Peer Review of the 2014 Actuarial Valuation of Public Pension Plans Summary

Chapter 1   Results of the 2014 actuarial valuation of public pension plans

(1)   Peer Review of actuarial valuation of Public Pension Plans by the Actuarial Subcommittee

This report outlines the peer review[1] of the 2014 actuarial valuation of Public Pension Plans. In response to the request made in accordance with the 2001 Cabinet decision pertaining to the unification of public pension plans, the Actuarial Subcommittee conducted the review of the actuarial valuation in order to ensure the stability and equitableness of employee pension plans. As financial situations of employee pension plans are affected by the financial situation of the National Pension (NP) through the Basic Pension (BP) System that is applied commonly to all Japan's residents, we review the 2014 actuarial valuation of all public pension plans including NP are subject to assessment.

(2)   Summary of the results of the 2014 actuarial valuation

In the 2014 actuarial valuation, eight scenarios, Scenarios A-H, are shown in parallel.

In this report, Scenarios C, E and G are shown as examples[2]. According to the financial project of the Employees' Pension Insurance (EPI), the figures for the replacement rate after the adjustment of benefit levels through macroeconomic indexation, the end year of adjustment of benefit levels (the earnings-related portion) and the end year of adjustment of benefit levels

Figure   Replacement rate (after adjustment of benefit levels) and end years of the adjustment of benefit levels for a standard pension under EPI

	Scenario C	Scenario E	Scenario G
Replacement rate (after adjustment of benefit levels)	51.0 %	50.6 %	42.0 %
Earnings-related portion	25.0	24.5	21.9
Basic Pension (BP) portion	26.0	26.0	20.1
End year of adjustment of benefit levels	Fiscal year 2043	Fiscal year 2043	Fiscal year 2058
Earnings-related portion	2018	2020	2031
Basic Pension (BP) portion	2043	2043	2058

Note 1: The above is based on medium-variant birthrate and medium-variant mortality rate.

Note 2: With regard to Scenario G, the figures indicate projections in the case where the adjustment of benefit levels is made automatically until the benefits and premium contribution have become balanced.

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[1]   Peer review means the evaluation of work by other professionals in the same field.

[2]   Although only Scenarios C, E and G are shown as examples here, this is not intended to indicate that we position these scenarios as basic or standard scenarios of the 2014 actuarial valuation.

(BP portion) for Scenario C are 51.0%, FY2018 and FY2043; those for Scenario E are 50.6%, FY2020 and FY2043; and those for Scenario G are 42.0%, FY2031 and FY2058[3], respectively.

Chapter 2 Review of frameworks for public pension finances and actuarial valuation

The 2014 actuarial valuations were conducted for all plans on the premise of the enforcement of the employee pension plan unification act in October 2015 in accordance with the relevant laws, regulations and so forth.

The purpose of the actuarial valuations of EPI and NP is to conduct reviews of the financial viability of the pension systems by examining:

• whether the equilibrium of the long term revenue/expenditure balance is promoted (sustainability); and

• the end years of the adjustment of benefit levels and projections for future benefit levels (adequacy of benefits);

and by formulating a projection for pension finances in light of the latest population and socioeconomic situation.

The purpose of the actuarial valuation of the National Public Service Personnel Mutual Aid Association (NPSP), Local Public Service Personnel Mutual Aid Association (LPSP) and Mutual Aid Corporation for Private School Personnel (PSP) is to calculate the contribution rates for the period until the employee pension plans are unified.

In accordance with the above, the financial projections until 2110 have been formulated for EPI and NP, while the financial projections from October 2015 onward have been formulated for tier 1 portion and tier 2 portion and the former occupational portion of the NPSP, LPSP and PSP. In addition, the financial projection of PSP includes reduced premiums for tier 1 portion and tier 2 portion.

Chapter 3 Review of implementation scheme for actuarial valuation

With regard to the implementation scheme for the actuarial valuation of the pension plans, it was pointed out that the scheme is smaller in terms of scale compared to those of other countries. Considering that the amount of work has increased significantly this time, due primarily to increased economic premises of the scenarios and response to tentative calculations based on optional premises, we request that due attention be paid to enhancing systems that allow the performance of adequate reviews and work and improvement of the competencies of the officers in charge of actuarial valuation.

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[3] These figures represent projections in the case where the adjustment of benefit levels is undertaken automatically until the benefits and premium contribution have become balanced.

Chapter 4   Review of the method of future projections in actuarial valuation

In the conventional actuarial valuation, there have been some inconsistencies, when considering the public pension plans as a whole, in the future projections for the number of insured persons in mutual aid pension plans and the number of their dependent spouses who are Category 3 insured persons in NP, between estimations made by the mutual aid systems and estimations derived from reviews of NP finances by the Ministry of Health, Labour and Welfare. In the 2014 actuarial valuation, a new policy was adopted to create a unified estimation for the financial projection for the portion up to EPI on the premise of the unification of employee pension plans and through cooperative work between the Ministry of Health, Labour and Welfare and mutual aid systems. As a result, differences in the type and form of base initial data and actuarial assumptions that had been seen in the conventional actuarial valuation pertaining to employee pension plans have almost disappeared.

Chapter 5   Analysis of results of actuarial valuation and analysis and review of appropriateness of how results of actuarial valuation are expressed

In the 2014 actuarial valuation of EPI and NP, eight scenarios, Scenarios A-H, are presented based on the fundamental approach of providing grounds for various discussions on the sustainability of the pension systems and potential measures for securing benefit levels, by indicating results based on a wide range of economic premises. The intent of the above itself can be highly evaluated in light of the necessity of reviewing future directions from various possibilities and contributing to discussions on plan revisions.

However, the results of the eight scenarios are treated in parallel, and there is concern that this way of expressing the results may preclude any judgment regarding the end years of adjustment of benefit levels through the macroeconomic indexation. As determining the end years of adjustment of benefit levels is one of the most important objectives of the actuarial valuation , we request that further development and improvement be reviewed regarding how the results should be expressed.

With regard to the information disclosure of the results of the actuarial valuations, it is considered that ordinary insured persons (members and enrollees of employee pension plans) have not necessarily understood such results to the fullest. We request that all the plans further their review and efforts regarding the methods, etc. of information disclosure.

Chapter 6   Comparison with the previous actuarial valuation

Comparing the projections for the number of insured persons with those shown in the previous actuarial valuation, the number of insured persons under the former EPI is higher in the 2014 actuarial valuation in the scenario where labor force participation increases, while the number of

insured persons is lower in the scenario where labor force participation does not increase. In the same comparison for the NPSP, LPSP and PSP, the estimated numbers of insured persons are higher than those shown in the previous actuarial valuation for all three mutual aid pension systems.

Comparing the projections for the number of beneficiaries of EPI (old-age pensions with long contribution periods)[4] with those shown in the previous actuarial valuation, the gap in the number of beneficiaries between the scenario where labor force participation increases and the scenario where labor force participation does not increase starts to widen in FY2030. In the scenario where labor force participation does not increase, the number of beneficiaries will remain at a level slightly lower than that shown in the previous actuarial valuation until FY2075. Under the Old-Age BP, the number of beneficiaries will remain at a level slightly lower than that shown in the previous actuarial valuation, and is estimated to be about 5 percentage points lower than the figure shown in the previous actuarial valuation in FY2075. However, the number is projected to edge closer to the level shown in the previous actuarial valuation in and after FY2075.

Chapter 7   Analysis and review of stability of public pension plans

(1)   Standpoint for analysis and review of the stability of public pension plans

With a view to the unification of employee pension plans, etc., we adopted a new policy with regard to the analysis and review of the stability of the public pension plans to firstly redefine the stability of the public pension plans as follows:

"Both the sustainability and adequacy of pension benefits are to be maintained in the future."

We then conduct an analysis and review of the stability by paying particular attention to the following points:

- It should be ensured that each implementation organization can provide payments of pension benefits without the depletion of reserves in the future.
- With regard to the stability of EPI, the stability of NP that determines the benefit levels of BP should be ensured at the same time.

