



The elements of success



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Fifty shades of funding – Municipal pension stats & strategies

Actuaries' Club of Hartford & Springfield

Spring 2017 meeting

Tim Ryor, FSPA, FCA, EA, MAAA, Senior Vice President & Consulting Actuary

Steve Lemanski, FSA, FCA, EA, MAAA, Consulting Actuary



Top 2 questions asked by our municipal clients



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How well funded is our plan?



How does that compare?

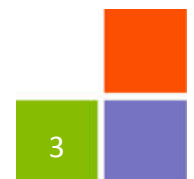


Presentation overview



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- Review of CT OPM fiscal indicator data & trends
- H&H survey of FYE 2015 CAFRs: actual & assumed returns
- Auditors/rating agencies public sector pension radar
- Strategies to evaluate & reduce pension risk
- Q&A

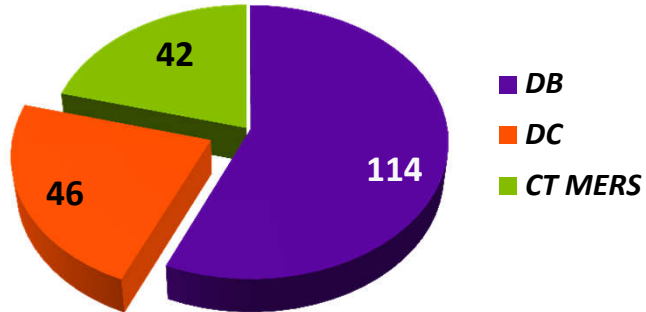


Trend in DC plan adoption

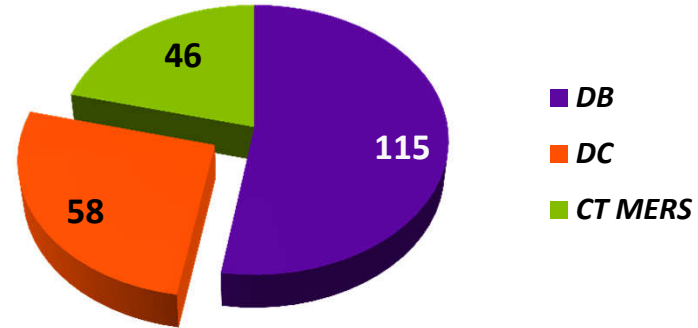


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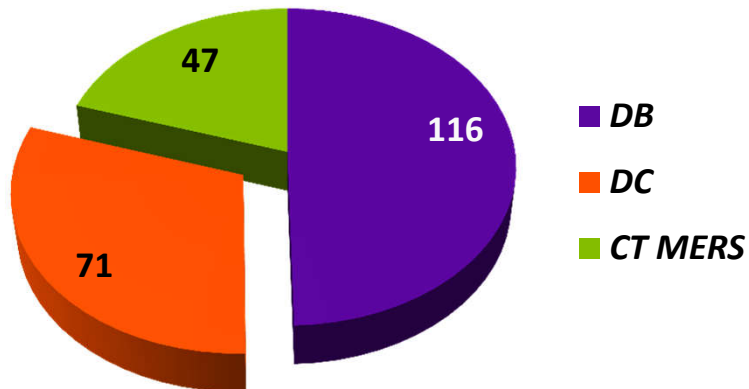
2005 FYE Data



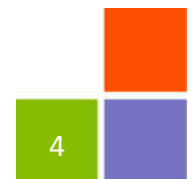
2012 FYE Data



2014 FYE Data



- Number of towns with DC plans increased by 12 from 2005 to 2012
- From 2012 to 2014, the number was 13
- 170 CT towns on the list so 42% now have DC
- Number of DB plans constant since plans only closed to new entrants when a DC plan is added



Trend in OPEB (GASB 45) trust creation



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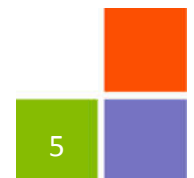
For FYE 2009

- 7% of CT municipalities reported OPEB assets
- GASB 45 liabilities reported totaled \$6.36 billion with \$29.1 million in assets (0.5% funded – 147 entities reporting)



For FYE 2014

- 36% of CT municipalities now report OPEB assets
- GASB 45 liabilities reported totaled \$7.17 billion with \$218.3 million in assets (3.0% funded – 163 entities reporting)

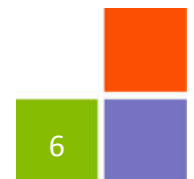


More consistent reporting under GASB 67/68



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- Both assets and liabilities are now reported at fiscal year-end
- Assets are market value (no smoothing)
- Liabilities are all calculated using the same funding method (Entry Age Normal)
- Actual “money-weighted” returns included
- OPM data is for FYE 2014; we added FYE 2015 information from CAFRs

