

# **How social security is responding to the low birthrate and longevity? (focusing on annuity)**

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## **Abstract**

In Japan, there are medical care, nursing, annuity and employment as a social security system, and they are independent respectively. However, we suffer from an advance of low birthrate and longevity, reduced growth of an economy in recent years. As a result, continuance of the current social security system verges to a crisis. Though reformation regarding the pension scheme, such as reduction of benefits for future generations and rise of the beginning age of benefits, were done, reliance from the nation cannot be restored.

In maintaining the present social security system, raising of the burden, such as a premium and controlling the benefit of an annuity and medical care are important. Moreover, in progress of the further low birthrate and longevity, the present structure itself needs to be reviewed again. Mutually complementary mechanism which enables the increase of working women who bring up many children and the creation of employment of the elderly with intent and ability, serves as fundamental solution to support an aging society with fewer children.

As the proposal for the public pension system as income compensation of old age, it is the system by the self-reliance which reduced intergenerational support as much as possible, and its benefit level changes the minimum level that can cover the expense concerning food, clothing and shelter. We suggest that the method of grant is changed from cash benefit into the point system, which stores the pension premium contributed during employment as a point and uses it from old age. Thus, it is possible to expect the public's confidence in the pension system

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## **1 .Introduction**

In Japan, the present framework of the social security system was established in the 1960s which was high-level economic growth age. In those days, retirement system and lifetime employment were common for employee. Therefore, social security system whose pillar is pension schemes was considered focusing on elderly people who were weak economically.

However, the situation has changed largely. As a countermeasure to high labor costs and appreciation against the yen, overseas relocation of manufacturing industry has progressed, and young man's working opportunity has been taken because the adoption has been reduced by the decrease of the factory. Moreover, company reduced the full-time employee (the employee of regular employment) and increased permanent part timers (In this paper, it is defined as a part-time jobber from 25-years-old to about 35-years-old.) at the factory which remains in domestic. As a result, the number of the young men of a low income who work as permanent part timers is increasing. Moreover, the number of the young man supporting a social security system itself is decreasing in the past 50 years, and it is difficult to support elderly people as socially vulnerable groups. As a result, institutional reexamination is indispensable.

Therefore, upon review of the social security system, in this paper, let us think about mutually complementary mechanism which enables the creation of employment of the elderly with intent and ability, and the increase of working women who bear and bring up many children. Next, the mechanism of a sustainable pension system, and then finally try to verify the feasibility of its system by these changes.

## **2 .Present condition in Japan**

### **2.1 Low birthrate and longevity and Public pension system**

Japan is facing a decline in birthrate. Percentage of unmarried people is increasing year by year. According to the census of 2005 the Ministry of Internal Affairs and Communications, the unmarried rate in men increased from 2.12% in 1970s to 15.96% in 2005. On the other hand, the unmarried rate in women increased from 4.32% in 1970s to 7.25% in 2005. Furthermore, although the average number of the children who wish is 2.3, the average number of the children who are now is 1.2 persons<sup>1</sup>. According to the same survey of Cabinet Office, young people are concerned about much expense to bringing up children and difficulties in keeping a work-life balance. That is to say, anxiety

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<sup>1</sup> Source: 2011 "Survey of international society with fewer children", the Cabinet Office

to the future life such as income and employment is considered to be the cause.

On the other hand, a proportion of elderly people had been increasing every year. In 2005, one elderly was supported by three working people. In 2055, however, it is expected that 1.2 working people should support one elderly.

<Movement and prospects of percentage of over 65 years population>

	over 65 years population/ total population	over 65 years population/ population of over 20 but younger than 65 years
1960	5.7%	10.6% (one per 9.5 persons)
1970	7.1%	11.7% (one per 8.5 persons)
1980	9.1%	15.1% (one per 6.6 persons)
1990	12.0%	19.6% (one per 5.1 persons)
1995	14.5%	23.2% (one per 4.3 persons)
2000	17.3%	27.9% (one per 3.6 persons)
2005	20.2%	33.1% (one per 3.0 persons)
2009	22.7%	38.5% (one per 2.6 persons)
2030	31.8%	58.2% (one per 1.7 persons)
2055	40.5%	85.0% (one per 1.2 persons)

(Source) Statistics Bureau of the Ministry of Internal Affairs and Communication “National Census”, “Population Estimates”

National Institute of Population and Social Security Research, “Japan’s Future Population Estimates”(Estimate at December 2006)”

By the way, this is not unique to Japan. Low birthrate and longevity are a problem in the foreign country as well as Japan. Especially, the birthrate in some of the Asia is lower than Japan, and is lower than the level which maintains the present population. However, in Sweden, France, the birthrate is a recovery tendency now, although it was once declining. This is because government performed the policy which is compatible in child-rearing and working.

<Birthrate (total fertility rate)>

country/region	year	birthrate
Japan	2010	1.39
United States of America	2009	2.01
France	2009	1.99
Sweden	2009	1.94
Britain	2009	1.94
Italy	2009	1.41
Germany	2009	1.36
Thailand	2008	1.8
Singapore	2009	1.22
South Korea	2009	1.15
Hong Kong	2009	1.04
Taiwan	2009	1.03

(Source) the statistics organization of each government

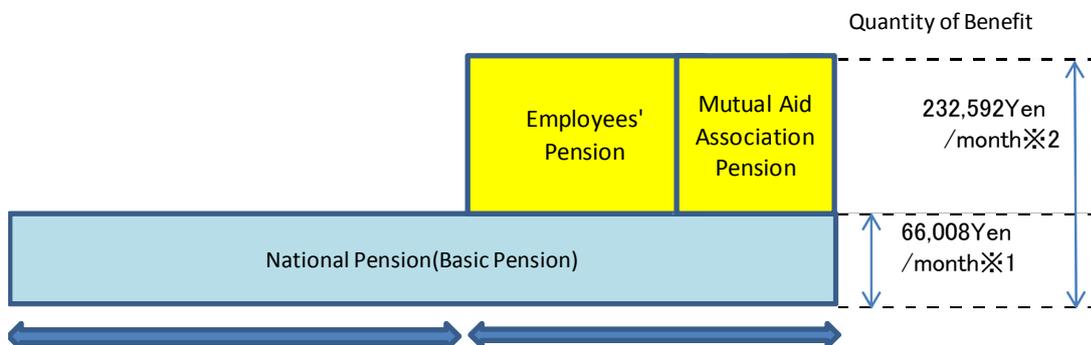
<The population rate (three classification) according to age in foreign countries>

	0~14(%)	15~64(%)	over 65 years(%)
Algeria	29.6	65.8	4.5
Egypt	33.6	61.7	4.8
Tanzania	42.6	54.2	3.2
China	21.4	71.0	7.6
Japan	13.6	65.3	21.0
South Korea	18.6	72.0	9.4
Thailand	23.8	69.1	7.1
France	18.2	65.2	16.6
Germany	14.3	66.9	18.8
Sweden	17.5	65.3	17.2
Britain	17.9	66.1	16.0
Canada	17.6	69.3	13.1
United States of America	20.8	66.9	12.3
Australia	19.6	67.7	12.7

(Source) United Nations, World Population Prospects(2004)

Based on such a situation, revision of the public pension plan was performed in Japan. Before we discuss this, first indicate the Japanese public pension system. It is a system of two layers consisting of "National Pension (for all nation)" whose pension is determined according to the covered period and "Employees' Pension (for company employees)" or "Mutual Aid Association Pension (for civil servants)" whose pension is earnings-related benefit. In addition, these systems have the mechanism of fluctuating pension benefit according to change of prices or wages.

