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When will Japan's saving rate stop falling?
– exploring the impact of the aging population upon the saving rate –

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Summary

1. The aging population is cited as one factor behind the decline of Japan's saving rate. However, looking beyond Japan, note that the aging of the population is not necessarily leading to the decline of the saving rate in major industrialized countries.
2. Japan's declining saving rate stems from the fall of disposable income – in particular the decrease of interest income and wages & salaries. The fall of interest income is due to the fall of interest rates and the decline of wages & salaries is due primarily to the decline of per capita wages stemming from changes in employment status. Despite examinations on whether the aging population had an impact with respect to both incomes above, macroeconomic statistics do not reveal any results indicating such possibility.
3. In the background to views that the aging population has caused the saving rate to decline is the "life cycle hypothesis of saving" (hereafter, the "Life Cycle Hypothesis"). We thus conducted a thorough examination on the validity of the Life Cycle Hypothesis upon Japan. However, as far as the results of the *National Survey of Family Income and Expenditure* are concerned, we could not discern a clear decline of the saving rate along with aging. Since many of the elderly in Japan are saving in a bid to provide for illnesses and nursing care, the preparatory savings behavior among the elderly most likely had an impact.
4. A discussion on the impact of aging must consider both the decline of the saving rate due to aging and the impact stemming from shifts in household structure. Analysis of the factors contributing to the shifts in saving rate during the decade from 1994 to 2004 revealed that the decline in number of households (decline of the household ratio) in the 40–59 age group served as a major drag upon the saving rate. Even though the saving rate has declined among households aged 60 or older, the rise of the household ratio is serving as a factor to push up the saving rate

because the level of savings is still high in this group. While a discussion on the aging society tends to focus upon the savings and consumption behavior of the elderly, the aging of society merely comprises one of the aspects of overall demographic shifts.

5. Even though aging has had limited impact in the past, the effect may gradually surface along with the increase in number of the older elderly (75 or older) and single–member elderly households with low saving rates. However, since the ratio of the young generation similarly having a relatively low saving rate will decline along with the increase of elderly households, the impact upon the overall saving rate should be relatively benign for the time being. In fact, calculations on the how much the shifts in household ratios will drag down the saving rate, based upon the rate of saving in each age group in 2004, revealed that its negative impact is only 0.15% pt as of 2010. Moreover, note that factors such as the following will temporarily push up the saving rate of elderly households: (1) the payment of retirement allowances along with the retirement of the baby boom generation and (2) the increase of job opportunities for the elderly stemming from the employment system for the employment extension of elderly workers.
6. Assuming that downward pressures upon savings due to aging do not surface, the saving rate would be affected strongly by cyclical factors. Despite the slow rise of wages at the moment, wages are expected to rise gradually because companies are feeling a more acute shortage of labor amid Japan's economic expansion and mass retirement of the baby boom generation. Furthermore, considering the prospects of a gradual rise of interest rates, cyclical factors pushing up the saving rate should grow. Amid the aging of the population, Japan's saving rate is predicted to turn upward and continue to rise for some time.

1. Introduction

The household saving rate (hereafter the "saving rate") is continuing to decline. The saving rate in FY2005 released in January fell to 3.1%, the lowest level in history falling below 3.4% in FY2004. Despite the general perception that the saving rate in Japan is higher than other industrialized countries up to the first half of the 1990s, Japan's saving rate belongs to the group of countries with low saving rates (**Chart 1**).

Chart 1: Change in global saving rate ranking (1990 → 2004)

	90
Italy	24.0%
Korea	22.5%
Japan	13.9%
Germany	13.9%
Austria	13.3%
Netherlands	13.0%
Canada	13.0%
Switzerland	9.6%
France	9.3%
Australia	9.3%
United States	7.0%
Ireland	6.1%
Finland	3.6%
Norway	2.2%
Sweden	1.2%

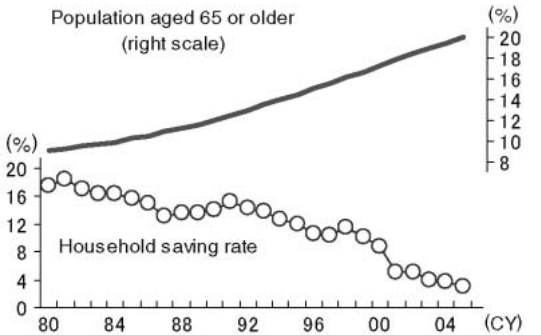
	04
France	11.8%
Italy	11.5%
Germany	10.5%
Norway	10.2%
Ireland	9.9%
Switzerland	8.9%
Sweden	8.6%
Austria	8.3%
Netherlands	7.3%
Japan	6.9%
Korea	5.1%
Finland	2.7%
United States	1.8%
Canada	1.4%
Australia	-3.0%

Note: The OECD saving rate corresponds to former SNA basis (1995SNA).
Source: OECD, *OECD Fact Book 2006*.

The fall of Japan's saving rate is attributed to its aging population. This stems from the fact that the decline of the saving rate progressed in lockstep with the aging of Japan's population (**Chart 2**). In fact, the percentage of the population aged 65 or older has continued to rise consistently since 1990. In 2005, 20.1% or one in

every five people was an elderly person.

Chart 2: The percentage of the population aged 65 or older and the saving rate



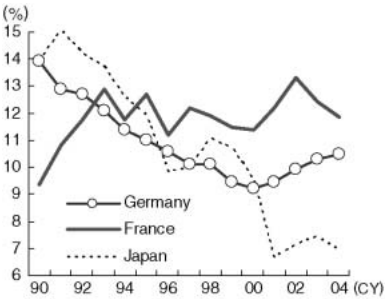
Note: The saving rate up to 1995 is based upon the former SNA basis.
Sources: Cabinet Office, *Annual Report on National Accounts*,
Ministry of Internal Affairs and Communications, *Current Population Estimates*.

Given the inevitable aging of the population, the consensus view is that the saving rate will continue to decline. According to Nagata (2006) (Note 1), a 1% rise of the percentage of the population aged 65 or older would push down the saving rate by approximately 2%, leading to views that Japan's saving rate would sooner or later turn negative.

