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Issues with the Preliminary Views on Amendments to IAS 19 Employee Benefits

Ken Sugita/Kozo Omori
(Chuo Mitsui Asset Trust and Banking Company,Limited)

SECTION SUR LES PENSIONS, AVANTAGES SOCIAUX ET SÉCURITÉ SOCIALE DE L'AAI
IAA PENSIONS, BENEFITS AND SOCIAL SECURITY SECTION
PBSS

JSCPA

Agenda

- Revision of IAS19 reviewed from the standpoint of economics and consistency among accounting items.
- Issues
  - The change of market value of pension fund in profit or loss.
  - New Classification of benefits: “Contribution-based promises” and “Defined benefit promises”.
  - Credit risk consideration.
  - ABO instead of PBO.

Amendments to IAS19

- IFRS←the International Accounting Standards Board (IASB)
- IAS(1973- 2001)← International Accounting Standards Committee (IASC).
  IASB took over from the IASC the responsibility for setting IAS.
- IAS19：Employee Benefits
  - 27 March 2008 Discussion Paper: the Preliminary Views on Amendments to IAS 19 Employee Benefits (DP)
  - 4Q 2009 Exposure Draft

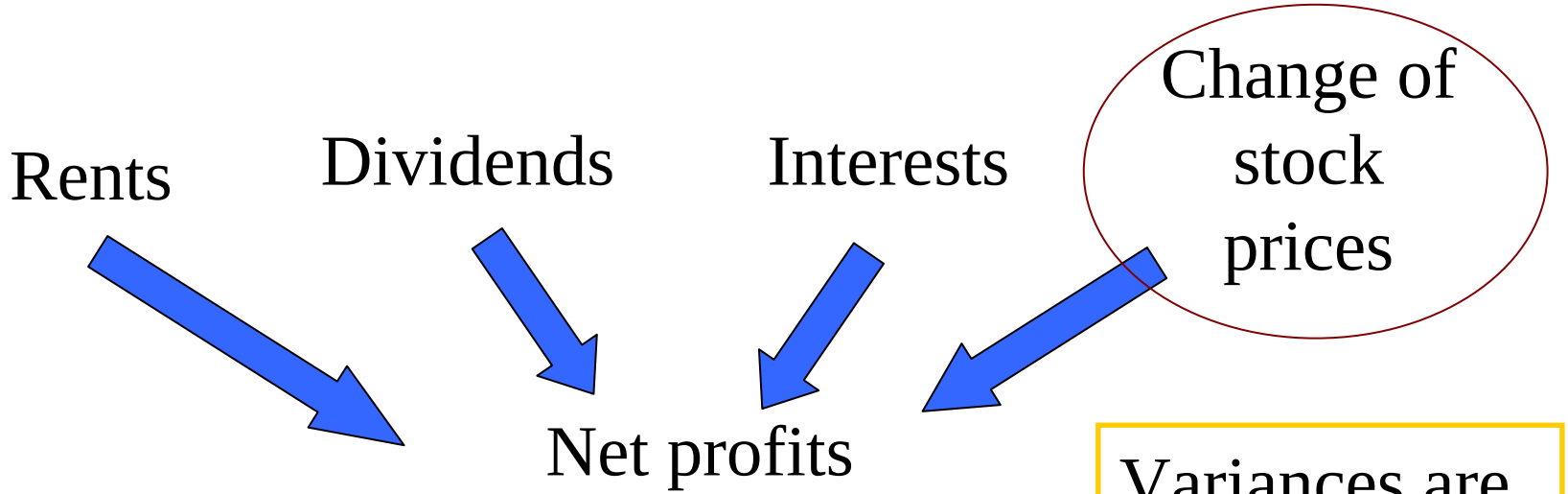
DP: Immediate Recognition of changes

- Entities should recognize all changes in the value of plan assets and in the post-employment benefit obligation in the financial statements in the period in which they occur(PV2).

- The Board does not express a preliminary view on the presentation of the components of post-employment benefit cost in comprehensive income. Instead, the Board outlines three approaches to presentation that illustrate ways in which information about post-employment benefit costs could be presented(PV5).

