Review of the 2009 Actuarial Valuation of Public Pension Plans (Summary)

1. Review of the 2009 actuarial valuation

The review of the 2009 actuarial valuation described in this report was made by the Actuarial Subcommittee of the Social Security Council in accordance with a cabinet decision taken in 2001, and was designed to examine the stability and equitableness of employee pension plans. It covers all public pension plans, including here the National Pension (NP) alongside employee pension plans.

2. Analysis of stability of public pension plans

(1) Benefit levels and contribution rates

The replacement ratio of the model pension benefit provided under Employees' Pension Insurance (EPI) is projected to gradually fall as a result of demographically-modified indexation from 62.3% at the outset to 50.1% from FY 2038, and so is expected to exceed 50%.

The raising of contribution rates for Mutual Aid pensions by the same method of indexation as for EPI to maintain balanced finances is projected to result in final contribution rates reaching 19.8% for National Public Service Personnel Mutual Aid Association (NPSP) and Local Public Service Personnel Mutual Aid Association (LPSP) plans, and 19.4% for the Mutual Aid Corporation for Private School Personnel (PSP).

The final contribution rate for EPI, for which contribution levels are fixed, will be 18.3%, and the final contribution for NP will be ¥16,900 (in FY 2004 value).

(2) Demographically-modified indexation

Demographically-modified indexation is expected to be applied to the earnings-related portion until FY 2019, and to the Basic Pension portion until FY 2038. In the final year of adjustment, the adjustment rate will be the same for all plans. As a result, benefits are projected, in the case of the model EPI pension benefit, to be reduced by approximately 20%.

(3) Projections of principal financial indicators

1) Pension support ratios

The pension support ratios of all plans are projected to decline until around FY 2070. In FY 2070, the ratio for the Basic Pension portion of all public pension plans will be 1.0, signifying that each old-age pensioner will be supported by one insured person. Though all plans will thereafter recover slightly, the situation will remain severe.

Pension support ratios are lower for all plans in comparison with the findings of the previous 2004 actuarial valuation (Figure 1).

Figure 1 Future projections of pension support ratios

Fiscal year	EPI	NPSP & LPSP	PSP	Basic Pension
2010	2.59	1.55	4.59	2.4
2030	2.09	1.24	2.30	1.6
2070	1.18	0.94	1.42	1.0
2105	1.20	1.00	1.60	1.1

*Comparison of findings of present 2009 and previous 2004 actuarial valuations

	EPI	NPSP & LPSP	PSP	Basic Pension
Present (FY 2100)	1.19	0.99	1.58	1.1
Previous (FY 2100)	1.66	1.20	2.45	1.4

2) Comprehensive cost ratios

All plans will see their comprehensive cost ratios rise until around FY 2070, from which point they will decline slightly. Up until FY 2030, the rise will be mitigated by the effects of the hike in the pensionable age and demographically-modified indexation.

Despite the greater reductive effect of demographically-modified indexation in comparison with at the time of the previous actuarial valuation, the present review finds ratios to be higher (Figure 2).

Note: The comprehensive cost ratio expresses the proportion of expenditure that a plan must finance from its own resources to total standard remuneration.

Figure 2 Future projections of comprehensive cost ratios

Fiscal year	EPI	NPSP & LPSP	PSP
	%	%	%
2010	18.8	18.9	13.4
2030	17.2	21.4	16.9
2070	25.5	29.4	32.3
2105	24.2	28.6	28.3

*Comparison of findings of present 2009 and previous 2004 actuarial valuations

	EPI	NPSP & LPSP	PSP
	%	%	%
Present (FY 2100)	24.4	29.1	28.9
Previous (FY 2100)	20.4	23.6	24.0

3) Ratios of contributions

All plans will see their ratios of contributions rise up to around FY 2030 owing to the effects not only of the above hikes in pensionable age and demographically-modified indexation, but also contribution and contribution rate increases. In FY 2030, the ratios of contributions for EPI, PSP, and NP will exceed 100%, indicating that the portion of real expenditure in that fiscal year that a plan must finance from its own resources can be met solely by revenue from contributions. All plans will then experience rapid declines until around FY 2070, after which they will recover slightly.

Compared with the results of the previous actuarial valuation, the present review finds ratios to be lower. This

is despite the greater downward effect on benefits of demographically-modified indexation and increases in the final contribution rate (Figure 3).

Note: The ratio of contributions expresses the proportion of revenue from contributions to the portion of expenditures that a plan must finance from its own resources.