The aging of the population is progressing albeit at a different pace in both Germany and France, which are both industrialized countries like Japan. Even so, in both countries there is no evidence of a decline of the saving rate as in Japan (**Chart 3**). A closer look at the connection between aging and the saving rate in 15 comparable OECD member countries revealed that the connection between the two is very tenuous (**Chart 4**). Even though it would be necessary to take into consideration the state of the economies of each of the countries at the time of comparison, we found that the connection between aging and the fall of the saving rate is not as clear as generally believed. Furthermore, the significant deviation from the

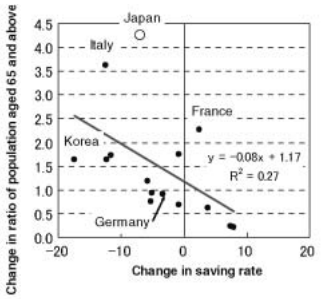
fitted curve in Japan's case suggests the impact of unique factors other than aging.

Chart 3: Trends in saving rate (Japan, Germany and France)



Source: OECD, *OECD Fact Book 2006*.

Chart 4: The connection between the saving rate and aging in industrialized countries



Note: Change of the saving rate from 1990 to 2004, change of the rate of population aging from 1990 to 2005.
Source: OECD, *OECD Fact Book 2006*.

This paper reexamines the connection between the falling saving rate and aging in Japan. More specifically, the paper explores the causes for the decline of the saving rate from the movements in each of the components of consumption and income and ascertains whether they are attributed to aging. Of course, a thorough examination of the impact of the aging population would be difficult (and only be limited to collateral evidence) due to the lack of age structure–based data on consumption and income in macroeconomic statistics such as the *Annual Report on National Accounts*. We thus examined the validity of the Life Cycle Hypothesis of saving which serves as the theoretical basis of the fall of the saving rate due to aging and looked closer at the connection between the fall of the saving rate and aging in Japan. In the final section, we have provided an outlook on the future course of the saving rate.

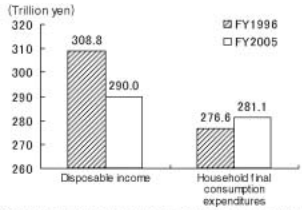
2. The cause of the decline of the saving rate and the impact stemming from the aging population

(1) What is causing the decline of the saving rate?

We shall first seek the underlying reasons causing the fall of the saving rate in Japan. Comparing the savings rate in FY1996 and FY2005 under the current SNA standards (Note 2), the saving rate fell by 7.3% during the foregoing nine year period. Looking closer at the constituent components of the saving rate, household final consumption expenditures increased by 4.5 trillion yen in contrast to a 18.8 trillion yen decline of disposable income (Note 3) (**Chart 5**). The decline of disposable income usually leads to the fall of the saving rate because of the difficulty to immediately reduce the level of consumption (the ratchet effect). In Japan, it appears that the increase of consumption expenditures has pushed up the saving rate.

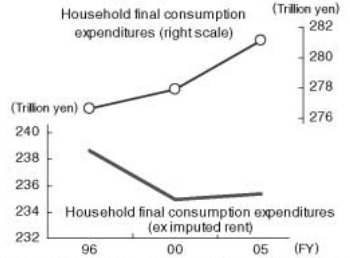
However, a breakdown of consumption expenditures reveals that imputed rent (Note 4) without the transfer of consideration is pushing up the overall level of consumption expenditures and that actual consumption expenditures excluding imputed rent are declining (**Chart 6**). Apart from imputed rent (which is a special factor), the decline of the saving rate may be explained more or less by the decrease of disposable income.

Chart 5: Trends in disposable income and household final consumption expenditures



Note: Disposable income includes changes in pension fund reserves.
Source: Cabinet Office, *Annual Report on National Accounts.*

Chart 6: Trends in imputed rent



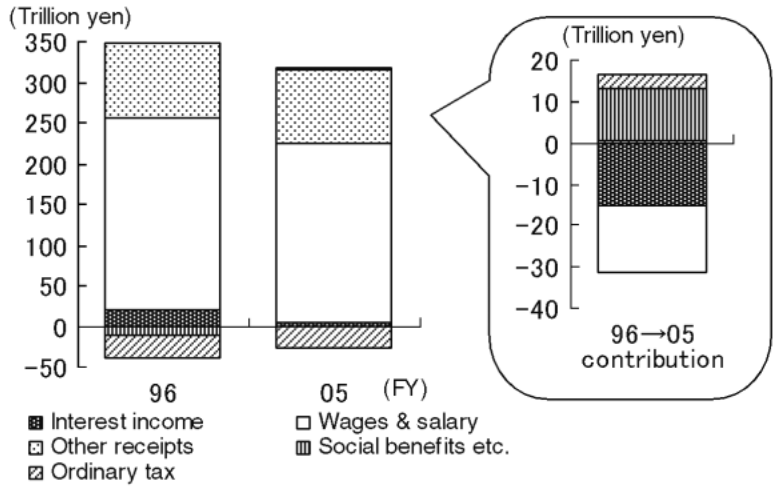
Source: Cabinet Office, *Annual Report on National Accounts.*

A breakdown of disposable income reveals a sharp decline of interest income and wages & salaries during the period from FY1996 to FY2005 (**Chart 7**). During the nine year period, interest income and wages & salaries fell 15 trillion yen and 16 trillion yen respectively. Since other components such as ordinary taxes and social benefits are positive factors, we can deduce that the decline of the two income components mentioned above (interest income and wages & salary) are the factors pushing down the saving rate.

The sharp decline of both interest income and wages & salaries stems largely from Japan's prolonged economic slump. The Japanese economy fell into a recession twice during the period of nine years, and its average annual growth rate in real terms dropped to 0.9%, falling sharply below its potential rate of growth estimated to be around the upper end of the 1% level. Prices have continued to fall and the short–term interest rate is still crawling near zero.

Even though the Japanese economy has been recovering since 2002, wage levels are still low. Thus, the possibility that the slow pace of wage growth stems from some other structural factor may not be ruled out altogether. The following section discusses the aging of the population as a structural factor and its impact upon the decline of income.

Chart 7: Disposable income (factor decomposition)

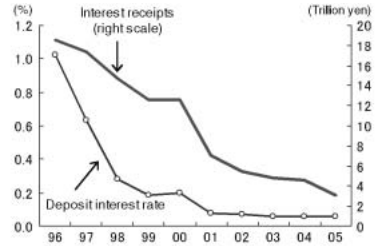


Source: Cabinet Office, *Annual Report on National Accounts.*

(2) The aging population – its impact upon the income level.

