Foundation for Public Pensions Risk Reporting
2020 Update

Risk reporting for public pensions should be transparent and accessible to all stakeholders and designed to inform long-term planning and decision-making. First published in 2018, Pew's "Foundation for Public Pension Risk Reporting" provides a comprehensive starting point for pension stress test and risk analysis, with the government plan sponsor as the primary target audience. Building on existing actuarial projections, risk assessments, and reporting standards, the framework is designed to assist budget decision-makers and government finance officials in evaluating the impact of investment and contribution risk on government budgets, pension system balance sheets, and the cost of current benefits under a range of economic conditions.

Beginning with the 2018 framework, this update reflects the dynamic nature of stress testing analysis. Reporting standards and practices evolve over time, and the ups and downs of the national economy prompt the routine need to adjust baseline assumptions and projections. For example, the current updates reflect recently proposed changes to actuarial standards and identify the need to account for workforce reductions during an economic downturn when measuring contribution risk. The supporting notes also capture revisions to our assumptions and methodology about investment returns and revenue affected by the COVID-19 pandemic, as well as further information on risk tolerance measures as critical budget management tools to actively monitor and manage key risks during all cycles of the economy, but especially during a downturn and expected recovery.

Overall, public pensions risk reporting for plan sponsors should be tailored to the individual policies and features of the plan and include:

1. Sensitivity analysis of plan liabilities to different investment return assumptions, including the low-default-risk obligation measure as outlined in proposed changes to Actuarial Standard of Practice (ASOP) No. 4;
2. Scenario analysis to assess investment risk, using regularly updated baseline projections that account for current economic conditions, and include forward-looking projections of five to 20 years under (a) a low return scenario assuming a fixed reduced rate of return (for example, 5% or the 25th percentile of projected returns) on assets; and (b) a downside, asset shock scenario that includes an initial loss of 20% on plan investments, followed by a period of recovery, and then low returns over the remaining period.
3. To assess contribution risk, projections and measurements for modified versions of the scenarios above, assuming (a) full actuarial contributions based on current funding policies; and (b) contributions that are constrained by the rate of revenue growth (i.e., fixed as a percent of revenue). Projections of plan contributions in these scenarios should account for any impact of recession-related payroll reductions, particularly for plans with fixed-rate funding policies;
4. Projections using stochastic analysis to simulate the volatility of annual investment returns above and below the expected rate of return, in order to measure the range of possible contributions and financial positions over the forward-looking projection period; and
5. Sensitivity analysis of service costs for current benefits, under the latest tier and the entire population as a whole, to different investment return assumptions.

To date, 12 states have enacted statutory requirements for risk reporting targeted to government plan sponsors. Legislation in these states establishes the scope of analysis and reporting, as well as the process for submitting the results to policymakers.

The resulting metrics provide executive and legislative officials information that supports active monitoring of risk and measures of risk tolerance, a data-driven approach to long-term budgeting through all cycles of the economy, and a framework to evaluate the impact of proposed or adopted policy changes.

SUPPLEMENTARY NOTES

INTRODUCTION

1. Investment and contribution risk are cited and defined in §3.2 of the Actuarial Standards Board (ASB), Actuarial Standard of Practice (ASOP) No. 51: Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions (2017). Additional risks identified in §3.2 include: asset/liability mismatch, interest rate, and longevity risks.

2. The sensitivity, scenario, and stochastic analyses included above are generally consistent with the quantitative measures identified in Section 3.2 of ASOP No. 51; the methodology framework we applied to 10 states in "Assessing the Risk of Fiscal Distress for Public Pensions: State Stress Test Analysis" by Greg Mennis, Susan Banta, and David Draine, working paper for Harvard Kennedy School's Mossavar-Rahmani Center for Business and Government (May 2018); and guidance on implementation as presented in the Public Policy Practice Note developed by the Pension Committee of the American Academy of Actuaries for ASOP No. 51.

3. Individual features of the pension plan that should be accounted for in the analysis include benefit design, financing arrangements, legal framework, and an acknowledgment that post-pandemic reductions in government workforces and payroll may also affect pension contribution policies for certain plans. Measurements for scenario analysis should include, at a minimum, assets, liabilities, and funded ratios; employer contributions as a share of payroll and as a share of revenue; and total contributions, benefit payments, and the ratio of operating cash flow to assets.

4. Baseline pension and revenue projections should reflect the expected impact of the COVID-19 recession and recovery, including impacts on state revenue using a state's near-term revenue forecast; and longer-range revenue projections based on the long-term outlook for the national and state-specific economy. Pew's baseline macroeconomic assumptions are based on the most recent outlook published by the Congressional Budget Office (CBO). Downside economic assumptions are based on stress test scenarios published by the Federal Reserve Bank. Pew's revenue forecasts, used solely for calculating costs as a share of state resources, are based on own-source revenues (OSR), a measure of taxes and fees controlled by the state that is tracked by the U.S. Census Bureau. In-state forecasts of revenue growth or contraction are used when available; and long-term revenues are estimated based on the expected path for economic recovery in the U.S. and the long-term relationship between OSR and state economic output, as measured by gross state product (GSP).

REPORT COMPONENT 1: SENSITIVITY ANALYSIS

1. GASB Statement No. 67, Financial Reporting for Pension Plans (2014) requires disclosures of net pension liabilities, calculated using the plan's discount rate as well as discount rates that are one percentage lower and one percentage higher than the current rate.

