

The Public Pensions Crisis

Ravitch Fiscal Reporting Program
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Questions

- What are defined benefit pension plans?
- What's the problem?
- Why do we have a problem?
- How big is the problem? Where are problems biggest?
- What can state and local governments do?
- What will happen next?
- What are some good information sources? (EMMA!)

What are defined benefit
pension plans?

What *is* a defined benefit?

The typical defined benefit pension is calculated as follows:

Step 1: # of years worked (called “years of service”)

x

Step 2: “benefit factor”

x

Step 3: a measure of pay (usually related to late-career salaries)

Example: Mary Smith retires after 20 years, 2% benefit factor, \$60,000 final salary:

Pension = 20 years x 2% x \$60,000 = 40% x \$60,000 = \$24,000 annually until death

Usually there are complexities: vesting rules, salary averaged over several years, alternative benefit calculations, survivorship benefits, COLAs, etc. But this is the essence of it. The benefit is defined, and required contributions will depend upon benefits and investment earnings. By contrast, if contributions are defined, benefits will depend upon contributions plus investment earnings. (There are hybrids, too.)

State & local defined benefit plans

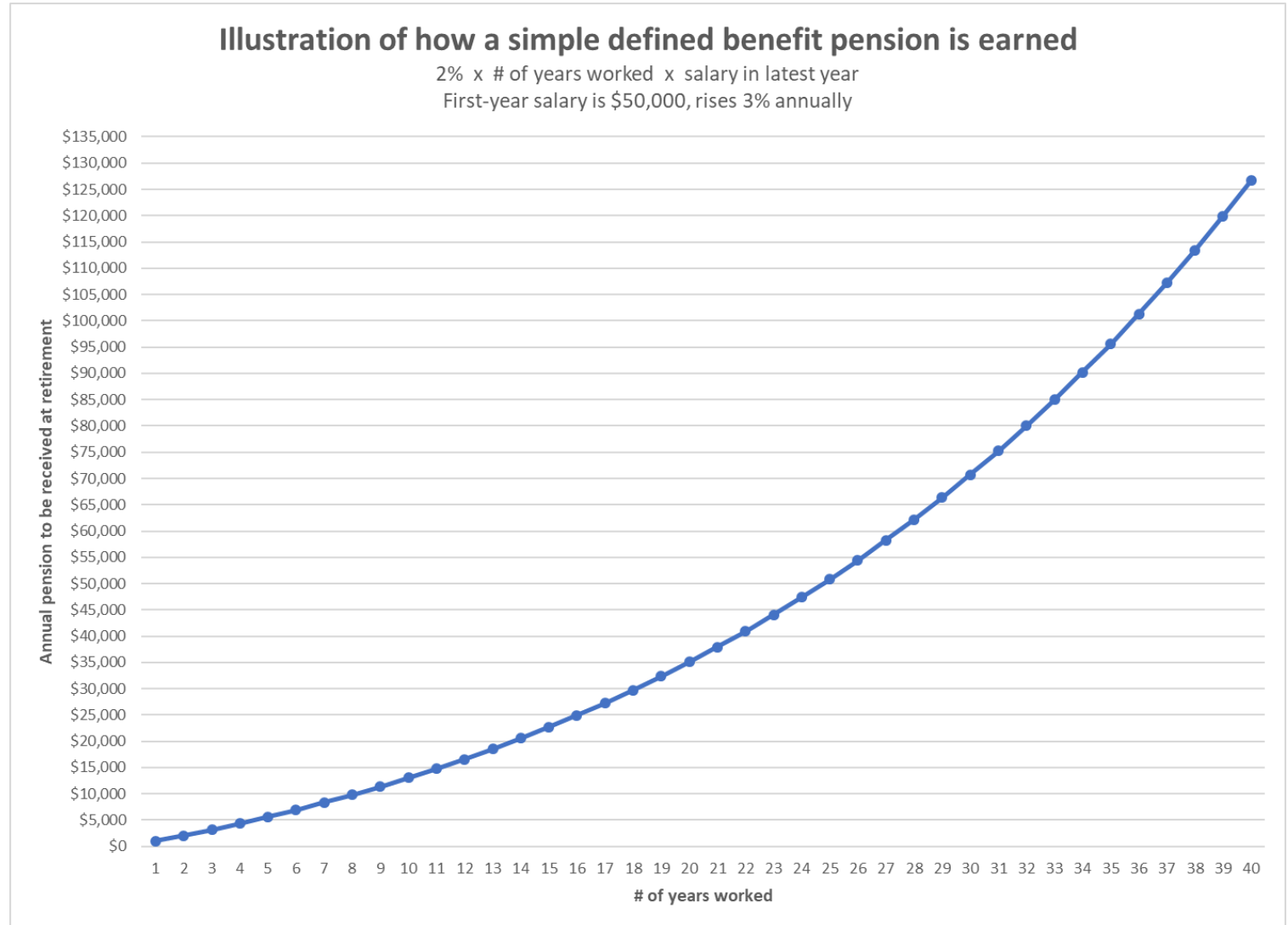
- 14+ million workers, 6+ million retirees
- > 6,000 plans; 170 large plans have 90% of assets
- \$4.8 trillion invested assets
- \$169 billion gov't contributions annually
 - About 50% greater than roads/bridges capital spending
 - About 20+% of K-12 spending
 - About 8.5% of all taxes (was 4.6% in 2000)

Which governments do what?

- Varied administrative arrangements:
 - State-run systems, state and local workers (e.g., CalPERS, NYSLERS)
 - City and county locally-run plans, local workers (NYCERS; Chicago; etc.)
 - State-run plans, multiple municipalities (Illinois IMRF)
- Varied contribution arrangements:
 - State contributes for state workers in state-run system (common)
 - State contributes for local gov't workers in state-run system (NJ)
 - Local gov't contributes for local workers, state-run system (NYSLERS)
 - Local gov't contributes for local workers, locally-run system (common)
- Greatly varying benefit levels and legal protections for benefits

Benefits earned in a backloaded manner

1. Pensions increase significantly as careers lengthen – incentive to stay one more year.
2. Workers who leave early don't get much.
3. If you cut the rate at which benefits will be earned for future service, it's a big cut in expected pension for the current worker. (Think **California Rule**.)
4. If pensions were funded the way they are earned, contributions would have to rise as % of pay during worker's career → Risky.



Why prefund pensions?

- Current generation pays for services they receive.
- Money is there to pay benefits when due. *Legal* protection vs. *funding* protection.
- If strong legal protection, maybe workers and unions don't need strong funding protection? Or does drastic underfunding create pressure to weaken legal protection?

Note: Some academics argue that full funding may not be the “right” policy. Dangerous, given real-world politics.

What's the problem?

Usually governments, not workers, bear pension risk

- If plan investments fall short, the government must increase contributions.
- That means taxes must go up or spending on services, infrastructure, etc. must decline.
- Many incentives encourage plans and governments to assume high investment returns and take investment risk. Other bad incentives, too.
- The risks have not worked out well. Assumptions remain risky.

What is an unfunded liability?

- The difference between:

Amount owed for benefits already earned* by current workers and retirees, and other past workers
and

Amount set aside for these benefits (assets)

* Policy implications?

- Public plans measure these amounts differently than economists and the rest of the financial world.

Technical: What is an unfunded liability?

1. Actuary forecasts future benefit payments for current workers and retirees
2. Estimates present value of future benefits, using discount rate
3. Apportions present value: (a) amount already earned (Accrued Actuarial Liability, AAL), and (b) amount to be earned with future service.
4. Accrued Actuarial Liability minus “Actuarial Assets” equals
5. Unfunded Accrued Actuarial Liability (UAAL):

$$\text{UAAL} = \text{Actuarial liability} - \text{Actuarial assets}$$

What's in this UAAL? What isn't? Policy implications?