(2)   Analysis and review of the stability of EPI and NP

(i)   Analysis and review of the stability in terms of benefit levels

With regard to the analysis and review of the stability of benefit levels, we first analyzed and reviewed the adequacy of benefit payments using the replacement rate for a standard pension under EPI. We included the comparison of the replacement rate based on different economic

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4   Projections of the number of beneficiaries of EPI after the unification of the employee pension plans are compared with the total number of beneficiaries of the former EPI and mutual aid plans shown in the previous actuarial valuation.

premises as one of the assessment factors for the stability of benefit levels.

The replacement rate for a standard pension under EPI was 62.7% in FY2014. Under Scenarios A to E, the replacement rate is projected to be above 50% when adjustments of benefit levels through macroeconomic indexation end in FY2043 or FY2044, while under Scenarios F, G and H, the rate is expected to be below 50%[5].

Adjustments of benefit levels of about 30% are projected to be required for BP portion of EPI under Scenarios A to E, while adjustments of slightly below 40% and about 45% are estimated to be required under Scenarios F and G, respectively.

On the other hand, adjustments of benefit levels of about 5% are projected to be required for the earnings-related portion under Scenarios A to E, while adjustments of slightly above 10% and about 15% are estimated to be required under Scenarios F and G, respectively. Adjustments required for the earnings-related portion are less than those required for BP portion.

This means that the degree of the reduction in benefits due to adjustment of benefit levels is greater for persons eligible for only BP benefit payments than it is for persons eligible for a standard pension under EPI.

Meanwhile, under Scenarios C and E, the end years of adjustment of benefit levels for BP portion are projected to be five years later than those shown in the 2009 actuarial valuation and more than 20 years later than that shown in the 2004 actuarial valuation. Under Scenario G, such end year is estimated to be 20 years later than that shown in the 2009 actuarial valuation. The replacement rate after the adjustment of benefit levels is projected to decline 0.7 percentage point in Scenarios C and E and 6.6 percentage points in Scenario G, compared to the relevant figures shown in the 2009 actuarial valuation.

With regard to the earnings-related portion, the end year of adjustment of benefit levels is estimated to come earlier in Scenario C than that shown in the 2009 actuarial valuation , while the replacement rates after adjustment of benefit levels are projected to rise 1.6 percentage points in Scenario C and 1.2 percentage points in Scenario E, respectively. In Scenario G, the replacement rate after adjustment of benefit levels is also higher than that shown in the 2004 actuarial valuation.

In accordance with the above, with regard to BP portion, the end years of adjustment of benefit levels become later and benefit levels decline with each actuarial valuation.

Consequently, at least the stability of the benefit levels under NP is lower than that under EPI.

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[5]   Projections shown here for the replacement rate in Scenarios F, G and H are based on the case where the benefit has automatically been adjusted, even after the replacement rate declines to a level below 50%, until the benefits and premium contribution have become balanced. In Scenario H, as it is estimated that, even if the benefit levels continue to be automatically adjusted, NP runs out of reserve fund in FY2055, which will lead to a complete pay-as-you-go method, the replacement rate for a standard pension for FY2056 and onward is not indicated.

(ii) Analysis and review of stability based on actuarial indices

The pension support ratios[6] are expected to become flat, at about 1.1, for both EPI and BP, starting around FY2080 and FY2070, respectively. This means that one old-age pension beneficiary will be supported by 1.1 insured persons.

Below, we will look at Scenarios C, E and G.

The comprehensive cost rates[7] of EPI in Scenarios C, E and G will maintain a downward trend until around FY2030 due to effects of the raising of the pensionable age for the earnings-related portion and adjustments of benefit levels through macroeconomic indexation. Subsequently, the comprehensive cost rate will rise by around FY2075 and remain generally flat thereafter, at slightly higher than 24%, under Scenarios C and E, while the rate will rise to around 22% by FY2080 and remain generally flat thereafter in Scenario G[8]. The independent benefit cost rate[9] of EPI shows a similar trend to those in the comprehensive cost rate in Scenarios C, E and G.

The expenditure/revenue ratio[10] of EPI will be over 120% in FY2110, which will be the final year of the period of financial equilibrium in Scenarios C and E. This means that more than 20% of expenditures must be met by using reserves. The expenditure/revenue ratio of NP will also be slightly less than 120% in FY2110 under Scenarios C and E, which means that slightly less than 20% of expenditures must be met by using reserves. Under Scenario G, the ratio is below 100%, which means that self-funding needs can be met by using revenues from contributions and investment income even after the end of the period of financial equilibrium.

(iii) Reserve level

Public pension finances are managed on the basis of pay-as-you-go method, while rises in contribution rates and declines in benefit levels are curbed by maintaining reserves for the

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[6] The pension support ratio represents the ratio of the number of insured persons to the number of beneficiaries of old-age pensions with long contribution periods, and is an actuarial indicator that expresses plan maturity.

[7] The comprehensive cost rate represents the ratio of the amount of the 'material' expenditures in the fiscal year, which the plan has to finance by itself (the portion to be covered by revenues from contributions in the same year; this is calculated by subtracting national and local government subsidies etc. from effective expenditures) to the total amount of the pensionable remunerations of the plan in the fiscal year. It is equivalent to the contribution rate when the financial management is based entirely on a pay-as-you-go method (no reserves and no investment income from reserves). The effects of reducing the contribution rates from reserve funds can be grasped by comparing the comprehensive cost ratio and the contribution rate.

[8] The differences between Scenarios C and E and Scenario G are considered to reflect the effects of the adjustments of benefit levels being applied automatically until the benefits and premium contribution have become balanced, even after the replacement rate for a standard pension declines to a level below 50% in Scenario G, while in Scenarios C and E, adjustments of benefit levels are made until the replacement ratio of a standard pension reaches about 50%.

[9] The independent benefit cost rate expresses the portion of expenses related to individual benefits (expenditure that does not pertain to BP out of "effective expenditures – national and local government subsidies etc.") in the comprehensive cost rate. It is equivalent to the pay-as-you-go contribution rate pertaining to the tier 2.

[10] The expenditure/revenue ratio represents the ration of the amount of the 'material' expenditures in the fiscal year to the amount of "revenues from contributions + investment income." When the ratio is 100% or below, self-funding needs can be met by using revenues from contributions and investment income. When the ratio is above 100%, it becomes necessary to secure sources of funding, such as by using reserves.

purposes of investment income and the use thereof. Reserve levels are therefore very important in securing the stability of future pension finances.

Looking at projections for reserves in EPI and NP through FY2014 value[11], reserves in EPI will decrease until around FY2020, increase until around FY2045 and decrease monotonically toward FY2110 under Scenarios A-E. On the other hand, under Scenarios F and G, reserves will decrease until around FY2025, increase slightly toward FY2040 and decrease monotonically toward FY2110. With regard to NP, reserves are projected to decrease monotonically in Scenarios A-G.

Looking at projections for the extent of reserve[12] in EPI and NP, adjustments of benefit levels through macroeconomic indexation are expected to be made so that the extent of reserve becomes one for FY2110 in both EPI and NP.

In EPI, the extent of reserve under Scenarios A-E is estimated to decline until around FY2020, turn to a rising trend until around FY2050, decline monotonically toward FY2110 and become one in FY2110. On the other hand, the extent of reserve under Scenarios F and G is projected to decline until around FY2020, rise toward FY2040, remain almost flat for some period, decline monotonically from around FY2055 toward FY2110 and become one in FY2110.

In NP, the extent of reserve under Scenarios A-E is estimated to decline until around FY2020, turn to a rising trend toward FY2045, decline monotonically toward FY2110 and become one in FY2110. On the other hand, the extent of reserve under Scenario F is projected to follow a general declining trend in a smooth and monotonous manner toward FY2110 and become one in FY2110. The extent of reserve under Scenario G is estimated to decline monotonically until around FY2070, remain almost flat and become one in FY2110. There is a striking characteristic in Scenarios A-E where the extent of reserve in EPI is projected to peak around FY2050 compared with the extent of reserve in NP, which is projected to peak earlier.

The reserve ratios[13] in both EPI and NP also show similar trends to the extent of reserve. Reserve ratios in FY2110 are projected 1.2 for EPI and 2.5 for NP. This gap represents a difference that arises between the two pension plans, even when the extent of reserve is one for both plans, in the ratio of the portion of expenditures to be funded with contribution costs and investment income.

