Government Accounting Standards (GASB) Statements 67 and 68 Crossover Testing Report for Measurement Date June, 30 2015 based on June 30, 2014 Valuations

Table of Contents

Introduction

This report describes CalPERS approach for crossover testing to fulfill Government Accounting Standards Board Statements 67 and 68 reporting requirements on discount rates for measurement date June 30, 2015 based on data from valuation date June 30, 2014.

Background

History

The Government Accounting Standards Board approved Statements 67 and 68 on June 25, 2012.

Statement 68 (Accounting and Financial Reporting for Pensions) paragraphs 26 to 31 contain requirements for determining the discount rate to be used in a pension plan. A 100 year cash flow projection for each agent plan is among the requirements.

CalPERS Structure

The California Public Employees' Retirement System (CalPERS) provides retirement and health benefit services to more than 1.7 million members and 3,094 school and public employers.

Led by a 13-member Board of Administration ("CalPERS Board") consisting of member-elected, appointed, and ex officio members, CalPERS membership consists of 1,129,014 active and inactive members and 586,959 retirees, beneficiaries, and survivors as of June 30, 2014.

Public Employees Retirement Fund

The Public Employees Retirement Fund (PERF) provides retirement benefits to State of California, schools and other California public agency employees. The PERF benefits are funded by member and employer contributions and by earnings on investments.

The PERF is comprised of and reported as three separate entities for accounting purposes:

- PERF A is comprised of agent-multiple-employer plans, which includes State of California and most public agencies' rate plans with more than 100 active members.

- PERF B is a cost-sharing multiple-employer plan of school employers consisting of non-teaching and non-certified employees.

- PERF C is a cost-sharing multiple-employer plan of public agencies' plans with generally less than 100 active members.

CalPERS Long-Term Expected Rate of Return

CalPERS used the following methodology to set the long-term expected rate of return in the June 30, 2015 CAFR:

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class.

In determining the long-term expected rate of return, staff took into account both short-term and long-term market return expectations as well as the expected pension fund cash flows. Using historical returns of all of the funds' asset classes, expected compound returns were calculated over the short-term (first 10 years) and the long-term (11-60 years) using a building-block approach. The present value of benefits was calculated using the expected nominal returns for both short-term and long-term. The expected rate of return was set by calculating the single equivalent expected return that arrived at the same present value of benefits for cash flows as the one calculated using both short-term and long-term returns. The long term expected rate of return was then set equivalent to the single equivalent rate calculated above and rounded down to the nearest one quarter of one percent.

CalPERS Pension Discount Rate

CalPERS pension discount rate is set equal to the long-term expected rate of return calculated using the capital market assumptions.

CalPERS Amortization Methods and Actuarial Assumptions

CalPERS breaks unfunded liability into components, or bases, according to their date of origin and the cause that created the component.

In April 2013, the CalPERS Board approved new actuarial amortization and smoothing policies for components of the unfunded liability that arise due to gains and losses. The CalPERS Board adopted these new policies to return the System to fully funded status within 30 years, and to ensure that no GASB 68 crossover test would fail on any of the CalPERS plans.

The new policies include a rate-smoothing method with a 30-year fixed amortization period for gains and losses. Each 30-year amortization period has a five-year ramp-up of rates at the start, and a five-year ramp-down at the end of the 30 year period. The new policies also include rate smoothing for assumption changes and benefit improvements. Both assumption changes and benefit improvements are amortized over a 20 year fixed period. Assumption changes are amortized with a five-year ramp-up at the start of the 20 year period and a five-year ramp-down at the end of the 20 year period.

These new policies were applied to the June 30, 2014 valuation for the State and Schools Pool, setting employer contribution rates for the 2015-16 Fiscal Year. For Public Agencies, the new policies applied in the June 30, 2013 valuations, setting rates for the 2015-16 Fiscal Year.

A maximum 30-year amortization payment on the entire unfunded liability is enforced on the amortization methods described above. In addition, for those plans in which the amortization methods described above result in either mathematical inconsistencies or unreasonable actuarial results, all unfunded liability components are combined into a single base and amortized over a period of time, as determined by the CalPERS Chief Actuary.

