

Examination of Public Pension Reform

1. Introduction

In June of 2004 a reform of the public pension system was implemented. Premium payments were raised increasing the burden of participants, while benefits declined. The public pension system in Japan is complex and challenging to understand. Here we would like to explain the current and future of the complicated Japanese pension system so that it is easy to understand, outlining the system as well as putting forth some estimates for the future.

2. Framework of Public Pensions

The public pension is a system that the government manages and operates to compensate older persons for their lower incomes. In Japan, the system is run from a social insurance approach where the contributor pays a premium over a fixed period, and then receives a pension benefit according to the contributions. The benefit amount is reviewed based on increases in wage and price levels, so that it can be a source of steady income to retired persons adaptable to unexpected inflation and other changes in the economy. In order to construct a stable pension system for all of society, all residents in Japan over 20 years of age and residing in Japan are required to participate in the pension system.

A major characteristic of the public pension system in Japan is that it is one of intergenerational support where the current retired population is supported by the contributions of the current working generation.

Japan's public pension is multi-tiered. Tier 1 is the Basic Pension whose benefits are paid to all public pension subscribers. Tier 2 is the Employees' Pension and Mutual Aid Pensions (Figure 1).

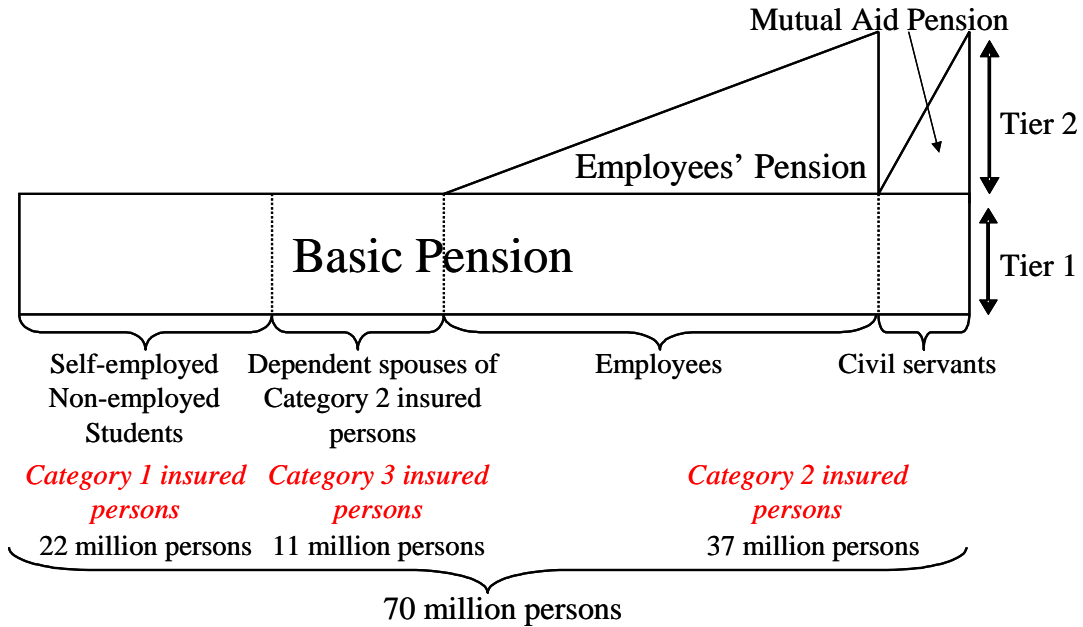
Self-employed persons, unemployed persons and students are called Category 1 insured persons. They subscribe to the National Pension, they make fixed premium payments, and in the future will be paid Basic Pension benefits. In addition, Japan doesn't introduce the Social Security Number and it is difficult to figure out self-employed persons' income. Therefore, Category 1 insured persons subscribe fixed pension premiums to the National Pension.

Salaried employees (in the private sector) subscribe to the Employees' Pension, and public sector employees subscribe to the Mutual Aid Pension. They are defined as Category 2 insured persons. Premium payments are not fixed. Rather they are proportionate to the salaries of the employees. However, payments are subject to a cap. For these contributors, in the future, they will receive the Basic Pension, plus a pension proportionate to their salaries (salary-related portion). This is tier 2.

Homemakers are category 3 insured persons. They do not make any premium payments on their own, rather their pension benefits have been paid for by Category 2 insured persons. In future, they will receive the Basic Pension.

Moreover, half of the costs of making the benefit payments of the Tier 1 Basic Pension are paid for by the national government.

Figure 1. Japan's Pension System



Note: As at March 31 2003

Source: Social Insurance Agency

3. The Difference Between Private and Public Pensions.

Private pension plans are managed by private enterprises. They act like savings, and are meant to supplement public pensions. Public pensions are designed to be comprehensive basic income security for retirement in that all subscribers support the beneficiaries. However, private pensions are for a more prosperous post-retirement standard of living, and are based on the efforts of the individual to support themselves. As private pension plans are supported only by the individuals' payments and its investment income, they are not flexible to changes in inflation, and it is difficult to maintain the real value of the pension (Table 1).

