Moody's
INVESTORS SERVICE

US Public Pensions: Past Promises, Today's Credit Challenge

April 2015

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Agenda

» Part 1: Moody's approach to US public pensions

» Part 2: Growing unfunded liabilities, costs and asset volatility risk

» Part 3: Pension reforms and legal developments

» Part 4: Analytical enhancements from new pension accounting

Part 1: Moody's Approach to US Public Pensions

Pensions are one of many rating factors

- Pensions are just one of many factors in a government credit rating
  - For example, 10% weighting in our state and local government rating “scorecards”
- But they affect three of the four key areas of our credit analysis
  - *Debt burden* - exceeding bonded debt in many jurisdictions, with escalating payments, and may be on legal parity with GO bonds
  - *Financial performance* - in terms of whether the budget is truly balanced
  - *Management* - key assumptions used, strategies to control costs, degree of local control
- Sizable unfunded liabilities across the US public sector
  - Aggregate FY’13 reported UAAL in Moody’s pension database at $1.3 trillion
  - Equates to Moody’s ANPL of $3.6 trillion (or 21% of US GDP)
  - $1.3 trillion ANPL allocated to the 50 state credits

Pensions are a growing source of credit pressure

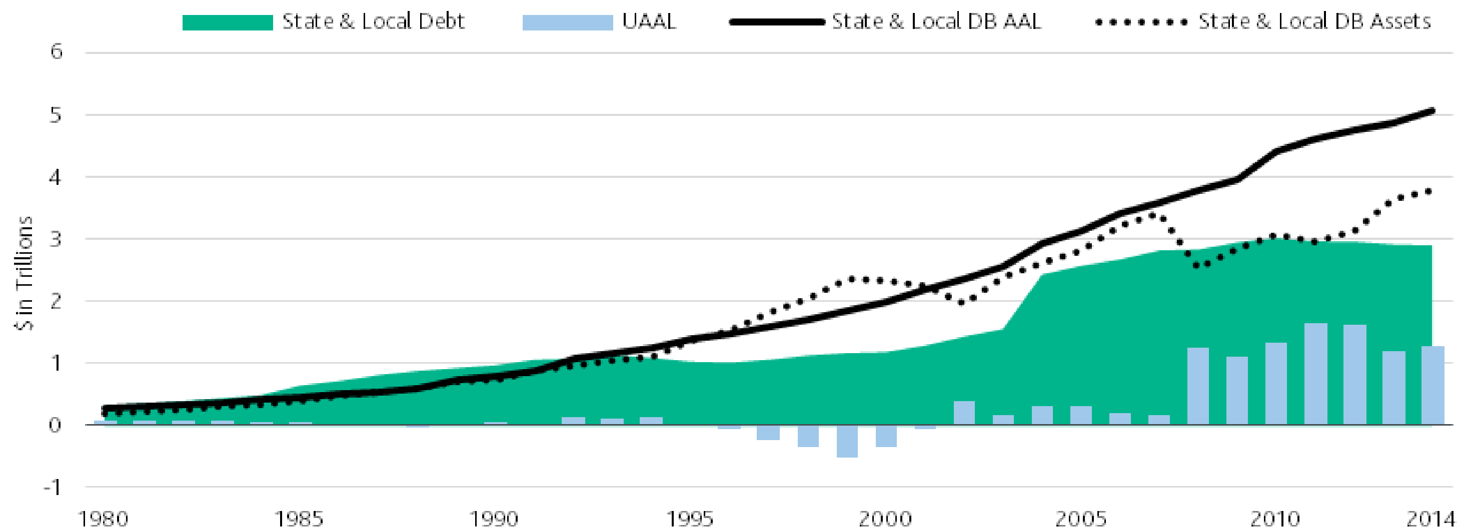
» Liabilities and costs continue to grow across the public sector

– Demographic trends, benefit increases, contribution shortfalls, and “lost decade” in the stock market

– State and local unfunded liabilities at $1.3 trillion in 2014 according to Federal Reserve

– Negative credit impact is compounded by recent years’ slow recovery of tax revenues

– Credit rating downgrades of several states and locals attributable mainly or partly to pension pressures

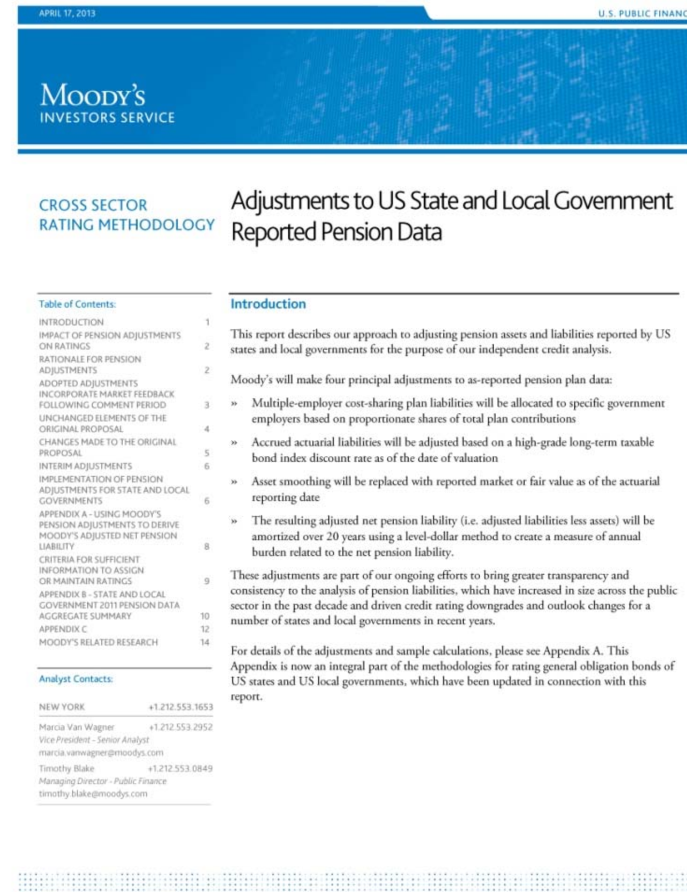


Note: State and Local Debt solely reflects short and long-term municipal securities and loans, excludes US government loans.

Source: Board of Governors of the Federal Reserve System, “Financial Accounts of the United States”

Moody's adjustments to state & local reported pension data

- » Adopted in April 2013, following Request for Comment in July 2012
- » Purpose of adjustments is to provide greater transparency & comparability of liability measures for use in our rating analysis
- » Provide a balance sheet measure, similar to that in private sector
- » Not intended as a guide, standard or requirement for state or local governments to report or fund their obligations



APRIL 17, 2013 U.S. PUBLIC FINANCE

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CROSS SECTOR RATING METHODOLOGY

Adjustments to US State and Local Government Reported Pension Data

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Introduction

This report describes our approach to adjusting pension assets and liabilities reported by US states and local governments for the purpose of our independent credit analysis.

Moody's will make four principal adjustments to as-reported pension plan data:

- » Multiple-employer cost-sharing plan liabilities will be allocated to specific government employers based on proportionate shares of total plan contributions
- » Accrued actuarial liabilities will be adjusted based on a high-grade long-term taxable bond index discount rate as of the date of valuation
- » Asset smoothing will be replaced with reported market or fair value as of the actuarial reporting date
- » The resulting adjusted net pension liability (i.e. adjusted liabilities less assets) will be amortized over 20 years using a level-dollar method to create a measure of annual burden related to the net pension liability.

These adjustments are part of our ongoing efforts to bring greater transparency and consistency to the analysis of pension liabilities, which have increased in size across the public sector in the past decade and driven credit rating downgrades and outlook changes for a number of states and local governments in recent years.

For details of the adjustments and sample calculations, please see Appendix A. This Appendix is now an integral part of the methodologies for rating general obligation bonds of US states and US local governments, which have been updated in connection with this report.

