

The effect of the introduction of mandatory Category 3 contributions on the poverty rate for the elderly in Japan

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Abstract

Japan's public pension is a two-tier system that consists of a flat-rate benefit called a basic pension and an earnings-related pension for regular employees (Category 2 subscribers). All people in Japan are covered by the basic pension. Currently, homemakers (Category 3) make no contributions to the basic pension, yet receive full basic pensions. On the contrary, the self-employed, non-regular employees, and the unemployed (Category 1) make contributions but their pensions are based on their payment periods. From the standpoint of fairness, it has been a controversial issue in Japan whether Category 3 subscribers should contribute to the basic pension. This study assesses both the sustainability and adequacy of the public pension scheme under a scenario of mandatory Category 3 contributions. In particular, the author modifies official actuarial valuation results to evaluate the sustainability of such contributions, and estimates future poverty rates for the elderly by using a dynamic microsimulation model, termed the integrated analytical model for household simulation.

The findings show that mandatory contributions by Category 3 subscribers would raise the poverty rate for elderly women (men) from 26.6% (12%) under the current system to 27.6% (12.5%) by 2100, as homemakers' basic pension benefits would be reduced because of their non-payment of the newly introduced contribution. However, the surplus from the new contribution could then be devoted to increasing pension benefits. If this surplus were devoted to the basic pension, the estimation results show that the poverty rate in 2100 would decrease to 22.5% (9.7%).

1. Introduction

Japan's public pension is a two-tier system that consists of a flat-rate benefit called a basic pension and an earnings-related pension for regular employees (Category 2 subscribers), as depicted in Figure 1. All people in Japan are covered by the basic pension. Currently, homemakers (Category 3) make no contributions to the basic pension, yet receive full basic pensions. On the contrary, the self-employed, non-regular employees, and the unemployed (Category 1) make contributions but their pensions are based on their payment periods.

Table 1 summarizes the contributions and benefits by category. Category 1 subscribers pay a monthly contribution of ¥15,240 (\$127)¹ in exchange for receiving a basic pension of ¥64,400 (\$293). However, if they do not pay their contributions for any period, their basic pension would be reduced according to the length of the non-payment period.

The basic pension contributions for Category 2 subscribers are included in the insured person's contribution to the Employees' Pension Insurance or the Mutual Aid Associations. The 2014 contribution is 17.12% of Category 2 subscribers' pensionable remuneration, for which employer and employee are liable in equal amounts. Employers deduct employees' contributions from their salaries, and pay the contributions to the insurers. The insurers then transfer the paid contribution to the basic pension program. Because employers pay employee contributions directly to insurers, non-payment of contributions is not a problem, unlike the case of Category 1 subscribers.

Under the public pension classification, Category 3 subscribers do not have to contribute to the basic pension but they are deemed to have paid their contributions, and thus, are entitled to full basic pensions. On the contrary, Category 1 subscribers must pay their own contributions. As a result, Category 3 subscribers always receive full basic pensions, while Category 1 subscribers receive basic pensions calculated by their periods of payment.

From the standpoint of fairness, it has been a controversial issue in Japan whether Category 3 subscribers should contribute to the basic pension. The Ministry of Health, Labour and Welfare (2011) has summarized the pros and cons of the system for Category 3 subscribers, which was introduced in

¹ The exchange rate was \$1=¥120.09 on March 18, 2015.

1986 after a 1985 amendment of the Pension Act. The pros are as follows.

- (1) The 1985 amendment established pension rights for women as homemakers had up until then participated in the public pension scheme only voluntarily.
- (2) The amendment is an important safety net for homemakers.

The cons are as follows.

- (1) The amendment violates a fundamental rule of the social insurance system, namely, to provide benefits according to contributions.
- (2) It might have a bad effect on women's labor force participation because homemakers have an advantage in pension benefits.
- (3) It might have removed the self-responsibility of contributions by homemakers².

This study assesses both the sustainability and adequacy of the public pension scheme if the contributions of Category 3 subscribers were mandatory. The rest of this paper proceeds as follows. Section 2 outlines the modification of official actuarial valuation results used in this study, as well as the dynamic microsimulation model used to estimate poverty rates for the elderly. Section 3 presents the results; in particular, it addresses the sustainability and adequacy of making Category 3 contributions mandatory. Section 4 concludes.

2. Methods

This study assesses the effects of introducing mandatory Category 3 contributions on both the sustainability and adequacy of the public pension scheme. In particular, to evaluate sustainability, the author modifies official actuarial valuation results and estimates the poverty rates for the elderly (people aged 65 years and above) in the future by using a dynamic microsimulation model, termed the integrated analytical model for household simulation (INAHSIM) (Inagaki, 2007).

2.1. Financial structure of Japan's public pension scheme

Figure 2 shows the flow of funds through the three accounts of the public pension scheme in Japan. The National Pension (NP) account is for Category

² About 60–70% of homemakers paid contributions voluntarily before the 1985 amendment.

1 subscribers while the Employees' Pension Insurance (EPI) account³ is for Category 2 and 3 subscribers. The Basic Pension (BP) account provides the basic pension to all beneficiaries.

The income of the NP account comprises contributions from Category 1 subscribers, a national subsidy, and investment returns from its reserve fund. The NP account's expenditure is composed almost entirely of transfers to the BP account for the basic pension benefit. In addition, there is expenditure on some benefits to Category 1 subscribers but this is omitted from Figure 2 for the sake of simplicity because it is small.

