

Actuary 101 For SAVVA Meeting

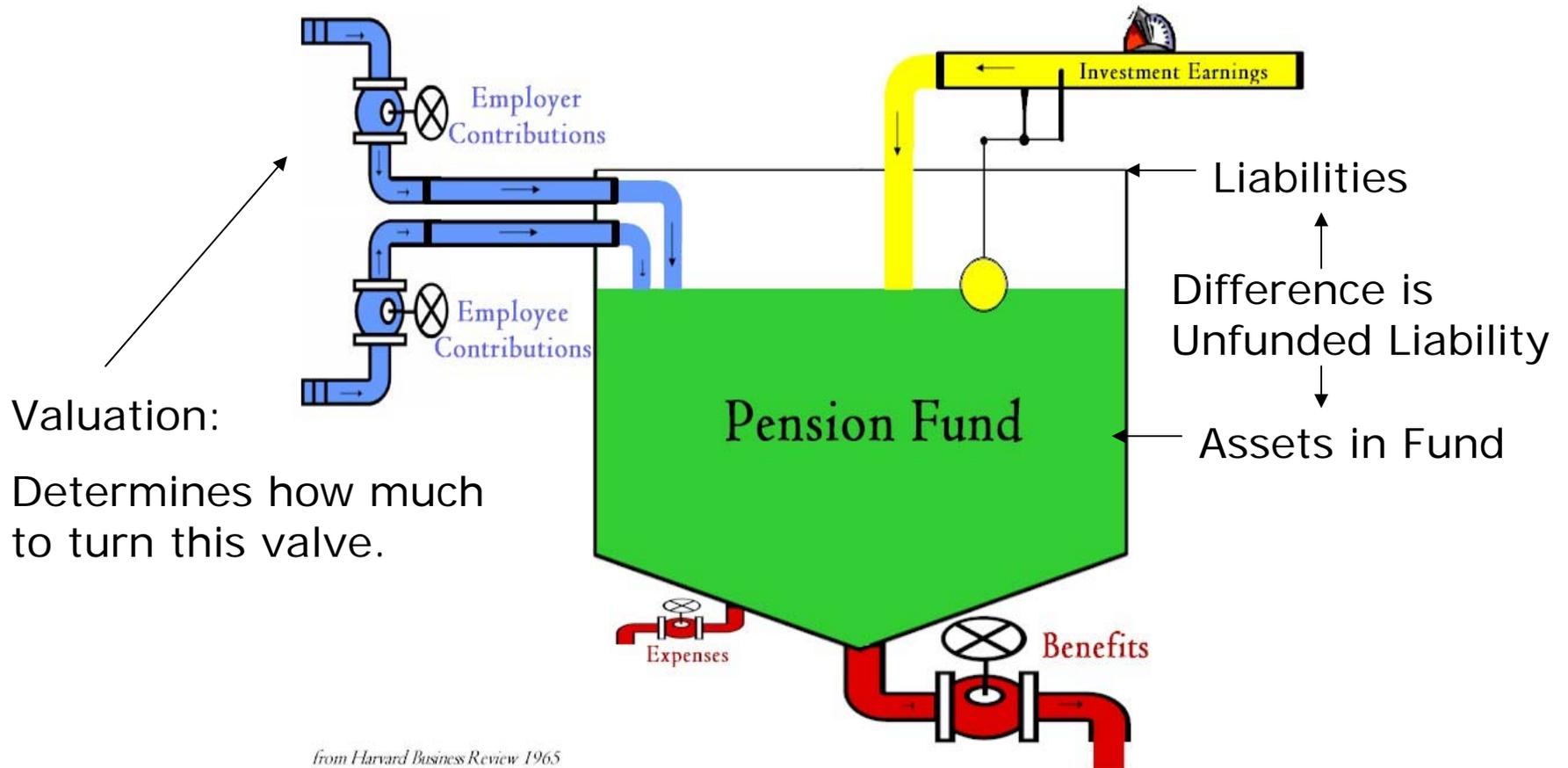
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Pension Fund Dynamics





Pension Actuary Tasks

- Analyze trends
- Develop assumptions for the future
 - Demographic (turnover, retirement, disability, mortality, etc.)
 - Financial and economic (investments, payroll, inflation, etc.)
- Measure obligations (liabilities)
- Develop a funding plan
- Stress test the future
- Monitor the progress of the plan and make periodic adjustments as needed



Analyze Trends

- Census data and past reporting
- Experience studies
- Financial historical returns
- National and regional statistics
- Changes in benefit structures
- Regulatory environment
- Economic environment
- Other?