Table 1. Comparison of Public Pension and Private Pension

	Public	Private
Purpose	Social Security	Self-Help Effort
Participation	Compulsion	Voluntary
Index-Linked	Yes	No
Capital	Our and Formers' Premium Public Burden Interest Income	My Premium Interest Income

Source: Ministry of Health, Labor and Welfare

4. Corporate Pension Plans

This type of pension is established on the corporate own initiative, and can be divided into defined benefit type, and the defined contribution type. The advantages to the corporate in introducing a corporate pension plan is that they can defer the costs of retirement benefits, and if the corporate pension is compliant with the legal conditions, then all contributions can be entered in their books as an expense. Disadvantages to the corporate are that this will lead to an increase in labor costs, and there is the risk that if the actual investment yield is lower than the assumed interest rate, then their debt could increase in the case of pension types other than defined contribution pensions.

5. Designing the Pension System

5.1 Two Major Types

In designing a pension scheme, there are two major types, the defined contribution plan, and the defined benefit plan. In the case of the defined contribution plan, premium rates are determined first, and then the actual pension benefit is determined later as a result of the premiums. In the case of the defined benefit plan, the pension benefit is first determined based on such factors as length of participation, and then the premium rates are calculated from this. Japan's public pension plans basically follow the defined benefit idea.

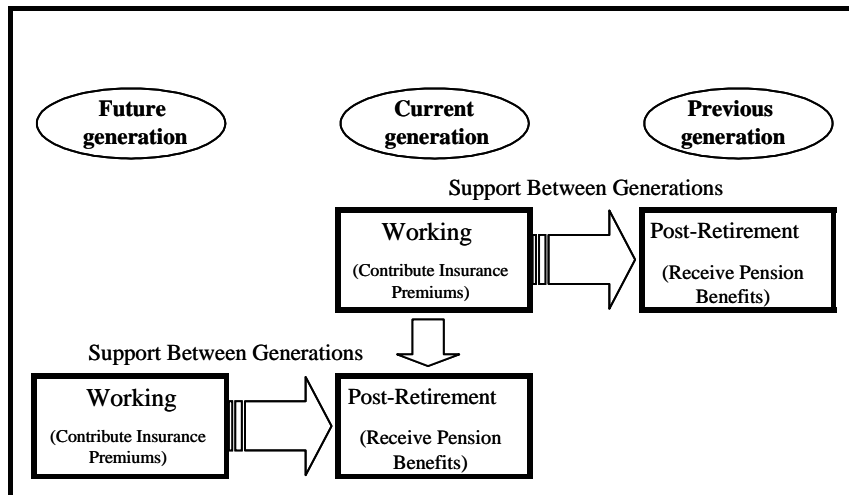
To finance the pension benefits, there are two methods, these are pay-as-you-go financing and funded financing.

5.2 Pay-As-You-Go (PAYG) Financing

In the case of pay-as-you-go financing, the costs required to pay benefits to the older persons of this generation are financed completely by the premium payments made by the contributors of the current working generation. As the current premium payments are being expended for the current pension benefits, the payments do not accumulate (Figure 2). In the PAYG financing method, the finances of the pension plan will be dependent on support ratio. Support ratio refers to “the insured persons/ the recipients”. If support ratio does not change, even if pension benefit amounts are revised with increases in wages and prices, there is no effect on the premium rate since the premium income also increases with wages and prices. Under this system, then, the persons that are already old enough to receive pensions when the system is put into place are not required to contribute to the plan at all to receive a pension. As times goes on, there will be more and more people who have been making contributions for a longer time, and so the ratio of the real values of the premium contributions and the pension benefits received should approach 1. However, if there is a variation in the way that the demographics of a country are structured, then this ratio will also change.

Thus as the birth rate declines and the population ages, the supporters of the plan become relatively fewer, the fiscal situation of the plan deteriorates, and then premiums must be increased, or benefits limited. With each generation and its demographic structure, the internal rate of return “IRR” will differ, and so there will be inequities between generations. The major countries in the world use the PAYG system in their public pension systems.

