GEORGIA TRS: PENSION PLAN SOLVENCY ANALYSIS
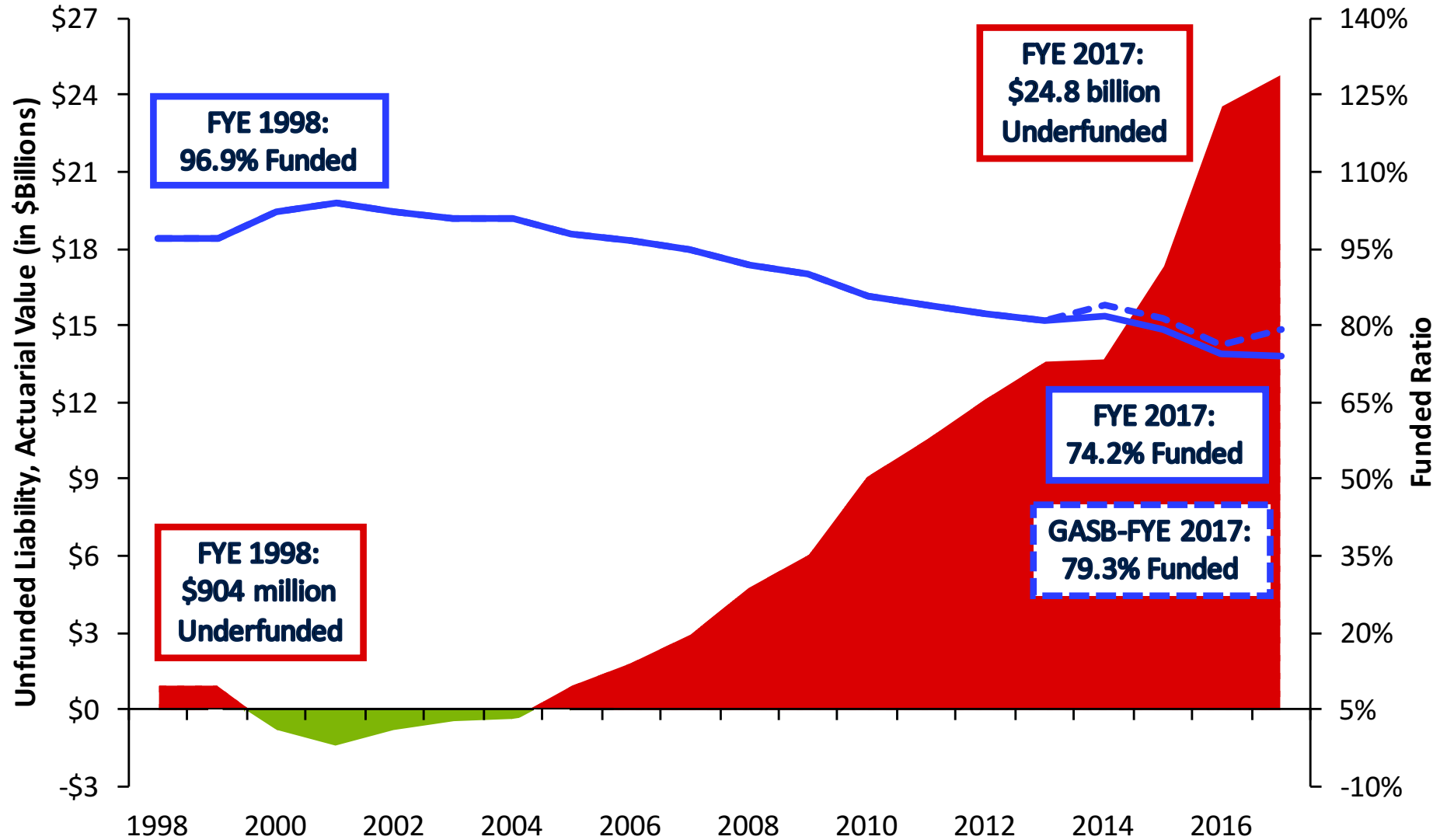
Prepared by:

Pension Integrity Project at Reason Foundation

**September 7, 2018**

A History of Volatile Solvency (1998-2017)

FYE 1998: 96.9% Funded

FYE 2017: $24.8 billion Underfunded

FYE 1998: $904 million Underfunded

FYE 2017: 74.2% Funded

GASB-FYE 2017: 79.3% Funded

Y-axis (left): Unfunded Liability, Actuarial Value (in $Billions) — $27, $24, $21, $18, $15, $12, $9, $6, $3, $0, -$3

Y-axis (right): Funded Ratio — 140%, 125%, 110%, 95%, 80%, 65%, 50%, 35%, 20%, 5%, -10%

X-axis: 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, 2016

Source: Pension Integrity Project analysis of Georgia TRS actuarial valuation reports and CAFRs.
Dashed blue line indicates funded ratio based on market values as reported under GASB 67/68

