Pensions, Benefits and Social Security

4TH PBSS Colloquium

Tokyo, Japan

October 4 (Sun) - 6 (Tue), 2009

Cash Balance Pension Plans in Japan

-Current Situation and the Future-

Takeshige Ota

F.I.A.J

Mitsubishi UFJ Trust and Banking Corporation

SECTION SUR LES PENSIONS, AVANTAGES SOCIAUX ET SÉCURITÉ SOCIALE DE L'AAI

IAA PENSIONS, BENEFITS AND SOCIAL SECURITY SECTION

PBSS

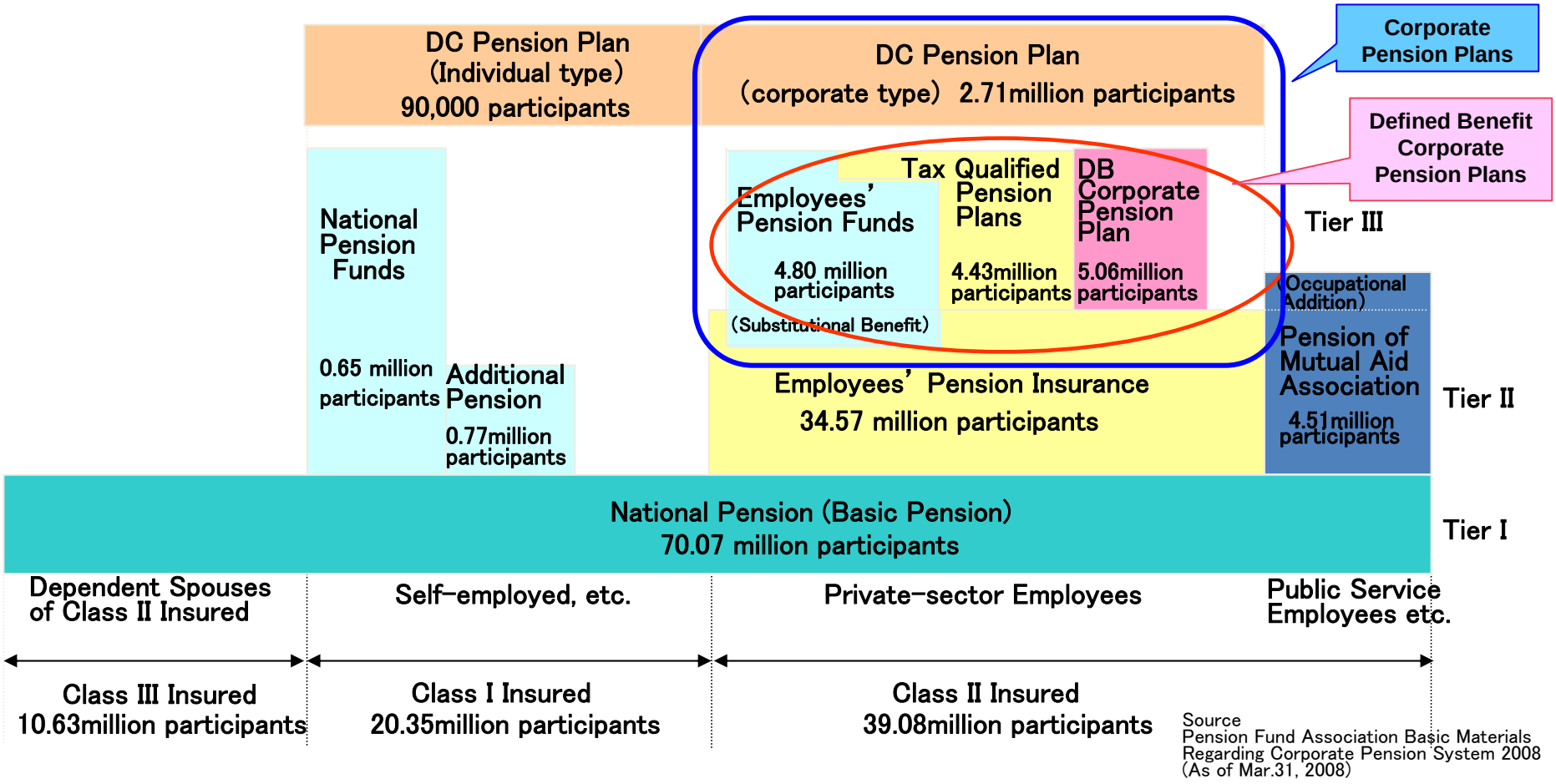
JSCPA

0 Introduction

1. Backgrounds
2. Current Situations of Cash Balance Plan in Japan
3. Modified Cash Balance Plan –Overview–
4. Issues to be Examined
   - 4.1 Floors/Caps in M-CB plan
   - 4.2 Post-employment Benefit Obligation
   - 4.3 Others
5. Conclusion and Next Step

1 Backgrounds -Structure of Japanese Pension System-

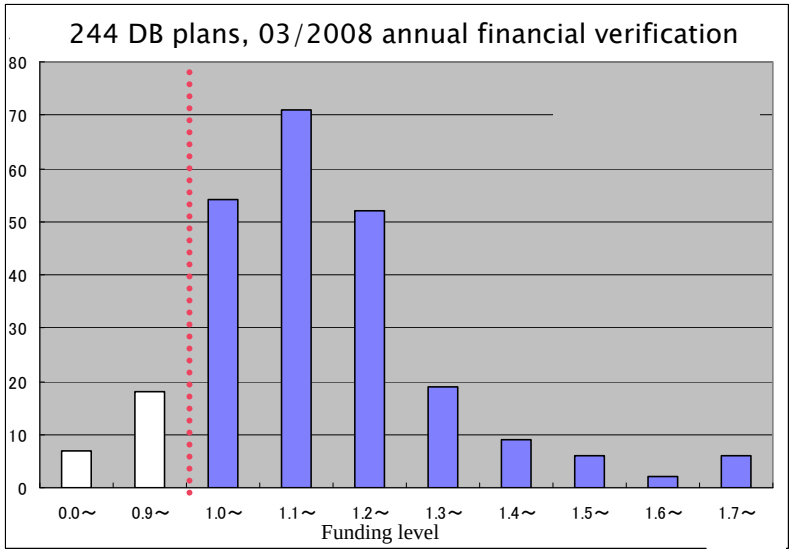
- Public Pension System:: Basic Pension, Employees' Pension Insurance, Pension of Mutual Aid Association
- Private Pension System: **Corporate Pension Plans**: Employees' Pension Funds, Defined Benefit (DB) Corporate Pension Plan, Defined Contribution (DC) Pension Plan (Corporate type) (Tax Qualified Pension Plan is to be repealed by Mar., 2012)
  Personal Pension Plans: DC Pension Plan (Individual type), National Pension Funds

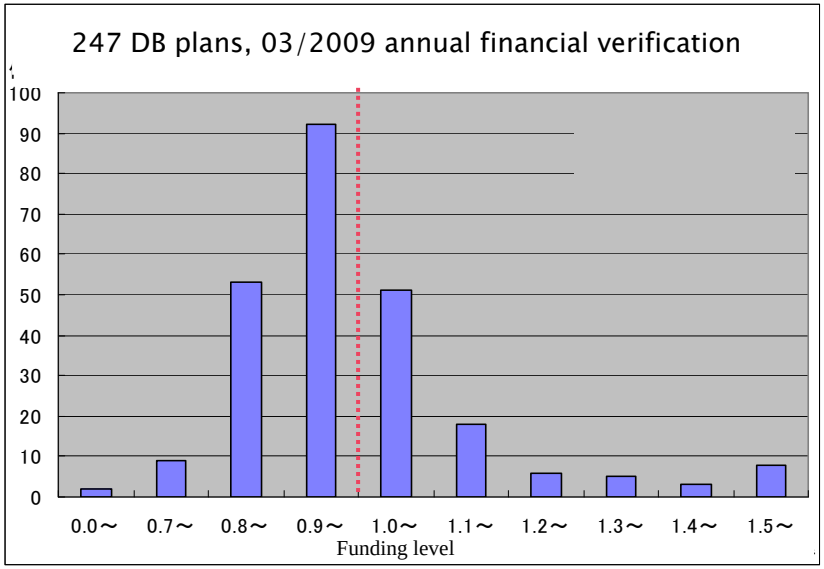


Source
Pension Fund Association Basic Materials Regarding Corporate Pension System 2008
(As of Mar.31, 2008)

1 Backgrounds -DB plan Deterioration-

Recent decline of stock market has damaged financial conditions of DB plans.