Four principal adjustments to as-reported pension data (pre-GASB 67 and 68)

- Allocate liabilities of cost-sharing plans to participating government employers based on their proportionate shares of total plan contributions
- Discount accrued actuarial liabilities (AAL) using a high-grade (Aa quality) corporate bond index rate as of the date of valuation
- Use fair or market value of assets (MVA) instead of smoothed asset value to calculate **Moody's adjusted net pension liability** (adjusted AAL minus MVA)
- Calculate a standardized annual amortization metric related to the adjusted net pension liability, on a 20-year level dollar basis
- ***With introduction of GASB 67 and 68 we no longer need to adjust for cost-sharing allocations or asset smoothing***

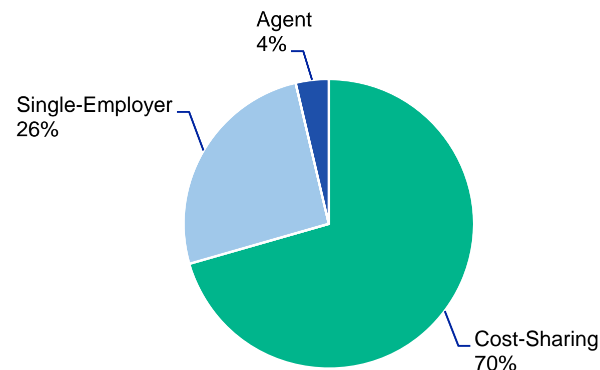
Bond index discount rate provides a balance sheet measure

- Our approach is similar to private sector standard set by FASB
- Discounts the promised benefit payments using current market interest rate*
  - Treats pension benefits as bond-like obligations
  - Liabilities are measured independently of asset mix or performance
  - Liabilities of identical pension plans (government, hospital, or manufacturer) measured on the same day should be identical
- Contrasts with public sector approach focused on funding
  - Discounts using assumed investment rate of return based on asset mix
  - Estimates the PV of employer contributions, if assumptions are met
  - Market risk in this approach increases as the return assumption increases

* *Citigroup Pension Liability Index, composed of minimum Aa taxable bonds, considered an appropriate proxy for risk of state and local pension benefits*

Cost-sharing exposure characterized by lack of local control, bulk of liabilities

- Participating entities bear no burden for plan administration, including asset management
- Plan benefits decided, to varying degrees, at a centralized level
- Deteriorating funding at plan level translates into local participant risk
- Bulk of reported and Moody's-adjusted net liabilities concentrated in cost-sharing plans



Part 2: Increased Unfunded Liabilities, Costs and Asset Volatility Risk

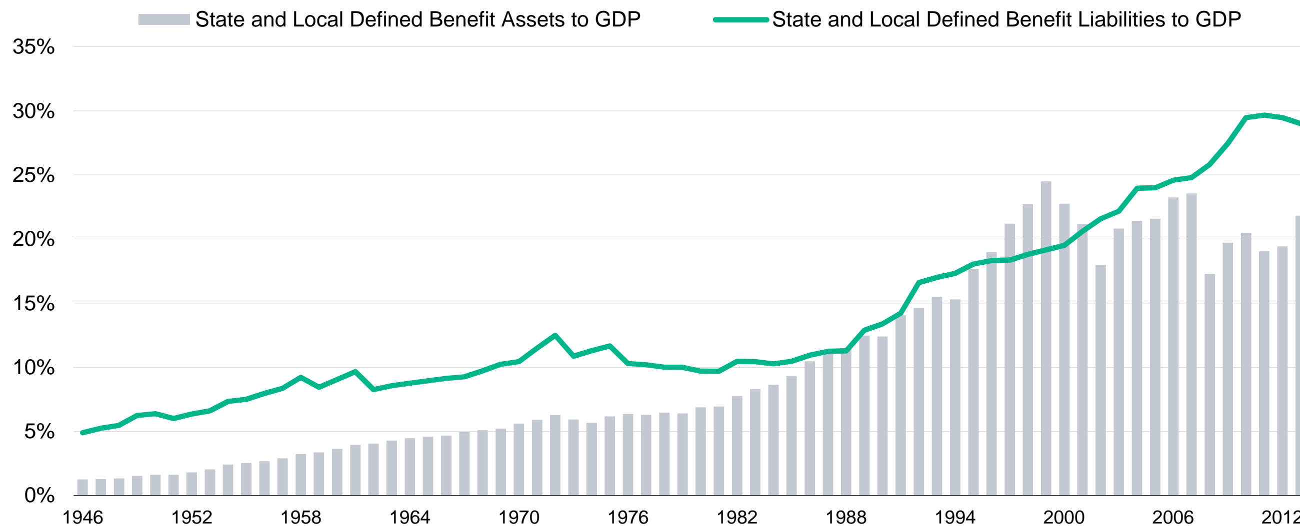
Budgetary risk from asset performance

» State and local defined benefit asset (and liability) buildup versus capacity-to-pay is near historical highs

– Same trends compared to government revenues, expenditures, or national economic output

– Relative buildup coincides with aging public plan demographics

– Translates into greater potential contribution volatility for governments



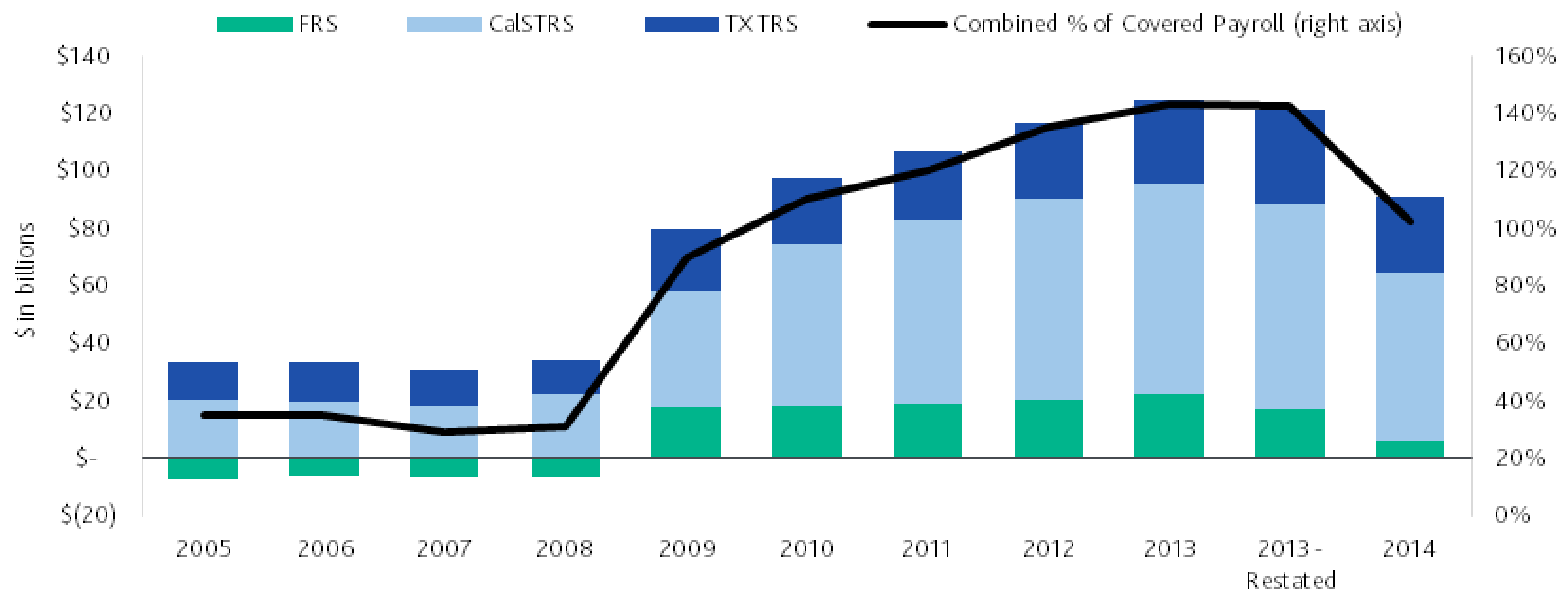
Sources: US Bureau of Economic Analysis; Board of Governors of the Federal Reserve System, "Financial Accounts of the United States"

Unfundedliabilities and costs remain elevated

» Reported unfunded liabilities remain large relative to payrolls and budgets, benefit from very strong investment performance for year ended June 30, 2014

» Previous contribution shortfalls and lengthy, back-loaded amortization increase cost trajectories

