The impact and implication of the 2016 pension legislative revision in Japan

Kenji Kusakabe
Mizuho Trust & Banking Co.,Ltd.
1-17-7, Saga, Koto-ku, Tokyo 135-0031
E-mail: kenji.kusakabe@mizuhotb.co.jp

Abstract

Japan faces one of the most severe environments in the world for income security for the elderly (declining birthrate, aging population, low economic growth, and sluggish stock market). On the other hand, the desire to work and employment rate among the elderly are remarkably high among developed countries.

Under these circumstances, the 2016 pension legislative revision was implemented in order to complement public pension. In the field of public pension, the macroeconomic slide introduced in 2004 has started functioning effectively. In the future, the average replacement rate from public pension is expected to decrease from about 65% to about 50%. In the field of DB (defined benefit pension), new structures (risk-related premium, risk-sharing scheme) have been introduced. In the field of DC (defined contribution pension), the participation eligibility of individual-type DC has been expanded.

For this paper, we conducted simulations and developed a way to achieve income security for the elderly, considering aspects such as longevity risk and investment risk. The analysis confirms that the income for the late elderly (over 75 years old) should be covered with public pension and that the income for the early elderly (65 to 75 years old) should be covered with wages and private pension. Specifically, for longevity risk it is effective to raise the upper pensionable age for public pension to 75 years old (annual amount increases according to the age). In addition, it is important to defer parts of wages by utilizing DB and DC to maintain income level in the early elderly. To that end, it will be necessary to better educate Japanese citizens about social security. The new structures are effective for mitigating investment risks in DB. However, in order for these structures to become popular, additional measures for refunding of pension assets to employers are required.

Key word

income security for the elderly, public pension, DB, DC, risk sharing, refund, social security education

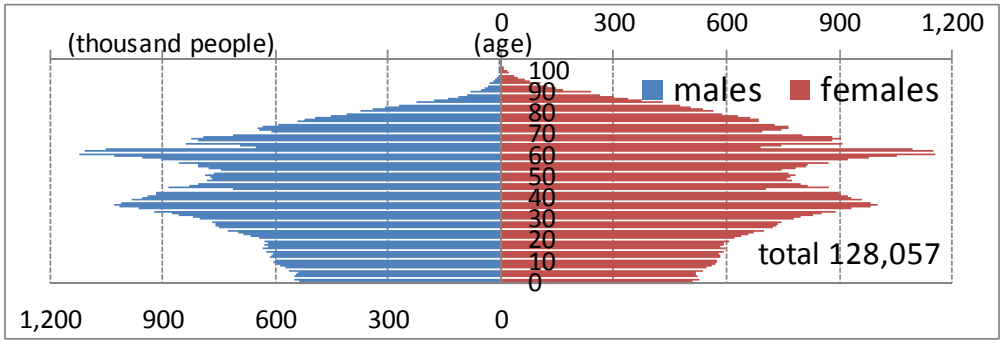
1. Introduction

(1) Population and change of age structure

The total population in Japan has changed from a state of increase to one of decrease, and the population will decrease over the long term. In 2010, the proportion of middle and older aged citizens is large. However, the age structure of 2060 will be an inverted triangle due to the prospect of a continued low birthrate.

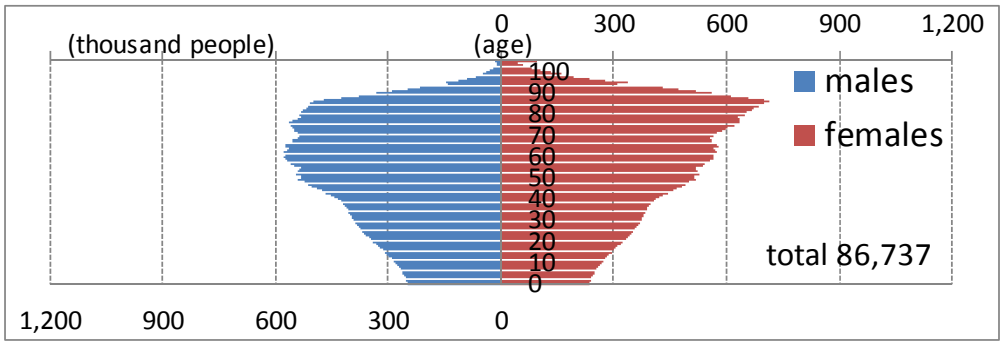
A significant feature is that the population over 65 years will increase and the population under 65 years will decrease despite the decline in total population over the next 50 years. Even if the birthrate remains higher, the percentage of the population over 65 years is expected to be 36.6%. The labor force population (15 to 65 years old) also decreases. In 2010, the ratio of working age males is 66% and the ratio for females is 62%. In 2060, the ratio for male will decrease to 54% and the ratio for females will decrease to 48%.

Fg.1 Japanese population (2010)



(Source: National Institute of Population and Social Security Research)

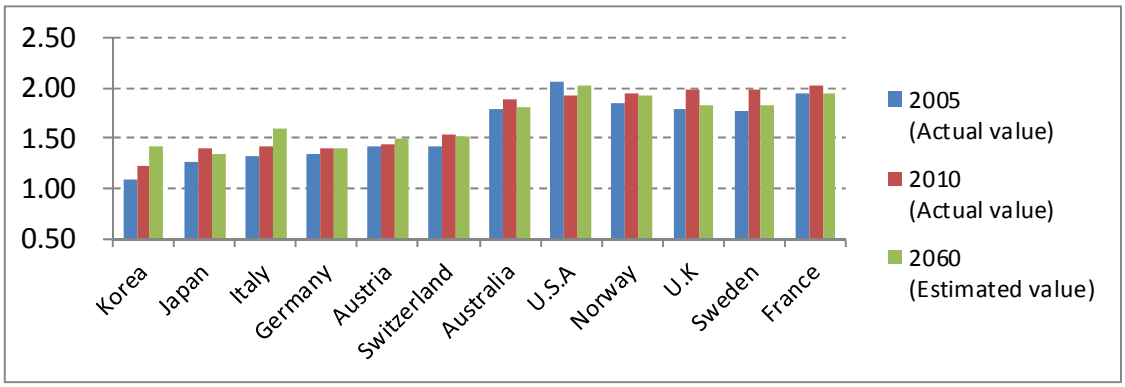
Fg.2 Japanese population (2060)



(Source: National Institute of Population and Social Security Research)