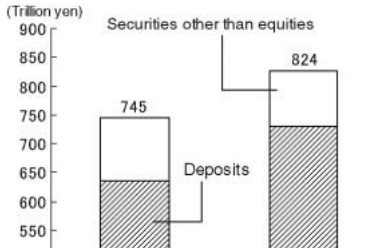
Firstly, we shall examine the connection between the decline of interest income and the aging population. As mentioned above, the fall of interest rates has had a large impact upon the decline of interest income. Even though time deposits (3–year) were already at a historically low level in 1996 (approximately 1%), the level is still twenty times the level in 2005 (0.06%). Interest rates continued to drop along with the slumping economy and interest income also fell in lock step (**Chart 8**). If we were to presume that the aging population did have an impact, one possibility would be that dissaving – in the course of the population growing older – led to the fall of the saving rate. However, we could not confirm a pattern of dissaving stemming from aging during this period. On the other hand, the outstanding balance of bank deposits and securities other than equities increased during the period (**Chart 9**).

Chart 8: Trends in deposit interest rates and interest income



Note: Deposit interest rate refers to the interest rate on 3-yr time deposits on postal saving deposits.
Source: Cabinet Office, *Annual Report on National Accounts* and others.

Chart 9: Changes in household financial assets



Source: Bank of Japan, *Flow of Funds*.

We shall turn next to wages & salaries. Wages & salaries are calculated by multiplying the number of employees (quantity) by per capita wages (price). The aging of the population would affect wages & salaries in terms of both the quantity and price factors. In fact, in the event the working population decreases as a result of aging, it would serve as restraints upon the number of employees. Furthermore, according to the *Wage Census*, the average annual income (Note 5) of persons aged 60 or older is approximately 30% lower than those in the 50s. Thus, if the percentage of elderly employees rises, the level of per capita wages would be pushed down. In the following section, we shall ascertain whether the aging of the population led to (1) the decline in number of employees, or (2) the decline of per–capita income on the basis of statistical data on employment and wages.

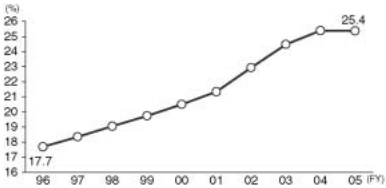
The number of employees increased by approximately 690 thousand workers during the period from 1996 to 2005. Since the number of employees has been following an uptrend during this period, there is no discernable impact of aging in quantitative terms. Looking at the change in number of employees in terms of age structure, we found that employees aged 60 or older increased by approximately 990 thousand persons, revealing that the aging of the

population is serving as a factor to push up the number of employees.

In contrast, per capita wages dropped 6.9% from FY1996, serving as a considerable drag upon wages & salaries. Since the percentage of employees aged 60 or older has been rising as evidenced by the number of employees, this may have served to push down the level of per capita wages. However, note that companies have been boosting employment of (1) part–time employees with lower wage levels in comparison to full–time employees, and (2) non–regular workers such as contract employees and temporary staff from agencies. Since the wage level of non–regular employees is approximately 30% of the wage level of regular employees, the negative impact stemming from the shift in employment pattern cannot be ignored. According to the *Monthly Labor Survey*, the percentage of part–time workers in regular workers rose from 17.7% in FY1996 to 25.4% in FY2005 (**Chart 10**). The percentage of non–regular workers (Note 6) including temporary staff and contract employees is 30.2%, surpassing 30%.

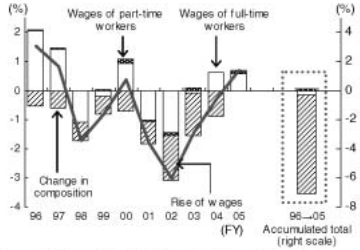
Decomposing the factors to the rise of per capita wages in terms of (1) shifts in full–time worker wages, (2) shifts in part–time worker wages, and (3) shifts in the ratio of part–time workers (employment status), we found that the decline of wages can be explained mostly by the shifts in the ratio of part–time workers (**Chart 11**). The contribution by the changes in wages of full–time and part–time workers – which we initially perceived to be the principal factor – turned out to be essentially zero.

Chart 10: Trends in ratio of part–time workers



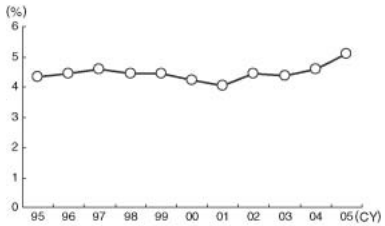
Source: Ministry of Health, Labor and Welfare, *Monthly Labor Survey.*

Chart 11: Per capita wages (decomposition of contributing factors)



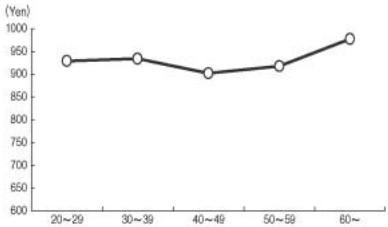
Source: Ministry of Health, Labor and Welfare, *Monthly Labor Survey.*

Chart 12: Ratio of individuals aged 60 or older in full–time workers



Source: Ministry of Health, Labor and Welfare, *Basic Survey on Wage Structure.*

Chart 13: Wage curve of part–time workers



Source: Ministry of Health, Labor and Welfare, *Basic Survey on Wage Structure.*

One of the reasons that we could not discern the change in wages as a result of the aging population is that the percentage of those aged 60 or older remained virtually flat despite the aging of the population (**Chart 12**). Even though the percentage of those aged 60 or older rose among part–time workers, it did not serve as a drag upon wages because of the absence of an age–specific gap in hourly wages (**Chart 13**).

In the previous section, we explored the cause of the falling saving rate and examined whether the aging population has had an impact. The foregoing revealed that the decline of the saving rate was caused by the fall of disposable income – in particular the

decrease of interest income and wages & salaries. In the background to the decline of interest income was the fall of interest rates and the drop of wages & salaries was caused by the fall of per capita wages. Although we examined the impact of the aging population with respect to each of the above–mentioned factors, we could not discern any signs that aging had served as a drag upon income. While our findings only serve as collateral evidence due to the limitations of analysis based upon macroeconomic data, the chances are very slim that aging had an impact upon the past decline of the saving rate.

