

Reinventing the Risk Sharing Mechanism of DB Plans

The Japan Pension Research Council

2006 Annual Conference

2006.8.25

Nobuhiro SHIMIZU

E-mail: n-shimizu@gpif.go.jp

Outline

1. **Basic Stance**
2. **Employers' Risks and Individual Employees' Risks under Corporate Pension Plans**
3. **How Accounting Standards and Funding Standards Should Deal with the Interest Rate Volatility**
4. **The Risk Sharing Mechanism of Present DB Plans and their Structural Drawbacks**
5. **Proposal of "Ring-fenced" DB Plans**
6. **Proposal of "Retrospective" DB Plans**
7. **Proposal of Collective DC, Sequential Hybrid, Combination Hybrid and Issues concerning the Present Frame of Plan Conversion in Japan**
8. **Conclusion**

1-1. Basic Stance

- (1) DB plans are on the verge of extinction.
- (2) Risks accompanied by corporate pension plans should be shared by employers and employees appropriately,
 - based on the agreement between labour and management.
- (3) DB plans are intrinsically superior than DC plans.
 - DB plans can realize any pattern of risk sharing between employers and employees.
- (4) Should avoid such unhappy situations that
 - individual employees are obliged to bear all risks or
 - corporate pension plans, as a pillar of old-age income security, are confused by accounting standards.
- (5) DB plans should adapt to changes in the environment.

1-2. Nutshell of the Presentation

Toward the imminent review of the DB Corporate Pension Act and the DC Pension Act of Japan,

- 1. Analyze the risk sharing mechanisms from various aspects, including the risk sharing**
 - between employers and employees
 - between individual employees and collective employees and
 - between active members and retirees.
- 2. Point out present limits and drawbacks of the risk sharing mechanism of DB plans.**
- 3. Propose “metamorphosis” of DB plans, by introducing**
 - **“Ring-fenced” DB plans,** to dissolve present drawbacks and mitigate volatility of pension liabilities and
 - **“Retrospective” DB plans,** to drastically expand risk sharing patterns available

(If various patterns of risk sharing are made possible, it is anticipated that the general principles on post-retirement benefit accounting have to be modified accordingly.)

2-1. Employers' Risks under Present DB Plans

- (1) Future mortality rates might improve than expected
 - The risk that benefit expense increases due to improvement of mortality rates beyond expectation
 - Should be clearly distinguished from the risk that individual beneficiaries live longer than average
- (2) Future salary might increase than expected
- (3) Future investment return might be smaller than expected
- (4) Future interest rate might be less than expected
 - Interest rates do not affect benefit expenses (cash outflow), if assumption on interest rates are not used in the calculation of contributions.
 - In this case, interest rate risk is not intrinsic, because it is only caused by the accounting standards and funding standards based on termination liability.
 - In other cases as cash balance (CB) plans where interest rates are incorporated into benefit formulae, interest rate risk relates to the volatility of future benefit expenses (cash outflow).
- (5) Risks accompanied by other assumed rates, such as withdrawal rates

2-2. Risks of Individual Employees

(other than those listed on the previous slide)

(1) Longevity Risk

- Able to be covered by life annuity
- Fairly large additional cost is needed, in order to cope with longevity risk by the efforts of individual employees
- The costs of life insurance companies to provide life annuities are **ten times greater** than those of corporate pension plans (the case of the ABP of Netherlands).
- Measures to enlarge and strengthen the annuity market are indispensable
- For the time being, realistic solution may be strengthening the annuitisation function of both the Pension Fund Association (PFA) and the National Pension Fund Association (NPFA).

(2) Risk of Sponsoring Companies' Insolvency

- As long as the plan is alive, **the rights of beneficiaries are unconditionally given priority over the interests of active participants.** --- Beautiful solidarity among generations?
- "Ring-fenced" DB plans dissolve this drawback!!