The income of the EPI account comprises contributions from Category 2 subscribers, a national subsidy, and investment returns from its reserve fund. The EPI account's expenditure comprises transfers to the BP account, earnings-related pensions for former Category 2 subscribers, and pension payments to the dependent spouses of deceased beneficiaries. There is some other small expenditure but it is omitted from Figure 2 for the sake of simplicity.

The BP account provides the basic pension to all beneficiaries and its financial resources are transfers from the NP and EPI accounts. The amounts of the transfers are calculated based on the number of subscribers as follows.

$$\text{Transfer from NP account} = T \times \frac{A}{A+B+C} \quad (2.1)$$

$$\text{Transfer from EPI account} = T \times \frac{B+C}{A+B+C} \quad (2.2)$$

where:

T is the total amount of the basic pension.

A is the number of Category 1 subscribers who pay their contribution.

B is the number of Category 2 subscribers aged between 20 and 59 years.

C is the number of Category 3 subscribers.

2.2. Actuarial valuation

The public pension scheme in Japan is currently not a defined benefit plan but a defined contribution plan. Therefore, the scheme is essentially

³ Accounts for Mutual Aid Associations exist but they will be integrated into Employees' Pension Insurance in 2015.

financially sustainable because the level of pension benefits is reduced automatically to achieve the financial equilibrium of the pension accounts. However, if its level were to drop considerably, it would not be able to support all people in their old age. In other words, it would no longer be a “public pension,” even if it were financially sustainable.

Therefore, the main purpose of the actuarial valuation is to calculate how much the level of pension benefits should be reduced (known as the “macroeconomic slide system”) to achieve financial equilibrium of the pension accounts and to check the final level of pension benefits. The indicator of the level of pension benefits is a replacement ratio that is defined by the Japanese government. The replacement ratio is defined as B/I where:

B is the sum of monthly old-age pension benefits (before tax) that a specified couple receives at the age of 65 years (the husband is covered by the EPI from 20–59 years, and the wife, who is the same age as her husband, has always been dependent on him.

I is the average monthly disposal income (after tax) of active male workers at the time when the couple reaches the age of 65 years.

This replacement ratio is currently 62.3%, comprising the basic pension (36.6%) and the earnings-related pension (25.6%)⁴.

The couple in this definition is unrealistic and there is inconsistency in the tax treatment between the denominator and numerator. However, if the replacement ratio were not below 50%, the public pension scheme would be regarded as “sustainable” and “adequate” because the government considers that this level of pension benefits would be a sufficient public pension for people’s old age.

According to the 2009 Actuarial Valuation (Ministry of Health, Labour and Welfare, 2010), the basic pension should be reduced by 26.9% from ¥64,400 (\$536) to ¥47,100 (\$392) on the basis of a full basic pension, and the earnings-related pension should be reduced by 8.8% from ¥90,173 (\$751) to ¥82,238 (\$685) on average. Table 3 shows the estimated schedule⁵ of the macroeconomic slide system for the basic pension and earnings-related pension. In this case, the indicator of the replacement ratio in the future

⁴ Owing to rounding, there is slight discrepancy between the sum of individual percentages and the total. The same applies hereafter.

⁵ The actual annual rate of the macroeconomic slide may be calculated based on the number of actual subscribers.

would be 50.1%, comprising the basic pension (26.8%) and the earnings-related pension (23.4%), and so, the public pension scheme is regarded as “sustainable” and “adequate.”

2.3. Definition of sustainability and adequacy

As alluded to in Subsection 2.2, the definition of sustainability and adequacy for the public pension in Japan by the government is somewhat difficult to understand. Therefore, in this study, the public pension is considered sustainable if the reserve funds would not run out of money. On the other hand, this study evaluates adequacy using a poverty rate for the elderly instead of the replacement ratio defined by the government, which is unrealistic and inconsistent.

2.4. Evaluation of sustainability

Figure 3 and 4 show the prospects for the reserve funds of the NP and EPI accounts. The reserve fund in the NP account would run out by 2029 if the basic pension were maintained at the current level. Meanwhile, the reserve fund in the EPI account would run out by 2053 if the earnings-related pension were maintained at the current level. However, if the basic pension were reduced by 26.9% and the earnings-related benefit were reduced by 8.8%, as scheduled in Table 3, the reserve funds in both accounts would not run out. This implies that the current public pension system in Japan is sustainable.

If the contribution of Category 3 subscribers were mandatory, what would happen to sustainability? It is obvious that sustainability would improve because income would increase as current Category 3 subscribers paid their new contributions. At the same time, expenditure would decrease because contributors' basic pensions would be reduced according to their non-payment periods.

The author estimates how much reserve funds would increase by modifying the income and expenditure in the 2009 Actuarial Valuation. The question arises of which account the new contribution should be placed into. It is possible to place it into either the NP account or the EPI account. Therefore, this study estimates the size of the increase in the total amount of

the reserve fund, without any distinction between the accounts.

2.5. Dynamic microsimulation model: Integrated Analytical Model for Household Simulation

The INAHSIM is a dynamic microsimulation model for Japan. It was developed originally in the early 1980s as a household simulation model tailored to Japanese society. The simulation cycle of INAHSIM version 3.7⁶ is shown in Figure 5. In this model, life events are assumed to occur in annual cycles. The life events incorporated in this model are marriage, birth, death, divorce, international migration, changes in needs for long-term care, changes in employment status, estimated earnings, adjustment of pension benefits, young people leaving home, living with elderly parents, entering an institution, and paying a pension premium.