The average of rates of return from 04/2008 to 03/2009 is approximately -17.30%**.

*All plans above are Defined Benefit Corporate Pension Plans (under Defined Benefit Corporate Pension Act) and entrust Mitsubishi UFJ Trust and Banking Corporation as the leading-manager.
**The result of 03/2009 annual financial verification among 247 DB plans above.
***Funding level = (Plan asset+Risk buffer)/Actuarial reserve
If the funding level falls below 1.0, an additional contribution will be required.

What needs to be considered and delivered?

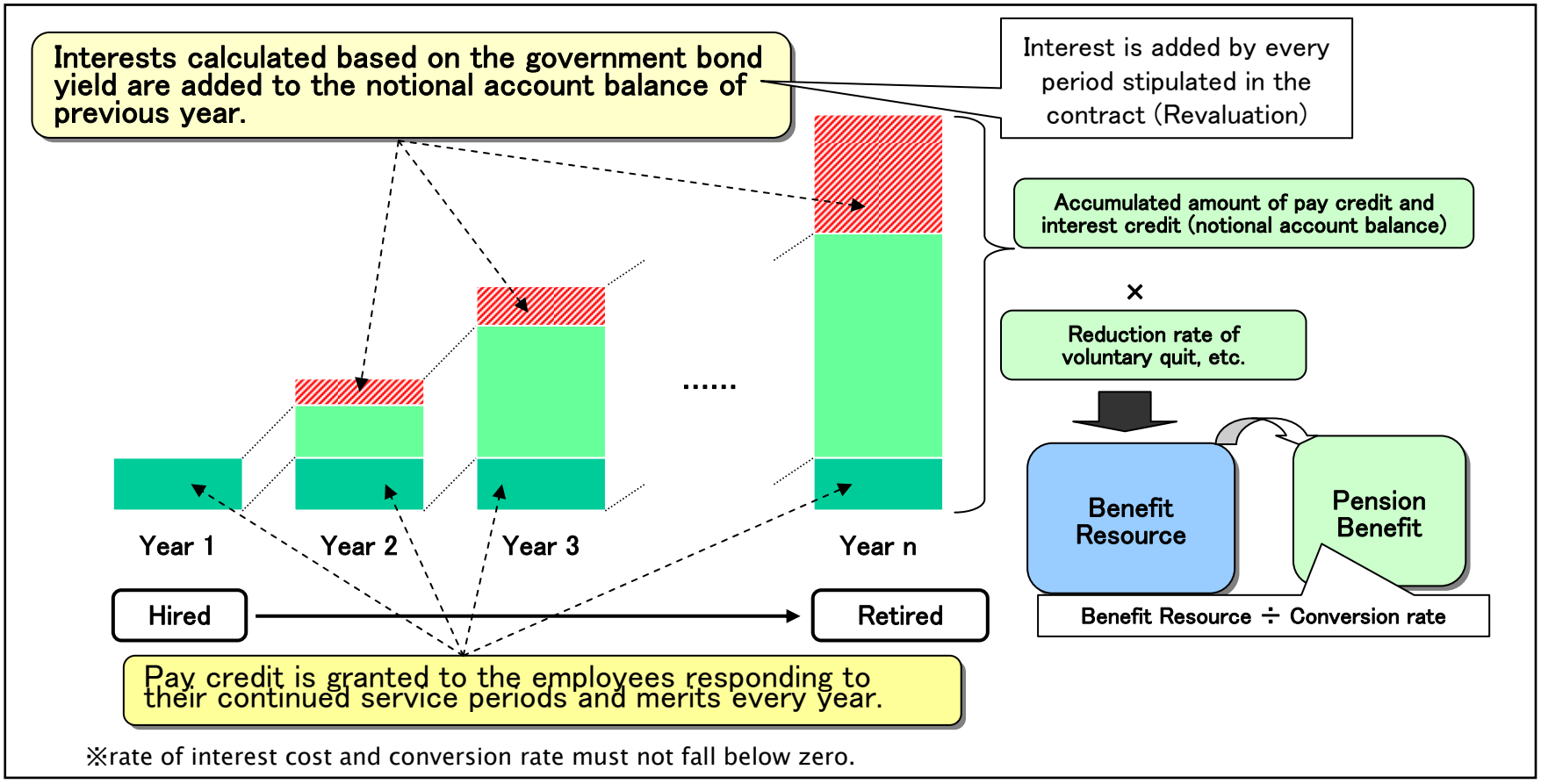
- Temporary relaxing of funding standards?
- Fundamental modifications?

2 Current Situations of Cash Balance Plan in Japan

Cash Balance Plan

Benefit amount changes with the preliminarily determined economic indices (for example, yields for long-term government bond subscribers, etc).
The plan may be operated responding to the effective interest.

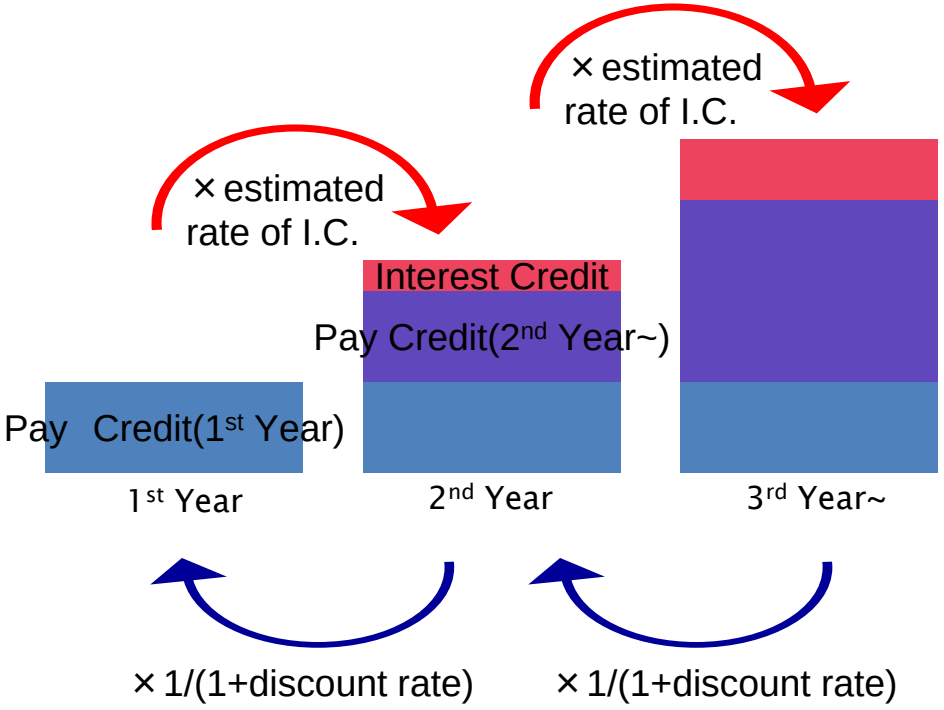
Benefit Amount＝Accumulated amount of pay credit and interest credit (notional account balance) × Benefit coefficient based on reason for withdrawal



2 Current Situations of Cash Balance Plan in Japan

Stabilization of obligation and cost on accounting

The decrement amount of PBO caused by decrease of the rate of interest credit (I.C.) could balance out the increment caused by decease of the discount rate.