15-Year Trend: TRS Pension Contribution Growth Outpacing State Economic Growth
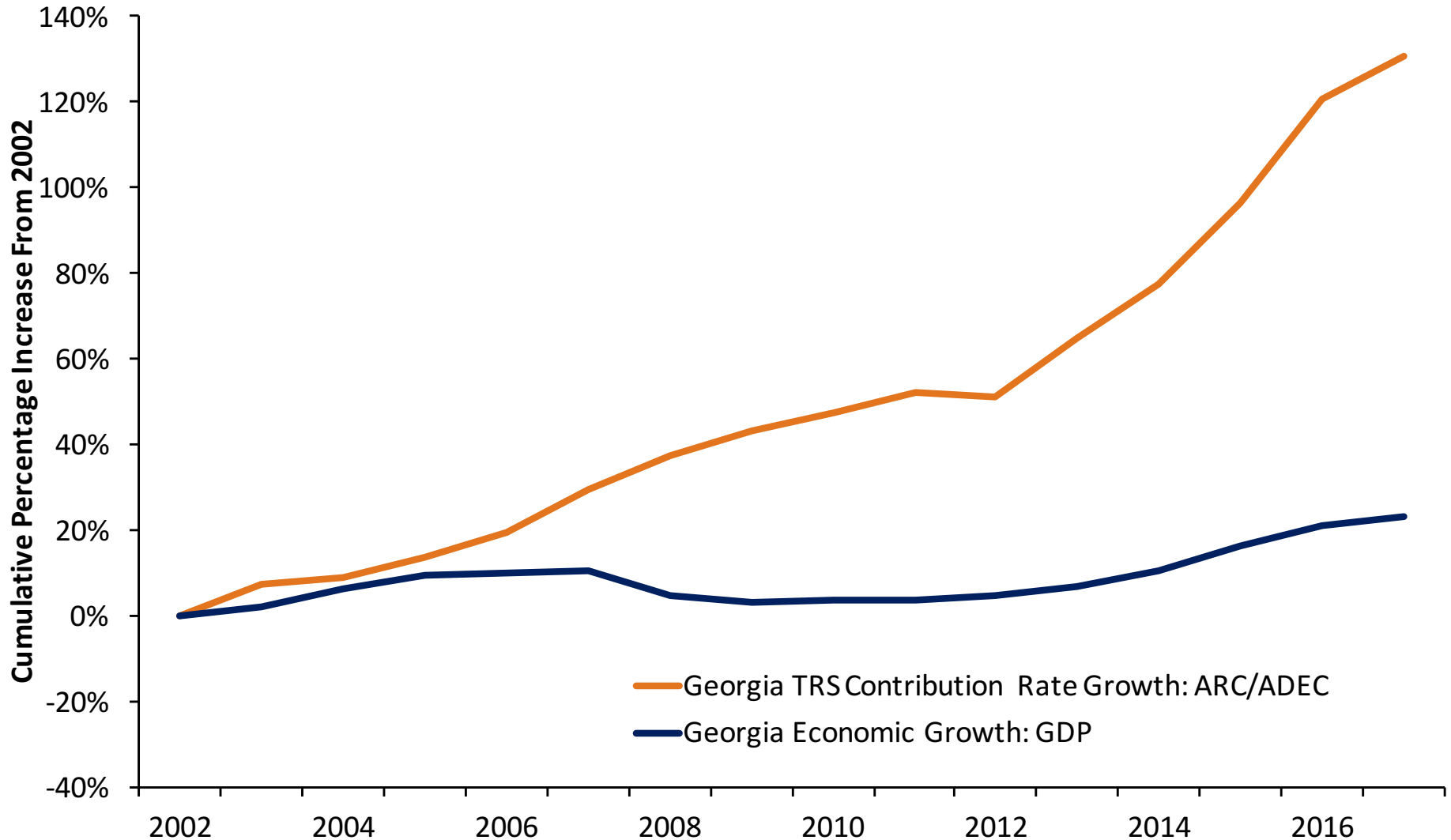
Source: Pension Integrity Project analysis of Georgia TRS actuarial valuation reports, as well as data from the Federal Reserve Bank of St. Louis and BLS. GASB recently redefined Actuarially Required Contribution (ARC) as the