Actuarial Standards of Practice (ASOP 51)

Leon F, (Rocky) Joyner, ASA, FCA, EA, MAAA - Segal

NCPERS UNIVERSITY: Program for Advanced Trustee Studies (PATS)
May 18 - 19
Austin, TX
Agenda

- What is ASOP 51?
  - Introduction
  - What is the Impact?
  - Identifying Risks
  - Evaluating Risks
  - Other Considerations
  - Recommendation
  - Valuation Report Discussion of Risk

- Questions
ASOP 51: Introduction

“ASOP” = Actuarial Standard of Practice

– The Actuarial Standards Board develops ASOPs to set standards for appropriate actuarial practice, taking into account current and emerging practices.

– In recent years, the ASOPs that apply to pension plans and valuation reports have evolved to require

  • A disclosure that future measurements may differ significantly from the current measurement
  • A statement indicating that due to the limited scope of the actuary’s assignment, an analysis of the range of potential future outcomes was not performed (or the results of the analysis of the range of potential future outcomes, if an analysis was performed)
  • A requirement that the actuary consider what cautions regarding uncertainty or risk should be included in the actuarial report
New ASOP 51 on Pension Risk

- Formal title = “Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions”
- Adopted by ASB in September 2017
- Further expands on changes made to the pension ASOPs in recent years
- Intended to help the users of the actuarial report to gain a better understanding of risks inherent in the measurement of pension plan liabilities
- ALL pension actuarial funding or pricing valuations with measurement dates on or after November 1, 2018 MUST conform to ASOP 51
ASOP 51: What is the Impact?

Expanded risk disclosures
  – Actuarial communications are being updated

<table>
<thead>
<tr>
<th>Common Actuarial Deliverables</th>
<th>Does ASOP 51 Apply?</th>
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<tbody>
<tr>
<td>Annual valuation for pension plan (“funding valuation”)</td>
<td>YES</td>
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<tr>
<td>Pricing studies – Benefit changes</td>
<td>YES</td>
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<tr>
<td>Annual valuation for post-retirement medical benefits</td>
<td>NO</td>
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Recommendations of additional risk assessment?
  – Actuary should recommend additional risk assessment if it would be “significantly beneficial” to plan sponsor
# ASOP 51: Identifying Risks

**Key statement from ASOP 51:**

“... an intended user ... may not understand the effects of future experience differing from the assumptions used in the funding valuation... or the potential volatility of future measurements resulting from such differences.”

**Actuary must identify relevant risks:**

- Risk is defined as potential of actual future measurements deviating from expected
- Only risks that “may reasonably be anticipated to significantly affect the plan’s future financial condition” need to be evaluated

<table>
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<tr>
<th>Examples of Risks for Public Sector Pension Plans</th>
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<tr>
<td>Investment Return Risk</td>
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<tr>
<td>Longevity Risk</td>
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<tr>
<td>Plan Design Risk</td>
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ASOP 51: Evaluating Risks

The risk assessment can be **qualitative or quantitative**

Quantitative methods for assessing risks:

- Scenario tests – assessing impact of one possible event, or several simultaneous events (economic recession may impact investment returns and employment levels)
- Sensitivity tests – assessing impact of a change in actuarial assumption
- Stress tests – assessing the impact of adverse changes in one or relatively few factors (when will funding percentage fall below 70%)
- Stochastic modeling – generating numerous potential outcomes by allowing random variations (usually of investment returns)

Actuary should exercise professional judgment:

- May consider practicality, usefulness, reliability, timeliness, cost efficiency
- Should consider nature, scale, and complexity of the plan
ASOP 51: Other Considerations

Plan maturity measures
– Actuary should calculate and disclose any plan maturity measures that are significant in understanding risks
– Include commentary to help intended user understand significance
– Examples:
  ▪ Retired Liability/Total Liability
  ▪ Cash Flow ("burn rate")
  ▪ Benefit Payments/Contributions
  ▪ Inactive/Active Participant Ratio
ASOP 51: Other Considerations (Cont.)

Historical information

– Actuary should identify and disclose relevant historical information that is significant to understanding risks
– Include commentary to help intended user understand significance
– Examples:
  ▪ Participant Count
  ▪ Payroll Growth
  ▪ Funded Percentage
  ▪ Gains/Losses
  ▪ Actuarially Determined Contributions
  ▪ Market Returns
  ▪ Maturity Measures
Sample Qualitative Risk Wording

The actuarial valuation results are dependent on a single set of assumptions; however, there is a risk that emerging results may differ significantly as actual experience proves to be different than projected by the current assumptions.

We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Plan’s future financial condition, but have included a brief discussion of some of the risks that may affect the Plan.

A more detailed assessment of the risks may provide the Trustees with a better understanding of the risks inherent in the Plan. This assessment may include scenario testing, sensitivity testing, stress testing, and/or stochastic modeling.

A detailed risk assessment is important for your Plan because:

– Relatively small changes in investment performance can produce large swings in the unfunded liabilities, since the assets and liabilities are of similar size.
– The negative cash flow position of your plan could be exacerbated by relatively small deviations from assumed future experience.
– Inactive and retired participants account for most of the Plan’s liabilities leaving limited options for reducing Plan costs in the event of adverse experience.
– Recent plan changes may result in participant choices that vary from those currently assumed.
– The Trustees have not had a detailed risk assessment in several years.
Sample Qualitative Risk Wording (Continued)

Investment Risk (the risk that returns will be different than expected)
Since the Plan’s assets are much larger than contributions, investment performance will create volatility in contribution requirements. For example, for each 1% by which the current Plan Year’s actual return on market value is less than assumed, the unfunded actuarial accrued liability would increase by $X (or Y%).

