



ATRS: RETIREMENT SYSTEM SOLVENCY ANALYSIS

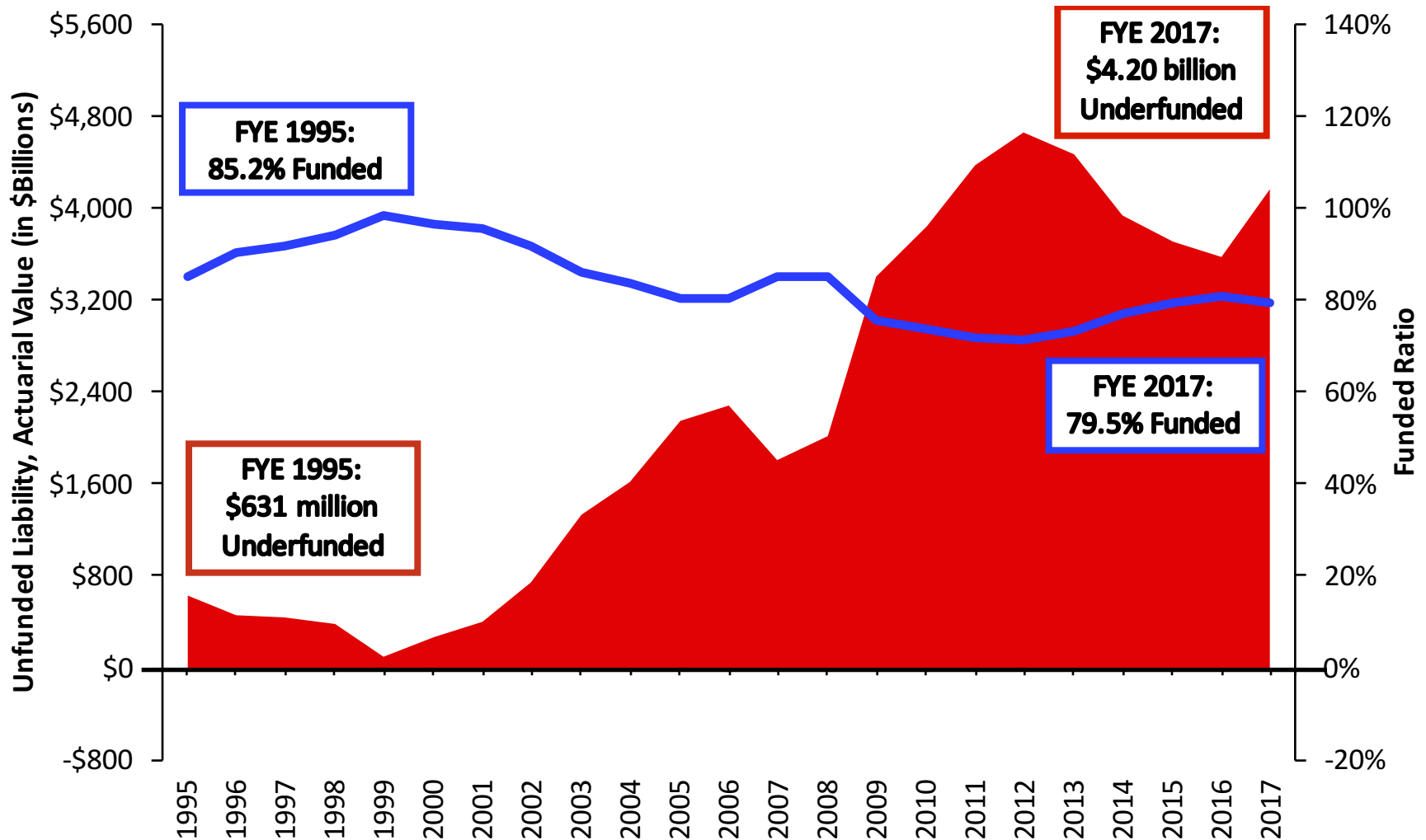
Prepared by:

Pension Integrity Project at Reason Foundation

September 11, 2018



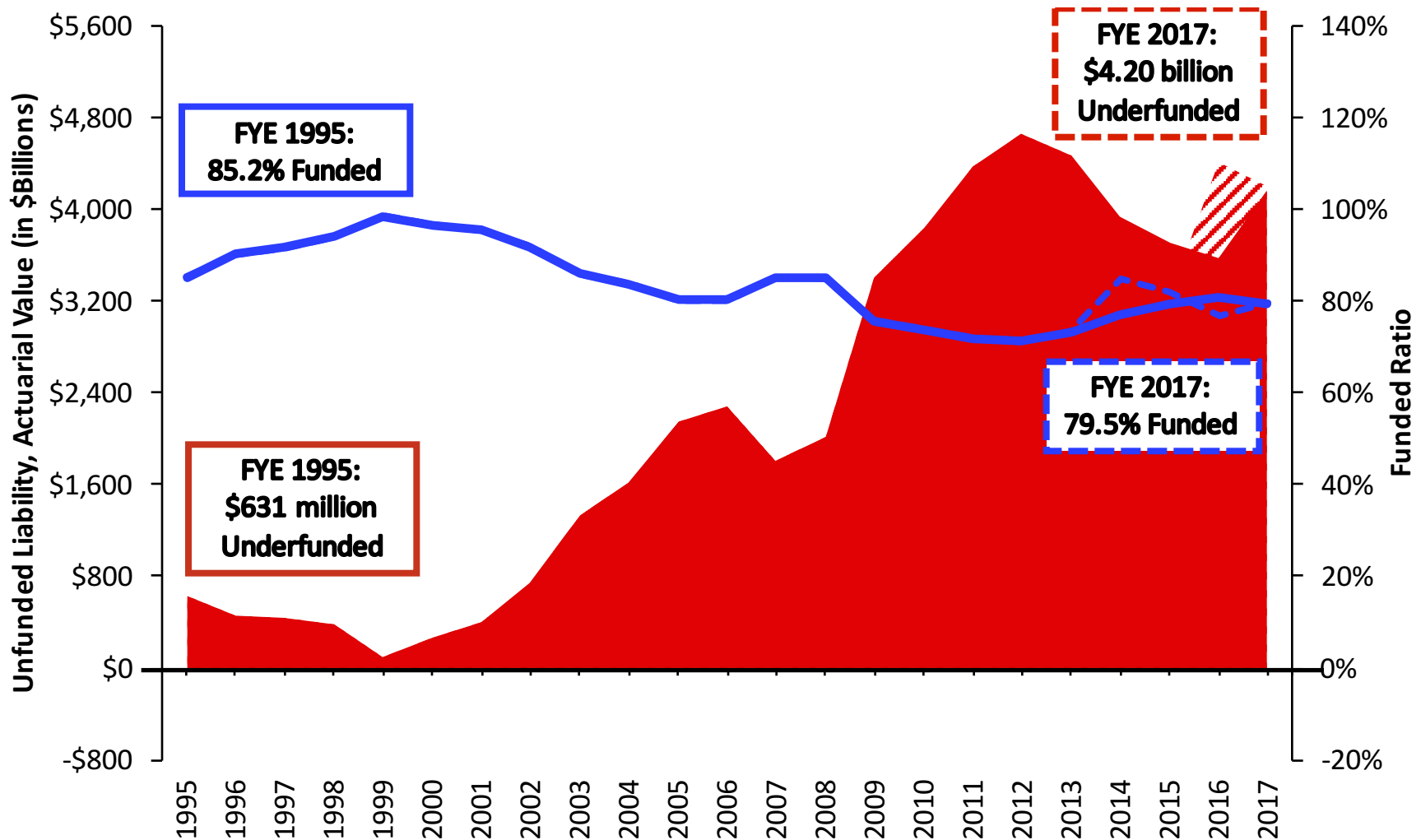
A History of Volatile Solvency (1995-2017)



Source: Pension Integrity Project analysis of ATRS actuarial valuation reports and CAFRs through FY2013, GASB reports for FY2014-17. Figures presented for the FY2014-17 period reflect market value, fiduciary net position, and total pension liabilities.