Actuarially Determined Employer Contribution (ADEC).
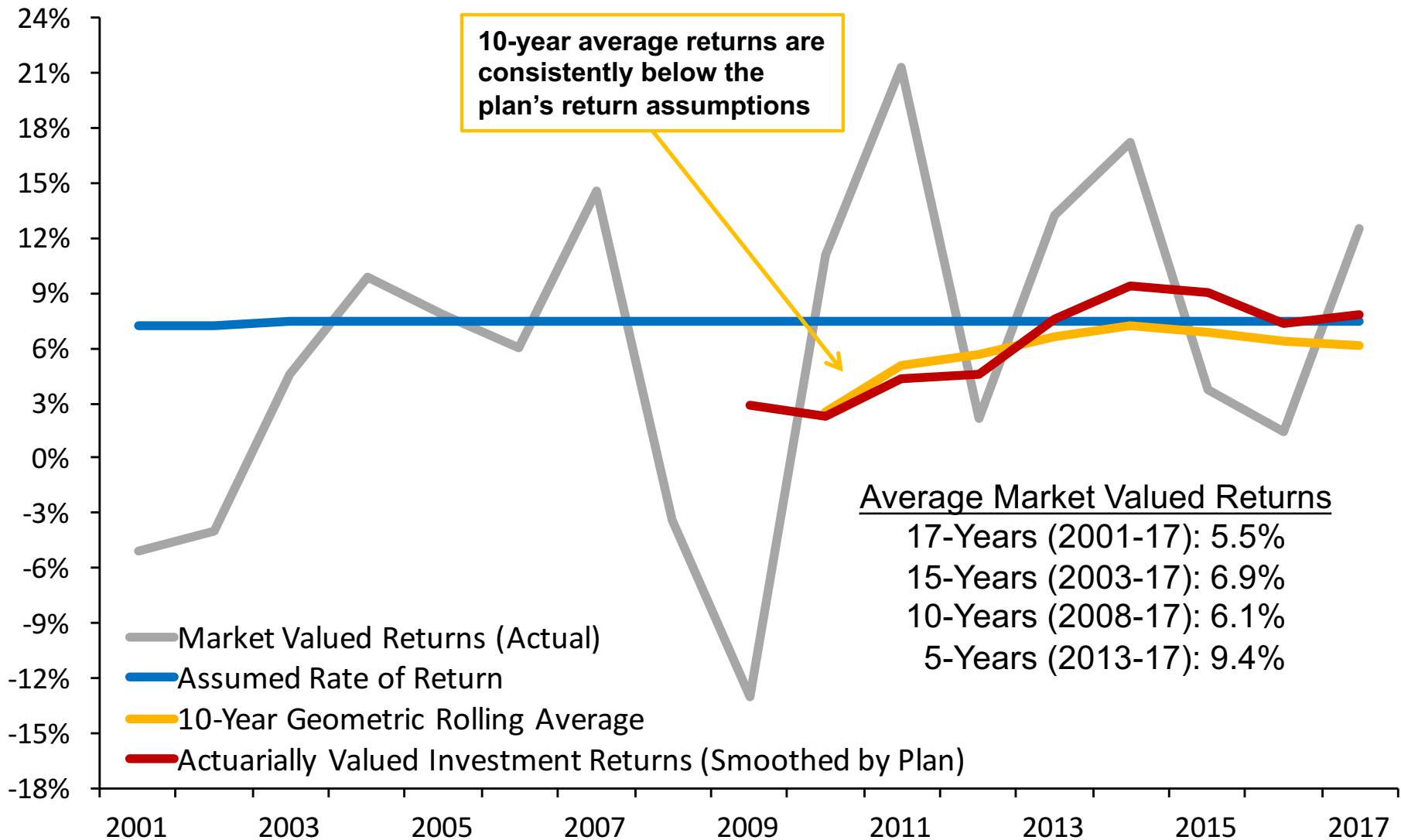
The Causes of the Pension Debt
Actuarial Experience of Georgia TRS 1998-2017
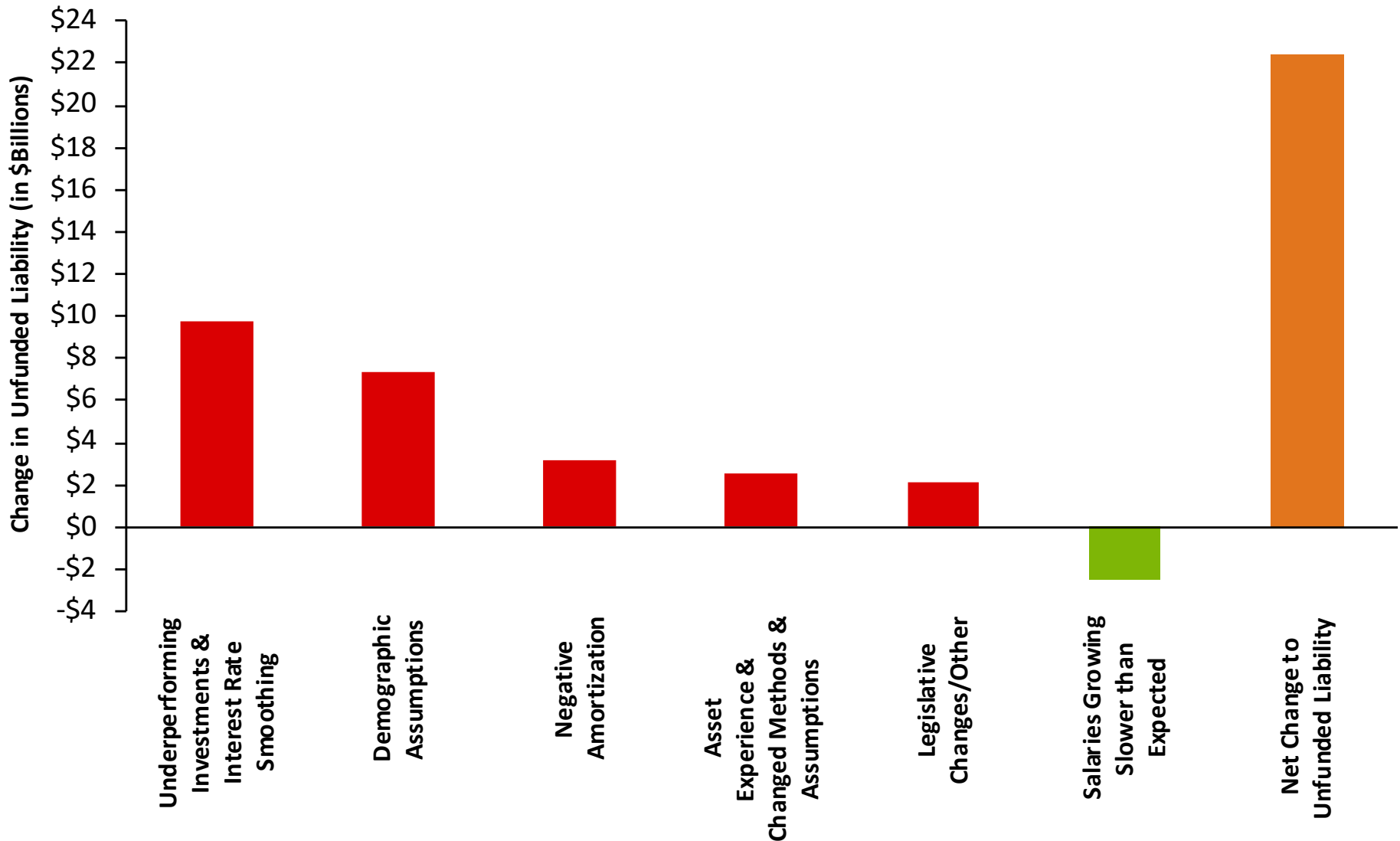
Source: Pension Integrity Project analysis of Georgia TRS CAFRs. Data represents cumulative unfunded liability by gain/loss category.