The assumptions used in the crossover testing are the same assumptions adopted by the Board in February of 2014 for all plans, for more details please refer to the experience study report that can be found on the CalPERS website.

Approach

Crossover Testing

CalPERS conducted cash flow projections to determine if assets would run out under the assumed discount rate. CalPERS refers to these projections as “crossover tests”.

Each crossover test requires running multiple valuations, completing additional calculations and verifying the results. CalPERS cannot currently support crossover testing for the more than 3,000 contracting public agency plans it administers. Instead, CalPERS chose representative plans that had a higher likelihood of a crossover event (see Selection of Plans for more details).

CalPERS performed crossover tests on the following plans within the PERF for valuation date June 30, 2014:

- PERF A
  - California Highway Patrol
  - State Miscellaneous (Tiers 1 and 2)
  - State Peace Officers and Fire Fighters (POFF)
  - State Safety
  - One Public Agency Miscellaneous Plan
  - One Public Agency Safety Plan
- PERF B
  - Schools Pool
- PERF C
  - No plans were selected (see Selection of Plans section)

Selection of Plans

For PERF A, CalPERS tested a combination of State and Public Agency agent multiple-employer plans with the lowest funded status and lowest ratio of actives to retirees.

Funded status is one of the fundamental indicators of a plan's financial health. Active to retiree ratio indicates how many actives a plan has to fund retiree benefits. Plans with low measures in these two areas indicate that they have a higher probability of a crossover event than other CalPERS contracting agencies.

For PERF B, CalPERS conducted a crossover test on the Schools pool (a cost-sharing multiple-employer plan).

For PERF C, CalPERS believes that demonstrating that a crossover event does not occur for other contracting public agencies plans which have a lower funded status than the PERF C risk pools is sufficient proof that no crossover event will occur in PERF C risk pools.

Plan Characteristics (as of June 30, 2014)

Plan	Funded Status (on a Funding Basis)	Active to Retiree Ratio
California Highway Patrol	64.3%	0.843
State Miscellaneous (Tiers 1 and 2)	72.4%	0.901
State POFF	71.0%	1.197
State Safety	79.2%	1.188
PA Miscellaneous Plan	62.6%	0.560
PA Safety Plan	65.7%	0.566
Schools	86.6%	1.387

Crossover Testing Methodology

The crossover tests are conducted using a mixture of assumptions, plan information and cash flow projections generated from CalPERS Actuarial Valuation System (AVS).

Crossover Testing Assumptions

The assumptions below are used as an input to the crossover testing. The first two assumptions are set by CalPERS Board. The last assumption is based upon available municipal bond rates.

- Discount Rate Assumption
- Employee Payroll Growth Rate

- Municipal Bond Index Rate (in case of a crossover event)

Plan Information

The following plan information is used as an input to the crossover testing:

- Total Plan Payroll
- Beginning Market Value of Assets
- Unfunded Actuarial Liability Payment as a Percentage of Payroll

Cash Flow Projections from AVS

The following cash flow projection data is generated from AVS:

- Employee and Employer Future Normal Cost Contributions
- Employee Future Benefit Payments

Results

Crossover Testing Results

For each plan, the following data was calculated to determine if a crossover event occurred:

- Projected Beginning Fiduciary Net Position
- Projected Benefit Payments
- "Funded" Portion of Benefit Payments
- "Unfunded" Portion of Benefit Payments

A crossover event occurs if the Projected Benefit Payments exceed the Projected Beginning Fiduciary Net Position in a given year.

No crossover event occurred for any CalPERS plan tested. This report will display:

- The first five (5) years of crossover testing data
- The two (2) years preceding the closest point to a crossover event
- The closest point to a crossover event
- The two (2) years after the closest point to a crossover event
- The 100th year of the crossover test

The crossover testing results are very sensitive to the discount rate. As the retiree population reduces over time, benefit payments to the closed population decrease. Eventually in each crossover test, a point occurs where the benefit payments are less than the amount of interest that the balance accrues. After this point, the balance increases very rapidly as interest compounds the excess balance and benefit payments decrease due to members exiting the plan. This results in large balance at the end of the crossover test.