» Public plan reporting unaffected by market interest rates



Source: Plan CAFRs and actuarial valuations

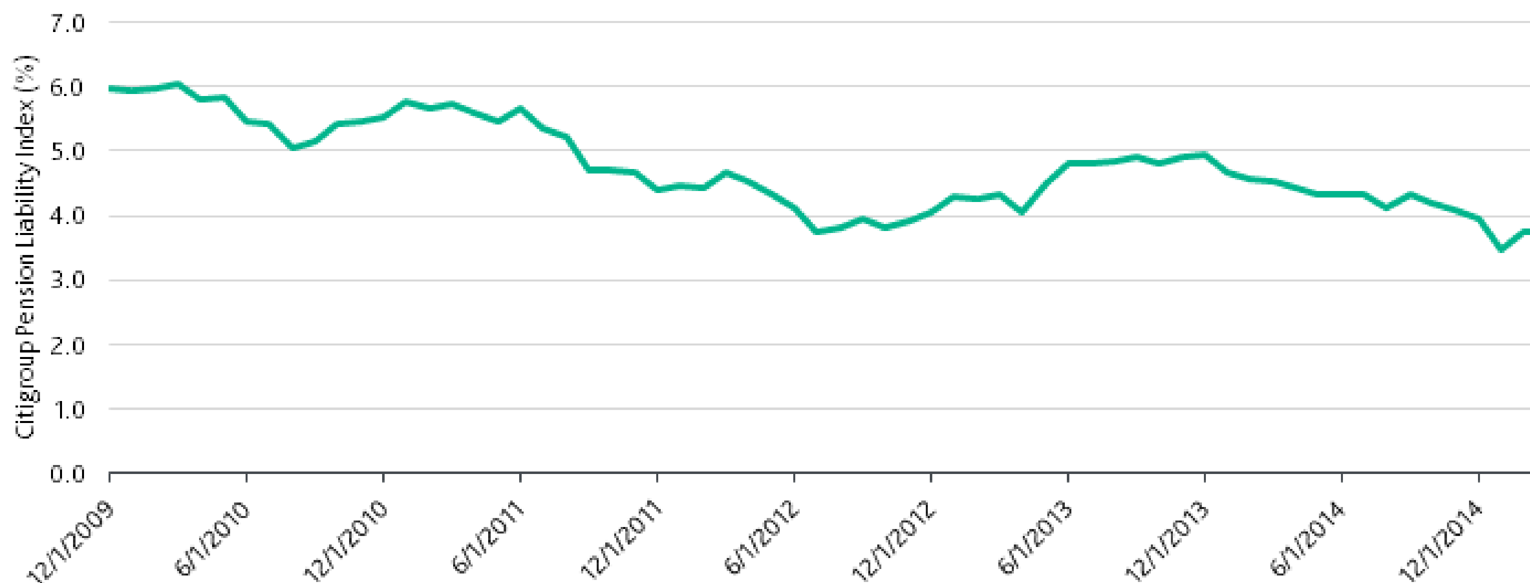
Discount rates remain low, partially offsetting recent strong investment returns

» Adjusted liabilities decline, but remain high relative to past years

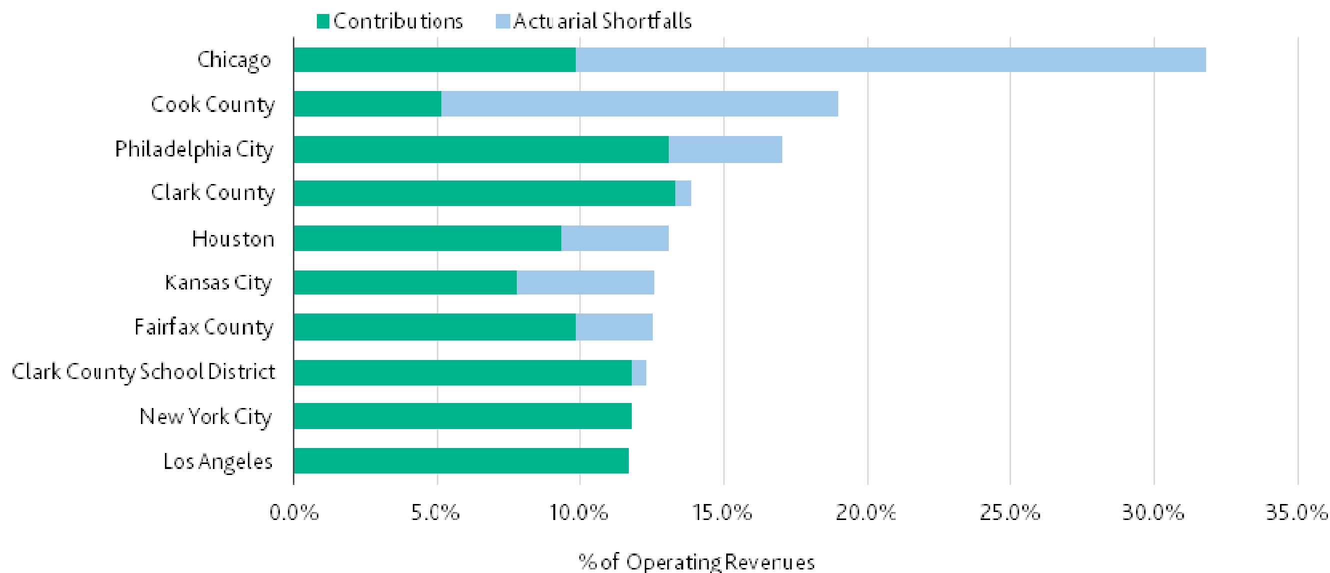
– Bond index discount rate down 100 bps from year end 2013 to 2014

– Very strong investment performance for FYE 6/30/2014

» CalPERS (18.4%), CalSTRS (18.7%), FRS (17.4%), TX TRS (16.9%)



Contributions and actuarial costs have grown onerous for some local governments



Sources: Issuer and pension plan fiscal 2012 CAFRs, Moody's Investors Service.

» Contributions relative to actuarial requirements include Moody's allocation of cost-sharing plans. Most local governments with cost-sharing exposure make full contractual contributions, though not necessarily tied to actuarial costs.

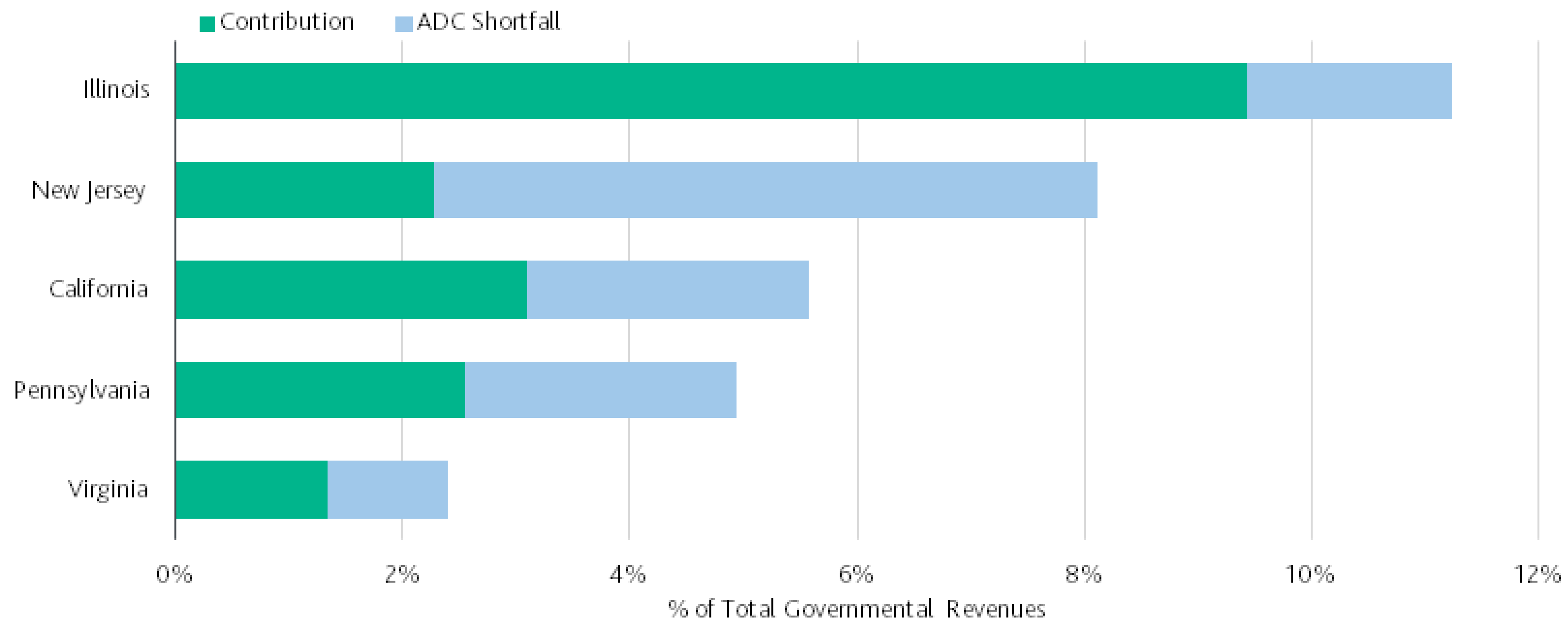
» We view contribution shortfalls, including those from cost-sharing exposure, as a driver of structural budget imbalance. Contribution shortfalls also correlated with higher Moody's Adjusted Net Pension Liabilities (ANPLs).