(3) Inflation Risk

(4) Redundancy Risk and Job-change Risk

- Question of the back-loading of benefit design
- Forfeiting members' rights is allowed in certain cases in Japan

3-1. Stance of the IMF on Interest Risk

1. The current “mixed attributes” model of accounting and financial reporting has attempted to recognize different investment periods.

The banking industry illustrates requirements for using different reporting frameworks even within a single institution. Trading activities by banks are assessed by fair-value accounting and loans held-to-maturity are assessed by amortized cost accounting.

2. Liability measures are broadly viewed as more problematic than asset values, so standard setters continue to struggle with a variety of “mixed” measurement frameworks.

3. Fair value approaches require the existence of active and liquid markets, or some reasonable proxy, that can readily provide observed “value-in-exchange” prices.

4. Markets may sometimes be imperfect, at least in the short run. Shifting to fair value accounting, with frequent adjustment to earnings, may reinforce incentives to engage in short term, procyclical activities and inject further volatility into market and prices.

Extreme volatility or liquidity “black hole” can create disorderly markets and lead to financial instability.



5. In an imperfect world, policymakers need to consider whether proposed accounting reforms may not diminish the diversity of investment behavior and the long-term orientation of important institutional investors, such as pension funds.

Traditionally patient behavior of pension funds, stemming in part from their long-term liability structure, has enhanced financial stability.

6. As standard setters and other policymakers reassess accounting and reporting standards, they should consider the broader financial stability issues, and the benefits from risk dispersion and investor diversity.

Source: IMF [2005], “The Global Financial Stability Report 2005”.

An experts group chaired by Ignazio Visco[2005], “Ageing and pension system reform: implication to financial markets and economic policies”, a report prepared at the request of the Deputies of the G10.

3-2. Funding Standards -1

Characteristics of Corporate Pension Funds

(1) Who assumes risks?

- I. Pension funds does **not** guarantee by themselves the benefit obligation --- USA, UK, Canada, Germany (Unterstuetzungskasse, Pensionsfonds), Japan, etc.
 - In this case, **pension funds never be equivalent to life insurance companies.**
 - Proposed Funding Standards of USA: “ongoing funding target” & “at risk funding target”
 - Pensions Regulator of UK: Takes into account “the strength of the employer and its ability to pay off the shortfall”
- II. Pension funds guarantee by themselves the benefit obligation --- Denmark, Sweden (except company pension funds), Germany (Pensionskasse), Netherlands, etc.
 - Funding regulations proxy of those for life insurance companies are imposed (Traffic Light Model of Sweden, nFTK of Netherlands)

(2) General principle of financing

Corporate pension plans are not always externally fully-funded for both DB & DC.

- In Germany, book reserve financing (Direktzusage) is still dominant.
- In Sweden and Finland, sponsoring companies are permitted borrowing from pension funds.
- In USA, sponsoring companies are permitted contributing with their own stocks.

(3) Implementation of Pension Plans

- I. Mandatory --- in principle, required to affiliate to industry or nation-wide pension plans (France, Netherlands, Sweden, Switzerland)
- II. Arbitrary --- in general, establish company pension plans (USA, UK, Canada, Japan)