Correlation between the rate of I.C. and the discount rate (general tendency)

Yield of government bond	↗	↘
①Estimated rate of I.C	↗	↘
①Obligation and Cost	↗	↘
②Discount rate	↗	↘
②Obligation and Cost	↘	↗

※Case that the yield of government bond is set as interest credit and the discount rate (usual cases in Japan)

In September 2006, 672** plans of 1,670 under Defined Benefit Corporate Pension Act adapted CB plans.

*source: Conference of Corporate Pension Plans, MHLW, 2006 **including plans which partly switched to CB plans

2 Current Situations of Cash Balance Plan in Japan

Some Problems of current CB Plan

- Difficulty in maintaining stability of financial management under the situation of increased investment volatility
- Investment profits are not directly reflected as an increase in benefits.
- No option to choose different benefit patterns (returns and risks) for participants

→partly because indices for interest credit are restricted to the yield of government bonds, or a few other indices

Necessity of a new CB plan scheme

3 Modified Cash Balance Plan -Overview-

What is Modified Cash Balance Plan (M-CB plan)?

Benchmark Related Plan proposed by the Japanese Society of Certified Pension Actuaries (April 2009)

- Addition of the composite index-based rate* to the existing rate of interest credit in CB plan
- Guaranteeing the sum of pay credits**

*a combination of economic indices in accordance with predetermined ratio of asset classes

**while allowing the application of annual negative rate of interest credit

M-CB plan has more..

- Some upper and lower limit (caps/floors) variations for composite index-based rate
- Index selection by participants

3 M-CB plan Composite index-based rate

Examples of economic indices which the composite index consists of:

Japanese bonds: Nomura-BPI (whole market)

Japanese stocks: TOPIX and Nikkei Stock Average

Foreign bonds: Citigroup World Government Bond Index (excluding Japan)

Foreign stocks: MSCI Kokusai (reinvestment of dividends, gross basis)

1. Predetermined ratio of asset classes

EX)

Japanese bonds:60%

Japanese stocks:40%

2. Up-down ratios are given in each term

EX) fiscal year:2009

Nomura-BPI:1.2%

TOPIX:4.5%

3. Composite index-based rate (=rate of interest cost) determination

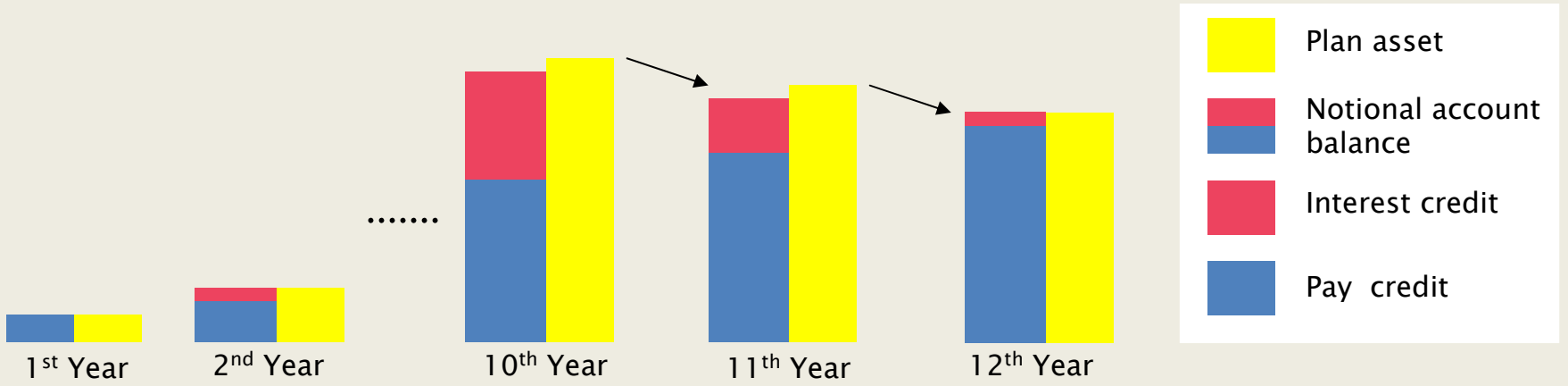
EX)1.2×60%+4.5×40%=2.52%

3 M-CB plan Stabilization of financial condition

Setting up an investment portfolio of the plan asset in accordance with the ratio of asset classes which the composite index is based on,

The plan asset yields of each asset class are expected to correspond with each economic index. (Although a complete match is hardly ever achieved)

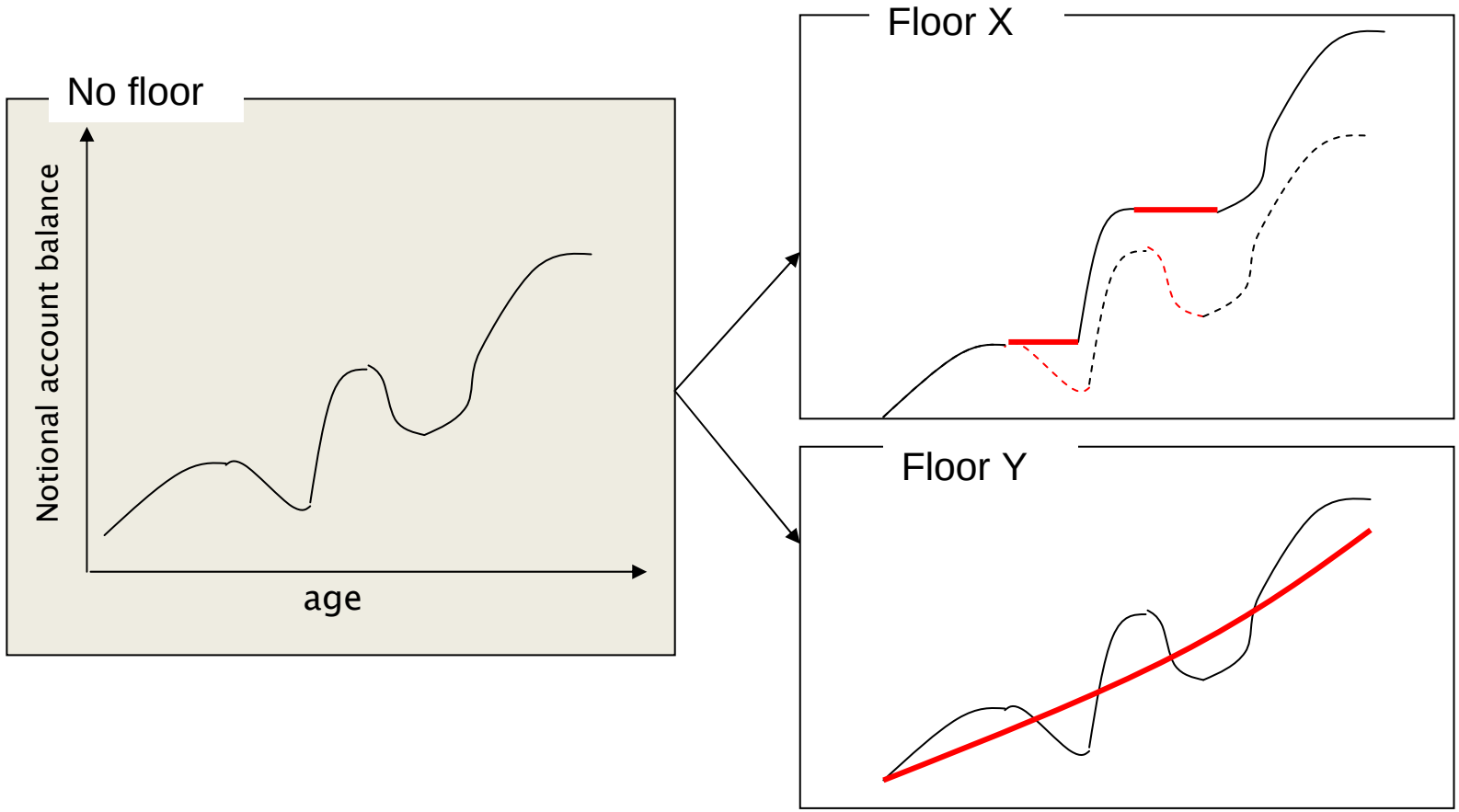
Case that the stock market falls down from 10th year to 12th year



On the other hand, when the composite index goes up, participants will enjoy investment profits as increases in benefits.