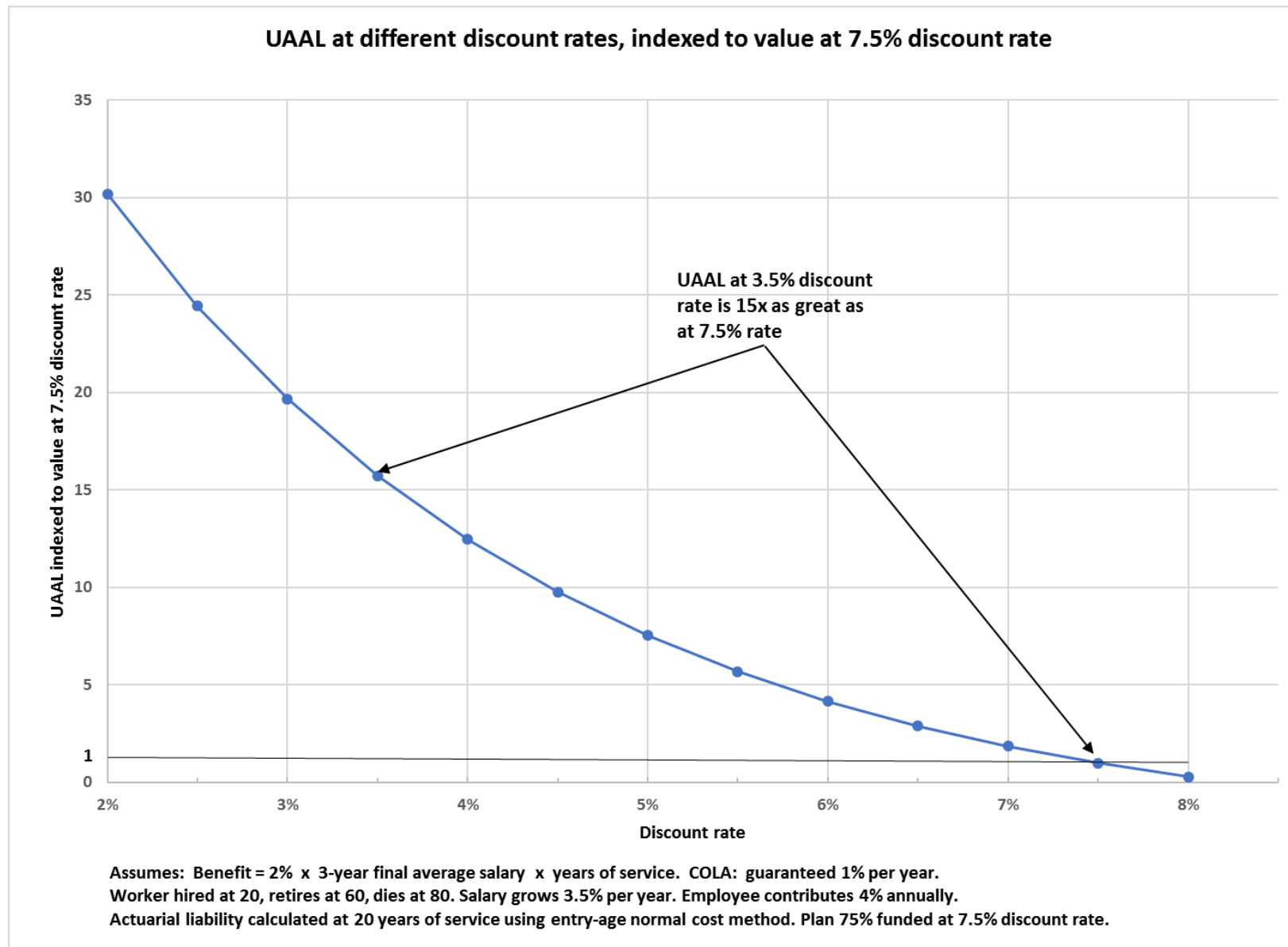
Notes: (1) more detail in appendix; (2) accounting terminology is different from actuarial terminology.

Why do we have a problem?

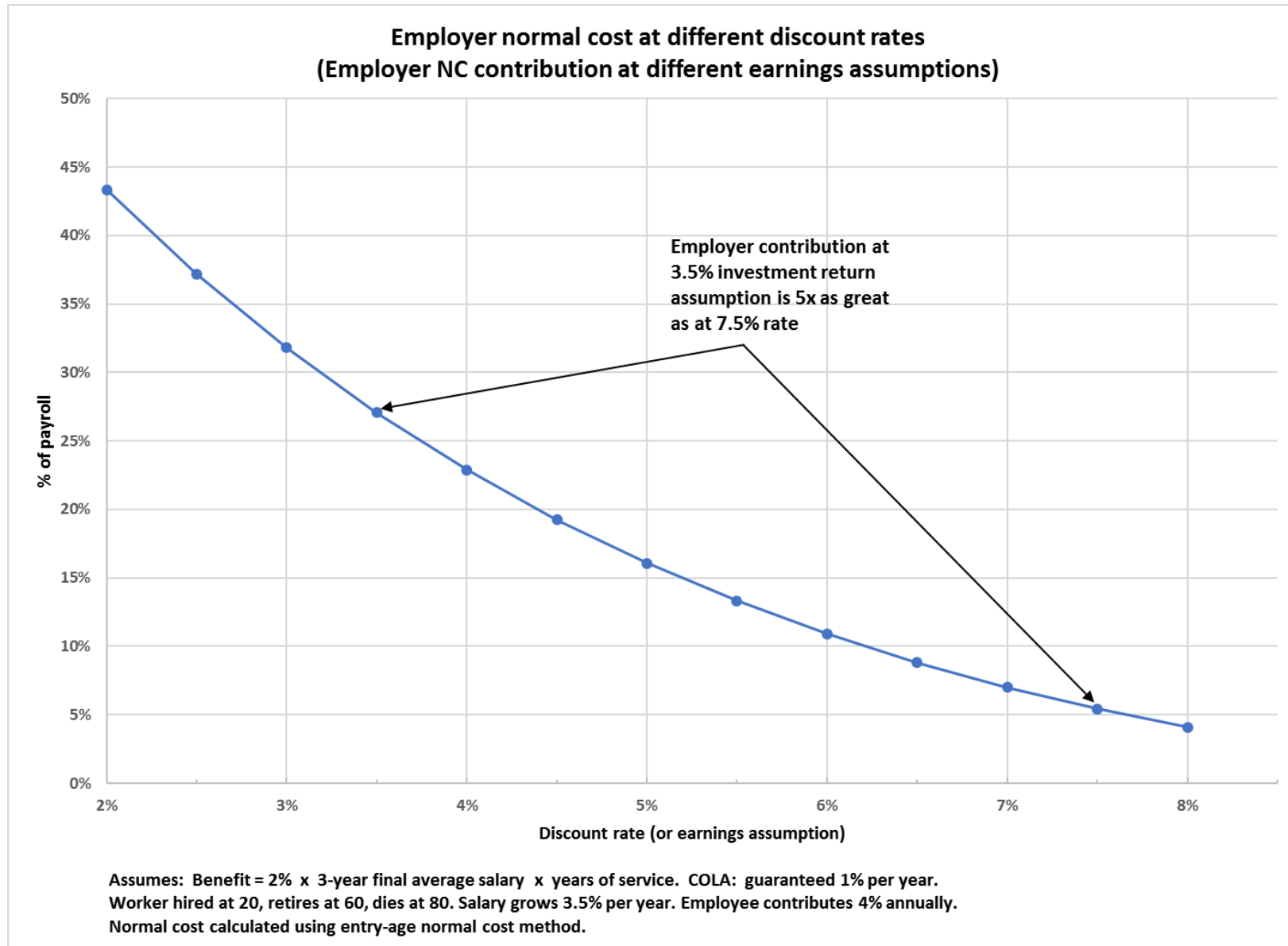
Bad incentives and no police

- Attractive for 2- & 4-year elected officials to push costs to future. Institutional environment allows and encourages this.
- Laws often are one-way streets: Governments can increase but rarely can reduce benefits. (Some exceptions.)
- Unlike private plans, public plans not subject to ERISA and related federal laws; no federal funding requirements or minimum-contribution rules
- Weak accounting standards compared to private. Unlike FASB:
 - GASB requires discount rate assumption based on plan's own portfolio (incentive!)
 - No SEC oversight of accounting.
 - Governments effectively can veto appointments to the GASB board that oversees them.
- Actuarial Standards Board guidance allows latitude and plans use it!
- Congress has no role (so far) and is chary; Tower Amendment.
- States can impose rules on local plans; hard to impose rules on themselves.