Figure 3 Future projections of ratios of contributions

Fiscal year	EPI	NPSP & LPSP	PSP	NP
	%	%	%	%
2010	84.6	80.8	93.0	103.6
2030	106.5	91.8	114.4	107.1
2070	71.7	66.9	59.6	73.8
2105	75.8	68.8	68.2	78.9

*Comparison of findings of present 2009 and previous 2004 actuarial valuations

	EPI	NPSP & LPSP	PSP	NP
	%	%	%	%
Present (FY 2100)	75.1	67.6	66.7	78.0
Previous (FY 2100)	89.8	79.2	76.3	87.1

(4) Effects of reserves on reduction of contribution rates

An examination of the effects of reserves on the reduction of contribution rates based on a comparison of comprehensive cost ratios and contribution rates reveals the effect to be quite high in all cases. At their peaks, contribution rates were reduced by 7.4% in the case of EPI, 9.8% in the case of NPSP & LPSP, and 13.4% in the case of PSP. Regarding NP, the contribution is reduced by approximately ¥6,100 (in FY 2004 value) at its peak. The reductive effect is greater for all plans than was found to be the case at the time of the previous actuarial valuation, indicating that dependence on reserves is increasing (Figure 4).

Figure 4 Future projections of effects of reserves on reduction of contribution rates

	EPI	NPSP & LPSP	PSP	NP
	%	%	%	Yen
At peak	7.4 (FY 2073)	9.8 (FY 2073)	13.4 (FY 2065)	6,100 (FY 2072)
FY 2105	5.9	8.8	8.9	4,500

Note: Figures for NP indicate the reduction in contributions in FY 2004 value.

(5) Present value of benefits

Present values are all expressed as commuted values calculated by accumulating benefits each fiscal year after converting all to their values at a base point in time. Here, the end of FY 2009 is adopted as the base point of time, and conversions are made applying the rate of investment return.

The present values of benefits are ¥1,660 trillion under EPI, ¥280.1 trillion under NPSP & LPSP, ¥25.5 trillion under PSP, and ¥220 trillion under NP. The present values of reserves for past service up to FY 2009 are ¥830

trillion under EPI, ¥173.4 trillion for NPSP & LPSP, ¥13.2 trillion for PSP, and ¥120 trillion for NP. The proportions accounted for by past service are thus greater for NPSP & LPSP and NP.

The real values of the portion financed from reserves in the period from FY 2101 to FY 2105 (FY 2100-2104 in the case of EPI and NP), which extends beyond the period covered by the previous actuarial valuation, will be ¥4.2 trillion under EPI, ¥1.0 trillion under NPSP & LPSP, ¥0.1 trillion under PSP, and ¥0.3 trillion under NP.

(6) Duration

Duration represents the weighted average period until each cash flow occurs calculated based on the present value of the cash flow concerned, and is employed as an indicator of the average period until cash flow occurs. The durations of net expenditures that have to be financed by using reserves and investment income from them (equivalent to income excluding expenditure less investment income) are 53.4 years for EPI, 39.5 years for NPSP & LPSP, 61.0 years for PSP, and 55.7 years for NP (Figure 5). (Durations may be shorter if wage and price fluctuations in association with interest rate fluctuations are taken into consideration.)

Figure 5 Durations of net expenditures under each public pension plan

EPI	NPSP & LPSP	PSP	NP
Years	Years	Years	Years
53.4	39.5	61.0	55.7

(7) Effects of changes in assumptions

Changing the assumptions would cause the estimates of the EPI replacement ratio to vary from 43.1% (low fertility/pessimistic economy) to 54.6% (high fertility/optimistic economy). Mutual Aid final contribution rates, meanwhile, would vary across the following ranges: 19.6% (low mortality) to 20.1% (high mortality) for NPSP & LPSP, and 18.3% (high fertility) to 20.7% (low fertility) for PSP (Figure 6).

Figure 6 Effects of changes in assumptions

		Scenario								
		Baseline	High fertility rate	Low fertility rate	High mortality rate	Low mortality rate	Optimistic economic growth	Pessimistic economic growth	High fertility Optimistic economy	Low fertility Pessimistic economy
First fiscal year of demographically-modified indexation		2012	2012	2012	2012	2012	2012	2014	2012	2014
Last fiscal year of demographically-modified indexation	Earnings-related portion	2019	2015	2024	2017	2022	2018	2028	2014	2032
	Basic Pension portion	2038	2033	2041	2035	2041	2037	2043	2032	2048
Final benefit level (%) (replacement ratio)	EPI	50.1	53.9	46.9	52.3	47.9	50.7	47.1	54.6	43.1
Final contribution rate (%)	EPI	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
	NPSP	19.8	19.9	19.8	20.1	19.6	19.7	19.9	19.7	19.9
	LPSP	19.8	19.9	19.8	20.1	19.6	19.7	19.9	19.7	19.9
	PSP	19.4	18.3	20.7	19.7	19.1	20.0	18.6	18.9	19.6

Notes: The baseline scenario assumes price inflation of 1.0%, wage growth of 2.5% and investment returns of 4.1% from FY 2020.
The optimistic economic scenario assumes price inflation of 1.0%, wage growth of 2.9%, and investment returns of 4.2% from FY 2020.
The pessimistic economic scenario assumes price inflation of 1.0%, wage growth of 2.1%, and investment returns of 3.9% from FY 2020.