California Highway Patrol Crossover Test Results (PERF A)

A crossover event did not occur at any point. The beginning of Year 65 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 65 exceeds benefit payments by $39,921,442. In Year 66, the amount of interest accumulated exceeds benefit payments and administrative expenses by $76,127,689. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position ($)	Projected Benefit Payments ($)	“Funded” Portion of Benefit Payments ($)	Unfunded Portion of Benefit Payments ($)
1	6,645,481,580	487,644,209	487,644,209	0
2	6,721,499,396	516,312,989	516,312,989	0
3	7,143,289,947	547,444,794	547,444,794	0
4	7,607,595,343	579,377,951	579,377,951	0
5	8,092,335,537	611,675,683	611,675,683	0
. . .	. . .	. . .	. . .	. . .
63	3,323,914,428	277,692,590	277,692,590	0
64	3,285,297,594	239,143,466	239,143,466	0
65	3,283,752,053	203,639,894	203,639,894	0
66	3,318,900,540	171,335,384	171,335,384	0
67	3,390,178,331	142,328,297	142,328,297	0
. . .	. . .	. . .	. . .	. . .
100	31,189,415,928	971	971	0

State Miscellaneous (Tier 1 and 2) Crossover Test Results (PERF A)

A crossover event did not occur at any point. The beginning of Year 59 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 59 exceeds benefit payments by $86,741,526. In Year 60, the amount of interest accumulated exceeds benefit payments by $300,948,729. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position ($)	Projected Benefit Payments ($)	"Funded" Portion of Benefit Payments ($)	Unfunded Portion of Benefit Payments ($)
1	68,358,591,216	5,275,489,534	5,275,489,534	0
2	67,866,368,694	5,506,913,565	5,506,913,565	0
3	70,636,807,883	5,853,741,015	5,853,741,015	0
4	73,519,923,861	6,195,797,774	6,195,797,774	0
5	76,385,986,170	6,531,807,570	6,531,807,570	0
. . .	. . .	. . .	. . .	. . .
57	24,965,274,741	2,160,610,106	2,160,610,106	0
58	24,597,559,596	1,933,441,015	1,933,441,015	0
59	24,437,793,697	1,718,238,132	1,718,238,132	0
60	24,489,166,728	1,515,570,172	1,515,570,172	0
61	24,754,517,958	1,325,985,494	1,325,985,494	0
. . .	. . .	. . .	. . .	. . .
100	317,777,981,654	19,977	19,977	0

State POFF Crossover Test Results (PERF A)

A crossover event did not occur at any point. The beginning of Year 64 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 64 exceeds benefit payments by $45,638,132. In Year 65, the amount of interest accumulated exceeds benefit payments by $160,788,236. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position ($)	Projected Benefit Payments ($)	"Funded" Portion of Benefit Payments ($)	Unfunded Portion of Benefit Payments ($)
1	26,591,349,889	1,728,626,863	1,728,626,863	0
2	26,924,694,948	1,827,244,146	1,827,244,146	0
3	28,614,351,103	1,952,618,450	1,952,618,450	0
4	30,416,839,084	2,085,685,399	2,085,685,399	0
5	32,263,100,235	2,225,335,579	2,225,335,579	0
. . .	. . .	. . .	. . .	. . .
62	11,201,005,006	1,007,481,717	1,007,481,717	0
63	10,996,527,910	879,172,596	879,172,596	0
64	10,909,745,347	760,407,742	760,407,742	0
65	10,939,588,953	651,624,943	651,624,943	0
66	11,084,456,341	553,098,302	553,098,302	0
. . .	. . .	. . .	. . .	. . .
100	103,270,411,695	63,918	63,918	0

State Safety Crossover Test Results (PERF A)

A crossover event did not occur at any point. The beginning of Year 49 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 49 exceeds benefit payments by $47,205,896. In Year 50, the amount of interest accumulated exceeds benefit payments by $99,624,180. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position ($)	Projected Benefit Payments ($)	"Funded" Portion of Benefit Payments ($)	Unfunded Portion of Benefit Payments ($)
1	7,561,646,144	461,738,009	461,738,009	0
2	7,822,241,973	479,863,005	479,863,005	0
3	8,462,625,891	524,271,807	524,271,807	0
4	9,111,326,398	570,681,251	570,681,251	0
5	9,752,619,612	617,108,717	617,108,717	0
. . .	. . .	. . .	. . .	. . .
47	11,628,599,068	902,428,609	902,428,609	0
48	11,565,149,357	854,203,932	854,203,932	0
49	11,546,924,198	805,877,491	805,877,491	0
50	11,577,427,228	757,604,824	757,604,824	0
51	11,660,259,378	709,483,044	709,483,044	0
. . .	. . .	. . .	. . .	. . .
100	251,398,120,591	22,471	22,471	0

