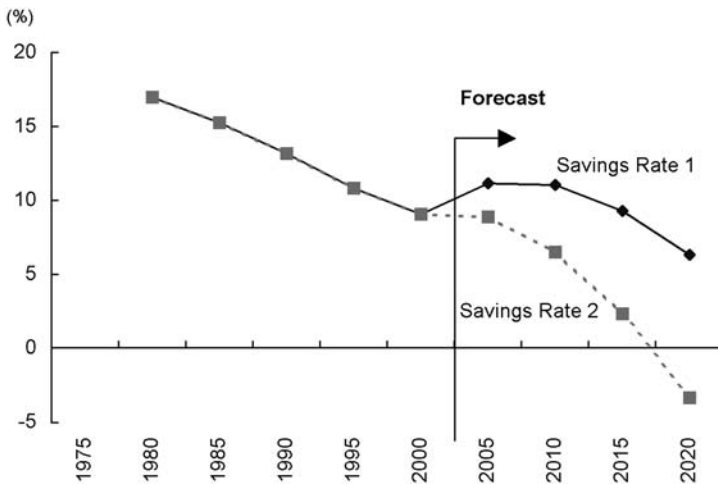   Direct taxes: based upon the gradual abolishment of the fixed-rate tax cut (3.5 trillion yen) by 2010.
    2. Proportion of public contributions: (direct taxes + social insurance premiums) / disposable income.
Sources: Cabinet Office, *Annual Report on National Accounts, Structural REform and Medium-Term Economic and Fiscal Perspectives,* and others.

How will this scenario affect the IS balance in the household sector? In this paper, we have set forth two probable scenarios on the course of the savings rate. Scenario 1 assumes that nominal consumption per household will increase at the same rate as the growth of nominal wages and will also be subject to the impact stemming from the change in household composition estimated in Chapter 4 (2). In this scenario, the savings rate will improve in the second half of the 2000s reflecting the recovery of income and gradually decline from then onward (Chart 18). In Scenario 2, we assume that nominal consumption per household will increase at the rate of 0.5% and will be subject to the impact of the change in household composition. In this case, the savings rate will decline steadily without the chance to recover and will fall into negative territory in 2020. Assuming that residential investment remains relatively strong during this period, the IS balance of the household sector may turn negative.

Chart 18: Forecast on the Savings Rate

Notes: 1. In both cases, we used the estimates in Chart 17 for disposable income.
2. Savings Rate 1 is based upon future consumption on the basis of the household shift factor + nominal wages.
3. Savings Rate 2 is based upon future consumption on the basis of the household shift factor + nominal wages + 0.5%.

5. Conclusion: what do we need for a recovery of household demand?

The aging of the population, which is already having a full-blown impact upon the Japanese economy, is forecast to accelerate during 2000~2015. Nevertheless, as far as the rapid transformation of the household sector from the 1990s onward is concerned, the economic recession has had a far greater impact. It should be noted that the aging of the population has served to mitigate the direct impact of the recession because of the increase of income such as retirement allowances and pension benefits which is relatively unaffected by swings in economic conditions. Even so, the ultimate source of non-work-related income is work-related income. The capacity of the government and corporate sectors as stabilizers function only to the extent of leveling out the fluctuation of economic conditions. In the event of a prolonged economic slump or if the social security system becomes unsustainable in the light of demographic trends, the postponement of the negative impact by the stabilizer effect involves the risk of magnifying future disruptions.

Fortunately, deflation appears to be approaching an end in Japan given the ongoing recovery of the economy. On the basis of calculations in the previous section, the odds are high that household sector income will recover toward 2010. However from then onward, we may not look forward to an overall growth of income and consumption because of the full-blown impact of the decline as well as aging of the population. If this is indeed the case, Japan must rebuild a sustainable social security system and the people should prepare themselves for the change while the economy is strong enough to absorb the accompanying shocks. The current speed of Japan's reforms is much too slow.