The initial population is prepared using micro data of the 2004 Comprehensive Survey of Living Conditions (CSLC)⁷ conducted by the Ministry of Health, Labour and Welfare. This survey is conducted every 3 years using large sample sizes. In the 2004 survey, the sample size comprised 25,091 households and 72,487 household members. The survey covers kinship relationships of household members, marital status, employment status, need for long-term care, earnings, pension amounts, and other socioeconomic characteristics. The initial population of 49,307 private households and 126,570 household members is prepared by resampling with replacement from the micro data. The elderly population of 1,212 people in institutional households is prepared separately and then added to the initial population. In the end, the initial population includes 127,782 people and reflects Japan's society on a 1/1,000 scale.

2.6. Consistency between macro and micro

The actuarial valuation is a simulation method at macro level while INAHSIM is a simulation method at micro level. Both methods are different and their assumptions are not exactly the same. Therefore, the simulation results are not always the same. Since this study focused on poverty rates for

⁶ Refer to Inagaki (2005, 2007, 2010, 2014) for details.

⁷ The data used in this study were made available to the author by the Ministry of Health, Labour and Welfare of Japan, notice number No.0925-6, dated September 25, 2014.

the elderly, consistency in the total amount of the basic pension is important to analyze such rates.

Figure 6 compares the total amount of the old-age basic pension between the two simulation results. By the mid-2030s, the results are very well suited, but thereafter, the INAHSIM results are slightly lower than the 2009 Actuarial Valuation results. This difference might come from the difference in the simulation methods and their assumptions. In addition, the difference is small and seems to be fair. Therefore, neither result is adjusted.

2.7. Evaluation of adequacy

Adequacy is evaluated by the poverty rate for the elderly. The poverty rate is defined as the percentage of people below a poverty line among the population. Therefore, it is necessary to estimate income distribution in the future in order to estimate the poverty rate.

As described in Subsection 2.5, INAHSIM is a microsimulation model for Japan and its function is to estimate future society at the micro level of individuals and households. It incorporates earnings and pension benefits⁸, and thus, can estimate income distribution in the future. The poverty line used in this study is the level of livelihood assistance stipulated by the Public Assistance Act in Japan. The poverty lines for some specific households are shown in Table 2.

3. Results

3.1. Sustainability of the new plan

If contributions by Category 3 subscribers were introduced, the income of the pension accounts would increase on the whole. On the other hand, the total expenditure would decrease because the Category 3 subscribers' basic pensions would be reduced according to their non-payment periods. Since income would increase and expenditure would decrease, the sustainability of the pension scheme would improve considerably.

The 2009 Actuarial Valuation estimated that the total number of

⁸ According to the Comprehensive Survey on Living Conditions (Ministry of Health, Labour and Welfare, 2011), earnings and pension benefits contributed the majority (around 92.3%) of total household income.

Category 3 subscribers in 2015 would be 9,495,000 people. Because the monthly contribution was ¥15,590 in 2015, it was expected that the total income from their contributions would be ¥1.8 trillion (\$14.8 billion) in 2015. However, the actual increase in income would be lower than that amount because some subscribers would not pay their contributions. If we assume that the contribution payment behavior of Category 3 subscribers were the same as that of Category 1 subscribers (68.6% will pay in 2015), this would result in income from Category 3 contributions of ¥1.2 trillion (\$10.1 billion). Repeating this process, we can estimate the contribution income until 2105.

The expenditure prospect for basic pension benefits is a little complicated because the mandatory Category 3 contributions would have a lagged effect on pension benefits. The ages of subscribers are essentially those between 20 and 59 years, and their normal pensionable age is 65 years. Thus, it would take 45 years until the effect of mandatory Category 3 contributions was reflected fully in their pension benefits. The rate of contribution payment is about 70% on average in the long run, and thus, the total amount of basic pension for Category 3 subscribers would decrease to 70% of the full amount by 2060. Here, it is assumed that this percentage would decrease proportionally from 100% in 2020 to 70% in 2060. In addition, the total amount of the national subsidy for the basic pension (50% of total benefits) would be reduced along with this discount.

If the macroeconomic slides shown in Table 3 are maintained, reserve funds would increase considerably. The reserve funds under the current scheme would be ¥602.9 trillion (\$5 trillion) in 2050 and ¥167 trillion (\$1.4 trillion) in 2105. After the introduction of mandatory Category 3 contributions, the reserve funds would increase to ¥797 trillion (\$6.6 trillion) in 2050 and ¥2759.8 trillion (\$23 trillion) in 2105.

The increment in the reserve funds could be devoted to increasing pension benefits. If this increment were all devoted to the basic pension, the macroeconomic slides (Table 3) could end by 2023. The accumulated rate of the macroeconomic slide system would be 10.9%⁹ instead of 26.9%. In this case, the replacement ratio would be 56%, comprising the basic pension (32.6%) and earnings-related pension (23.4%).

Category 3 subscribers are dependent spouses of Category 2

⁹ The macroeconomic slide rate in 2023 would be 0.1%. Therefore, the accumulated rate would be 10.9%.

subscribers, and they are classified in the EPI account as shown in Formula (2.2). Therefore, the increment could be devoted to the earnings-related benefits because their contributions after the transfer to the BP account are a financial resource of the earnings-related benefits. If the increment were all devoted to the earnings-related benefits, the macroeconomic slides (Table 3) could end by 2015. The accumulated rate of the macroeconomic slide system would be 3.7%¹⁰ instead of 8.8%. In this case, the replacement ratio would be 51.5%, comprising the basic pension (26.8%) and earnings-related pension (24.7%).