(3) Stability of EPI by implementation organization

The stability of EPI by implementation organization was reviewed by checking whether there is a sharp decline or depletion in reserve levels (extent of reserve and reserve level) of each

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[11] 'In FY2014 value' indicates the value converted to the equivalent at FY2014 prices using the wage growth rate.

[12] The extent of reserve is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of total expenditure in current fiscal year.

[13] The reserve ratio is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of the 'material' expenditures in the fiscal year.

organizations.

Looking at the extent of reserve by implementation organization in Scenarios C, E and G, the extent of reserve for the NPSP + LPSP is projected to remain at a level below that of the former EPI from a long-term perspective. With regard to the PSP, the extent of reserve in Scenarios C and E is estimated to remain at a level above that of the former EPI in FY2033 and thereafter and reach the same level in FY2110, while in Scenario G, the extent of reserve will remain at the same level as that of the former EPI from a long-term perspective.

Looking at the reserve ratio by implementation organization, the reserve ratio of the former EPI and PSP in Scenarios C, E and G is projected to remain at the same level as EPI after unification as a whole, while the reserve ratio for the NPSP + LPSP is projected to remain at a level below that of EPI after unification as a whole. The reserve ratio in FY2110 is between 1.2 and 1.3 for the former EPI and PSP, while that for the NPSP + LPSP is projected to be below one, at 0.7.

In accordance with the above, in the 2014 actuarial valuation, the reserves for the former EPI, NPSP + LPSP and PSP are all projected not to be depleted during the period of financial equilibrium.

Chapter 8   Review of the effects of the unification of employee pension plans

With regard to the effects of the unification of employee pension plans on EPI, we have received a report by EPI stating that "the unification of employee pension plans does not necessarily cause the deterioration of EPI finances because the average of pensionable remuneration of mutual aid associations is higher than that of the former EPI, and such unification has factors with positive impacts on EPI," although the report does not show the results of any quantitative analysis of the finances.

In this review, we have sought to analyze the financial effects of the unification of employee pension plans after making a clear decision to a certain extent, using "(Reference) Financial projection for the former EPI that takes the unification of employee pension plans into consideration."[14]

The results of the analysis indicate that in all the analyzable scenarios of Scenarios A-G, the unification of employee pension plans has contributed to favorable changes to a certain degree in EPI as a whole.

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[14]   Consequently, it should be noted that this analysis does not represent an estimation based on a perfect reproduction of the situation where there is no unification of employee pension plans.

Chapter 9   Review of the situation of the reflection of the issues pointed out in the previous Peer Review

(1)   Detailed analysis of NP finances

In the previous Peer Review report, we pointed out that "it should be noted that a more detailed analysis of the effects of the situation of unpaid contributions on NP finances will be required in the future, considering that the gap between future projections and actual results as the premised payment rate of NP in the current (2009) actuarial valuation is 80%, whereas the actual rate shown in recent results was around 60%."

Projections for the payment rates of NP in the 2014 actuarial valuation are based on a scenario under which the payment rate improves in the future as a result of the strengthening of the relevant measures, while the 2014 actuarial valuation also shows the replacement rate projections in a scenario under which the payment rates remain at the existing levels. In accordance with the above, it can be evaluated that action was taken in response to the issues pointed out in the previous Peer Review.

(2)   Projections of the number of insured persons in Mutual Aid pension plans

In the previous Peer Review report, we pointed out that "a decrease in the number of insured persons had been anticipated in the PSP, while conversely the actual number increased. In the NPSP and LPSP, the numbers of insured persons can also be higher than the premises, considering that there are job types that require more than certain numbers of workers even when the population shrinks. In accordance with the above, it is also necessary to indicate projections on the premise that in the future, the number of insured persons may become higher than the premises in the current (2009) actuarial valuation ."

The 2014 actuarial valuation adopted revised premises according to which the ratio of the number of insured persons to the entire population at the end of FY2012 will be used as the fixed ratio in the future for the NPSP and LPSP based on the premise that such numbers are more sensitive to the demand for administrative services than to the labor supply, and that the number of insured persons in the PSP for the near-term will initially increase based on the actual results.

The above can be evaluated on the basis that action was taken in response to the issues pointed out by us in the previous Peer Review. In addition, it is desirable to begin examining a number of projections based on the issues pointed out in the previous Peer Review.

(3)   Projections considering economic fluctuations

In the previous Peer Review report, we pointed out that "although constant values are used for long-term economic premises in the current (2009) actuarial valuation, it is unlikely that there are no fluctuations in the real economies. As the macroeconomic indexation, which has a significant impact on public pension finances, will not function in the phases of declining prices

and wages, it is necessary to conduct a future actuarial valuation that also takes into account the existence of periods during which macroeconomic indexation does not function due to economic fluctuations."

In the 2014 actuarial valuation, tentative calculations based on optional premises present the "effects in the case where economic fluctuations are premised," which was calculated on the basis that wage growth rates and the inflation rate undergo repeated changes within the range of ±1.2% in intervals of four years. In this case, periods during which macroeconomic indexation does not function appear in a cyclical manner.

The above can be evaluated on the basis that action was taken in response to the issues pointed out in the previous Peer Review.

(4) Stochastic projections

In the previous Peer Review report, we pointed out that "with regard to making changes to the premises, it is necessary to examine movements in pension finances when all the premises are changed, in addition to making changes to each premise. One method for carrying out the above would be the preparation of stochastic projections. The preparation of these stochastic projections is considered essential in detailed examinations of the stability of the pension system. It is desirable to consider adopting stochastic projections in the future because it can be an effective method for calculating projections that take into account a situation where macroeconomic indexation does not function."

Stochastic projections were still not undertaken in the 2014 actuarial valuation. This is considered to reflect the extreme difficulty in solving the issues that we had pointed out as those that needed to be solved in the future. These issues include the setting of the distribution of actuarial premises, consistency between a number of actuarial premises, the frequency of simulations needed and the method of expressing results.

Firstly, it is desirable to consider calculating stochastic projections with some simplification.

Chapter 10 Evaluation of the 2014 actuarial valuation and recommendations pertaining to future actuarial valuations

(1) Evaluation of the 2014 actuarial valuation

(i) The unification of employee pension plans

In October 2015, the unification of the financial units of the employee pension plans, which had been a major issue in Japan's public pension system over many years, was finally realized. As a result, financial stability among the employee pension plans was noticeably strengthened, while measures for improving inter-plan equitableness have been implemented in full, except for some transitional measures. After all sorts of problems and difficulties, this achievement of the unification of employee pension plans should be highly evaluated.

(ii) Evaluation of the results of the 2014 actuarial valuation

In the actuarial valuation of EPI and NP, several results are shown, in particular pertaining to the economic premises in Scenarios A-H. Based on medium-variant birthrate and medium-variant mortality rates, 50% or higher is ensured for the replacement rate of standard EPI's pension after adjustments of benefit levels under Scenarios A-E, where labor force participation increases, while 50% may not be maintained if the benefit and premium contribution are balanced through adjustments of benefit levels under Scenarios F-H, where labor force participation does not increase. Based on the premise of low-variant birthrate, the replacement rate is projected to be below 50% in all the Scenarios. The above indicates the importance of birthrate decline measures and labor policies. It is desirable to ensure that effective measures to deal with these issues are implemented in the future.

(iii) Evaluation of the method of future projections in actuarial valuation

As the current actuarial valuation was premised on the unification of employee pension plans, and it was necessary for the Ministry of Health, Labour and Welfare to prepare estimates that included tiers 1 and 2 of the former mutual aid pension plans, it can be said that the consistency of initial data and actuarial premises between the plans has improved dramatically. A common standard method for preparing initial data and actuarial premises that is applicable to all the plans should be established, and each plan should not insist on its own traditional method, except in the case where there is a rational reason for using different methods for each plan. In establishing actuarial premises, attention should be paid to the effects of the movements of actual results on the pension finances, and actuarial premises whose future tendency can be projected should be prepared appropriately from a forward-looking viewpoint as much as possible.

In the current actuarial valuation, efforts made for reexamining and improving the economic models in order to establish rational and consistent economic premises should be highly evaluated. It is desirable that continuous research and examinations should be made to further improve method for determining the economic premises.