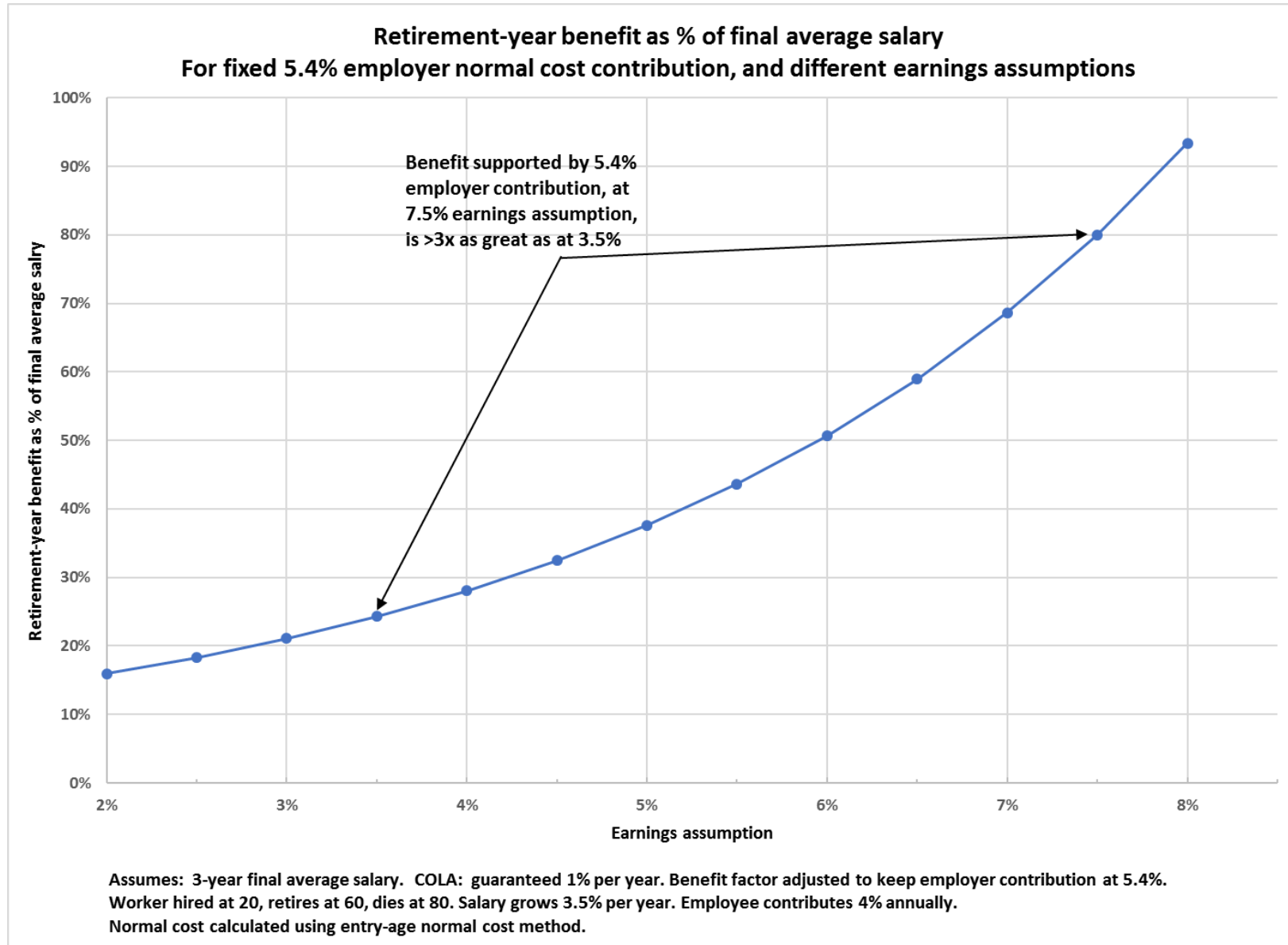
Higher discount rates → much better (reported) funded status



Higher assumed investment returns → much lower contributions

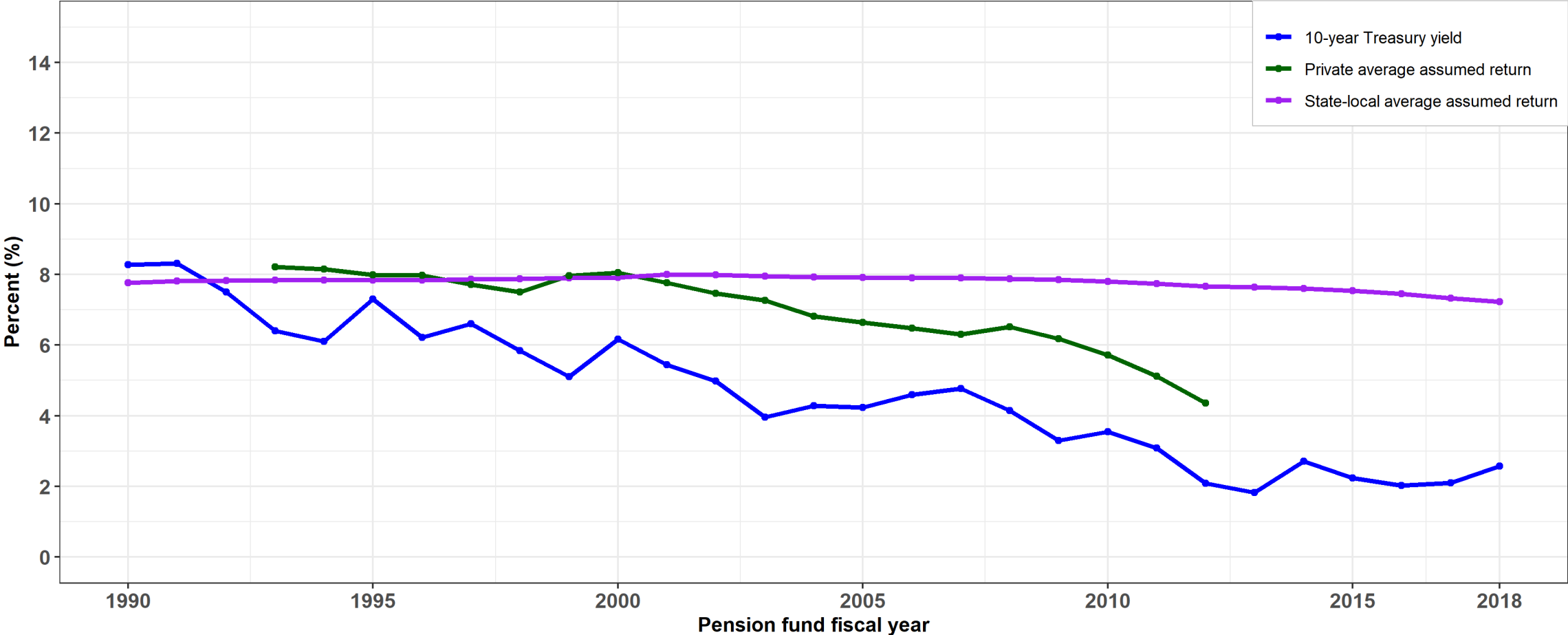


Also → Can offer higher benefits for a given contribution level



Public plans have lowered return assumptions only slightly in response to declining risk-free rates