3. Analysis of equitableness of public pension plans

(1) Allocation of contribution rates

As contribution rates are set as a whole, it is not really possible to break them down and allocate them to specific tiers. In order to analyze inter-plan equitableness, however, contribution rates according to the 2009 actuarial valuation were mechanically allocated by the following method.

<Method of allocation of contribution rates>

The portion of the contribution rate for the contribution to the Basic Pension is first adopted as the Tier 1 portion, and the remainder is allocated proportionately according to Tier 2 and Tier 3 benefits in each fiscal year concerned.

(2) Contribution levels for Tier 2 benefits

Contribution rates for the Tier 2 portion exhibit some differences in the short term. In FY 2030, however, when all plans will have reached their final contribution rates, the levels under each plan will be almost equal. Thereafter, a gap is projected to gradually emerge between EPI and Mutual Aid pensions such that, in the longer term, contributions for this tier will reach a higher level for Mutual Aid pensions than for EPI. This contrasts with the findings of the previous actuarial valuation, which projected that the two would reach approximately the same level (Figure 7).

Figure 7 Future projections of Tier 2 contribution rates

Fiscal year	EPI	NPSP & LPSP	PSP
	%	%	%
2010	11.4	11.0	8.6
2030	14.1	14.3	14.2
2105	12.5	13.2	13.2
(Reference) FY 2100 according to previous actuarial valuation	12.6	12.5	12.4

(3) Contribution levels for Tier 1 benefits

The Tier 1 contribution rate (i.e., the rate for contributions to the Basic Pension) is lower for Mutual Aid pensions than for EPI. This difference arises because, whereas contributions to the Basic Pension are made per capita, this fixed sum contribution is converted to a contribution rate based on total standard remuneration, which differs according to plan.

(4) Contribution levels for benefits excluding occupational portion

The contribution rate for benefits excluding the occupational pension portion (i.e., the combined contribution rates for Tier 1 and Tier 2 benefits) from FY 2030, when all plans will have reached their final contribution rates, will be around 1 point lower for Mutual Aid pensions than for EPI. Ultimately in FY 2105, the rates will be 18.3% for EPI, 17.4% for NPSP & LPSP, and 17.3% for PSP. While there will thus be some differences between employee pension plans, they will be slightly smaller than projected at the time of the previous actuarial valuation (Figure 8).

Figure 8 Future projections of contribution rates excluding occupational portion

Fiscal year	EPI	NPSP & LPSP	PSP
	%	%	%
2010	16.1	14.1	11.8
2030	18.3	17.4	17.1
2105	18.3	17.4	17.3
(Reference) FY 2100 according to previous actuarial valuation	18.3	16.5	16.5

4. Scale of public pension benefit costs, etc.

In order to examine the scale of future public pension benefit costs in relation to the size of the Japanese economy as a whole, the total scale of benefits (nominal value) paid by public pension plans as a whole was estimated as a proportion of GDP. According to these estimates, benefits are projected to be equivalent to 8.9% of GDP in FY 2010 and 10.5% in FY 2105 (Figure 9).

Note: GDP from FY 2040 was calculated mechanically by the Actuarial Subcommittee so as to be consistent with the economic assumption of nominal wage growth of 2.5%.

Figure 9 Future projections of public pension benefits, etc. as proportions of GDP

Fiscal year	Total benefits	Contributions	Public subsidies, etc.	Use of reserves
	%	%	%	%
2010	8.9	5.8	2.2	0.9
2030	8.0	6.5	1.8	△ 0.3
2070	11.1	6.4	2.4	2.2
2105	10.5	6.4	2.3	1.8

Note: "Use of reserves" equals public pension benefits less revenue from contributions and public subsidies, etc., and indicates the portion that must be financed using reserves and investment income from them.

5. Overall evaluation

(1) Stability of pension finances

In view of the following points, the Actuarial Subcommittee regards public pension finances as being somewhat stable. At the same time, however, it considers there to exist a variety of grounds for concerns as outlined below. It is therefore important that the stability of public pension finances continue to be reviewed while monitoring future trends as ascertainable from plans' financial performance each fiscal year and similar evidence.

○ Positive points

- Under the baseline scenario, the replacement ratio of the model pension benefit provided under EPI will exceed 50%, and is projected to be 50.1% from FY 2038.
- The final contribution rate for Mutual Aid pensions under the baseline scenario will remain at 19.8% for NPSP & LPSP and 19.4% for PSP.
- The over 10-year forward rate for government bonds is presently (as of 2010) over 2% and, if the recent slump in wages is taken into consideration, exceeds the 1.6% real rate of investment returns (nominal investment return compared with the wage growth rate) assumed for the economic scenarios.
- The duration of net expenditures exceeds the duration of current bond investments. Given the state of normal yields, therefore, a lengthening of the durations of investments will provide scope for improvement of investment returns.