Figure 2. Pay-As-You-Go Financing

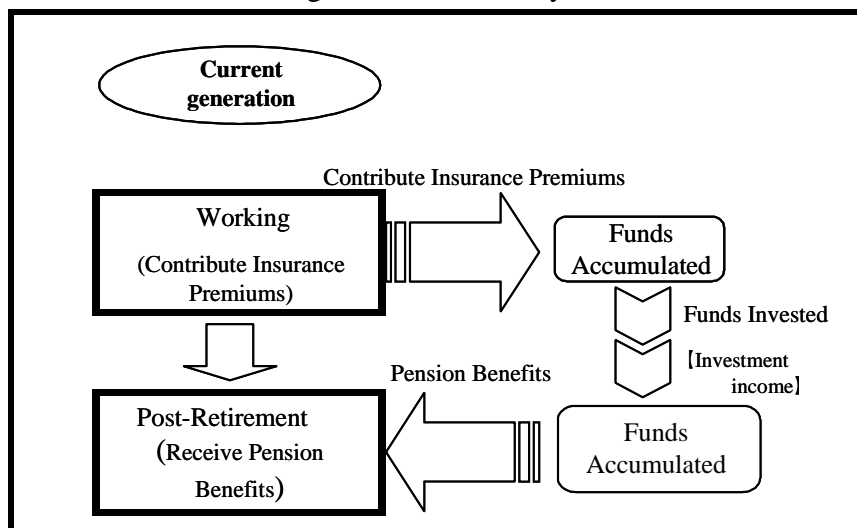


5.3 Funded Systems

With the funded system, future pension benefits are funded by accumulating the contributions of the current generation. The contributions made are accumulated and this and the interest earned become the source for future benefits. Thus, the contributions and the benefits are directly related (Figure 3). With this financing method, as each generation is contributing to benefits they will receive in the future, there is no inequality between the generations. Moreover, changes in demographics such as the lower birth rate and aging population do not affect the pension amount. However, if wages and prices rise at a higher rate than assumed, so long as the investment yield on the contributions increases at a higher rate, then there is no great effect, but if the yield on investment under performs the increases in wages and prices, then the premium rates must be raised, or pension benefit amounts must be reduced.

In Japan, the corporate pensions are managed under the funded system. The defined benefit type corporate pensions are funded defined benefit schemes. The Defined contribution pensions are funded, defined contribution schemes.

Figure 3. Funded System



5.4 Adjusted Funded Scheme

The National Pension Plan and the Employee's Pension were both initially funded schemes. However, to adapt to the rapid changes in prices and wage levels, they are now managed under a scheme called the “stepwise raising contribution method”.

Under this stepwise raising contribution method, because the premium rates start at low levels and are raised step-by-step, the reserves are smaller than if managed under a flat premium rate system. (Under the flat premium rate, premium rates are constant over the future, and are set at rates that allow for balanced finances.) Therefore, although there are some reserves, it is actually run under a PAYG system. This is known as a Revised Pay-As-You-Go system.

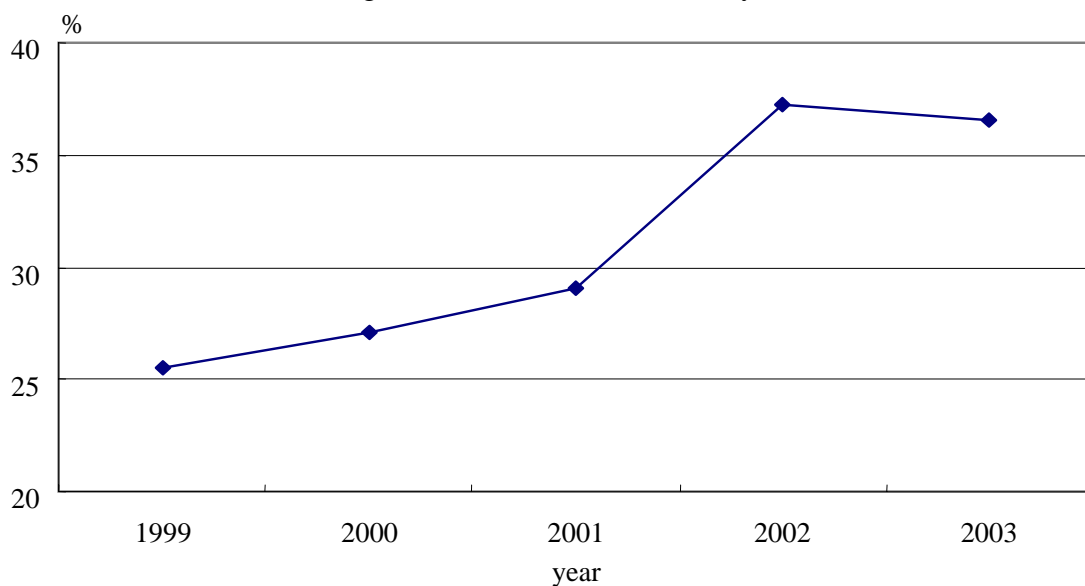
6. Issues with the Public Pension System

6.1 Non-payment Issue

In Japan it is becoming more and more a problem that the Category 1 insured persons are not fulfilling their responsibility of paying their pensions premiums in full. The increasing number of non-paying persons, in a time of relatively low supporters, results in a decline in premium income, and the burden on those paying becomes that much greater. This has a very negative effect on the health of the pension system. The rate of non-payment in fiscal 2001 was 29.1%, and in fiscal 2002, it was the worst on record at 37.2%. In particular those persons between 20 and 30 years of age had a non-payment rate of 50%.