3 M-CB plan Variety of floors/caps

X: To set a floor for the rate of interest credit each year
Y: To guarantee capital and interest of pay credit based on a certain rate during the whole period (not a single-year based floor)

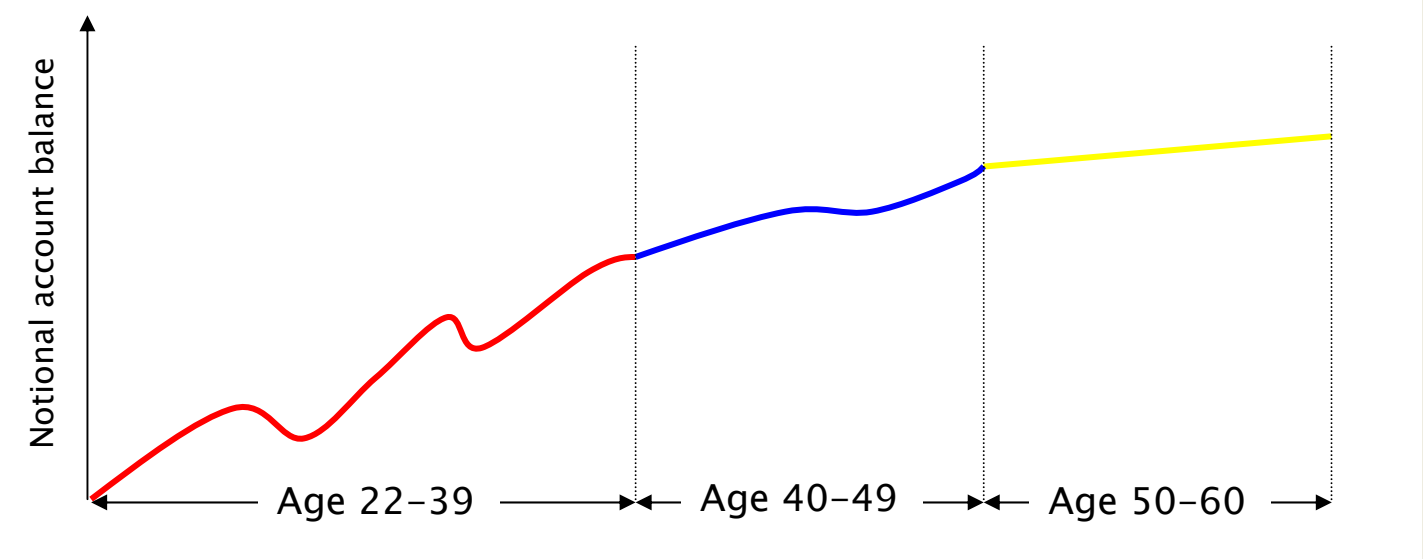


Like above, two types of caps can be set as well as floors.

3 M-CB plan Index selection by participants

Benefit levels and schemes can be designed in accordance with participants' own investment policies and life plans

A: fixed rate
B: indices which consist of bonds mainly (low risk, low average of return)
C: indices which consist of stocks mainly (high risk, high average of return)

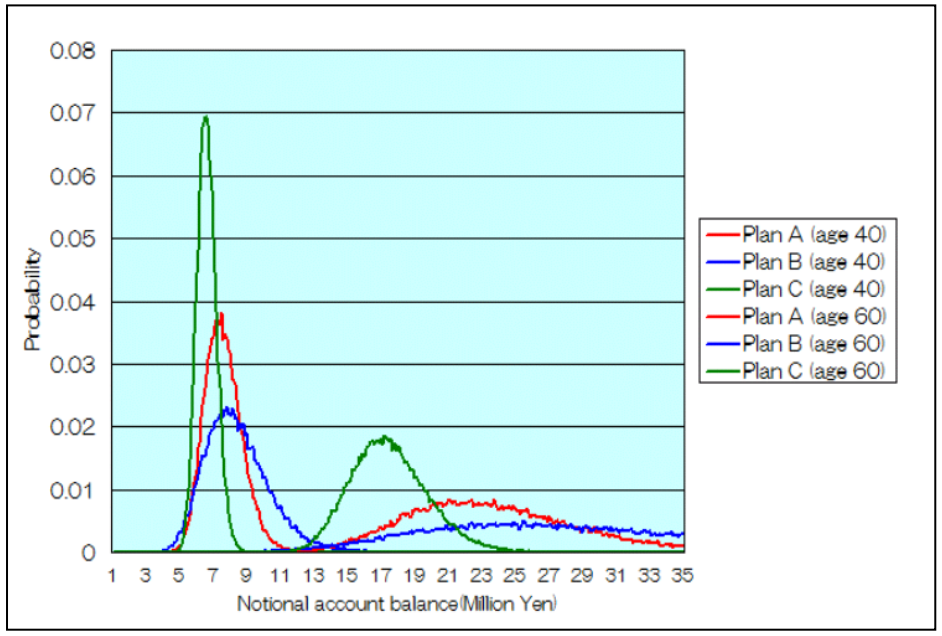


This would lead to participants' easily accepting the new plan.

4 Issues to be examined Floors/Caps(1)

Necessity of setting floors

Case: participants join a plan at age 22 and pay credit is 300 thousand yen per year through the whole term



Composite index

	Plan A	Plan B	Plan C
Expected rate of interest credit (%)	3.50%	4.50%	2.10%
Standard deviation*	5.50%	8.40%	3.35%

*estimated by actual records from 1989 to 2008

Distribution of benefit at each age

unit 1,000 yen

	Age 30			Age 40			Age 60		
Distribution	A	B	C	A	B	C	A	B	C
Average	2,810	2,940	2,639	7,600	8,427	6,615	23,913	30,149	17,534
Lower 1%	2,228	2,039	2,296	5,376	4,914	5,385	14,039	12,898	12,907
Lower 5%	2,380	2,267	2,388	5,926	5,716	5,707	16,233	16,169	14,046
Lower 10%	2,467	2,395	2,441	6,253	6,183	5,890	17,601	18,272	14,727

A sort of guarantee (floor) should be set to ensure the minimum amount of benefit and the target benefit.

4 Issues to be examined Floors/Caps(2)

Average of benefits increased by floors

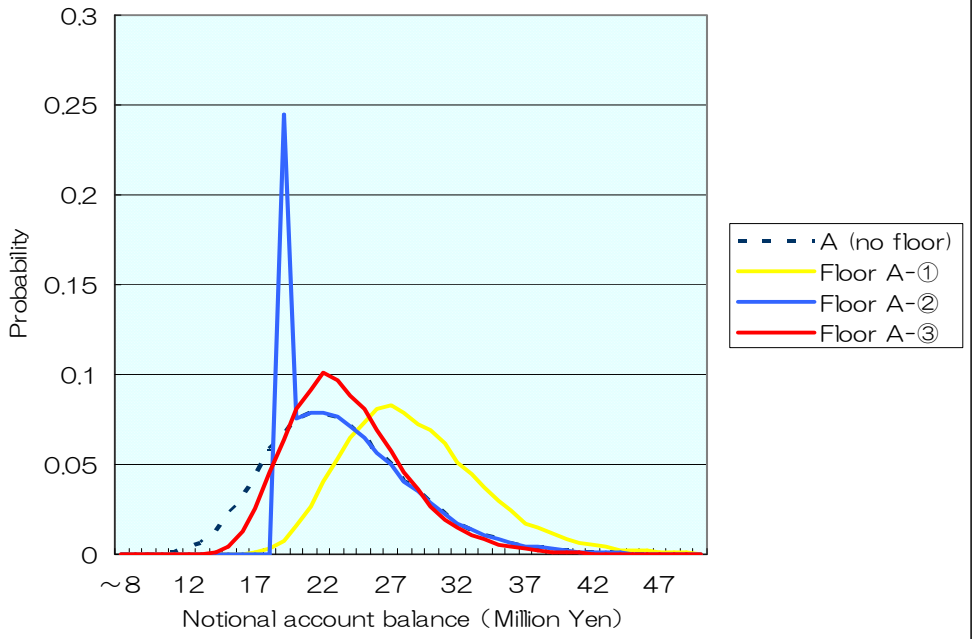
Floor A-①: 0% for each single-year (X-type floor)
Floor A-②: 2.5% during the participation period (Y-type floor)
Floor A-③: decreasing pay credit from 300 thousand yen to approximately 250 thousand in addition to Floor A-① to the extent that the average of benefits equals that of Floor A-② (X-type floor)