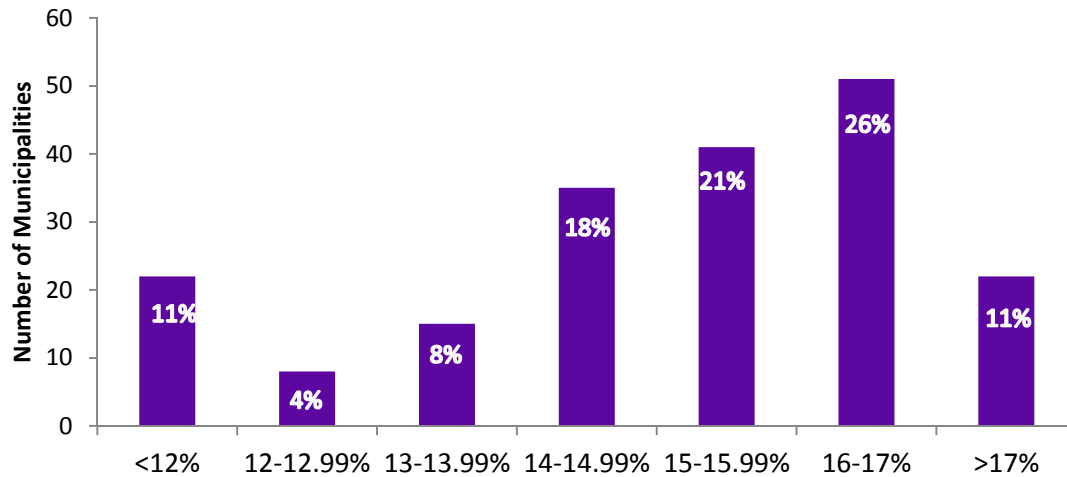


GASB money-weighted returns



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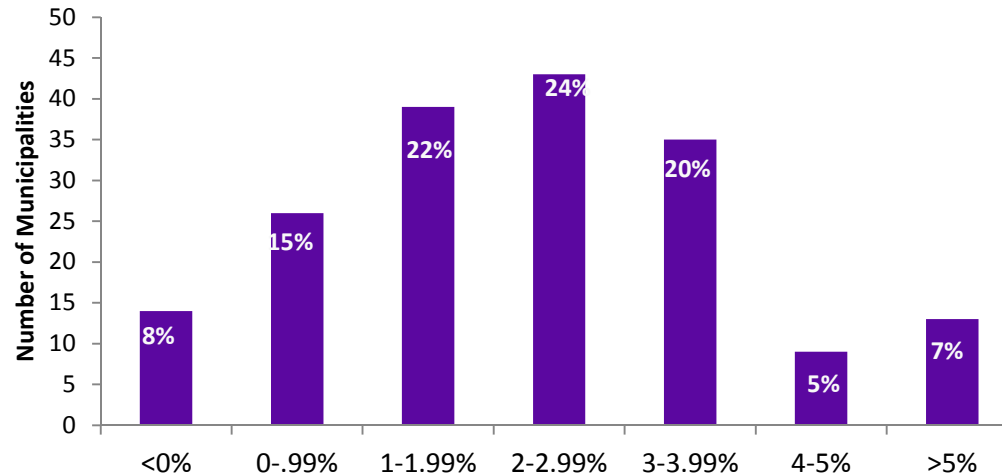
2014 Money-Weighted Rate of Return



- Average return was 14.8%
- 78% of plans (194 in total) had returns between 12% & 17%

2015 Money-Weighted Rate of Return

- Average return was 2.3%
- 85% of plans (179 in total) had returns between 0% & 5%