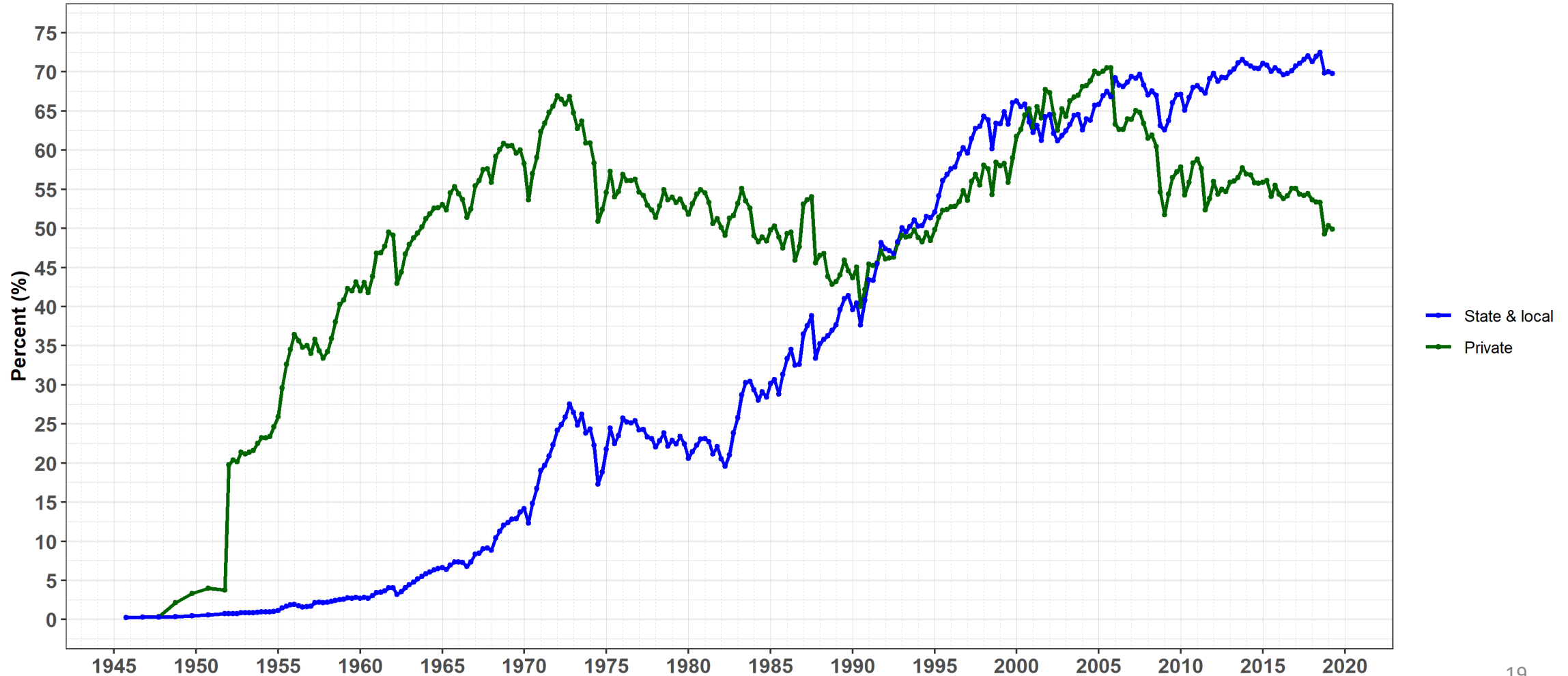
Assumed investment returns and risk-free returns
Public and private retirement systems



Notes:
- Public plan assumptions for 2001+ from Public Plans Database, Center for Retirement Research. Earlier years from multiple sources.
- Private plan assumptions provided via correspondence with authors of:
Andonov, Aleksandar and Bauer, Rob and Cremers, Martijn, Pension Fund Asset Allocation and Liability Discount Rates (March 3, 2016). <http://ssrn.com/abstract=2070054>
- 10-Year Treasury yield from Federal Reserve Bank of St. Louis (FRED)

Public plans are increasingly invested in equity-like assets

Equity-like investments as percentage of invested assets
State and local government and private sector defined benefit pension plans



Risk has increased relative to government budgets

Investment risk and state and local government taxes

Fiscal year	Assets, all pension funds in SC (\$ millions)	Estimated standard deviation of portfolio with 7.5% expected return	1 standard deviation investment-return shortfall (or overage) (\$ millions)	State & local taxes in SC, all governments (\$ millions)	1 standard deviation shortfall as % of taxes	30-year level-dollar amortization (\$ millions)	As % of taxes
1995	\$ 12,526	4.3%	\$ 539	\$ 7,059	7.6%	\$ 45	0.6%
2016	29,514	12.0%	3,542	17,272 *	20.5%	293	1.7%

Source: Author's calculations, based upon Census Bureau data, and upon Donald J. Boyd, and Yimeng Yin. "Appropriateness of Risk-Taking by Public Pension Plans." Nelson A. Rockefeller Institute of Government, February 2017.

* Estimated

U.S. public plans, with unique regulatory environment, have increased risk. Other plans have not.

- Important paper: Andonov, Bauer, Cremers (2017). Examines, among other things, how U.S. public plans, private plans, and Canadian/European plans responded to Treasury rate declines.
- Their statistical analysis shows that other plans reduced discount rates as market rates declined, but not U.S. public plans.

“U.S. public pension funds have become the biggest risk-takers among pension funds internationally”

Even IF assumptions are correct, a roller coaster path

Three individual simulations, all with 7.5% discount rate & 30-year 7.5% compound annual returns.

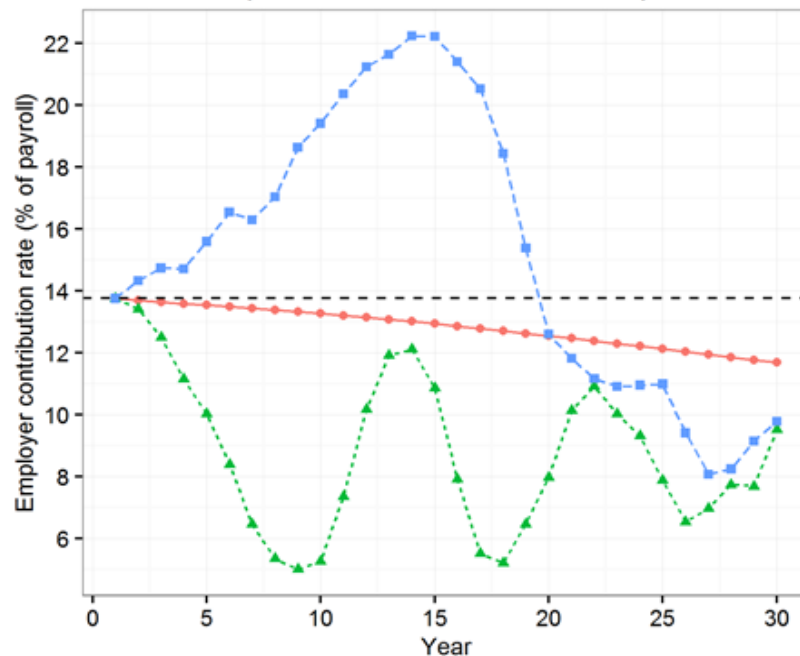
- **Deterministic run: constant returns**
- **Stochastic run: high returns in early years**
- **Stochastic run: low returns in early years**

People (politicians) interact with this system:

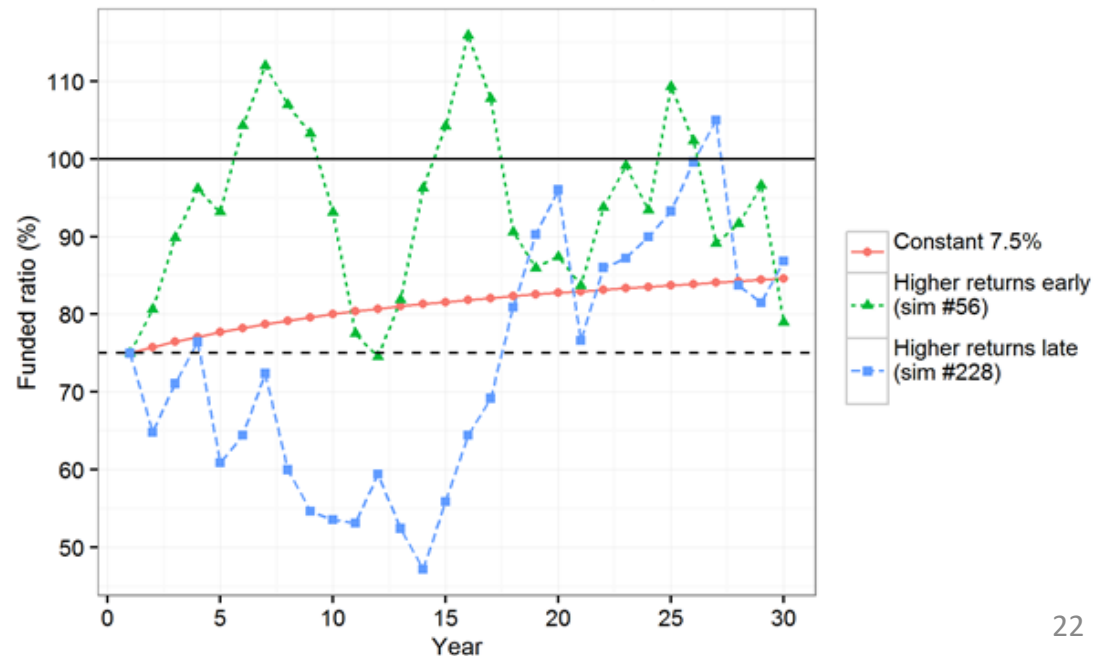
- Will they support 50+% contribution increases?
- Will they refrain from benefit increases and gimmicks if plan funding shoots above 100%?

And this is when return assumptions are met at 30 years. Most times, things will be better or worse than assumed.