3-3. Funding Standards -2

OECD Core Principles

<Core Principle 3 (Extracts) >

- (1) DB plans should be subject to minimum funding rules or other mechanisms to ensure adequate funding of pension liabilities.
- (2) Rules based on winding-up approach may be promoted as a minimum level to complement the on-going approach.
(The legislation on minimum funding in many countries became **too much stricter (over-regulation)**.)
- (3) Flexibility can be allowed for temporary limited under-funding under restricted circumstances.
(Forcing or encouraging plan sponsors to take dramatic corrective actions based on this single market value can be **very counterproductive**.)
- (4) Consideration should be given to the development of **adequate but flexible** requirements for minimum capital/guarantee in pension funds, taking account of the long term nature of their liabilities.
(There is much to recommend the general Canadian approach to minimum funding.)
(Whether should a plan sponsor try to match the pension plan funding with the pension expense, in order **to eliminate any pension asset or liability of the company's balance sheet? The answer is "no."**)
- (5) Appropriate calculation methods for asset valuation and liabilities funding, including actuarial techniques and amortisation rules must be set up and based on transparent and comparable standards.
 - 3.2 Legal Provisions are in place that require the determination of DB pension plan liabilities corresponding to the financial commitments or obligations, defined as accrued benefit rights.
 - 3.5 These legal provisions set out flexible methods of correcting a situation of underfunding, **with appropriate distinctions concerning the source of underfunding**.

Material: OECD [2004], "OECD Recommendation on Core Principles of Occupational Pension Regulation".
Colin Pugh [2004], "Report on Funding Rules and Actuarial Methods", OECD home page.

3-4. Funding Standards -3

OECD Guidelines on Funding and Benefit Security

<Extracts>

- (1) **The legal provisions should not prevent funding methods that seek to dampen the short term volatility in contributions.** Under ongoing funding methods, prudent amortisation might help achieve a smoother contribution schedule. (§ 3.4)
- (2) Funding rules may grant some reprieve on contribution obligations only under restricted circumstances and to defined limits. Temporary reductions of contribution obligations may be considered with a clear waiver procedure. (§ 3.5)
- (3) **Funding rules should aim to be countercyclical.** They should also take asset price and discount rate volatility into account when limiting contributions. (§ 3.6 & annotations 21)
- (4) **Where the pension fund itself underwrites the pension liability without any guarantee from plan sponsor or members,** it should be required to hold additional assets on a plan termination basis. (§ 3.7)
- (5) Whenever plan benefits are guaranteed by sponsoring employers, the creditor rights of plan members and beneficiaries should be recognized in the case of bankruptcy of the plan sponsor. **Priority rights should be required for at least due and unpaid contributions.** (§ 4.2)

Material: OECD [2006], "OECD Guidelines on Funding and Benefit Security", published for public consultation.

3-5. Funding Standards -4

EU: IORP Directive (2003/41/EC)

- (1) The home Member State shall ensure that institutions, where they **provide cover** against biometric risks and/or guarantee either an investment performance or a given level of benefits, establish sufficient technical provisions (TPs). (§ 15-2)
- (2) The **minimum amount of the TPs** shall be calculated by a sufficiently prudent actuarial valuation. It must be sufficient both for pensions and benefits already in payment to continue to be paid, and to reflect the commitments which arise out of members' **accrued pension rights**. (§ 15-4(a))
- (3) The maximum rates of interest used shall be chosen prudently and determined in accordance with any relevant rules of the home MS. These prudent rates of interest shall be determined by taking into account
 - the **yield on the corresponding assets** held by the institution and the future investment returns **and/or**
 - the **market yields of high-quality or government bonds**; (§ 15-4(b))
- (4) TPs should be calculated on the basis of recognised actuarial methods and **certified by qualified persons**. (preamble 21)
- (5) The home MS shall ensure that institutions, where the institution **itself** underwrites the liability to cover against biometric risk, or guarantees a given investment performance or a given level of benefits, hold on a permanent basis **additional assets** above the TPs. The amount thereof shall reflect the type of risk and asset base in respect of the total range of schemes operated. (§ 17-1)

4-1. Presently Available Risk Sharing -1 Usual Analysis

Innovation such as the “Ring-fenced DB Plan” cannot be borne from the usual analysis on risk sharing:

Table 1: Risk Attribution in Pension Plans

Risk Feature	Investment	Annuity Conversion	Salary Inflation
Final Salary Pension	Sponsor	Sponsor	Sponsor
Final Salary Lump Sum	Sponsor	Member	Sponsor
Career Average/CARE	Sponsor	Sponsor	Member
Sequential Hybrid	Both	Both	Both
Combination Hybrid	Both	Both	Both
Final Salary Underpin	Sponsor	Sponsor	Sponsor
DC Underpin	Member	Member	Member
Cash Balance	Sponsor	Member	Member
Self annuitising DC	Member	Sponsor	Member
Defined Contribution	Member	Member	Member