- Approach 1: All changes in the defined benefit obligation and in the value of plan assets should be included in profit or loss in the period in which they occur.
- Approach 2: An entity presents the costs of service in profit or loss. Entities present all other costs in other comprehensive income.
- Approach 3: An entity presents remeasurements that arise from changes in financial assumptions in other comprehensive income. …An entity presents changes in the amount of post-employment benefit cost other than those arising from changes in financial assumptions (e.g. the costs of service, interest cost and interest income) in profit or loss (PV5)

Issues with approach 1



Measurement of periodic income:
"standard method" :current earnings

Variances are different.

"present value method" the sum of (i) current earnings and (ii) the difference between the present value of the future earnings or market value at the previous settlement date and those at the current settlement date.

Concept of our proposition

- For 2 periods, let X_1 be a dividend for period 1, let X_2 be a dividend for period 2.
- Market value of stock converges to X_1+X_2

Present Value Method

Positive ← positive serial correlations

- $\overbrace{Var(X_1+X_2)}$

$$=\underbrace{Var(X_1)}+\underbrace{Var(X_2)}+2\overbrace{Cov(X_1, X_2)}$$

Standard Method

- Risk of present value method is relatively larger.

Utility of corporate manager

- e_i: period profit for period i

  β : subjective discount rate($0 < \beta \leq 1$)

  E(・) : Expected Value

  Var(・) : Variance

  λ : parameter for risk aversion

- Under the above notation, the utility can be

  $U = \sum \beta^i \{E(e_i) - \lambda \, Var(e_i)\}$

- Our assertion:Utility with present value method is relatively small due to the relatively large variance.

Stock model

- Stock price is represented with Dividend Discount Model in consideration of long term convergence.
- Model for dividend for period i

$d_1 = d + \varepsilon_1$,
$d_2 = d + \varepsilon_1 + \varepsilon_2$,
……,
$d_i = d + \varepsilon_1 + \varepsilon_2 + \cdots + \varepsilon_i$,
……,

d: constant
ε_i and ε_j are mutually independent stochastic variables for $i \neq j$,
mean of ε_i is 0,
standard deviation is σ_i

$d_n = d + \varepsilon_1 + \varepsilon_2 + \varepsilon_3 + \cdots\cdots + \varepsilon_n$

- $E(d_i) = d, Var(d_i) = \sigma_1^2 + \sigma_2^2 + \cdots\cdots + \sigma_i^2$

Stock model without time discount

- We first suppose that the interest rate and risk premium are both 0 , and β is 1. Because we do not suppose a time discount, the time of the recognition of expense does not influence profit calculations, and under the standard method we recognize total investment expenses in the first period for simplicity reasons. Under these assumptions, the stock price S after the first ex-right of period 1 is,

$S=E(d_1+d_2+d_3+\cdots\cdots+d_n)=nd.$

■As for the standard method, e_1, the profit for period 1, is d1-*S*,then,

$$E(e_1)=d-S=(1-n)d,$$

$$Var(e_1)=Var(d_1)=\sigma_1^2$$

■For values of *i* greater than 1, the expected value of profit is the expected value of dividends for period *i* , therefore ,

$$E(e_i)=E(d_i)=d,$$

The variance of profit is the variance of dividends,

$$Var(e_i)= Var(d_i)=\sigma_1^2+\sigma_2^2+\sigma_3^2+\cdots\cdots+\sigma_i^2.$$

■The utility U acquired by the corporate manager is expressed in terms of the expected value and variance at time 0 of the profit arising at each period;

$$U = \sum_{i=1 \text{ to } n} \{E(d_i) - \lambda\, Var(d_i)\}$$

$$= \sum_{i=1 \text{ to } n} \{d - \lambda \sum_{t=1 \text{ to } i} \sigma_t^2\}-nd$$

$$= -\lambda \sum_{i=1 \text{ to } n} (n+1-i)\,\sigma_i^2.$$

■As for the profit with present value method, the ex-right stock price of the end of the first period being

