How Changes to Actuarial Standards Will Impact Pension Reporting

Webinar

November 16, 2020
Logistics

• Attendees in listen only mode.

• Questions welcome. Type question using “Question” function on control panel, and we will answer.

• Audio, technical issues during webinar, call GoToWebinar at 1-800-263-6317.

• We are recording this session, and webinar replay and slides will be posted at https://www.nirsonline.org/events.
Agenda

01. Introductions
02. History
03. Overview of ASOPS 51 & 4
04. Practical Examples
05. Q&A
Speakers

Dan Doonan
NIRS, Executive Director

Todd Tauzer, FSA
Segal, Vice President and Actuary
Speakers

Flick Fornia, FSA
Pension Trustee Advisors, President

Joe Newton, FSA
Gabriel Roeder Smith & Company, Pension Market Leader
Actuaries Report Pension Costs and Liabilities Based on Expected Return

• **Before ERISA (1970s):** Public Pensions tended to invest mostly in fixed income securities
  - Actuaries used bond yields as the assumed rate of return
  - Created well-matches cost and liability determination

• **1980’s:** Most funds continued to shift to more equity investments
  - Assumed rates of return crept up to recognize equity risk premium in costs and liabilities
  - High inflation meant that assumed rates of return were still conservative

• **1990’s:** Sustained bull market made 8% return assumptions look overly conservative
  - 401(k)’s looked more attractive than “stodgy” DB plans built around only an 8% return
Implications of using a single assumed rate of return

- Decision makers get incomplete picture of costs and liabilities
- No recognition of risk of not earning assumed rate
- Some anomalies in pricing plan provisions
  - Gainsharing benefits
  - Any other feature dependent on returns
- The single number approach gives undue credence to the costs and liabilities
  - Single figure appears more credible
  - Although it is merely a calculation based on a single set of assumptions
Push-back to a single assumed rate of return

- Financial economists argued that single rate must be market-based
  - This meant risk-free rate
  - This rate is often appropriate for determining settlement values
- Many economists and actuaries support market-value liability (MVL) approach as single rate
  - Consistent with insurance pricing
  - Consistent with financial economics
  - Consistent with pricing assets which trade
  - Elegant approach
Public plans / actuaries have challenged appropriateness & usefulness of MVL

- Unlike private sector pensions which can be bought and sold, public pensions do not trade as a marketable security
- Tremendous opportunity for mis-information
- MVL accrued benefit basis inconsistent with public plan benefit promise
- Distorts comparisons between DB (if based on risk-free rates) and DC (when thought of by participants as opportunity to earn based on balanced portfolio)
- Not a useful risk measure, unlike other approaches
Actuarial Standards Of Practice

- US Credentialed Actuaries are bound by Actuarial Standards of Practice (ASOPs)
  - Member, American Academy of Actuaries
  - Fellow or Associate, Society of Actuaries
  - Fellow, Conference of Consulting Actuaries
- ASOPs developed by leading actuaries
- We are also subject to Code of Professional Conduct
  - Integrity
  - Only do work if qualified
  - Must follow ASOPs
  - Self-policing
  - Ten other precepts to the code of conduct
# Actuarial Standards Of Practice Relative to Public Pensions

<table>
<thead>
<tr>
<th>ASOP</th>
<th>Name</th>
<th>Latest Revision</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td>Measuring Pension Costs and Liabilities</td>
<td>2014/2021</td>
</tr>
<tr>
<td>27</td>
<td>Selection of Economic Assumptions for Measuring Pension Obligations</td>
<td>2020</td>
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<tr>
<td>35</td>
<td>Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations</td>
<td>2020</td>
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<tr>
<td>41</td>
<td>Actuarial Communications</td>
<td>2010</td>
</tr>
<tr>
<td>44</td>
<td>Selection and Use of Asset Valuation Methods for Pension Valuations</td>
<td>2011</td>
</tr>
<tr>
<td>51</td>
<td>Assessment and Disclosure of Risk Associated with Pensions</td>
<td>2017</td>
</tr>
<tr>
<td>56</td>
<td>Modelling</td>
<td>2019</td>
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ASOP 4 Changes – Overview