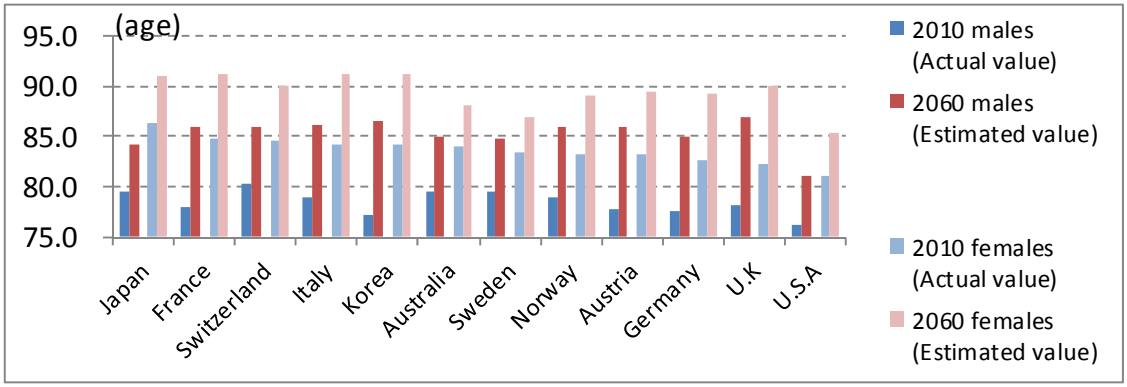
In Japan, the birthrate is expected to decrease whereas it is expected to increase in other countries. The average life expectancy is expected to increase to approximately 85 to 90 years. As a result, the estimate for the total population is extremely pessimistic. Japan will face unprecedented population decline and an aging society.

Fg.3 Birthrate



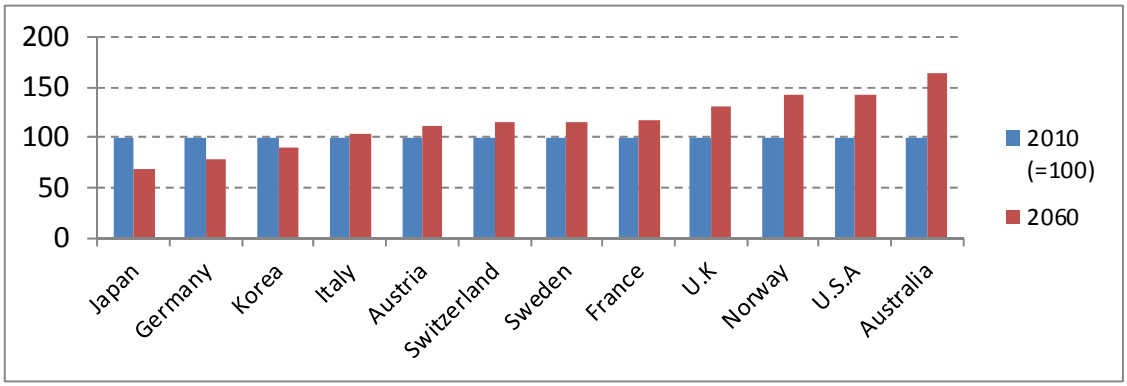
(Source: National Institute of Population and Social Security Research)

Fg.4 Average life expectancy



(Source: National Institute of Population and Social Security Research)

Fg.5 Total population



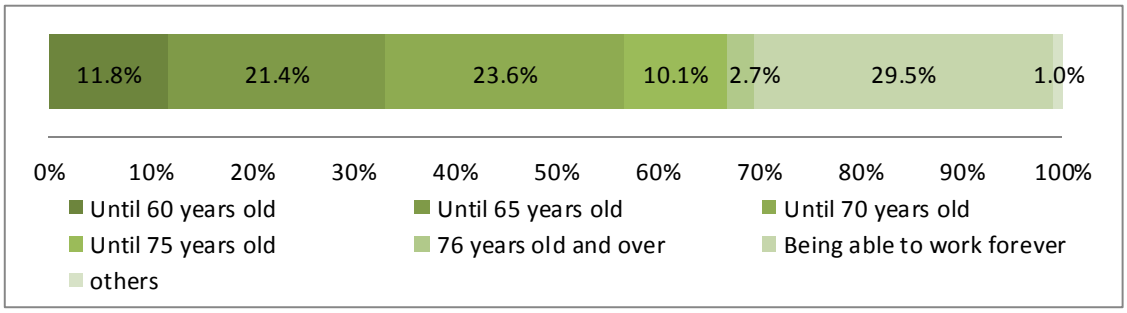
(Source: National Institute of Population and Social Security Research)

(2) Employment situation for the elderly

The aging of the population is progressing very rapidly, so society is faced with an unprecedented ratio of aging people in the near future. Under these circumstances, the elderly's motivation to work is very high. The percentage of those who wish to work up to 65 or over is approximately 90%.

The biggest factor is economic motivation to earn income to pay for living expenses. Also, there are many people who are willing to participate in society and to live for their work. The elderly tend to save a certain portion of their income due to uneasiness regarding their futures.

Fg.6 Work motivation for the elderly



(Source: Ministry of Health, Labor and Welfare)

Fg.7 Employment rate

Employment rate

		Japan	U.S.A	U.K	Germany	France	Italy	Sweden	Korea
Total	55 ～ 59 years	75.4%	68.1%	70.8%	74.9%	67.1%	57.7%	82.0%	68.1%
	60 ～ 64 years	57.7%	52.0%	45.3%	46.5%	21.7%	22.8%	64.4%	56.1%
	65 ～ 69 years	37.1%	29.9%	19.5%	11.1%	5.9%	8.0%	19.5%	42.5%
males	55 ～ 59 years	88.4%	73.0%	75.4%	80.7%	71.0%	69.7%	84.3%	82.5%
	60 ～ 64 years	71.3%	56.8%	55.3%	54.8%	23.7%	30.7%	68.6%	69.8%
	65 ～ 69 years	46.9%	34.7%	24.4%	14.4%	7.1%	12.6%	24.3%	54.4%
females	55 ～ 59 years	62.6%	63.6%	66.3%	69.3%	63.5%	46.3%	79.7%	53.9%
	60 ～ 64 years	44.5%	47.6%	35.8%	38.7%	19.9%	15.4%	60.2%	43.1%
	65 ～ 69 years	27.8%	25.7%	15.0%	8.1%	4.8%	3.8%	14.8%	32.6%

(Source: Ministry of Health, Labor and Welfare)