Composite index

	Plan A
Expected rate of interest credit (%)	3.50%
Standard deviation	5.50%

※Considering floors raise the average of future benefits, plan sponsors have two options to control the target benefit:
1.Decreasing the amount of pay credit (Floor A-③)
2.Setting caps

Distributions of Notional Account Balance at age 60



4 Issues to be examined Floors/Caps(3)

Average of benefits increased by floors

Distribution of benefits at age 60 with 3 types of Floors Unit: 1,000 yen

	A(no floor)	Floor A-①	Floor A-②	Floor A-③
Average	23,913	29,251	24,289	24,289
Lower 1%	14,039	19,799	19,100	16,441
Lower 5%	16,233	21,851	19,100	18,145
Lower 10%	17,601	23,100	19,100	19,182
Lower 20%	19,339	24,800	19,339	20,593
Upper 10%	30,987	36,145	30,987	30,014

Floor A-②; secures at least 19 million under which benefits never fall.
Floor A-③; does not prevent benefits from falling substantially below the initially assumed benefit.

However, the possibility of benefit exceeding the initially assumed benefit is relatively high in Floor A-③.

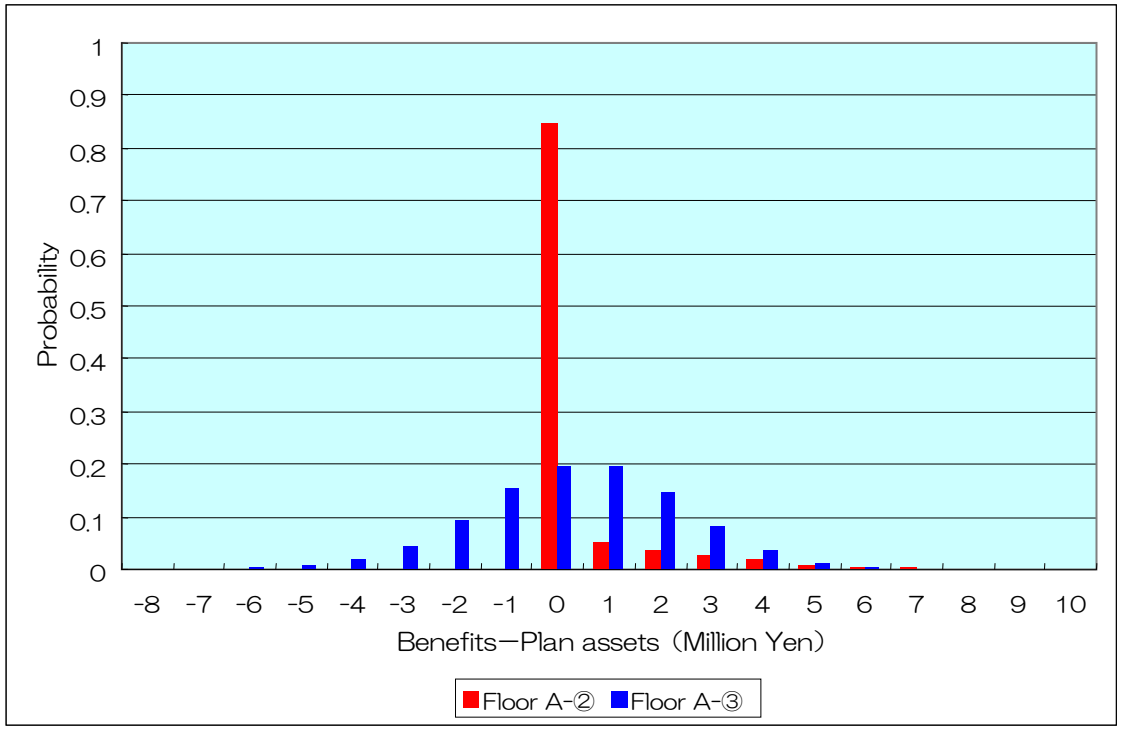
Possibility	Floor A-②	floor A-③
exceeds the initially assumed benefit	44.6%	47.7%
exceeds 90% of the initially assumed benefit	63.2%	71.2%

4 Issues to be examined Floors/Caps(4)

Impact of floors on financial management of M-CB plan

Which type of floor is favorable to plan sponsors?

Divergence between distribution of the investment performance and the amount of benefit with floor A-② or A-③ at age 60



It is indicated that Floor A-② generates less divergence that leads to stabilization of financial conditions.

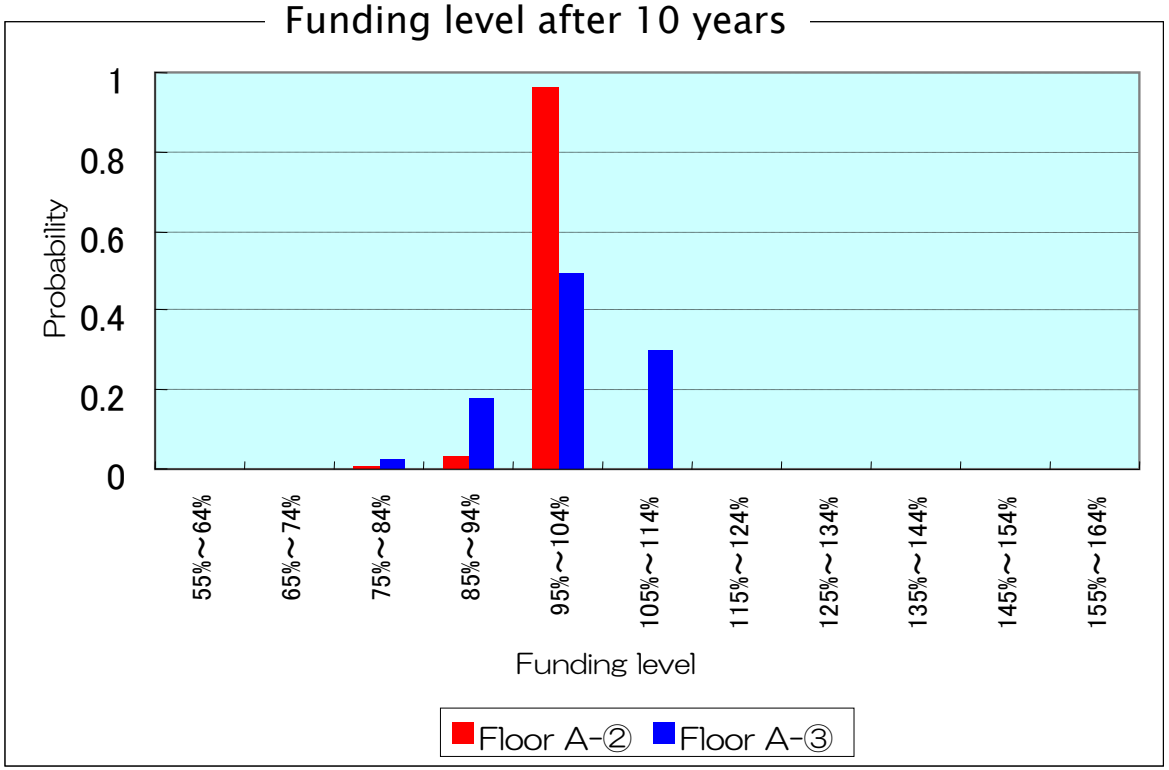
※Divergence in case of floor A-③ can be mitigated by a lower floor such as -2%

※The measurement substituted distribution of benefit at age 60 with no floor for investment performance.