$$S_1=E(d_2+d_3+\cdots+d_n)$$
$$=E(d_1+\varepsilon_2+d_1+\varepsilon_2+\varepsilon_3+\cdots+d_1+\varepsilon_2+\varepsilon_3+\cdots+\varepsilon_n)$$
$$=(n-1)d_1$$
$$=(n-1)(d+\varepsilon_1),$$

and the stock price at the beginning of period 1 being

$$S=nd,$$

■Therefore, the profit of period 1 is

$$e_1=d_1+S_1-S=n\varepsilon_1.$$

■Similarly, we can calculate profits for period 2 and beyond:

$$e_2=d_2+S_2-S_1=(n-1)\varepsilon_2,\cdots$$
$$e_n=d_n+S_n-S_{n-1}=\varepsilon_n.$$

■Each of the expected profit values is 0, and the variances thereof are

$$n^2\sigma_1^2、(n-1)^2\sigma_2^2、\cdots、\sigma_n^2.$$

■ Now we calculate the utility;

$$\begin{aligned} U= & \ 0-\lambda\, 0 \\ & +0-\lambda\, n^2\sigma_1^2 \\ & +0-\lambda\,(n-1)^2\sigma_2^2 \\ & +\cdots\cdots \\ & +0-\lambda\ \sigma_n^2 \\ = & -\lambda\ \sum_{i=1\ \mathrm{to}\ n}(n+1-i)^2\sigma_i^2\ . \end{aligned}$$

Cf. As for standard method,

$$U = -\lambda\ \sum_{i=1\ \mathrm{to}\ n}(n+1-i)\sigma_i^2.$$

Stock Model with Time Discount

The model without time discount

→ No risk premium

→ Stock investment is an investment with nothing but risks.

→ Denying stock investment due to the negative utilities.

This conclusion may be a result of the overly simplistic model.

■Let us start by determining a recognition of expenses that enables the consistent recognition of two alternative measurement of profit.

■Considering the expected value of dividend is *d*, if we denote expenses by C_i for period *i* and ex-right stock price by S_i, the expected value of profit by accrued income is

$$d\text{-}Ci$$

and the expected value of profit by market value change is

$$E(S_{i-1})(1/v\text{-}1).$$

■We obtained Ci by setting the above two profits equal and solving

$$d\text{-}C_i = E(S_{i-1})(1/v\text{-}1) \text{ with respect to } C_i.$$

■For $i \neq n$, the ex-right stock price S_i for the end of period i is

$$S_i = vE_i(d_{i+1}) + v^2E_i(d_{i+2}) + \cdots + v^{n-i}E_i(d_n) = \Sigma_{t=1 \text{ to } n-i} v^t d_i,$$

and for $i=n$ $\quad S_n=0.$

■Therefore, we conclude $C_i = d\text{-}E(S_{i-1})((1/v)\text{-}1)$

$$= d\text{-}\Sigma_{t=1 \text{ to } n-i+1} v^t d((1/v)\text{-}1)$$

$$= d\{ 1\text{-}\Sigma_{t=1 \text{ to } n-i+1} v^{t-1} + \Sigma_{t=1 \text{ to } n-i+1} v^t \} = v^{n-i+1}d.$$

■We can now calculate the utility of investment in the case of standard method.

■ As the profit e_i is

$$e_i = d_i - C_i = d_i - v^{n-i+1}d,$$

the expected value of the profit is

$$E(e_i) = d(1 - v^{n-i+1}),$$

and the variance is

$$Var(e_i) = Var(d + \varepsilon_1 + \varepsilon_2 + \varepsilon_3 + \cdots\cdots + \varepsilon_i - v^{n-i+1})$$

$$= Var(\varepsilon_1) + Var(\varepsilon_2) + Var(\varepsilon_3) + \cdots\cdots + Var(\varepsilon_i)$$

$$= \sigma_1^2 + \sigma_2^2 + \sigma_3^2 + \cdots\cdots + \sigma_i^2.$$

■Using these expected values and variances for the profit of each period, we can calculate the utility acquired by a corporate manager as