Fg.8 Savings and Liabilities

(dollar [at the rate of 110 yen to the U.S.dollar])

	savings			liabilities		
	50 ～ 59 years	60 ～ 69 years	70 years and over	50 ～ 59 years	60 ～ 69 years	70 years and over
2006	159,273	219,273	225,545	50,545	20,455	11,000
2007	154,273	224,909	220,545	54,000	20,091	8,182
2008	152,273	208,000	219,545	47,727	22,455	11,273
2009	151,818	200,182	214,636	48,091	18,273	10,545
2010	150,909	210,364	204,818	50,091	20,091	9,818
2011	144,364	214,818	201,000	50,091	20,545	8,182
2012	152,273	204,455	199,727	48,727	17,909	8,727
2013	145,000	216,818	216,818	55,182	18,545	8,455
2014	151,182	225,818	222,909	59,455	19,364	7,091
2015	159,182	218,364	217,182	58,636	17,818	7,545

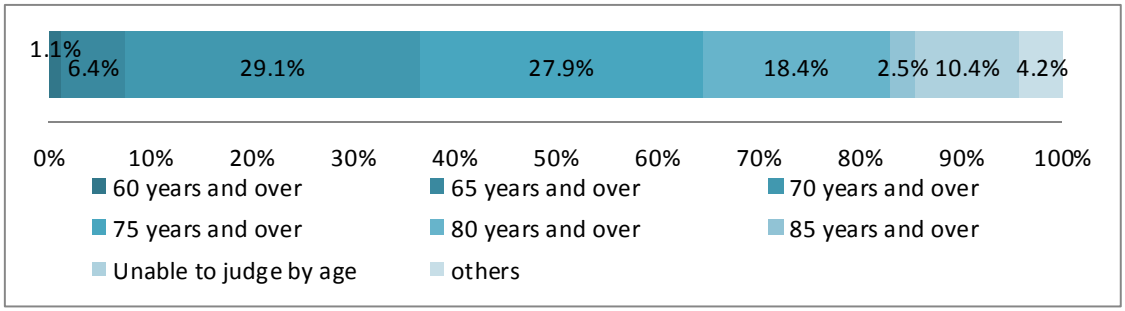
(Source: Ministry of Internal Affairs and Communications)

Currently, the government has improved the work environment so that the elderly can continue working until at least the standard pensionable age (65 years) of public pension. Companies must secure employment until the age of 65. However, it is common to review the work arrangement and the salary level after an employee reaches 60 years of age. Working hours decrease, but salary levels are often decreased to 50 to 70% of original levels.

In many countries, the definition of the elderly is over 65 years. However, there are still many active people, especially aged 65 to 70 years, in Japan. Considering the high level of work motivation and the growth of the elderly population, it is thought that employment rate will further increase if work environment is improved. Meanwhile, there is concern that maintenance of the work environment for the elderly will result in a job decrease for young people. In Japan, the ratio of young people is expected to decrease as mentioned above, so it is easy to justify improving the work environment for the elderly.

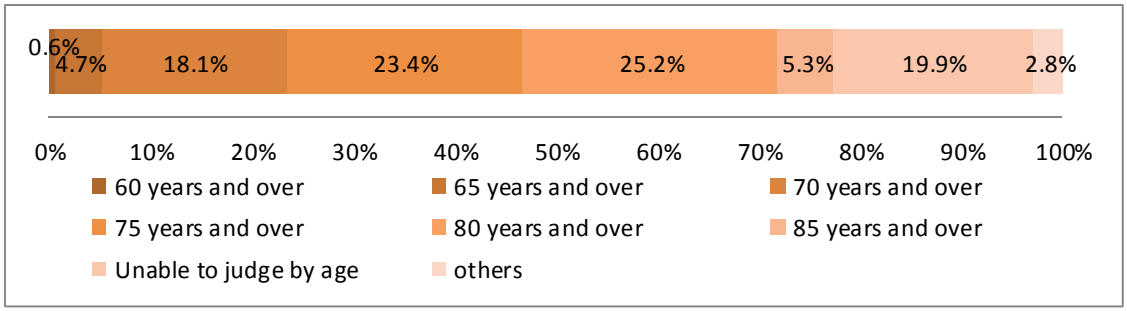
In this paper, 65 to 74 years are classified as “the early elderly”, and over 75 years are classified as “the late elderly”.

Fg.9 How old are "the elderly"?



(Source: Cabinet Office Survey)

Fg.10 How old are "the elderly who should be supported"?

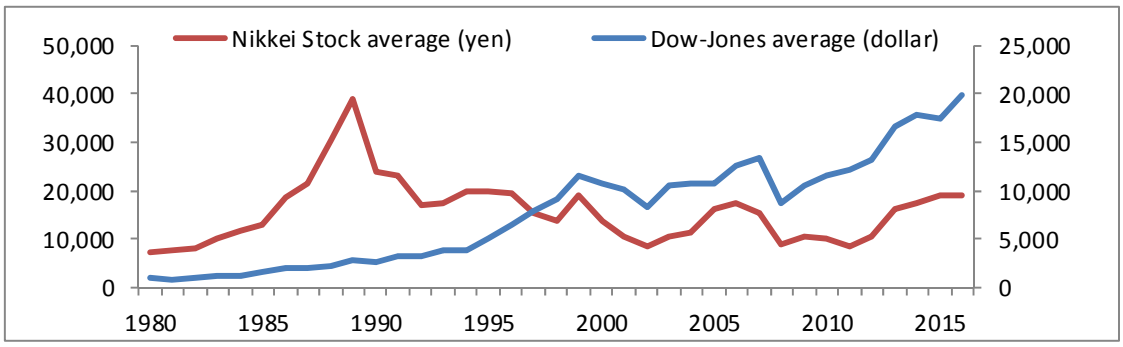


(Source: Cabinet Office Survey)

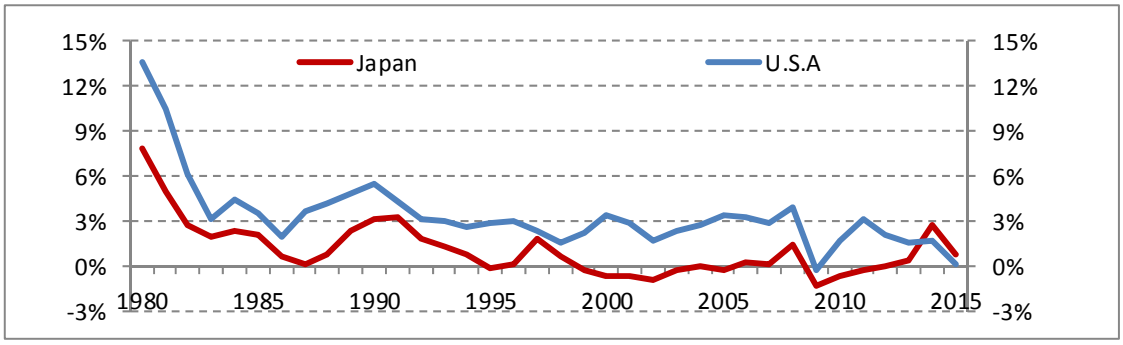
(3) Japanese market environment

Japanese economy has been sluggish for more than 20 years since the collapse of the bubble in the 1990s. Also, since the latter half of the 1990s, the inflation rate has declined. Long-term interest rates are on a downward trend, and after the introduction of the negative interest rate policy in February 2016, the government bond spot rate of about 10 years or less is negative.