Material: Department for Work and Pensions (UK) [2005], “Risk sharing and hybrid pension plans”, Research Report 270

4-2. Presently Available Risk Sharing -2

Analysis of the Author

+ Analyze the employers' risks (1) – (4) above, with the distinction of ante-retirement periods from the post-retirement periods

+ Pay attention to the function of “solidarity among generations” when these risks are realized

Chart 1 Risk Sharing under interest rates-tied CB plans

Interest rates-tied Cash Balance Plans	Active Period	Beneficiary Period	Solidarity among Generations
Mortality Risk	Sponsor	Sponsor	Unconditional Solidarity
Salary Inflation Risk	Active Members (in the main)	Beneficiaries	None
Investment Risk	Sponsor	Sponsor	Unconditional Solidarity
Interest Risk at the time of Annuitisation	Active Members & Beneficiaries		None
Longevity Risk	Pooled among same Generations		None (in general)

Note: In Japan, it is not permitted to use the mortality rates at the time of future retirement for calculating the amount of annuity.

4-3. Structural Drawback of the Present DB Plans

- + **Unconditional Solidarity among Generations**
 - As long as the plan is alive, the rights of beneficiaries are given priority over the rights (interests) of active members, irrespective of the level of underfunding
 - Amounts of benefits cannot be cut down before plan termination
 - However, the precondition of the solidarity, “the situation of underfunding shall be corrected in the future” may not always stand up
- + There should be some mechanism of restricting the solidarity among generations, to ensure “fair” risk sharing between active members and beneficiaries.

5-1. Mechanism of "RfDB" Plans -1

I. Specification of individual participants' "share" on reserves

- By dividing the annual contribution to individual participants, and **retrospectively** calculating the terminal amounts based on **actual** rates of return on investments and **actual** amounts of benefits paid

II. When decease or withdrawal occurs

- If there is some remainder in the "share" of the deceased or the withdrawn person, distribute the remainder among other participants according to the plan regulation.

III. Financing of annual benefit disbursement

- The amount of one's "share" > The present value of his/her future benefits $\times 100\%$
Withdraw from his/her "share" the amount equal to his/her annual benefits of the year and allocate it to benefit disbursement for him/her.
- The amount of one's "share" = The PV of his/her future benefits $\times Y\%$ ($Y < 100$)
Withdraw from his/her "share" $Y\%$ of the annual amount of benefits and allocate it to benefit disbursement for him/her. The rest may be financed through allocating the surplus of other participants according to the plan regulation. Shortfalls should be financed by supplemental contribution of the employers.

IV. If any funding shortfalls: (basic mechanism)

- Any shortfall of financial resources for benefit disbursement of the following year should be immediately supplemented. If employers cannot meet this requirement, the annual amount of benefits shall be cut down correspondingly. The beneficiaries concerned shall be given privileged rights of claim against the employers.

5-2. What is Ring-fencing?

- + Any of a range of techniques for distinguishing, **segregating or separating** one set of asset class, liabilities, activities or operations from another, including
 - methods for ensuring that particular assets and liabilities can **be identified and traced with ease**, as well as
 - techniques **protecting one set of assets from the economic fate of another**, such as providing them with a privileged status in the case of bankruptcy

Source: Simon Arnot [2004], "Directive 2003/41/EC on the Activities of Institutions for Occupational Retirement Provision", European Federation for Retirement Provision.