Georgia TRS Problem: Underperforming Asset Allocations
Investment Return History, 2001-2017

10-year average returns are consistently below the plan's return assumptions

Average Market Valued Returns
17-Years (2001-17): 5.5%
15-Years (2003-17): 6.9%
10-Years (2008-17): 6.1%
5-Years (2013-17): 9.4%

Market Valued Returns (Actual)
Assumed Rate of Return
10-Year Geometric Rolling Average
Actuarially Valued Investment Returns (Smoothed by Plan)

Source: Pension Integrity Project analysis of Georgia TRS actuarial valuation reports and CAFRs.
Assumed rate of return shown is 7.25% for 2001-02, and 7.5% for 2003-17 periods.

New Normal: The So-Called Recovery Has Already Happened, the Market Has Changed

The "new normal" for institutional investing suggests that achieving even a 6% average rate of return is optimistic.

1. Over the past two decades there has been a steady change in the nature of institutional investment returns.

    - 30-year Treasury yields have fallen from around 8% in the 1990s to consistently less than 3% today.
    - Globally, interest rates are at ultralow historic levels, while market liquidity continues to be restrained by financial regulations.

2. McKinsey & Co. forecast the returns to equities will be 20% to 50% lower over the next two decades compared to the previous three decades.

    - Using their forecasts, the best case scenario for a 70/30 portfolio of equities and bonds, similar to Georgia TRS, is likely to earn around 5% return.

3. As Georgia TRS awaits for the "recovery" its unfunded liabilities continue to grow.

Georgia TRS Asset Allocation (2001-2017)
Expanding Equities in Search for Yield
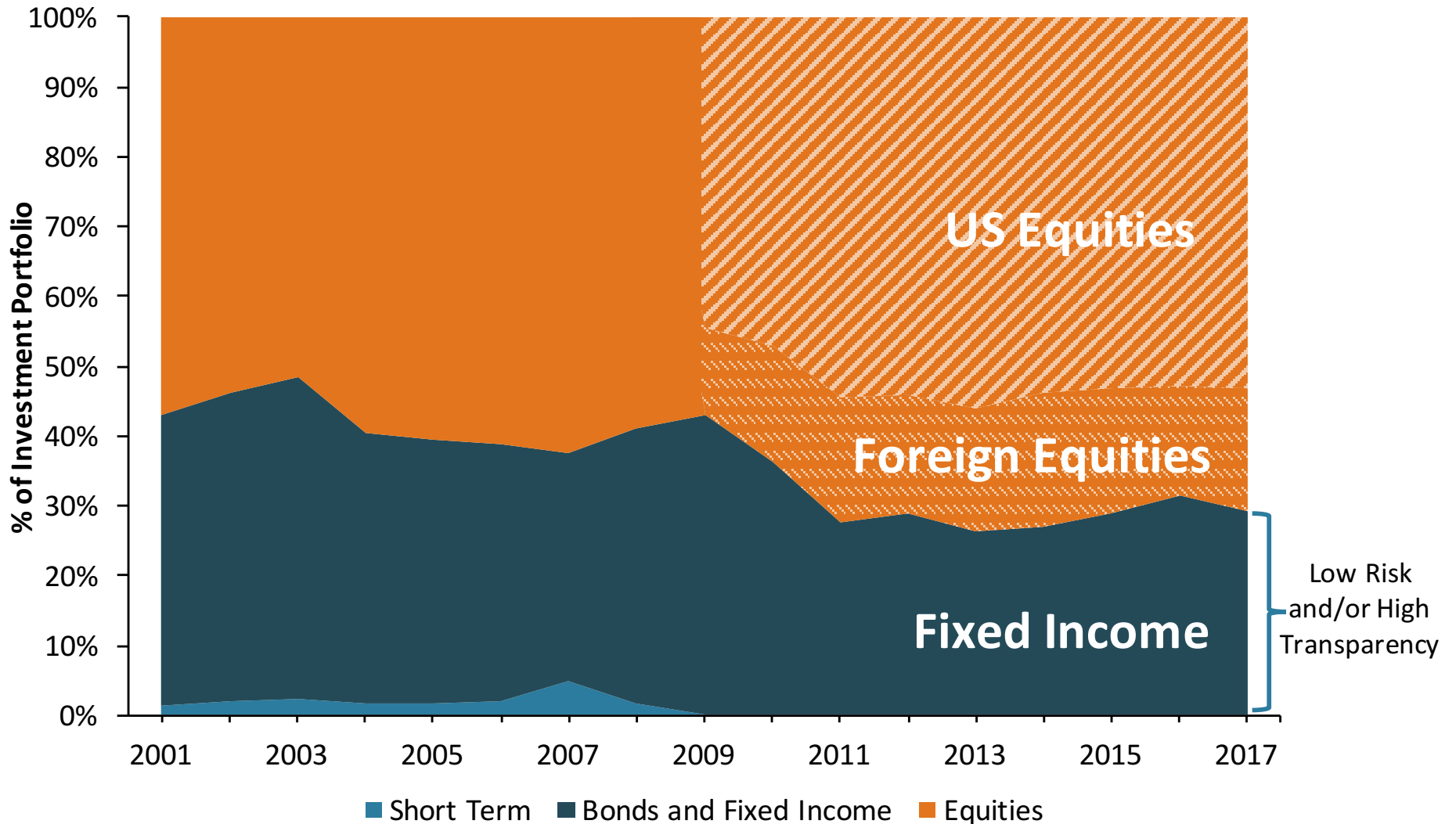
Source: Pension Integrity Project analysis of Georgia TRS actuarial valuation reports and CAFRS.