The replacement ratio under the current scheme was estimated as 50.1%, comprising the basic pension (26.8%) and earnings-related pension (23.4%). Both cases increase the replacement rate but the former case (devoting the increment to the basic pension) is much more effective for improving the replacement ratio than the latter case (devoting the increment to the earnings-related benefits). There are two reasons for the large difference between the two cases: (1) the national subsidy to the basic pension doubles the effect; and (2) the specified couple's pension is composed of the basic pensions for two and earnings-related pension for one, and thus, the share of the basic pension is double the earnings-related pension.

3.2. Adequacy of the new plan

As discussed in Subsection 2.3, the replacement ratio defined by the government is not appropriate as an indicator of adequacy. Therefore, this study uses the poverty rate for the future evaluation of adequacy.

This section compares poverty rates for the elderly in the future by sex among four plans, namely, (1) the current scheme, (2) introduction of mandatory contributions but no improvement of pension benefits, (3) devoting the surplus to the basic pension, and (4) devoting the surplus to the earnings-related pension.

First, Table 4 shows the trends in the distribution of pension amount by sex under the current scheme. The distributions are completely different between sexes. The distribution for males has two peaks, which correspond to Category 1 and 2 subscribers, but the distribution for females has only one peak. Since women's wages are lower than men's and women's working years

¹⁰ The macroeconomic slide rate in 2014 would be 1%. Therefore, the accumulated rate would be 3.7%.

are shorter than men's, the second peak would not be shaped. In addition, women's pension amounts are concentrated in the low amounts of pension benefits. Therefore, many women might face a serious poverty risk in their old age. Their risk would be mitigated if they were married because the current pension scheme is very generous for married women or homemakers. However, the number of never-married or divorced elderly women would increase, and thus, the poverty rate for elderly women might increase.

Figure 7 shows future trends in poverty rates for the elderly by sex under the current scheme. As anticipated, the poverty rate for females is much higher than that for males. In addition, the poverty rate for males would peak in 2038, which is the last year of the macroeconomic slides (Table 3) but the rate for females would continue to increase thereafter. The effect of changes in nuptiality behavior after the 1980s has a lagged effect on marital status for elderly women, and thus, their poverty rate would continue to increase until 2060 (Inagaki, 2014).

Table 5 compares the distribution of pension amounts by plan and sex. If the mandatory Category 3 contributions were introduced without any increase in pension benefits, it would have a negative effect on females' pensions because almost all Category 3 subscribers are females. However, the new contributions would result in a surplus to the pension accounts, which could be devoted to an increase in pension benefits. The simulation results imply that devoting the surplus to the basic pension is more effective than devoting the surplus to the earnings-related pension. Non-payment of new contributions of Category 3 subscribers might reduce their basic pension, but if the surplus from the new contributions were devoted to the increase in the basic pension, the distribution of pension amounts would improve considerably as a whole.

Table 6 shows the effect of the introduction of Category 3 contributions by comparing future trends in the poverty rate between the current scheme and the new plans. The findings show that mandatory Category 3 contributions would raise the poverty rate for elderly women (men) from 26.6% (12%) under the current system to 27.6% (12.5%) by 2100, as homemakers' basic pension benefits would be reduced because of their non-payment of the newly introduced contribution.

However, the surplus from the new contribution could then be devoted to increasing pension benefits. If this surplus were devoted to the basic pension,

the estimation results show that the poverty rate in 2100 for women (men) would decrease to 22.5% (9.7%). On the contrary, if the surplus were devoted to the earnings-related pension, the effect on reducing poverty rates would be very limited. The poverty rates in 2100 would be 26.5% for females and 11.9% for males. This is because most poor people would receive only the basic pension or with a small amount of earnings-related pension if they were to have experience as regular employees (Category 2 subscribers).

Mandatory Category 3 contributions may raise poverty rates for Category 3 subscribers or homemakers, but it would bring a surplus to the pension accounts. The surplus could be devoted to increasing pension benefits. If it were devoted to the basic pension, poverty rates would decrease considerably on the whole because the basic pension is an essential income for low-income elderly people.

4. Conclusion

The social security system in Japan was developed under the premise that postwar families are common. A “postwar family” refers to a family in which (1) men and women are married; (2) husbands work as regular employees and wives are dependent homemakers; and (3) husbands and wives seldom get divorced. Therefore, the social security system is particularly generous toward dependent wives and widows. However, these premises are no longer valid because Japanese nuptiality behavior has changed completely since the 1980s. Marriage rates have decreased and divorce rates have increased significantly. Nevertheless, society continues to suffer from wage inequality between men and women.

From the standpoint of fairness, it has been a controversial issue in Japan whether Category 3 subscribers should contribute to the basic pension. However, this has been an abstract argument because it has not been based on evidence. Therefore, this study assessed both the sustainability and the adequacy of the public pension scheme under a scenario of mandatory contributions by Category 3 subscribers.

Sustainability was assessed by modifying the 2009 Actuarial Valuation results. Adequacy was evaluated by a poverty rate using the dynamic microsimulation model, INAHSIM. The findings show that the poverty rate would improve considerably if the surplus from the new contribution were

devoted to increasing the basic pension benefits. In other words, the financial effect of mandatory Category 3 contributions on both sustainability and adequacy is not of great concern.

In Japan, policy for homemakers is important and essential. Even though the number of homemakers in Japan is decreasing, the question remains whether policy should encourage women to become homemakers.

There is great disparity in the poverty rate between men and women, as seen in Figure 7. The main cause of this disparity is inequality of wages and working conditions between men and women (Inagaki, 2014). In addition, women live longer than men do, and thus, women have higher risk of occupying a single-person household. The social system in Japan is generous for full-time homemakers because it has been established based on old traditions. As Japanese lifestyles are changing and diversifying, the social system should be reformed accordingly.