(for reference)

- In the event of cross-border activity as referred to in Article 20, the technical provisions shall **at all times be fully funded** in respect of the total range of pension schemes operated. (the IORP Directive § 16-3)
- If these conditions are not met, the competent authorities of the home MS shall intervene in accordance with Article 14. To comply with this requirement the home MS may **require ring-fencing of the assets and liabilities**. (the IORP Directive § 16-3)

5-3. Mechanism of "RfDB" Plans -2

V. If any funding shortfalls ("modified" mechanism)

(ex.) Amounts up to, for instance, 90% of the prescribed benefits are guaranteed as the rights of beneficiaries. The rests are not treated as rights, and shall be paid out according to the funded status of the plan.

- **Funding shortfall > 10%** (ex.) Benefits of the following year shall be cut down by 10%. Employers are required to pay the sum of
 - (A) Supplemental contribution corresponding to the first 90% of benefits and
 - (B) Contribution to raise the funded status from 90% to 100% within the next 10 years.

- **Funding shortfall = X%, X < 10%** (ex.) Benefits of the following year shall be cut down by [X]%. Employers are required to pay the contribution to raise the funded status to 100% within the next [X] years.

5-4. Merits of the “Modified RfDB” plans

- (1) The variable portion of benefits (last 10%) shall **function as a virtual risk buffer**, and dramatically **diminish the influence that interest rate fluctuations** exert on the equity of sponsoring companies.
- (2) Can **prevent cost hikes** due to accumulating a risk buffer, by allocating the virtual risk buffer to benefit disbursement as the variable portion of benefits.
- (3) **Funding standards may be eased** because the reserve is ring-fenced by individual participants. For multi-employers plans, it is possible to **insulate the financial effects of employers' withdrawal**.
- (4) There is no need to modify the original benefit design.
 - Because the “RfDB” plans put certain condition on financing of benefit disbursement, irrespective of the benefit design of the plan.

6-1. "Retrospective" DB Plans -1

<Mechanism of "Retrospective" DB plans>

- We can obtain the prescribed amount of annual benefits by:
 - Specifying the past normal contributions by individual participants and by each year of benefit disbursement, and
 - Calculating **retrospectively** the terminal amounts **using the assumed rates used for calculation of contributions**
- **Replace** the assumed rates with those that partially or entirely reflect the actual rates. Annual amounts of benefits of the "Retrospective" DB plans are given by the same calculation as above **but using the new rates.**

Example I. The assumed rate of return shall be replaced with the assumed ROIs **used at subsequent financial valuations.**

- Same as the CB plans with contribution credits equal to the amounts of normal contributions and revaluation indices equal to the expected ROIs used at subsequent financial valuations.
- No funding shortfall arises even if the expected ROI is reduced. (**Conversely, no surplus arises even if the expected ROI is raised.**)
- Able to maintain the basic characteristics of DB plans while limiting the investment risk borne by employers up to the funding shortfall due to the discrepancy between the actual ROI and the assumed ROI.
- If expected mortality rates shall be replaced by actual mortality rates, then employers do not bear the mortality risk. (except the case where plan members live longer on average than expected under the actual mortality rates)

6-2. "Retrospective" DB Plans -2

Chart 5 Risk Sharing under "Retrospective" DB plans (example)

"Retrospective" DB plans – I (example)	Active Period	Beneficiary Period	Solidarity among Generations
Mortality Risk	Active Members	Beneficiaries	None
Salary Inflation Risk	Active Members	Beneficiaries	None
Investment Risk	Sponsor (partially)	Sponsor (partially)	Unconditional Solidarity
Interest Risk at the Time of Annuitisation	Active Members & Beneficiaries		None
Longevity Risk	Pooled among same Generations		None

6-3. "Retrospective" DB Plans -3

Example II. Assumed ROI shall be replaced by actual ROIs of subsequent years

- Same as the CB plan with contribution credits equal to the amounts of normal contributions and revaluation indices equal to the actual ROIs of subsequent years.
- Should prescribe the formula of determining the assumption on the expected ROI from the actual ROIs
- Able to maintain the basic characteristics of DB plans by confining the annual amounts of benefits within certain range from the prescribed amounts.
- Same as the collective DC plans guaranteeing a given investment performance.
- Various alternatives are possible, such as that where assumed ROI shall be replaced only if actual ROIs separate from the assumed ROI beyond the prescribed range.