Although consumption will inevitably slow down in the medium to long-term perspective, it is still possible to stimulate demand by

exploring the needs of a graying society. This in turn will contribute to the improvement of welfare in the household sector. In such event however, these endeavors may lead to a faster decline of the savings rate given the limited rise of income. Households would need to adapt to a low savings rate by improving the efficiency of their investments and utilizing overseas funds.

Furthermore, work-related income must be bolstered for a sustained recovery of disposable income. As we observed in Chapter 3, wages in real terms would have to rise because of the difficulty to increase the labor force. As a matter of course however, the rise of labor costs would suppress corporate profits. Thus, to make higher hourly wages feasible, it would be indispensable to raise productivity through the qualitative improvement of human resources. This, however, involves several problems.

Firstly, hourly wages are declining rather than rising because of the rise in proportion of part-timer workers in segments of the labor force where there is room for the labor force participation rate to grow. While this implies that there is upward leeway for the rise of wages in this segment, in consideration of the fact that the rise of the labor force participation rate thus far is largely the result of the increase of part-time workers, in order to raise the level of wages in real terms, it would be necessary to revise the social security and tax systems, corporate personnel policy and industrial structure which contributed to the increase of part-time workers.

Secondly, we should note that in the case of the elderly aged 65 and above, it is difficult to increase the hours and intensity of labor due to physical reasons. In many cases, elderly workers do not necessary wish to work longer and more strenuous hours. Despite the importance of elderly workers' active participation in a progressively aging society, the foregoing indicates that it is critical to boost the utilization of non-elderly workers.

Thirdly, in connection with the second issue above, we should note that the young working generation is losing the opportunity to acquire professional experience and expertise because of a prolonged and high rate of unemployment among young people. If the young are not given the opportunity to build their careers at this point in time, they will have a lower chance to obtain high-paying jobs when they grow older. The quest for solutions for an aging population, is simultaneously a quest to upgrade the quality of labor among the young who will grow old and comprise the elderly generation of the future. With one-fifth of the young without full-time regular jobs (referred to as "freelance part-time workers" or "freeters" for short), Japan has no time to lose. Left untouched, the effective labor force will continue to shrink and its expansion is a Herculean task. The Japanese government faces an urgent task of addressing these labor market issues with serious and farsighted policy measures.

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Notes:
1. For example, the Cabinet Office (2003).
2. The age-based labor force participation rate for those aged 65 and above rises to the level in 1990 and flattens out thereafter. The labor force participation rate of men aged 60~64 rises to the level in 1970 around 2020. The age-based labor force participation rate of men aged 25~59 is the same level as in 2000. As for the age-based labor force participation rate of men aged 24 and younger and women aged 64 and younger, all those seeking employment in the non-labor force population will become part of the labor force population around 2020.
3. Overseas reports and media coverage on this topic generally advocate a more open immigration policy by Japan. For example, the 2004 Annual Meeting of the World Economic Forum (Davos, Switzerland) reported that Japan would have to accept approximately 650 thousand immigrants per year - more than ten times in the past - in order to offset the decline of Japan's labor force population. In contrast, the *2003 White Paper on Japanese Economy* sets forth a negative view on the quantitative expansion of Japan's immigration policy, citing that the repercussions (for example, social costs) of accepting ten times the current number of immigrants on a continuous basis would be enormous.
4. This is an estimate of the sub-sectors of households on an all-households basis with respect to the income and expenditures accounts for 1994 and 1999 so that the sums correspond to the SNA household account. Due to the limitation of base data, there are several omissions such as employers' contribution to corporate pensions and lump-sum retirement allowances and imputed services of financial institutions. Furthermore, operating surpluses are represented as gross figures because of the lack of estimations on the consumption of fixed capital.
5. Nevertheless, there may be a slight discrepancy due to a conceptual difference between the age-based distribution statistics used in the estimation and the SNA statistics.