Employer contribution rate



Funded ratio



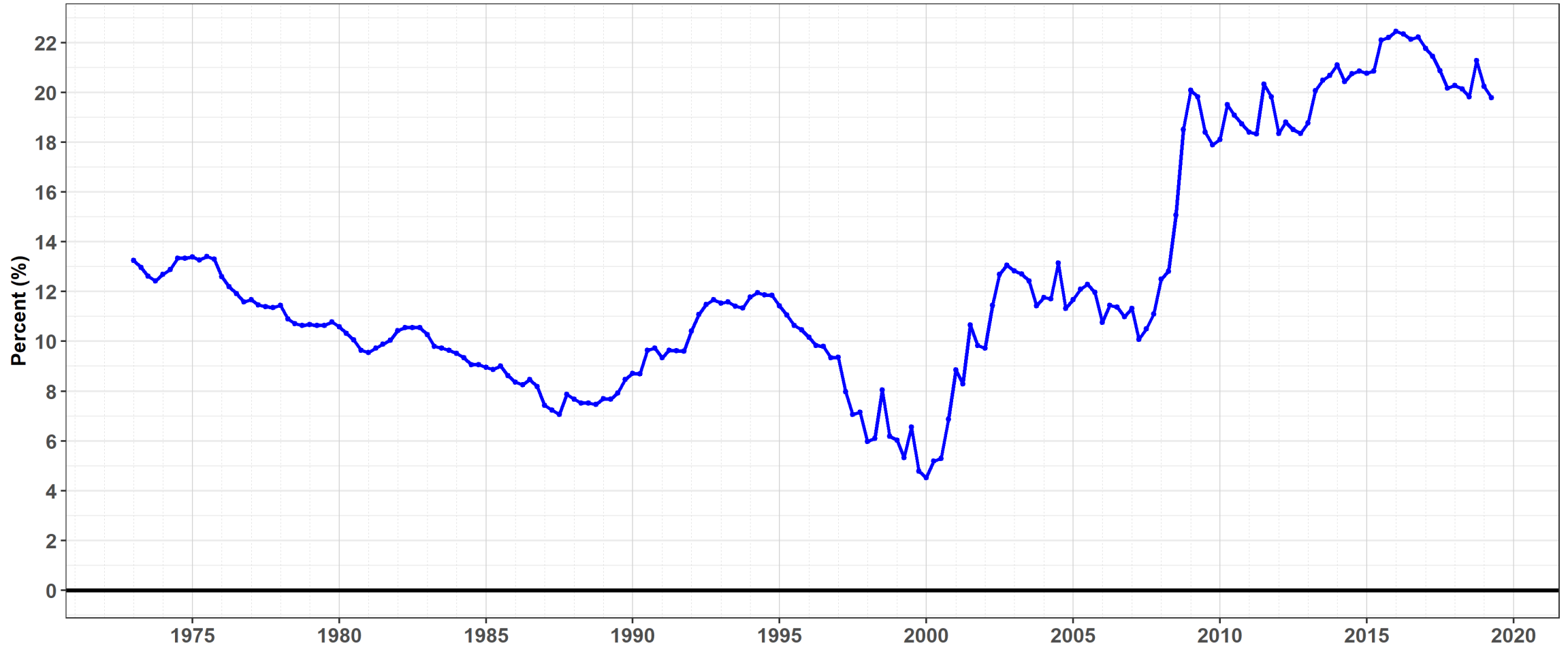
How big is the problem?

Basic facts – underfunding

- Controversy about how to measure liabilities
- Per Federal Reserve Board 2020q3 unfunded liabilities were \$4.3 trillion. By contrast public plan estimates are ~\$1.5-2 trillion.
- Great variation around country in extent of underfunding

Despite contribution increases, unfunded liabilities are near record relative to economy

Unfunded liability of state and local government defined benefit pension plans
As percentage of Gross Domestic Product

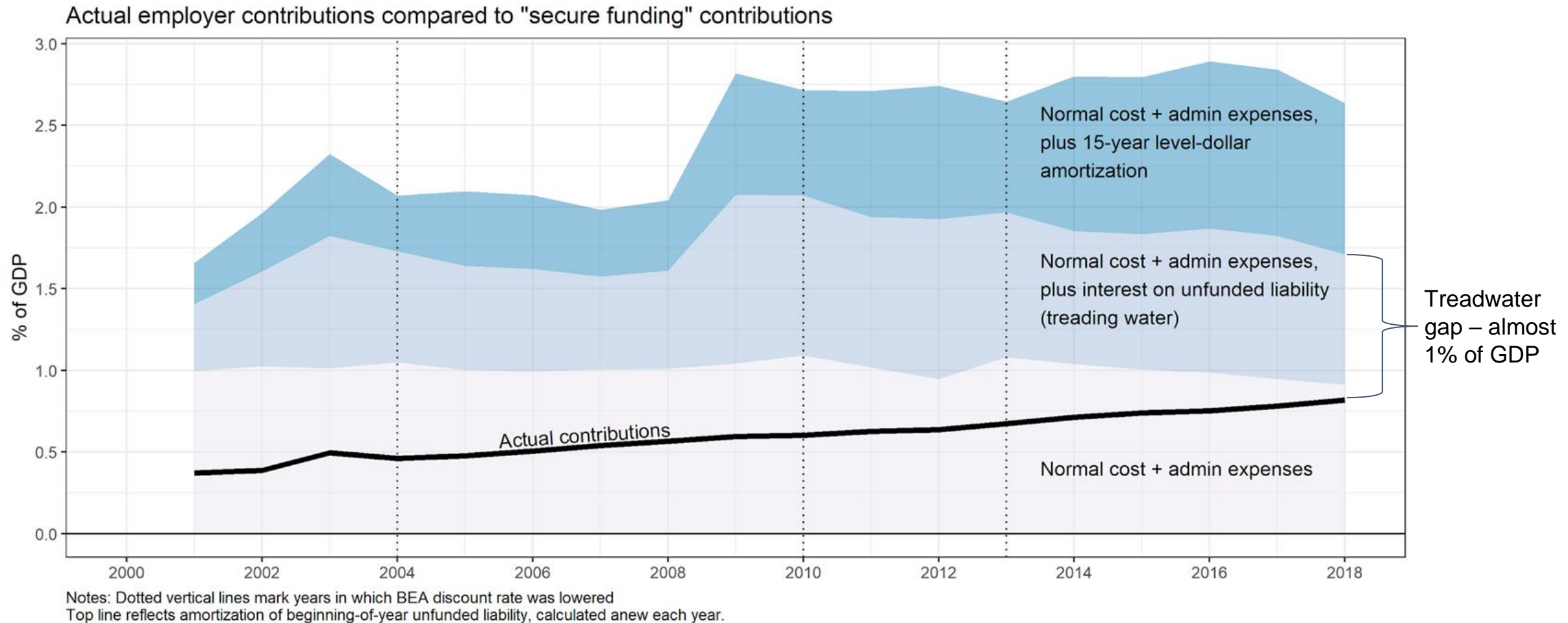


Source: Federal Reserve Board, Financial Accounts of the United States, Tables L.120.b and F.2
Note: Liabilities are as valued by the Bureau of Economic Analysis, not actuaries.

What does it take to tread water?

- Tread water: Keep things from getting worse, i.e., keep unfunded liabilities from growing.
- Requires contributions to cover costs of:
 - New benefits earned with a new year of service (the “normal cost”), plus
 - Interest on unfunded liability.

Huge gap between employer contributions and “secure funding”



Where are problems the
biggest?