## Japanese Public Pension System



\* self-employed persons and farmers  
 \* spouses of private businessman and public service employees

\* employees of private businessman and public service employees

※1: Self-employed (For 40 years at the joining)

(Source: Ministry of Health, Labor and Welfare Report 2009–2010)

※2: Married couple of private company workers

Total of the benefits of the Employees' Pension (For 40 years of participation with average wage) and the benefits for the 2 persons with the Basic Pension (For 40 years of participation)

(Source: Ministry of Health, Labor and Welfare Report 2009–2010)

However, under the aging society, those who support the pension system are decreasing, and thus "Macro-Slide Formula" to revise the amounts of pension by deducting a part of increase rate of prices or wages, even if prices and wages to rise, has been introduced by the revision of pension in 2004. According to the forecast, which is the future of the public pension system of government announcements, the pension system makes management possible over the long period of time. This is because it is premised on raising a burden by public expenditure and social insurance premium, and reducing an income replacement ratio<sup>2</sup> by the introduction Macro-Slide Formula. However, I am skeptical. Normally reduction of prices will reduce pension benefit, but the reduction of pension benefit tends to cause a backlash of public opinion. As a result, the past political power provided for transitional measures as a policy of collecting votes in the election. Therefore, I am disbelieving. However, due to an economic downturn since the bankruptcy of Lehman Brothers, finances of Japan got worse. Furthermore, change of power also occurs and the policy is looked over again. The present government is considering pulling up a consumption tax gradually to secure stable source-of-revenue for social security. According to the opinion poll, it seems that an understanding about the necessity for a consumption tax increase is obtained from people. However, there are many opinions which the tax increase should be avoided by first reducing other budgets. It is a difficult situation for realization.

<sup>2</sup> The ratio of the annual old-age benefit to the average annual disposable income of the active workers

## Macro-Slide Formula

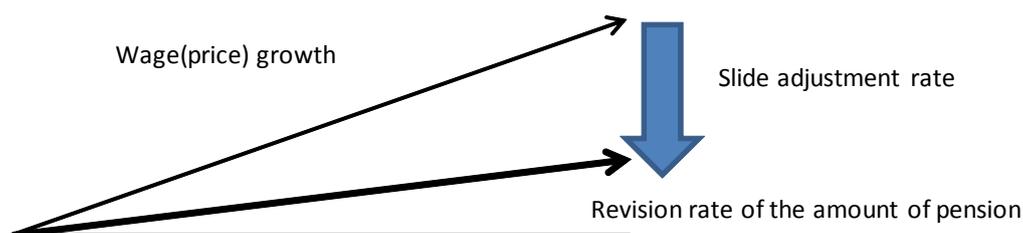
In calculating amount of pension, the system that adjust growth of the amount of pension, instead of direct use wage growth and price growth

- people who newly start receiving pension : wage growth - slide adjustment rate※
- people who are currently receiving pension : price growth - slide adjustment rate※

※ slide adjustment rate

increase rate of the total number of people covered by public pensions

+ fixed rate with consideration of growth rate of average life expectancy



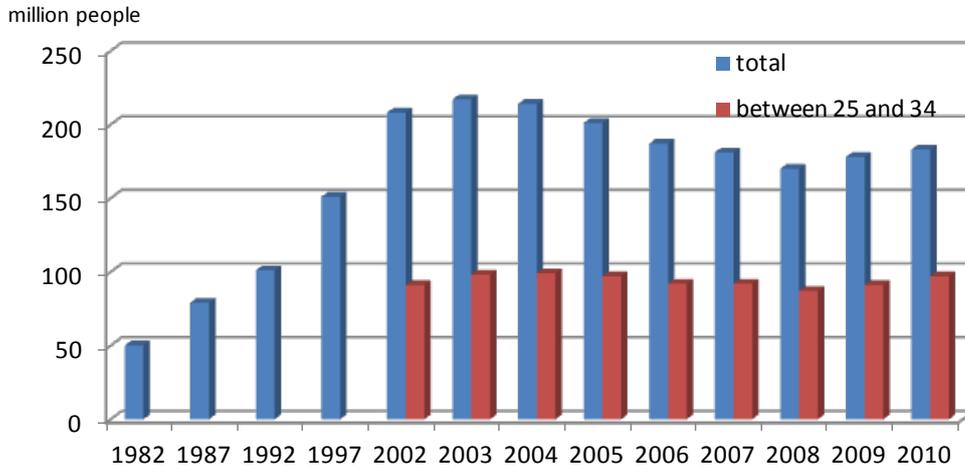
## 2.2 Increase of permanent part timers

In the first half of the 1990s ('bubble' period), Japan had continued to boom, and employment of a new graduate was expanded focusing on the major company. However, the bubble economy collapsed in the mid-1990s, and employment adjustment struck the major company. Especially the employment of a new graduate was controlled. On the other hand, the economy recovered since 2002, and increased demand for labor by the wave of business expansion. The tendency which shows that major company employed many permanent part timers was strengthened by reluctance to future employment adjustment. Three reasons are considered as a background of the increase of non-regular employment. The first is the control of personnel cost by utilizing people whose wage was low relatively. The 2nd is that adoption of new graduates was suppressed because employment of personnel ready was more important than training a fresh graduate. The 3rd is that deregulation of a worker dispatch business backed up such a tendency. As a result, the control of personnel-expenses was mainly the use of permanent part timers, which caused problems, such as a reduction of professional skills in young people, or a decline of capability which trains a person with high professional competence, or an expansion of income differential.

The important problem in the permanent part timers is that they cannot change from non-regular employment to regular employment. This is because the permanent part timers do not have professional skills, and company hesitates to employ them. As a result, it becomes difficult for a non-regular employment person to continue to have an opportunity of vocational training at an office.

As the following figures, change in the number of permanent part timers around 30-year-old isn't seen in spite of the prosperity or the reduction of labor population in a young generation. As an urgent subject, it seems to be desirable for the government to support a development of ability to permanent part timers, and take measures of job creation more than now.

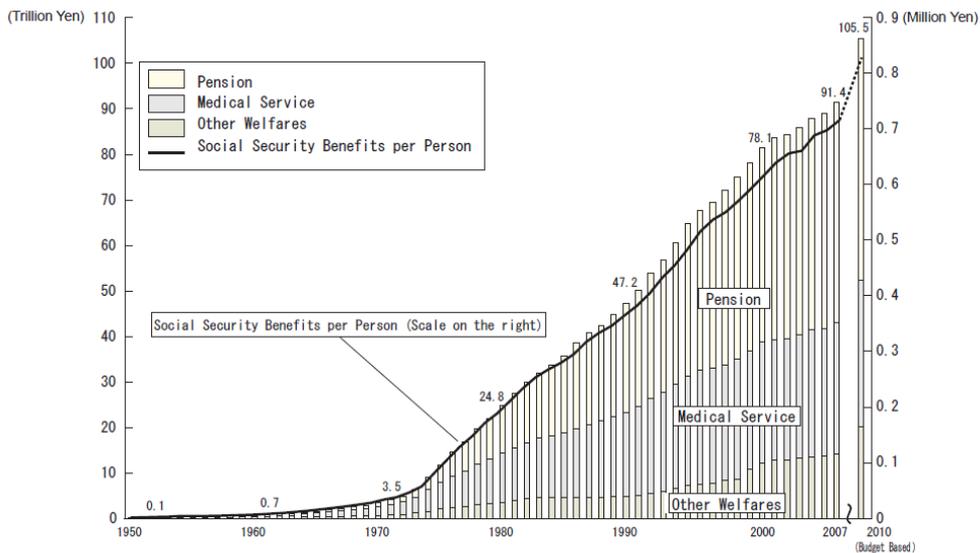
### Transition on the number of permanent part-timer