The author recognizes that this study has several limitations in addition to the full consistency between the two sets of simulation results. First, INAHSIM incorporates only earnings and pension benefits as people's income. Property income should be added to the model. Second, it should consider property for the poverty rate because many people save money for their old age. Third, in the case of divorced couples, earnings-related pensions should be divided into portions for husbands and wives according to their period of marriage before divorce. INAHSIM does not take into account this regulation. This might reduce poverty rates in the future.

Nevertheless, these limitations are not expected to cause a serious problem for the results because (1) poor people below the poverty line generally do not own a lot of property for their old age and (2) in the case of divorced couples, there is only a small portion of divided earnings-related pensions as the marriage period of divorced couples is usually short. However, these limitations remain as future tasks for INAHSIM.

Acknowledgement

The author would like to thank the Japanese Society of Certified Pension Actuaries for its support and Editage (www.editage.jp) for English language editing.

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Table 1 Contributions and benefits (per month)

	Contribution	Benefit (40 years of service)
Category 1	¥15,240 (\$127)	Basic pension: ¥64,400 (\$536) <i>(The amount will be reduced according to the non-payment period)</i>
Category 2	17.12% of PR ^(*) Employee: ¥35,207 Employer: ¥35,207 (\$293)	Basic pension: ¥64,400 (\$536) Earnings-related benefit: 21.924% of PR ^(*) ¥90,173 (\$751) Total amount: ¥154,573 (\$1,287)
Category 3	None	Basic pension: ¥64,400 (\$536) Survivors' pension: ¥67,603 (\$563) Total if spouse is deceased: ¥132,003 (\$1,099)

Note: Average Pensionable Remuneration (PR) for males was ¥411,298 (\$3,425) in 2012.

Table 2 Amount of livelihood assistance (2012)

Type of household	Household members	Livelihood assistance per month
Nuclear family	33-year-old husband 29-year-old wife 4-year-old child	¥145,770 (\$1,214)
Single-person household	68 years old	¥72,370 (\$603)
Couple-only household	68-year-old husband 65-year-old wife	¥109,440 (\$911)
Single-mother household	30-year-old mother 4-year-old child 2-year-old child	¥128,420 (see note) (\$1,069)

Note: Additional benefits for single-mother households are excluded because this model does not include social security benefits for such households.

Table 3 Macroeconomic slides

	Basic pension		Earnings-related pension			Basic pension	
	Single year	Accumulated	Single year	Accumulated		Single year	Accumulated
2012	-0.7%	-0.7%	-1.3%	-1.3%	2026	-1.0%	-13.9%
2013	-1.4%	-2.1%	-1.4%	-2.7%	2027	-1.0%	-14.8%
2014	-1.3%	-3.4%	-1.3%	-3.9%	2028	-1.1%	-15.7%
2015	-1.2%	-4.5%	-1.2%	-5.1%	2029	-1.2%	-16.7%
2016	-1.1%	-5.6%	-1.1%	-6.1%	2030	-1.3%	-17.8%
2017	-1.1%	-6.6%	-1.1%	-7.2%	2031	-1.4%	-19.0%
2018	-1.0%	-7.5%	-1.0%	-8.1%	2032	-1.6%	-20.2%
2019	-0.9%	-8.4%	-0.8%	-8.8%	2033	-1.7%	-21.6%
2020	-0.9%	-9.2%	-	-	2034	-1.8%	-23.0%
2021	-0.9%	-10.0%	-	-	2035	-1.9%	-24.5%
2022	-0.9%	-10.8%	-	-	2036	-2.0%	-26.0%
2023	-0.8%	-11.5%	-	-	2037	-0.4%	-26.3%
2024	-0.8%	-12.3%	-	-	2038	-0.9%	-26.9%
2025	-0.9%	-13.0%	-	-			

Source: 2009 Actuarial Valuation (Ministry of Health, Labour and Welfare, 2010)

Note: The macroeconomic slides for the earnings-related pension would end by 2019, but those for the basic pension would last until 2038.

Table 4 Trends in distribution of pension amounts by sex (per year, in thousand)

	Female				Male			
	2010	2030	2050	2100	2010	2030	2050	2100
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0-250	6.3%	3.5%	5.2%	5.1%	3.7%	3.6%	3.4%	2.8%
250-500	14.6%	15.7%	25.3%	24.5%	5.5%	7.6%	11.5%	9.4%
500-750	20.5%	32.7%	25.9%	26.9%	7.4%	13.1%	8.7%	7.3%
750-1000	19.0%	16.0%	18.2%	20.2%	9.4%	9.5%	11.0%	14.7%
1000-1250	11.5%	14.3%	18.7%	16.2%	7.5%	13.1%	15.5%	17.9%
1250-1500	7.6%	11.4%	5.9%	6.3%	6.8%	17.9%	23.9%	21.7%
1500-1750	6.0%	4.1%	0.7%	0.8%	8.1%	21.7%	19.1%	18.7%
1750-2000	4.6%	1.5%	0.1%	0.0%	8.8%	10.3%	6.1%	6.7%
2000-2250	3.7%	0.4%	0.0%	0.0%	9.9%	2.2%	0.8%	0.9%
2250+	6.2%	0.4%	0.0%	0.0%	32.9%	1.0%	0.0%	0.0%

Table 5 Distribution of pension amounts in 2050 (per year, in thousand yen, 2004 price)