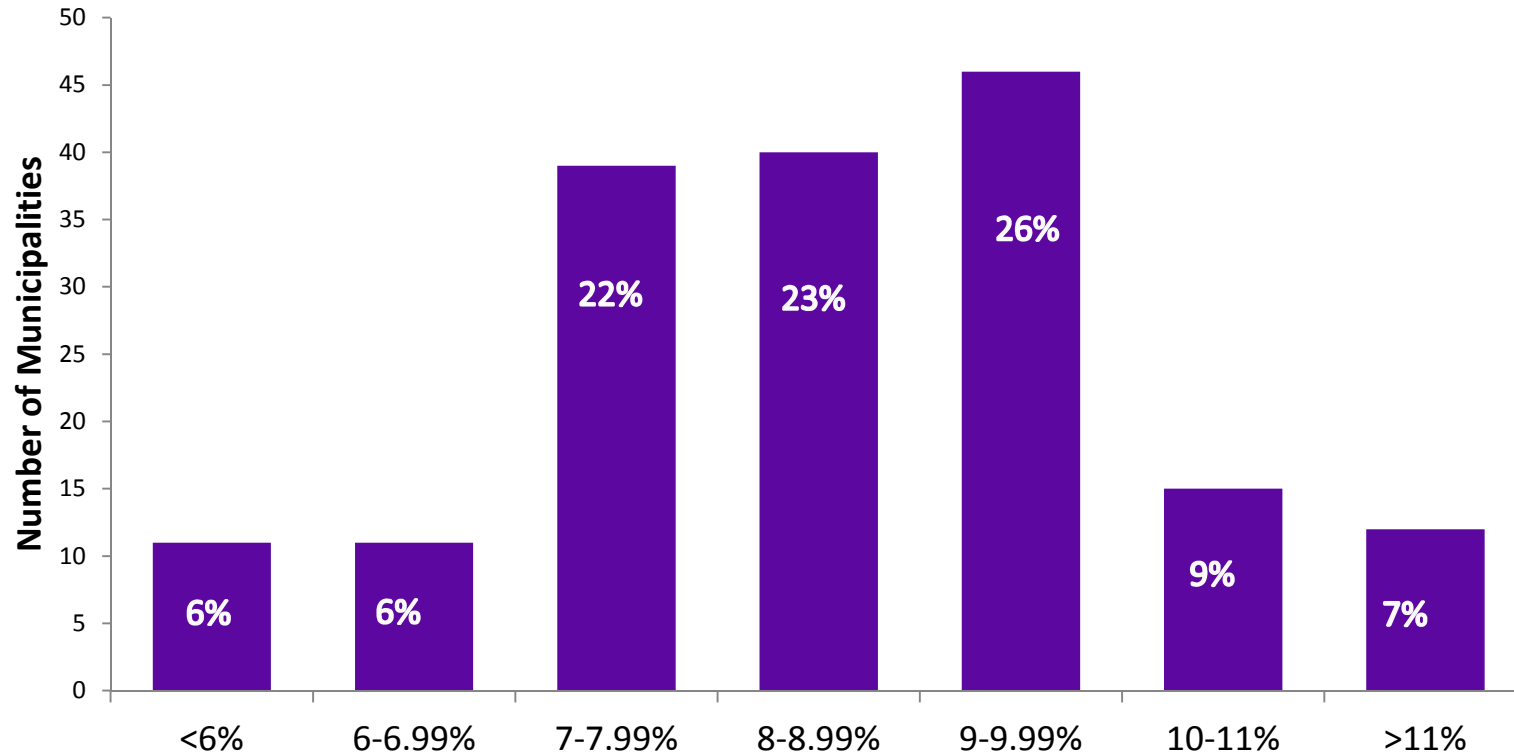


GASB money-weighted returns



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Cumulative Money-Weighted Rate of Return for 2013-2015



- Average two year return was 8.5%
- 87% of plans (174 in total) had returns between 6% & 11%
- Complete data not yet available for **FYE 16** but our preliminary survey of larger plans (\$50M+ in assets) indicates an average of -1.3%



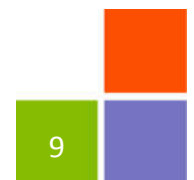
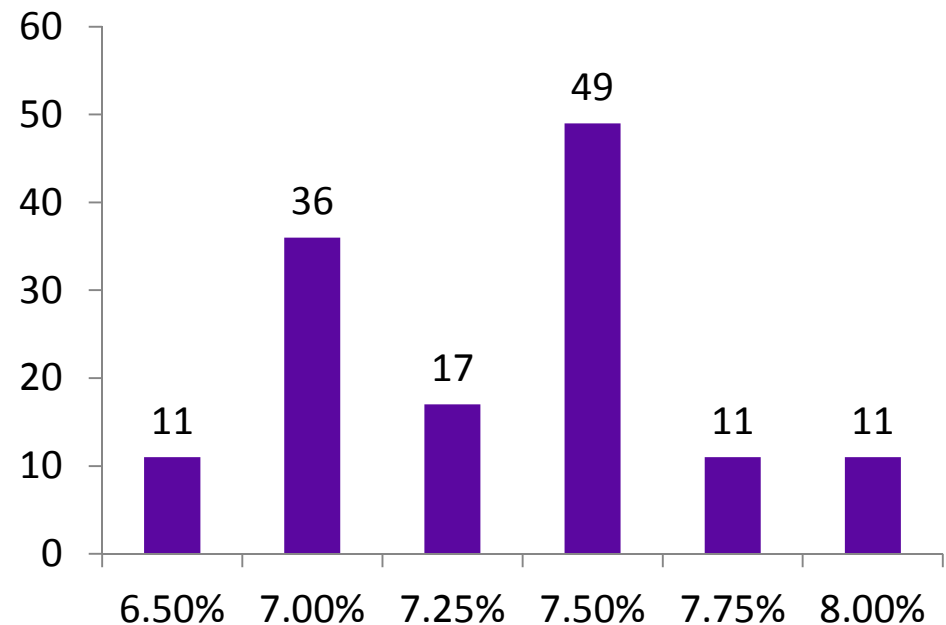
Trend in long-term rate assumption



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- Consistent trend of LTROR lowering
- Average drop of 0.4% over past 4 years
- Lower rates - Some still phasing-in, or will lower for 2016 valuations
- Only 12 plans (out of 184 surveyed) still at or above 8%; that number likely to be cut to 6 or less after the 2016 valuation cycle
- No one assumption dominates (unlike the 8% assumption that was pervasive 10+ years ago) – partly due to phasing-in of lower rates