Develop Assumptions for the Future

- The Actuary does not have a crystal ball
- Balance past experience of the plan with on-going national trends
- Judgment, experience, and risk assessment play important roles in the final determination
- Once set, one can be sure that from year-to-year actual experience will vary
- Assumptions normally are determined when experience studies are done and remain in place until the next experience study



Measuring Obligations

- Collect Data
 - Age, Service, Salary, etc.
 - Retiree benefits in pay status
- Determine Benefits
 - According to applicable statutes
 - Amount, Eligibility
- Apply Assumptions
 - Economic
 - Investment Return, Payroll growth, COLAs
 - Demographic
 - Withdrawal, Retirement, Mortality, Disability



Measuring Obligations (continued)

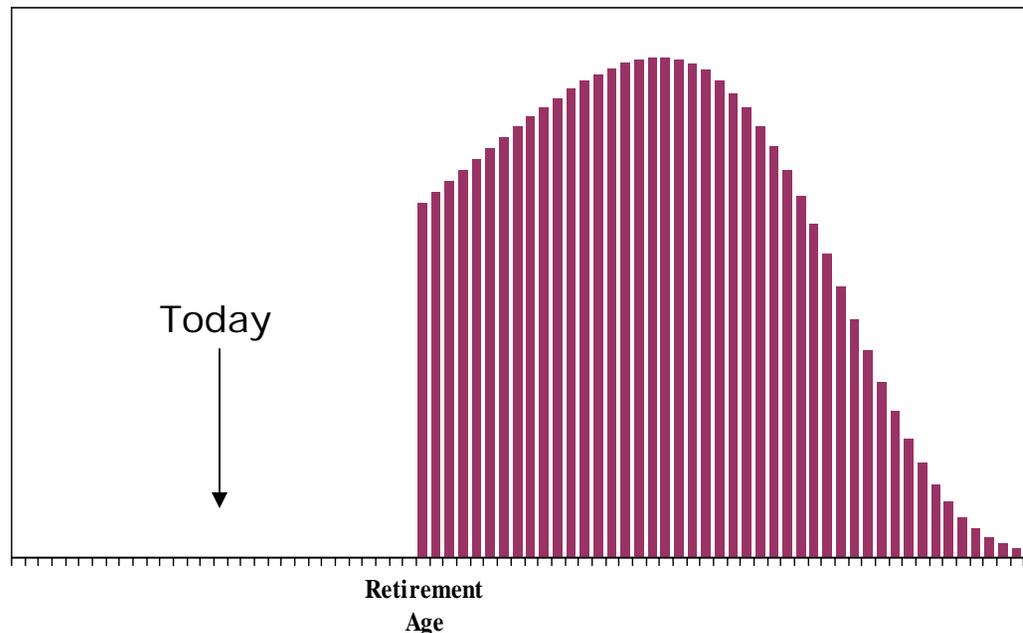
- For each person, we calculate the benefit payable for each decrement at each age

	Withdrawal	Early (reduced) Retirement	Normal (unreduced) Retirement	Service Connected Death	Non-Service Death	Service Connected Disability	Ordinary Disability
Age 25	\$0	NA	NA	\$750	NA	\$9,000	NA
Age 26	ROC	NA	NA	\$775	NA	\$9,250	NA
Age 27	ROC	NA	NA	\$800	\$400	\$9,500	\$480
:							
Age 50	NA	\$12,000	NA	\$23,000	\$11,500	\$32,000	\$23,000
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Age 55	NA	NA	\$25,000	\$25,000	\$12,500	\$35,000	\$25,000
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Age 70	NA	NA	\$30,000	\$30,000	\$15,000	\$37,500	\$30,000



Measuring Obligations (continued)

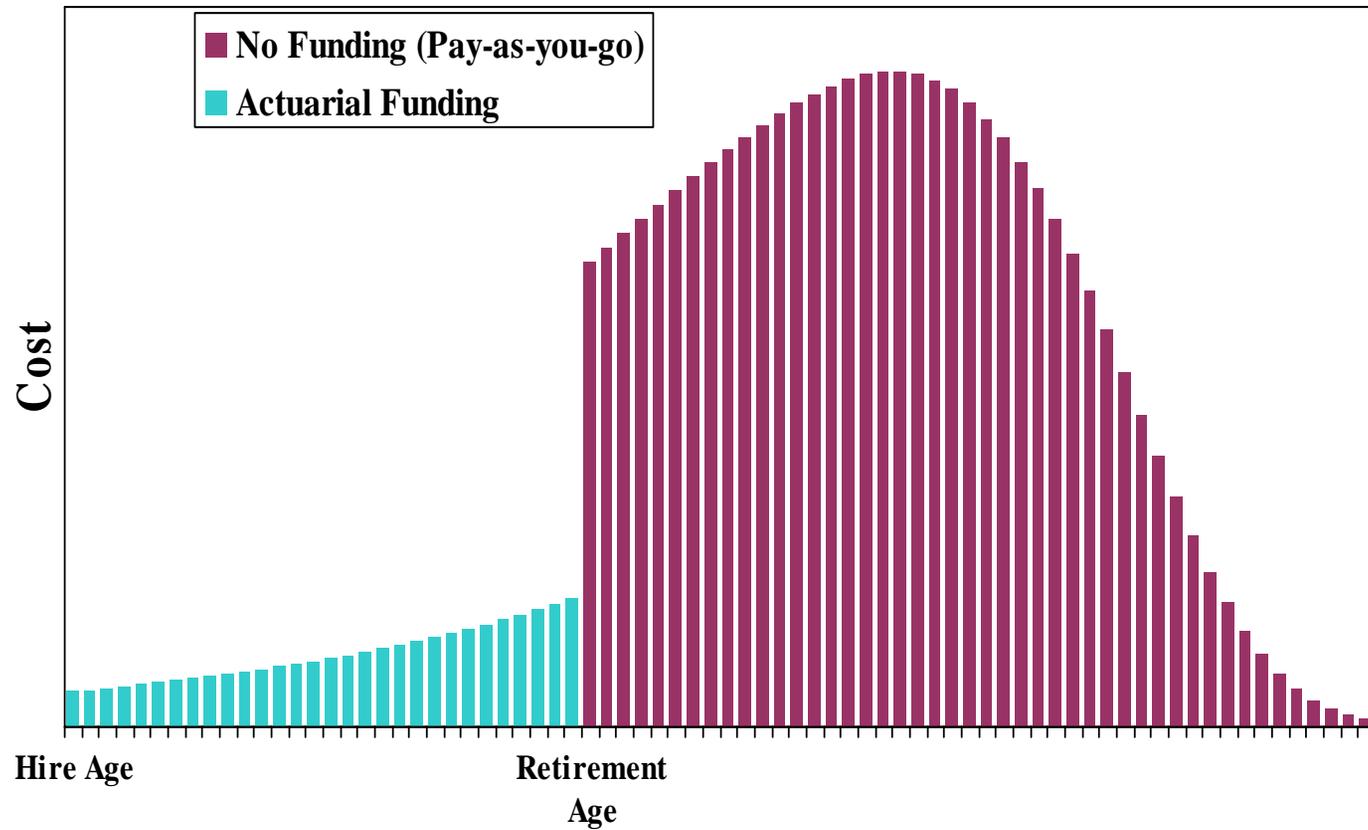
- We then convert each of the benefits to a payout stream (reflecting COLAs where applicable) and the probability of paying each benefit