	Female				Male			
	Current scheme	Surplus devoted to			Current scheme	Surplus devoted to		
		None	Basic pension	Earnings-related pension		None	Basic pension	Earnings-related pension
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0-250	5.2%	9.8%	7.7%	9.7%	3.4%	3.5%	2.7%	3.5%
250-500	25.3%	21.1%	7.9%	20.8%	11.5%	11.4%	5.2%	11.3%
500-750	25.9%	26.6%	34.6%	25.6%	8.7%	8.7%	12.9%	8.4%
750-1000	18.2%	18.7%	19.0%	17.8%	11.0%	11.0%	8.6%	10.0%
1000-1250	18.7%	17.2%	17.7%	16.7%	15.5%	15.5%	13.7%	14.0%
1250-1500	5.9%	5.8%	11.1%	8.2%	23.9%	23.9%	20.1%	20.6%
1500-1750	0.7%	0.7%	1.7%	1.1%	19.1%	19.1%	23.7%	21.7%
1750-2000	0.1%	0.1%	0.2%	0.2%	6.1%	6.1%	10.4%	8.7%
2000-2250	0.0%	0.0%	0.0%	0.0%	0.8%	0.8%	2.5%	1.8%
2250+	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%

Table 6 Trends in poverty rates by plan and sex

	Female				Male			
	Current scheme	Surplus devoted to			Current scheme	Surplus devoted to		
		None	Basic pension	Earnings-related pension		None	Basic pension	Earnings-related pension
2010	11.7%	11.8%	11.8%	11.8%	6.1%	6.2%	6.2%	6.2%
2020	14.1%	14.6%	14.6%	14.1%	8.1%	8.4%	8.4%	8.2%
2030	18.2%	19.0%	17.7%	18.3%	11.6%	12.0%	10.9%	11.6%
2040	21.0%	22.0%	18.2%	21.1%	13.5%	13.9%	11.2%	13.4%
2050	23.4%	24.5%	20.1%	23.5%	13.8%	14.1%	11.5%	13.6%
2060	26.1%	27.1%	22.4%	26.1%	13.5%	14.0%	11.2%	13.4%
2070	26.7%	27.8%	22.8%	26.7%	12.6%	13.1%	10.2%	12.4%
2080	26.6%	27.6%	22.5%	26.5%	12.1%	12.6%	9.7%	11.9%
2090	26.7%	27.8%	22.6%	26.6%	12.2%	12.7%	9.8%	12.0%
2100	26.6%	27.6%	22.5%	26.5%	12.0%	12.5%	9.7%	11.9%