4 Issues to be examined Floors/Caps(5)

Impact of floors on financial management of pension plans

Simulation regarding funding level



* Assumptions and plan designs are shown in the Appendix

**Funding level=
Actual liability/Plan asset

***Actual liability is calculated by subtracting present value of the estimated future contribution revenues from present value of the estimated future benefits.

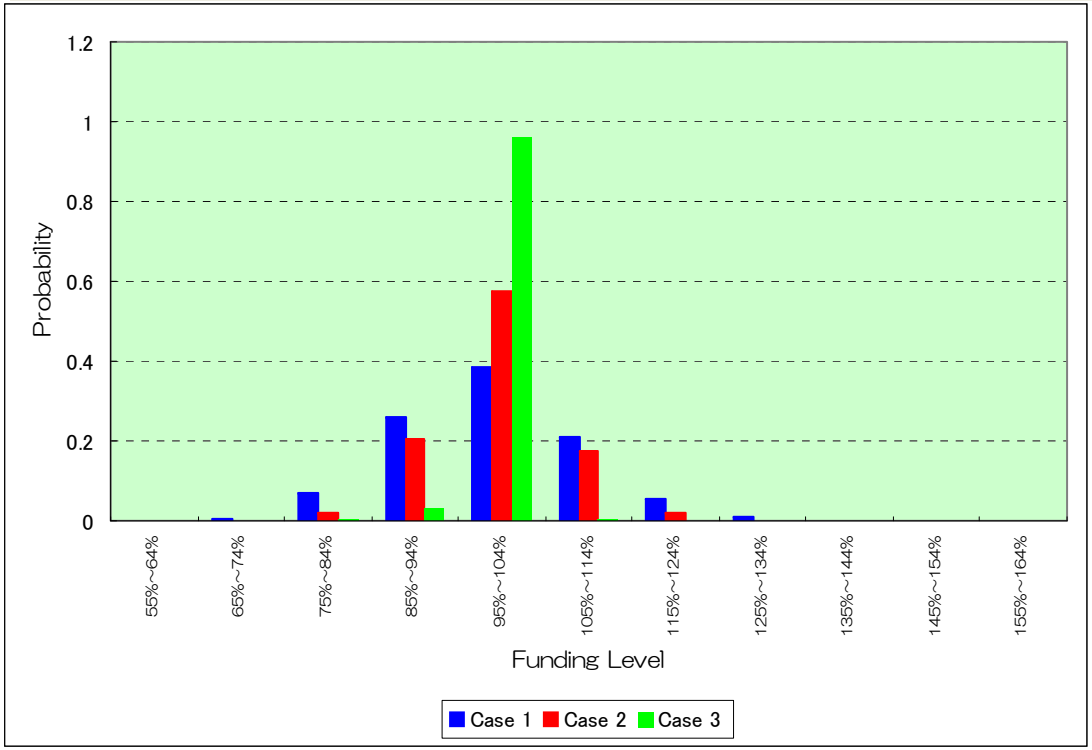
Financial condition of Floor A-② tends to be more stable than Floor A-③

4 Issues to be examined Floors/Caps(6)

Impact of floors/caps on financial management of pension plans

Simulation to measure the impact of floors/caps

Case1: 0% for a floor, 7% for a cap for a single-year
Case2: -2% for a floor, 9% for a cap for a single-year
Case3: 2.5% for a floor, 4.5% for a cap for the whole period



- Case3 is superior to the others in terms of financial stability.
- By extending the gap between a floor and a cap, the stability improves in Case2

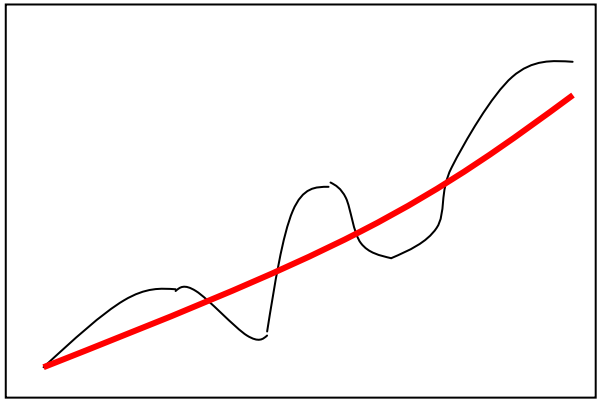
*Floors/Caps are adapted to Plan A
**Other assumptions are the same as in the appendix

4 Issues to be examined Floors/Caps(7)

Further variation of caps/floors for the whole period

Early retirees raise the possibility of additional costs.

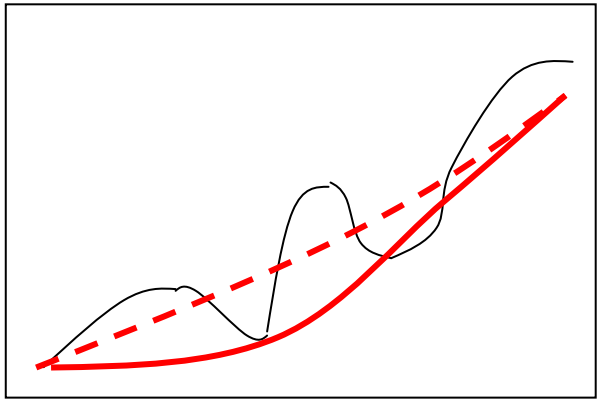
	Age 30		Age 40		Age 60	
Guarantee rate	Guarantee (thousand yen)	Possibility of additional costs (%)	Guarantee (thousand yen)	Possibility of additional costs (%)	Guarantee (thousand yen)	Possibility of additional costs (%)
2.50%	2,686	33.90	6,884	27.27	19,135	18.64
2.00%	2,626	26.11	6,552	17.10	17,171	8.24



Multiplying the guarantee by the discount rate for early retirees will mitigate the risk of additional costs.

Guarantee at age 30 is multiplied by the discount rate 0.8 and age 40 by 0.9

	Age 30		Age 40		Age 60	
Guarantee rate	Guarantee (thousand yen)	Possibility of additional costs (%)	Guarantee (thousand yen)	Possibility of additional costs (%)	Guarantee (thousand yen)	Possibility of additional costs (%)
2.50%	1,880	00.00	5,507	1.55	19,135	18.64
2.00%	1,838	00.00	5,242	0.62	17,171	8.24



4 Issues to be examined Post-employment benefit obligation (1)

Issues by current standards (GAAP in Japan)

1. How to estimate future rates of interest credit? Basing them on..

   ✓Actual values would be inappropriate because of their high volatility.
   ✓Averages for past years or market/economy forecasts could be options.

2. Link between the rate of interest credit and the discount rate

   Recent trends imply that the rate of the composite index based on the typical portfolio fluctuates significantly while the yield of government bonds remains low. (See the Appendix)

   The actual rate and the estimation of the future rate of interest credit would not correlate to the discount rate.