The major reason behind this non-payment was stated as, “the premium is too high and I cannot afford it”. However, on the other hand, of the non-paying persons, 52.7% have life insurance, 11% have purchased individual annuities, and 9% have both. This is unfortunately an indication of the distrust that the people have of the National Pension Plan.

Figure 4. The Rate of Non-Payment



Source: Ministry of Health, Labor and Welfare

6.2 Women and Pensions

Category 3 insured persons do not pay premiums, but they are entitled to receive benefits in the future. This is because the premiums of the Category 3 insured persons are paid by all of the Category 2 insured persons. As a rough estimate, one Category 2 insured person's premiums are actually 1.28 times higher than they would be if they were not required to pay the premiums for Category 3 insured persons.

The number of women that are participating in the pension plan was 11.21 million Category 1, 12.24 million Category 2, and 11.17 million Category 3 insured persons. Thus the ratio was roughly 1:1:1. The premium to the Basic Pension component is 16,900 yen per month for Category 1, 21,630 yen per month for Category 2 and 0 yen for Category 3 insured persons. However, when they are old enough to receive benefits, they will all receive the same fixed Basic Pension benefit. In this sense, the current system lacks in fairness.

6.3 Deteriorating Pension Financials

Japan's public pension plan uses the Revised Funded system. As it is based on the PAYG system, a high amount of benefits could be paid out. This is because the premiums paid in the past can be set at much lower levels than if the pension were managed under the funded system. However, as a result of this, there is a large transfer occurring to the next generation. In this environment, the declining birthrate and aging population will lead to an even worse pension financial situation and it is imperative that the financial situation of the pension system be reviewed.

7. The Pension Reform Plan of 2004

7.1 Outline

Until now, both the Employees' Pension and the National Pension had first determined the benefit amount to be paid out, and then would determine the necessary premium to attain this benefit amount. As a result, with the increasing number of beneficiaries that the aging population has brought about, and the relative decrease in the working population due to a declining birth rate, the burden on the contributors is becoming higher and higher. With this reform, there will be a limit to the burden to be put on the contributor, and benefits would be adjusted within those parameters.

7.2 Premium (and Rates) to be Raised

The premium to the National Pension was at 13,300 yen per month as at September 2004. However, this will be hiked by 280 yen every year until the premium reaches 16,900 yen per month in 2017, where it will remain. However, this amount, including the 280 yen increase, is as at 2004 standards, and premiums are constantly being adjusted on a sliding scale based on changes in the nominal wage.

The premium rate of the Employees' Pension was 13.58% as at September 2004, but this will be raised by 0.354% every year and will be fixed at 18.30% from September 2017.

7.3 Macroeconomic Indexation Adjustment for macroeconomic variables.

Until now, people receiving their pensions for the first time would have their pensions reviewed based on wage increases, and for pension recipients, there would be adjustments on an index-linking

for price changes. However if this method is maintained, then as the fertility rate continues to drop and the population ages, the balance between benefits and contributions would be difficult to maintain. Thus, even if the average wage does rise, the fact that the total revenue would decrease based on the fewer contributors would be reflected in the adjustment rate on the index-linking. In about 20 years, the amount of the benefit should fall by 15%.

It has never occurred in the history of Japan that the amount of a pension that a retired person is actually receiving is reduced. However, with this revision, the real value of a person's pension benefit (that he is already receiving) will be decreased. This macroeconomic indexation adjustment is expected to be completed in 2023, but depending on the socio-economic makeup of the time, this may be continued.

8. Relationship Between Benefit and Premiums

8.1 Intergenerational Inequality

One of the reasons that the public pension plan is losing its credibility is said to be because compared to the premiums paid in, the benefits received is low. In other words, the insured person incurs a loss by participating in the pension plan.

We conducted a study where we find, if the 2004 reforms are implemented -- the increase in the premiums and premium rates are completed, the macroeconomic indexation is completed, and the system has settled -- how this will change the relationship of a typical insured person or household's benefit amounts and the burden that will be borne. To find these effects, we estimate the IRR.

8.2 Results of Estimates

The internal rate of return of the National Pension is higher than 3% for men and women of all generations if we include the government contribution, and above the wage increase rate of 2.1%. However, if we do not include the share of support from general tax, then the ratio of lifetime pension benefits to contributions falls below 1, meaning that they cannot receive pension benefits commensurate with the burden paid. Yet, this is not that bad a figure if we take into consideration the fact that the public pension system is a disability pension and a survivor's benefit pension, and there is the possibility of unexpected inflation occurring (Table 2).

As for the Employees' Pension (including Basic Pension), we made calculations for the model household (husband is an employee, the wife is a homemaker), a typical single male (average monthly salary 360,000 yen), and a typical single female (average monthly salary of 224,000 yen), and a household where both spouses are the same age and working.

For the model household and the single female, the internal IRR would gradually decline, but for each generation, it would be above the increase in wages of 2.1%. For the single male, since a man's average life expectancy is shorter than a woman's, the internal rate of return is much lower. For both the single male and single female, their premium payments are very different, but their pension benefits are about the same. In declining order of ratio of pension benefits to burden, it was the model household with the highest rate, then the single female, the working couple, and the single male (Table 3).