7-1. Other Plans to Be Introduced -1

<Collective DC Plans>

Chart 2 Risk Sharing under Collective DC plans

Collective DC plans	Active Period	Beneficiary Period	Solidarity among Generations
Mortality Risk	Active Members	Beneficiaries	None
Salary Inflation Risk	Active Members	Beneficiaries	None
Investment Risk	Active Members	Beneficiaries	None
Interest Risk at the Time of Annuitisation	Active Members & Beneficiaries		None
Longevity Risk	May Be Pooled among same Generations		None

7-2. Other Plans to Be Introduced

<Sequential Hybrid Plans>

- Convert from a DC to a DB at given age
 - <Favorite points for employees>*
 - I. Longevity risk is pooled by plan members as a group
 - II. Administrative and investment costs during the stage of beneficiaries are borne by employers
 - III. Shut down the solidarity between active members and beneficiaries

Chart 3 Risk Sharing under Sequential Hybrid plans (example)

Sequential Hybrid plans (example)	Active Period	Beneficiary Period	Solidarity among Generations
Mortality Risk	Active Members	Sponsor	Only among Beneficiaries
Salary Inflation Risk	Active Members	Beneficiaries	None
Investment Risk	Active Members	Sponsor	Only among Beneficiaries
Interest Risk at the Time of Annuitisation	Active Members & Beneficiaries		None
Longevity Risk	Pooled among same Generations		Only among Beneficiaries

7-3. Present Issues on Plan Conversion

- + **Plan conversion to DB is not allowed in Japan**
 - DC plan is a sort of the “black hole”. We cannot recover from DC plans eternally!
 - Plan conversion to DB should be allowed under the present principle of dealing DB and DC on the same basis as alternatives of corporate pension plans
- + **Lump-sum settlement due to DC conversion**
 - Employers are allowed to break their promises to the DB plan participants of paying annuity, by the reason of DC conversion.

7-4. Other Plans to be Introduced

<Combination Hybrid Plans adopted by the MES of UK>

· Distribute surplus over prescribed funding level to individual plan participants as contributions to a DC plan

<Favorable points for employees>

- I. Limit the risk pooling of DB plans concerning surplus
- II. Maintain the risk pooling concerning the basic portion of benefits

Chart 4 Risk Sharing under Combination Hybrid plans (example)

Combination Hybrid plans (example)	Active Period	Beneficiary Period	Solidarity among Generations
Mortality Risk	Sponsor	Sponsor	Limited Solidarity
Salary Inflation Risk	Active Members	Beneficiaries	None
Investment Risk	Sponsor	Sponsor	Limited Solidarity
Interest Risk at the Time of Annuitisation	Sponsor		Limited Solidarity
Longevity Risk	Pooled among same Generations		None (in general)

Source: Richard Stroud, "A Multiple Choice Question", Investment & Pensions Europe, February 2005

8. Conclusion

- (1) DB plans are intrinsically superior than DC plans. Should expand the pattern of risk sharing as much as possible.
- (2) Should enlarge and strengthen the market of life annuity as a policy (For the time-being, should strengthen the annuitization function of the PFA and the NPFA).
- (3) Should introduce CDC plans
- (4) Should reconsider the lump-sum settlement due to DC conversion. Should allow DB conversion from DC.
- (5) Should introduce sequential hybrid that is DC until given age and converted to DB, and combination hybrid where surplus of the DB portion is distributed as contribution to the DC portion.
- (6) Should introduce the “**Retrospective**” DB plans
- (7) Should introduce the “**Ring-fenced**” DB plans