$$U = \sum_{i=1 \text{ to } n} \beta^{i} \{E(d_i) - \lambda \, \mathrm{Var}(d_i)\}$$

$$= \sum_{i=1 \text{ to } n} \beta^{i} [d(1 - v^{n-i+1}) - \lambda \sum_{t=1 \text{ to } i} \sigma_t^{2}]$$

$$= \sum_{i=1 \text{ to } n} \beta^{i} d(1 - v^{n-i+1}) - \lambda \sum_{i=1 \text{ to } n} \sum_{t=i \text{ to } n} \beta^{t} \sigma_i^{2}$$

$$= \sum_{i=1 \text{ to } n} \beta^{i} d(1 - v^{n-i+1}) - \lambda \sum_{i=1 \text{ to } n} \sum_{t=1 \text{ to } n-i+1} \beta^{t-1} \beta^{i} \sigma_i^{2}$$

■Next, we calculate the utility of profit the with present value method. In this case, profit e_i is expressed as

$$e_i=d_i+S_i-S_{i-1}$$

$$=d_i+\Sigma_{t=1 \text{ to } n-i} v^t d_i - \Sigma_{t=1 \text{ to } n-i+1} v^t d_{i-1}$$

$$=d_{i-1}(1+\Sigma_{t=1 \text{ to } n-i} v^t - \Sigma_{t=1 \text{ to } n-i+1} v^t) + \varepsilon_i (1+\Sigma_{t=1 \text{ to } n-i} v^t)$$

$$=d_{i-1}(1- v^{n-i+1})+ \varepsilon_i \Sigma_{t=1 \text{ to } n-i+1} v^{t-1}.$$

■Thus the expected value and variance of the beginning of period 1 is

$$E(e_i)=d(1- v^{n-i+1}),$$

$$Var(e_i)=(\sigma_1^2+\cdots\cdots+\sigma_{i-1}^2)(1- v^{n-i+1})^2+\sigma_i^2\{\Sigma_{t=1 \text{ to } n-i+1} v^{t-1}\}^2$$

Respectively.

■ $U = \Sigma_{i=1 \text{ to } n} \beta^i \{E(d_i) - \lambda \, Var(d_i)\}$

$= \Sigma_{i=1 \text{ to } n} \beta^i [d(1 - v^{n-i+1})$

$- \lambda ((\sigma_1^2 + \cdots\cdots + \sigma_{i-1}^2)(1 - v^{n-i+1})^2 + \sigma_i^2 \{\Sigma_{t=1 \text{ to } n-i+1} v^{t-1}\}^2)]$.

■ Let ΔV_i be the difference in which the variance for e_i in standard method is deducted from the variance for e_i in present value method. This shows

$$\Delta V_i = (\sigma_1^2 + \cdots\cdots + \sigma_{i-1}^2) \, v^{n-i+1} (v^{n-i+1} - 2) + \sigma_i^2 \{\Sigma_{t=1 \text{ to } n-i+1} v^{t-1}\}^2.$$