Source: ministry of internal affairs and communications (examination on labor force)

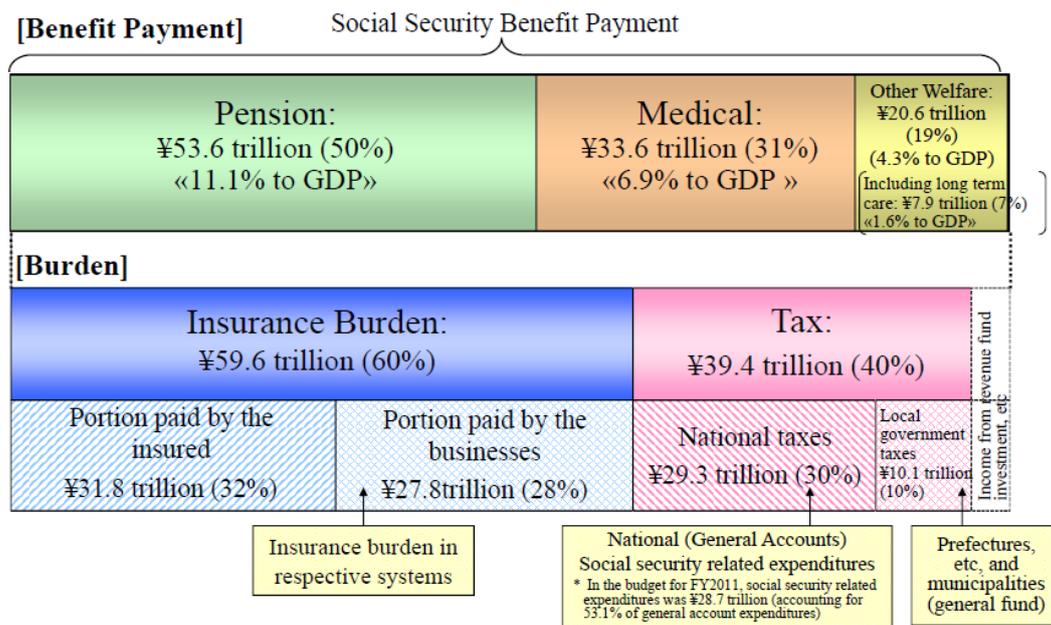
### 2.3 Increase of benefits in social security system

According to the following figure, social security benefits per person are increasing year by year. Especially, a benefit of pension is huge, and its expense in 2010 is five times in 1980 and occupies 50 percent of the whole social security cost.



Sources: National Institute of Population and Social Security Research "FY 2006 Social Security Benefits"FY2009 (budget based)- Estimated by MHLW.  
 Note: Figures shown in the diagram are social security benefits (Trillion Yen) of 1950, 1960, 1970, 1980, 1990, 2000 as well as FY 2009 (budget based).  
 Reference: Social security benefits per person in FY2007 was 716,000 yen and 828,000 yen in FY2010 (budget base)

The present social security benefit is 22.3% to GDP. Although the rate is slightly lower when compared with other developed countries of Europe (whose rate is 20% to 30%), the expense was the same level if you pay attention to pension. As for burden at the expense, 40% of benefit is provided by tax, and the remainder (60%) is provided by the premium. Moreover, it is expected that benefits will continue to increase due to the progress of aging. In addition to the pension problem as described above, the increase of payout in the field of medical care and nursing-care is at issue.



\* Other sources of Social Security Funds include income generated from assets, etc

## 2.4 Present situation about elderly people

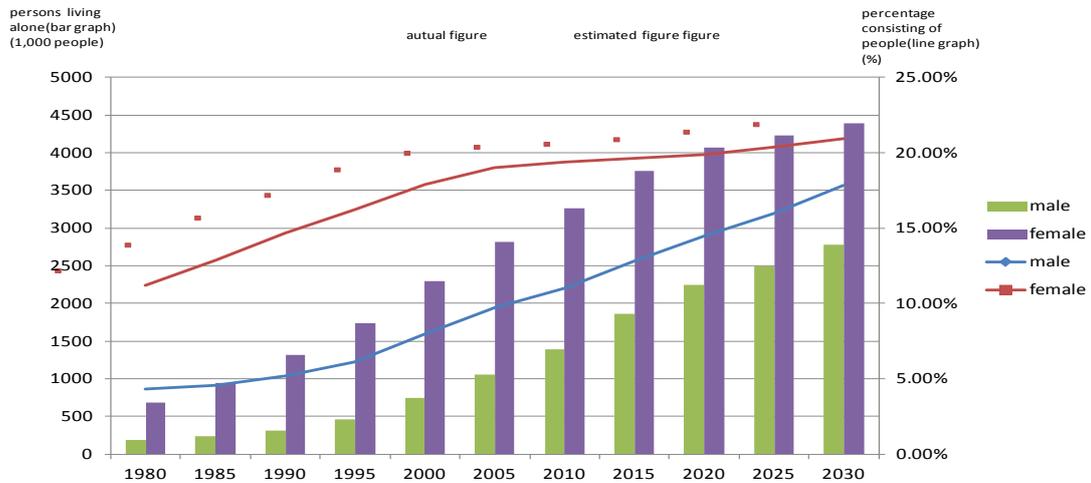
### ① Increase of elderly people living alone

Elderly-people household<sup>3</sup> over 65-years-old occupies 41.2% (19.78 million) of all the households (47.96 million). The proportion of households which are living on only elderly-people, such as living alone or a married couple, is about 50% of elderly-people household over 65-years-old. Besides, 40% of them are a household which lives alone. Elderly people living alone are increasing in both male and female. For instance, the percentage of elderly people living alone increased from 4.3% (1980) to 9.7% (2005) in males and from 11.2% (1980) to 19.0% (2005) in females. In addition, it would be increasing further.

As elderly person living alone has little daily conversation, and there is little association with a friend and the neighborhood, the increase in this rate is at issue.

<sup>3</sup> households that contain the elderly, such as households living in elderly people and their families, or households only living in the elderly

<Trends of elderly people living alone>



Source: up to 2005, from the ministry of internal Affairs and Communications' "Population Census":

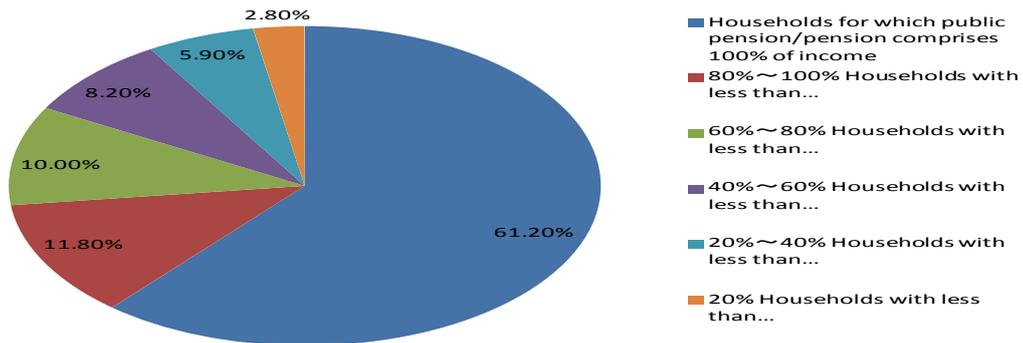
from 2010, from the National institute of Population and Social Security Research's "Estimates of Future Number of Households in Japan" (estimated: March 2008), and "Projected Population of Japan" (estimated in December 2005)

(Note) "Living alone" refers to the households deemed so ("Living alone households") by the above examination /estimates

②Life of elderly people

The proportion of pension is high in elderly people's income. Elderly-people household in which the income is only a pension occupies 61.2%. That is to say, pension is important for elderly people.