- The discounted value of these payout streams is the Present Value of Future Benefits (PVFB)



Funding Plan Development





Contribution Components

- **Normal Cost**
 - Cost associated with one year of service by the actuarial cost method (Entry Age Normal method for Montana systems)
 - Expressed as a percentage of payroll
 - Only changes if benefits or assumptions change
- **Actuarial Accrued Liability (AAL)**
 - Portion of the Present Value of Future Benefits (PVFB) which is not covered by future normal costs
 - Disclosed in annual financial report
- **Actuarial Value of Assets (AVA)**
 - The value of assets used by the actuary for purposes of the actuarial valuation
 - Normally the actuary smoothes investment gains and losses over future valuation dates (4 years for Montana systems) to reduce volatility



Annual Required Contribution (ARC)

- ARC is the sum of the current year's normal cost plus an amortization payment toward the Unfunded Actuarial Liability (UAL)
- Amortization of Unfunded Actuarial Liability
 - $UAL = \text{Actuarial Accrued Liability} - \text{Actuarial Value of Assets}$
 - Maximum period of 30 years under GASB rules
 - For public funds, payments are normally calculated to increase with assumed increases in payroll
 - If payroll increases at the assumed rate (and there are no further gains or losses) this will produce a constant contribution rate
- Statutory contribution rates may or may not be sufficient to satisfy the ARC



Relevant Accounting Standards

- Issued by Governmental Accounting Standards Board (GASB)
- Two primary statements affecting public retirement systems
 - Statement 25: Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans
 - Statement 27: Accounting for Pensions by State and Local Governmental Employers



Actuarial Standards of Practice

- Issued by the Actuarial Standards Board
- Provide actuaries with a framework for providing professional actuarial assignments
- Currently there are 44 standards covering all areas of actuarial practice, 6 of which directly impact actuarial valuations of pension plans

ASOP No. 4	Measuring Pension Obligations
ASOP No. 23	Data Quality
ASOP No. 27	Selection of Economic Assumptions
ASOP No. 35	Selection of Demographic and Other Noneconomic Assumptions
ASOP No. 41	Actuarial Communications
ASOP No. 44	Selection and Use of Asset Valuation Methods



Qualifications of Actuaries

- Society of Actuaries
 - Administers actuarial exams and provides for continuing education
 - Designations include Fellow of the Society of Actuaries (FSA) and Associate of the Society of Actuaries (ASA)
- American Academy of Actuaries
 - Voice of the actuarial profession on public policy and professionalism issues
 - Designation is Member of the American Academy of Actuaries (MAAA)



Qualifications of Actuaries (continued)

- Joint Board for the Enrollment of Actuaries
 - Agency of the Federal government
 - Qualifies actuaries to sign forms and reports required by ERISA for private sector plans
 - Designation is Enrolled Actuary (EA)
- Actuarial Code of Conduct
 - Identifies the professional and ethical standards required of actuaries
 - Sets forth the requirements that actuaries have to the public, to their clients, to their employers and to the actuarial profession



Qualifications of Actuaries (continued)

- Qualification Standards
 - Set forth specific qualifications for actuaries issuing Statements of Actuarial Opinion
 - Require ongoing continuing education in each actuary's specific practice area