3. The validity of the Life Cycle Hypothesis of Savings in Japan

(1) Discussions regarding the Life Cycle Hypothesis of Savings

A large number of readers most likely feel skeptical about our findings that "the chances are slim that the aging had an impact". In fact, there is a considerable volume of literature asserting that the aging population has pushed down the saving rate. However, since many of these existing studies (Note 7) are based upon the assumption that the life cycle hypothesis of savings (the "Life Cycle Hypothesis") is valid, it is only a matter of course that the aging population would push down the saving rate. The Life Cycle Hypothesis is a theory of consumption maintaining that "individuals determine the amount of annual consumption so that the total amount of consumption during their lifetime is equivalent to the total amount of money they may spend in their lifetime". Based upon this theory, people would save when they are able to work and dissave when they are old.

However, it should be noted that there are both proponents and opponents regarding the validity of the Life Cycle Hypothesis in Japan. Among the dissertations supporting the Life Cycle Hypothesis are those by Yashiro and Maeda (1994) and Horioka et al. (2002).

Yashiro and Maeda (1994) analyses the saving behavior of the elderly using the *National Survey of Family Income and Expenditure*, arguing that the Life Cycle Hypothesis is valid in Japan because the saving rate of the elderly would become negative when considering factors such as employment status, family structure and imputed income. Horioka et al. (2002) examines whether motives for bequests in Japan are selfish, altruistic or dynastic, concluding that bequests in Japan are motivated in exchange for "care, attention and/or financial assistance" during old age, in other words selfishly motivated and are consistent with the Life Cycle Hypothesis. Furthermore, according to Horioka (2006) and the Bank of Japan (2006), the fact that the saving rate among the retired elderly in the *Family Income and Expenditure Survey* is continuously negative suggests the validity of the Life Cycle Hypothesis.

In contrast, Ishikawa (1988) questions the validity of the Life Cycle Hypothesis, contending that there are factors other than employment which support the high saving rate among the elderly (indicating a deviation from the Life Cycle Hypothesis) as a result of analyzing the savings of the elderly on the basis of the *Family Savings Survey*. Nakagawa et al. (2000) concluded that the Life Cycle Hypothesis is not applicable to Japan, indicating that the elderly have maintained a high saving rate even after the 1990s on the basis of analysis of the saving behavior of the elderly living together with non–elderly households. Furthermore, Hayashi (1986) claims that simulations based upon the Life Cycle Hypothesis fail to provide an explanation of the saving rate trends in the 1980s, stating that there are altruistic motives such as intergenerational transfers.

There is still no consensus regarding the validity of the Life Cycle Hypothesis. Thus, in the following section, we shall re–examine whether the Life Cycle Hypothesis is valid in Japan, on the basis of data including the *Family Income and Expenditure Survey and the National Survey of Family Income and Expenditure*.

(2) The validity of the Life Cycle Hypothesis on the basis of the *Family Income and Expenditure Survey*

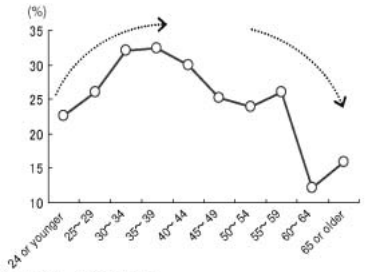
The *Family Income and Expenditure Survey* is the most popular source to discern the connection between the saving rate and aging. Despite the relatively small number of samples (8,000), the popularity stems from the survey's continuity and promptness – providing age structure–specific savings data of household heads every year.

The age structure–based saving rate in the *Family Income and Expenditure Survey* reveals that the saving rate rises up to the late 30s and declines as one grows older (**Chart 14**). Even though the saving rate in the *Family Income and Expenditure Survey* does not fall into negative territory (dissaving) since the saving rate pertains to two–or–more person households, the data reveals that the saving rate among elderly households is lower than other age groups, thus suggesting the applicability of the Life Cycle Hypothesis.

Furthermore, as indicated by existing studies, dissaving among the retired elderly households (Note 8) serves as evidence for the validity of the Life Cycle Hypothesis. From 1995 onward, the increase of retired elderly households and the sharp decline of the saving rate among those households most likely served to accelerate the saving rate from a macroeconomic perspective (**Chart 15**).

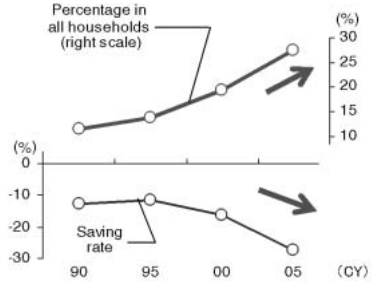
Note that the sharp decline of the saving rate of households with salaried worker ("worker") household heads aged 60 or older in comparison to other worker households is a relatively recent phenomenon. Up to the second half of the 1990s, the saving rate among households aged 60 or older was higher than the current level, and the difference between other age groups was only around 4% to 5% (**Chart 16**). The sharp decline today is due largely to the decline of "Other current income" (**Chart 17**). "Other current income" is the total of property revenue, social security benefits and financial support. In particular, note the sharp fall in 2002. The reform of the national pension system (Note 9) in 2002 most likely had a large impact upon "Other current income" in 2002.

Chart 14: Age structure–based saving rate



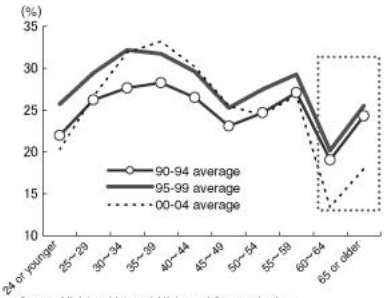
Note: 2001~2005 average.
Source: Ministry of Internal Affairs and Communications, *Annual Report on the Family Income and Expenditure Survey.*

Chart 15: The saving rate of elderly unemployed households



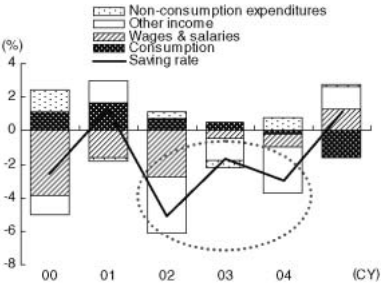
Source: Ministry of Internal Affairs and Communications, *Family Income and Expenditure Survey.*