<Percentage of total income of elderly households consisting of public pension /pension and Proportions of number of households>

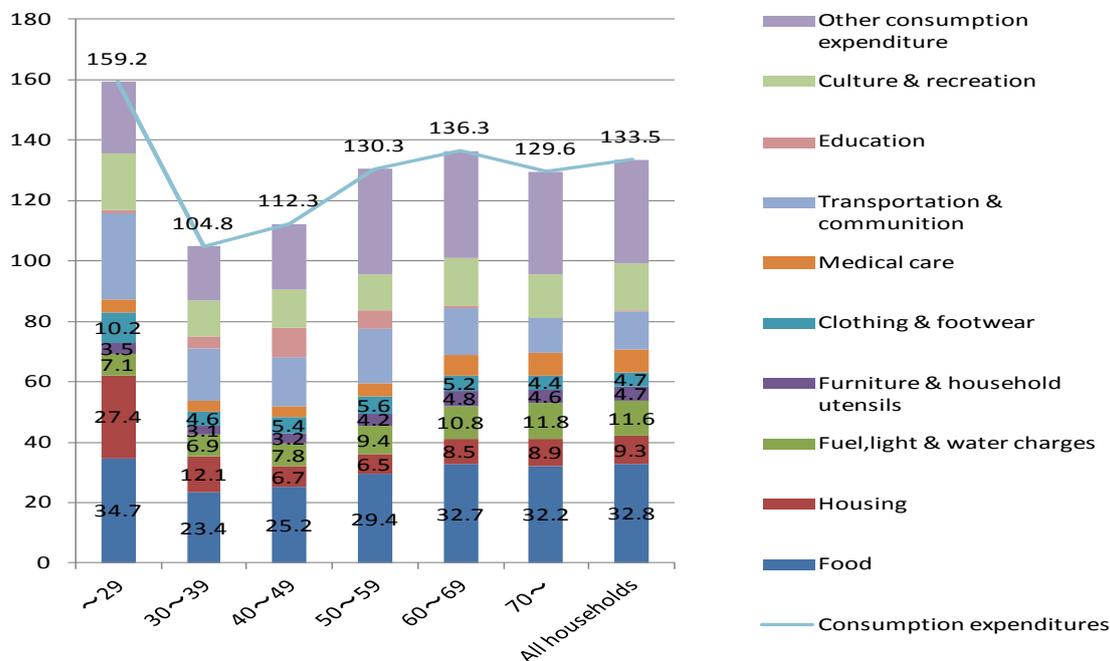


Source:Ministry of Health, Labor and Welfare, "Coomprehensive Survey of Living Conditions"(2009)(income for January 2007)

Expenditure per person of elderly-people household over 60-years-old is more than the average of all households. According to the figure below, their expenditure (60-69 years-old) concerning their food, clothing and shelter is 620,000 yen (52,000 yen in monthly amounts). By the way, the Basic Pension is monthly amounts of about 66,000 yen (for 40 years at the joining). That is to say, the expense concerning food, clothing and shelter is a level which can be covered by the current Basic

Pension if you think for those who join the system for a long time.

<Yearly household expenditures per person by age group of head of households>



(Source) Calculated by the cabinet Office from the Ministry Internal Affairs and Communications "Family income expenditure survey"(2008)  
 (Note) Expenditures for one month were multiplied by twelve to calculate one year's expenditures and that number was divided by the average number of people in a household.

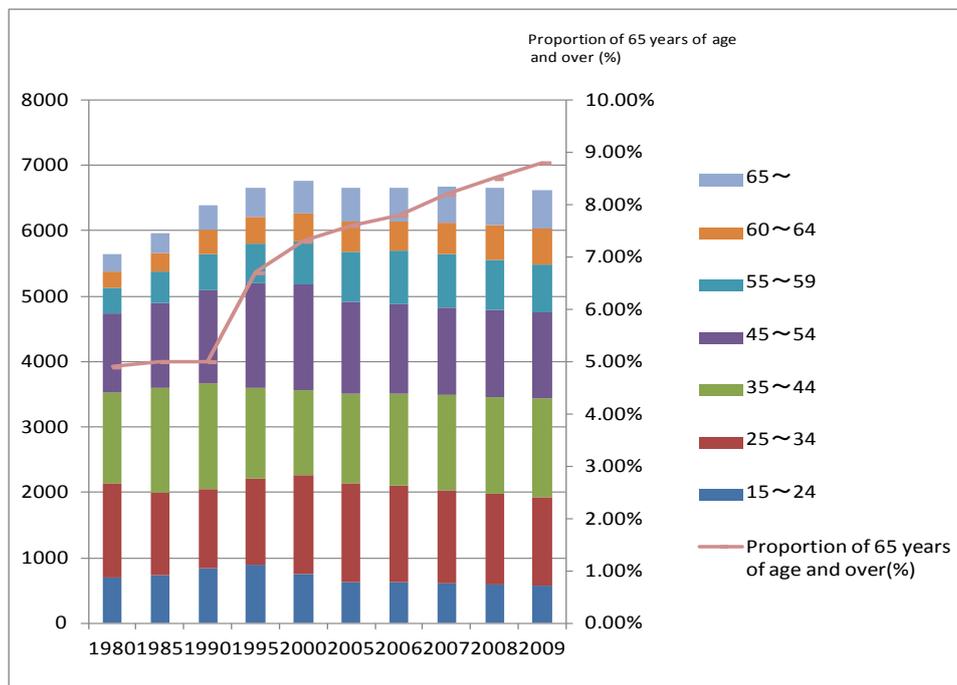
### ③employment of elderly people

The proportion of young workers in the labor population is decreasing. On the other hand, workers over 60-years-old are increasing. The rate which accounts for the labor population is 17.2% in 2009 and is going up.

It will also be one of the factors of the elderly people's increase in employment that extension of the retirement age or continuous employment<sup>4</sup> was made compulsory because the pensionable age of the public pension will be raised in stages until the age of 65 from fiscal year 2013. However, since a workplace where the elderly people can take advantage of past work experience is limited, it is difficult to engage them in the same work as retirement age before. That is to say, they are engaged in work which is completely different from retirement age before in many cases. As a result, it is economically inefficient.

<sup>4</sup> Continuous employment means being succeedingly employed as non-regular employment after retirement age.

