Triennial Experience Study

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Joint Committee on Pensions, Investments, and Benefits
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KPERS
Actuarial Assumptions

Experience Studies

Preliminary Recommendations
Actuarial Assumptions

• Assumptions have a significant impact on the calculation of liabilities and actuarial contribution rates
  • Benefit payments are dependent on number of contingent events that are unknown
  • Actuaries use assumptions to determine information about future benefit payments including when, how much, and how long
  • Assumptions will impact the allocation of costs so usually set neither overly conservative or aggressive

• Assumptions are just that assumptions. If actual experience differs from the assumption over time, the costs will differ also. This variance is captured each year in the valuation process.

• Having accurate assumption is important to ensure generational equity.
Types of Assumptions

• Economic
  • Inflation
  • Investment return
  • Payroll growth

• Demographic
  • Retirement rates
  • Promotional/step pay increases
  • Disability rates
  • Turnover
  • Mortality

• Actuarial Methods
  • Cost method
  • Amortization
## General Impact of Assumption Changes

<table>
<thead>
<tr>
<th>Assumption change</th>
<th>Usual Impact on liabilities and actuarial contribution rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Assumptions</strong></td>
<td></td>
</tr>
<tr>
<td>Lower inflation</td>
<td>Indirect impact</td>
</tr>
<tr>
<td>Decrease investment return</td>
<td>Increase</td>
</tr>
<tr>
<td>Lower salary increases</td>
<td>Decrease</td>
</tr>
<tr>
<td>Lower payroll growth</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Demographic Assumptions</strong></td>
<td></td>
</tr>
<tr>
<td>Longer lifetimes</td>
<td>Increase</td>
</tr>
<tr>
<td>Earlier retirements</td>
<td>Increase</td>
</tr>
<tr>
<td>More disabilities</td>
<td>Increase</td>
</tr>
<tr>
<td>More terminations</td>
<td>Decrease</td>
</tr>
</tbody>
</table>
Major Drivers of Liabilities/Cost

- Assumptions with Largest Cost Impact
  - Investment return assumption
  - Salary increase assumption
  - Mortality assumption
  - Retirement assumption

<table>
<thead>
<tr>
<th>Liability Impact</th>
<th>Used to Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment return</td>
<td>All groups</td>
</tr>
<tr>
<td>Salary increase</td>
<td>Actives only</td>
</tr>
<tr>
<td>Mortality</td>
<td>All groups</td>
</tr>
<tr>
<td>Retirement</td>
<td>Actives only</td>
</tr>
</tbody>
</table>

- Impact of investment return assumption dwarfs all other assumptions
What is an Experience Study

• Comparison of actual experience during study period with expected results based on current assumptions.

• Past experience provides strong guidance for some assumptions (like mortality) and weak guidance for others (like investment return).

• Both science and art
  • Objective (science): number crunching of actual and expected numbers of members and rates of occurrence.
  • Subjective (art): interpreting the information and deciding on appropriate changes.
KPERS Triennial Experience Study

• By statute, performed triennially for KPERS (K.S.A. 74-4908).

• Monitor all actuarial assumptions and methods used in the valuation process.

• Last KPERS study covered calendar years 2013 through 2015.

• This study covers calendar years 2016 through 2018.
Purpose of the Triennial Experience Study

• Review all actuarial assumptions and methods.
  • How well do the current assumptions fit today?
  • Should any assumptions be changed? How much?

• Provide the best estimate of future experience.

• Each assumption should be individually reasonable.
  • For example, would not use 3% inflation for investments and 2% inflation for salary growth.

• Assumptions are intended to be long-term estimates, but experience unfolds and is measured over the short term.

• As fiduciaries, the Board is responsible for the selection of actuarial assumptions,
  • Board can adopt all, none, or some of actuary’s recommendations.
2019 Triennial Experience Study

• The Board of Trustees is in the middle of the Triennial Experience Study process.
  • Economic assumptions were presented in September.
  • Actuarial methods were presented in October.
  • Demographic assumptions are scheduled for November.

• The Board will receive the recommendations from the actuary this fall and winter.

• The Board will make final decisions on assumptions next year.

• The new assumptions will be used in the 12/31/2019 actuarial valuation, which will be reflected in FY 2023 for State/School contributions.
Economic Assumptions

- Building blocks approach
- Inflation is a component in several economic assumptions
- Inflation and productivity assumption must be consistent in all assumptions
# Current Assumptions

<table>
<thead>
<tr>
<th>Economic Assumption</th>
<th>Current Assumption</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price inflation</td>
<td>General increase in prices (CPI)</td>
<td>2.75%</td>
</tr>
<tr>
<td>Productivity</td>
<td>Wage growth in excess of inflation (standard of living increases)</td>
<td>0.75%</td>
</tr>
<tr>
<td>General wage increase</td>
<td>Price inflation plus Productivity</td>
<td>3.50%</td>
</tr>
<tr>
<td>Price inflation</td>
<td>General increase in prices (CPI)</td>
<td>2.75%</td>
</tr>
<tr>
<td>Real rate of return</td>
<td>Returns in excess of inflation</td>
<td>5.00%</td>
</tr>
<tr>
<td>Nominal investment return</td>
<td>Price inflation plus Real return</td>
<td>7.75%</td>
</tr>
<tr>
<td>Payroll growth</td>
<td>Payment scheduled for amortizing the unfunded actuarial liability</td>
<td>3.00%</td>
</tr>
</tbody>
</table>
Setting Assumptions

Demographic Assumptions
• Data driven
• Study what happened to individual members
• Compare what actually happened to what was expected to happen
• Assess credibility of the changes
  • Did something unusual happen (i.e. large increase in school funding)
• Key evaluation tool is Actual/Expected ratio
  • A ratio close to 1 mean experience match expectation. A ratio above or below 1 may indicate a change in the assumption is warranted.
<table>
<thead>
<tr>
<th>Demographic Assumption</th>
<th>Current Assumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover</td>
<td>Generally higher turnover earlier in career</td>
</tr>
<tr>
<td>Retirement</td>
<td>Percent of early and normal retirements</td>
</tr>
<tr>
<td></td>
<td>Percent of rule of 85 retirements</td>
</tr>
<tr>
<td>Mortality</td>
<td>RP-2014 mortality table with adjustments</td>
</tr>
<tr>
<td>Partial Lump Sum Option</td>
<td>12% of benefits will be paid as lump sum. 50% lump sum most common election</td>
</tr>
<tr>
<td>Disability Rates</td>
<td>Varies by group, higher for KP&amp;F</td>
</tr>
</tbody>
</table>
Preliminary Recommendations

• Recommendations for actuarial methods and demographic assumptions will be made at the November and January Board meetings.

• Amortization is not likely to be changed in this experience study, but is being reviewed by the Board.

• The Board is continuing to evaluate the investment return assumption using:
  • Long-term historical information
  • Recent economic data
  • Peer system comparisons
  • Inflation forecasts
  • Asset allocation
  • Risk tolerance
Questions?