■ We can then express the difference in utility as follows: ΔU

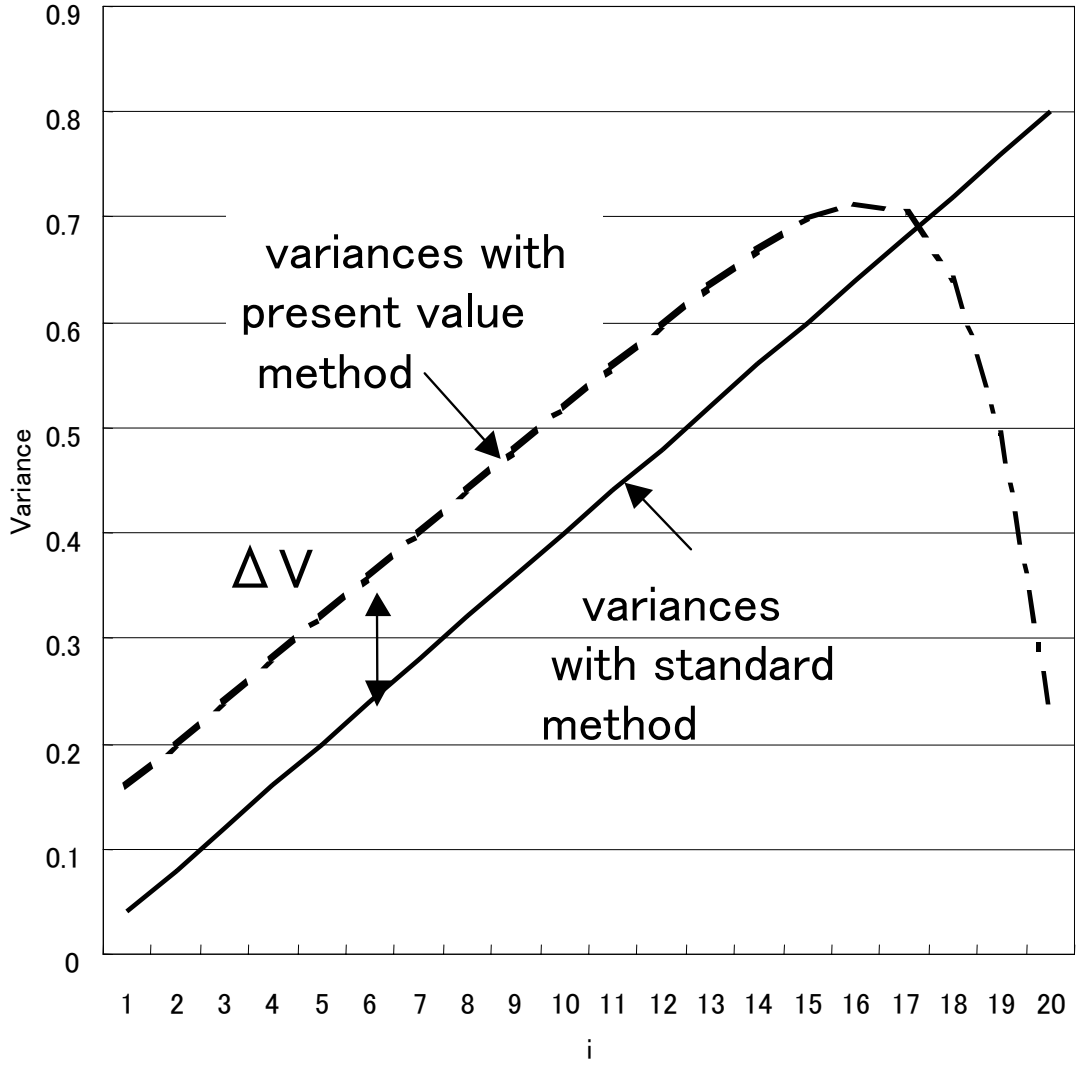
Risk Reduction

Risk Increase

$= - \lambda \, \Sigma_{i=1 \text{ to } n} \beta^i \Delta V_i$

$= - \lambda \, \Sigma_{i=1 \text{ to } n} \beta^i \{(\sigma_1^2 + \cdots\cdots + \sigma_{i-1}^2) \, v^{n-i+1} (v^{n-i+1} - 2) + \sigma_i^2 \{\Sigma_{t=1 \text{ to } n-i+1} v^{t-1}\}^2\}$.

An Example : Comparison of variances



■Let D_i be the terms for σ_i^2

in the formula U divided by $-\lambda \beta^i \sigma_i^2$.