<Transitions in the labor force population>



Source: Ministry of Internal Affairs and Communications "Labor Force Survey"

(Note) The "labor force population" is defined combining employed persons and unemployed persons among population of 15 years or more

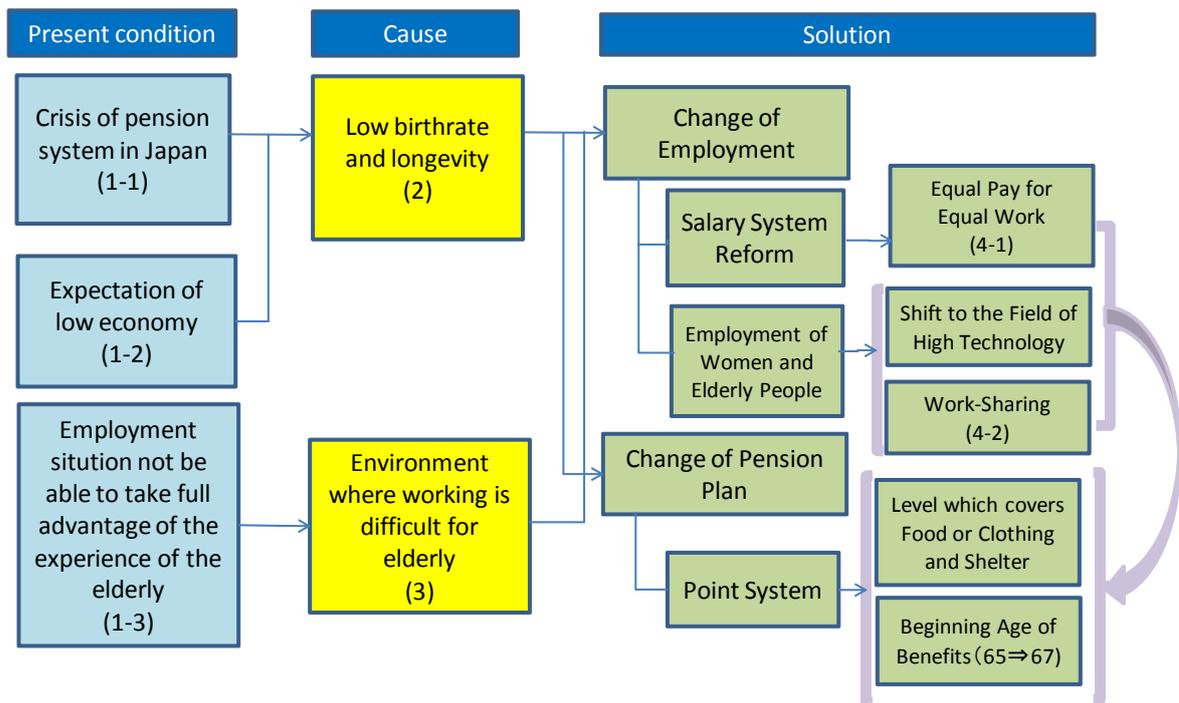
### 3. Nature of employment and public pension system in an aging society

Given the foregoing, there seems to be three problems in Japan. First is that, it is not able to take full advantage of the experience of the elderly people. Second is that elderly people's percentage has been increasing every year, and fewer employees will support elderly people in the future. Third is that a large stretch of economic growth cannot be expected due to a decrease in working population.

As for these causes, the first point is undeveloped working environment of the elderly people, and the two or three point is low birthrate and longevity.

I think it appropriate to improve employment situation and change the pension system as solution. Thinking about the improvement of employment situation, the reform in the wage system and employment of women and the elderly people are effective as a means. With regard to the change of the pension plan, the points system, which stores the premium<sup>5</sup> contributed during employment as a point and uses it from old age, is considered as valid, as a means.

<sup>5</sup> In this paper, premium means pension premium, or contribution.



### 3.1 Employment

The tendency for a salary to serve as the seniority system, for elderly people to live a pension life, and for a wife to become a homemaker, is remarkable in present Japan. By the development on the employment situation, think that we change the trend as follows.

- salary system: a seniority-based system ⇒ equal pay for equal work (in view of improvement in vocational capability)
- elderly people(after retirement): a pension life ⇒ working(in view of reduction in a worker and elderly people's definite aim in life)
- a worker: husband (a wife is a homemaker) ⇒ having two incomes (in view of reduction in a worker)

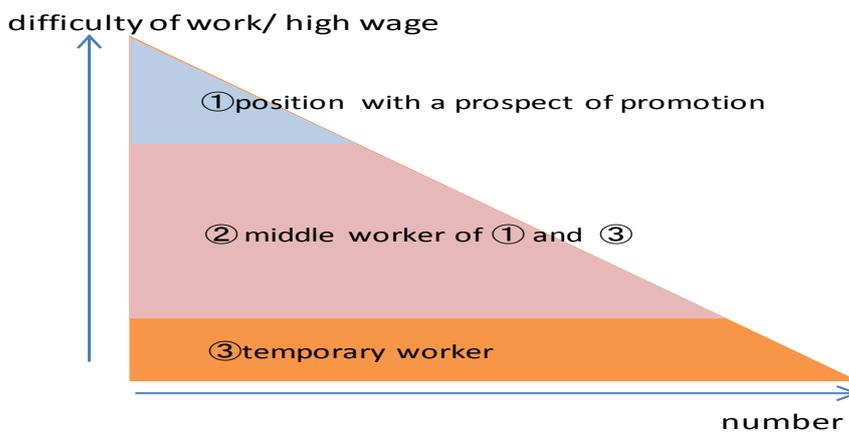
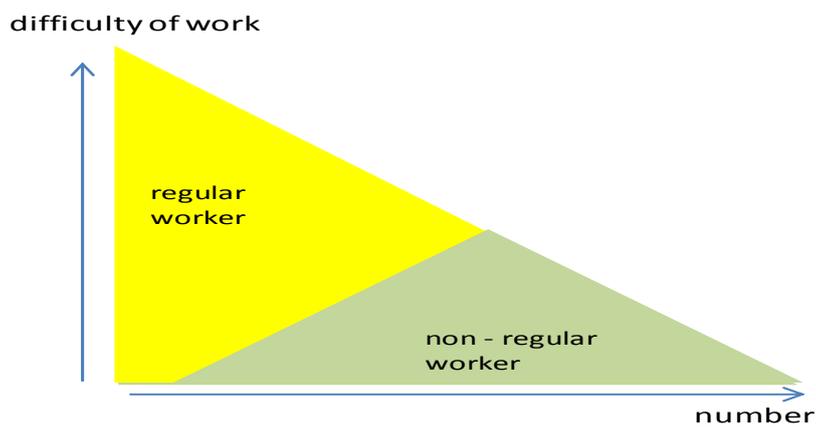
However, in employment of elderly people and women, it would be necessary not only to develop the environment in which they are employed but also to take measures to encourage them a change in the approach to work or the way to spend after retirement.

#### ①salary system reform

If elderly people are re-employed after retirement age, wages decrease sharply as compared with retirement age or before. This is due to their physical strength's decline, which they cannot work the same way as before retirement, or reduction of wages by public pension, which is paid to them. However, the reduction of wages, if there is no convincing feeling for them, decline to be willing to work, and prevent them from working.

On the other hand, the permanent part timers are also increasing in young generation. Since their vocational capability is low, their wages are low. However, the opportunity for them to improve capability is restricted in the present workplace. If they perform self-education themselves, wages may go up, but there is no guarantee.

If elderly people and the permanent part timers are satisfied with the wage level to their work, we require that wage is reasonable and a mechanism to increase wages in accordance with the improvement of capabilities. It is a salary system which relates a wage structure to the salary according to work rather than to the type of employment (for example, a full-time employee, or permanent part timers). That is, according to equal pay for equal work. However, if we change the system, the consideration of measures to avoid drastic changes to people whose salary decreases (for example, gradual reduction of wages over the past few years, a grant of opportunity to receive vocational training in order to improve the capability), would be required.