○ Areas for concern

- The Japanese economy has yet to clearly extricate itself from deflation, and assumptions made regarding variables such as wage growth may be on the high side.
- The future projections presume that demographically-modified indexation will function every year from FY 2012 to FY 2038. Depending on economic fluctuations due to the business cycle, however, there may be times when indexation lags or cannot be implemented.
- Labor force participation rates and other such variables used in this review were set in accordance with an "increased entry to the labor market" scenario, which envisaged that conditions would allow more people to work (labor force participation rates are assumed to increase from 47.7% to 65.8% for married women aged 30-34, and from 70.9% to 96.6% for men aged 60-64). Whether conditions unfold as envisaged will therefore have to be watched closely.
- If the assumptions made regarding births, deaths, and economic factors are altered, then even the scenario used for the estimates reported here would see the replacement ratio of the EPI model pension decline to 43.1%, and the projected final contribution rates for Mutual Aid pensions would be 20.1% for NPSP & LPSP and 20.7% for PSP.

(2) Inter-plan equitableness

Inter-plan equitableness is assessed from the point of view of there being "basically no difference between plans in contribution level relative to the same pension benefit taking into account past investment performance and other relevant factors."

As Tier 1 and Tier 2 benefits are approximately the same, equitableness between employee pension plans may be appropriately assessed on the basis of contribution rates excluding the occupational portion. An examination

of employee pension contribution levels shows that, at the present point in time, contribution rates are lower for Mutual Aid pensions than for EPI for all portions—Tier 1, Tier 2, and the non-occupational portion—owing mainly to Mutual Aid pensions' higher reserve ratios and remuneration. Although the contribution rate for each plan is to be progressively raised, differences will exist between plans even beyond FY 2030 onward, when all will have reached their final contribution rates. Although the differences in contribution rates between Mutual Aid pensions excluding the occupational portion will almost disappear, that between EPI and Mutual Aid pensions is projected to remain.

Equitableness between plans needs to be judged taking into consideration factors including differences in reserve ratios between plans and the assumptions employed when calculating contribution rates, and it is important that equitableness remain under review.

- Although the gap between EPI and Mutual Aid pension contribution rates (excluding the occupational portion) has shrunk compared with at the time of the previous actuarial valuation, the present review still projects that rates in the future will be around 1 point lower for Mutual Aid pensions than for EPI.
- Converting the cost burdens of the Tier 1 portion ("fixed-sum benefit/fixed-sum contribution" under the Basic Pension plan) to contribution rates for each plan reveals differences between them, with the Tier 1 contribution rates for Mutual Aid pensions being lower than the rate for EPI.
- Tier 2 contribution rates were found to almost the same for all plans at the time of the previous actuarial valuation. However, this review projects that rates will be lower for EPI than for Mutual Aid pensions.

(3) Areas for attention and consideration regarding future public pension plan reviews and actuarial valuations

○ Detailed analysis of NP finances

The present review assumes that the Basic Pension portion will be subject to demographically-modified indexation for longer than the earnings-related portion. This leads on to the question of Basic Pension levels, which may become an important issue. Further, the projections made in the present financial review diverge from recent data on the actual rate of payment of NP contributions. Consequently, more detailed analysis of the future impact of the state of non-payment of contributions on pension finances will be required.

○ Projection of number of persons insured under Mutual Aid pensions

A major reason for Tier 2 contributions for Mutual Aid pensions exceeding those for EPI in the future would appear to be the substantial decline in the projected number of persons insured under Mutual Aid pensions. The actual number insured in PSP is exhibiting an upward trend and, considering that the people insured under these plans belong to occupations that will experience relatively stable demand despite population decline, it is possible that the numbers insured in NPSP and LPSP may in the future grow more than assumed for this review. The present financial projections were calculated on the basis of conservative assumptions in that they indicate finances will remain balanced even if the number of insured persons drops considerably. Future studies will have to provide estimates based on the assumption that the number of insured persons will be greater than assumed here.

○ Gauging of influence of economic fluctuations

While the projections described in the present review were calculated based on fixed values regarding long-term economic assumptions, it is inconceivable that the economy will be unaffected by the effects of the business cycle. Demographically-modified indexation, which exerts a major impact on public pension

plan finances, will not function during periods in which prices and wages are falling, and so future reviews and actuarial valuations will need to be conducted taking into consideration times when demographically-modified indexation does not function due to the effects of the business cycle.