(iv) Implementation schemes and cooperative work among pension plans

In terms of the number of officers in charge of the actuarial valuation, there is concern as to whether it will be sufficient to respond to increasing case calculations in the future. It is therefore desirable for each plan to ensure that dependable work continues to be implemented in the future. In light of the high level of professionalism required for the actuarial valuation, it is also desirable for each plan to perform a detailed verification of whether the efforts made in the past for improving the qualities of the officers in charge through training and so forth have been sufficient. It is also desirable for each plan to apply further efforts and initiatives, including an increase in training opportunities for the officers in charge.

With regard to cooperative work among the pension plans, the current actuarial valuation was premised on the unification of employee pension plans for the first time. Considering the fact that cooperation schemes that were much stronger than those in the previous actuarial valuations were needed, we would like to laud the efforts of the relevant parties, because the work was implemented without any major problems.

(v) Stability of the pension system in terms of periods of adjustments of benefit levels

In EPI, the lengths of the periods for the adjustment of benefit levels were the same for both the earnings-related portion and BP portion in the 2004 actuarial valuation. In the 2009 actuarial valuation, the adjustment period for the earnings-related portion was shorter, while that for BP portion was prolonged. These gaps are wider in the 2014 actuarial valuation. In particular, Scenario H presents a case where NP runs out of reserve fund. Consequently, it is highly desirable that the appropriate measures be taken pertaining to NP.

(vi) Closed-period-balancing method

Under the existing framework based on the pension system reform in 2004, financial equilibrium is expected to be achieved in the finances of EPI and NP through the implementation of a closed-period-balancing method for around 100 years. The period of financial equilibrium is shifted forward by five years at every actuarial valuation. As a result, future periods that were not initially included in the period of financial equilibrium are newly incorporated in the period in a sequential manner. Assuming that, after the previous actuarial valuation, the population, economic conditions and so forth trend as projected in the previous actuarial valuation and that they will continue to trend as projected in previous actuarial valuation, the shortage of pension costs arising from this difference will need to be covered by an increase in reserves. As a result of repetitions of this process, this method will produce results that are closer to those of whole-future-balancing method in the long run, as we pointed out in the past peer review. In fact, there is concern that further adjustments of benefit levels and a greater contributory burden will become necessary, considering that under a closed-period-balancing method, whole future has not been projected from the beginning. The closed-period-balancing method itself was introduced based on discussions regarding public pension reserves. An accurate public understanding of these characteristics of the method should be promoted.

(vii) Tentative calculations based on optional premises

Following reports made by the National Social Security System Reform Congress, tentative calculations based on optional premises are presented in the current actuarial valuation, in addition to the results of the actuarial valuation, although a detailed analysis of the calculations is not provided in this report. The presentation of various calculations can be evaluated as being extremely useful for obtaining a deeper public understanding of the pension system and discussions on the necessity of the reform of the system in the future.

(viii) Separate financial projection for each of NPSP and LPSP

One of our viewpoints regarding the evaluation of the pension system after the unification of the employee pension plans is "ensuring that each implementation organization of EPI after the unification of the employment pension plans can provide payments of pension benefits without the depletion of reserves in the future." In the current actuarial valuation, separate financial projections for each of NPSP and LPSP which are implementation organizations of EPI after the unification of the employment pension plans, were not presented. After the unification of the financial units of NPSP and LPSP based on the pension system reform in 2004, financial adjustments unique to NPSP and LPSP that include the occupational pension portion were introduced. In both the 2004 and 2009 actuarial valuations, financial projections for only the first 50 years were presented, partly because there was a delay in setting frameworks for financial adjustments for the phase when fund reserves will have to be used due to the introduction of a closed-period-balancing method. Regarding this point, we had expressed, in the peer review report of the 2004 actuarial valuation, anticipation for the earliest possible adoption of financial adjustment schemes and the presentation of a separate long-term financial projection for each of NPSP and LPSP. From the viewpoint of verifying whether the frameworks for financial adjustments and so forth introduced through the unification of employee pension plans function properly, it is strongly desirable that a financial projection for each of the NPSP and LPSP be presented.

(2) Recommendations pertaining to future actuarial valuation

(i) Reliable implementation of actuarial valuations

We request that, in future actuarial valuations of public pension plans, the significance and purpose of themselves be securely fulfilled by taking into account the evaluations and issues pointed out regarding the current actuarial valuation.

(ii) Analysis of variation factors of financial projections

With regard to the degrees of changes in future projections for replacement rates and periods of adjustments of benefit levels indicated in the results of the current actuarial valuation of EPI and NP from those indicated in the results of the previous actuarial valuations, the factor analysis behind such changes should be presented in as much detail as possible.

Generally speaking, variable factors of financial projection are discrepancies in initial data and discrepancies in actuarial premises. In Japan's public pension system, there are factors that are also caused by the effects of pension system reforms and the characteristics of financial framework such as the closed-period-balancing method. In any case, it is unavoidable for the financial projection to change from that in the past to some extent, and it is desirable to appropriately indicate the factors behind such changes.

(iii) Stochastic projection

With regard to stochastic projection, we have been recommending it as an effective measure for the closer examination of the stability of pension finances. This is done by assuming a given probability distribution for each actuarial premises, and calculating the future possibility (probability) of the financial status of the plan concerned by performing numerous estimates realized at that probability. We have also stated that some simplifications are necessary to calculate stochastic projection because of some issues to be solved in the future. These issues include the setting of the distribution of actuarial premises, consistency between a number of actuarial premises, the frequency of simulations needed and the method of expressing results.

We continue to advocate the necessity of considering the formulation of stochastic projections. In particular, stochastic projections are considered to be a potential response to the concern that the original purpose of the actuarial valuations, which is to determine the end years of adjustments benefit levels, will not be fulfilled if the results of scenarios based on a number of economic premises are treated in parallel as in the current actuarial valuation.

(iv) Projection of distribution

The issue of people with low pension benefit has been a focal point in recent years. After the introduction of the macroeconomic indexation, the amounts of pension benefits for future generations are also attracting attention. Accordingly, there is a view that, apart from the original purpose of the actuarial valuations, it is desirable to calculate projection of distribution estimation by sex, by generation and by amount of pension benefit payments.

Of course, projection of distribution cannot be made according to the method used in the existing actuarial valuation, under which simulations are conducted using initial data obtained from the statistics of average standard remuneration by generation and by insured period. The calculation is not straightforward, as it requires a sea change in terms of the projection method, data and systems. It is questionable whether a projection of distribution for around 100 years in the future is necessary. However, we consider that such request for future projection serves as a topic for consideration, aside from the issue of whether it should be dealt with within the actuarial valuation system.

(Reference 1-1) Financial projection for Employees' Pension Insurance (EPI)
(Scenario C, medium-variant birthrate and medium-variant mortality rate)

Premises:
Population: Medium-variant birthrate and medium-variant mortality rate
Economy: Scenario C

Long-term economic premises (FY2024 and onward)
Rate of inflation: 1.6%
Rate of wage increase (real <except inflation>): 1.8%
Investment return (real <except inflation>): 3.2%
Investment return (spread <except wage increase>): 1.4%

Replacement rate 51.0 %
(after adjustment of benefit levels)
Final contribution rate 18.30 %
End year of adjustment of benefit levels FY2043

[Employees' Pension Insurance (EPI)]