Contribution Risk (the risk that actual contributions will be different from projected contributions)
If payroll is significantly less than expected, contributions may fall short of the ADC.

Longevity Risk (the risk that mortality experience will be different than expected)
If we were to use the new SOA mortality, we project the Funded Percentage would decrease by X% as of the valuation date.

Other Demographic Risk (the risk that participant experience will be different than assumed)
Examples of this risk include:

• Actual retirements occurring earlier or later than assumed. The value of retirement plan benefits is sensitive to the rate of benefit accruals and any early retirement subsidies that apply. While it is difficult to quantify the impact of potential experience, for your Plan, each 1% change in the actuarial cost factors would result in an increase in the unfunded actuarial liability of approximately $X, or Y% of one year’s contributions.

• More or less active participant turnover than assumed.
Sample Qualitative Risk Wording (Continued)

Actual Experience over the Last 10 years and Implications for the Future

Past experience can help demonstrate the sensitivity of key results to the Plan’s actual experience. Over the past ten years:

- The non-investment gain or loss for a year has ranged from a loss of $A to gain of $B.

Maturity Measures

The risk associated with a pension plan increases as it becomes more mature, meaning that the actives represent a smaller portion of the liabilities of the plan. When this happens, there is a greater risk that fluctuations in the experience of the non-active participants or of the assets of the plan can result in large swings in the contribution requirements.

- Over the past ten years, the ratio of non-active participants to active participants has increased from a low of 0.9 to a high of 2.1.

Or

- Benefits and administrative expenses less contributions was $X million as December 31, 2017, or Y% of the market value of assets. The Plan is dependent upon investment returns in order to pay benefits.
ASOP 51: Recommendation

Recommendation of additional risk assessment

“If, in the actuary’s professional judgment, a more detailed assessment would be significantly beneficial for the intended user to understand the risks identified by the actuary, the actuary should recommend to the intended user that such an assessment be performed.”

Factors for actuary to consider:

– Findings of assessments already performed and when performed
– Size of plan
– Plan’s maturity, funded status, asset allocation, zone status
– Net cash-flow, possible insolvency
– Plan design, including variable benefit formulas
– Rate of Employer withdrawals and dependency on withdrawal liability payments
– Current market conditions
What type of additional risk assessment is needed?

- What would be “significantly beneficial” to the client, based on actuary’s professional judgment?
- Signing actuary must decide and be able to defend the decision to recommend/not recommend an additional risk assessment
- Examples of items the actuary will consider when determining if an additional risk assessment will be needed:
  - How much risk appears to be present – in the investment portfolio? In the workforce? In employer stability?
  - What projections and modeling are currently being performed Are they deterministic, stochastic or both?
  - Is the Plan funded well beyond 100%?
  - What is the Plan’s “burn rate?” (i.e., cash outflow as a percent of assets?)
  - Has the client’s asset allocation been used to develop a stress/sensitivity analysis, e.g. at the 75th or 90th percentile return, for 1, 5 or 10 years?
Understanding Pension Risk

Important for Trustees to understand risk

– Considerations when Plan’s mature, employment changes and investments are volatile

– Considerations when looking at optional plans

Actuarial valuation reports use a single set of assumptions

Risk evaluation requires an analysis of potential future outcomes under different scenarios

The ASOP 51 now requires that the actuaries help users of our actuarial reports gain a better understanding of the risks inherent in the measurement of pension plan obligations (i.e., perform a risk evaluation)
Risk Assessment Discussion

Deterministic projections
  – Scenario test
    • Determine impact of varying investment returns, work levels, or other factors
    • “Stay the course” scenarios
  – Stress test
    • What investment return is required to maintain or improve the funding percentage?
    • What investment return is required to limit contribution volatility?
  – Sensitivity test

Stochastic modeling
  – What funding metrics are most important to the Trustees?
  – What is the likelihood, or probability, of achieving a defined goal (e.g. funded level, contribution rates, etc.)?
Deterministic Tests

Investment return scenarios

- Baseline - actuarial assumption is met in each future year
- Other scenarios evaluate short-term lower returns and possible volatility (see next slide)
- Develop a stress/sensitivity analysis of the client’s asset allocation at the 25th or 10th percentile return for 1, 5 or 10 years

Investment return and contribution scenarios

- Run same investment scenarios, but with lower contribution income

Stress tests: “Stay the course” and “Model Changes”
Plan Maturity

How much will Plan mature over time?

- Consider different scenarios for future active population, etc.

As Plan matures, it will become more sensitive to investment volatility

- In other words, it will be harder to recover from investment losses with increases in employer contributions, reductions in benefit accruals, or both
Plan Maturity (Cont.)

How should investment strategy change as Plan matures?
- Should the Plan de-risk investments?
- It may be important to align assets and liabilities
- Pursue a glide path strategy?
- Will need to coordinate analysis with Plan investment consultant

What is the impact of changing investment strategy?
- Lower assumed returns = higher contributions (or lower benefits)
- Use stochastic analysis? For example:
  - Evaluate range of possible funding percentages, assuming no changes to contributions or benefits
  - Evaluate range of possible contributions in future years to maintain current benefit levels and meet funding targets
Historical Plan Information

Comment on historical plan information that is relevant to understanding risk

Valuation reports often include a history of:

– Active, inactive and retired population
– Ratio of non-actives to actives
– Covered Payroll
– New pension awards
– Contributions, Benefits and Administrative Expenses
– Market and Actuarial Returns, and Asset Values
– Funded Percentage
– ADC, Projected Contributions and Margin/Deficit
Questions?