- ① the employee of a career-track bureaucrat with a broad career
- ② the employee who have rather high skill , but hardly restricted by work
- ③ the employee whose work can be performed by alternative worker

## ②work-sharing

In Japan, the environment for the employment of working women during pregnancy or child care and elderly people is insufficient. Despite their willingness to work, they retire in many cases due to the physical burden by long working hours and childbirth. In response to the decline of the working population in the future, it would be necessary to promote employment of women and the elderly people.

Therefore, I think work-sharing (the various employment promotion type: Various service forms, such as working for a short time are accepted.) is effective in order to fulfill the needs of a company and them. In particular, I would like to propose the labor adjustment between the woman with child-rearing, elderly people, and the permanent part timers. It is a model which performs comparatively an easy work by constructing a team in which people with high vocational capability between them lead persons whose capability is low, and helping each other.

As a result, the following effects are expected.

- Women can work for a short-time, and are compatible in child-rearing and work. The woman who had retired in consideration of child-rearing at the time of marriage could keep on working from now on.
- Elderly people can make up for labor quantity which runs short by a woman's short-time service. In this case, elderly people can work for a short time, and would have little physical burden.
- As a secondary effect to work-sharing, bonds will deepen by helping each other through the adjustment of working hours. Moreover, it is expected that much mutual help appear in society, and society is becoming comfortable
- By working, the elderly people can get income and expand consumption. As a result, economy will grow.
- Since elderly people care about health in order to be employed, the effect which controls medical expenses and care cost is expected.

## ③Investment in new fields

Since large economic growth cannot be expected, it is difficult to secure employment of elderly people, women, and permanent part timers. In order to create jobs, it will be necessary to be offered a certain amount of support by nation, and work on the development of next-generation industry (for example, Food production increase technology, Alternative energy replaced with atomic power and fire power, The high-speed vehicle replaced with a car or an airplane, Technology of stopping global warming, Robot for nursing care, Accumulation-of-electricity system).

#### ④Utilization toward countermeasures to the falling birthrate

Upon entry into new fields which can be expected to grow in the future, employment of young talent with expertise might be useful. Utilizing a woman as such a talented person, would not be utilized as countermeasures to the falling birthrate? Concretely, it is a model which terminates the stage which requires much care in child-rearing while acquiring expertise at the graduate school.

Women take a lot of time by graduation if they bring up their children in school days. However, company will not mind employing them because they have professional expertise and there are few retirement risks by childbirth. Since students cannot earn money to bring up children, public support is needed, but understanding of public opinion would be obtained for the lead to the suppression of the decrease in the birth rate. Moreover, since the first child is born when young, it is expected that they will bear and bring up many children.

However, if an employment age is extended, can retirement age be pulled up? As a result, many companies can extend the retirement age to be 65 years old( in the future, 67years-old in view of going to the graduate school), although retirement age is 60 years old now.

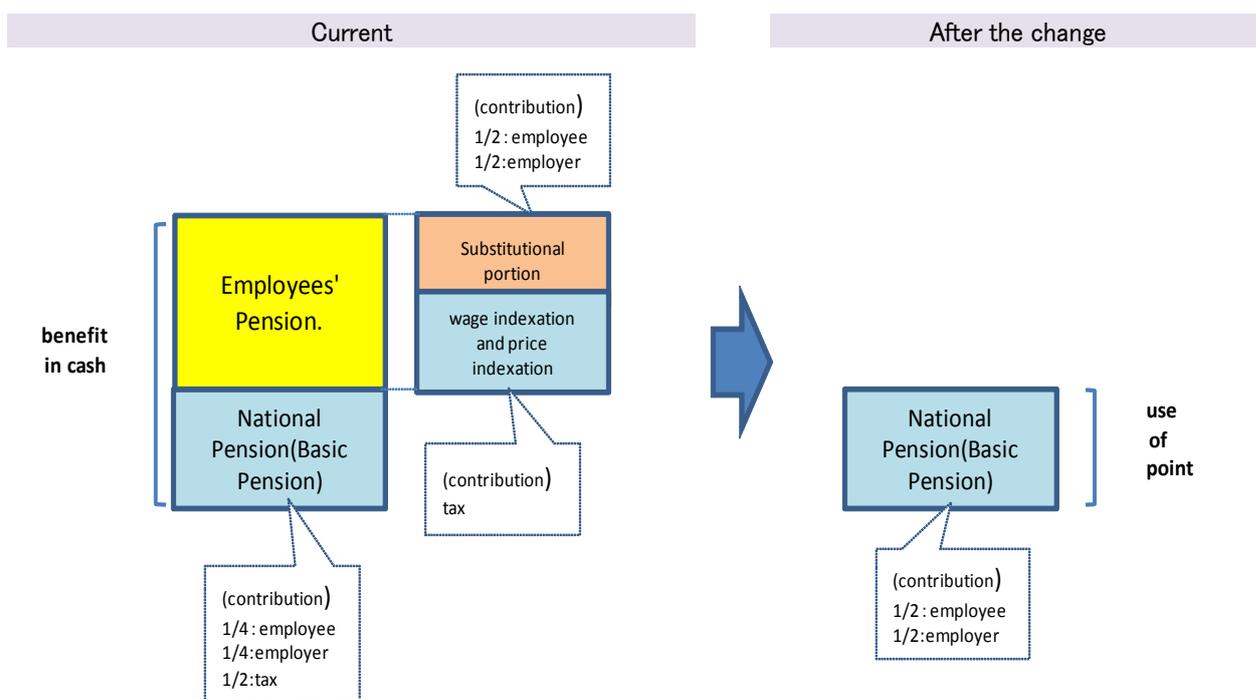
### 3.2 Pension plan

We suggest a point system as a future public pension plan corresponding to low birthrate and longevity. The point system is a mechanism which accumulates as a point the premium subscribed to the system during working, and it uses as living expenses of old age. In the system, we change the view to present pension system in Japan as follows.

➤ concept: giving money as pension ⇒ using point as living expenses (in view of continuation of system ※)

※ By setting the point balance to each, a member is shown that the paid premium is reflected in benefit, and the trust to the system is acquired. Moreover, an understanding about institutional continuation is obtained from the public by making benefit into the mechanism reflected in consumption (economic activity).

- position: mutual help between the generations ⇒ self-reliance (in view of public finance soundness)
  - However, a long-life risk is paid within the same generation.
- benefit level: generous benefit ⇒ minimum benefit which suits food, clothing and shelter(in view of public finance soundness)



●The outline of the point system

①Benefit levels

Benefit which united the Basic Pension and the Employees' pension for the office worker is a level which can cover living expenses (food, clothing and shelter, medical expenses, transportation expenses, communication charges, entertainment and social expenses, etc.). However, since elderly people will increase increasingly from this day forwards, it is difficult to continue the mutual help between generations. For this reason, although the present system is supported by the country, workers, and employer, we should reduce the burden of a country as much as possible from now on, and shift to the pension system based on the self-reliance supported by workers and employer. In order to control the rise level of a premium, and the obligation fees of a country, a benefit is reduced to the level which can cover the living expenses concerning food, clothing and shelter required to live. This level, shown for a company employee, almost equals to the level of benefits when you join the entire period of the Basic Pension and reduce benefits of the Employees' Pension (refer to 2.4②). In addition, the pension amounts vary depending on year price changes to maintain a substantial level for benefits.