Chart 16: Age structure–based saving rates in the past



Source: Ministry of Internal Affairs and Communications, *Annual Report on the Family Income and Expenditure Survey.*

Chart 17: Factors contributing to the decline of the saving rate among households aged 60 or older

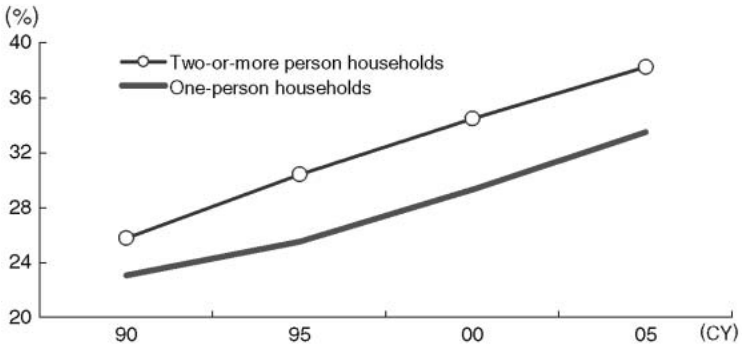


Note: "Other income" = total of asset income, social security benefits and financial support.
Source: Ministry of Internal Affairs and Communications, *Family Income and Expenditure Survey.*

As shown above, the *Family Income and Expenditure Survey* indicates the validity of the Life Cycle Hypothesis to a certain extent. However, it is necessary to keep in mind the possibility of a sample bias in the *Family Income and Expenditure Survey* stemming from its small sample group. Moreover, since data on disposable income is

limited to two–or–more person households headed by workers and retired elderly households, the saving rates of one–person households and households other than workers such self–employed households (excluding retired elderly households) are not taken into account. Given the rising percentage of elderly households among one–person households (just as in the case of two–or–more person households) one–person households may not be overlooked when discussing the impact of aging upon the saving rate (**Chart 18**).

Chart 18: Trends in percentage of households aged 60 or older



Source: Ministry of Internal Affairs and Communications, *Population Census of Japan*.

Chart 19: Outline of the *Family Income and Expenditure Survey* and the *National Survey of Family Income and Expenditure*

	Family Income and Expenditure Survey	National Survey of Family Income and Expenditure
Contents	①Household income and expenditures (income and non-consumption expenditures only for workers' households ②Major durable consumer goods ③No. of household members and residence	①Household income and expenditures (non-consumption expenditures only for workers' households) ②Savings and liabilities ③Major durable consumer goods ④No. of household members and residence
Sample (number)	Approximately 8,000 households	Approximately 60,000 households
Sample composition	(2004 survey)	(2004 survey)
Two-or-more person households	7,743 households	54,372 households
One-person households	710 households ※	5,002 households
Sample reshuffle	Reshuffled every 6 months for two-or-more person households, every 3 months for one-person	-
Frequency	Monthly	Every 5 years (in Sep ~ Nov)
Characteristics	●Promptness, being a monthly report × Large bias due to small sample size	●Slim sample bias due to large sample size ●Includes income data other than workers

※ Surveyed quarterly since 2002 ● Positive characteristic × Negative characteristic

To resolve the shortcomings of the *Family Income and Expenditure Survey*, the following section explores the validity of the Life Cycle Hypothesis on the basis of the *National Survey of Family Income and Expenditure* (Note 10). In addition to the likelihood that the *National Survey of Family Income and Expenditure* does not have such a significant sample bias given its large sample group (approximately 60,000 households), it also enables the analysis of a wider range of households than the *Family Income and Expenditure Survey* as long as certain preconditions are established (**Chart 19**).

(3) The validity of the Life Cycle Hypothesis on the basis of the *National Survey of Family Income and Expenditure*

Since the *National Survey of Family Income and Expenditure* asks all households their annual income, it is possible to calculate the disposable income of households other than worker households by using the rates of taxation and social security premiums. **Chart 20** sets forth the shifts in saving rate due to aging by grouping all households into four categories in terms of employment status of the

household head (salaried worker or otherwise) and the number of household members (one–person or two–or–more persons).

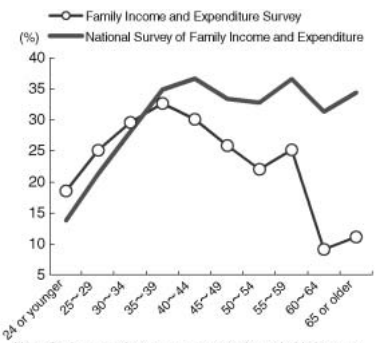
Firstly, let us look at worker households with two–or–more persons (①) which may be compared with the *Family Income and Expenditure Survey*. Since the *National Survey of Family Income and Expenditure* is conducted once in every five years, unlike the *Family Income and Expenditure Survey* which is conducted annually, the most recent results pertain to 2004. According to the age structure–based saving rate in 2004, the saving rate is highest among households aged 60 or older, revealing a sharp contrast with the results of the *Family Income and Expenditure Survey* observed in the preceding section (**Chart 21**). In the absence of a decline of the saving rate as a result of aging, the Life Cycle Hypothesis is not applicable for two–or–more person households as far as the *National Survey of Family Income and Expenditure* is concerned. Incidentally, the difference in saving rate among households aged 60 or older in the *Family Income and Expenditure Survey* and the *National Survey of Family Income and Expenditure* is larger than 20% – providing a critical gap in judging the validity of the Life Cycle Hypothesis.

Chart 20: Households surveyed in the *National Survey of Family Income and Expenditure*

		Employment status of household head	
		Worker	Non-worker
No. of household members	Two-or-more person households	①	②
	One-person households	③	④

Note: Households headed by non-worker household heads include self-employed and unemployed households.