Probability Analysis: Measuring the Likelihood of Georgia TRS Achieving Various Rates of Return

| Rate of Return	Probability of Georgia TRS Achieving A Given Return Based On:				
	Georgia TRS Expectations	BNY Mellon 10-Year Forecast	BlackRock Long-Term Forecast	JP Morgan 10-15 Year Forecast	Research Affiliates 10-Year Forecast
9.0%	39%	8%	10%	7%	3%
8.0%	52%	17%	19%	15%	7%
7.5%	58%	22%	25%	20%	10%
7.0%	64%	28%	31%	27%	14%
6.0%	75%	42%	46%	41%	25%
5.0%	83%	58%	61%	58%	39%
4.0%	90%	74%	75%	73%	54%

Source: Pension Integrity Project Monte Carlo model based on Georgia TRS asset allocation and reported expected of returns by asset class.
Forecasts of returns by asset class generally from BNYM, JPMC, BlackRock, and Research Affiliates were used and matched to the specific asset class of Georgia TRS
. Probability estimates are approximate as they are based on the aggregated return by asset class. For complete methodology contact Reason Foundation.

What if Georgia TRS Investments Continue Underperforming?
Sensitivity Analysis: Employer Contribution
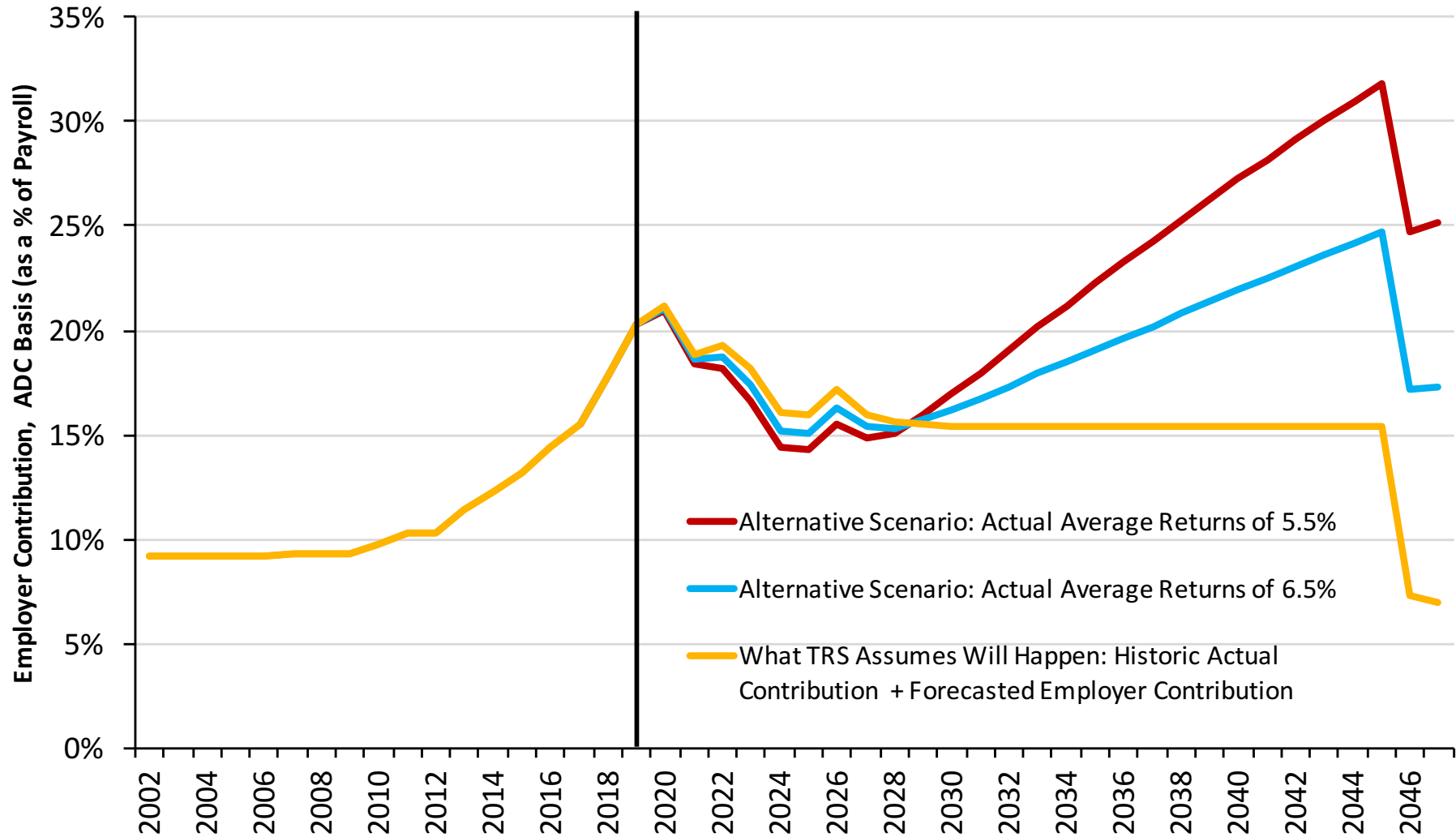
Source: Pension Integrity Project actuarial forecast of Georgia TRS. Scenario assumes that the state continues to pay 100% of the actuarially determined contribution each year and that Georgia TRS meets its actuarial assumptions, except return assumptions. Employer contributions for 2018-19FY show plan's own projections. Years are contribution fiscal years. Figures are rounded and adjusted for inflation.