Most common assumptions

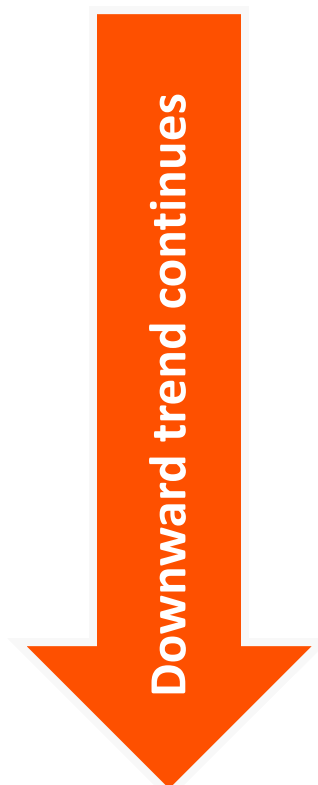
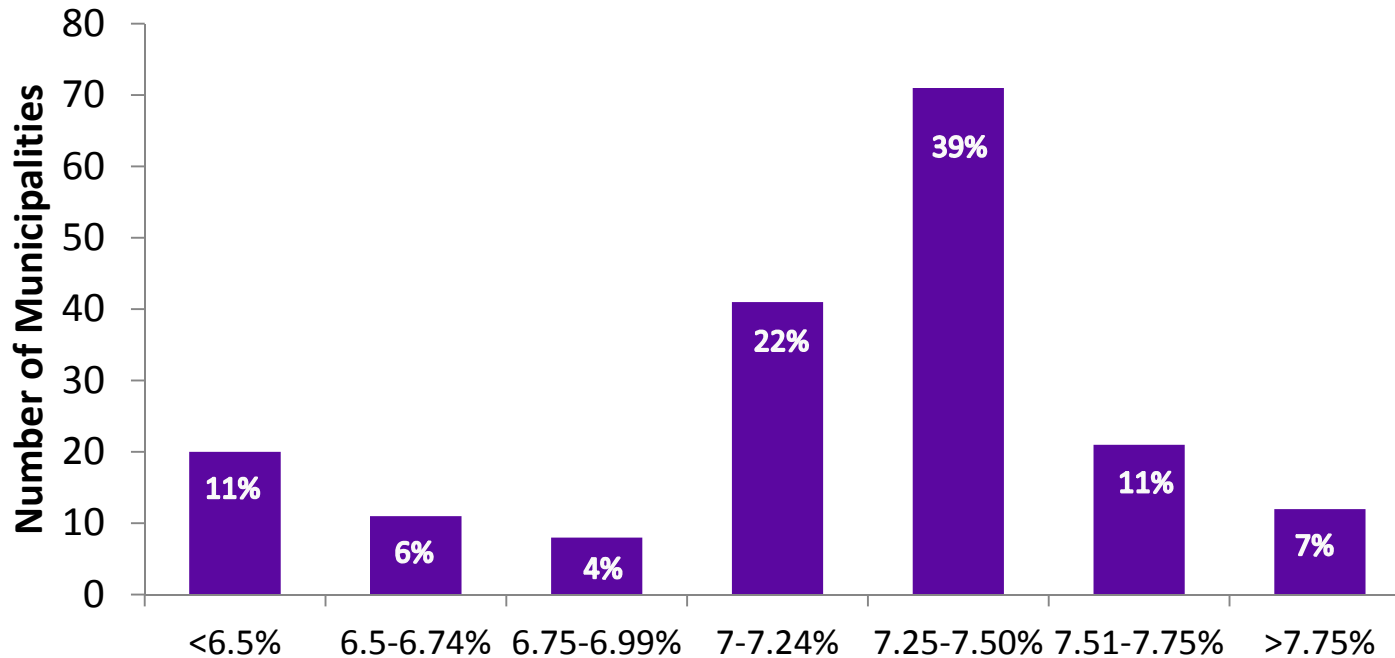


Long-Term rates from 2015 CAFRs

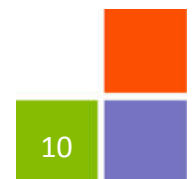


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2015 LTROR Assumption



- Average rate is **7.14%** for the 184 CT plans that we gathered data on (median = 7.25%)
- Liability weighted average is **7.50%** since larger plans tend to have the higher rates
- Down about 0.4% from 4 years ago from 7.49% (average) & 7.88% (weighted average)



Actuarial assumptions and funded ratios



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- Lower LTROR:
 - has the impact of lowering funded ratios
 - often lowered in conjunction with an experience study
 - partially driven by lower long-term inflation expectations which impacts salary increase assumption
- Investment experience through FYE 2015 helped offset the impact (FYE 2016 unfortunately will not)
- Average funded ratio percentage remains in the mid-70s
- Liabilities are “normalized” to a 7.5% rate to compare funded ratios
- Need to compare your funded ratio to others using the same LTROR

Example

A 75.5% funded plan using 7% is the same as an 80.0% funded plan using 7.5%

Impact of LTROR on funded ratio



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Long-Term Rate of Return (LTROR) Assumption