Pensions a driving factor in Chicago downgrades

- Years of contribution shortfalls have driven sharp growth in city's unfunded liabilities
- Reforms to city's Municipal and Laborer plans currently in litigation
  - Plans face asset depletion in approximately ten years under status quo
- City faces contribution spike for public safety plans in fiscal 2016 under state-mandated plan to achieve 90% funding by 2040
  - City requires state legislation to avoid $540 million contribution hike (e.g. further smoothing)
- Single tax base heavily leveraged by overlapping debt and liabilities of city, school district and county

City	Rating	Debt Burden (FY 2013)	Pension Burden (3 yr. avg. ANPL)	Combined Leverage
Chicago	Baa2/NEG	10.5%	27.1%	37.5%
Detroit (pre-Ch. 9 adjustment)	B3/STA	24.3%	28.7%	52.9%
New York	Aa2/STA	8.0%	10.3%	18.3%
Philadelphia (reflects 2014 re-assessment)	A2/STA	7.5%	10.2%	17.7%

Some US states face similar funding challenges



Sources: Issuer and pension plan fiscal 2013 CAFRs, Moody's Investors Service.

» Pension pressure has been a key driver of rating downgrades for IL, PA and NJ

Local level underfunding isn't always a choice

- Exposure to large unfunded liabilities translates into high annual fixed costs for pension contributions
- Unless it doesn't:
  - An implicit structural imbalance extends to cost-sharing participants when plan experiences aggregate contribution shortfalls relative to actuarial requirements
  - Even though participating local governments generally contribute the amount specified by the plan or state statute
  - Plan shortfalls translate to future contribution hikes and budget risk
- No incentive or option for given participating government to "over contribute"

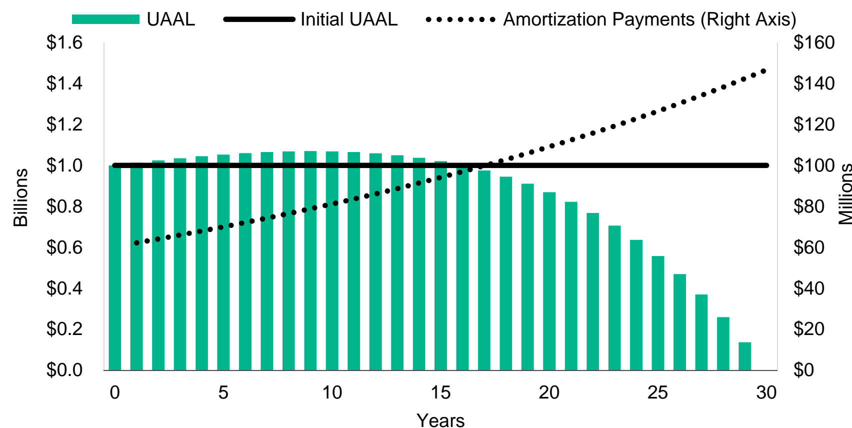
Stealth budgetary risk from the ARC Standard

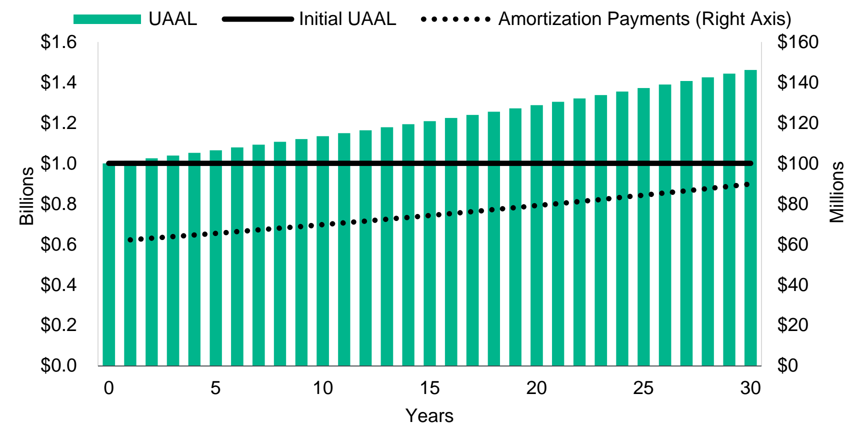
» Back loaded amortization structures lead to growing unfunded liabilities even when employers are “following the rules” and assumptions are met

» Risk that government resources do not grow commensurately with rising costs and pension debt, despite path of improving funded ratios

» Costs for servicing past pension debt often outlast employee working lifetimes, compete with current government expenditure priorities

Exhibits: Level % of pay, closed amortization (left) *eventually* reduces unfunded liabilities, unlike its “open” variant (right)





Source: Moody’s Investors Service

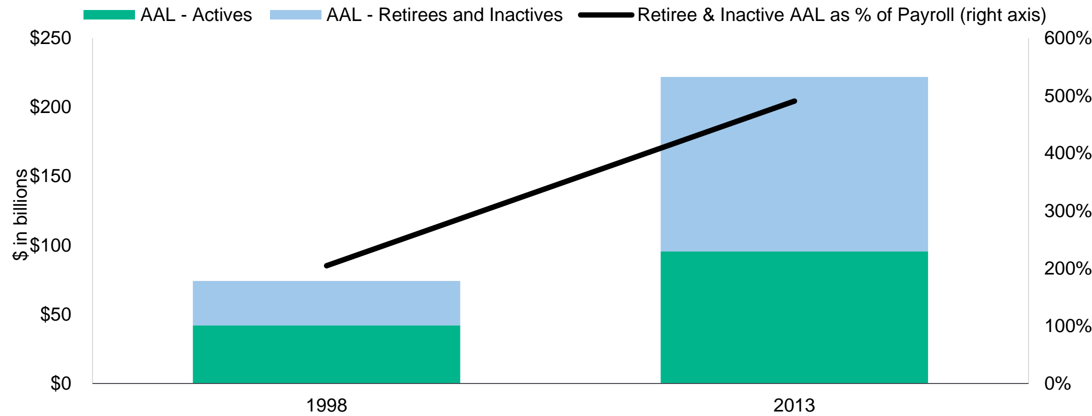
Public plans are not "de-risking"

» Allocations to risky assets are increasing even as plans mature

– Asset allocations tied to maintaining return assumptions around 7.5% despite assets and liabilities that have grown much larger relative to government resources

– Total state & local defined benefit pension assets relative to GDP: 7% in 1980, 23% in 2000, 20% in 2010

– Retired and inactive segment of liabilities growing (example: CalSTRS)



Source: CalSTRS actuarial valuations

» Recent steps to modestly reduce return targets and diversify assets do not mitigate enormous government market exposure

» There are exceptions: Wisconsin Retirement System mitigates government risks

– Employees and retirees share costs and gains from asset performance; lower return assumption applies to retiree portion of asset portfolio

Part 3: Pension Reforms and Legal Developments

Fast pace of developments on key legal questions impacting credit

- Key Question 1: Can reforms change benefit terms for future work of existing employees?
  - Florida's highest court said Yes, while California lower court (again) said No
- Key Question 2: Are cost-of-living adjustments considered a protected benefit?
  - Still uncertain in Illinois and New Jersey; Rhode Island settlement allows both changes