Multiple overlapping underfunded plans must be funded by the same economic and tax base

For example, Illinois taxpayers (largely) must pay for multiple underfunded plans:

- Illinois Teachers' Retirement System
- State Employees' Retirement System
- State Universities Retirement System
- Chicago-area funds: Municipal Employees, Laborers', Police, Firemen's; Chicago Public Schools; Cook County Employees'; Chicago Transit Authority
- Many lesser funds in the Chicago area and throughout the state, most of which are deeply underfunded

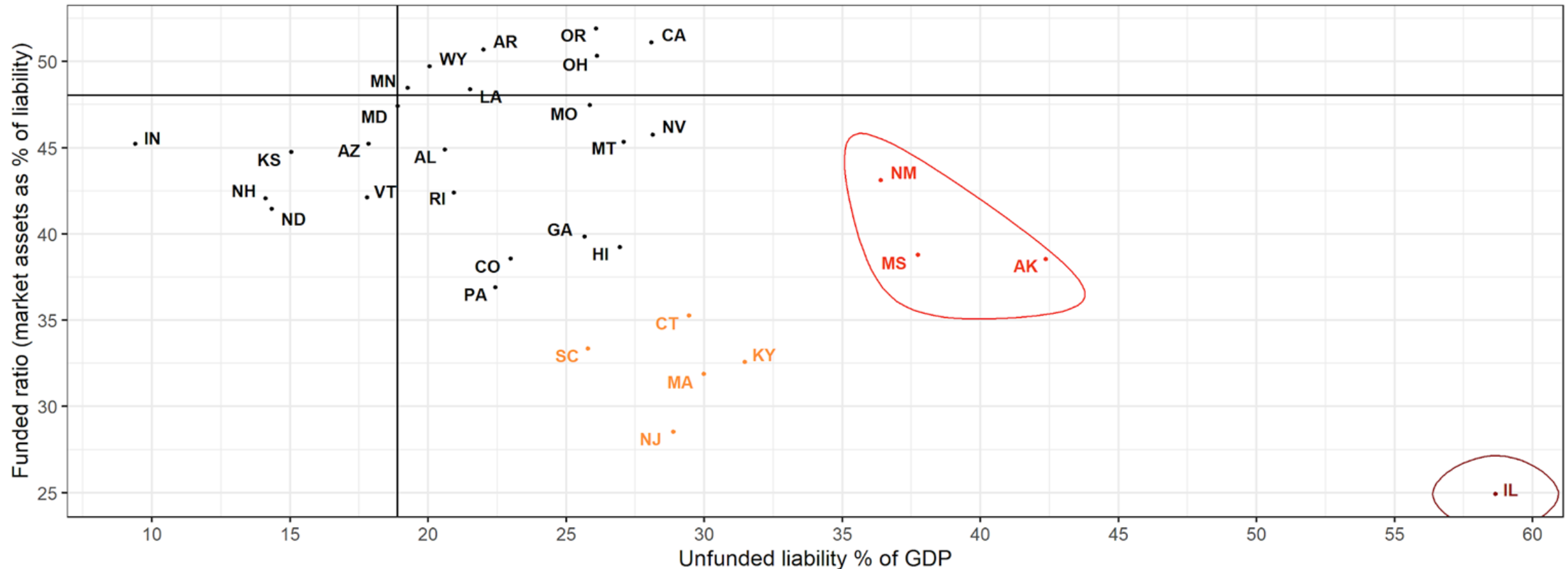
BEA data allow this. It is a valuable way to compare across states.

(It would be nice - but much harder still - to do this for smaller geographic areas.)

Comparing to the economy can be more revealing than simply looking at the funded ratio

Funded ratio vs. Unfunded liabilities as % of GDP, 2018

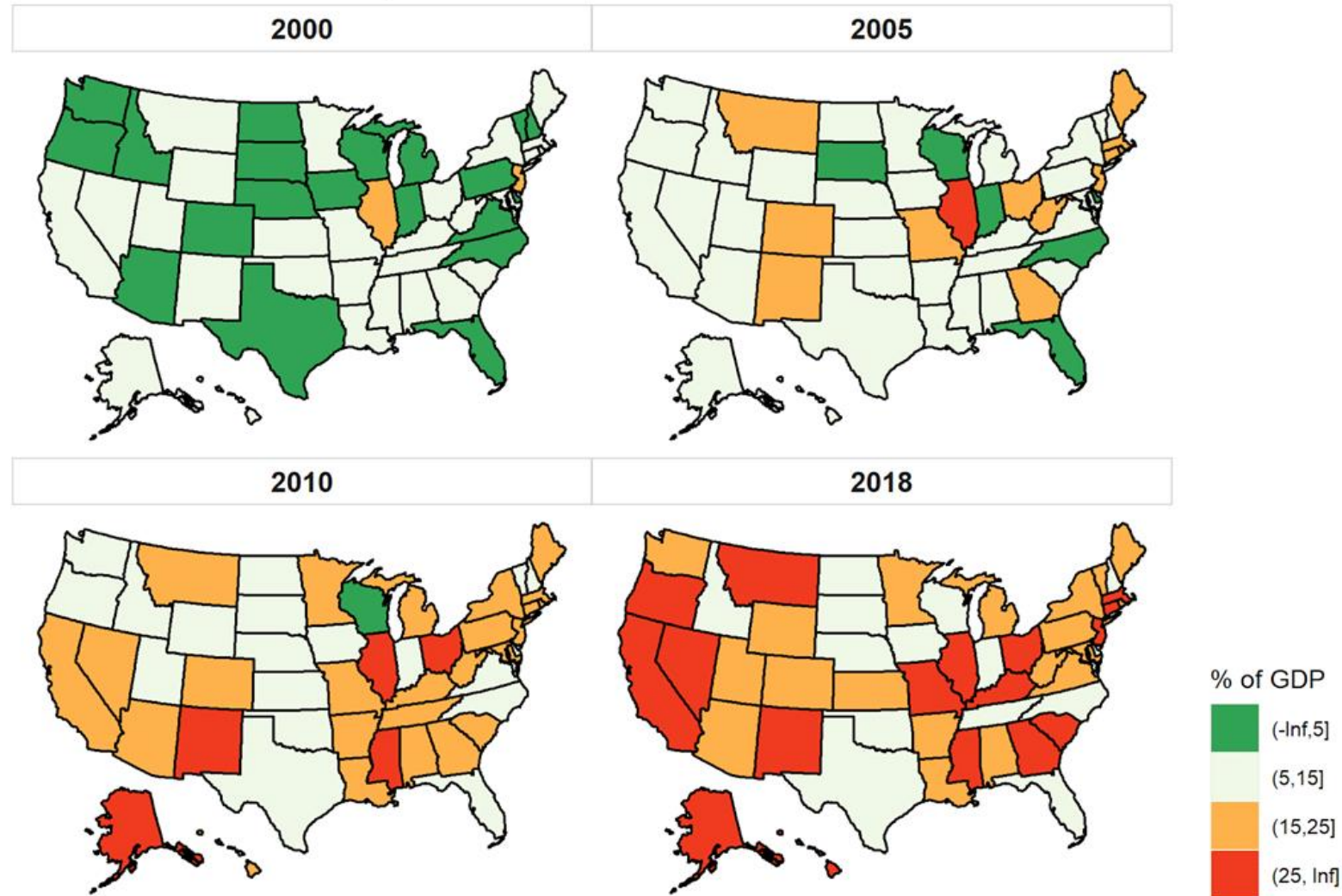
States with funded ratio, or unfunded liability as % of GDP, that is worse than median