Fiscal year	Contribution rate	Revenue Total revenue	Contribution income	National and local government subsidies etc.	Investment income	Contribution to the equivalent to benefits provided by the Basic Pension, which are prescribed by the Old Law that is still effective after the pensions reform in FY1986	Contribution to the equivalent to benefits of EPI	Other revenue	Insurer contribution to support the ex-JT MAA and the ex-JR MAA both of which were merged with EPI (reposted)	Expenditure Total expenditure	Benefit disbursements	Contribution to Basic Pension	Contribution to EPI	Other expenditures	Balance of revenue and expenditure	Reserves at fiscal year end	Reserves at fiscal year end (in FY2014 value)	Extent of reserve	Reserve ratio	Total remuneration
	%	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen			Trillion yen
2015	17.828	45.1	31.7	9.9	3.2	Note 5	Note 6	0.3	0.0	48.0	29.1	18.8	Note 6	0.1	-2.9	169.6	168.7	3.6	4.5	180.9
		(38.7)	(27.0)	(8.8)	(2.7)			(0.3)	(0.0)	(41.1)	(24.4)	(16.6)		(0.1)	(-2.4)	(-143.6)	(-142.8)	(3.6)	(4.5)	(152.7)
2020	18.3	57.3	39.3	11.0	6.7			0.3	0.0	52.8	31.4	21.2		0.1	4.5	176.4	158.4	3.3	4.1	215.0
2025	18.3	69.3	47.1	12.0	10.1			0.1	0.0	58.4	34.8	23.6		0.1	10.8	219.1	164.4	3.6	4.5	257.5
2030	18.3	80.8	54.5	13.0	13.2			0.0	0.0	64.4	38.6	25.8		0.1	16.3	290.7	183.5	4.3	5.3	297.6
2035	18.3	92.5	60.5	14.5	17.4			0.0	0.0	74.1	45.2	28.9		0.1	18.3	381.1	203.5	4.9	6.1	330.7
2040	18.3	104.8	66.7	16.5	21.6			0.0	0.0	87.4	54.5	32.8		0.1	17.4	470.2	212.5	5.2	6.4	364.3
2045	18.3	117.8	73.5	18.6	25.7			0.0	0.0	100.6	63.3	37.2		0.1	17.2	556.9	212.9	5.4	6.6	401.6
2050	18.3	132.6	81.4	21.5	29.7			0.0	0.0	115.6	72.5	43.0		0.1	17.1	642.7	207.9	5.4	6.7	444.9
2055	18.3	148.4	90.3	24.4	33.7			0.0	0.0	131.3	82.5	48.8		0.1	17.1	728.2	199.2	5.4	6.7	493.3
2060	18.3	165.1	99.9	27.6	37.7			0.0	0.0	148.9	93.7	55.1		0.1	16.2	812.1	188.0	5.3	6.6	545.7
2065	18.3	182.3	110.0	31.0	41.3			0.0	0.0	168.2	106.1	62.1		0.1	14.1	887.4	173.8	5.2	6.4	601.2
2070	18.3	199.6	120.8	34.6	44.3			0.0	0.0	188.0	118.8	69.1		0.1	11.7	950.4	157.5	5.0	6.1	660.1
2075	18.3	217.4	132.4	38.4	46.7			0.0	0.0	209.1	132.4	76.7		0.0	8.2	999.4	140.1	4.7	5.8	723.3
2080	18.3	236.0	145.4	42.7	48.0			0.0	0.0	232.9	147.6	85.3		0.0	3.1	1,025.3	121.6	4.4	5.4	794.4
2085	18.3	255.4	160.2	47.0	48.1			0.0	0.0	257.2	163.1	94.1		0.0	-1.8	1,026.0	103.0	4.0	4.9	875.5
2090	18.3	275.4	176.7	51.6	47.1			0.0	0.0	282.8	179.5	103.2		0.0	-7.3	1,001.1	85.0	3.6	4.4	965.6
2095	18.3	295.7	194.5	56.7	44.5			0.0	0.0	311.5	198.0	113.5		0.0	-15.8	940.6	67.6	3.1	3.8	1,062.9
2100	18.3	315.5	213.6	62.5	39.4			0.0	0.0	343.7	218.6	125.1		0.0	-28.1	826.3	50.2	2.5	3.0	1,167.2
2105	18.3	334.2	234.3	69.0	30.9			0.0	0.0	379.0	241.1	137.9		0.0	-44.8	637.4	32.8	1.8	2.2	1,280.4
2110	18.3	351.3	257.3	76.0	18.0			0.0	0.0	417.4	265.5	151.9		0.0	-66.1	351.3	15.3	1.0	1.2	1,406.1

(Note 1) The above is the financial projection for EPI as a whole after the unification of the employee pension plans, including the substitutional portion for the Employees' Pension Fund and mutual aid pension plans.
(Note 2) The figures for FY2015 include revenues and expenditures and expenditures for the portion of the mutual aid pension plans pension equivalent to the EPI pension before the unification of the employee pension plans (until September 2015).
The amounts in parentheses are those of the former EPI. The schedule for raising contribution rates represents the schedule for the former EPI.
(Note 3) The extent of reserve is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of total expenditure in current fiscal year.
(Note 4) 'In FY2014 value' indicates the value converted to the equivalent at FY2014 prices using the wage growth rate.
(Note 5) As regards the contribution to the equivalent of the benefits of the Basic Pension that is offset between the revenue and expenditure sides, the financial projection is prepared by entering equal amounts on the revenue and expenditure sides and canceling each other out financially.
(Note 6) As the figures represent the financial projections for EPI as a whole after the unification of the employee pension plans, the contribution to the equivalent of the benefits of EPI pension and the contribution to EPI, which are offset between the revenue and expenditure sides, are cancelled out accordingly.

(Reference 1-2) Financial projection for EPI
(Scenario E, medium-variant birthrate and medium-variant mortality rate)

Premises:
Population: Medium-variant birthrate and medium-variant mortality rate
Economy: Scenario E

Long-term economic premises (FY2024 and onward)
Rate of inflation: 1.2%
Rate of wage increase (real <except inflation>): 1.3%
Investment return (real <except inflation>): 3.0%
Investment return (spread <except wage increase>): 1.7%

Replacement rate: 50.6 %
(after adjustment of benefit levels)
Final contribution rate: 18.30 %

End year of adjustment of benefit levels: FY2043

[Employees' Pension Insurance (EPI)]

Fiscal year	Contribution rate (%)	Total revenue	Contribution income	National and local government subsidies etc.	Investment income	Contribution to the equivalent to benefits provided the Basic Pension, which are prescribed by the Old Law that is still effective after the pensions reform in FY1986	Contribution to the equivalent to benefits of EPI	Other revenue	Insurer contribution to support the ex-JT MAA and the ex-JR MAA both of which were merged with EPI (reposted)	Total expenditure	Benefit disbursements	Contribution to Basic Pension	Contribution to EPI	Other expenditures	Balance of revenue and expenditure	Reserves at fiscal year end	Reserves at fiscal year end (in FY2014 value)	Extent of reserve	Reserve ratio	Total remuneration
	%	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen			Trillion yen
2015	17.828	45.1	31.7	9.9	3.2	Note 5	Note 6	0.3	0.0	48.0	29.1	18.8	Note 6	0.1	-2.9	169.6	168.7	3.6	4.5	180.9
		(38.7)	(27.0)	(8.8)	(2.7)			(0.3)	(0.0)	(41.1)	(24.4)	(16.6)		(0.1)	(-2.4)	(143.6)	(142.8)	(3.6)	(4.5)	(152.7)
2020	18.3	57.3	39.3	11.0	6.8			0.3	0.0	52.3	31.0	21.2		0.1	5.0	177.3	159.2	3.3	4.2	215.0
2025	18.3	67.9	46.5	12.0	9.4			0.1	0.0	57.7	34.2	23.5		0.1	10.2	220.8	165.7	3.6	4.6	254.1
2030	18.3	75.5	51.4	12.7	11.3			0.0	0.0	62.2	37.0	25.1		0.1	13.3	281.9	184.1	4.3	5.4	281.1
2035	18.3	82.5	54.7	13.6	14.2			0.0	0.0	68.5	41.4	27.1		0.1	14.0	352.7	203.6	4.9	6.2	299.0
2040	18.3	89.5	57.7	14.9	16.9			0.0	0.0	77.8	47.9	29.8		0.1	11.7	416.1	212.3	5.2	6.4	315.3
2045	18.3	96.3	60.9	16.3	19.1			0.0	0.0	86.1	53.5	32.5		0.1	10.2	470.5	212.2	5.3	6.6	332.8
2050	18.3	103.6	64.6	17.9	21.1			0.0	0.0	94.5	58.7	35.8		0.1	9.1	518.3	206.6	5.4	6.7	352.9
2055	18.3	110.8	68.5	19.4	22.9			0.0	0.0	102.5	63.8	38.7		0.1	8.3	561.3	197.7	5.4	6.7	374.5
2060	18.3	117.9	72.6	20.8	24.5			0.0	0.0	110.9	69.2	41.7		0.1	7.0	599.5	186.7	5.3	6.6	396.6
2065	18.3	124.6	76.5	22.4	25.8			0.0	0.0	119.7	75.0	44.7		0.1	4.9	628.4	172.9	5.2	6.4	418.2
2070	18.3	130.7	80.4	23.8	26.5			0.0	0.0	128.0	80.4	47.6		0.1	2.8	646.2	157.2	5.0	6.2	439.5
2075	18.3	136.5	84.4	25.3	26.8			0.0	0.0	136.3	85.8	50.5		0.0	0.1	652.6	140.3	4.8	5.9	461.0
2080	18.3	142.1	88.7	26.9	26.5			0.0	0.0	145.4	91.5	53.8		0.0	-3.2	643.1	122.2	4.4	5.5	484.7
2085	18.3	147.5	93.6	28.4	25.6			0.0	0.0	153.6	96.8	56.8		0.0	-6.1	618.0	103.8	4.1	5.0	511.3
2090	18.3	152.6	98.8	29.8	24.0			0.0	0.0	161.7	102.0	59.6		0.0	-9.1	578.8	85.9	3.6	4.5	539.8
2095	18.3	157.2	104.1	31.3	21.7			0.0	0.0	170.4	107.7	62.7		0.0	-13.2	521.6	68.4	3.1	3.8	568.8
2100	18.3	160.9	109.4	33.1	18.5			0.0	0.0	179.9	113.7	66.1		0.0	-19.0	439.0	50.9	2.5	3.1	597.9
2105	18.3	163.6	114.9	34.9	13.8			0.0	0.0	189.9	120.1	69.8		0.0	-26.3	322.7	33.1	1.8	2.3	627.8
2110	18.3	165.1	120.8	36.8	7.5			0.0	0.0	200.3	126.6	73.6		0.0	-35.2	165.1	15.0	1.0	1.2	660.0