State Supreme Court Rulings on Public Pension Reform Challenges In Recent Years

State	Reform Description	State Supreme Court Decision
Arizona	2011 reforms reduced COLA benefits	Reforms violated the state constitution (2014)
Colorado	2010 reforms altered certain benefit provisions and retirement eligibility criteria, and reduced COLA benefits	Reforms upheld (2014)
Florida	2011 reforms lowered future benefit accruals, increased employee contributions and eliminated COLAs associated with future years of work	Reforms upheld (2013)
New Mexico	2013 reforms reduced COLAs and increased employee contribution rates	Reform upheld (2013)
Washington	In 2007 and 2011, the state repealed certain COLA and other contingent benefits that included state termination options when enacted	Reforms upheld (2014)
Wisconsin	2011 reforms related to collective bargaining and employee shares of pension costs, including those of a local pension system	Reforms upheld (2014)

Sources: Moody's Investors Service and state supreme court opinions

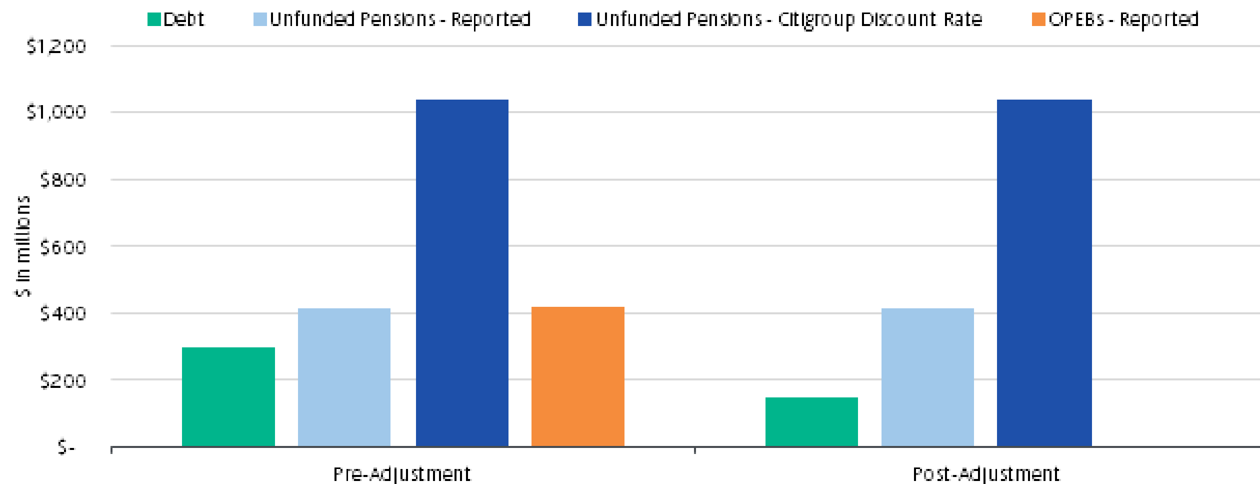
Detroit and Stockton cases treat pensions favorably

» Two rulings that pensions are contractual obligations subject to impairment in Chapter 9 bankruptcy, despite strong state legal protections

» However, both cases show strong political support for pensions

- Governments steer the course through plans of adjustment
- Pension recovery in Detroit better than bondholders as part of "grand bargain", plus contingent benefit restoration
- Stockton left unfunded pension liabilities untouched over creditor objection

» Bondholder recoveries negatively affected; both cities retain large unfunded pension liabilities (Stockton in chart below)



Pension Obligation Bonds (POBs) Resurface

» POBs have reemerged as a funding strategy in the current very low interest rate environment

» Primary motivations include interest rate arbitrage, short-term budget relief, funding closed plans

» Recent proposals in KS, KY, PA

- Until budgets are approved, uncertainty remains whether POB proceeds will replace or supplement current and future contribution requirements

» We view POBs as credit neutral at best

- Hardened liability reduces flexibility
- Budget risk arises from uncertain asset performance after debt issuance
- Failure to keep up with contribution requirements turns POBs into deficit financing

"Reform" can include increased funding requirements

» Beyond 2013 benefit reforms, CalPERS implementing contribution rate increases
  - March 2012: lower discount rate
  - April 2013: change to amortization and smoothing policies
  - February 2014: mortality improvements in actuarial assumptions
  - 2015: Asset allocation and thus discount rate changes to reflect aging demographics under consideration

» ERISA plans must adopt new mortality tables published by Society of Actuaries
  - Increase to liabilities estimated at 4% to 8%, depending on plan-specific demographics

» Public plan mortality assumptions not subject to ERISA rules like private plans
  - Plan-specific tables for some large plans
  - Regular experience studies generally used to detect needed adjustments to assumptions

Part 4: Analytical Enhancements from New Pension Accounting

Moody's Publication: "New Pension Accounting Increases Clarity of Plan Funding Trajectories"

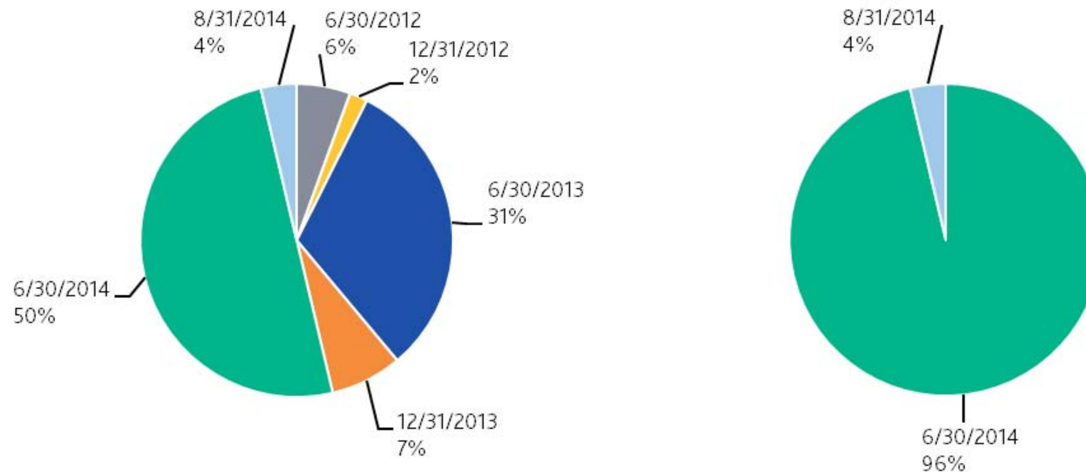
» Provides results and insights from our review of available disclosures for 54 public pension plans that comply with new GASB pension accounting standards

» All plans included have reported liabilities in excess of $10 billion, most are multi-employer cost-sharing plans with state and/or local government participants

» Data-focused follow-up to our June 2014 pension publication which covered the impact of the new accounting on our pension adjustments and credit analysis

More timely funding disclosure under new standards

- GASB 67 requires reporting of pension funded position as of the plan's fiscal year end (right hand chart below)
  - Plan Fiduciary Net Position (fair value of assets) is reported as of the fiscal measurement date
  - Total Pension Liability is based on actuarial valuation not more than 24 months before measurement date, with actuarial results "rolled forward" to the measurement date
- This is an improvement over prior reporting as of the most recent actuarial valuation date (left-hand chart below)



Issuer funding disclosure timing more lenient than for pension plans

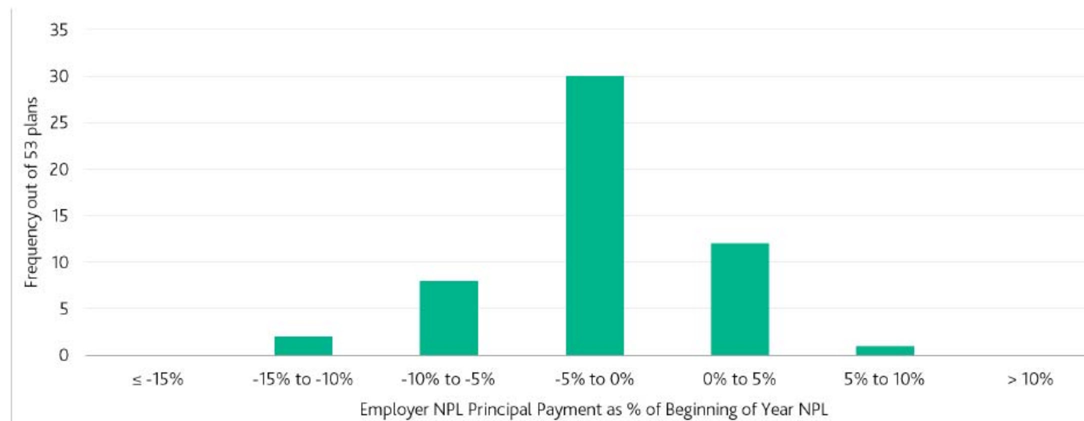
- GASB 68 requires pension measurement dates within a year of the issuer’s fiscal year end
  - Allows governments in cost-sharing plans (CSPs) to report proportional shares without roll-forward procedures
  - Issuers participating in multiple plans may have more than one measurement date
  - Actuarial valuations for single employer and agent plans must fall within 30 months and one day of issuer fiscal year end - with plan actuary to apply professional judgment whether roll-forward or a more updated valuation is appropriate

Most government contributions insufficient to prevent net liability growth

- GASB 67/68 require disclosure of “service cost,” the actuarial present value of benefits earned in current year under the entry age normal cost method.