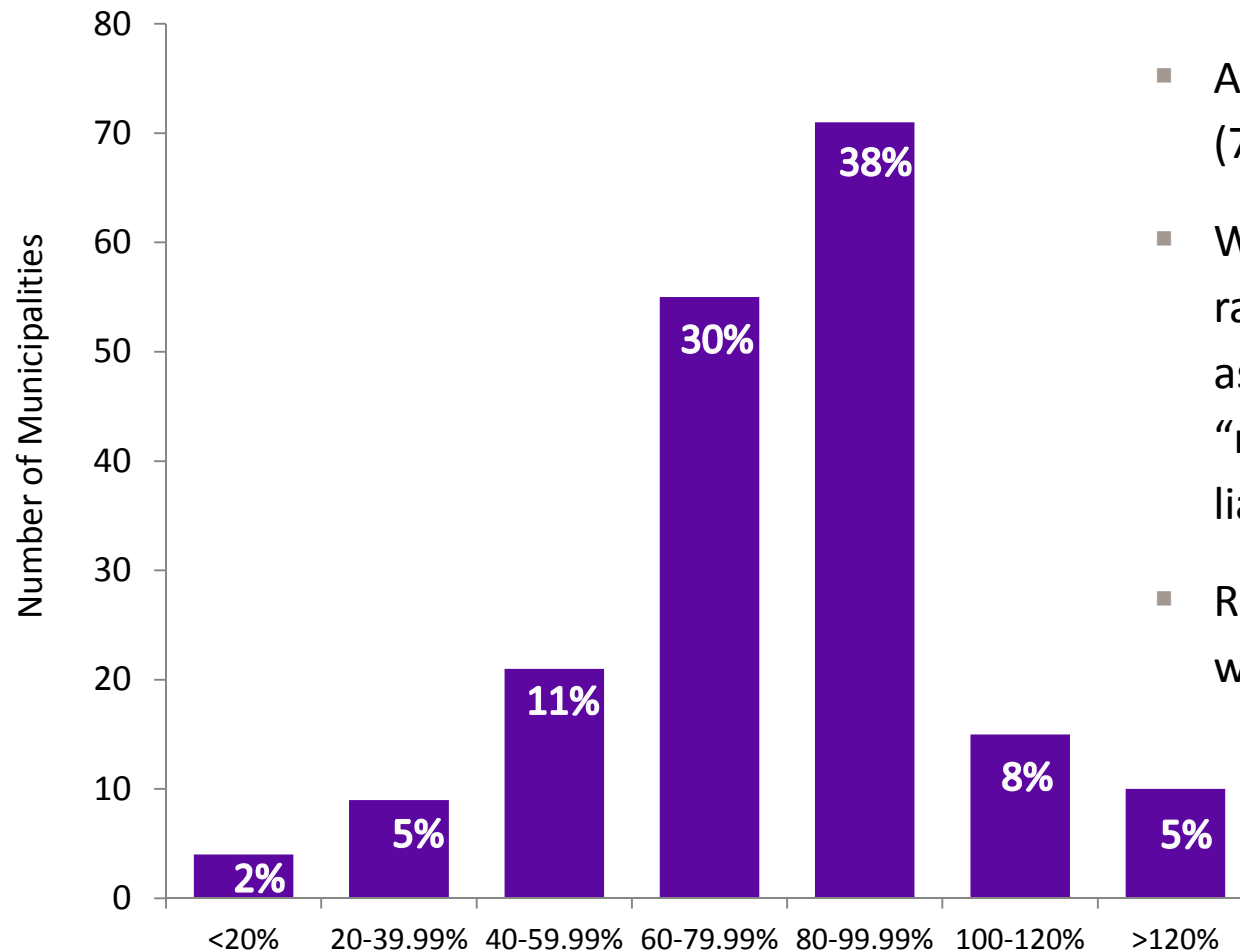
	6.50%	7.00%	7.50%	8.00%
Actuarial Liability	\$112,393,000	\$106,002,000	\$100,000,000	\$94,366,000
Assets	\$80,000,000	\$80,000,000	\$80,000,000	\$80,000,000
Unfunded Liability	\$32,393,000	\$26,002,000	\$20,000,000	\$14,366,000
Funded Ratio	71.2%	75.5%	80.0%	84.8%
20-Year Level \$ Payment	\$2,760,400	\$2,293,800	\$1,825,000	\$1,354,800
<i>Compared to 7.5%</i>	\$935,400	\$468,800	\$0	<i>(\$470,200)</i>

FYE 2015 funded ratios



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Funded Ratio (7.5% adjusted accrued liability)