A History of Volatile Solvency (1995-2017)

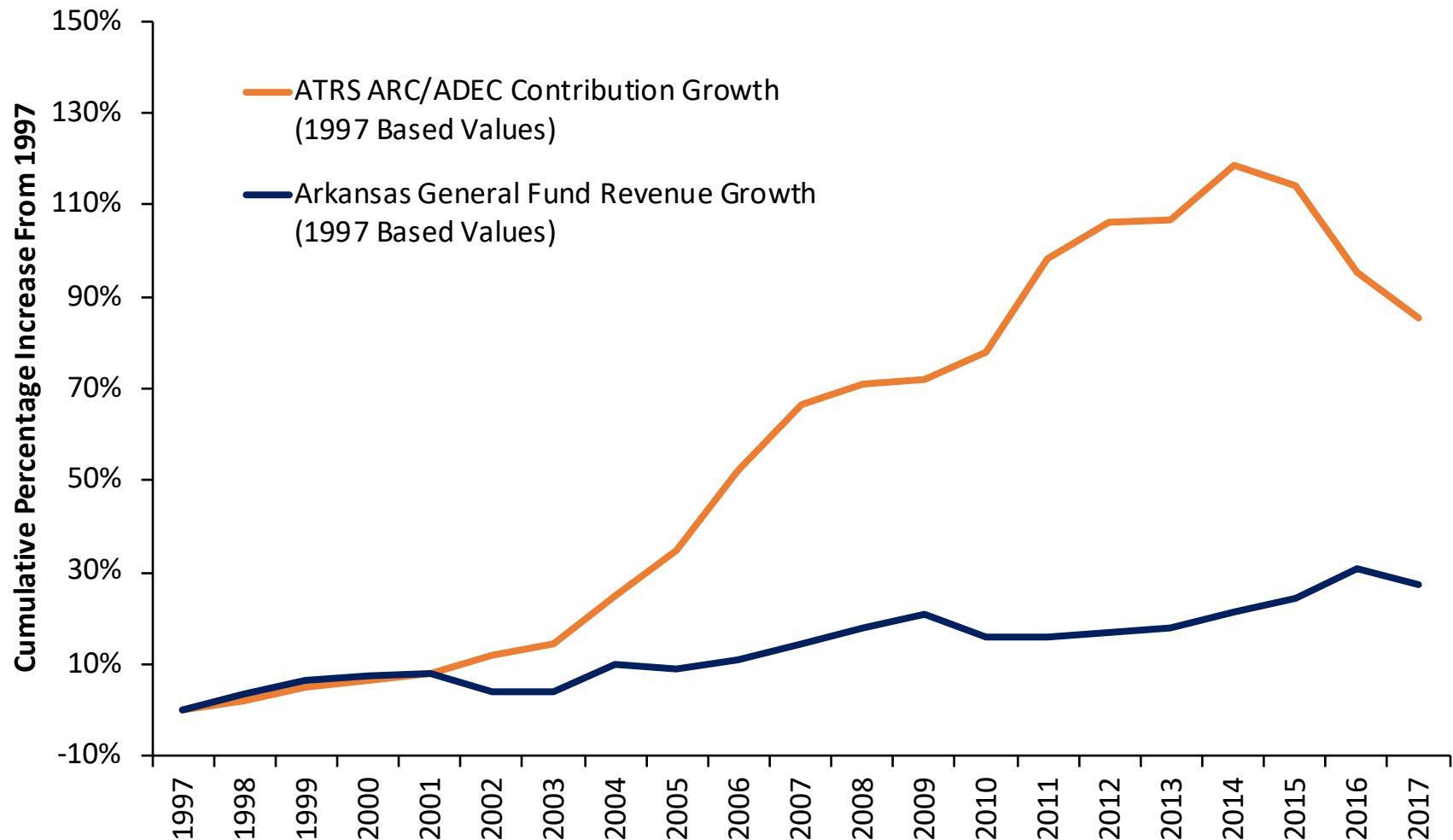
Showing GASB based accounting



Source: Pension Integrity Project analysis of ATRS actuarial valuation reports and CAFRs through FY2013, GASB reports for FY2014-17.