- Comparing actual contributions to service cost plus interest on the beginning net liability shows us whether the contributions are sufficient, if assumptions are met, to amortize some of the liability or only to “tread water”

- Contributions to only 25% of plans in our sample met or exceeded the tread water benchmark. The remainder were insufficient to cover service cost and interest, thus generating negative amortization



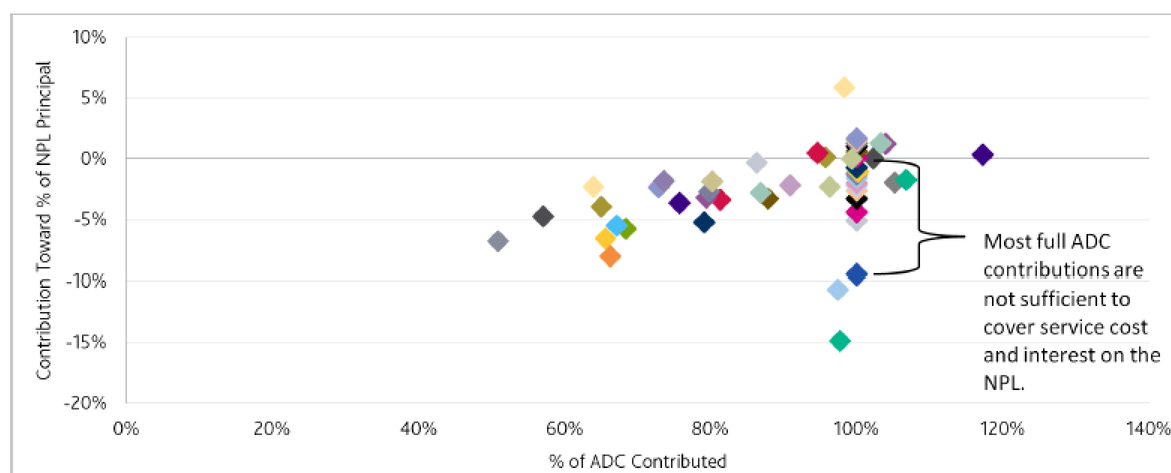
n = 53. Excludes New York State Teachers Retirement System because of reported over-funded status on June 30, 2013.

Sources: Plan CAFRs, Moody's Investors Service

Baseline trajectory of growing net liabilities for many plans receiving “full” actuarial contributions

- 19 plans in our sample received exactly 100% of ADC, yet employer contributions to only 6 of these 19 were sufficient to tread water
- Driven by widespread use of back-loaded cost structures

Employer Contributions At and Below ADCs Often Drive Public Pension Funding Gaps
Tread water benchmark at 0% on y-axis



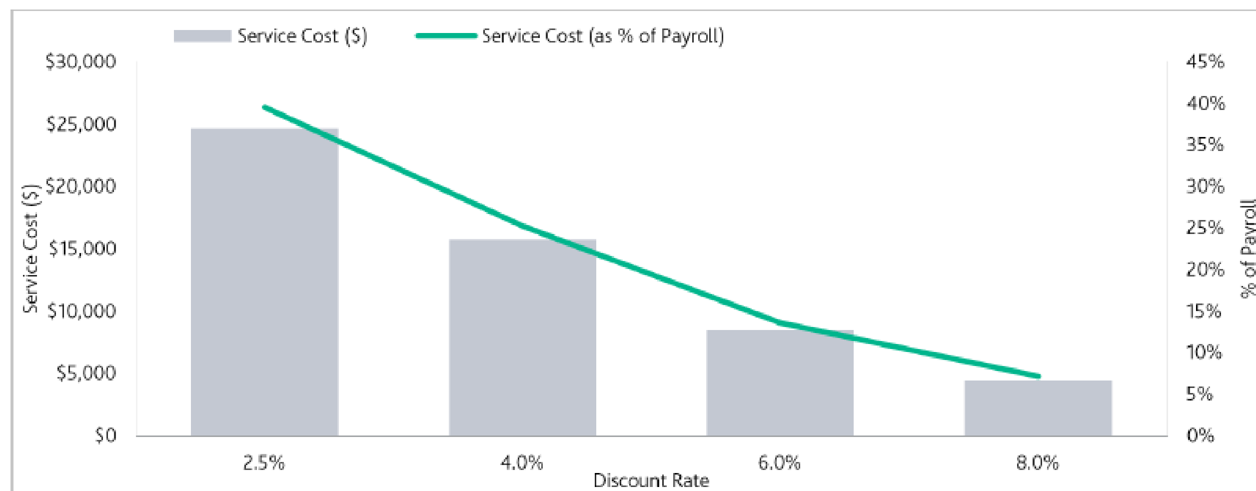
Source: Plan CAFRs, Moody's Investors Service

- Highlights fact that broad improvement in reported funding status seen in fiscal 2014 was primarily attributable to strong asset performance

Actuarial assumptions remain a key consideration

- New standards allow key analytical enhancements over past standards, but differences in actuarial assumptions still drive comparability challenges
- For example, “tread water” relies on reported discount rates, which impact not only reported liabilities, but also reported service costs

Differences in Discount Rate Assumptions Substantially Impact Service Cost



Assumptions include benefit multiplier of 2% of five-year highest final average salary, entry age of 25, retirement at 65, death at 85, 2% cost-of-living adjustment, 3% annual salary increase assumption.

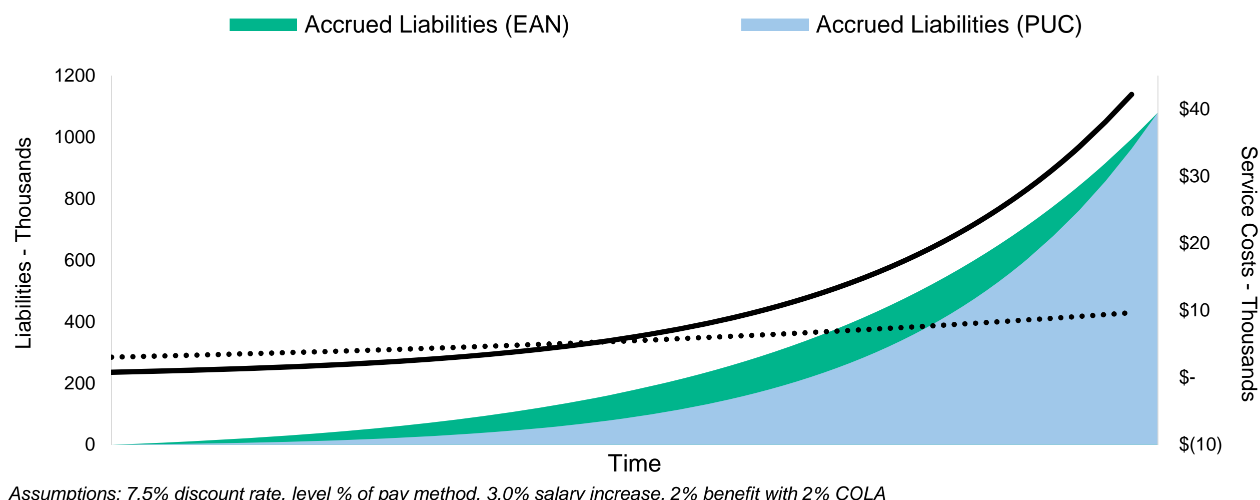
Source: Moody's Investors Service

GASB 67/68 Standardize Actuarial Cost Methods

» GASB 68 requires Entry Age Normal (EAN) for accounting
  - Improvement over 6 permitted cost methods in previous standard
  - Different cost method may be used for funding