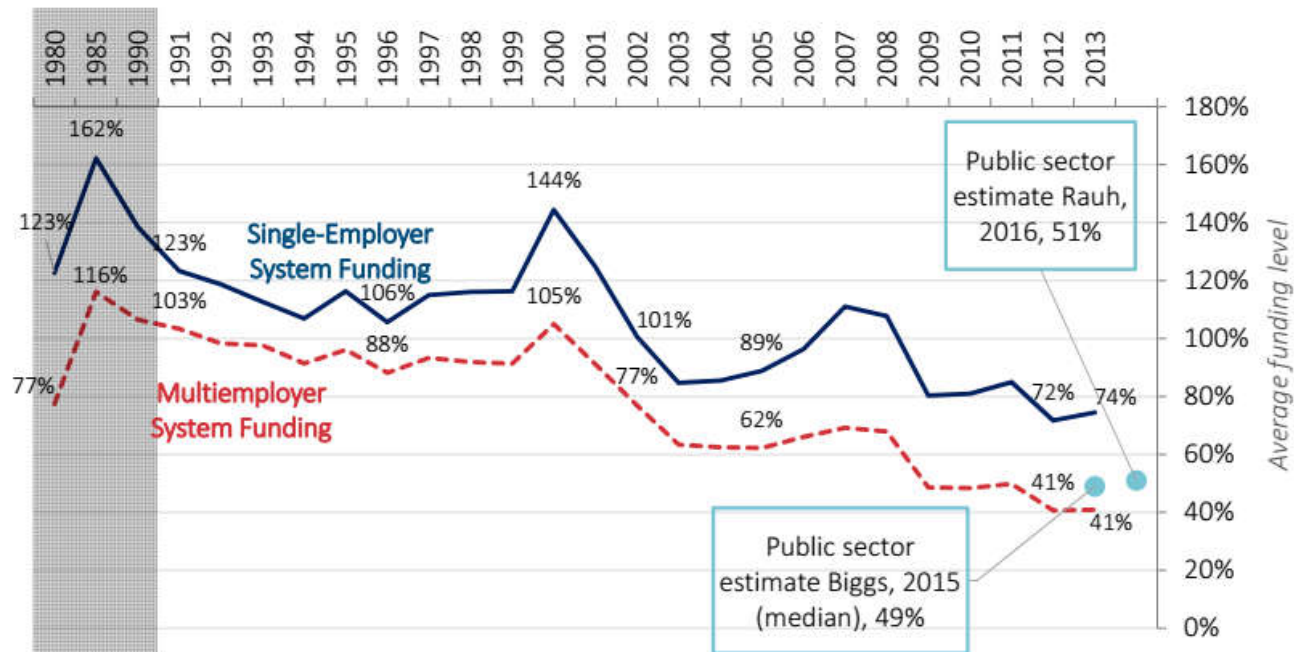


- Average funded ratio is 79.4% (76.4% unadjusted)
- Weighted average funded ratio is 75.8% (\$9.43 billion in assets over \$12.44 billion in “normalized (7.5% LTROR)” liabilities)
- Roughly 57% on an ABO basis with a 4.5% discount rate

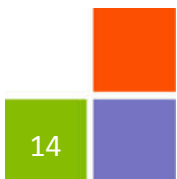


Pension System Funded Ratios

Funding of US Employer-based Pension Systems—Estimated Market Basis

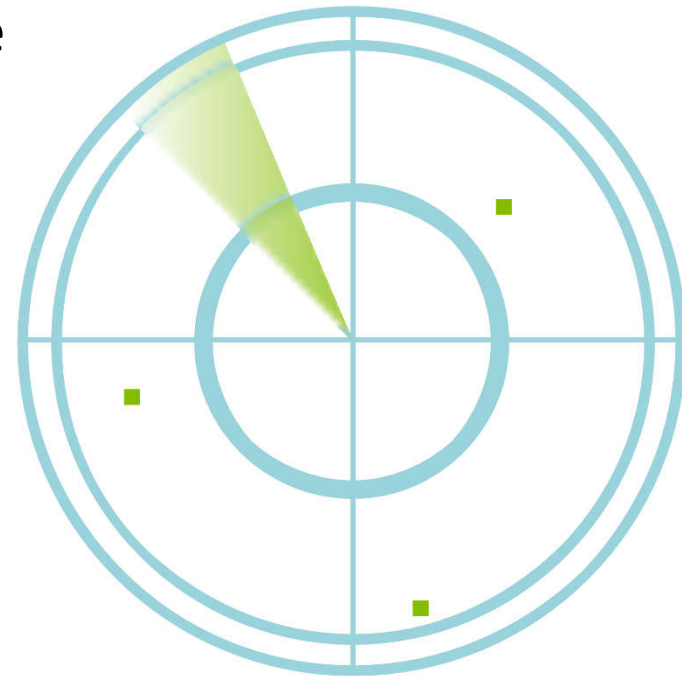


Sources: Single-employer and multiemployer time series – PBGC 2014 Databook, Public sector estimates for FY 2014 (Rauh, Hoover Institute April 2016) and FY 13/14 (Biggs, AEI, September 2015)



Auditors & rating agencies
public sector pension radar

- Actuarial assumptions
- Funded ratio
- Contribution allocation procedure
- Funding policy





- **Investment return** and **mortality** assumptions continue to be front and center
- Underlying long-term inflation component for economic assumptions is often in the 2.50% to 2.75% range
- Combined with updated capital market assumptions, result is continuing trend of lower **investment return** assumption
- Review asset allocation and investment policy statement

One size does not fit all

Mortality

- Most commonly used: RP-2000 and RP-2014 tables
- SOA currently studying public sector mortality (i.e., teachers, public safety, general employees)

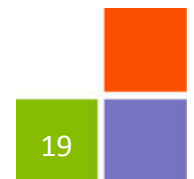
Scale

- Mortality improvement scale estimates how life expectancies may change in the future
- Most commonly used: Scale AA, Scale BB, Scale MP-2014, and Scale MP-2015
- SOA now updating the “MP” scales annually
- Scale MP-2016 was released on October 20, 2016

▶ **What has happened in the past
will not necessarily happen in the future**



- A formal experience study compares all actuarial assumptions with actual plan experience
- Each assumption should be reasonable
- Balance between allowing enough time to pass for experience to develop vs. reviewing stale information
- GFOA “best practice” is to perform an experience study at least every five years



Funded ratio



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- Traditional definition of funded ratio is actuarial value of assets divided by actuarial accrued liability
- Actuarial methods are designed to get the funded ratio to 100% over time, if actuarial assumptions are realized and the Actuarially Determined Employer Contribution (ADEC) is consistently made
- Funding the ADEC consistently over time is viewed favorably by rating agencies as an indicator of both funding progress and funding discipline
- GASB 67/68 measures funded ratio on different basis: market value of assets divided by actuarial accrued liability (entry age normal basis)
- Participants expect to receive 100% of their accrued benefits, so it is reasonable to expect that 100% of the actuarial accrued liability is the long-term funding target

“Credit Neutral”

Funded ratio of
70% to 80%

90%+ from S&P

Higher ratio required
to receive top
pension funding
rating

Contribution allocation procedure



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► Actuarial Standard of Practice 4 definition:

A procedure that uses an actuarial cost method and may include an asset valuation method, an amortization method, and an output smoothing method to determine the actuarially determined contribution for a plan

Example:

Entry Age Normal cost method, 5-year smoothed assets, with unfunded actuarial accrued liability amortized over 20 years (closed period) as a level dollar amount

“Inputs” are smoothed

- ▶ **Moody's "Tread Water" analysis: if the ADEC is contributed, and all actuarial assumptions are realized, does the Net Pension Liability change?**

Under GASB 67/68



- If the answer is "no" the plan may be viewed as "treading water"
- Can perform a similar analysis for the funding valuation
- A contribution allocation procedure that uses a long amortization period (particularly in conjunction with level percent amortization) may be more likely to produce the above outcome in the near-term

- ▶ In light of the ADEC that has been calculated, what is the plan sponsor's policy with respect to the contribution that is actually made?

Best practice is to have a formal written funding policy document

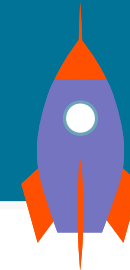
If the funding policy contribution is less than the ADEC, there may be an impact on the GASB 67/68 discount rate and NPL

Pension risk



Historically, the focus was on traditional measures such as the plan's funded ratio and standard deviation of the investment portfolio

Emerging actuarial practice is to have a more comprehensive view of pension risk



Risk

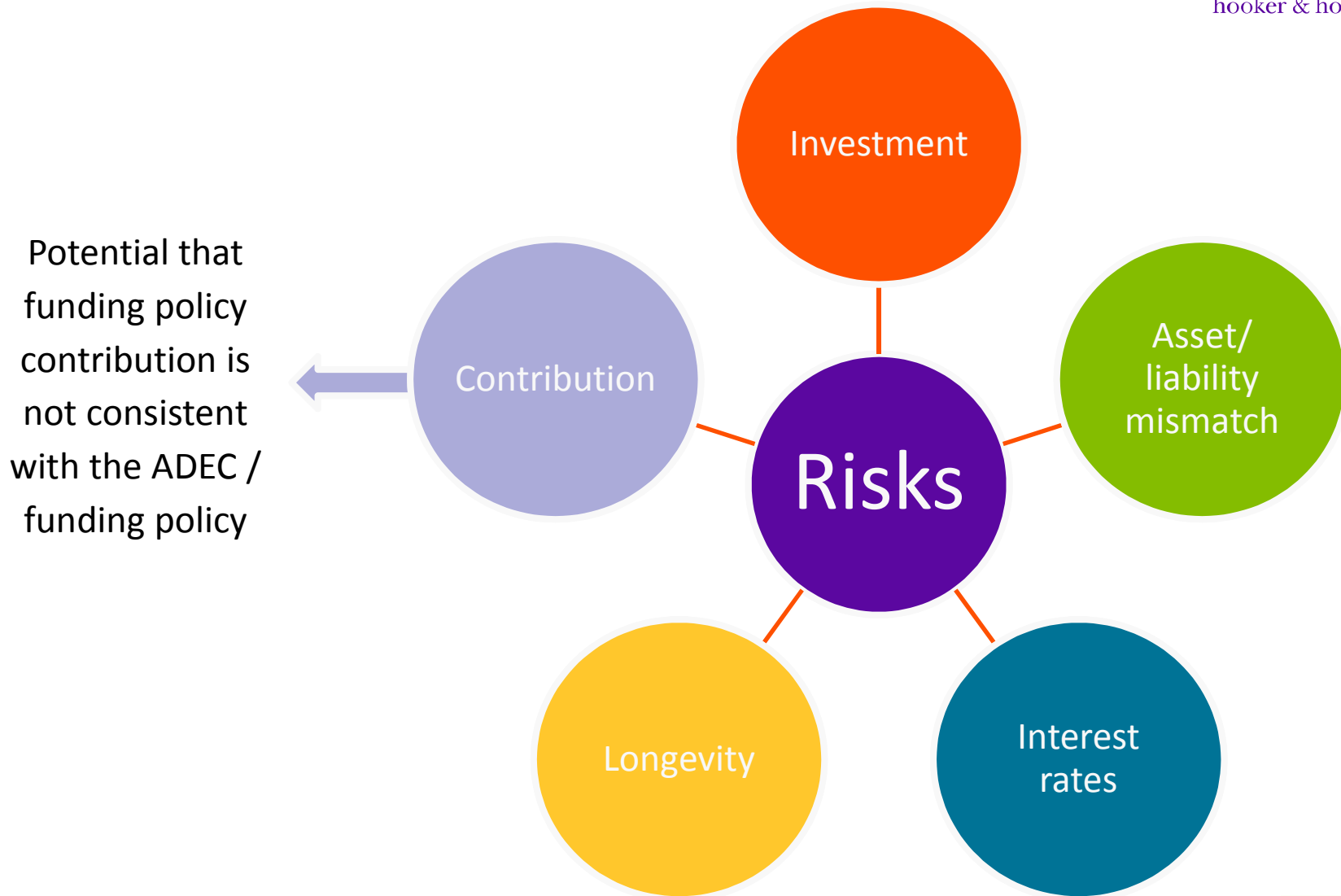
The potential of actual future measurements deviating from expected future measurements resulting from actual future experience deviating from actuarially assumed experience