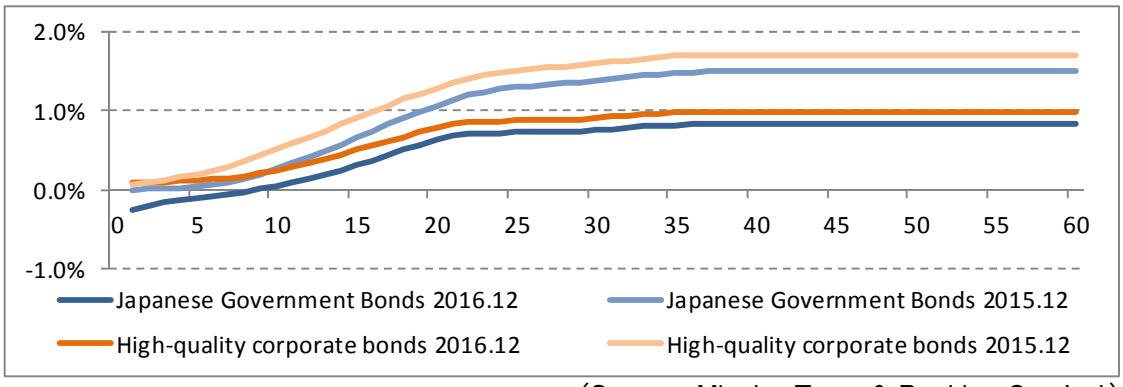
Fg.11 Stock market trend



Fg.12 Inflation rate trend



Fg.13 Yield curve in Japan



(Source: Mizuho Trust & Banking Co., Ltd.)

Many companies in Japan use the government bond spot rate as the discount rate used for retirement benefit obligations. Under such circumstances, two temporary measures about the discount rate have been recognized. The ideas are as follows:

- How to calculate at the negative rate
  The guidance on the accounting standards for retirement benefits stipulates that the discount rate should be determined based on yields of highly secure bonds. The negative discount rate determined based on the yield of government bonds traded at negative rates comply with the accounting standard.
- How to calculate at the zero rate corrected from the negative rate
  If companies hold cash the same amount as the benefits of future retirement and pension benefits, there is no shortage. Therefore, it is not necessary to recognize obligations beyond the amount.

Since companies are benefiting from the negative rate on the asset side, it is considered unbalanced to correct only the liability side. The Accounting Standards Board of Japan is currently holding discussions to clarify the treatment.

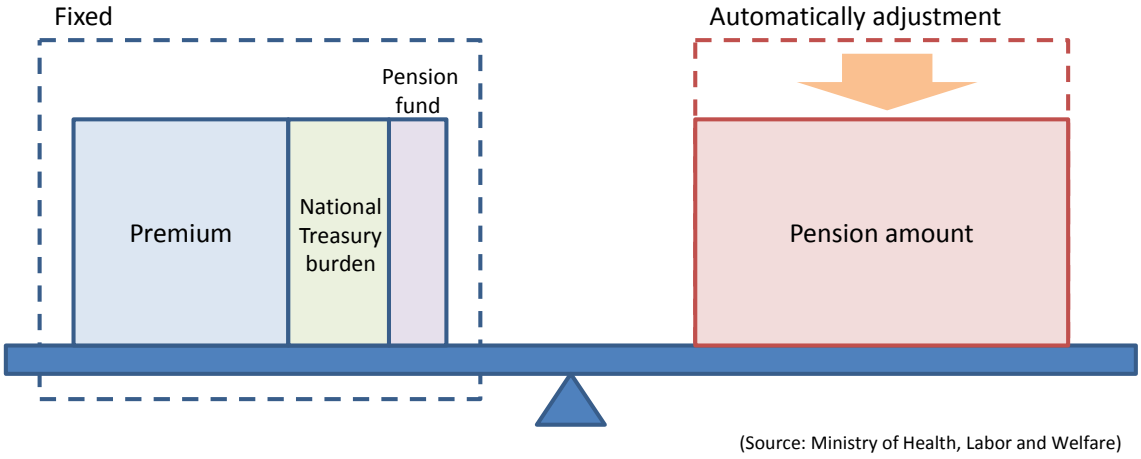
2. Public pension

(1) Introduction of pension fiscal scheme

Public pension is fundamentally managed in a pay-as-you-go fashion. The mechanism to automatically balance benefits and burden has been introduced in 2004.

Specifically, from the viewpoint of avoiding an excessive burden on future working generations, the premium level and the state burden have been fixed, and how to utilize the pension fund has been decided. Thus, the financial resource of the benefit has been fixed. Pension benefits are made within this resource. If premiums increase in accordance with wages and price increases, pension amounts will also increase. Meanwhile, in order to correspond to population decrease and longevity, the pension amount is automatically reduced. This adjustment is called the macroeconomic slide. This pension fiscal scheme has guaranteed the sustainability of public pension.

Fg.14 Pension financing scheme



(Source: Ministry of Health, Labor and Welfare)

- Increase of the premium (13.58% to 18.3%)
- Increase of the national treasury burden (1/3 to 1/2)
- Utilizing pension fund
- Introduction of the macroeconomic slide

(2) Completion of the pension fiscal scheme

The pension fiscal scheme is almost completed in 2016. Specifically, it is as follows:

- The increase in premium has been completed

  It has been increased stepwise (0.354% per year) from 2004 to 2017.

- The financial resource for the national treasury burden has been secured.

  The permanent financial source was secured by increasing the consumption tax (5% to 8%).

- The macroeconomic slide has been strengthened

  The unadjusted parts under the deflationary economy were eliminated in 2015. The precondition that macroeconomic slide works effectively was maintained.