Note: Crosslines mark 50-state medians

Unfunded liabilities have grown in most states

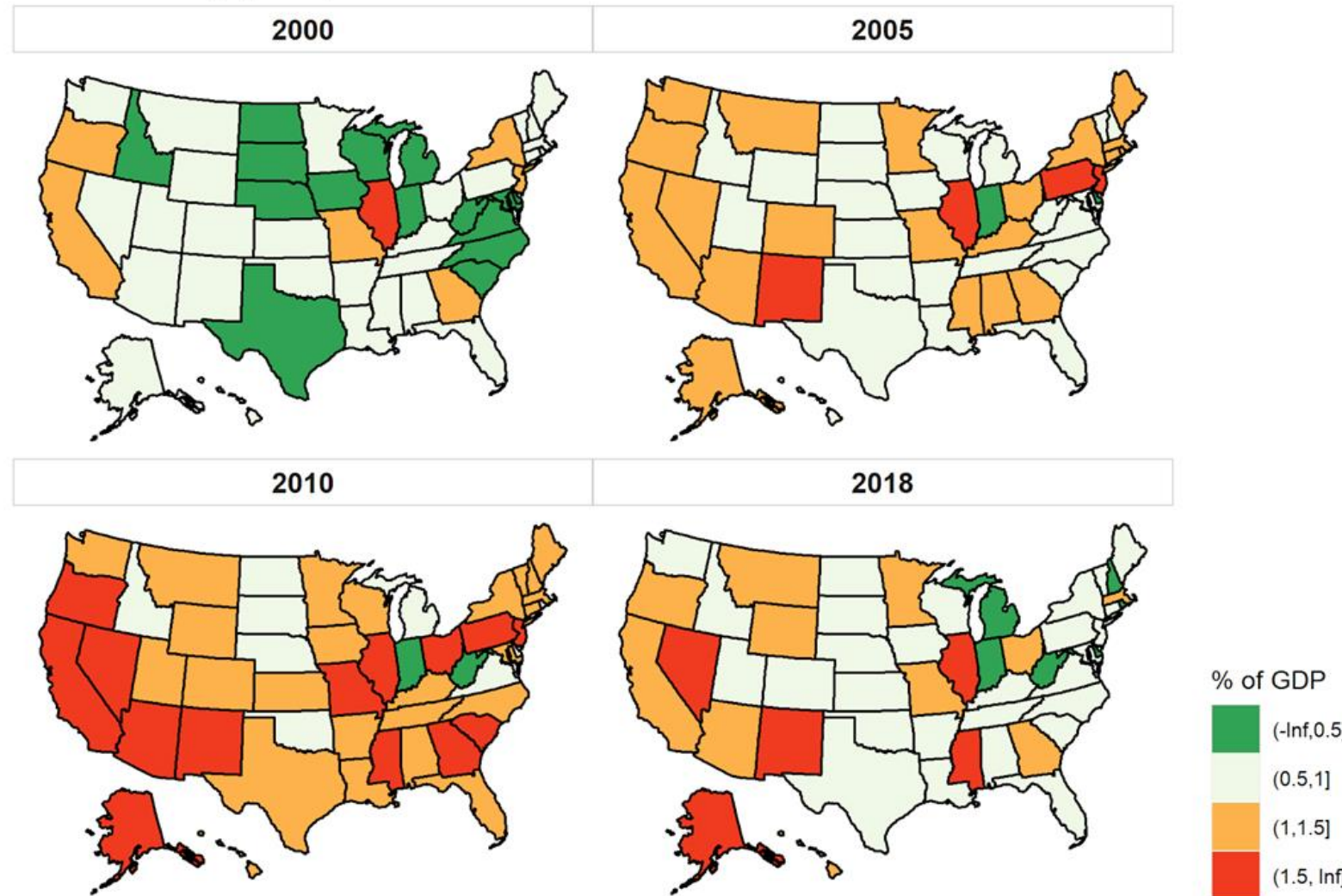
Unfunded liabilities as percent of GDP



Source: Author's analysis of BEA state pension estimates

Contribution increase needed to “tread water” has fallen recently (due to contribution increases and benefit cuts)

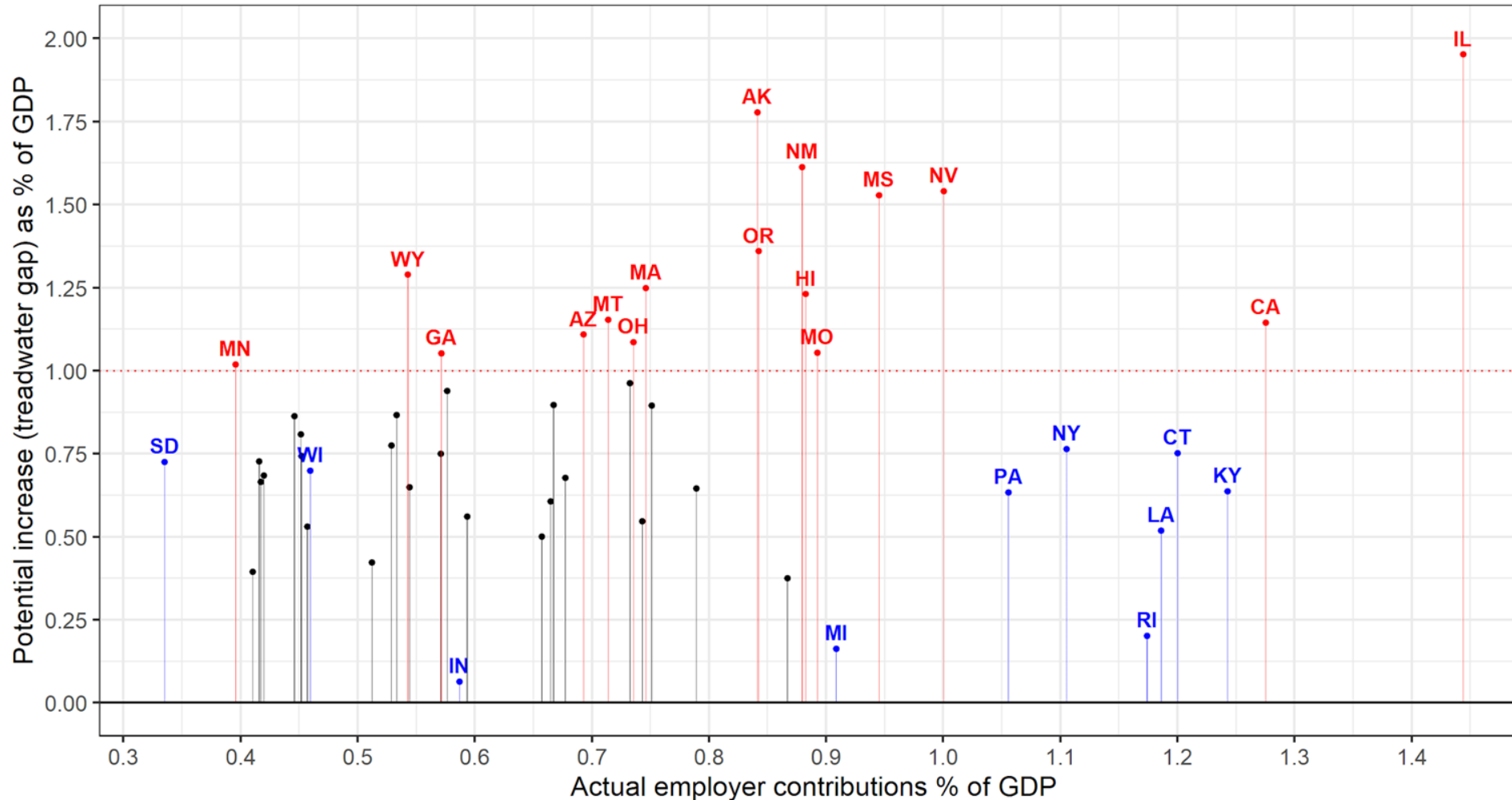
Treadwater gap as percent of GDP



Source: Author's analysis of BEA state pension estimates

How hard would it be to tread water?

Contribution increase needed to cover normal cost plus interest on unfunded liability, compared with actual employer contributions, as % of GDP in 2018



Note: Labeled states have gap > 1% of GDP or are otherwise noteworthy

1% of GDP for US is roughly equivalent to:

- 49% of all state-local income or sales taxes, or
- 29% of all K12 spending, or
- 190% of all highway capital spending

What can state and local
governments do?

Policy options highly constrained

- Politicians understandably concerned about going back on commitments, especially to people who no longer work or are near retirement
- Laws in some states are particularly constraining
 - Employee contribution increases often easier to do, legally than benefit cuts. Different impacts on plan members.
 - COLAs sometimes legally easier to do than other benefit changes.
 - “California rule” – an evolving issue – is especially constraining
- Benefit cuts also can reduce a government’s attractiveness as an employer. Changes should be considered in this context.
- Risk-sharing an option in some places: SD, WI; PA. Under consideration in some places.

Reducing unfunded liabilities – stylized view

People affected	What a government may be able to do*	Examples	Comments
1. People who don't work for you yet	Anything	<ul style="list-style-type: none"> • New tiers • Hybrid DB-DC plans • Risk-sharing 	NONE OF THE UAAL IS HERE. A “stop digging” solution – can ease future costs, <i>slowly</i> . Competitiveness-as-employer issues. Most reforms have been here.
2. People who work for you now:			
(a) Service they have yet to render	Depends. “ California rule ” may prevent cuts. In IL, state Supreme Court said cannot change. (Can lay off workers, but not change benefits)	<ul style="list-style-type: none"> • Reduce benefit factor for future service • Increase retirement age • Change COLA 	#3) SOME UAAL CAN BE IN HERE UNDER EAN COST METHOD BUT PROBABLY NOT MUCH. In some circumstances, can be substantial. Potentially important in distressed situations (e.g., Detroit). ERISA allows for private plans.
(b) Service they've already rendered	Hard to cut benefits, legally, politically, morally.	<ul style="list-style-type: none"> • Haircuts, future benefits • COLA cuts • Contingent COLAs 	#2) MOST REMAINING UAAL IS HERE. BIG IMPACT ON PROBLEM. Vested/non-vested distinctions matter, too.
3. People who used to work for you (e.g., retirees)	Hard to cut benefits, legally, politically, morally. Great variation. COLAs more susceptible to cuts than other benefits.	<ul style="list-style-type: none"> • Haircuts, current benefits • COLA cuts or suspension for retirees • Contingent COLAs for retirees 	#1) MOST OF THE UAAL IS HERE (Often 50-60%). BIG IMPACT ON PROBLEM.