» Most state and local plans already use EAN, but not all

» Holding other assumptions constant, this change can impact accrued liabilities and service costs



Assumptions: 7.5% discount rate, level % of pay method, 3.0% salary increase, 2% benefit with 2% COLA

GASB 68 pension expense a sharp departure from prior standards

» New and more rigid expense recognition rules for government-wide accounting
  - Some NPL changes recognized immediately, investment return gains/losses recognized over 5 years, others recognized over average remaining working lifetime of plan members
  - Unrecognized portions of expense added to deferred inflows/outflows on government balance sheets

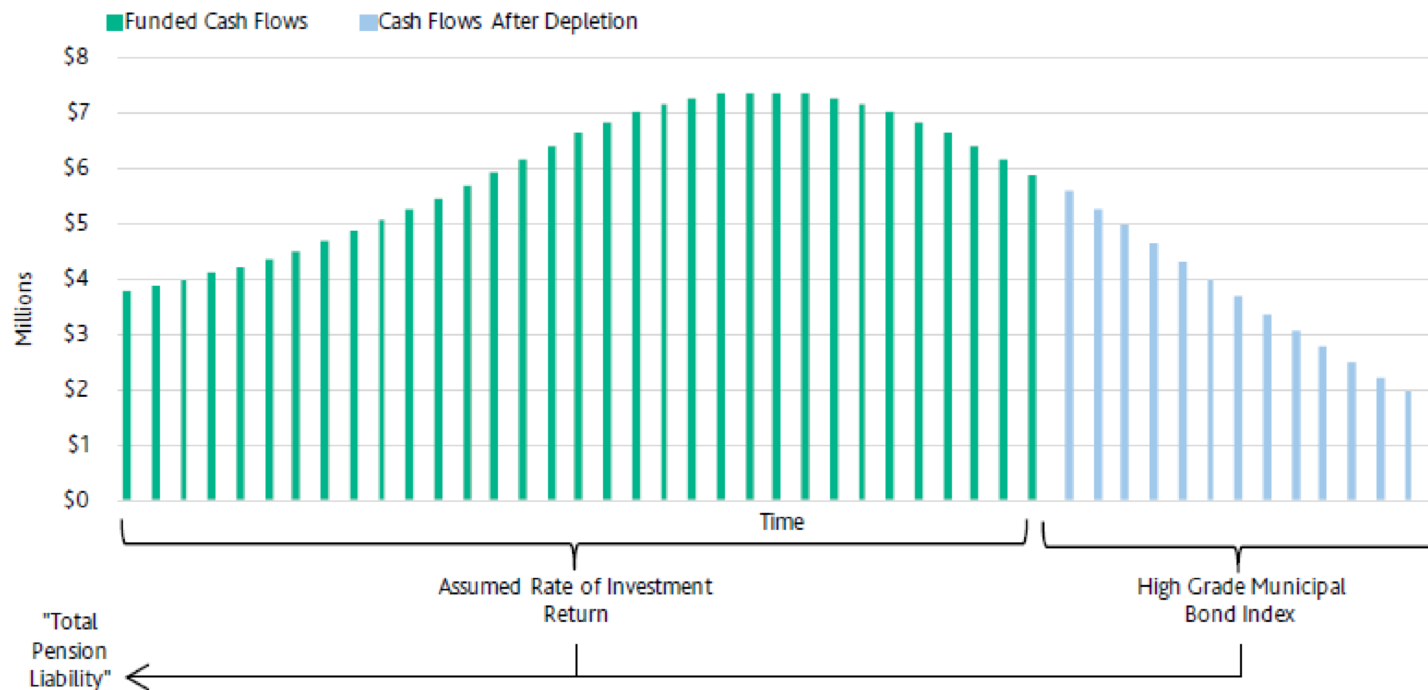
» New accounting expense increasingly disconnected from budgetary outlays, actuarial funding requirements – and likely to exhibit volatility

Quick Recognition of Investment Performance in GASB 68 Pension Expense Severs Link Between Annual Plan Funding and Income Statement Accounting
$ in millions, fiscal 2014 issuer financial reporting

	University of Missouri	New York City - Police	University of California
Money-weighted rate of return	16.20%	17.69%	17.30%
Actuarially Determined Contribution (ADC)	$114	$2,321	$2,473
Tread Water Payment	$97	$2,130	$1,869
Employer Contribution	$114	$2,321	$1,581
Pension Expense	$51	$1,274	$1,286

Source: Issuer and plan CAFRs, Moody's Investors Service

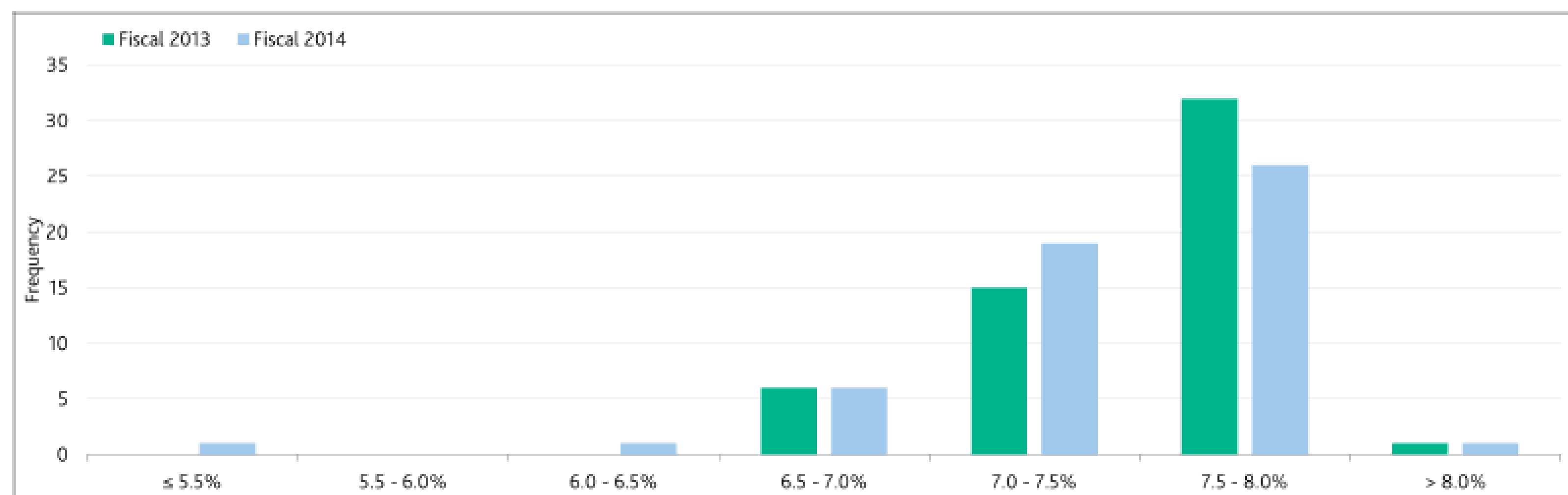
GASB 67/68 Alter Discount Rate Rules for Reporting Liabilities



- Under GASB 67/68, some plans will continue use of the assumed rate of return, others will be impacted by the "crossover" point and use a municipal bond rate to discount a portion of projected cash flows

Most plans do not project depletion under GASB 67/68

- Due to generous allowable assumptions under GASB, most plans (50 out of 54 in our sample) avoid projected asset depletion
- Discount rates largely remain equal to assumed investment rates of return