What if Georgia TRS Investments Underperform in the Short-term?
Sensitivity Analysis: Employer Contribution
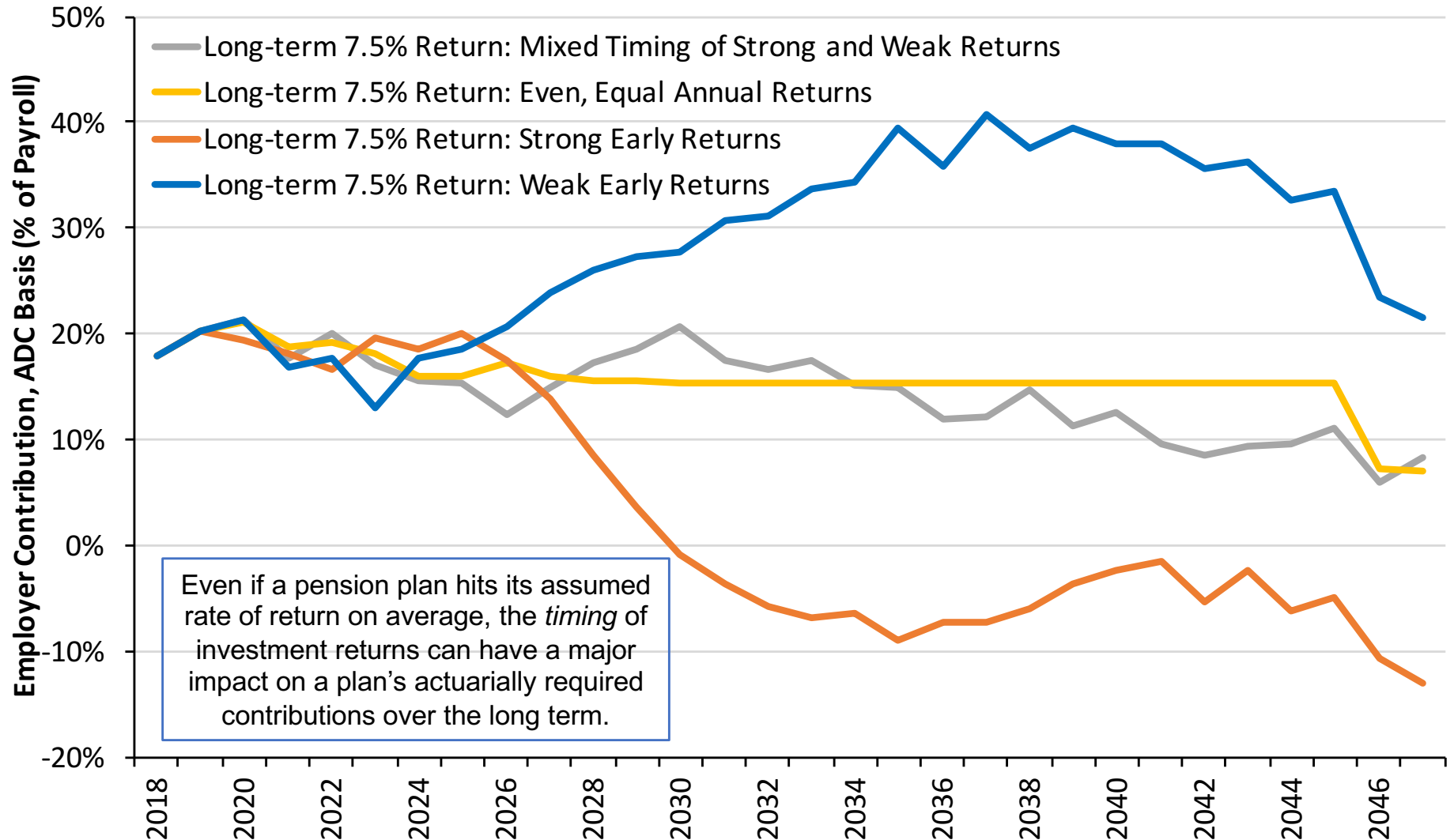
Source: Pension Integrity Project actuarial forecast of Georgia TRS plan. Strong early returns (TWRR = 7.4%, MWRR = 8.5%), Even, equal annual returns (Constant Return = 7.5%), Mixed timing of strong and weak returns (TWRR = 7.5%, MWRR = 7.5%), Weak early returns (TWRR = 7.5%, MWRR = 6.5%) Scenario assumes that Georgia TRS pays the actuarially required rate each year. Years are plan's fiscal years.