Figure 1 Public pension scheme in Japan

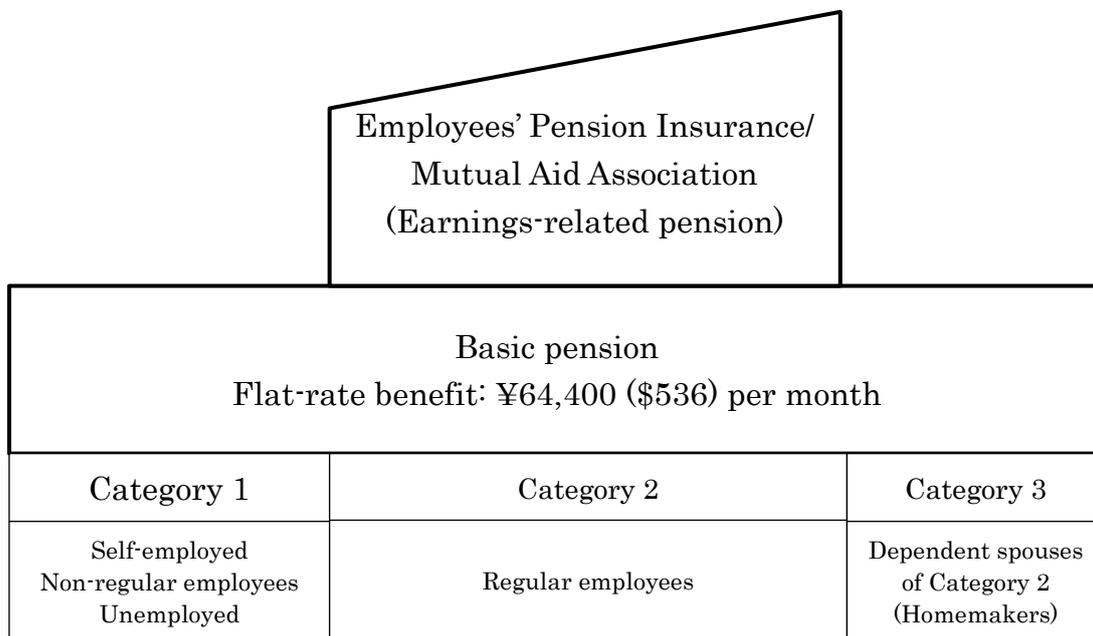


Figure 2 Flow of pension funds through the accounts

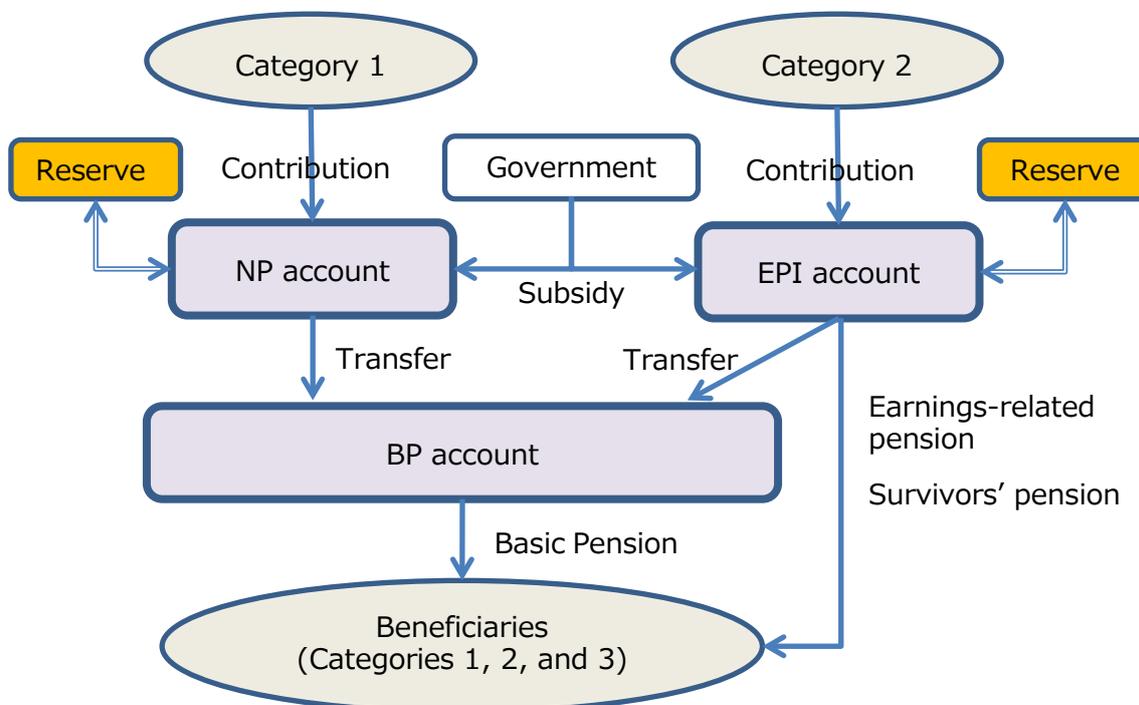
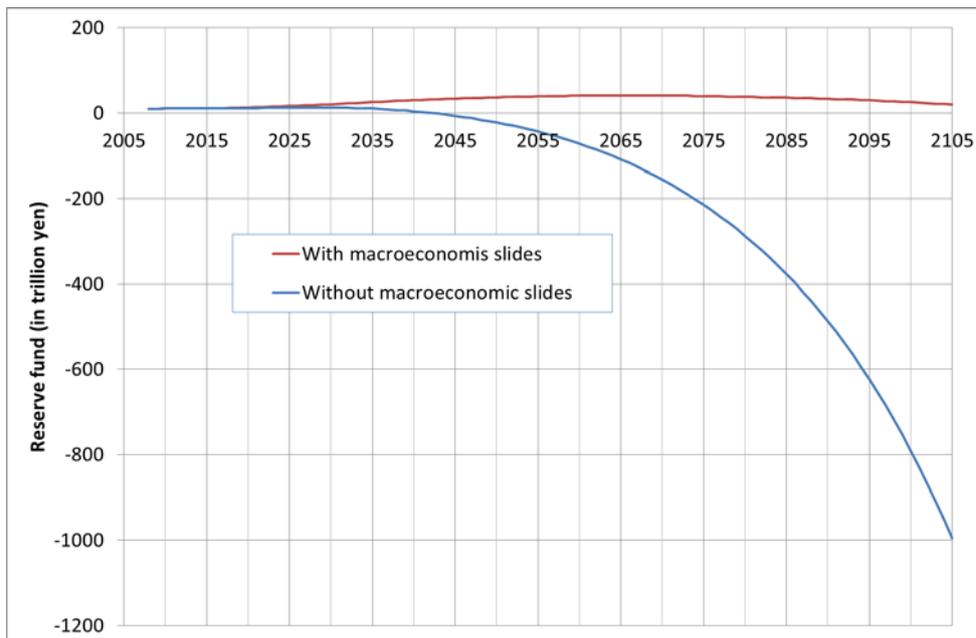
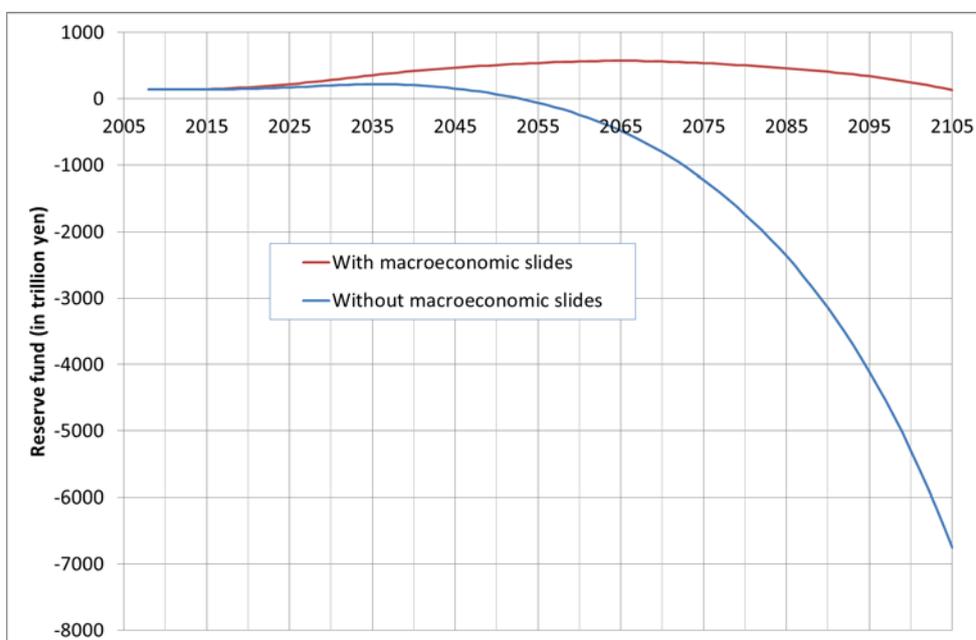


Figure 3 Financial projections for NP account



Source: 2009 Actuarial Valuation (Ministry of Health, Labour and Welfare, 2010); the author makes projections in cases in which the macroeconomic slide system could not be applied.