* Varies greatly across states. See Monahan.

What will happen next?

Very difficult to predict

- Covid-19 posed great risks to governments and pension funds. Fortunately, the main fears did not occur.
- Investment risk remains a wild card. Plans could get lucky, or even do much worse.
- Benefits for new workers already reduced widely; some reductions in benefits for current members.
- Laws in some states are particularly constraining
 - Employee contribution increases often easier to do, legally than benefit cuts. Different impacts on plan members.
 - COLAs often legally easier to do than other benefit changes.
 - “California rule” – an evolving issue – is especially constraining
- Benefit cuts also can reduce a government’s attractiveness as an employer. Changes should be considered in this context.

What if a government has made promises it cannot keep?

- Local governments
 - Bankruptcy is an option, if allowed by state.
 - All bets are off – bankruptcy is about breaking deals (and contracts).
 - Pain can be spread – to bondholders and to other creditors of the gov't, not just to workers and retirees.
 - In fact, in general, pensions have been relatively protected. Will they be if bankruptcy becomes more widespread?
- State governments
 - No bankruptcy option – see David Skeel...
 - No explicit mechanism to spread pain beyond workers and retirees.
 - Taxpayers, service beneficiaries, infrastructure-users still hit through political process – crowd-out. Probably not bondholders.


Selected information sources

Information sources

- Great sources on multiple plans and/or issues:
 - Center for Retirement Research: [snapshots](#), [research](#), [data](#), [AVs and CAFRs](#)
 - [NASRA](#) (National Association of State Retirement Administrators)
 - [Pew Charitable Trusts](#)
 - [Wharton Pension Research Council](#)
 - [State and Local Government Finance Project](#), Rockefeller College
 - Plus, several others (BEA, NCSL)
- Deep dives on individual plans or governments:
 - CAFRs and AVs for individual plans
 - CAFRs for governments
 - **EMMA and the OS** (Official Statement) – broad, no-nonsense analysis

EMMA & NJ pensions: Get latest OS

- (1) [EMMA](#), (2) click NJ & accept, (3) click “state issuers” checkbox, (4) click “STATE OF NEW JERSEY”, (5) sort by Dated Date (descending), (6) download latest OS

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Issue Description	Dated Date	Maturity Dates
NEW JERSEY COVID-19 GENERAL OBLIGATION EMERGENCY BONDS, 2020 SERIES A	11/24/2020	2023 to 2032
TAXABLE GO BDS A	01/23/2020	06/01/2033

EMMA & NJ pensions: Find pensions info

- look at TOC; search “pension” (ctrl-f); probably appendix



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EMMA & NJ pensions: Key info

Financial Condition of the Pension Plans

General

As a result of lower-than-recommended contributions by the State to the Pension Plans for an extended period, lower than assumed investment returns on an actuarial basis, benefit enhancements enacted during the late 1990s and early 2000s, and reductions in member contributions, the Pension Plans experienced a deterioration in their financial condition. As a result, the State believes that, in addition to the existing assets of the Pension Plans, the expected earnings on those assets, and contributions from members of the Pension Plans, the State will need to make significantly larger contributions to the Pension Plans in the future to ensure that the Pension Plans will have a sufficient amount of assets to fund expected retirement benefits.

Decrease of UAAL primarily as a result of Experience Investigations

The overall funded status of the Pension Plans, which is the ratio of the actuarial value of assets over liabilities, decreased from 54.4% to 50.7% between the June 30, 2018 and June 30, 2019 actuarial valuations. The reduction in the funded status is mainly attributable to the adoption of revised actuarial assumption based on experience investigations conducted by the Pension Plans' actuary in 2019 and a reduction in the assumed investment rate of return used in the actuarial valuations from 7.5% to 7.3%. The revised assumptions, which were adopted by the various Pension Boards in early 2020, caused actuarial accrued liabilities to increase by \$2.656 billion or 2.6% between the June 30, 2018 and June 30, 2019 actuarial valuations. The change in the assumed rate of return increased liabilities by \$2.098 billion or 2.1%. The reduction in the funded status of the Pension Plans is also attributable to the State contributing less than the full actuarially recommended contribution to the Pension Plans. Funded levels are expected to continue to drop until such time as the State begins making full actuarially recommended contributions to the Pension Plans. See "Prospective Statutory Funded Status" below.

EMMA & NJ pensions: Projections!

**AGGREGATE PROJECTED ANNUAL CASH FLOWS AND
NET VALUE OF ASSETS OF STATE'S PORTION OF PENSION PLANS**
Fiscal Year Ending June 30, 2021 through June 30, 2050
(In Millions)

Fiscal Year Ending (June 30)	Beginning Value of Net Assets⁽¹⁾	Member Contributions⁽²⁾	State Contributions⁽³⁾⁽⁴⁾	Lottery Net Proceeds⁽⁵⁾	Investment Earnings⁽⁶⁾	Benefit Payments⁽⁷⁾	Ending Value of Net Assets
2021	\$ 30,786	\$1,280	\$3,490	\$1,086	\$ 2,077	\$ 7,267	\$ 31,453
2022	31,453	1,301	4,382	1,099	2,141	7,458	32,919
2023	32,919	1,321	5,626	1,112	2,270	7,642	35,606
2024	35,606	1,341	5,705	1,125	2,455	7,825	38,408
2025	38,409	1,362	5,781	1,139	2,649	8,004	41,335
2026	41,335	1,382	5,851	1,153	2,850	8,185	44,387
2027	44,387	1,410	5,913	1,167	3,060	8,377	47,560
2028	47,561	1,445	5,955	1,180	3,279	8,571	50,848
2029	50,848	1,481	5,990	1,190	3,505	8,762	54,251
2030	54,251	1,517	6,020	1,202	3,738	8,961	57,768

EMMA & NJ pensions: It could get worse...

Impact of COVID-19 Pandemic on Investment Return of Pension Plans

The preliminary unaudited Pension Plan returns for Fiscal Year 2020 were significantly below the rate of return assumed by the Pension Plans for purposes of developing the annual actuarially recommended contributions. Investments were impacted by a wide range of factors generally related to the COVID-19 Pandemic and the concurrent shutdown of large segments of the economy. For actuarial valuation purposes, Fiscal Year 2020 contributions assumed that plan assets would grow by 7.5%. Due to market declines in certain investments directly impacted by the weakened economic environment and financial market dislocations caused, in part, by the COVID-19 Pandemic, preliminary unaudited returns for Fiscal Year 2020 were only 1.2%. The lower returns will create additional unfunded liabilities

Impact of the COVID-19 Pandemic on Lottery Net Proceeds

Lottery Net Proceeds received by the Pension Plans have been lower than anticipated. In Fiscal Year 2020, total Lottery Net Proceeds are estimated to be lower than forecasted by approximately \$70 million. For Fiscal Year 2021, Lottery Net Proceeds received to date are also below target based on current State Lottery projections. The State is anticipating that the Pension Plans will receive \$1.084 billion in Lottery Net Proceeds in Fiscal Year 2021. If current State Lottery sales do not improve in Fiscal Year 2021 and remain below target, the Pension Plans will incur additional asset losses which will raise future State contribution requirements. Lower Lottery Net Proceeds may also cause required State contributions to increase beginning in Fiscal Year 2023. LECA contains a provision requiring the Lottery Enterprise to be revalued every 5 years. The first revaluation must be completed by Fiscal Year 2023. If the estimated value of the Lottery Enterprise is reduced, the amount the State is required to fund from General Fund appropriations may increase. Projections of future cash flows, plan funding status and future liabilities reflect the impact of the actual Fiscal Year 2020 rate of return and of lower Lottery Net Proceeds for Fiscal Year 2020. See “Fiscal Year 2021 Contribution and Prospective Funding Policy” and “Prospective Financial Information of Pension Plans” below.

Reprise: Conclusions

- Liabilities and annual costs severely underestimated by plans.
- ON AVERAGE, plans deeply underfunded.
- Unless plans get lucky, investment returns won't bail us out.
- Benefit cuts for workers/retirees unlikely to be big part of solution.
- Further tax increases and service cuts likely – “crowd out”.
- Loss of political support for public defined benefits will encourage gradual movement to defined contribution plans and to risk-sharing DB plans.
- And the system that allowed this will remain largely in place. The issue will be with us for many years.