• Liabilities must additionally be measured based on a “Low-Default-Risk Obligation Measure” (LDROM)
  • This is consistent with risk-free rate
  • Strong push-back from plans and practicing actuaries
  • Loosened to permit liability measurement to be consistent with ongoing liability measurement – permits meaningful calculation of value of investing in riskier assets

• Requires “Reasonable Actuarially Determined Contribution”
  • Generally viewed as positive requirement
  • Some necessary technical changes may lead to delay in final standard
Why measure risk?

“All models are wrong but some are useful.”

George E.P. Box
CalPERS Case Study: Early Asset Liability Management Framework
New ASOP 51

- **Must include Risk Disclosure Measures, such as:**
  - Stress tests
  - Scenario tests
  - Sensitivity tests
  - Stochastic modeling
  - Key metrics

- **Provides very useful information to users of actuarial valuations**
  - Many actuaries view as superior to LDROM calculation as a decision-useful measure
Practical Stress Testing: Funding

Scenario 1: Return at 14.0% (2018/19), 7.0% thereafter
Scenario 2: Return at 7.0% (2018/19 and thereafter)
Scenario 3: Return at 0.0% (2018/19), 7.0% thereafter
Practical Stress Testing: Payments

- **Scenario 1**: Return at 14.0% (2018/19), 7.0% thereafter
- **Scenario 2**: Return at 7.0% (2018/19 and thereafter)
- **Scenario 3**: Return at 0.0% (2018/19), 7.0% thereafter
Risk Metrics

• ASOP 51 requires the disclosure of several “risk metrics” that will likely be new for most pension systems

• These metrics compare two other variables in a way to add context

• An example from another industry would be the debt to income ratio when applying for a mortgage:
  • Applicant A wants a $100,000 mortgage and has an income of $80,000
  • Applicant B wants a $100,000 mortgage and has an income of $40,000

• Applicant B is clearly the riskier situation
Example Risk Measure:
Projected Benefit Payments

Benefit Payments

<table>
<thead>
<tr>
<th>Annual Benefit Payments</th>
<th>2018</th>
<th>2023</th>
<th>2028</th>
<th>2033</th>
<th>2038</th>
<th>2043</th>
<th>2048</th>
<th>2053</th>
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Benefit Payments as a Percentage of Payroll

- 2018: 47%
- 2023: 34%
- 2028: 20%
- 2033: 20%
Another Example: Using ratio of Retirees to Actives
Example Risk Measure (2014) – Based on goal that fixed contribution plan would become 100% funded within 30 years

<table>
<thead>
<tr>
<th>Status</th>
<th>Definition</th>
<th>Annual long-term investment return to get to this status</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark Green</td>
<td>100% funded by 2041 (30 years from 2011)</td>
<td>Average 8.6% or more</td>
<td>33%</td>
</tr>
<tr>
<td>Green</td>
<td>100% funded by 2045 (30 years from 2015)</td>
<td>Average 8.2% to 8.6%</td>
<td>5%</td>
</tr>
<tr>
<td>Light Green</td>
<td>100% funded by 2055 (40 years from 2015)</td>
<td>Average 7.4% to 8.2%</td>
<td>14%</td>
</tr>
<tr>
<td>Yellow</td>
<td>100% funded by 2065, and never as low as 20% funded</td>
<td>Average 7.3% to 7.4%</td>
<td>3%</td>
</tr>
<tr>
<td>Orange</td>
<td>Solvent, and only gets as low as 20% funded</td>
<td>Average 6.1% to 7.3%</td>
<td>18%</td>
</tr>
<tr>
<td>Red</td>
<td>Insolvent or technically insolvent after 2035</td>
<td>Average 3.1% to 6.1%</td>
<td>22%</td>
</tr>
<tr>
<td>Dark Red</td>
<td>Insolvent by 2035 (within 20 years)</td>
<td>Average less than 3.1%</td>
<td>6%</td>
</tr>
</tbody>
</table>
Staying Informed: Historical Perspective