Table 2. The Trial Calculation Result of Internal Rate of Return (National Pension)

Male	Including the Government Contribution		Excluding the Government Contribution	
	Ratio of Benefits to Contributions (Times)	Internal Rate of Return (%)	Ratio of Benefits to Contributions (Times)	Internal Rate of Return (%)
Age at 2005				
40	1.68	3.51	0.84	1.35
30	1.50	3.25	0.75	1.12
20	1.42	3.17	0.71	1.04
10	1.38	3.13	0.69	0.97
0	1.38	3.06	0.69	0.96

Female	Including the Government Contribution		Excluding the Government Contribution	
	Ratio of Benefits to Contributions (Times)	Internal Rate of Return (%)	Ratio of Benefits to Contributions (Times)	Internal Rate of Return (%)
Age at 2005				
40	2.17	4.13	1.08	2.15
30	1.94	3.88	0.97	1.93
20	1.83	3.81	0.92	1.86
10	1.78	3.78	0.89	1.80
0	1.78	3.70	0.89	1.77

Notes:

- 1) Results in both Tables 2 and 3 estimated by the Financial Markets Group, Japan Center for Economic Research
- 2) Ratio of benefits to contributions = payment of pension (in total) / the contributions payments (in total)
- 3) Payment of pension (in total) and the contributions payments (in total) are the prices converted into the price by the wages increasing rate at the 65 years-old time.

Table 3. The Trial Calculation Result of Internal Rate of Return (Employees' Pension)

Age at 2005	Model Household		Single Male	
	Ratio of Benefits to Contributions (Times)	Internal rate of Return (%)	Ratio of Benefits to Contributions (Times)	Internal Rate of Return (%)
40	1.37	2.85	0.83	1.32
30	1.20	2.57	0.73	1.05
20	1.12	2.44	0.68	0.92
10	1.09	2.38	0.66	0.84
0	1.09	2.33	0.66	0.83

Age at 2005	Working Couple		Single Female	
	Ratio of Benefits to Contributions (Times)	Internal Rate of Return (%)	Ratio of Benefits to Contributions (Times)	Internal Rate of Return (%)
40	1.04	2.07	1.33	2.83
30	0.92	1.78	1.17	2.50
20	0.86	1.64	1.09	2.36
10	0.83	1.57	1.06	2.30
0	0.83	1.55	1.06	2.25

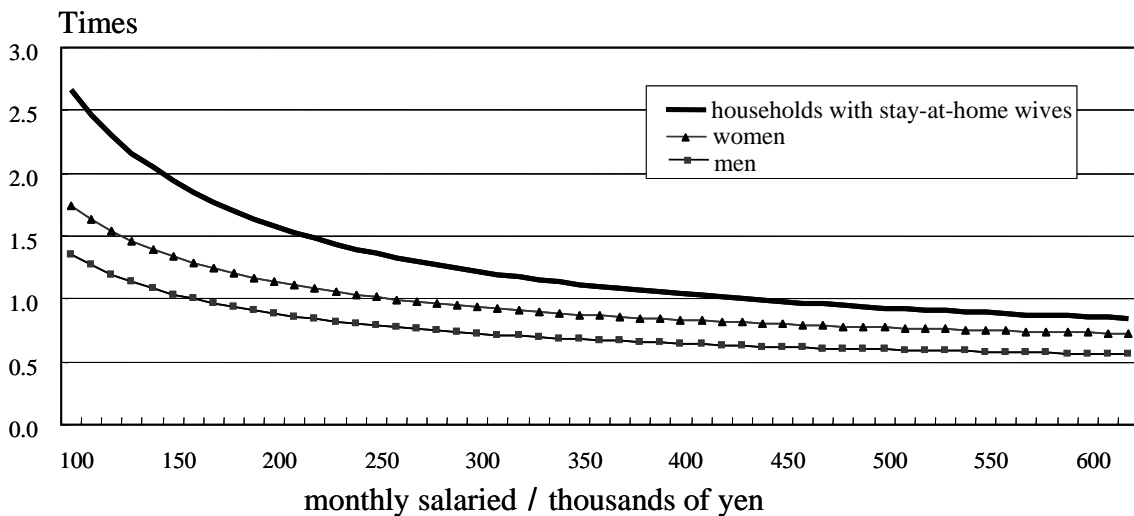
Note: Including Basic Pension

8.3 Intragenerational Inequality

The public pension plan has an income distribution function within the same generation. Here we will see what kind of inequalities will assert themselves after the revisions to the system have been completed, the system has settled, and the contribution payments have increased compared to the benefits to be received. We took the male, female, and model household, and estimated this separating the Basic Pension (Tier 1) and the salary based pension (Tier 2) components.

The Basic pension is calculated based on the assumption that the fixed premiums have been paid, and higher and lower wages have no effect. As for the salary-based component, the higher the salary of the individual, the lower the rate of benefits to contributions becomes (Figure 5).