○ Stochastic projection

One way of changing the assumptions is by stochastic projection. This is done by assuming a given probability distribution for each actuarial assumption, and calculating the future possibility (probability) of the financial status of the plan concerned by performing numerous estimates realized at that probability. While there are some problems regarding, for example, what distribution should be adopted for which actuarial assumption and how to maintain consistency between multiple actuarial assumptions, calculating such stochastic projections, even with some simplification, is likely to be necessary in order to examine the stability of the pension plans in greater detail. As stochastic projections can make an effective contribution to the calculation of financial projections that allow for circumstances under which demographically-modified indexation is not applied, future study of this subject is recommended.

Table 1 EPI financial projections

Assumptions: Baseline scenario (intermediate fertility, intermediate mortality, intermediate economy)

Details

Long-term economic assumptions		Period of demographically-modified indexation		Final replacement ratio	50.1%
Price inflation:	1.0%	First year of adjustment:	FY 2012	(in last year)	
Wage growth rate:	2.5%	Last year of adjustment:	FY 2038	Final contribution rate	18.3%
Rate of investment return:	4.1%				

Fiscal year	Contribution rate	Revenue							Expenditure				Balance	Reserve at end of fiscal year	Reserve at end of fiscal year (in FY 2009 value)	Extent of reserve	Reserve ratio	Total standard remuneration (total remuneration)
		Total revenue	Contributions	Subsidies by state, etc.	Investment income	Contribution to the equivalent to benefits of Basic Pension	Other	NPSP contribution, etc.	Total expenditure	Benefits	Contribution to Basic Pension	Others						
	%	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion			¥ trillion
2010	16.058	35.0	24.7	7.4	2.5	(Note 4)	0.4	0.0	36.7	23.1	13.5	0.1	△1.7	142.6	141.1	3.9	4.9	155.6
2015	17.828	44.8	31.7	8.7	4.1		0.2	0.1	42.6	26.2	16.3	0.1	2.1	144.2	132.5	3.3	4.2	179.9
2020	18.3	53.3	36.9	9.4	6.8		0.2	0.1	45.7	27.5	18.1	0.1	7.6	172.5	140.6	3.6	4.6	201.4
2025	18.3	59.5	40.8	9.9	8.6		0.1	0.0	48.6	29.2	19.2	0.1	10.9	219.9	158.5	4.3	5.4	223.1
2030	18.3	66.1	44.5	10.4	11.1		0.1	0.0	52.3	31.7	20.5	0.1	13.8	284.2	181.0	5.2	6.5	243.0
2035	18.3	72.3	47.0	11.3	14.0		0.0	0.0	58.5	36.0	22.4	0.1	13.8	354.8	199.7	5.8	7.3	256.7
2040	18.3	78.5	49.1	12.8	16.5		0.0	0.0	67.3	41.6	25.5	0.1	11.2	417.1	207.5	6.0	7.5	268.5
2045	18.3	84.5	51.5	14.5	18.6		0.0	0.0	75.4	46.4	28.9	0.1	9.2	466.6	205.2	6.1	7.5	281.3
2050	18.3	90.4	54.1	16.0	20.2		0.0	0.0	82.9	50.9	31.9	0.1	7.5	507.7	197.3	6.0	7.5	295.7
2055	18.3	96.1	57.0	17.4	21.6		0.0	0.0	90.3	55.4	34.8	0.1	5.7	539.7	185.4	5.9	7.3	311.6
2060	18.3	101.2	59.8	18.8	22.5		0.0	0.0	97.6	59.9	37.6	0.1	3.6	562.5	170.8	5.7	7.1	327.0
2065	18.3	105.7	62.5	20.3	22.9		0.0	0.0	105.4	64.7	40.6	0.1	0.3	570.9	153.2	5.4	6.7	341.3
2070	18.3	109.6	65.2	21.7	22.6		0.0	0.0	112.8	69.3	43.4	0.1	△3.3	561.3	133.1	5.0	6.2	356.4
2075	18.3	113.1	68.5	22.9	21.7		0.0	0.0	118.9	73.0	45.8	0.1	△5.8	536.8	112.5	4.6	5.7	374.4
2080	18.3	116.7	72.4	23.9	20.3		0.0	0.0	124.2	76.2	47.8	0.1	△7.5	502.5	93.1	4.1	5.1	395.6
2085	18.3	120.3	76.7	25.0	18.7		0.0	0.0	129.6	79.6	49.9	0.1	△9.3	459.8	75.3	3.6	4.5	419.1
2090	18.3	123.9	81.2	26.1	16.6		0.0	0.0	135.6	83.2	52.3	0.1	△11.7	406.4	58.8	3.1	3.8	443.6
2095	18.3	127.1	85.8	27.4	13.9		0.0	0.0	142.4	87.4	54.9	0.1	△15.3	337.4	43.2	2.5	3.1	468.7
2100	18.3	129.9	90.7	28.9	10.3		0.0	0.0	149.8	92.0	57.8	0.1	△19.9	247.2	28.0	1.8	2.2	495.6
2105	18.3	132.4	96.2	30.4	5.8		0.0	0.0	157.5	96.6	60.8	0.1	△25.1	132.4	13.2	1.0	1.2	525.6

Notes: 1. "Extent of reserve" means the ratio of the reserve at the end of the previous fiscal year to total expenditure in the current fiscal year.
2. "In FY 2009 value" indicates the value converted to the equivalent at FY 2009 prices using the wage growth rate.
3. Financial projections for EPI as a whole including the substitutional portion of the Employees' Pension Fund.
4. Financial projections were calculated by deducting contributions to the equivalent to benefits of Basic Pension offset between revenue and expenditure from both the revenue and expenditure sides.