■$D_n=1$ is clear, and for $i \leqq n-1$ we have

$$D_i = \{ \Sigma_{t=1 \text{ to } n-i+1} v^{t-1} \}^2 + \Sigma_{t=i+1 \text{ to } n} \beta^{t-i} v^{n-t+1} (v^{n-t+1} -2).$$

■Because $\beta^{t-i} <1$ and $(v^{n-t+1} -2)<0$, we have

$$D_i > \{ \Sigma_{t=1 \text{ to } n-i+1} v^{t-1} \}^2 + \Sigma_{t=i+1 \text{ to } n} v^{n-t+1} (v^{n-t+1} -2)$$

$$= \{ \Sigma_{t=0 \text{ to } n-i} v^t \}^2 + \Sigma_{t=1 \text{ to } n-i} v^t (v^t -2)$$

$$> 1+ \Sigma_{t=1 \text{ to } n-i} 2v^t + \Sigma_{t=1 \text{ to } n-i} v^{2t} -2 \Sigma_{t=1 \text{ to } n-i} v^t$$

$$=1+ \Sigma_{t=1 \text{ to } n-i} v^{2t} > 0.$$

■Thus, we can derive $\Delta U<0$.

A Numerical Example

fiscal year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
annual dividend(yen)	55	55	70	55	55	55	60	60	60	60

■The current dividend is ¥60 per share.

The stock price is 2,190.

