

EMPLOYEE CONTRIBUTIONS

Valuation Technique: Aggregate Level Cost

WITHOUT EEC:

ASSETS

AAV

UAL

Bal PVNC

Total PVB

LIABILITIES

PV retirement benefits

PV ancillary benefits

PV INACTIVES

Total PVB

WITH EEC:

ASSETS

AAV

PV EEC

UAL

Bal PVNC

Total PVB

LIABILITIES

PV retirement benefits

PV ancillary ben incl. refunds

PV inactives

Total PVB

ONE YEAR TERM COST

Similar concept is used for Unit Credit Method in handling Employee Contributions

- **Used in lieu of level normal cost**
- **Simple approximation**
- **One year at a time**
- **PV of liability for one year's expected exits**

Example calculation:

Death benefit to survivor is monthly annuity

$$v^1 q_x^{(d)} (\text{Annual benefit}) \ddot{a}_{y+1}^{(12)}$$

EMPLOYEE CONTRIBUTIONS

Valuation Technique - Unit Credit Method

A. ACCRUED LIABILITY

1. Should increase accrued liability by refunds of past mandatory employee contributions
2. Simplifying assumption: rate credited on EEC is same as valuation rate
3. Simplifying assumption: assume no vesting, instead have refunds of EEC at all ages
4. PV of refunds \rightarrow EECWI $[1 - (I_{RA}/I_x)]$
5. Interpretation: refunds are provided to employees who leave before attaining retirement age

EMPLOYEE CONTRIBUTIONS

Valuation Technique - Unit Credit Method

B. NORMAL COST

1. Should reduce normal cost by mandatory employee contributions
2. Simplifying assumptions (prior page)
3. Can't take credit for portion of this year's EEC that will be refunded in the future:

$$v(\text{EEC})[1 - (I_{\text{RA}}/I_x)]$$

4. Net reduction in normal cost

$$v(\text{EEC}) - v(\text{EEC})[1 - (I_{\text{RA}}/I_x)] = v(\text{EEC})(I_{\text{RA}}/I_x)$$

5. Interpretation: value of EEC (paid at EOY) still in pension fund when participant retires