2. The Second Exposure Draft of ASOP No. 4 – Measuring Pension Obligations and Determining Pension Plan Costs or Contributions (December 2019) would require a calculation of plan liabilities based on a general obligation borrowing rate. Pew applies

a similar measure, using a 3% discount rate to provide a liability estimate that can be compared to the retirement liabilities of other plan sponsors and also compared against other forms of government debt. In addition, the difference in liabilities calculated using the assumed rate of return compared to liabilities based on a low-risk or risk-free rate of return can offer a way of assessing the economic value of the risk borne through investment choices. ASOP No. 51, adopted in September 2017 and currently in effect, suggests a comparison of a similar measure to the liability measured at the assumed rate of return as a potential risk assessment measure, but leaves the use and calculation of such a measure subject to the professional judgment of the actuary.

REPORT COMPONENT 2: INVESTMENT RISK SCENARIO ANALYSIS

1. The 5% nominal return assumption in Pew's model is identified as a reasonably likely downside scenario for a typical public pension fund that equates to a 3% real return, plus 2% for expected inflation, based on current Congressional Budget Office long-term assumptions. Using the 25th percentile return allows the low-return scenario to be modeled based on the plan's specific asset allocation, investment assumptions, and expected volatility in returns. Examining trials from stochastic analysis that have low long-term rates of return can provide similar information while also reflecting real-world market volatility.

2. When accounting for a near-term market or economic downturn, applied downside scenarios may be adjusted. For fiscal year 2021, our analysis is based on the economic and financial market assumptions in the "Alternate Severe" scenario included in the Federal Reserve's second round of 2020 bank stress tests. More information on the Alternative Severe scenario can be found in the Fed's September 2020 publication "Supervisory Scenarios for the Resubmission of Capital Plans in the Fourth Quarter of 2020." Our adaptation of the Fed's scenario includes a market downturn in the first two years, with cumulative losses of around 20% for the typical public pension fund, followed by an economic recovery over the next three years with annual returns of 10% to 11%. In years 5-20, investment returns are largely equal to their long-term expectations.

3. Additional scenarios may include an initial return of 0%; twice the assumed rate (see page 18 of the [ASOP No. 51 practice note](#)); projections at +/-1% of the assumed rate; or an asset shock scenario followed by a period of market recovery, in which the long-term rate of return averages to the expected rate of return over time. Baseline projections, in which all investment and actuarial assumptions are met, should be applied to provide a point of comparison for all scenarios.

REPORT COMPONENT 3: CONTRIBUTION RISK SIMULATION ANALYSIS

1. For plans that have not received the full Actuarially Determined Employer Contribution (ADEC) from plan sponsors in a given year, a supplemental disclosure should also be included that provides an explanation for the shortfall, and an estimate of its fiscal impact based on a consistent methodology developed by the plan actuary and/or budget officials.

REPORT COMPONENT 4: STOCHASTIC ANALYSIS OF A BROAD RANGE OF OUTCOMES

1. Stochastic analysis is typically designed to provide multiple trial simulations based on the fund's actual investment policy and asset allocation in which the annual returns over the forecast period vary to provide a range of possible outcomes of funded status and cost over time, based on a uniform set of capital market assumptions.

REPORT COMPONENT 5: SENSITIVITY ANALYSIS OF SERVICE COSTS FOR CURRENT BENEFITS UNDER VARYING RETURN ASSUMPTIONS

1. Investment return assumptions used for normal cost sensitivity may include, for example, +/-1% of the expected rate of return and a 5% rate of return (or the 25th percentile of projected returns). Sensitivity of normal cost should incorporate the effects of any risk-sharing policies built into the plan design, including variable cost of living adjustments (COLAs) and employee contribution rates. In addition to measuring cost sensitivity for the latest tier of benefits, calculations for total service cost across the workforce should also be included.

CONCLUSION
A ROUTINE PROCESS AND STANDARDIZED REPORTING TO SUPPORT ACTIVE RISK MONITORING AND BUDGET DECISION-MAKING

1. Pension plan actuaries and investment consultants regularly produce studies for their clients (the retirement systems) that include long-term projections based on plan-specific assumptions, as well as asset/liability studies and risk assessments that examine outcomes based on a range of investment return scenarios. These serve as essential inputs to plan administrators and fiduciaries; however, routine and transparent risk reporting that is designed to inform plan sponsors' broader policy deliberations and long-term planning goes a step further by also factoring the jurisdiction's overall economic conditions, revenues, and historical willingness to make required contributions.

2. Furthermore, stress testing analysis can best inform all key stakeholders when the results are publicly available and presented in a consistent format.

3. Policies to actively monitor and manage key risks should include setting thresholds, or "risk boundaries," for specific measures (e.g., a plan's funded status) and require corrective actions (e.g., increased contributions) if a plan falls below these thresholds. Risk boundaries can be as simple as minimally acceptable funded ratios or contribution levels, or more complex measures based on the likelihood of breaching these boundaries.

4. As of February 2021, 12 states have enacted statutory requirements for routine risk reporting. Since 2017 alone, 10 states have adopted requirements through legislation: Virginia (2017), Hawaii (2017), Connecticut (2017), New Jersey (2018), Colorado (2018), Maryland (2018), Indiana (2019), Montana (2019), North Carolina (2020), and Pennsylvania (2020). They join early adopters Washington state (2007) and California (2011).