(Note 1) The above is the financial projection for EPI as a whole after the unification of the employee pension plans, including the substitutional portion for the Employees' Pension Fund and mutual aid pension plans.
(Note 2) The figures for FY2015 include revenues and expenditures for the portion of the mutual aid pension plans pension equivalent to the EPI pension before the unification of the employee pension plans (until September 2015).
(Note 3) The amounts in parentheses are those of the former EPI. The schedule for raising contribution rates represents the schedule for the former EPI.
(Note 4) The extent of reserve is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of total expenditure in current fiscal year.
'In FY2014 value' indicates the value converted to the equivalent at FY2014 preices using the wage growth rate.
(Note 5) As regards the contribution to the equivalent of the benefits of the Basic Pension that is offset between the revenue and expenditure sides, the financial projection is prepared by entering equal amounts on the revenue and expenditure sides and canceling each other out financially.
(Note 6) As the figures represent the financial projections for EPI as a whole after the unification of the employee pension plans, the contribution to the equivalent of the benefits of EPI pension and the contribution to EPI, which are offset between the revenue and expenditure sides, are cancelled out accordingly.

Population: Medium-variant birthrate and medium-variant mortality rate
Economy: Scenario G
—Case where the benefit has automatically been adjusted
until the benefits and premium contribution habe become blanced—

Long-term economic premises (FY2024 and onward)
Rate of inflation: 0.9%
Rate of wage increase (real <except inflation>): 1.0%
Investment return (real <except inflation>): 2.2%
Investment return (spread <except wage increase>): 1.2%

End of adjustment of benefit levels FY2058

Replacement rate 42.0 %
(after adjustment of benefit levels)
Final contribution rate 18.30 %

(Reference 1-3) Financial projection for EPI
(Scenario G, medium-variant birthrate and medium-variant mortality rate)
—Case where the benefit has automatically been adjusted
until the benefits and premium contribution have become balanced—

[Employees' Pension Insurance (EPI)]

Fiscal year	Contribution rate	Revenue								Expenditure					Balance of revenue and expenditure	Reserves at fiscal year end	Reserves at fiscal year end (in FY2014 value)	Extent of reserve	Reserve ratio	Total remuneration
		Total revenue	Contribution income	National and local government subsidies etc.	Investment income	Contribution to the equivalent to benefits provided the Basic Pension, which are prescribed by the Old Law that is still effective after the pensions reform in FY1986	Contribution to the equivalent to benefits of EPI	Other revenue	Insurer contribution to support the ex-JT MAA and the ex-JR MAA both of which were merged with EPI (reposted)	Total expenditure	Benefit disbursements	Contribution to Basic Pension	Contribution to EPI	Other expenditures						
	%	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen		%	Trillion yen
2015	17.828	43.9 (37.6)	31.0 (26.3)	9.8 (8.7)	2.7 (2.3)	Note 5	Note 6	0.3 (0.3)	0.3 (0.3)	48.0 (41.0)	29.2 (24.5)	18.7 (16.4)	Note 6	0.1 (0.1)	-4.1 (-3.4)	168.0 (142.0)	167.1 (141.3)	3.6 (3.5)	4.5 (4.5)	177.2 (149.1)
2020	18.3	51.4	36.0	10.5	4.7			0.3	0.3	50.4	30.0	20.3		0.1	1.0	162.6	150.1	3.2	4.1	196.9
2025	18.3	55.8	39.3	10.9	5.5			0.1	0.1	51.8	30.4	21.3		0.1	4.0	177.8	144.5	3.4	4.3	215.0
2030	18.3	58.6	41.2	11.2	6.1			0.0	0.0	52.9	30.7	22.1		0.1	5.7	203.6	149.4	3.7	4.8	225.3
2035	18.3	61.1	42.4	11.7	7.0			0.0	0.0	56.2	32.8	23.3		0.1	4.9	231.3	154.4	4.0	5.1	231.8
2040	18.3	63.5	43.5	12.5	7.6			0.0	0.0	61.0	36.0	24.9		0.1	2.5	248.8	151.2	4.0	5.1	237.5
2045	18.3	65.2	44.6	12.8	7.8			0.0	0.0	64.1	38.5	25.5		0.1	1.1	256.6	141.9	4.0	5.0	243.8
2050	18.3	66.7	46.0	12.7	8.0			0.0	0.0	65.9	40.4	25.4		0.1	0.8	261.2	131.5	4.0	4.9	251.3
2055	18.3	67.9	47.4	12.4	8.1			0.0	0.0	67.0	42.0	24.9		0.1	1.0	265.5	121.7	3.9	4.9	259.1
2060	18.3	69.4	48.7	12.4	8.2			0.0	0.0	68.7	43.8	24.9		0.1	0.6	270.1	112.7	3.9	4.8	266.2
2065	18.3	70.8	49.9	12.7	8.3			0.0	0.0	71.0	45.6	25.3		0.1	-0.2	270.8	102.8	3.8	4.6	272.4
2070	18.3	71.9	50.9	12.8	8.2			0.0	0.0	72.8	47.1	25.7		0.0	-1.0	267.2	92.3	3.7	4.5	277.9
2075	18.3	72.8	51.8	13.0	8.0			0.0	0.0	74.6	48.5	26.1		0.0	-1.8	259.9	81.7	3.5	4.3	283.1
2080	18.3	73.9	52.9	13.3	7.6			0.0	0.0	76.8	50.1	26.7		0.0	-2.9	247.3	70.8	3.3	3.9	289.2
2085	18.3	74.9	54.3	13.6	7.1			0.0	0.0	78.5	51.3	27.2		0.0	-3.5	230.7	60.1	3.0	3.6	296.5
2090	18.3	76.0	55.6	13.8	6.5			0.0	0.0	80.0	52.3	27.6		0.0	-4.0	211.6	50.2	2.7	3.3	303.9
2095	18.3	76.8	56.9	14.1	5.8			0.0	0.0	81.8	53.6	28.2		0.0	-5.0	188.8	40.8	2.4	2.9	310.8
2100	18.3	77.4	58.0	14.4	5.0			0.0	0.0	83.8	54.9	28.8		0.0	-6.3	160.1	31.5	2.0	2.4	317.1
2105	18.3	77.8	59.2	14.8	3.9			0.0	0.0	85.8	56.3	29.6		0.0	-8.0	123.6	22.1	1.5	1.9	323.3
2110	18.3	78.1	60.4	15.1	2.5			0.0	0.0	87.9	57.6	30.3		0.0	-9.8	78.1	12.7	1.0	1.2	330.2

(Note 1) The above is the financial projection for EPI as a whole after the unification of the employee pension plans, including the substantional portion for the Employees' Pension Fund and mutual aid pension plans.
(Note 2) The figures for FY2015 include revenues and expenditures for the portion of the mutual aid pension plans pension equivalent to the EPI pension before the unification of the employee pension plans (until September 2015).
The amounts in parentheses are those of the former EPI. The schedule for raising contribution rates represents the schedule for the former EPI.
(Note 3) The extent of reserve is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of total expenditure in current fiscal year.
(Note 4) 'In FY2014 value' indicates the value converted to the equivalent at FY2014 preices using the wage growth rate.
(Note 5) As regards the contribution to the equivalent of the benefits of the Basic Pension that is offset between the revenue and expenditure sides, the financial projection is prepared by entering equal amounts on the revenue and expenditure sides and canceling each other out financially.
(Note 6) As the figures represent the financial projections for EPI as a whole, the contribution to the equivalent of the benefits of EPI pension and the contribution to EPI, which are offset between the revenue and expenditure sides, are cancelled out accordingly.