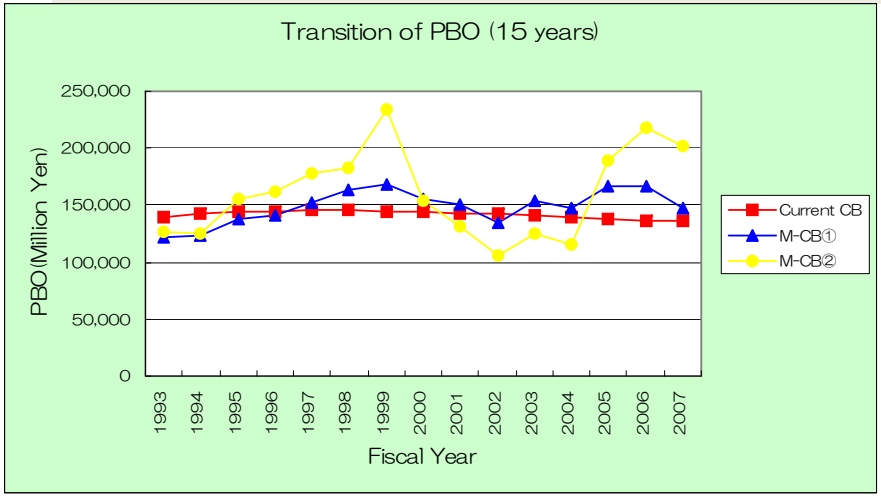
In M-CB plan, stabilization of PBO (which is achieved by correlation between the rate of interest cost and the discount rate) is not expected.

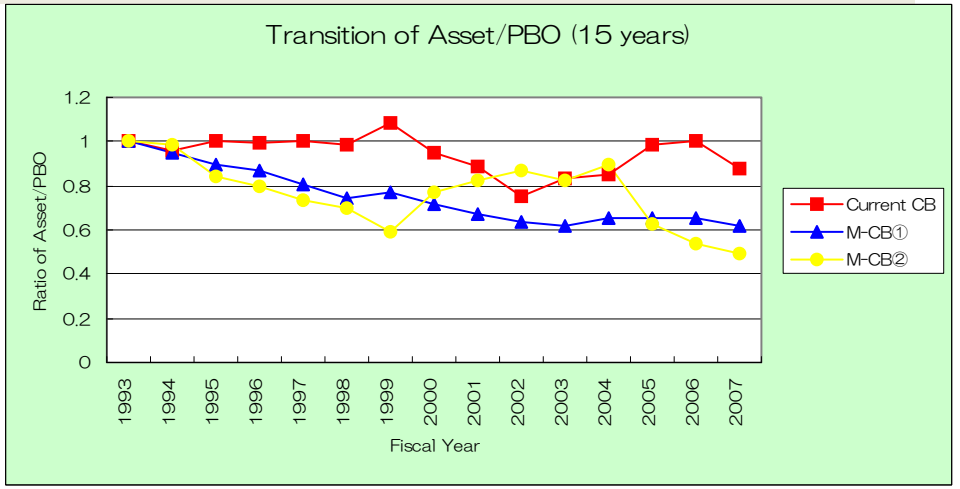
3. Link between notional account balances and plan assets

4 Issues to be examined Post-employment benefit obligation (2)

Simulations based on historical data (comparison with current CB)

The transitions of PBO and funding levels (indicated by Asset/PBO) are measured on the condition that the rate of interest credit and the return on plan asset follow the actual return of the typical portfolio (past 15 years and 10 years).





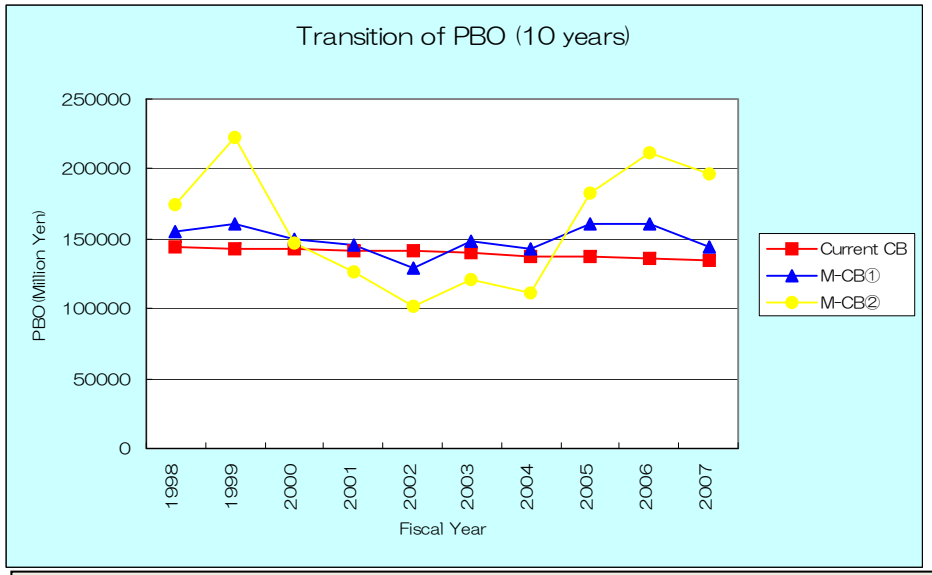
* Assumptions and plan designs are shown in the Appendix
**Estimation of the future rate of interest credit
M-CB①: Expected rate of composite index M-CB②:5 years average of actual values

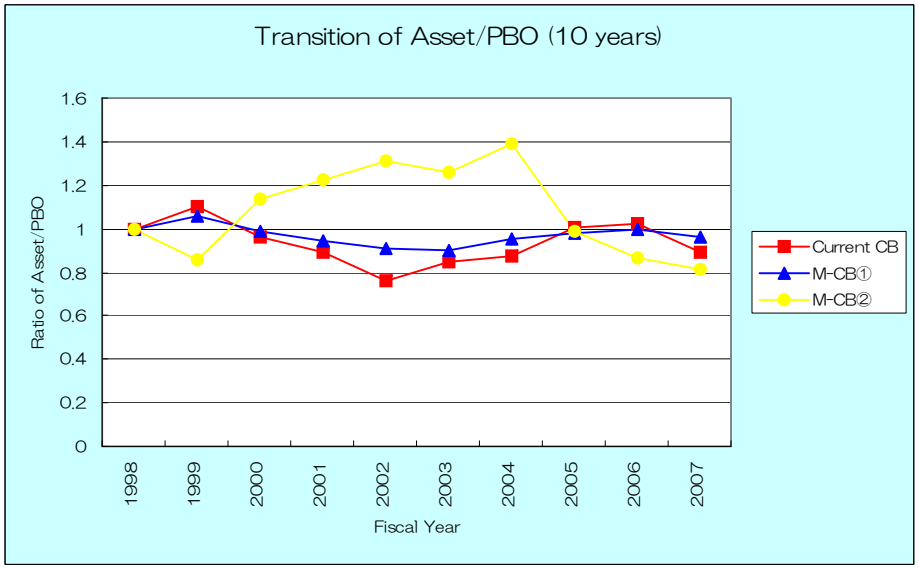
Results

✓In the current CB plan, the decrease in the actual and estimated rate of interest credits mitigate the increase of PBO when the discount rate decreased from 1994 to 1998 .
✓On the other hand, PBO in M-CB plan fluctuates more because of discount rate decreases during the same term.

4 Issues to be examined Post-employment benefit obligation (3)

Simulations based on historical data (comparison with current CB)





Results

✓The discount rate (government bond rate) is relatively stable and the accompanied fluctuation of PBO is not significant.

✓In the M-CB plan, when the asset decreased in 2000, the following decrease of notional account balances mitigate the fall in funding level.

✓On the other hand, in 1999, PBO increased with the growth of the asset which resulted in preventing an improvement in the funding level.

✓The past 5 years average (M-CB②) indicates increased volatility that causes a lack of PBO stability in the M-CB plan.

4 Issues to be examined Post-employment benefit obligation (4)

Necessity of a new measurement method

M-CB plan would minimize the risk of additional contributions on the condition;
✓The plan asset is almost equal to notional account balances
✓The portfolio is correlated to the composite index.

However, simulations indicate the M-CB plan can generate a large profit/loss by current accounting standards.

Any new measurements?

Can the sum of notional account balances be the obligations of M-CB plans?