Table 2 NPSP & LPSP financial projections

Assumptions: Baseline scenario (results of actuarial valuation)

Details

Assumptions		Long-term economic assumptions		Period of demographically-modified indexation			
Fertility:	Intermediate scenario	Price inflation:	1.0%	First year of adjustment:	FY 2012	Final replacement ratio	
Mortality:	Intermediate scenario	Wage growth rate:	2.5%	Last year of adjustment:	FY 2038	(in last year)	
Economy:	Intermediate scenario	Rate of investment return:	4.1%			Final contribution rate	19.8%

Fiscal year	Contribution rate	Revenue							Expenditure					Balance	Reserve at end of fiscal year	Reserve at end of fiscal year (in FY 2009 value)	Extent of reserve	Reserve ratio	Total standard remuneration (total remuneration)
		Total revenue	Contributions	Subsidies by state, etc.	Subsidies for "bestowals" payments of prior period	Investment income	Contribution to the equivalent to benefits of Basic Pension	Other	Total expenditure	Benefits	Contribution to Basic Pension	Others	Pension insurer contribution (re-tabulated)						
	%	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million			¥100 million
2010	15.508	78,128	42,024	8,639	15,267	8,417	3,780		79,806	62,543	17,005	258	161	△1,678	470,958	465,818	6.2	9.1	275,100
2015	17.278	86,690	50,493	9,655	10,811	13,303	2,428		86,049	66,726	19,101	222	110	641	465,638	427,872	5.6	7.4	296,586
2020	19.048	99,466	59,990	10,352	7,882	19,932	1,309		88,245	67,465	20,544	236	117	11,221	501,689	408,949	5.6	7.1	319,538
2025	19.8	107,621	68,262	10,880	5,124	22,773	582		90,870	68,976	21,645	250	126	16,751	575,170	414,392	6.2	7.5	347,203
2030	19.8	114,908	73,836	11,625	2,743	26,488	216		95,189	71,744	23,177	268	135	19,719	669,123	426,090	6.8	8.1	375,611
2035	19.8	123,305	78,505	12,878	1,178	30,671	73		102,325	76,324	25,718	284	144	20,979	773,855	435,547	7.4	8.5	399,378
2040	19.8	132,231	82,568	14,543	382	34,715	24		113,190	83,824	29,069	296	151	19,041	873,502	434,531	7.6	8.7	420,016
2045	19.8	141,973	86,983	16,355	95	38,532	8		122,869	89,859	32,704	306	158	19,104	968,521	425,840	7.7	8.9	442,420
2050	19.8	151,190	90,830	18,003	23	42,332	2		132,916	96,596	36,004	315	165	18,274	1,062,672	412,969	7.9	9.1	461,956
2055	19.8	159,910	94,642	19,560	7	45,700	1		144,942	105,500	39,118	324	171	14,968	1,144,824	393,221	7.8	9.0	481,334
2060	19.8	168,123	98,668	21,250	2	48,203	0		158,397	115,733	42,498	166	11	9,726	1,204,466	365,657	7.5	8.7	501,825
2065	19.8	175,359	102,921	22,978	0	49,461	0		172,723	126,606	45,955	162	6	2,637	1,232,167	330,620	7.1	8.2	523,484
2070	19.8	181,680	107,938	24,470	0	49,271	0		186,059	136,960	48,940	159	4	△4,380	1,223,915	290,263	6.6	7.6	549,037
2075	19.8	187,910	114,378	25,729	0	47,802	0		197,825	146,211	51,459	156	2	△9,916	1,184,556	248,300	6.0	6.9	581,825
2080	19.8	193,556	121,325	26,838	0	45,393	0		207,548	153,720	53,676	152	1	△13,992	1,122,537	207,971	5.5	6.3	617,198
2085	19.8	197,863	127,795	27,998	0	42,069	0		217,445	161,300	55,996	149	0	△19,582	1,037,018	169,812	4.9	5.6	650,164
2090	19.8	200,878	134,218	29,334	0	37,326	0		228,935	170,121	58,668	145	0	△28,057	914,694	132,385	4.1	4.7	682,919
2095	19.8	202,568	141,077	30,821	0	30,671	0		241,056	179,273	61,641	142	0	△38,487	743,821	95,151	3.2	3.7	717,924
2100	19.8	203,406	149,228	32,385	0	21,793	0		253,385	188,476	64,771	139	0	△49,979	517,083	58,464	2.2	2.6	759,509
2105	19.8	203,633	159,068	33,979	0	10,586	0		265,308	197,214	67,958	135	0	△61,675	232,286	23,213	1.1	1.3	809,670