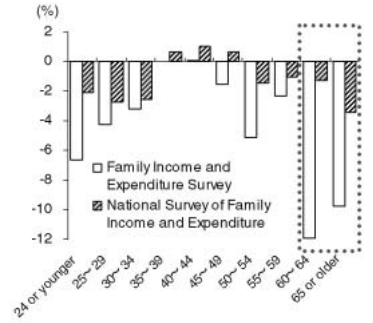
Chart 21: Age structure–based saving rate of two–or–more person household



Note: Saving rate of two-or-more person households in 2004.
Sources: Ministry of Internal Affairs and Communications, *Family Income and Expenditure Survey, National Survey of Family Income and Expenditure.*

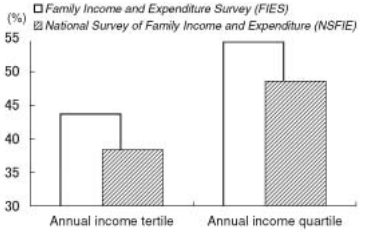
To explore the reasons for such a large gap, we compared the breadth of change with the previous survey (1999). The saving rate among households aged 60 or older in the *Family Income and Expenditure Survey* dropped 11.2% pt from 21.0% in 1999 to 9.8% in 2004. In contrast, the breadth of the fall in the *National Survey of Family Income and Expenditure* was only 2.9% pt (**Chart 22**). As mentioned before, the reduction of social security benefits most likely had a large impact upon the fall of the saving rate among households aged 60 or older. However, if that is the case, the same impact should have also been evident in the *National Survey of Family Income and Expenditure*. The resulting gap notwithstanding suggests that the sample bias in the *Family Income and Expenditure Survey* played a part. As a result of a comparison of the ratio of households by annual income structure in the *National Survey of Family Income and Expenditure* and the *Family Income and Expenditure Survey*, we found that the ratio of low income households in the *Family Income and Expenditure Survey* is approximately 6% higher than the ratio in the *National Survey of Family Income and Expenditure* (**Chart 22**). Considering that a relatively large number of elderly households are low income households, the pension system reform most likely had a large impact upon the *Family Income and Expenditure Survey*.

Chart 22: Change in age structure–based saving rate



Note: Change from 1999.
Sources: Ministry of Internal Affairs and Communications, *Family Income and Expenditure Survey, National Survey of Family Income and Expenditure.*

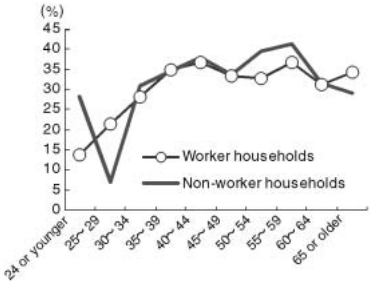
Chart 23: Comparison of the percentage of households in terms of annual income among elderly households



Note: The annual income decatile corresponds to all two-or-more person worker households. The upper limits of the tertile and quartile are 5.21 million yen and 5.93 million yen respectively. The The annual income-based number of households in the *NSFIE* match the above-mentioned limits by linear interpolation.
Sources: Ministry of Internal Affairs and Communications, *Family Income and Expenditure Survey, National Survey of Family Income and Expenditure.*

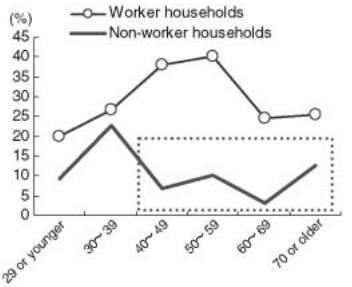
Turning to households other than salaried workers (②: including retired elderly households), the saving rate among this group is more or less equivalent to or slightly above worker households (excluding households aged 25 to 29) (**Chart 24**). The saving rate of households aged 60 or older is pinned near 30%, with no signs of dissaving presumed in the case of retired elderly households. Admittedly, it is necessary to provide some leeway when viewing the results since the saving rate is calculated on the basis of certain assumptions. Even so, as in the case of worker households, the results are not conducive to the validity of the Life Cycle Hypothesis. The saving rate among retired elderly households (included in non–worker households) fell 46.7%, falling lower than in the *Family Income and Expenditure Survey* (–27.4%). The high rate of saving despite such a sharp fall among households aged 60 or older stems most likely from the high saving rate among non–retired households such as the self–employed.

Chart 24: Age structure–based saving rate among non–worker households



Source: Ministry of Internal Affairs and Communications
National Survey of Family Income and Expenditure

Chart 25: Age structure–based saving rate among one–person households



Source: Ministry of Internal Affairs and Communications,
National Survey of Family Income and Expenditure.

Chart 25 sets forth the age structure–based saving rate of one–person households categorized into worker households (③) and non–worker households (④). The saving rate among one–person worker households rises as the age grows higher and drops sharply among households aged 60 or older. Since the households are headed by workers, the saving rate does not turn negative (dissaving). Even so, the saving rate of households aged 60 or older is lower than other age groups, providing support that the Life Cycle Hypothesis is applicable for this category of households. In contrast, the shift in saving rate due to aging could not be confirmed in non–worker households, given the low level of savings in all age groups.

As a result of ascertaining whether aging pushed down the saving rate in all household groups in the section above, we found that this was unlikely with the exception of one–person worker households. However, in a discussion on the age structure–based saving rate, the economic conditions of the year of the survey must be considered. Given identical economic conditions, its impact upon income and expenditures would differ, depending upon the age of the household head. Furthermore, note that the saving rate of each age group is also subject to generational characteristics of the age group. The

recent spotlight upon the baby boom generation stems not only from its large size but also from its savings and consumption behavior which differs largely from the previous generation (the saving rate when the previous generation was at the same age level). In the next section, we shall examined whether aging led to the decline of the saving rate, even when eliminating the various implications stemming from generational factors, using a method of analysis referred to as cohort analysis.

(4) An examination of the Life Cycle Hypothesis using cohort analysis

Cohort analysis is a method used to determine how the behavior and thought patterns among individuals in a certain cohort – individuals having in common significant events and experiences during the same time period – change along with the passage of time. To be more exact, (1) dummy variables are set for each segment (age segment, historical segment, generational segment) using data in the standard cohort table (Note 11) as explained variables and (2) differentiating each of the impacts through regression using the least–square method (**Chart 26**). The age structure–specific saving rate at each time period may be expressed in the form of the following equation.

