MISCELLANEOUS ASSUMPTIONS *continued*

Certain and Life Annuities

What is the Certain and Life Annuities Assumption and How Do We Use it?

In many of the retirement plans, the standard retirement option is a monthly benefit payable for the lifetime of the member. If a retired member dies before their total pension payments received exceed the value of their pre-tax contributions made throughout their career with credited interest (also referred to as the savings fund), the difference is paid to their beneficiary or estate. We estimate the value of this benefit for current and future retirees using a Certain and Life Annuity – a life annuity with a certain payment period.

As the name implies, the certain payment period is the expected length of time that an annuitant is guaranteed to receive benefit payments. The certain period begins upon retirement. If the annuitant dies during the certain period, payments to a beneficiary or estate are assumed to continue until the end of the certain period. This methodology approximates any lump sums that may be paid out to the member's beneficiary or estate under this benefit.

Members of the hybrid Plans 3 don't receive this benefit because they do not contribute to the defined benefit portion of their retirement and thus, they have no savings fund.

High-Level Takeaways

We found that the old certain period assumptions reasonably modeled the length of guaranteed annuity payments in relation to historical savings funds. However, our updated analysis suggests small adjustments for a few plans.

Data

We used records of new retirees from 2014-2017 to study the ratio of their savings fund to annual retirement benefits. To study the certain period of open Plans 2, we also gathered data on the age and service of active members from our 2017 valuation file to estimate the average age members are hired.

General Methodology

To develop the certain and life annuity assumption, we use different approaches for the closed and open plans.

Since the average population of the closed Plans 1 is near retirement, we use recent retiree data to calculate the ratio of accumulated contributions to annual retirement benefits. This ratio is simply the sum of all member savings funds divided by the total annual retirement benefits for all recent retirees.

For the open Plans 2, we include additional forward-looking analysis. We estimate the ratio of accumulated contributions to annual retirement benefits of an average new hire using a new simplified method.

We based our new methodology on the principle that the accumulation of all contributions plus investment returns should equal the value of member pensions upon retirement. With this in mind, we determined the time it would take to recoup the purchase amount of an annuity based on plan-specific mortality assumptions and Cost-of-Living-Adjustment (COLA) provisions at the time of expected retirement. We made adjustments to capture (1) the difference between the savings fund interest rate and the investment return assumption and (2) the 50/50 cost sharing that takes place between Plan 2 employees and employers that pays for a member's pension benefit throughout their career. We anticipate this new method will improve the modeling of long-term expectations and reduce volatility that could emerge as contribution rates fluctuate over time.

Lastly, we compare the results of this analysis to recent retiree data to determine if we need to make any adjustments to reflect actual experience at retirement.

MISCELLANEOUS ASSUMPTIONS *continued*

Law Changes

Since the last study, no law changes have impacted our analysis of this assumption.

Analysis and Results

Analysis

Closed Plans 1

PERS Plan 1 analysis of recent retiree experience indicated a certain period of roughly four and one half years. This is slightly higher than our old analysis.

TRS Plan 1 is different from other plans. The standard option for most benefits in this plan is a single life benefit with no guarantee of receiving at least the value of their savings fund. The exception is the TRS 1 disability benefit, which provides (1) an actuarial equivalent annuity of the member's savings fund, (2) a 1 percent per years of service pension, and (3) $100 per year lump sum. For the first benefit, the annuitized savings fund, the member is entitled to receive back at least the value of their savings fund from the annuity payments. This benefit structure causes the TRS 1 disability benefit certain period to be longer than other plans.

LEOFF Plan 1 analysis of recent retiree records indicates a certain period of slightly less than two and one-half years. We expect this trend to continue downward since member contribution rates have been zero percent since July 1, 2000 and we expect that rate to continue for the remainder of active members' working careers.

WSPRS Plan 1 analysis of recent retiree records indicates a certain period of three and one-half years.

The following table summarizes our observations from this experience study along with the analysis from our prior report.

Certain Period Observations		
Plan	Prior Study	Recent Experience
PERS 1	4	4.5
TRS 1*	9.1	9.8
LEOFF 1	2.5	2.3
WSPRS 1	3.6	3.5

Applies to TRS 1 disability only.

Open Plans 2

All Plans 2 analysis indicate a certain period of roughly four to five years. The public safety plans, (PSERS, LEOFF, and WSPRS), with earlier retirement ages, tend to have slightly longer certain periods.

Overall, our new analysis suggests future certain periods are generally consistent with our old assumptions.

The following table summarizes our observations from this experience study along with the analysis from our prior report.

Certain Period Observations			
Plan	Prior Study	Future Expectations	Recent Experience
PERS 2	4.4	4.5	3.1
TRS 2	5.4	4.5	3.4
SERS 2	4.2	4.6	2.7
PSERS 2	4.2	4.7	4.3
LEOFF 2	5.5	4.8	5.1
WSPRS 2	4.5	5	N/A

MISCELLANEOUS ASSUMPTIONS *continued*

Methods and Format of Assumptions

We round our certain period to a whole number in order to be compatible with our valuation software.

We compared our new methodology to the method used in the prior experience study and found the results of our two methods to be substantially similar. As such, we intend to eliminate the more complicated approach we've used in the past and apply the simpler method going forward.

Results

All-Plan Summary

We found that actual experience was reasonably similar to the old assumptions. However, when taking into account expectations for the future, we adjusted our assumptions, where appropriate, and to have consistency across systems and plans with similar benefit structures.

Overall, this resulted in a certain period assumption of 4 years for PERS, TRS, and SERS Plans 2. For the public safety plans with earlier retirements, PSERS, WSPRS, and LEOFF Plans 2, we selected a certain period assumption of five years. We also set the WSPRS 1 certain period equal to five years but retained the old assumptions for the remaining Plans 1.

By System Considerations

The following are specific impacts and/or changes by plan:

- We did not change the certain period assumption for PERS 1, TRS 1 disability, or LEOFF 1 given the size of their remaining populations.
- We set the WSPRS 1 certain period equal to our assumption for WSPRS 2 due to the similar plan design. We did not take the same approach as we did for the other Plans 1 because WSPRS 1 was closed to new hires much more recently.

Otherwise, based on our analysis we made some minor adjustments to our assumptions to better model our expectations for the future.

New Certain and Life Annuities Assumption

The following table shows the old and new assumptions by plan.

Certain Period Assumption		
Plan	Old	New
PERS 1	4	4
PERS 2	4	4
TRS 1*	9	9
TRS 2	5	4
SERS 2	4	4
PSERS 2	4	5
LEOFF 1	3	3
LEOFF 2	5	5
WSPRS 1	4	5
WSPRS 2	5	5

**Applies to TRS 1 disability only.*