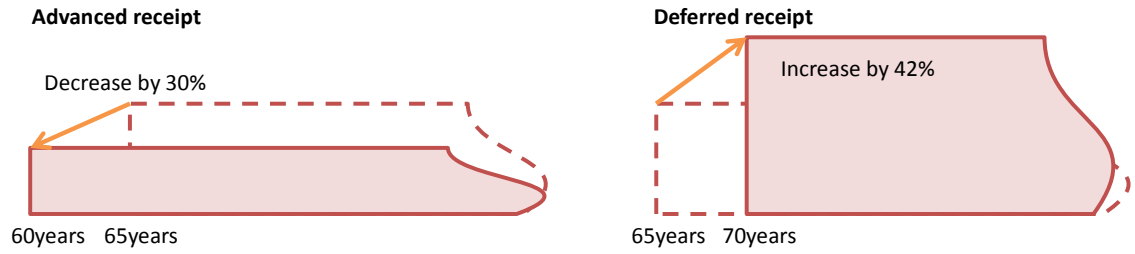
(3) Status of pensionable age selection system

In individuals, the pension amount increases in proportion to contributed premiums. When contributions are insufficient, the pension amount also decreases proportionally. But there is the mechanism that people can increase the pension amount by deferring the pensionable age.

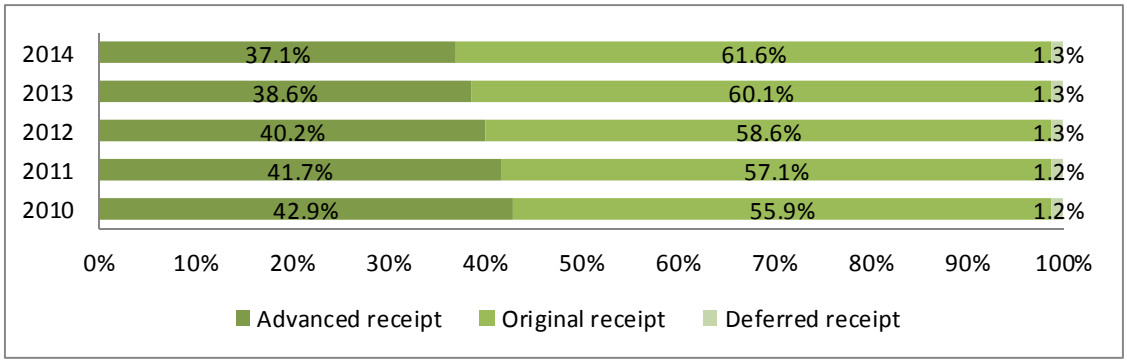
Specifically, in the case of deferred receipt, the pension amount increases (8.4% per year). In the case of advanced receipt, the pension amount decreases (6% per year). The standard pensionable age is 65 years.

There are very few people who select to defer the pensionable age. The proportion is about 1% in recent years. The main reason is considered to be "because people think that they can't live longer." However, in order to prepare for longevity risk, it is important to increase pension amount level by deferring as much as possible. In order for this system to become popular, enhancement of social security education including education on the pension system is an important issue.

Fg.15 Pensionable age selection system



Fg.16 Trend of selection



(Source: Ministry of Health, Labor and Welfare)

(4) Outlook for FY2014 financial verification

Financial verification is carried out once every five years. New prospects are created with the results of population and economics. Financial verification acts like a regular check on the state of the public. In the case where labor participation makes appropriate progress with sustainable economic growth, an income replacement ratio of 50% is secured. This result suggests that it is important to promote labor participation by women and elderly people in order to secure the labor force necessary for economic growth.

The sustainability and satisfaction of pension are generally in a trade-off relationship. In order to break this relationship and to increase either, it is necessary to increase resources by economic growth.

Fg.17 Projection of income replacement rate

		Economic situation assumption		Economic premise			Income replacement rate
		Labor force ratio	Total factor productivity growth rate	Inflation rate	Wage increase rate	Investment yield	
A	Cabinet Office "Economic recovery case"	Participation in the labor market progresses	1.8%	2.0%	4.3%	5.4%	50.9%
B			1.6%	1.8%	3.9%	5.1%	50.9%
C			1.4%	1.6%	3.4%	4.8%	51.0%
D			1.2%	1.4%	3.0%	4.5%	50.8%
E			1.0%	1.2%	2.5%	4.2%	50.6%
F	Cabinet Office "Reference case"	Participation in the labor market will not proceed	1.0%	1.2%	2.5%	4.0%	45.7%
G			0.7%	0.9%	1.9%	3.1%	42.0%
H			0.5%	0.6%	1.3%	2.3%	35～37%

(Source: Ministry of Health, Labor and Welfare)

3. Private pension

(1) Position of corporate pension

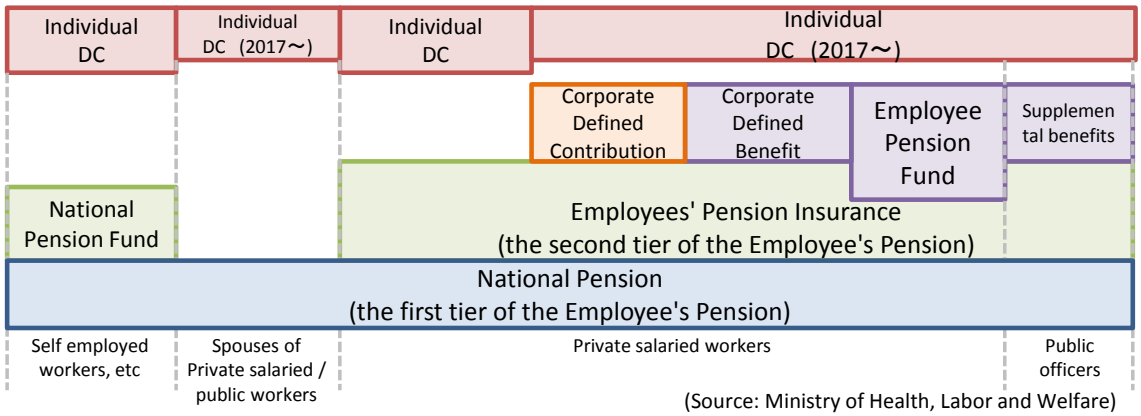
A characteristic of Japanese corporate pension is that the lump-sum retirement payment is the source of the corporate pension. When designing a DB system, a part of the lump-sum is generally shifted. When designing a DC system, a part of the lump-sum is generally separated. Also, many companies design fixed annuity. The reason is that when designing lifetime annuity, companies will owe the lifetime cost substantially.

Corporate pension plays a major role in income security for the elderly. In recent years, the socioeconomic situation and work environment has changed greatly, so a more flexible system has been in demand.

Since 2017, the participation eligibility of individual-type DC has been expanded, and the portability between pension institutions has been expanded. By this, all workers can basically join the pension system to prepare for when they reach elderly age. The development of a pension system corresponding to the diversification of life choices is proceeding.