Let n be 200, which means the company lasts 200 years. Then we can derive Rs, the sum of the interest rate and the risk premium, as a discount rate with which the stock price of ¥2,190 is the market value of future ¥60 dividends. The result of the calculation for Rs is 2.74%. The mean and standard deviations of yearly differences of dividends are 0 yen and 8 yen respectively.

■Now we determine the parameter λ in the utility function

$$U=\Sigma_{i=1 \text{ to } n}\ \beta^{i}\{E(d_i)-\lambda\,\mathrm{Var}(d_i)\}.$$

As

$$S_1=\Sigma_{t=1 \text{ to } n-1} v^t d_1,$$

the variance of income after the one-year holding of the stock is

$$\mathrm{Var}(d_1+S_1)$$

$$=(1+v+v^2+\cdots v^{n-1})^2\,\sigma_1^2=(1-v^n)^2/(1-v)^2\,\sigma_1^2.$$

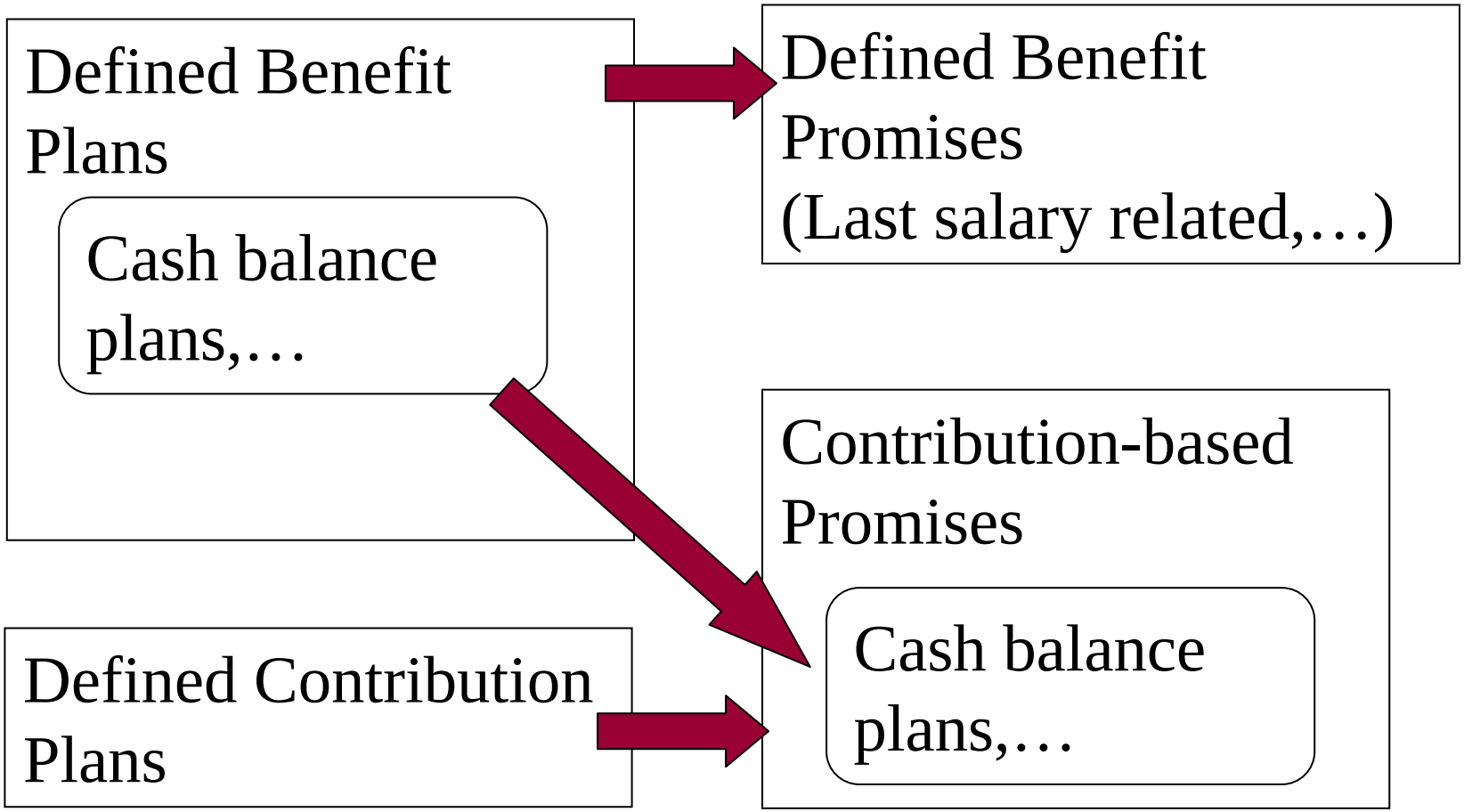
■Let W be the amount held by an investor and the marginal utility of stock holding is equal to risk free rate R_f under the market equilibrium,