- Proposed actuarial standard of practice has been released (second exposure draft)
- Comment period closed October 31, 2016
- Actuary should identify risks that may reasonably be anticipated to significantly affect the plan's future financial condition



Risks to be assessed



Risk assessment considerations



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Funded status

Relevant characteristics of the contribution allocation procedure (i.e., significantly back-loaded procedure)

Asset allocation

Maturity of the plan (i.e., retiree liability vs. total liability, ratio of net cash flows vs. assets, liability duration)

Indications that plan sponsor may or may not make the current or future ADECs to the plan (to the extent known)





RISKS

- Scenario tests (i.e., deterministic projections)
- Sensitivity tests (i.e., what if asset returns are +/- 1% different than assumed over the upcoming year?)
- Stochastic modeling (i.e., estimated distribution of outcomes over time)
- Stress tests (i.e., what if the asset returns are consistently 2% lower than assumed over the next 20 years?)
- Compare a market-consistent present value to a corresponding funding valuation present value



Strategies
to evaluate and reduce pension risk

- Smooths the “inputs”
- Smooths the impact of actual investment return that differs from the actuarially assumed rate
- Many variations applied in practice
- SOA “Blue Ribbon Panel” report (February 2014) on public pension plan funding recommends that asset smoothing be limited to 5 years

Example

5-year smoothing of market value gains/losses (with or without a “collar”)



- Smooths the “outputs”
- Develop smooth pattern of contributions that achieves full funding within a reasonable period of time
- Need to balance with short-term budget limitations
- SOA “Blue Ribbon Panel” report encourages consideration of direct-rate smoothing, but cautions against methods that jeopardize adequacy or generational equity goals

Example

Compare present value of all benefits expected to be paid (including expected future accruals) with the **market** value of assets



Direct-rate smoothing



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- Goal is contribution rate stabilization (commonly with a “floor” rate and/or “corridor”)
- Methodology may trigger an adjustment to the contribution rate, if the calculated ADEC is +/- X% higher than the budgeted rate

Example

Current contribution rate is maintained, or increased gradually over time

Reduce investment risk

- Adjust portfolio to contain larger percentage of assets with lower standard deviation of returns
- May wish to perform stochastic asset-liability modeling to estimate potential impact on distribution of future results (i.e., funded ratios, ADECs, net cash flows)
- Review investment return assumption in conjunction with this analysis
 - Target CPI now in the 2.50% to 2.75% range
 - Incorporate updated capital market assumptions



Contribution “reality check”

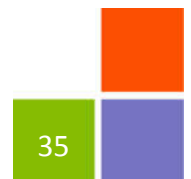


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- Other techniques are available to review contribution allocation procedure and/or funding policy results
- May supplement (or be performed in lieu of) other approaches
- Helps to reduce the likelihood of employing contribution approaches that “tread water” over time
- OMC concept is outlined in a 2010 SOA white paper, “Public Pension Plan Funding Policy”

Example

Checking results against the “Overriding Minimum Contribution” (OMC)

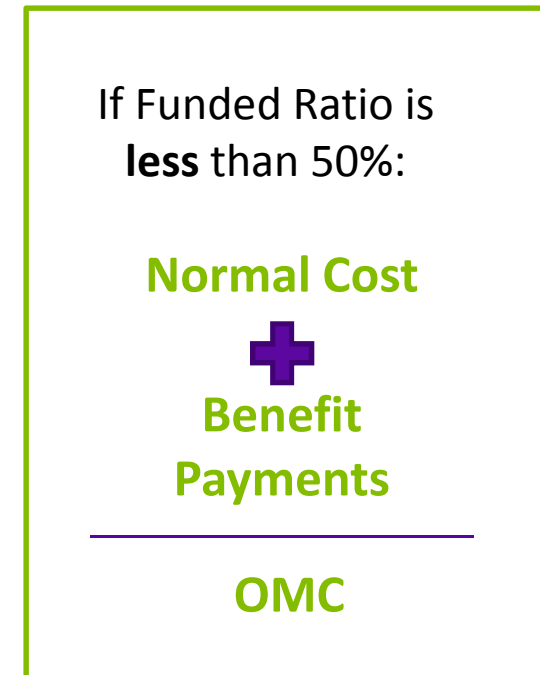


Overriding Minimum Contribution (OMC)



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- Test all contributions against the OMC calculation
- Apply automatically to all plans with a funded ratio of less than 60% on a market value of assets basis
- Avoids distortions caused by excessive asset smoothing
- The proposed contribution is the **greater of** the amount using traditional methods and the OMC
- Need 3 inputs:
 - Normal Cost (NC)
 - Funded Ratio (FR)
 - Expected annual Benefit Payments (BP)



Overriding Minimum Contribution (OMC)



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If Funded Ratio is **more** than 50%:

Normal Cost



**Declining % of
Benefit Payments**



Benefit Payments




OMC

- OMC formula assumes that when the Funded Ratio is less than 100%, the rate of asset growth should equal or exceed the rate of liability growth
- For a plan with a 100% Funded Ratio, the OMC equals the Normal Cost
- If OMC is less than the amount otherwise developed, evaluate contribution allocation procedure and funding policy results by analyzing projections
- May be an acceptable short-term result, but longer-term implications should be understood



The elements of success

Together we will

-  **identify** your challenges and opportunities
-  **achieve** your goals
-  **exceed** your expectations