Fg.18 General DB design, DC design

Fg.19 Pension system in Japan



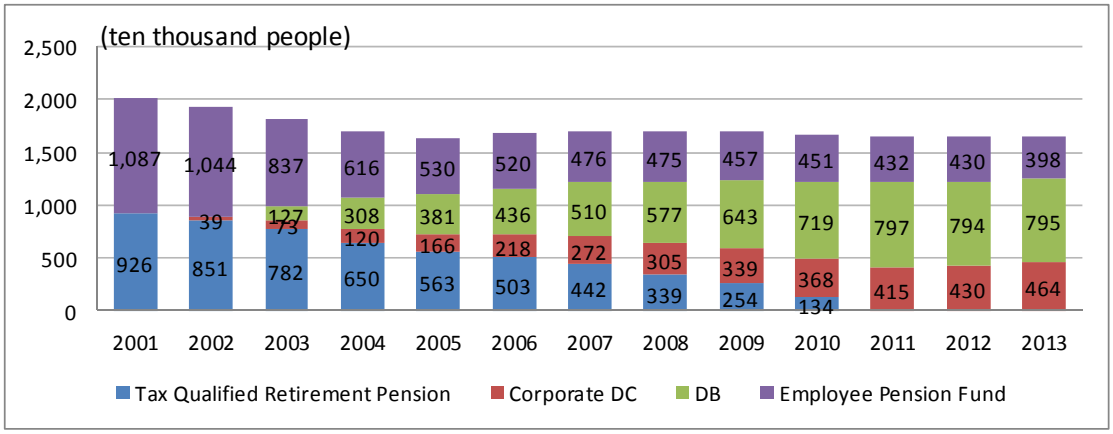
(Source: Ministry of Health, Labor and Welfare)

(2) Status of corporate pension

Previously, tax qualified retirement pensions and employee pension funds were the mainstream of corporate pension. Currently, tax qualified retirement pension has been abolished, employee pension funds were also principally abolished, and the transition to DB and DC is proceeding. The number of subscribers had been on a downward trend, but it has remained flat in recent years.

Although the coverage of corporate pension is low, the coverage of the retirement benefit plan is high. Many companies have secured certain levels of retirement benefits. In order to efficiently secure income security for the elderly, it is desirable to maintain and expand corporate pensions.

Fg.20 Number of subscribers



(Source: Ministry of Health, Labor and Welfare)

Fg.21 Retirement benefit system coverage

	Companies with retirement benefit plans				No system
		Lump-sum only	Pension only	Both systems	
total	75.5%	65.8%	11.6%	22.6%	24.5%
Over 1000 people	93.6%	23.0%	28.9%	48.1%	6.4%
300 ～ 999 people	89.4%	31.5%	27.2%	41.3%	10.6%
100 ～ 299 people	82.0%	56.0%	14.0%	30.0%	18.0%
30 ～ 99 people	72.0%	74.1%	8.6%	17.3%	28.0%

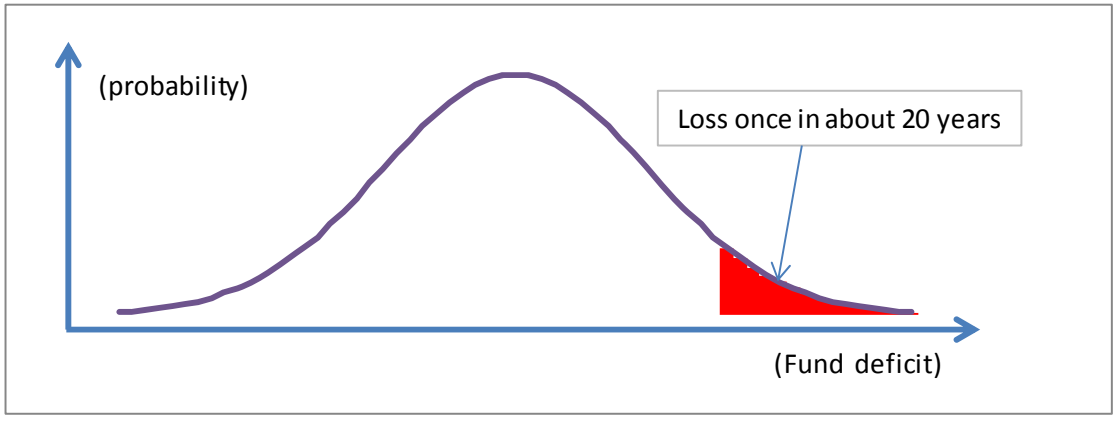
(Source: Ministry of Health, Labor and Welfare)

(3) First part of 2016 pension legislative revision on DB

In the current fiscal management, companies should make additional contributions when the financial situation deteriorates. Funding status is generally linked with economic fluctuations. As a result, companies are required to make additional contributions when the economy and corporate performance deteriorate. It hinders business activities. This was a problem from the viewpoint of steadily managing DB. Therefore, a structure to allow for contribution of "risk-related premium" in advance has been introduced so that companies will not be required to make additional contributions in a recessionary period. The company can choose whether or not to utilize this structure.

Specifically, we first define "financial-deterioration risk" as a criterion that companies can withstand losses once in about 20 years. Next, we set a "risk-related premium" based on this level. This structure means that companies will make extra contributions. In order for this structure to become popular, additional measures for refunding of pension assets to employers are required. As for the surplus fiscal-deterioration risk, the refunding mechanism under certain restrictions should be introduced.

Fg.22 Financial-deterioration risk

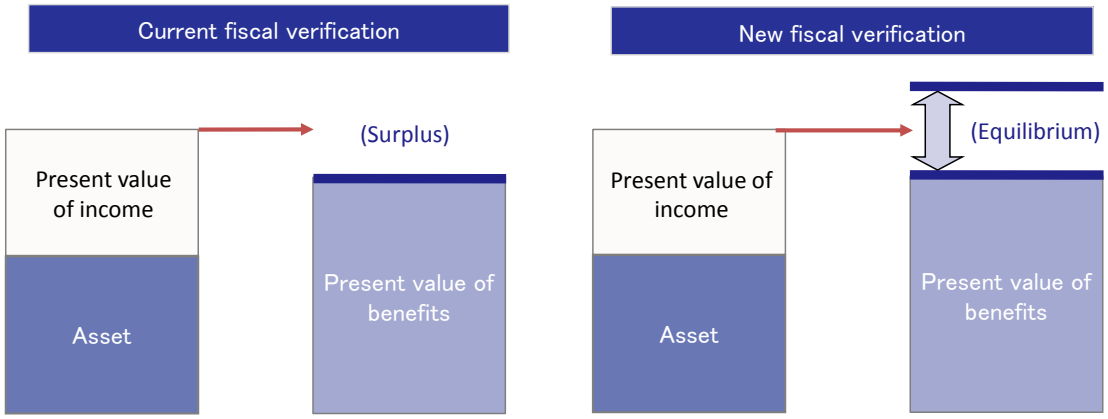


(4) Second part of 2016 pension legislative revision on DB

The definition of the actual reserve, which is the target reserve, has been changed. The debt obligations of asset management were included in the actual reserve. As a result, the actual reserve fluctuates according to the status of asset management and asset mix. Under new fiscal verification, it is regarded as equilibrium as long as it is within a certain range.