Figure 5. Ratio of Benefits to Contributions (Employees' Pension)



Note: Calculations by Financial Markets Group, Japan Center for Economic Research

8.3.1 Men

As for the Basic Pension, men will receive 1.04 times the amount they contributed in benefits. As for the salary-related component, the ratio has gone to 4.5 times from 0.48. For all benefits, the ratio went from 0.57 to 1.35.

When the standard monthly salary rises above 160,000 yen, then the ratio falls to under 1. Since the average monthly salary of men is 360,000, most men will not be receiving in benefits the amount they contributed.

8.3.2 Women

As women receive pensions for six years longer than men, their level of benefits is much improved.

For the Basic Pension, women receive 1.34 times in pension benefits the contributions made. As for the salary-related component, the ratio went from 0.62 to 5.81 times. Overall, their ratio of benefits to contributions rises from 0.73 to 1.75 times.

Once their salaries rise above 260,000 yen, then the ratio of benefits to contributions falls below 1. The current average monthly salary for women is 224,000 yen and so even at above average salary levels, their benefits received may be greater than the contributions they make.

Meanwhile, a woman's life expectancy is longer than a man's life expectancy 6 years old.

8.3.3 Households with Category 3 insured persons.

Homemakers are entitled to receive Basic Pension benefits without ever making premium payments, and they can also receive survivor benefits. Thus, their benefit ratio is very high. As for the Basic Pension, they receive benefits 2.38 times their premiums. For the salary-related component, their ratio went from 0.59 to 5.48 times. Overall, their ratio of benefits to contributions made goes from 0.86 to 2.66 times. Once their salary rises above 440,000 yen, then the ratio falls below 1.

8.3.4 Summary on Intragenerational Inequalities

From these calculations, there is an income-related inequality for persons with high salaries, in that they will not receive in pension benefits what they paid out in contributions. As the system adopted is the pay-as-you-go system, there is no transfer of income within the generation, but an intergenerational redistribution. Furthermore, for men with a high standard salary of 600,000 yen, if their wives are Category 3 insured persons, then their ratio is 0.85 times and much higher than a single man's whose ratio is 0.57. We see that households with Category 3 insured persons are at a great advantage.

9. Sweden's Pension Plan

There are many who are of the opinion that Japan should adopt Sweden's Pension Plan system, and so Sweden's pension system has been receiving much attention. The following is the framework of the Swedish pension model.

In a pension reform in 1999, Sweden decided to switch to a pension system comprised of a minimum guaranteed pension financed entirely by the government, and a salary-related pension. The government funding would be allocated to the difference between the salary-related component and the guaranteed minimum amount. The premium rate is fixed at 18.5% of the salary for the salary-related component. Of this, 16% is put into a PAYG type account for investment, and is used conceptually in a defined contribution system – this is known as a “notional defined contribution method”. This system being a notional defined contribution system is the first major characteristic of this system. The remaining 2.5% is put into a funded financing account.

This notional defined contribution system is run as a pay-as-you-go system, so there are no reserves, and premiums are used for pension benefits for that year. However, the premiums paid by each contributor are recorded in a kind of pension account. The increases in wage levels are viewed as notional investment yields, and this “interest” is “notionally” accumulated. As a result, there is a clearer link between contributions and benefits made. In principle, the system ensures that benefits are paid out in accordance with contributions made. The size of the pension is determined by dividing notional pension assets by the average of the average life expectancies of men and women. Thus, this system is adaptable to some degree to the aging of society, but the monthly pension amount will decline accordingly.

The Swedish system is still a PAYG system, and so the risks inherent to this system are not eliminated. Changes in the demographic structure or life expectancies can result in higher benefits to

be paid. For example, with the declining birth rate, the labor force can fall and the funding source of benefits will be short. Also, if the population ages at a rate higher than expected, then funding could come also short.

Thus, as a countermeasure against this risk, they have incorporated an automatic balance system. This is the second major characteristic of the Swedish model. When the sum of the pension reserve fund and the “notional” contribution assets on the balance sheet are lower than the balance of the pension liabilities, then the notional investment yield is adjusted. “Automatic” as meant here refers to that fact that this is executed without government determination. As a result of this, we can avoid having to shift the burden to the future.

10. Demographic Composition and Pension Funding

10.1 Differences between Funded System and Pay-As-You-Go

The pay-as-you-go system, as explained previously, is one where the expenses needed to pay pension benefits are covered at each time from the premiums paid by the current contributors. As the premium income depends on the number of contributors, the funding of the pension is greatly affected by the ratio of the number of persons receiving benefits and contributors who are paying the premiums.

We look here at the effects on the pay-as-you-go funded pension finances that differences or changes in the relative numbers of benefits recipients and premium contributors would have. Then, we compare this with the finances under a funded system, to show the differences of the financial situations between the funded and PAYG systems.