## ②Benefit funds

With the transition to the system based on self-reliance, a financing method is changed into an advance funding method from the current modified pay-as-you-go method. Benefit funds are computed by multiplying life expectancy by the annual cost of food, clothing and shelter to the elderly people, and funds are provided by the premium and its investment income. In addition, the operation aims to earn the profit for a price fluctuation so that a substantial level of benefit can be maintained. Moreover, in accordance with point system shift, pensionable age is pulled up aiming at a limited government. It will be realizable for a company to continue employment to 67 years old by adopting the mechanism of the above 3.1, since law is enacted so that the elderly people can work up to the age of 65. By the way, benefits are computed by dividing the total point by the average life expectancy. This is because mutual help is adopted in the same generation to correspond to a longevity risk.

## ③The point balance

The sum of what converted the premium you subscribed into the point (1 yen = one point) and summed up it, and what allocated to you operational gains and losses occurred by summarizing your premium with funds of pension system and investing them in a market.

## ④Burden of the country

Aiming at limited government and lower the level of benefits, abolish the national subsidy<sup>6</sup> to the pension benefit.

## ⑤Mutual help

Although benefit funds are saved based on the advance funding method by self-reliance, the additional burden of a premium for exempt insurance and the extra benefit as countermeasures to the falling birthrate (the addition of the point to the delivery mentioned later), are taken as mutual help. This cost is reflected in the premium on the given assumption.

## ⑥The things in which this system excels the present system proportional to the total salary

(Employee)

Sense of reliability for receiving a pension is acquired by promising benefits that meet the premium paid by the advance funding method, and creating a mechanism to grasp the total benefits (point balance) in the future since you have entered the system.

(Plan)

- Since the point which was not used vanishes, margin occurs within the system.
- Since the transfer to a bank account is eliminated, the procedure of payment to beneficiaries in the system is simplified by use of electronic money.

(Economic)

Compared with a benefit by cash, since the money which is turning to neither savings nor

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<sup>6</sup> The rate of the national subsidy to the National Pension is 1/2 costs.

consumption turns to consumption, economy is activated.

#### ⑦ Transitional measure

• The current pension system is transferred to a closed-system, the vested benefit to the past period is continued in the current system.

- However, the current system is underfunded significant when evaluated in the advance funding method<sup>7</sup>. In order to maintain the vested benefits, it is required to increase about 15.5% of consumption tax in addition to the increase of 5% in the consumption tax rate which the government is advancing now. In addition, the increase of 15.5% in consumption tax rate will be implemented for 45 years in which replaced all current active participants.
- In addition, the point balance for active participants who will join the system at the time of migration is the total amount of contributions to the old system.
- Although pensionable age is pulled up to 67 years old in accordance with the shift to the new system, pensionable age of active participants who joins in the current system is made into the present 65 years old.

#### ● Details

##### ① Accumulation of point

The premium is set in view of covering the expense concerning elderly people's food, clothing and shelter. The premium which contributed makes 1 yen one point, and is added to the point balance.

##### Start time to accumulate (contribute)

*The time of becoming 22-years-old when is expected to graduate from university*

However, the person whose employment is earlier than 22-years-old, or later than it can adjust start time in accordance with the employment point in time.

##### End time to accumulate (contribute)

*The time of becoming 67-years-old*

The reason is why elderly people can work for a long period than ever before by adopting the mechanism of the above 3.1.

##### Premium after entry

A financial system is the similar unit funding method which set aside benefit funds according to the period by the present. Current year's premium is the difference between the point balance at the beginning of the year and benefit funds at the end of the year.

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<sup>7</sup> In the balance sheet of 2009, the Ministry of Health, Labor and Welfare announced that underfunding toward benefits to the past period is about 690 trillion yen under the given assumption.

The amount of premium at N years after entry

$$= \left\{ \frac{(\text{expense of the elderly people concerning the food, clothing and shelter of the previous year} \times (1+a)) \times \text{life expectancy} \times (1+\beta) \div (67 - \text{entry age}) \times N - (\text{the point balance at N-1 years after entry}) \right\} \times (1+\gamma)$$

$a$  : (After year N) inflation rate for the previous year

$\beta$  : future life expectancy predicted in N years after entry/ life expectancy in N years after entry

$\gamma$  : premium rate toward the necessary financial resources to support parenting and exempt insurance

Underlined part: benefit funds at the end of the year

#### supplement

*Pension benefit secures the substantial value which considered the price increase, and we assume that investment earns the profit according to a price increase rate. Therefore, the assumed interest rate and price increase rate on the premium calculation are set up equally. For this reason, by an above-mentioned formula, the price increase from N-year after to the time of a pension payout and the discount by the assumed interest rate from N-year after to the time of a pension payout are offset.*

The premium is split in the company and the active participants.

However, the premium is exempted when it is impossible to contribute a premium by either illness or unemployment. In addition, in the case of a homemaker, it is required for a husband and his employer to contribute a premium.

#### ② Use of point

##### Start time to use

*67 years old*

Grant the card with photo face at this point

##### End time to use

*Death*

##### Point which can be used in one year

*Amount of point which divides the point balance at the start of pension by the life expectancy equally*

In addition, point which remains in the given year can't transfer to the next year. It is important for elderly people to exhaust all the points assigned as a point for the year in view of checking the decrease in consumption due to population decline.

##### Object for use of a point

*Principle, food, clothing and shelter*

However, medical expenses, care expenses and cost of transportation is available.

③ Increase and decrease of the point balance

During premium

A) Increase according to the paid premium and its interest

B) Increase according to the number of children

(B) Provision for declining birth rate. By an increase of the number of children or give birth to a child at a young age under the age of 25, several percent to a premium is added to the point balance in changing the premium into the point. This addition is provided with a premium.

However, those who do not want to add this addition to the point balance can also receive a refund from the tax at the time of grant.

During receipt

*Increase or decrease according to a price fluctuation*

For example, if prices increase 1%, the point balance increases 1%. If prices fall 1%, the point balance decreases 1%.

		Current pension plan	Point system
Contribution	Period of payment	20~65	22~67
	Pensionary positioning	Mutual help	Self – reliance
	Payer	1/4: Employer 1/4: Employee 1/2: Tax	1/2: Employer 1/2: Employee
Benefit	Period of benefit/ Usable period of point	From 65 to death	From 67 to death
	Amount which can be used in one year	Benefit for one year	Amount which divide the point balance by the life expectancy equally
	Benefit form	Cash (Divided into a few times a year, a cash transfer to bank account)	Point (Divided into a few times a year, point is granted, depending on the number of months)
	What can be bought or used	Everything	Principle, food, clothing and shelter. However, medical expenses, care expenses, and cost of transportation is available.
	Measure to inflation or deflation	Change of benefit	Change of point balance according to a price fluctuation

● The effect of system change

In accordance with the change of the system, generating of a new shortfall would be controlled. For example, the past shortfall in funding is controlled by a consumption tax increase, and the shortfall toward the future would be controlled by an investment in a low risk which aimed only to maintain a

substantial level of benefits in the future. However, when this change is made, the present active participants are forced the double burden of the premium to refund of the unfunded liabilities for the past, and the premium to the savings for the future. Moreover, since the price fluctuation under savings and the increase of a life expectancy are included in the premium, the range of fluctuation to a premium is large. Then, we verified by setting a given premise, whether the change of the system can acquire an effect, even if we are forced a double burden, or whether the range of fluctuation of a premium can be permitted.