The Impact of the factors below should be considered;
✓floors/caps
✓discount for voluntary retirement
✓additional cost of annuities

A possible solution (personal opinion)

The sum of notional account balances plus the quantified additional contributions risk as an option cost can be the obligation.
The method to quantify that additional contributions risk as the option cost should be considered.

4 Issues to be examined Others

- Fluctuation of annuities
- Determination process of the benefit reduction
- Requirements for the composite index
- Investment regulations
- and more..

5 Conclusion and Next Step

M-CB plan

Functions to relate notional account balances to fluctuating pension funds

For plan sponsors: can deliver more sustainable financial management even under dire investment circumstance.
For participants: can select an appropriate type of interest credit and design of benefit level based on how much they intend to risk.

To introduce a practical application of this plan …

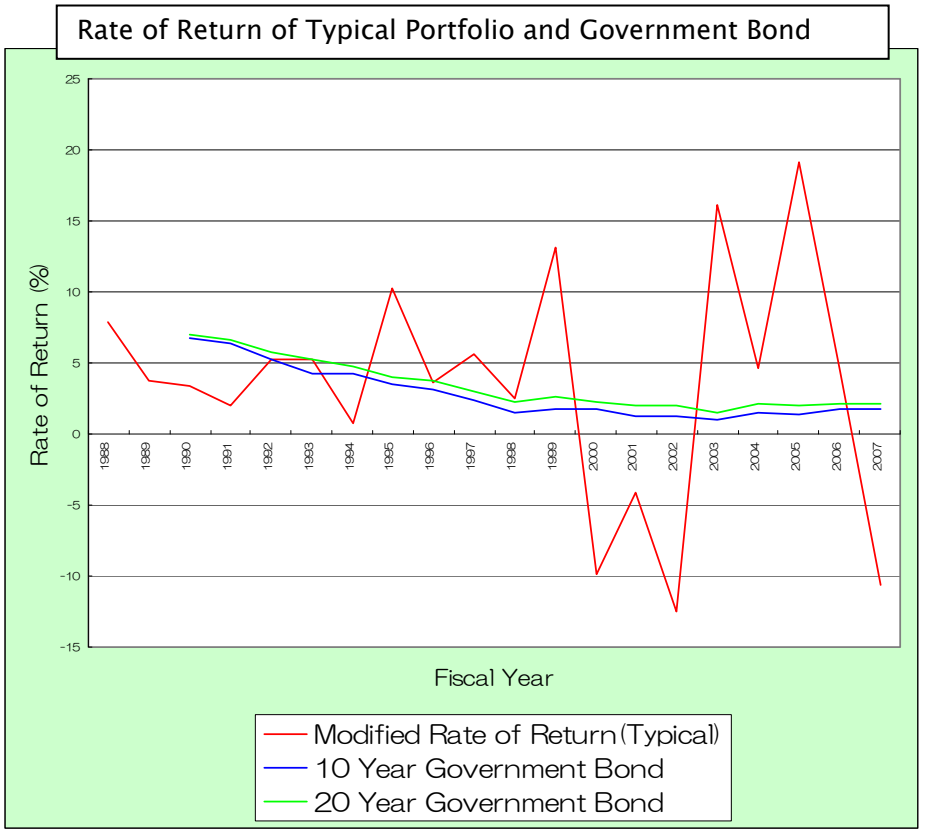
Issues to be examined in more detail

(1) Method to measure the obligation
(2) Method to appraise caps/floors
(3) Modification of the benefit reduction determination process

0 Appendix Assumptions for Simulations –Analysis for PBO(1)–

Plan Designs

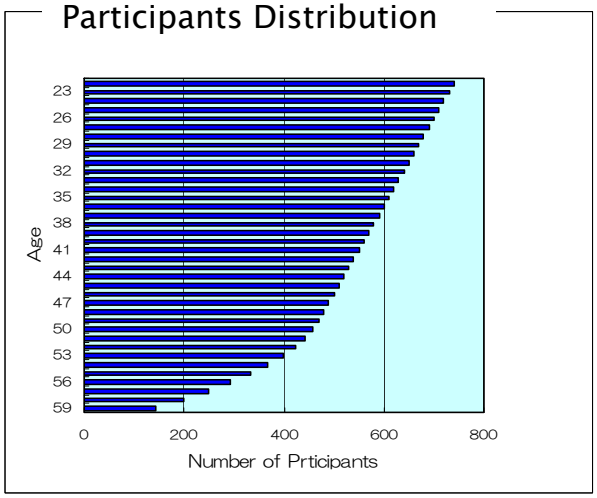
Plan design	Notional account balance is paid. No benefit discount for any reason
Type of payment	Only lump-sum benefit
Pay credit	320 thousand yen per year at any age Granted once at the beginning of each year
Interest credit(M-CB plan)	Composite rate is based on the same ratio as the class asset in the typical portfolio among corporate pension plans in Japan for the last 15 years. Correlated to return on plan asset
Interest credit(Current CB plan)	Single year average of 20 year newly-issued government bond yield
Target benefit at age 60 (join at age 22)	Approximately 240 million yen
Expected return of plan assets	3.20% *average of last 15 years actual data of the typical portfolio
Benefit payment	Once at the end of the fiscal year

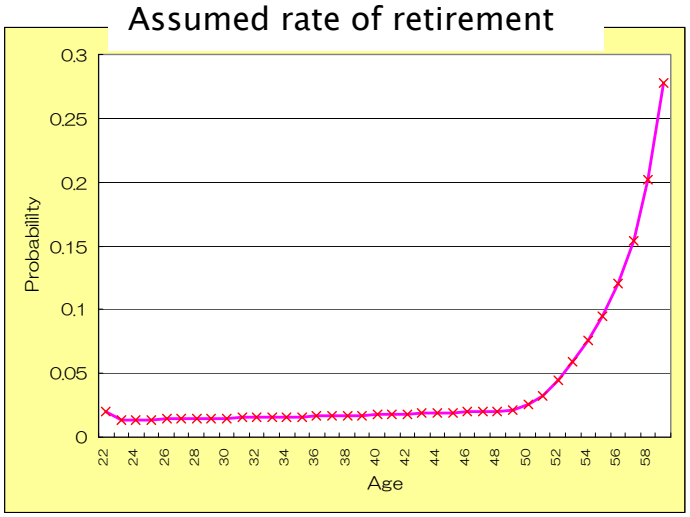


*source; pension fund association

0 Appendix Assumptions for Simulations -Analysis for PBO(2)-

Actuarial Assumptions





Average remaining service period	Approximately 18 years
Discount rate	Single year average of 20 year newly-issued government bond yields
Measurement attribute	Years-of-service approach
Estimation of future rate of interest credit (CB plan)	Latest actual rate(=discount rate)
Estimation of future rate of interest credit (M-CB plan)	1.①Expected rate of composite index (plan assets) 2. ②5 years average of actual return*
Amount of the plan asset in the initial year	Equal to notional account balances

*If 5 years average falls below 0%, 0% is set as an alternative.

0 Appendix Assumptions for Simulations –Analysis for Caps/Floors–

✓Assumed rate of retirement and distribution of participants are the same as those in the PBO analysis
✓In the initial year, funding level is equal to 1.0 (the plan asset is equal to the liability)
✓Other designs and assumptions are listed below

Plan design	Notional account balance is paid. No benefit discount for any reason
Type of payment	Only lump-sum benefit
Pay credit	300 thousand yen per year at any age Granted once at the beginning of each year
Interest credit	Plan A Correlated to the return on plan asset
Estimation of future rate of interest credit with Floor A-③	4.4% *coupled with single year based floor 0%
Target benefit at age 60 (join at age 22)	Approximately 240 million yen
Expected return of plan assets	3.50% (correlated to Plan A)
Benefit payment	Once at the end of the fiscal year
Contribution	Level contribution, 300 thousand yen per a participant, is paid once a year (based on the entry age normal cost method)
Others	Return of the plan asset and interest credit is set to follow the normal distribution, and funding level after 10 years is calculated by 30,000 times