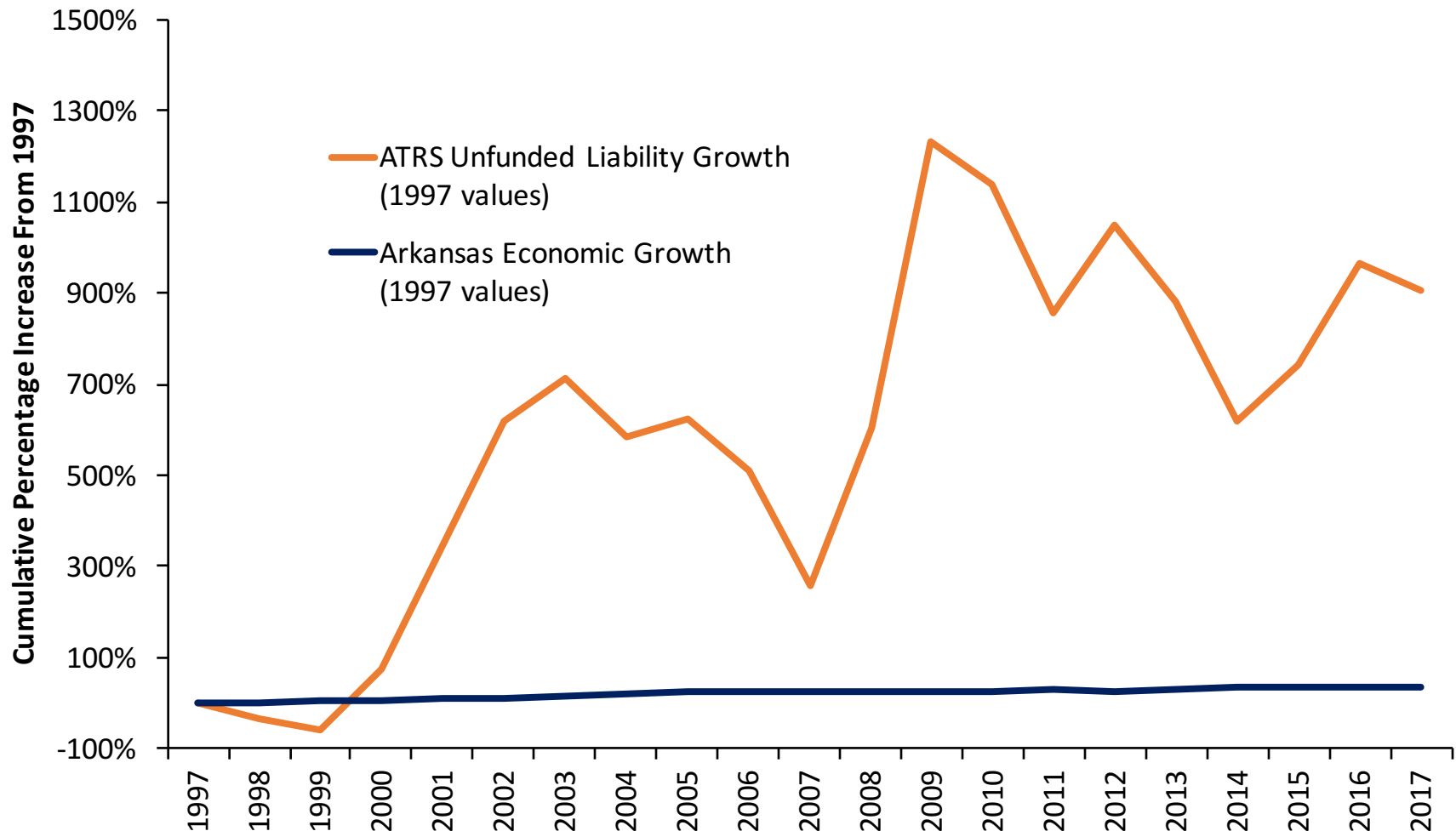
Figures presented for the FY2014-17 period reflect market value, fiduciary net position, and total pension liabilities.