①double burden of the premium

According to the result of actuarial revaluation concerning the Employees' Pension in the 2009 fiscal year, the Ministry of Health, Labor and Welfare announced that underfunding toward benefits to the past period is about 690 trillion yen under the given assumption (Wage growth rate:2.1%, Price increase rate:1%, Yield on investment 4.1%). If we calculate on the premise that we provide the unfunded liabilities to the past period with increasing consumption tax for 45 years, its expense would be 30.9 trillion yen per year. On the other hand, the benefit for the future period is operated by a point system, and its expense would not be needed in fiscal year 45.

If the rate of a return is calculated as 3.2% equivalent to the actuarial revaluation in the 2004 fiscal year, in FY 45 would be 4.8 trillion yen. That is, the total cost of the new system in FY 45 on the latter premise, active participants (except company' burden) would be 35.7 trillion yen, and beneficiaries would be 30.9 trillion yen (15.5% in consumption tax rate). On the other hand, if the current system is continued, active participants (except company' burden) are ¥ 38.5 trillion, which totaled ¥ 28.5 trillion yen in premium in fiscal 2055 and ¥ 10 trillion tax increase (5% in consumption tax rate) which government currently promotes. Also beneficiaries are 10 trillion yen (5% in consumption tax rate).

Therefore, although there is a double burden for active participants by the shift to a new system, 2,800 billion yen decreases by the reduction in a benefit(cut of Employees' Pension) on the premise at 2004 actuarial revaluation. On the other hand, beneficiaries will receive the same benefits as ever by the transitional measures, but burden increases about 10% in consumption tax rate rather than maintaining the current system. Transition to the new system would be feasible by compressing consumption tax increase width by the extension of the amortization period, and considering of mitigation measures to drastic changes in beneficiaries.

( thousand yen)

	Price increase rate ( $\alpha$ )	Rate of return on plan assets for the balance point	Annual premium			Total premium	Point balance
			First year	20 fiscal year	45 fiscal year		
Case1	0.0%	0.0%	401	401	401	18,055	18,055
Case2	1.0%	1.0%	405	487	625	22,773	28,250
Case3	2.0%	2.0%	409	590	968	29,128	44,006
Case4	1.0%	3.2%	405	289	265	11,156	28,868
Case5	1.0%	4.1%	405	207	-222	6,331	29,125

【2004 Fiscal recalculation result / Ministry of Health, Labour and Welfare】  
 Wage growth rate: 2.10%  
 Price increase rate: 1.00%  
 Yield on investment: 3.20% (In 2009 fiscal recalculation, 4.1%)

②the range of fluctuation of the premium

The premium of the Basic Pension (National Pension) is about 15,000 yen now. By this change, we calculated how it would pull and go up. The following table is calculated by a given premise; Entry at the age of 22, withdrawal at the age of 67, annual cost of 660 thousand yen to take food, clothing and shelter of the elderly. Although the rise of the premium is large, it seems contribution is possible since the salary increase is expected by a price increase.

The comparison graph of the premium:

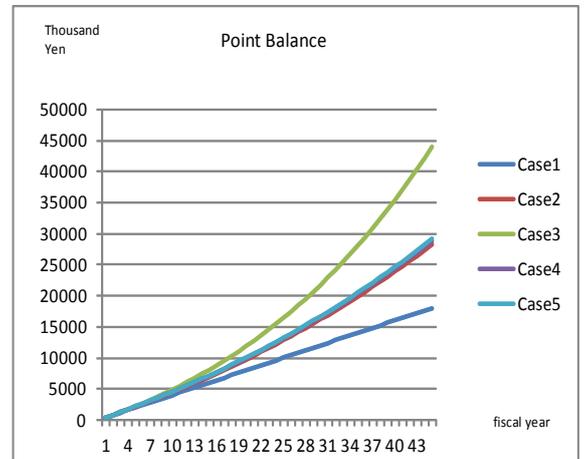
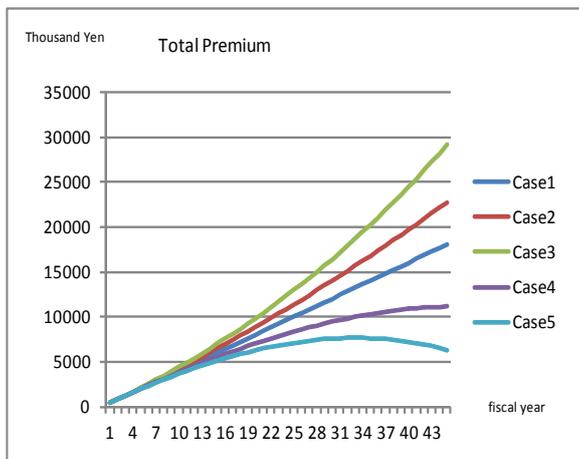
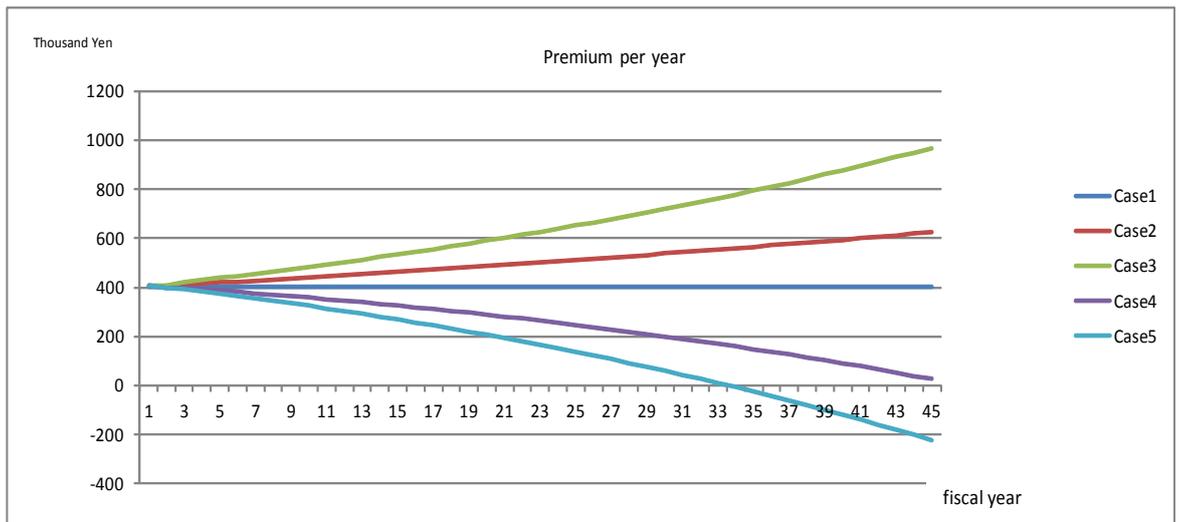
Refer to 『Premium per year』 of the following figures

The total premium to withdrawal:

Refer to 『Total premium』 of the following figures

The comparison graph of the point balance:

Refer to 『Point Balance』 of the following figures



## 4. Conclusion

In this paper, as a sustainable social security system in an aging society with fewer children, we suppose the reduction of a benefit and the introduction of the point system which active participants can pay the premium in comfort by an advance funding method. As 3.1 described, it seems that the reduction of benefit is realizable by building the structure which elderly people can work after retirement age and compensating reduction of a benefit by a salary. On the other hand, when shifts to a new system, the problem of the double burden of the premium generates in active participants. However, as a result of verifying in 3.2, the introduction of the point system is realizable because obligation decrease rather than continuing the current system and the premium is a subscribable level, although the premium increases by the increase of future price or the increase of a life expectancy.

Low birthrate and longevity continue to progress. As this measure, if this paper serves as an aid, I am pleased.

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