This can be evaluated as an effort to make DB more sustainable. However, it becomes more complicated to grasp financial conditions. Actuaries are required to carefully explain to customers about financial conditions.

Fg.23 DB fiscal verification



(5) Third part of 2016 pension legislative revision on DB

An intermediate scheme between DB and DC has been introduced, in which asset management risk is shared flexibly between employees and management. This is called risk-sharing scheme. In this scheme, premiums are fixed. If the financial condition is sufficient, benefits will increase. If the financial condition is insufficient, benefits will decrease. It has been basically classified as a defined contribution in accounting.

In DC, individuals manage their assets. In risk-sharing scheme, companies manage their assets. Therefore, it is possible to suppress the benefit disparity between employees with risk-sharing scheme. Few companies are actively considering introduction at the present time.

Fg.24 Benefit design

Benefit design	outline	Fluctuation of benefit	Guarantee of benefit
Traditional DB	Calculation method of benefit such as salary proportion and point system is predetermined.	No	Yes
Index linked DB (Cash balance plan)	Based on a certain contribution amount, the benefit amount is determined in conjunction with indicators (yields of government bonds etc.).	Yes	Yes
Performance linked DB (Cash balance plan)	Based on a certain contribution amount, the benefit amount is determined in conjunction with the actual result of the pension fund.	Yes	Yes
Risk-sharing DB	The benefit amount is determined based on the total amount of the predetermined contribution amount and its investment income. Benefit amount increases or decreases on a system basis.	Yes	No
DC	The benefit amount is determined based on the total amount of the predetermined contribution amount and its investment income. Benefit amount increases or decreases on an individual basis.	Yes	No

4. The way to achieve income security for the elderly

(1) Income for the late elderly

There is a limit to how much income can be achieved for the late elderly by corporate pensions and individual savings. It is effective to utilize public pension corresponding to inflation and longevity. By deferring, people can increase the pension amount at low cost. In order to further increase the pension amount, the options for the pensionable age of public pension should be further expanded.

Specifically, it is effective to expand the options for the pensionable age to 75 years. The increase rate based on actuarial present value rate is 49% (9.8% per year). In this case, the male mortality rate and the interest rate is 4% is used.

Fg.25 Increase rate (70 to 75 years)

Increase rate	Calculation process
49%	11.08796/(9.07541*(1.04)^5)-1

age	Actuarial present value rate (Life annuity)
60	14.34213
65	12.96866
70	11.08796
75	9.07541

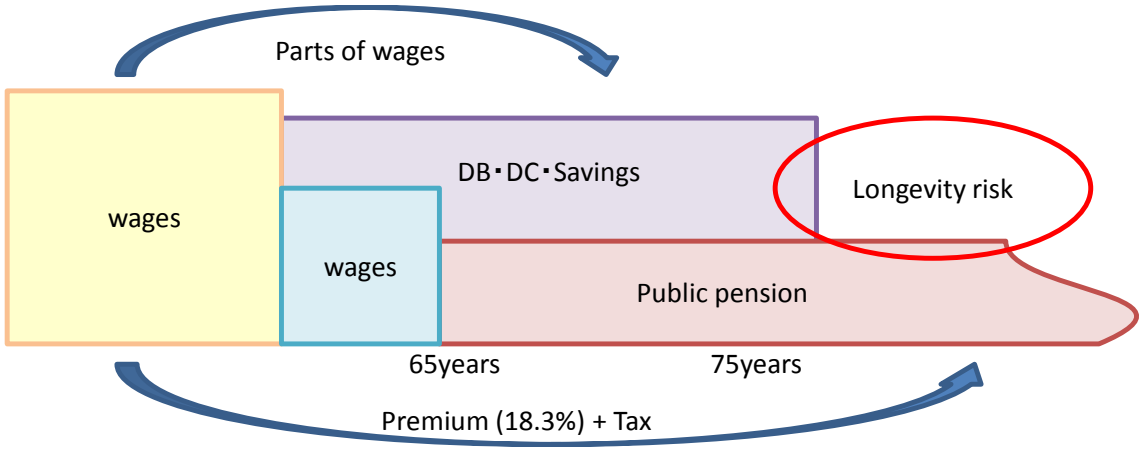
Extension of the contribution period is also effective for increasing the pension amount. Since the pension amount is proportional to the premium, if the current contribution period of 40 years (20 to 60 years of age) is extended to 45 years (20 to 65 years of age), it is roughly 1.125 times (45 ÷ 40). However, extending the contribution period will increase the national treasury burden, so it is considered difficult to introduce.

(2) Income for the early elderly

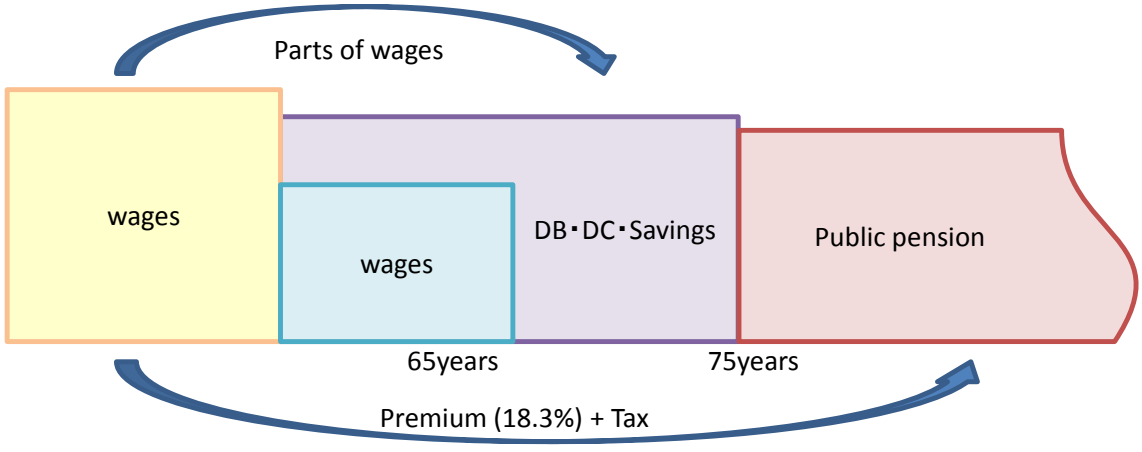
When achieving income for the late elderly by public pension, how to achieve income for the early elderly becomes an issue. It is necessary to combine wages, savings and private pensions according to individuals' employment situations. It is important to effectively defer parts of wages by using DB and DC with tax incentives. If individuals systematically save from a young age, the burden per year is alleviated.