Negative Amortization: Understanding the Current Funding Policy

- Currently, the government employers in Georgia make pension contributions based on level percent actuarial cost method (ADC). However, contributions made have not always kept up with the interest accruing on the unfunded liabilities.

- Historically, Georgia TRS had been using 30-year schedules to re-amortize its unfunded liabilities, and this frequently led to amortization payments less than accrued interest. In 2013, Georgia TRS adopted a closed schedule for the legacy unfunded liability as of that year — a positive step that will ensure the bulk of existing debt gets wound down. However, Georgia TRS still uses 30-year amortization schedules for new actuarial gains and losses, which can create negative amortization too.

- In <u>17 of the past 22 years</u>, employer contributions have been less than the interest accrued on the pension debt (i.e. Negative Amortization). Thus, despite receiving 100% ADEC contributions, the plan's unfunded liability is growing in absolute terms.

- The Society of Actuaries recommends funding periods of 15 to 20 years. Longer periods result in larger long-term costs for the state.

Georgia TRS Discount Rate
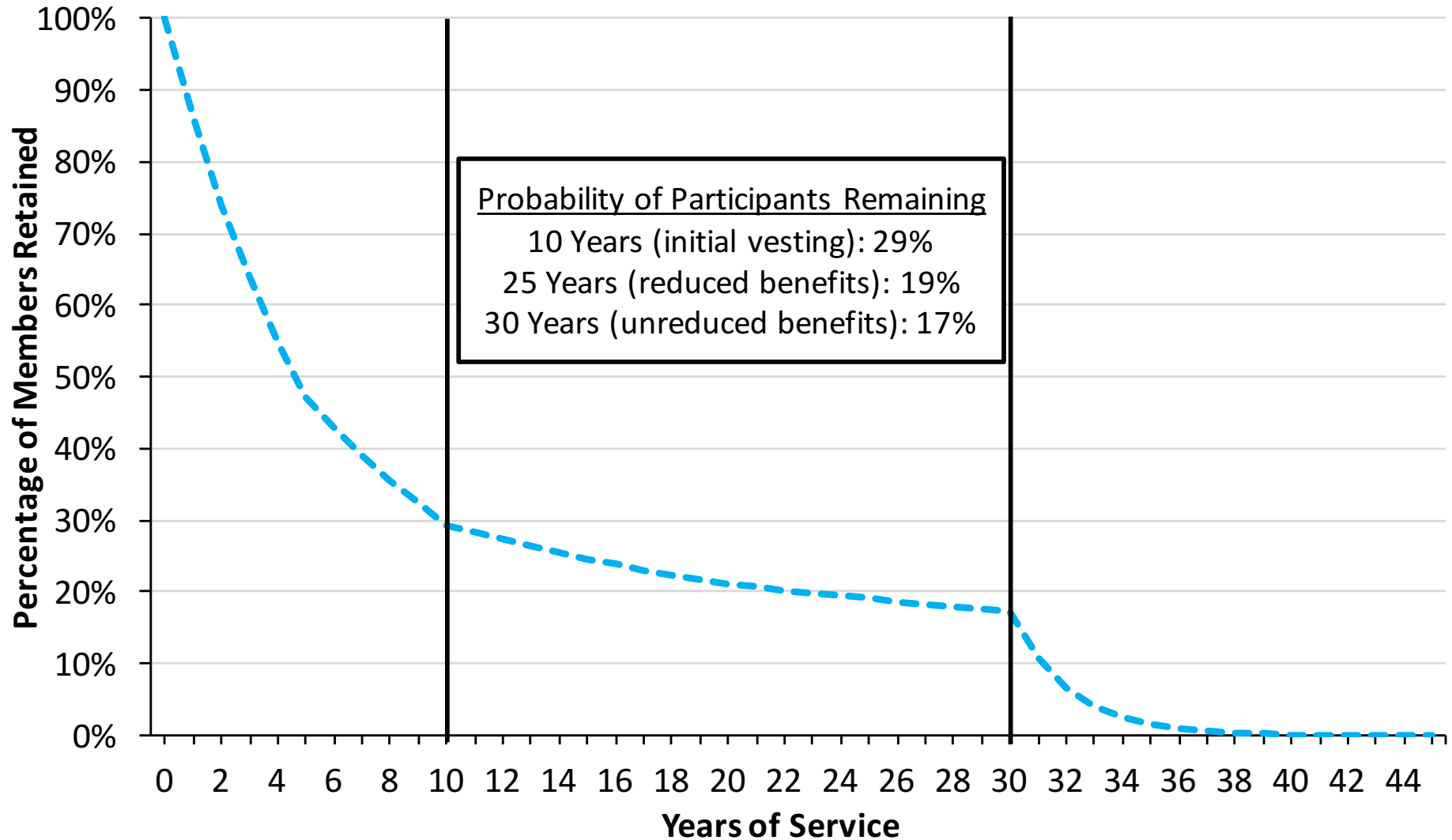## FYE 2017 Total Pension Liability Under Varying Discount Rate

	Funded Ratio (Market Value)	Unfunded Liability	Total Pension Liability
7.5% Discount Rate (Current Baseline)	79.3%	$18.6 billion	$89.9 billion
6.5% Discount Rate	70.1%	$30.9 billion	$102.3 billion
5.5% Discount Rate	60.8%	$46.1 billion	$117.4 billion
4.5% Discount Rate	52.5%	$64.6 billion	135.9 billion

Source: Pension Integrity Project analysis of Georgia TRS CAFR Statements.
Market values shown are fiduciary net position, and unfunded liabilities shown are total pension liabilities. Figures are rounded.