(Reference 2-1) Financial outlook for the National Pension (NP)
(Scenario C, medium-variant birthrate and medium-variant mortality rate)

Premises:
Population: Medium-variant birthrate and medium-variant mortality rate
Economy: Scenario C

Long-term economic premises (FY2024 and onward)
Rate of inflation: 1.6%
Rate of wage increase (real <except inflation>): 1.8%
Investment return (real <except inflation>): 3.2%
Investment return (spread <except wage increase>): 1.4%

End year of adjustment of benefit levels: FY2043
Final contribution amount: 16,900 yen

[National Pension (NP)]

Fiscal year	Contribution (in 2004 value)	Revenue						Expenditure				Balance of revenue and expenditure	Reserves at fiscal year end	Reserves at fiscal year end (in FY2014 value)	Extent of reserve	Reserve ratio
		Total revenue	contributions income	National and local government subsidies etc.	Investment income	Contribution to the equivalent to benefits provided the Basic Pension, which are prescribed by the Old Law that is still effective after the pensions reform in FY1986	Other revenue	Total expenditure	Benefit disbursements	Contribution to Basic Pension	Other expenditures					
	Yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen		Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen		
2015	16,380	3.9	1.6	2.1	0.2	Note 4	0.0	4.0	0.1	3.9	0.1	-0.1	10.7	10.6	2.7	5.9
2020	16,900	4.4	1.7	2.3	0.4		0.0	4.3	0.1	4.1	0.1	0.1	10.7	9.6	2.5	5.5
2025	16,900	4.9	1.8	2.5	0.6		0.0	4.6	0.1	4.5	0.1	0.3	11.9	8.9	2.5	5.7
2030	16,900	5.4	2.0	2.7	0.6		0.0	4.9	0.1	4.8	0.1	0.5	13.9	8.7	2.7	6.4
2035	16,900	6.0	2.1	3.1	0.8		0.0	5.5	0.1	5.4	0.1	0.5	16.4	8.8	2.9	6.8
2040	16,900	6.7	2.3	3.6	0.9		0.0	6.2	0.1	6.0	0.1	0.6	19.1	8.6	3.0	7.2
2045	16,900	7.6	2.5	4.1	1.0		0.0	7.0	0.1	6.9	0.1	0.6	22.1	8.5	3.1	7.6
2050	16,900	8.7	2.8	4.8	1.2		0.0	8.1	0.1	8.0	0.0	0.6	25.2	8.1	3.0	7.5
2055	16,900	9.9	3.1	5.5	1.3		0.0	9.3	0.1	9.2	0.0	0.6	28.2	7.7	3.0	7.3
2060	16,900	11.2	3.4	6.3	1.4		0.0	10.6	0.0	10.5	0.0	0.6	31.1	7.2	2.9	7.2
2065	16,900	12.4	3.8	7.1	1.6		0.0	11.9	0.0	11.9	0.0	0.5	33.8	6.6	2.8	6.9
2070	16,900	13.7	4.1	7.9	1.7		0.0	13.2	0.0	13.2	0.0	0.4	36.1	6.0	2.7	6.7
2075	16,900	14.9	4.4	8.7	1.8		0.0	14.6	0.0	14.5	0.0	0.4	38.1	5.3	2.6	6.5
2080	16,900	16.4	4.9	9.6	1.8		0.0	16.1	0.0	16.1	0.0	0.2	39.5	4.7	2.4	6.1
2085	16,900	18.0	5.4	10.6	1.9		0.0	17.8	0.0	17.8	0.0	0.1	40.3	4.0	2.3	5.6
2090	16,900	19.6	6.0	11.7	1.9		0.0	19.6	0.0	19.6	0.0	-0.0	40.5	3.4	2.1	5.1
2095	16,900	21.4	6.6	12.9	1.9		0.0	21.6	0.0	21.5	0.0	-0.2	39.8	2.9	1.9	4.6
2100	16,900	23.2	7.2	14.1	1.8		0.0	23.7	0.0	23.7	0.0	-0.6	37.8	2.3	1.6	4.0
2105	16,900	25.1	7.9	15.5	1.6		0.0	26.1	0.0	26.0	0.0	-1.0	33.7	1.7	1.3	3.3
2110	16,900	27.1	8.7	17.1	1.3		0.0	28.6	0.0	28.6	0.0	-1.6	27.1	1.2	1.0	2.5

(Note 1) The monthly contribution amount represents the contribution amount (in 2004 value) set forth in Article 87, Paragraph 3 of the National Pension Act. Actual contribution amounts will be revised based on the growth of prices and wages after the 2004 pension system reform. The monthly contribution amount in FY2014 was 15,250 yen.
(Note 2) The extent of reserve is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of total expenditure in current fiscal year.
(Note 3) 'In FY2014 value' indicates the value converted to the equivalent at FY2014 preices using the wage growth rate.
(Note 4) As regards the contribution to the equivalent of the benefits of the Basic Pension that is offset between the revenue and expenditure sides, the financial projection is prepared by entering equal amounts on the revenue and expenditure sides and canceling each other out financially.

(Reference 2-2) Financial projection for NP
(Scenario E, medium-variant birthrate and medium-variant mortality rate)

Premises:
Population: Medium-variant birthrate and medium-variant mortality rate
Economy: Scenario E

Long-term economic premises (FY2024 and onward)
Rate of inflation: 1.2%
Rate of wage increase (real <except inflation>): 1.3%
Investment return (real <except inflation>): 3.0%
Investment return (spread <except wage increase>): 1.7%

End year of adjustment of benefit levels FY2043
Final contribution amount 16,900 yen

[National Pension (NP)]