Source: Plan CAFRs

Lack of GASB depletion does not signal absence of depletion risk

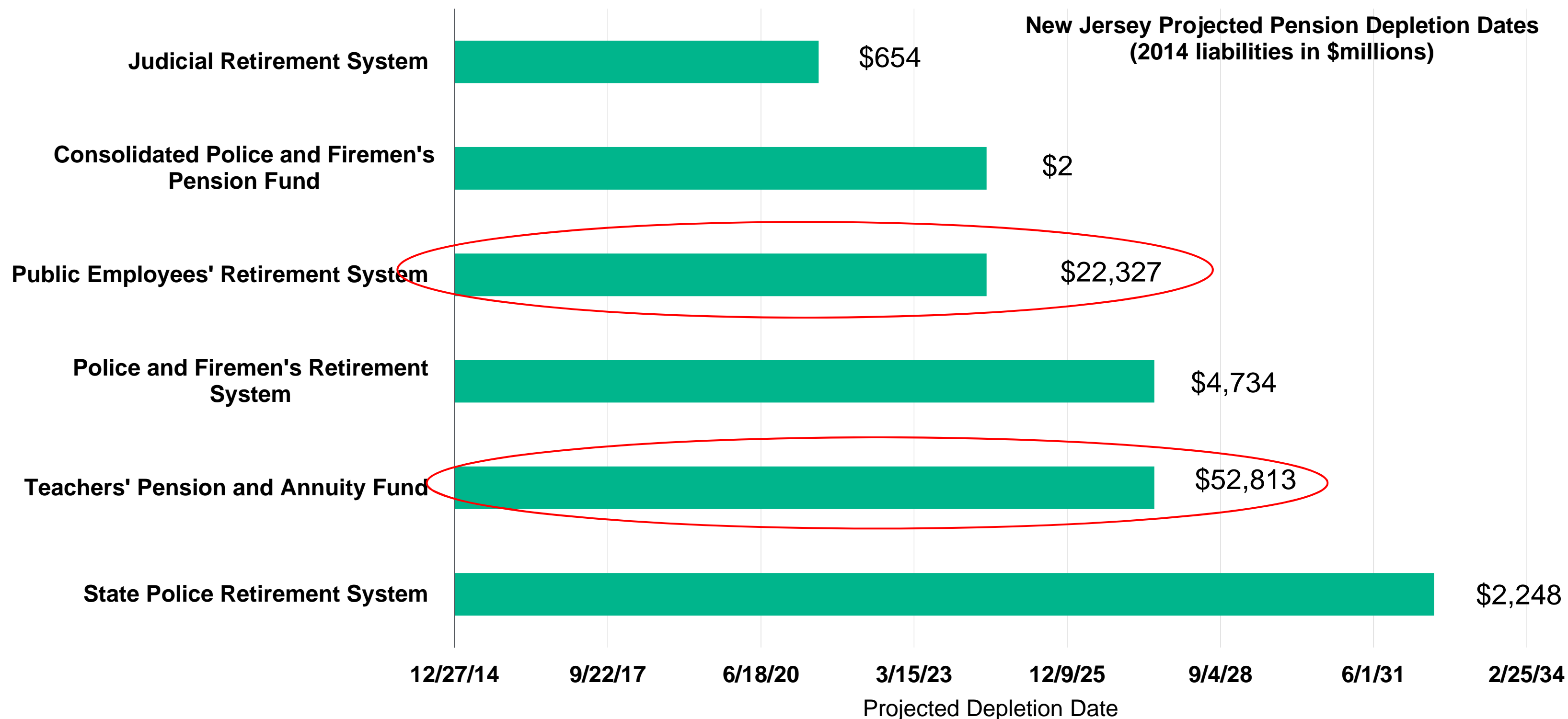
- While avoiding GASB depletion due to recently adopted contribution improvements, some plans still exhibit significant potential depletion risk
- Example: Kentucky's TRS exhibits stronger funding progress and contribution track record than KERS, yet only TRS projects GASB depletion
- However, near-term plan cash flow stress for KERS is much higher, indicated by its "benefit burn rate" in fiscal 2014

GASB 67	KY TRS	KY KERS
Assets - Beginning of Year	$16.1	$2.8
Employer Contributions	$0.6	$0.3
Employee Contributions	$0.3	$0.1
Benefit Payments, including refunds	$1.7	$0.9
Benefit Burn Rate	10.4%	32.7%
"Net" Benefit Burn Rate	5.0%	18.4%

Source: Plan CAFRs.

Budgetary risk from plan depletion

- We project a range of approximately $7.5 - $12 billion in annual retiree benefit payments by New Jersey's 2 largest plans a decade from now, depending on COLA litigation outcome
- Proposed FY 2016 contribution is $1.3B, vs. approximately $6.2B in benefit payments and $33.8B budget. Asset returns average $2.6B since 2010



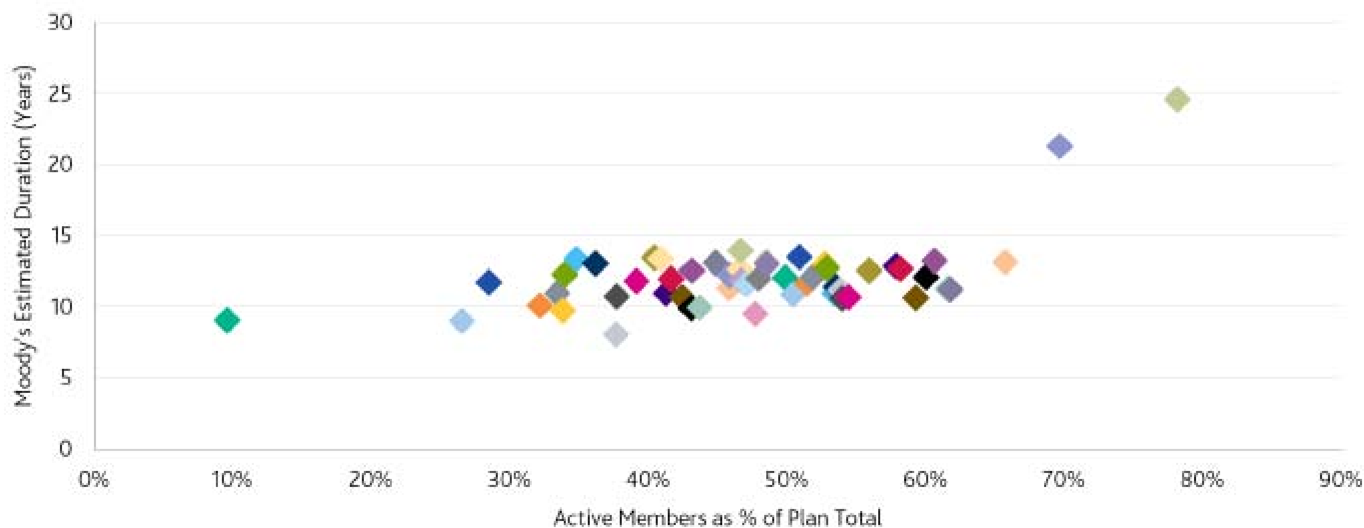
Source: State disclosure (GASB 67 basis) based on preliminary plan valuation data

Improved Precision of Moody's Liability Adjustments

» With new disclosure of liability sensitivity to discount rate changes, we replace our uniform 13 year duration assumption with plan-specific duration estimates

» Vast majority of plan duration estimates fall between 10 and 15 years

» Plans with highest discount rate sensitivity heavily weighted toward active employees



Limited Credit Impact from New Accounting, as Moody's Pension Analysis Fundamentally Unchanged

- We will use newly disclosed shares of multi-employer cost-sharing plan assets and liabilities rather than our current estimates based on pro rata contributions, provided we agree with the rationale

- While GASB "Net Pension Liability" will appear on government-wide balance sheets, our analysis already considers the Moody's Adjusted Net Pension Liability (ANPL) as a debt-like obligation

- We continue to adjust reported liabilities in their entirety using the Citigroup Pension Liability Index as the discount rate
  - Future benefits discounted at same market-based interest rate for all plans reporting on the same date

- Asset reporting at fair value enables transition away from actuarial values for local governments

Pensions to remain a broad credit challenge for the state and local sector

- Contribution requirements generally rising and competing with other budget needs
- Exposure to asset market volatility and unexpected additional budget pressure
- Key legal decisions in Illinois and New Jersey are forthcoming and will help clarify reform options
- Retiree healthcare (OPEB) liabilities also gaining more attention
  - Greater legal flexibility to change health benefits puts analytical focus on current budget burden and strategies to contain costs
  - But recent Chapter 9 cases suggest OPEB can be an important liability consideration in plans of adjustment
  - OPEB accounting expected to change in similar manner to pensions in next few years

Questions

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