Probability of Members Remaining in Georgia TRS

> **Probability of Participants Remaining**
> 10 Years (initial vesting): 29%
> 25 Years (reduced benefits): 19%
> 30 Years (unreduced benefits): 17%

Source: Bellwether Education Partners benefit modeling and analysis of Georgia TRS Actuarial Valuations

Does Georgia TRS Retirement Plan Work for All of Today's Employees?

- **53%** of new teachers/educators leave before 5 years
    - This teacher turnover rate exceeds occupation averages nationally.
    - Another 18% of new teachers who are still working after 5 years will leave before reaching the 10 years of service necessary to vest.

- Only **19%** of all teachers hired next year will still be working after 25 years, long enough to qualify for a reduced benefit.

- Only **17%** of all teachers hired next year will still be working after 30 years, long enough to qualify for full benefits, according to Bellwether Education Partners.

- Just **25%** of Georgia teachers will "break even" on their pensions, according to TeacherPensions.org
    - Analysis by the Pension Integrity Project suggests that members need to work more than 24 years for the present value of pension benefits to at least match the value of their own contributions.

Source: Pension Integrity Project analysis of Georgia TRS turnover and withdraw assumptions. Estimated percentages are based on the expectations used by the plan actuaries; if actual experience is differing substantially from the assumptions then these forecasts would need to be adjusted accordingly.

FRAMEWORK FOR SOLUTIONS & REFORM

Objectives of Good Reform

- **Keeping Promises:** Ensure the ability to pay 100% of the benefits earned and accrued by active workers and retirees

- **Retirement Security:** Provide retirement security for all current and future employees

- **Predictability:** Stabilize contribution rates for the long-term

- **Risk Reduction:** Reduce pension system exposure to financial risk and market volatility

- **Affordability:** Reduce long-term costs for employers/taxpayers and employees

- **Attractive Benefits:** Ensure the ability to recruit 21st Century employees

- **Good Governance:** Adopt best practices for board organization, investment management, and financial reporting

Pension Reform Strategies

- **<u>Problem 1: Assumptions</u>**
  - Reform Area 1.1: Reduce investment risk and align assumed return with a more realistic probability of success
  - Reform Area 1.2: Review and adjust assumptions related to withdrawal rates, new hire/headcount growth, payroll growth, retirement rates, inflation, and mortality

- **<u>Problem 2: Contributions and Methods</u>**
  - Reform Area 2.1: Consider whether the smoothed valuation interest rate methodology is a net positive or negative for the plan
  - Reform Area 2.2: Adjust contribution rate method to eliminate negative amortization, and consider adjusting the amortization method and use shorter periods to amortize the old/original and new unfunded liabilities

- **<u>Problem 3: Benefit Design</u>**
  - Reform Area 3.1: Consider whether adjustments to the current system could reduce costs and risks, while still ensuring retirement security
  - Reform Area 3.2: Consider whether a new benefit system design could work for more Georgia TRS members and reduce future risks

Practical Policy Framework

1. Establish a plan to pay off the unfunded liability as quickly as possible.
    - The Society of Actuaries Blue Ribbon Panel recommends amortization schedules be no longer than 15 to 20 years

2. Adopt better funding policy, risk assessment, and actuarial assumptions
    - These changes should aim at minimizing risk and contribution rate volatility for employers and employees

3. Create a path to retirement security for all participants
    - Members that won't accrue a full pension benefit should have access to options for other plan designs, like cash balance or DC

Reform Case Studies:

Michigan Teachers (2017 & 2018)

Why?

- Underperforming investment returns
- Back-loaded debt payments escalating (due to use of level-percent amortization method and payroll growth assumption failing to match actual experience)
- Prior reforms (2010, 2012) having limited effect on growth in unfunded liability amortization payments
- History of failing to pay the actuarially determined contribution rate

What?

- Plan to phase-in lower assumed rate of return
- New choice-based retirement system (DC or DB) for new hires
  - Lower assumed return, new amortization method, cost-sharing contribution rate policy for new-hire DB plan
- One-time money added to reduce unfunded liability
- Ratchet-down of payroll growth assumption to eliminate backloaded amortization (unanimous approval in House & Senate in 2018)

Reform Case Studies:
Michigan Teachers (2017 & 2018)

Outcomes?

- Growing bipartisan recognition of need for reform:
  - The plan design aspect of pension reform was contentious in 2017, passing by just 4 votes in each chamber
  - BUT, the funding policy and assumption changes in 2018 were unanimous
- 7/23/18: Standard & Poor's **increased the state's credit rating** from AA- to AA with a "stable outlook," citing pension reform as a key factor
  - Only one of three states receiving an upgrade since 2016

Concluding Comments

1. The 2013-2016 funding policy changes—including amortization method and certain actuarial assumptions—have been positive steps for the state in terms of constraining the growth in taxpayer liability. <u>However, significant risks in the system remains</u>.

2. The range of aggressive actuarial assumptions and insufficient ADC contributions suggest continued degrading solvency is likely.

3. While the Georgia TRS amortization schedule was closed to 30 years for existing unfunded liabilities as of 2014, targeting the transitional unfunded liability payoff date around 2044, the growth in required contributions as that date approaches will be substantial if there are no changes to the current plan. In addition, amortizing future unfunded liabilities over a rolling 30-year basis is far too long.

Questions?

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