$$X_{it} = \beta_o + \beta_i + \beta_t + \beta_c + e_{it}$$

where X_{it} is the saving rate of age structure i at time t,

β_o is the constant term,

β_i is the age effect,

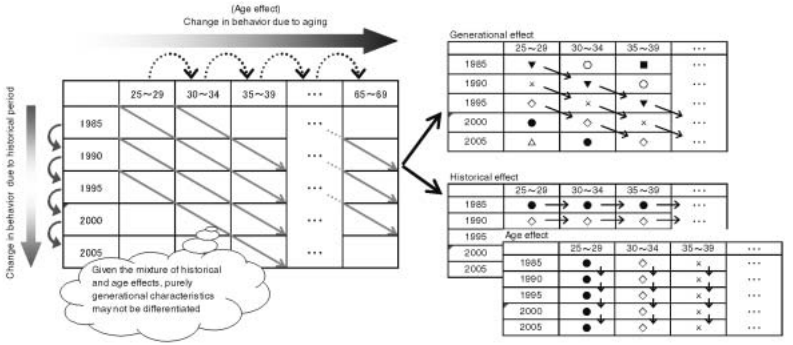
β_t is the historical effect,

β_c is the generational effect, and

e_{it} error term

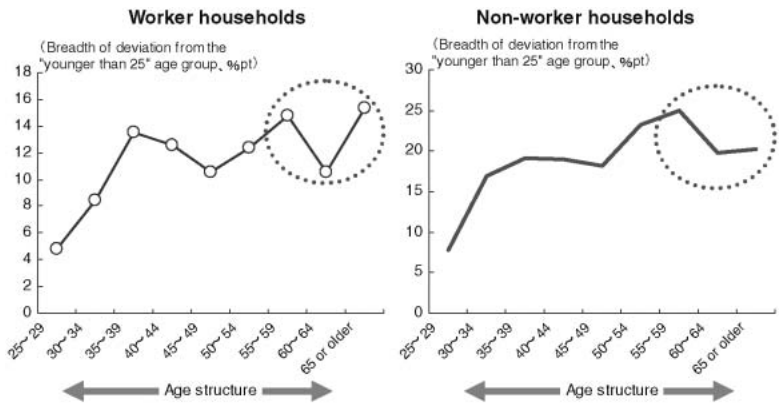
In this paper, we examined the age effect of two–or–more person households (Note 12) headed by workers and non–workers using data on seven historical segments in five year age ranges from 1974 to 2004 (Note 13). To raise the degree of freedom of estimates, we used a model (offsetting the historical effect) using the breadth of deviation from the average saving rate as the explained variable.

Chart 26: Cohort analysis



The age effect of worker households revealed that the saving rates of elderly households are approximately 15% points higher than those among households headed by individuals under the age of 25 and that the saving rates of elderly households compare favorably with other age groups (**Chart 27**). Even though the saving rate among non–worker households falls slightly below those among the 50s, it still surpasses the saving rate among households headed by individuals under the age of 25. The foregoing suggests that the Life Cycle Hypothesis does not apply for two–or–more person households even in consideration of age and generational effects.

Chart 27: Estimation of the age effect



Source: Estimations by MHRI on the basis of Ministry of Internal Affairs and Communications, *National Survey of Family Income and Expenditure.*

Chart 28: Saving motives among elderly households

	Purpose (motive)	Total (4914)	50～59 (1134)	60～69 (1029)	70 or older (706)
Life cycle	Provision for post-retirement life	67.1	75.9	**64.7**	**51.0**
	Purchase of owner-occupied residences	36.5	36.8	22.7	14.0
	Educational costs for children	29.1	18.9	7.2	5.2
	Funds for marriage (including such for children)	30.4	35.0	14.7	7.8
Preparatory	Provision for illnesses, disasters and other contingencies	61.3	64.6		
	Provision for nursing care	58.5	66.6	**59.4**	**50.0**
	Savings for reassurance and security	52.2	53.6	41.5	31.6
Others	Purchase of durable consumer goods	39.7	37.65	25.07	14.45
	Recreation, such as travel	39.6	35.80	29.25	18.27
	Others	18.9	20.37	12.15	7.51

Note: The figures in parentheses refer to the number of samples.
Source: Japan Post.

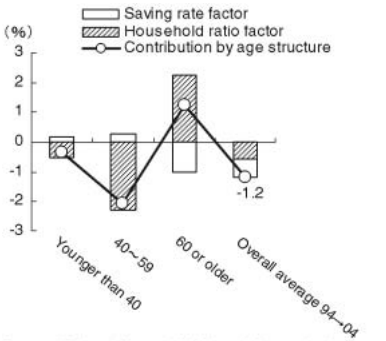
The lack of evidence on the decline of the saving rate due to aging in Japan stems most likely from the fact that many of the elderly still possess worries toward the future and wish to increase their savings. According to a survey by Japan Post, approximately 60% of respondents in their 60s and more than 50% of respondents in their 70s said that they wished to increase their savings to provide for illnesses and nursing care, underscoring the strong motive for preparatory savings among the elderly (**Chart 28**). Time series data also indicates the rise of preparatory saving motives, suggesting that the rising sense of risks associated with aging has driven up the high rate of savings.

(5) The shifts in household structure also have limited effect

While this paper has discussed the validity of the Life Cycle Hypothesis according to types of households in the foregoing sections, it is also necessary to take note of the shifts in household structure in a discussion on the impact of aging upon the saving rate. As suggested from the conjecture that a large part of one–person households are comprised of households which have evolved from two–or–more person households along with the aging process, in addition to the changes in saving behavior due to aging in the same household category, the change in the household ratio of different household categories play a role in the actual aging process.

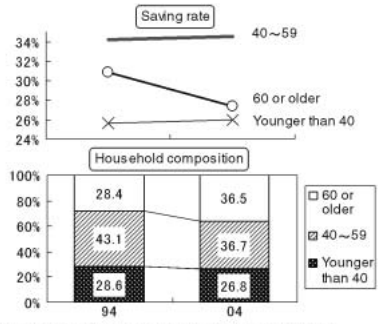
We thus decomposed the age structure–based saving rate during the decade from 1994 to 2004 into the saving rate factor and the household structure factor using the *National Survey of Family Income and Expenditure*. As a result, we found that the saving rate fell 1.2% point from 30.8% in 1994 to 29.6% in 2004, and that this was due

Chart 29: The decline of the saving rate (factor decomposition)



Source: Ministry of Internal Affairs and Communications, *National Survey of Family Income and Expenditure* and others.