Table 3 PSP financial projections

Assumptions: Baseline scenario (results of actuarial valuation)

Details

Assumptions		Long-term economic assumptions		Period of demographically-modified indexation			
Fertility:	Intermediate scenario	Price inflation:	1.0%	First year of adjustment: FY 2012	Final replacement ratio	47.9%	
Mortality:	Intermediate scenario	Wage growth rate:	2.5%	Last year of adjustment: FY 2038	(in last year)		
Economy:	Intermediate scenario	Rate of investment return:	4.1%		Final contribution rate	19.4%	

Fiscal year	Contribution rate (% of annual earnings)	Revenue						Expenditure					Balance	Reserve at end of fiscal year	Reserve at end of fiscal year (in FY 2009 value)	Extent of reserve	Reserve ratio	Total standard remuneration (total remuneration)
		Total revenue	Contributions	National subsidy	Investment income	Contribution to the equivalent to benefits of Basic Pension	Other	Total expenditure	Benefits	Contribution to Basic Pension	Others	Pension insurer contribution (re-tabulated)						
	%	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million	¥100 million			¥100 million
2010	12.584	5,137	3,494	897	619	126	0	4,781	2,913	1,752	116	116	356	34,864	34,484	7.4	9.2	28,026
2015	14.354	6,686	4,508	1,034	1,070	74	0	5,732	3,305	2,037	390	390	954	37,906	34,831	6.5	8.0	31,693
2020	16.124	8,579	5,598	1,111	1,834	36	0	6,284	3,696	2,201	388	388	2,294	46,796	38,146	7.1	8.7	35,003
2025	17.894	10,054	6,546	1,100	2,393	15	0	6,745	4,209	2,188	348	348	3,309	61,220	44,107	8.6	10.3	36,860
2030	19.4	11,561	7,310	1,097	3,149	6	0	7,492	5,009	2,188	295	295	4,069	80,409	51,204	10.2	11.9	37,910
2035	19.4	12,723	7,582	1,174	3,965	2	0	8,729	6,103	2,346	280	280	3,994	100,678	56,664	11.1	12.8	39,315
2040	19.4	13,968	7,918	1,323	4,727	1	0	10,436	7,505	2,645	286	286	3,533	119,419	59,406	11.1	12.7	41,059
2045	19.4	15,147	8,287	1,497	5,362	0	0	12,409	9,155	2,995	259	259	2,738	134,824	59,279	10.6	12.1	42,975
2050	19.4	16,167	8,684	1,678	5,805	0	0	14,547	10,970	3,356	221	221	1,620	145,287	56,460	9.9	11.2	45,030
2055	19.4	16,904	9,059	1,835	6,010	0	0	16,441	12,564	3,671	206	206	463	149,811	51,457	9.1	10.2	46,967
2060	19.4	17,426	9,409	1,979	6,037	0	0	17,734	13,774	3,959	1	1	△308	150,111	45,571	8.5	9.5	48,786
2065	19.4	17,870	9,834	2,136	5,901	0	0	18,865	14,594	4,271	1	1	△995	146,378	39,277	7.8	8.8	50,996
2070	19.4	18,324	10,380	2,284	5,660	0	0	19,686	15,118	4,568	1	1	△1,362	140,192	33,248	7.2	8.1	53,836
2075	19.4	18,786	11,013	2,407	5,366	0	0	20,334	15,520	4,814	0	0	△1,548	132,790	27,835	6.6	7.5	57,119
2080	19.4	19,215	11,666	2,513	5,035	0	0	20,982	15,955	5,027	0	0	△1,768	124,446	23,056	6.0	6.8	60,502
2085	19.4	19,553	12,292	2,618	4,643	0	0	21,734	16,498	5,237	0	0	△2,182	114,462	18,743	5.4	6.1	63,742
2090	19.4	19,790	12,911	2,736	4,143	0	0	22,621	17,148	5,473	0	0	△2,831	101,699	14,719	4.6	5.3	66,951
2095	19.4	19,970	13,599	2,877	3,493	0	0	23,625	17,870	5,755	0	0	△3,655	85,122	10,889	3.8	4.3	70,530
2100	19.4	20,137	14,429	3,038	2,671	0	0	24,682	18,606	6,075	0	0	△4,544	64,201	7,259	2.8	3.2	74,842
2105	19.4	20,270	15,405	3,204	1,661	0	0	25,798	19,389	6,409	0	0	△5,528	38,586	3,856	1.7	2.0	79,909