■ Now we have

$$0.0274 - 2\lambda(8/2190)^2(1-(1/1.0274)^{200})^2/(1-1/1.0274)^2W = R_f.$$

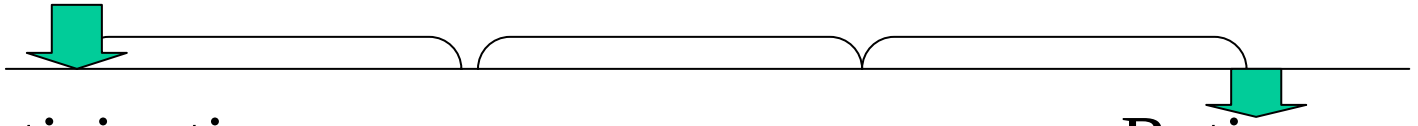
■If R_f is 0.5%, λ =0.60235/W.As for holding one stock, W=2190 causes λ =0.000275.
Using these parameter value as well as assumption n=200、d=60、σ_i=8、β =0.9、v=1/1.0274,
the utility with standard method is 714,
the utility with present value method is 494.

Change of classification of benefits



The line between contribution-based promises and defined benefit promises is blurry .

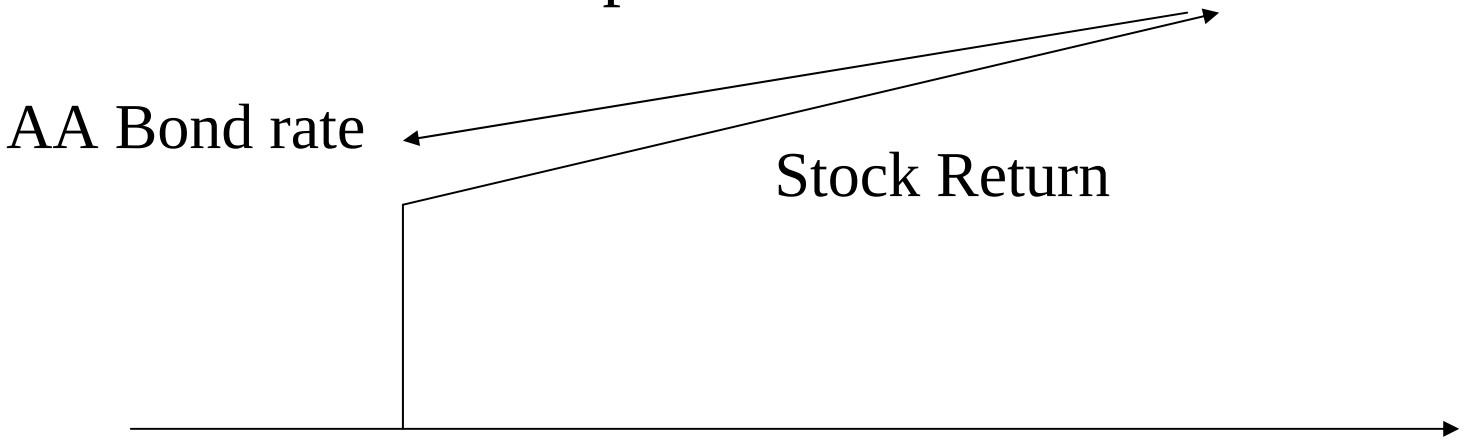
As one example of this ambiguity, according to section 5.39 and 5.40 of the DP, IASB classifies a lump sum benefit at retirement equal to 5 percent of the average of an employee's final three years' salary as a defined benefit promise; however, if a person retires from a company with career average plan after three years' employment, his or her lump sum can be also classified into defined-contribution promises according to section 5.10.



Particiaption Retirement

There is no need to distinguish between contribution-based promises and defined benefit promises .

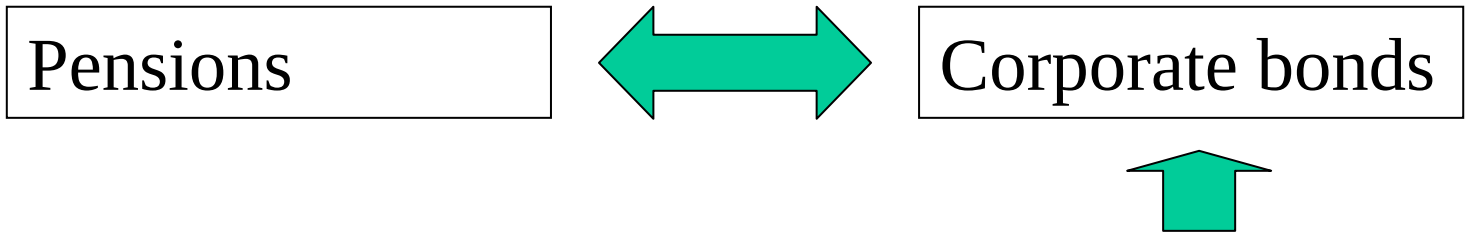
Post-employment benefit promises that promise a specified return on contributions. They include benefits commonly described as cash balance plans. The Board proposes to call these promises ‘contribution-based’ promises.



Use of risk neutral valuation.

Credit Risk Consideration

- The Board contemplates that the effect of the credit risk of a liability is relevant information that should be included in the measurement of "Contribution-based promises". But consideration of credit risk should be consistent among accounts(7.27 in DP).
- Consistency is important.



Controversial fair value accounting?

ABO instead of PBO

- First, PBO evaluation includes the future unrealized salary increase, which does not exist in other accounting items.
- Second, the salary increase considered by accountants is one of the probable factors considered by conservative accountants, and contains inflation.
- Third, under the current global capitalism, M&As are frequently performed, and salary increases are more and more unstable.

Conclusion

- Standpoints
  - Consistency with Financial Economics
  - Consistency between pension related accounting items and non-pension related accounting items
- Conclusions
  - Change of market value of pension fund should not be reflected in profit or loss.
  - No need for new classification: “Contribution-based promises” and “Defined benefit promises”.
  - Credit risk consideration consistent with bond.
  - ABO instead of PBO.