ATRS Actuarially Determined Contributions are Growing Faster than Arkansas Revenue



Source: Pension Integrity Project analysis of ATRS actuarial valuation reports and CAFRs, and data from NASBO Fiscal Survey of States. GASB recently changed the definition of Actuarially Required Contribution (ARC) to Actuarially Determined Employer Contribution (ADEC).

ATRS Unfunded Liabilities are Growing Faster than the Arkansas Economy



Source: Pension Integrity Project analysis of ATRS actuarial valuation reports and CAFRs, and NASBO Fiscal Survey of States.

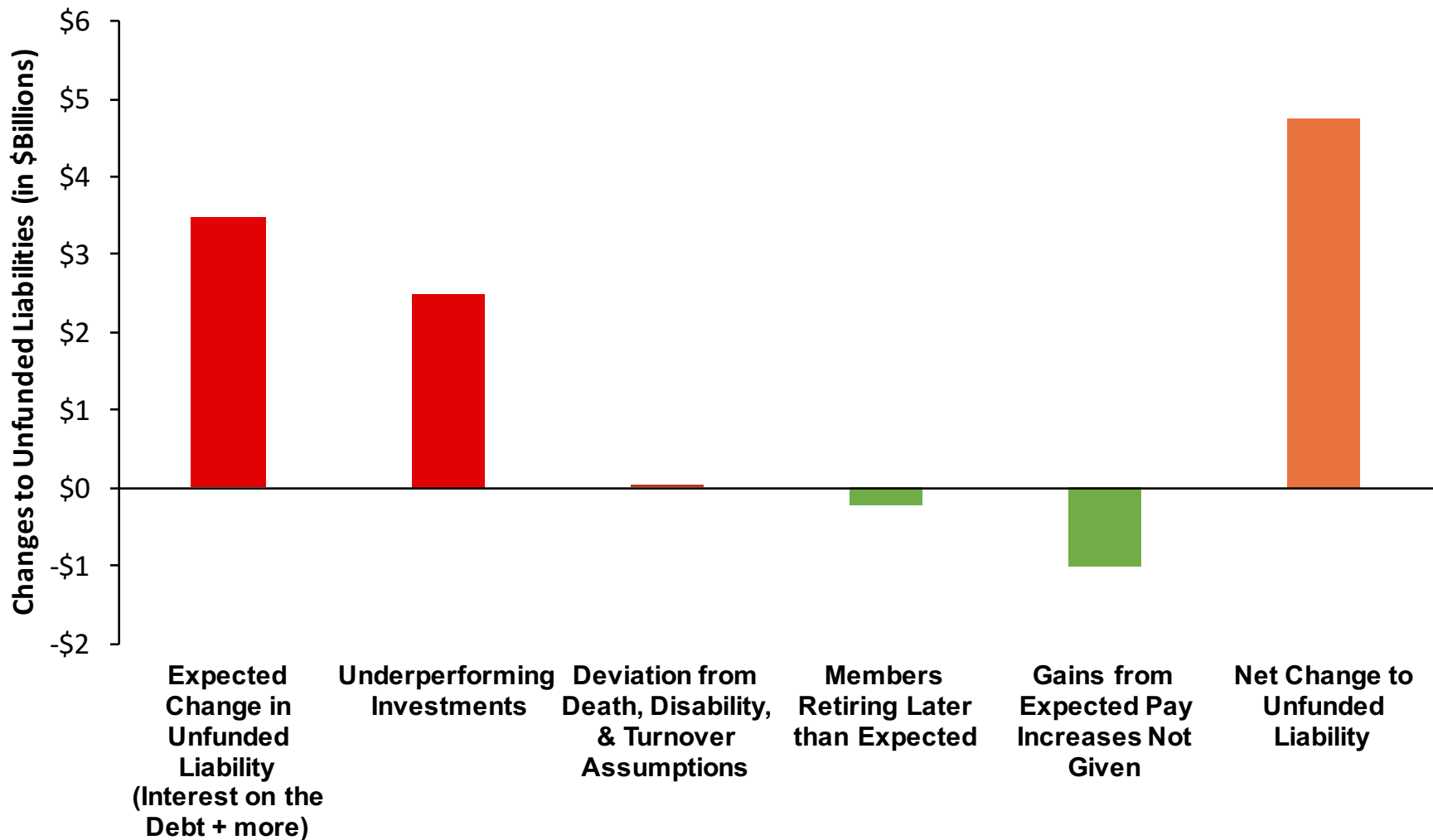


CHALLENGES ATRS IS CURRENTLY FACING



The Causes of the Pension Debt

Actuarial Experience of ATRS, 2001-2017



Source: Pension Integrity Project analysis of ATRS CAFRs. Data represents cumulative unfunded actuarial liability by gain/loss category.



Key Driving Factors Behind ATRS Problems

1. **Underperforming Investment Returns** have been the largest single contributor to the unfunded liability, adding \$2.49 billion to the unfunded liability from 2001 to 2017.
 - *ATRS' assets have consistently returned less than assumed, leading to growth in unfunded liabilities.*
2. **Insufficient prefunding** has meant that statutory contributions have been less than actuarially determined in some years, adding roughly \$296 million to the unfunded liability since 2011
3. **Historic amortization methods, actuarial changes, and liability experience** resulted in considerable growth in interest on the unfunded liability, and other components (i.e. "Expected Change in Unfunded Liability"), that added \$3.47 billion to the unfunded liabilities since 2001.
4. **Undervaluing Debt** through discounting methods has likely led to the tacit under calculation of required contributions.