Table 4 NP financial projections

Assumptions: Baseline scenario (intermediate fertility, intermediate mortality, intermediate economy)

Details

Assumptions		Long-term economic assumptions		Period of demographically-modified indexation	
Fertility:	Intermediate scenario	Price inflation:	1.0%	First year of adjustment:	FY 2012
Mortality:	Intermediate scenario	Wage growth rate:	2.5%	Last year of adjustment:	FY 2038
Economy:	Intermediate scenario	Rate of investment return:	4.1%		

Fiscal year	Monthly contribution (in FY 2004 value)	Revenue						Expenditure				Balance	Reserve at end of fiscal year	Reserve at end of fiscal year (in FY 2009 value)	Extent of reserve	Reserve ratio
		Total revenue	Contributions	Subsidies by state, etc.	Investment income	Contribution to the equivalent to benefits of Basic Pension	Other	Total expenditure	Benefits	Contribution to Basic Pension	Others					
	¥	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion	¥ trillion		
2010	14,980	4.9	2.2	2.5	0.2	(Note 4)	0.0	4.7	0.1	4.5	0.1	0.2	10.2	10.1	2.1	4.4
2015	16,380	5.7	2.5	2.8	0.3		0.0	5.4	0.1	5.2	0.1	0.2	10.9	10.0	2.0	4.1
2020	16,900	6.6	2.9	3.2	0.5		0.0	6.1	0.1	5.9	0.1	0.5	13.0	10.6	2.0	4.3
2025	16,900	7.3	3.2	3.5	0.6		0.0	6.6	0.1	6.4	0.1	0.7	16.3	11.7	2.4	5.0
2030	16,900	8.0	3.4	3.8	0.8		0.0	7.1	0.1	6.9	0.1	0.9	20.6	13.1	2.8	6.0
2035	16,900	8.6	3.5	4.1	1.0		0.0	7.7	0.1	7.5	0.1	1.0	25.4	14.3	3.2	6.9
2040	16,900	9.5	3.6	4.7	1.2		0.0	8.7	0.1	8.5	0.1	0.8	29.9	14.9	3.4	7.4
2045	16,900	10.5	3.8	5.4	1.3		0.0	9.8	0.1	9.7	0.1	0.7	33.6	14.8	3.4	7.4
2050	16,900	11.5	4.0	6.0	1.5		0.0	10.9	0.0	10.8	0.1	0.5	36.6	14.2	3.3	7.3
2055	16,900	12.4	4.2	6.6	1.6		0.0	12.0	0.0	11.9	0.1	0.4	39.0	13.4	3.2	7.2
2060	16,900	13.3	4.4	7.2	1.6		0.0	13.0	0.0	12.9	0.1	0.3	40.6	12.3	3.1	6.9
2065	16,900	14.0	4.6	7.7	1.7		0.0	14.0	0.0	13.8	0.1	0.0	41.3	11.1	3.0	6.6
2070	16,900	14.7	4.8	8.2	1.6		0.0	14.8	0.0	14.7	0.1	△0.2	40.8	9.7	2.8	6.2
2075	16,900	15.3	5.1	8.7	1.6		0.0	15.6	0.0	15.5	0.1	△0.3	39.5	8.3	2.5	5.7
2080	16,900	16.0	5.4	9.1	1.5		0.0	16.4	0.0	16.2	0.1	△0.4	37.8	7.0	2.3	5.2
2085	16,900	16.7	5.7	9.5	1.4		0.0	17.1	0.0	17.0	0.1	△0.5	35.6	5.8	2.1	4.7
2090	16,900	17.3	6.1	9.9	1.3		0.0	17.9	0.0	17.8	0.1	△0.6	33.0	4.8	1.9	4.2
2095	16,900	18.0	6.4	10.4	1.2		0.0	18.8	0.0	18.6	0.1	△0.8	29.6	3.8	1.6	3.6
2100	16,900	18.7	6.7	10.9	1.0		0.0	19.7	0.0	19.6	0.1	△1.0	25.1	2.8	1.3	3.0
2105	16,900	19.5	7.2	11.5	0.8		0.0	20.7	0.0	20.6	0.1	△1.2	19.5	1.9	1.0	2.3

Notes:
1. The monthly contribution indicates the amount of the contribution specified in Article 87, Paragraph 3 of the National Pension Act (in FY 2004 value).
2. "Extent of reserve" means the ratio of the reserve at the end of the previous fiscal year to total expenditure in the current fiscal year.
3. "In FY 2009 value" indicates the value converted to the equivalent at FY 2009 prices using the wage growth rate.
4. Financial projections were calculated by deducting contributions to the equivalent to benefits of Basic Pension offset between revenue and expenditure from the revenue and expenditure sides.
5. "Contribution to Basic Pension" includes the special national subsidy for Basic Pension benefits.