Factors that Changed UAAL in December 31, 2010 to 2019 Valuations ($ Millions)

- Change in investment return (from 5.00% to 7.75%) and other economic assumptions.
- Increase in UAAL from "negative amortization" due to prior amortization policy and assumptions.
- Change in investment return (from 7.75% to 7.50%), mortality, and other assumptions.
- Change in investment return (from 7.50% to 7.25%), mortality, and other assumptions.

- Includes change in compensation variable and cashouts.
- $399.3 million in proceeds from Pension Obligation Bonds.
- $3.7 million in County's additional UAAL payment.

Legend:
- Investment Experience (After Smoothing)
- Non-Investment Experience
- Expected UAAL Principal Payment
- Assumption Changes
- Additional UAAL Contributions
- Net Total Changes
Outstanding Balance of $744 Million in Net UAAL as of June 30, 2017

- GAINS & LOSSES
- ASSUMPTION / PLAN CHANGES
- RESTART AMORTIZATION
- NET UAAL BALANCE

Net UAAL Outstanding Balance
Contribution Transparency

Annual Payments Required to Amortize $744 Million in Net UAAL as of June 30, 2017

$ in Millions

- 50
- 100
- 150
- 200

2017 2019 2021 2023 2025 2027 2029 2031 2033 2035

Net UAAL Payments

GAINS & LOSSES
ASSUMPTION / PLAN CHANGES
RESTART AMORTIZATION
NET UAAL PAYMENT
What is risk?

• From ASOP 51: Risk – potential of actual future measurements deviating from expected results due to actual experience that differs from the actuarial assumptions

• Other definitions:
  • Potential of actual future outcomes not meeting expectations
  • Potential of undesirable future outcomes
Fight the right fight

• Do not fight an abstract concept
  • “We can’t do that because it is too risky”

• How *exactly* is it risky?
  • What is the outcome you find undesirable?
  • Keep asking questions until you find the end of the path (the outcome you are most concerned about)
    • Why is this metric important? Because it tells me something about…..
Define risks in objective, explicit outcomes

• Potential of having to contribute more (or much more) than expected
• Potential of having contribution changes in unmanageable ways
• Potential of funded status deteriorating
• Potential of some prescribed or traditional trigger occurring
• Impact on asset accumulation when combined with negative cash flow
• Potential liquidity management concerns

• Of course, there are also other non-financial, or less quantitative risks to be considered
What about using the asset allocation and investment return assumption to lower the risk?

- Using a stochastic model, we looked at three alternative strategies using the asset allocation and/or discount rate
  - **Baseline**: Median investment return assumption (ROA) based on typical portfolio
    - ROA: 7.00%, Median Return 7.00%, Standard deviation 10.7%
  - **Alt A**: Purposefully conservative investment return assumption, but keep a typical portfolio
    - ROA: 5.00%, Median Return 7.00%, Standard deviation 10.7%
  - **Alt B**: Purposefully conservative investment return assumption based on a more conservative portfolio
    - ROA: 5.00%, Median Return 5.00%, Standard deviation 7.0%
Contribution Rate

All scenarios start at 100% Funded Ratio and use 20 Year Layered Amortization for gains and losses.
Distribution of Funded Ratio

All scenarios start at 100% Funded Ratio and use 20 Year Layered Amortization for gains and losses.
Distribution of Change in Contribution Rate from Year to Year

Probability of Change vs. Amount of Change

- 7% Return Assumption/7% Portfolio
- 7% Return Assumption/5% Portfolio
- 5% Return Assumption/5% Portfolio

National Institute on Retirement Security
Conclusions

- ASOP 51 is a valuable tool for understanding and measuring risk, particularly with respect to investment volatility.

- ASOP 4 revisions have some value, but will likely lead to confusion of Low-Default-Risk Obligation Measure.