In this exercise, we assume that all persons participate in the salary-related pension, and there is no the share of support from general tax.

We design a model with the current economy and systems, and run the pension with a funded system. We estimated a case where the investment yield is equal to the rate of wage increases at 2.1%. We found that the monthly pension for this funded method would be 415,620 yen (163,131 yen at fiscal 2005 prices) as shown in Table 4 when the contributor begins receiving pensions.

Then we do the same calculation for a pay-as-you-go system.

Currently there are 24 million pension recipients in Japan. In the next fifty years, this will rise to 34 million. In order to estimate how many current working contributors are needed to finance the pensions of the older persons, we kept the population of the pension recipients' constant, while varying the younger working population. Thus we are varying the support ratio and look at the effects on the pension finances.

In Table 5, we kept the support ratio constant, and estimated the internal rates of return as well as the income substitution rates of the three cases.

When the support ratio is 3 (i.e., 3 contributors to support one pension recipient), the IRR is 3.4% and is higher than the funded system, and the income substitution rate is also higher than the funded system.

When the support ratio is 1.9, the pension is equal to the funded system, and the IRR is also equal. In this case, we see that the effects can be the same whether the system is run as a PAYG or funded system. This is because when the support ratio is fixed, even if the older person population and the pension payments increases, the current working generation is increasing at the same rate, and the

premium income would increase as well. Thus, there is no effect on the pension finances.

However, when the support ratio falls to 1, the IRR falls below the funded system to 0.2%, and the income substitution rate also fall below the funded system.

Table 4. Funded System

Starting monthly pension amount (yen)	Fiscal 2005 price (yen)	Internal Rate of Return (%)	Income Substitution Rate (%)
415,620	163,131	2.10	42.5

Table 5. Constant Pensioner Support Ratio

Support ratio	Starting monthly pension amount (yen)	Fiscal 2005 price (yen)	Internal Rate of Return (%)	Income Substitution Rate (%)
3.0	654,601	256,932	3.39	67.0
1.9	415,620	163,131	2.10	42.5
1.0	218,200	85,644	0.22	22.3

Notes:

- 1) Results in both Tables 4 and 5 estimated by the Financial Markets Group, Japan Center for Economic Research
- 2) Full pay-as-you-go system, with no reserves at all

From the above discussion, we see that with a support ratio of 1.9 and higher, benefits can be higher than under a funded system. However with a ratio of less than 1.9, benefits must be lower than under a funded system. This 1.9 ratio refers to “contribution period/ pension period = 40/21 = 1.904”.

10.2 Changes in the Pensioner Support Ratio

According to estimates of the Ministry of Health, Labor and Welfare, in the next fifty years, the support ratio will fall from the current 2.9 to 1.3, below the 1.9 mark. Next we utilize this estimate of number of contributors in the Basic Pension to analyze the financial health of the pension.

If the same pension is paid out as the funded system, then as the support ratio is higher than 1.9, there will be a positive balance in the beginning. However, in 15 years when this ratio falls below 1.9 (in 2020), the books will be in the red for that year, and then after that, it will continue to be in the red and large deficits will occur. Even if the positive balance of the previous years are put into a fund and invested, the funds will be exhausted by 2042. Therefore, in our estimates, in order to countermeasure this, it is necessary that the premium rates be raised. In our calculations, the premium rates must be raised to 25% at one time, and then gradually raised to 27%.

If we keep the premium rates constant, then after 2042 the funds will be exhausted. Thus, if we continue to pay pensions under a full PAYG system, then we will need to hold back pension amounts.

As a result, the income substitution ratio, that was about 43%, would fall to 30% (Table 6).

Under this PAYG system if the government tries to maintain pension benefits at their current level despite the declining support ratio and thereby weakening the pension's financials, the premium payments of future generations will increase, and the increased burden will only be postponed. However, if the amount of the benefits is suppressed, the benefit levels of the current generation will be lower than that of previous generations. In either case, an inequality between the generations will occur.

Table 6. PAYG System, With the Number of Contributors the Same as Basic Pension

The case where pension payments are the same as the funded system			
Starting monthly pension amount (yen)	Fiscal 2005 prices (yen)	Internal Rate of Return (%)	Income Substitution Rate (%)
	415,620		
Influences: The Premium will rise to 25% by 2043 The internal rate of return for persons that will be 20 years of age in 30 years from now: 1.16%			
The case where the premium are kept constant			
Starting monthly pension amount (yen)	Fiscal 2005 prices (yen)	Internal Rate of Return (%)	Income Substitution Rate (%)
	285,678		
Influences: The Pension amount and the income substitution rate will fall The internal rate of return for persons that will be 20 years of age in 30 years from now: 1.13%			

Notes:

- 1) The pensioner support rate will fall from 2.9 (in fiscal 2005) to 1.3 (fiscal 2050).
- 2) Any surplus was invested as a reserve fund.