Chart 30: Shifts in age structure–based household composition



Source: Ministry of Internal Affairs and Communications, *National Survey of Family Income and Expenditures.*

largely to households in the 40~59 age group (**Chart 29**). Even though the saving rates are rising slightly in these households, the decline of the household ratio (the fall in number of households) is serving as a drag upon the overall saving rate. Meanwhile, even though the saving rate has declined among households aged 60 or older, the rise of the household ratio is serving as a factor to push up the saving rate (**Chart 30**) because the level of savings is still high in this group (meaning that a sharp fall of the saving rate due to aging is not evident). As far as these results are concerned, the current decline of the saving rate is not due to dissaving by the elderly, but stems largely from the decline of the household ratio of the middle stratum having a relatively higher saving rate. While a discussion on the aging society tends to focus upon the savings and consumption behavior of the elderly, the aging of society merely comprises one of the aspects of overall demographic shifts. The changes in household structure should also be considered in a discussion on the background to the decline of the saving rate.

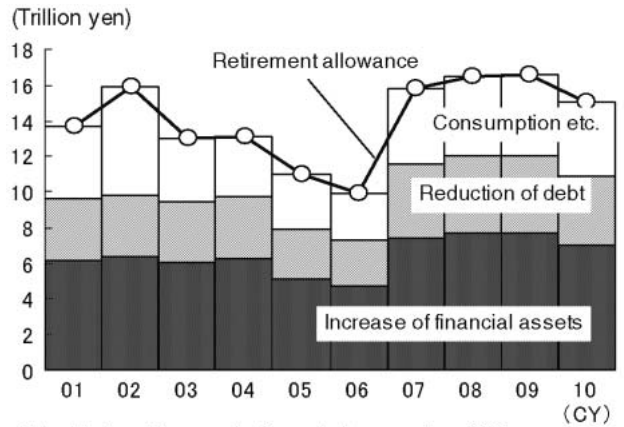
4. Will the impact of the aging population start to surface?

Despite the lack of evidence on dissaving as a result of aging, a further aging of the Japanese population should lead to a shift in household composition from elderly two–or–more person households to elderly one–person households. Since the saving rate among elderly one–person households is lower than elderly two–or–more households, the rise in proportion of elderly one–person households would push down the saving rate (**Charts 24, 25**). Moreover, there are those who believe that the saving rate will drop sharply as the baby boom generation joins the ranks of the elderly, given this generation's strong motivation to spend.

However, it is unlikely that the impact will surface immediately because of the following reasons. Firstly, even though the household ratio will change as the population grows older (the rise in ratio of elderly one–person households with relatively low saving rates), the impact upon the overall saving rate should be limited since the ratio of the young generation similarly having a relatively low saving rate will decline. In fact, calculations on the how much the shifts in household ratios will drag down the saving rate, based upon the rate of saving in each age group in 2004, revealed that its negative impact is only 0.15% pt as of 2010.

Secondly, the retirement of the baby boom generation will reach a peak in 2009, meaning that those in this generation will receive massive retirement allowances (48 trillion yen in three years) and that the saving rate should rise. According to an estimation of the uses of retirement allowances on the basis of past surveys (the *National Survey of Family Income and Expenditure*), approximately 50% will be allocated toward savings, thereby pushing up the overall saving rate by approximately 1% in the year 2007 alone (**Chart 31**).

Chart 31: Increase of net assets due to retirement allowances



Note: The breakdow n and retirement allow ance from 2004 onw ard are estimated by MHRI.

Sources: National Institute of Population and Social Security Research, *Population Projections,* Ministry of Internal Affairs and Communications, *National Survey ofFamily Income and Expenditure.*

In addition, from April 2006 onward, companies are obliged to implement measures to secure employment for the elderly by taking one of the following steps: (1) postponement of retirement until the age of 65, (2) abolishment of mandatory retirement, or (3) continuation of employment until the age of 65. As a result, employees are now able to continue working at the same company until the age of 65 if one wishes to do so. In fact, some companies are starting to hire more elderly workers amid the rising sense of a labor shortage, underscoring that the elderly have more job opportunities than before. Despite the necessity to consider matters such as the wage level at the time of employment extension and the impact of raising the eligible age to receive pension benefits, the odds are high that the baby boom generation will serve to support the saving rate if many of those reaching the age of 60 are able to continue working as employees.

If the aging of the Japanese population does not have an immediate impact as explained above, the saving rate will most likely

come under the strong influence of cyclical factors, at least for the time being. Despite the stagnant rise of wages at the moment, reflecting the changes in employment patterns, companies are feeling a shortage of labor in the face of economic expansion and the mass retirement of the baby boom generation. Moreover, the timing appears to be ripe for a wage hike (at the *Shunto* spring labor negotiations) reflecting the strong business performance among Japanese companies. In the light of these circumstances, wages are predicted to follow a gradual upward curve. The saving rate is also expected to turn upward reflecting the rise of wages. MHRI predicts that Japan's saving rate will turn upward and continue to rise for some time.

* * * * * * * * * *

Notes:

1. According to an estimation by Nagata (2006) of the saving rate coefficient by applying the ratio of the population aged 65 or older as the explanatory variable to disposable income, outstanding balance of financial assets and consumer prices, the coefficient of the population ratio aged 65 or older is significantly negative.
2. The saving rate under the current SNA basis is only available from FY1996 due to the rebase of the SNA in 2004
3. Including the change in pension fund reserves.
4. "Imputed rent" refers to the consideration for housing services enjoyed by owner–occupants of homes, which is accounted for as consumption expenditures as if the owner is paying rent to oneself.
5. Annual income of full–time employees (subtracting part–time employees from regular employees).
6. According to the *Annual Report on the Labor Force Survey*, the ratio of employees in sectors other than agriculture and forestry (54.07 million).
7. Among the experimental studies on the saving rate (household savings behavior) based upon the Life Cycle Hypothesis are Koga (2004), Murata (2003) and Saito & Shiratsuka (2003).
8. Most pensioners would fall into this category.
9. The pension system reform in 2002 included the adoption of the Old–age Employees' Pension in addition to a 5% reduction of remuneration
10. The *National Survey of Family Income and Expenditure* aggregates data for the three month period from September to November. Since a simple calculation of the saving rate would exclude bonus payments, the saving rate may be under–estimated.

Therefore, adjustments are made to convert the saving rate into an annualized basis as in Higo, Sugo & Kanaya (2001).

11. The cohort table is a table setting forth time series data according to age–specific segments.
12. Sufficient samples are not available with respect to one–person households since data is available only in terms of 10–year segments.
13. The estimations assume that the generations born during the period from 1905 to 1909 and the period from 1910 to 1914 period share identical generational effect since parameters may not be differentiated when setting dummy variables in all segments.

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