Figure 4 Financial projections for EPI account



Source: 2009 Actuarial Valuation (Ministry of Health, Labour and Welfare, 2010); the author makes projections in cases in which the macroeconomic slide system could not be applied.

Figure 5 Simulation cycle of INAHSIM

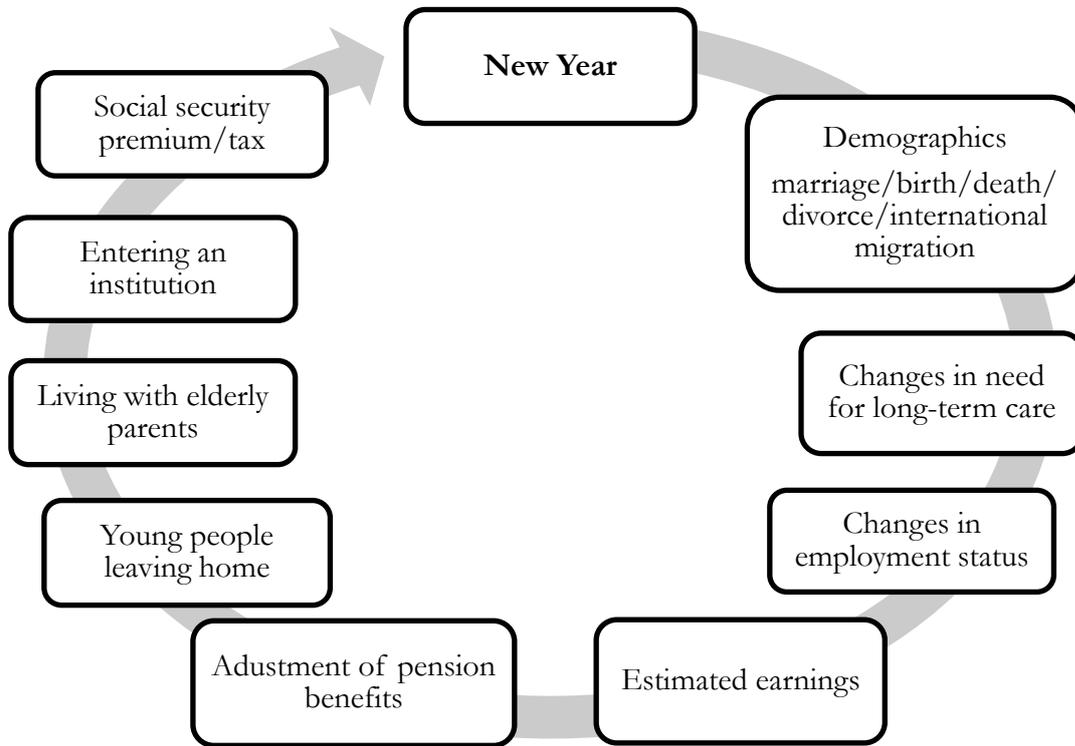
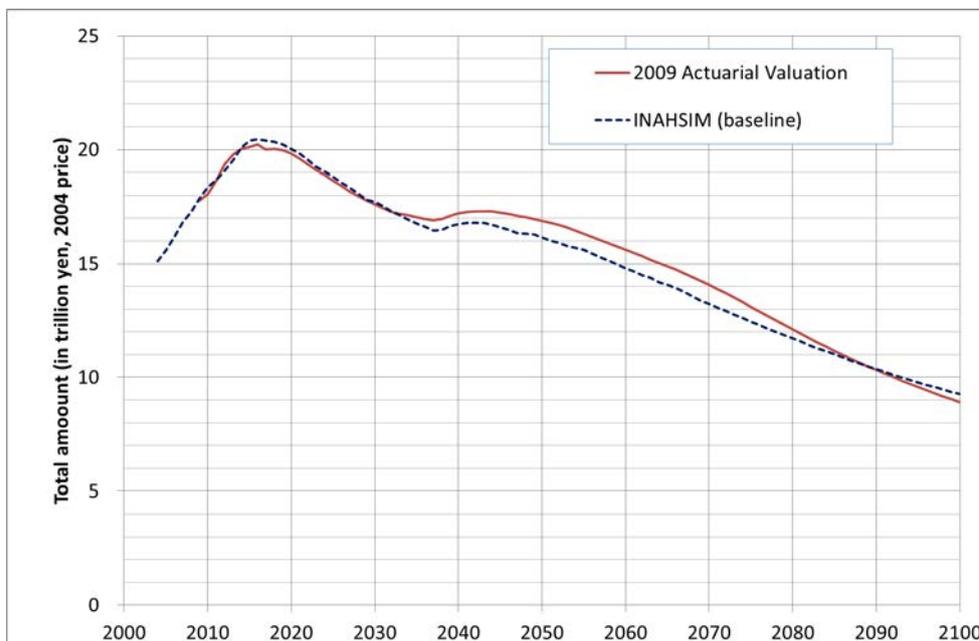


Figure 6 Trends in total amounts of old-age basic pension



Source: 2009 Actuarial Valuation (Ministry of Health, Labour and Welfare, 2010)

Figure 7 Future trends in poverty rates for the elderly