Conventionally, the roles of DB and DC are said to be an addition to income for the elderly. In the future, as the longevity risk increases, DB and DC should play a role of achieving income for the early elderly.

Fg.26 Conventional role



Fg.27 Future role



For companies with DB, one option is to utilize the existing DB. Therefore, under the new financial verification, we verified the effect of risk-rated premium, using the existing DB as a model. The main premises of the simulation are as follows.

- Assume interest rate is 2.5%
- Conduct Monte Carlo simulation for pension assets
- Set up risk-related premium or not

As the result, if risk-rated premium is set, the insufficiency situation hardly occurs in the next five years. The company can stably manage DB. The actual reserve varies depending on the pension asset in the new fiscal verification. Therefore, it is difficult to generate surpluses. Recalculating the fiscal deterioration risk by actuarial review is also a factor of fluctuation in actual reserve.

Companies may secure a certain level of risk buffer with high probability by setting a risk-rated premium. However, excessive surplus will occur if asset management is performing well. In order for companies to positively set risk-rated premium, it is necessary to develop a mechanism to return this excess surplus. For example, it is conceivable that a portion where the funding ratio after actuarial review exceeds 1.0 is defined as an excessive surplus and divided and returned in five years.

Fg.28 New fiscal verification (risk-related premium)

		FY2015 financial result	FY2015 actuarial review	FY2016 financial result	FY2017 financial result	FY2018 financial result	FY2019 financial result	FY2020 financial result	FY2020 actuarial review
Asset	5th percentile	467	467	553	615	679	730	768	768
	25th percentile	467	467	527	578	632	671	698	698
	50th percentile	467	467	513	554	597	634	651	651
	75th percentile	467	467	498	530	563	598	606	606
	95th percentile	467	467	473	496	523	546	549	549
Actuarial Reserve	5th percentile	438	467	507	551	597	640	639	719
	25th percentile	438	467	507	551	597	640	639	698
	50th percentile	438	467	507	551	597	634	639	651
	75th percentile	438	467	498	530	563	598	604	606
	95th percentile	438	467	473	496	523	547	547	565
Funding ratio	5th percentile	1.06	1.00	1.08	1.11	1.13	1.14	1.20	1.06
	25th percentile	1.06	1.00	1.03	1.04	1.05	1.04	1.09	1.00
	50th percentile	1.06	1.00	1.01	1.00	1.00	1.00	1.01	1.00
	75th percentile	1.06	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	95th percentile	1.06	1.00	1.00	1.00	1.00	0.99	1.00	0.97

Fg.29 Current fiscal verification (risk-related premium)

		FY2015 financial result	FY2015 actuarial review	FY2016 financial result	FY2017 financial result	FY2018 financial result	FY2019 financial result	FY2020 financial result	FY2020 actuarial review
Actuarial Reserve		438	438	480	521	565	602	617	617
Funding ratio	5th percentile	1.06	1.06	1.15	1.18	1.20	1.21	1.24	1.24
	25th percentile	1.06	1.06	1.09	1.10	1.11	1.11	1.13	1.13
	50th percentile	1.06	1.06	1.06	1.06	1.05	1.05	1.05	1.05
	75th percentile	1.06	1.06	1.03	1.01	0.99	0.99	0.98	0.98
	95th percentile	1.06	1.06	0.98	0.95	0.92	0.90	0.88	0.88

Fg.30 New fiscal verification (no risk-related premium)

		FY2015 financial result	FY2015 actuarial review	FY2016 financial result	FY2017 financial result	FY2018 financial result	FY2019 financial result	FY2020 financial result	FY2020 actuarial review
Asset	5th percentile	467	467	553	611	670	717	748	748
	25th percentile	467	467	527	573	623	658	680	680
	50th percentile	467	467	513	550	588	621	633	633
	75th percentile	467	467	498	526	555	585	589	589
	95th percentile	467	467	473	492	514	533	532	532
Actuarial Reserve	5th percentile	438	467	553	611	658	695	694	748
	25th percentile	438	467	527	573	623	658	678	680
	50th percentile	438	467	513	550	588	621	632	633
	75th percentile	438	467	498	526	565	602	600	617
	95th percentile	438	467	480	521	565	602	600	617
Funding ratio	5th percentile	1.06	1.00	1.00	1.00	1.01	1.03	1.07	1.00
	25th percentile	1.06	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	50th percentile	1.06	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	75th percentile	1.06	1.00	1.00	1.00	0.98	0.97	0.98	0.95
	95th percentile	1.06	1.00	0.98	0.94	0.91	0.88	0.88	0.86

Fg.31 Current fiscal verification (no risk-related premium)

		FY2015 financial result	FY2015 actuarial review	FY2016 financial result	FY2017 financial result	FY2018 financial result	FY2019 financial result	FY2020 financial result	FY2020 actuarial review
Actuarial Reserve		438	438	480	521	565	602	617	617
Funding ratio	5th percentile	1.06	1.06	1.15	1.17	1.18	1.19	1.21	1.21
	25th percentile	1.06	1.06	1.09	1.09	1.10	1.09	1.10	1.10
	50th percentile	1.06	1.06	1.06	1.05	1.04	1.03	1.02	1.02
	75th percentile	1.06	1.06	1.03	1.00	0.98	0.97	0.95	0.95
	95th percentile	1.06	1.06	0.98	0.94	0.91	0.88	0.86	0.86

5. Conclusion

The income for the late elderly (over 75 years old) should be covered with public pension and the income for the early elderly (65 to 75 years old) should be covered with wages and private pension.

Specifically, for longevity risk it is effective to raise the upper pensionable age for public pension to 75 years old (annual amount increases according to the age). In addition, it is important to defer parts of wages by utilizing DB and DC to maintain income level in the early elderly. To that end, it will be necessary to better educate Japanese citizens about social security.

The new structures are effective for mitigating investment risks in DB. However, in order for these structures to become popular, additional measures for refunding of pension assets to employers are required.