Measuring Risk in Public Pension Plans

Thoughts on the Blue Ribbon Panel Recommendations and Emerging Practice

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The Blue Ribbon Panel

- The panel’s charge: develop recommendations to strengthen plan funding over the long term in order to deliver on the plan’s benefit promises
- Provide the framework for an effective risk management system, including
  - Risk identification
  - Risk measurement and monitoring
  - Risk reporting
  - Taking mitigating actions

*Establish a framework and process to ensure effective decisions regarding benefit levels and funding programs*
What is risk?

- Risk is the possibility of adverse financial results due to experience varying from the expectations supporting the funding program.
- The more optimistic the assumptions, the greater the down-side risk to the funding program.
- Common sources of risk:
  - Investment performance - returns below expectations, volatility
  - Contribution levels - failure to maintain at appropriate level
  - Plan demographics - mix of active and retired employees; mortality experience
  - Actuarial cost methods - long or open amortization periods make it harder to recover from bad experience
  - Governance and decision making - balancing benefit levels, risk taking and funding demands
Measuring Risk

- Modern risk measurement methods for financial systems are based on multiple forecasts of possible future outcomes.
- Experience scenarios incorporate possible outcomes for all major risks to assess the financial impact of expectations not being realized.
- Evaluate the impact of experience variations on future contribution levels and future funded levels.
- Blue Ribbon Panel recommended scenarios:
  - Severe stress test using portfolio returns of +/- 3% from assumption for an extended period.
  - Effect of reductions in contribution levels.
- Additional scenarios that should be considered:
  - Adverse mortality.
  - New entrant level and mix of active and retirees.
  - Moderate but sustained fall in investment results, return volatility.
Stress test examples; impact on contributions

**Investment results +/- 3%**

*Figure 14*
Sample Plan: Projected employer contributions

**80% of Contributions**

*Figure 16*
Sample Plan: Projected employer contributions

**Baseline with benchmark return (6.5%)**

- Plan assumed rate of return (7.0%)
- 3.5% return for 20 years, 6.5% thereafter
- 9.5% return for 20 years, 6.5% thereafter

**Baseline with benchmark return (6.5%)**

- Plan pays 80% of recommended contribution for 20 years, full contribution thereafter
Monitoring Risk Levels

- Develop metrics that serve as indicators of changing risk level or profile
- Investment risk
  - 3, 5, 10 year total returns vs assumption
  - Standard deviation of portfolio reflecting current asset classes
  - Ratio of market value of obligation to actuarial value of obligation
- Contribution risk
  - Ratio of contributions made to recommended contribution
  - Ratio of contribution to BRP ‘standard contribution’
  - Ratio of contribution to jurisdictional funding
- Demographic risk
  - Ratio of benefit payments to contributions, i.e., operating cash flow
  - Ratio of active to retired employees
  - Ratio of benefit payments to payroll
  - Ratio of mortality experience to expectations
Monitoring Risk Levels

- Assumptions and methods risk
  - Do the assumptions represent an unbiased view of expected experience?
  - Does the method significantly delay the impact of experience deviations on contributions?
  - Comparison of recommended contribution and BRP standard contribution to assess the aggregate impact of smoothing, amortization and assumption risk

- Governance risk
  - Have clear funding principles been defined and approved by the board?
  - Are proposed plan changes, e.g., benefits, ee contributions, retirement dates, thoroughly costed prior to adoption by the completion of scenario testing?
  - Does the actuary opine positively on the reasonableness of all assumptions and methods?
Taking Action

- Action must be taken as the risk of adverse outcomes increases; understand your plan’s risk position and trend by using scenario and stress testing
- Take modest action sooner to avoid more drastic action later
- Carefully analyze the implications of all mitigating actions and plan decisions...changes in benefits, contributions, asset allocation
- Seek to avoid permanent plan changes; maintain flexibility and responsiveness in the face of changing demographic and economic conditions

Appropriate action requires sound knowledge about plan position and risk levels...decisions demand strong financial analysis