11. Examination of the Notional Determined Contribution Method

Sweden's notional defined contribution method pays pension benefits on the assumption that the investment yields on the funds are equal to the rise in wages. We can then apply our calculations to the Swedish model. If we apply the Swedish model to Japan, then in order to keep the pension amount constant, we need to raise the premiums. If we want to maintain current premiums, then the benefits will need to be reduced. To resolve both these issues, the government will have to come in and compensate for the difference.

Sweden's population is less than one-tenth that of Japan's, and the support ratio is lower in Japan. Also, the rate of decline of Japan's working generation is greater, and Japan's total fertility rate is also lower. Thus even beyond 2050, we estimate that the rate of decline of the working generation will be even higher, and so the financial situation of the pension will likely be worse than Sweden's.

In order to prevent a further deterioration of finances under a decreasing ratio of contributors to pension recipients, the automatic balance system would be expected to be executed constantly. The automatic balance system only lowers the investment yield and does nothing to guarantee pension benefits. The only advantage to adopting this system is that it would prevent the financial situation of the pension system from deteriorating any further.

With a lower investment yield, the pension benefits would decline greatly, and there is no guarantee that people would receive pensions in accordance with the contributions they made. This would not be a satisfactory solution to the people, and as designed, if pensions are paid with the investment yield seen as the rate of wage increase, the government will have to fund the difference.

On the one hand, the notional defined contribution method is very clear in the notion that the premiums paid would be paid back to the contributor. However, as pensions must be paid out in accordance with the contributions made, the current intragenerational income redistribution feature of the current public pension system would be lost. If the government must contribute to the salary-related component to make the system work, then all pension recipients will experience a shortage. In which case if the government has to cover the difference, then the pension will be salary-related, and the government burden will be related to the salary level as well. From the perspective of income redistribution and fairness, whether this is a good use of taxpayer's money becomes questionable.

12. Recommendations of the Financial Markets Group

With the results of our study on the Public Pension Reform, we would like to make the following recommendations.

1. The age from when pension benefits can be received should be raised from the current 65 to 70 years old. If the age of pension benefit eligibility is raised, then the older persons would stay in the labor force, premium income would increase, and benefits paid would decrease, and this would be a great relief to the pension finances. Currently, public pensions pay out about 35 trillion yen in pension benefits. The average length of time that people receive these benefits is for 21 years from age 65. By rising the age of pension benefit eligibility to 70, benefits would be paid out only 16 years. From a simple calculation, this would lead to benefits paid being reduced to 26.7 trillion yen, resulting in a savings of 8.3 trillion yen ($35 \text{ trillion yen} \times 16/21 = 26.7 \text{ trillion yen}$). This would create a large fund to be spent towards measures to raise the birth rate.

2. The National Pension, Employees' Pension and Mutual Aid pensions should be integrated into one system so that premiums to public pensions are consistent and are all related to income. However, if pension benefits are based solely on income levels, then people with no income would have zero benefits. Thus the Basic Pension should be 100% funded by the share of support from general tax and become the minimum guaranteed benefit.

By integrating all public pensions, there will be no occurrence of transfers within the system. Complex systems will be simplified, and there will be reduced inequality in the pension systems.

3. Category 3 insured persons should be eliminated when the pensions are integrated. This will do away with the transfers within the system.

4. In order to prevent a further decline in the birth rate that is a factor behind the deteriorating finances of the pension, support for birth and child rearing should be expanded. The current

income guarantee on childcare leave should be expanded, and 80% of income should be guaranteed up to the end of childcare leave. We should expect some increase in the birth rate from this measure.

5. Expansion of employment of older persons that are healthy and have the will and the capacity to work. Discrimination based on age should be prohibited, and the companies' mandatory retirement system should be abolished.

With the above recommendations, increases in pension premiums would be restrained, and low income or standard income households would receive pension benefits according to the contributions they made. In cases where persons are continuing to work even though they have reached the age of pension benefit eligibility, from the perspective of reduced pension and employment income added together, this becomes a de facto income-related. That is, the deterioration of the pension finances should be countered not by creating intergenerational inequities as exist now, but by redistributing income.

13. In Conclusion

With a declining pensioner support ratio, it is impossible to design a system that would keep all concerned parties satisfied. The key to resolution the pension issue is not creating intergenerational inequality, but working on the income redistribution. We need to expand this function from its current state. The feeling of inequality would become greatly alleviated over the intergenerational inequality currently existing, and would make the pension system become a sustainable one. The public pension system could reclaim its credibility. As the pension benefits would decline, the national burden would be alleviated somewhat and government expenditure would be reduced. Furthermore, there would be incremental tax revenue from older persons that were working and so this would contribute to the health of the government finances. Although once Japan is out of this deflationary economy and a positive nominal growth is achieved, then there will be a natural increase in tax revenue and a natural decrease in expenditure. However, this will be inadequate to resolve the massive deficit that the Japanese government is running. If our recommendations are followed and there are notable reductions in social insurance costs – that are a major portion of government expenditure – then the huge budget deficit may be reduced markedly.