PA Miscellaneous Plan (PERF A)

A crossover event did not occur at any point. The beginning of Year 56 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 56 exceeds benefit payments by $134,516. In Year 57, the amount of interest accumulated exceeds benefit payments by $367,252. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position ($)	Projected Benefit Payments ($)	"Funded" Portion of Benefit Payments ($)	Unfunded Portion of Benefit Payments ($)
1	98,377,888	8,774,890	8,774,890	0
2	96,415,442	8,997,194	8,997,194	0
3	99,343,171	9,471,351	9,471,351	0
4	102,323,688	10,012,145	10,012,145	0
5	105,378,944	10,585,257	10,585,257	0
. . .	. . .	. . .	. . .	. . .
54	22,627,928	2,024,586	2,024,586	0
55	22,225,941	1,745,695	1,745,695	0
56	22,082,958	1,498,566	1,498,566	0
57	22,185,473	1,281,811	1,281,811	0
58	22,520,408	1,093,116	1,093,116	0
. . .	. . .	. . .	. . .	. . .
100	369,537,131	0	0	0

PA Safety Plan (PERF A)

A crossover event did not occur at any point. The beginning of Year 43 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 43 exceeds benefit payments by $1,240,555. In Year 44, the amount of interest accumulated exceeds benefit payments by $ 2,427,197. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position ($)	Projected Benefit Payments ($)	"Funded" Portion of Benefit Payments ($)	Unfunded Portion of Benefit Payments ($)
1	232,998,435	18,586,493	18,586,493	0
2	232,523,321	19,363,697	19,363,697	0
3	243,478,691	20,345,356	20,345,356	0
4	255,014,438	21,304,828	21,304,828	0
5	267,254,292	22,233,894	22,233,894	0
. . .	. . .	. . .	. . .	. . .
41	467,949,511	35,257,066	35,257,066	0
42	466,491,510	34,227,597	34,227,597	0
43	465,991,356	33,162,685	33,162,685	0
44	466,557,786	32,060,747	32,060,747	0
45	468,309,184	30,920,720	30,920,720	0
. . .	. . .	. . .	. . .	. . .
100	12,641,121,607	2,166	2,166	0

Schools Crossover Test Results (PERF B)

A crossover event did not occur at any point. Year 57 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 57 exceeds benefit payments by $187,359,937. In Year 58, the amount of interest accumulated exceeds benefit payments by $418,818,388. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position ($)	Projected Benefit Payments ($)	"Funded" Portion of Benefit Payments ($)	Unfunded Portion of Benefit Payments ($)
1	56,838,237,794	3,841,784,883	3,841,784,883	0
2	56,403,168,349	3,630,559,995	3,630,559,995	0
3	59,059,382,640	3,900,688,408	3,900,688,408	0
4	61,765,007,391	4,176,382,213	4,176,382,213	0
5	64,530,400,716	4,456,930,919	4,456,930,919	0
. . .	. . .	. . .	. . .	. . .
55	31,417,441,785	2,561,833,717	2,561,833,717	0
56	31,117,652,350	2,330,145,256	2,330,145,256	0
57	31,035,592,252	2,107,727,849	2,107,727,849	0
58	31,177,979,004	1,895,143,502	1,895,143,502	0
59	31,551,451,249	1,692,973,402	1,692,973,402	0
. . .	. . .	. . .	. . .	. . .
100	454,190,834,334	21,892	21,892	0

Conclusion

CalPERS selected plans that were the likeliest candidates for a crossover event. As no crossover event occurred on any of the tested plans, CalPERS has determined that using the 7.65% long-term expected rate of return gross of administrative expenses for all plans in the PERF is appropriate and compliant with GASB Statement 68 reporting requirements for measurement date June 30, 2015 based on data from June 30, 2014 valuations.