Fiscal year	Contribution (in 2004 value)	Revenue						Expenditure				Balance of revenue and expenditure	Reserves at fiscal year end	Reserves at fiscal year end (in FY2014 value)	Extent of reserve	Reserve ratio
		Total revenue	contributions income	National and local government subsidies etc.	Investment income	Contribution to the equivalent to benefits provided the Basic Pension, which are prescribed by the Old Law that is still effective after the pensions reform in FY1986	Other revenue	Total expenditure	Benefit disbursements	Contribution to Basic Pension	Other expenditures					
	Yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen		Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen		
2015	16,380	3.9	1.6	2.1	0.2	Note 4	0.0	4.0	0.1	3.9	0.1	-0.1	10.7	10.6	2.7	5.9
2020	16,900	4.4	1.7	2.3	0.4		0.0	4.3	0.1	4.1	0.1	0.1	10.7	9.6	2.5	5.5
2025	16,900	4.9	1.8	2.5	0.5		0.0	4.6	0.1	4.4	0.1	0.3	11.8	8.8	2.5	5.7
2030	16,900	5.1	1.9	2.7	0.5		0.0	4.8	0.1	4.6	0.1	0.4	13.4	8.8	2.7	6.3
2035	16,900	5.5	2.0	2.9	0.6		0.0	5.1	0.1	5.0	0.1	0.4	15.3	8.8	2.9	6.8
2040	16,900	5.9	2.0	3.2	0.7		0.0	5.6	0.1	5.5	0.1	0.3	17.0	8.7	3.0	7.2
2045	16,900	6.4	2.1	3.6	0.8		0.0	6.1	0.1	6.0	0.0	0.3	18.8	8.5	3.0	7.4
2050	16,900	7.1	2.2	4.0	0.8		0.0	6.8	0.1	6.7	0.0	0.3	20.3	8.1	3.0	7.3
2055	16,900	7.7	2.4	4.4	0.9		0.0	7.4	0.0	7.3	0.0	0.3	21.6	7.6	2.9	7.1
2060	16,900	8.2	2.5	4.8	0.9		0.0	8.0	0.0	8.0	0.0	0.2	22.8	7.1	2.8	7.0
2065	16,900	8.8	2.7	5.1	1.0		0.0	8.6	0.0	8.5	0.0	0.2	23.7	6.5	2.7	6.8
2070	16,900	9.2	2.8	5.4	1.0		0.0	9.1	0.0	9.0	0.0	0.1	24.3	5.9	2.7	6.6
2075	16,900	9.6	2.9	5.7	1.0		0.0	9.6	0.0	9.5	0.0	0.0	24.6	5.3	2.6	6.4
2080	16,900	10.1	3.1	6.1	1.0		0.0	10.2	0.0	10.1	0.0	-0.1	24.5	4.7	2.4	6.0
2085	16,900	10.7	3.2	6.4	1.0		0.0	10.8	0.0	10.7	0.0	-0.1	24.0	4.0	2.2	5.6
2090	16,900	11.2	3.4	6.8	1.0		0.0	11.4	0.0	11.3	0.0	-0.2	23.1	3.4	2.1	5.1
2095	16,900	11.6	3.6	7.1	0.9		0.0	11.9	0.0	11.9	0.0	-0.3	21.8	2.9	1.9	4.6
2100	16,900	12.1	3.8	7.5	0.8		0.0	12.6	0.0	12.5	0.0	-0.5	19.9	2.3	1.6	4.0
2105	16,900	12.6	4.0	7.9	0.7		0.0	13.2	0.0	13.2	0.0	-0.7	17.0	1.7	1.3	3.3
2110	16,900	13.0	4.2	8.3	0.6		0.0	13.9	0.0	13.9	0.0	-0.9	13.0	1.2	1.0	2.5

(Note 1) The monthly contribution amount represents the contribution amount (in 2004 value) set forth in Article 87, Paragraph 3 of the National Pension Act. Actual contribution amounts will be revised based on the growth of prices and wages after the 2004 pension system reform. The monthly contribution amount in FY2014 was 15,250 yen.
(Note 2) The extent of reserve is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of total expenditure in current fiscal year.
(Note 3) 'In FY2014 value' indicates the value converted to the equivalent at FY2014 preices using the wage growth rate.
(Note 4) As regards the contribution to the equivalent of the benefits of the Basic Pension that is offset between the revenue and expenditure sides, the financial projection is prepared by entering equal amounts on the revenue and expenditure sides and canceling each other out financially.

(Reference 2-3) Financial projection for NP
(Scenario G, medium-variant birthrate and medium-variant mortality rate)
—Case where the benefit has automatically been adjusted until the benefits and premium contribution have become balanced—

Premises:
Population: Medium-variant birthrate and medium-variant mortality rate
Economy: Scenario G
—Case where the benefit has automatically been adjusted until the benefits and premium contribution habe become blanced—

Long-term economic premises (FY2024 and onward)
Rate of inflation: 0.9%
Rate of wage increase (real <except inflation>): 1.0%
Investment return (real <except inflation>): 2.2%
Investment return (spread <except wage increase>): 1.2%

End year of adjustment of benefit levels: FY2058
Final contribution amount: 16,900 yen

[National Pension (NP)]

Fiscal year	Contribution (in 2004 value)	Revenue						Expenditure				Balance of revenue and expenditure	Reserves at fiscal year end	Reserves at fiscal year end (in FY2014 value)	Extent of reserve	Reserve ratio
		Total revenue	contributions income	National and local government subsidies etc.	Investment income	Contribution to the equivalent to benefits provided the Basic Pension, which are prescribed by the Old Law that is still effective after the pensions reform in FY1986 (Note 4)	Other revenue	Total expenditure	Benefit disbursements	Contribution to Basic Pension	Other expenditures					
	Yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen		Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen	Trillion yen		
2015	16,380	4.0	1.6	2.2	0.2		0.0	4.1	0.1	4.0	0.1	-0.2	10.6	10.6	2.6	5.8
2020	16,900	4.4	1.7	2.4	0.3		0.0	4.5	0.1	4.3	0.1	-0.1	10.2	9.4	2.3	5.1
2025	16,900	4.8	1.9	2.6	0.3		0.0	4.8	0.1	4.6	0.1	0.0	10.2	8.3	2.1	4.8
2030	16,900	5.1	2.0	2.8	0.3		0.0	5.1	0.1	5.0	0.1	0.0	10.3	7.5	2.0	4.6
2035	16,900	5.3	2.0	3.0	0.3		0.0	5.4	0.1	5.3	0.1	-0.1	10.1	6.7	1.9	4.3
2040	16,900	5.5	2.0	3.2	0.3		0.0	5.7	0.1	5.6	0.1	-0.2	9.3	5.6	1.7	3.9
2045	16,900	5.6	2.0	3.3	0.3		0.0	5.8	0.1	5.7	0.1	-0.2	8.2	4.5	1.4	3.4
2050	16,900	5.7	2.1	3.4	0.2		0.0	5.9	0.1	5.8	0.1	-0.2	7.2	3.6	1.3	3.0
2055	16,900	5.8	2.2	3.4	0.2	Note 4	0.0	5.9	0.1	5.8	0.0	-0.1	6.6	3.0	1.1	2.8
2060	16,900	5.9	2.3	3.4	0.2		0.0	5.9	0.1	5.8	0.0	-0.0	6.4	2.7	1.1	2.7
2065	16,900	6.0	2.3	3.5	0.2		0.0	6.0	0.1	6.0	0.0	-0.0	6.3	2.4	1.0	2.5
2070	16,900	6.1	2.3	3.6	0.2		0.0	6.1	0.0	6.0	0.0	-0.0	6.2	2.1	1.0	2.5
2075	16,900	6.2	2.4	3.6	0.2		0.0	6.2	0.0	6.1	0.0	-0.0	6.1	1.9	1.0	2.4
2080	16,900	6.3	2.4	3.7	0.2		0.0	6.3	0.0	6.2	0.0	-0.0	6.1	1.7	1.0	2.4
2085	16,900	6.5	2.5	3.8	0.2		0.0	6.5	0.0	6.4	0.0	0.0	6.1	1.6	0.9	2.3
2090	16,900	6.6	2.6	3.9	0.2		0.0	6.6	0.0	6.5	0.0	0.0	6.3	1.5	0.9	2.3
2095	16,900	6.8	2.6	4.0	0.2		0.0	6.7	0.0	6.7	0.0	0.1	6.5	1.4	1.0	2.4
2100	16,900	6.9	2.7	4.0	0.2		0.0	6.9	0.0	6.8	0.0	0.1	6.7	1.3	1.0	2.4
2105	16,900	7.0	2.7	4.1	0.2		0.0	7.0	0.0	6.9	0.0	0.0	7.0	1.2	1.0	2.4
2110	16,900	7.2	2.7	4.2	0.2		0.0	7.2	0.0	7.1	0.0	0.0	7.2	1.2	1.0	2.5

(Note 1) The monthly contribution amount represents the contribution amount (in 2004 value) set forth in Article 87, Paragraph 3 of the National Pension Act. Actual contribution amounts will be revised based on the growth of prices and wages after the 2004 pension system reform. The monthly contribution amount in FY2014 was 15,250 yen.

(Note 2) The extent of reserve is the ratio of the amount of reserve at the end of the previous fiscal year to the amount of total expenditure in current fiscal year.

(Note 3) 'In FY2014 value' indicates the value converted to the equivalent at FY2014 preices using the wage growth rate.

(Note 4) As regards the contribution to the equivalent of the benefits of the Basic Pension that is offset between the revenue and expenditure sides, the financial projection is prepared by entering equal amounts on the revenue and expenditure sides and canceling each other out financially.