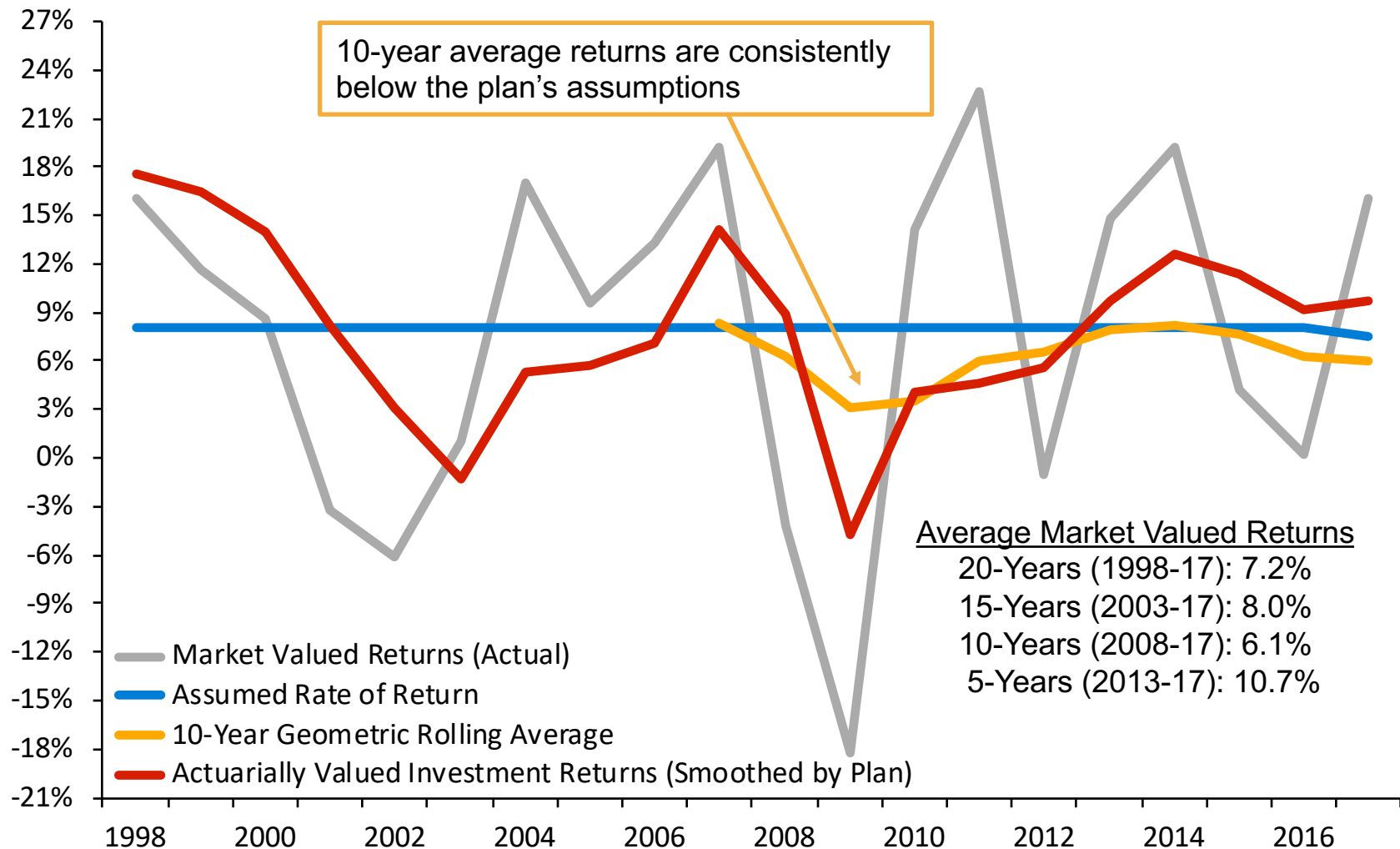


PROBLEM I: ASSUMED RATE OF RETURN

- **Unrealistic Expectations:** The *Assumed Return* for ATRS pension plan is exposing taxpayers to significant investment underperformance risk
- **Underpricing Contributions:** The use of an unrealistic *Assumed Return* has likely resulted in underpriced *Normal Cost* and an undercalculated *Actuarially Determined Contribution*

ATRS Problem: Underperforming Assets

Investment Return History, 1998-2017



Source: Pension Integrity Project analysis of ATRS actuarial valuation reports and CAFRs. The Assumed Return was 8% for 1998-2016, and 7.5% for 2017. Actuarially valued return for 2017 was projected using ATRS's own method of recognizing and phasing in investment gains/losses.

ATRS Problem: Underperforming Assets

Investment Returns Have Underperformed



- ATRS's assumed rates of return have remained at 8.0% rate over the past two decades, and changed to 7.5% only last year.
- The average portfolio returns have not matched the long-term assumptions:

| Average Market Valued Returns | Average Actuarially Valued Returns |
|-------------------------------|------------------------------------|
| 20-Years (1998-2017): 7.21% | 20-Years (1998-2017): 7.95% |
| 15-Years (2003-2017): 7.95% | 15-Years (2003-2017): 6.71% |
| 10-Years (2008-2017): 6.05% | 10-Years (2008-2017): 7.03% |
| 5-Years (2013-2017): 10.67% | 5-Years (2013-2017): 10.54% |

Note: past performance is not the best measure of future performance, but it does help provide some context to the problem created by having an excessively high assumed rate of return.

Source: Pension Integrity Project analysis of ATRS actuarial valuation reports.

Average market valued returns represent geometric means of the actual time-weighted returns.

Actuarially valued return for 2017 was projected using ATRS's own method of recognizing and phasing in investment gains/losses.

New Normal: Forecasts for Future Returns are Significantly Lower than Past Returns



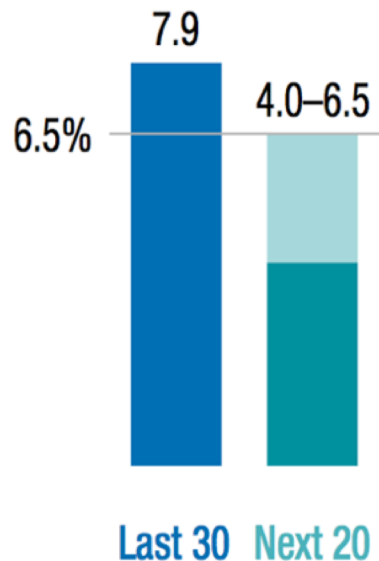
The past 30 years saw returns that exceeded the long-run average

The next 20 years could be more challenging

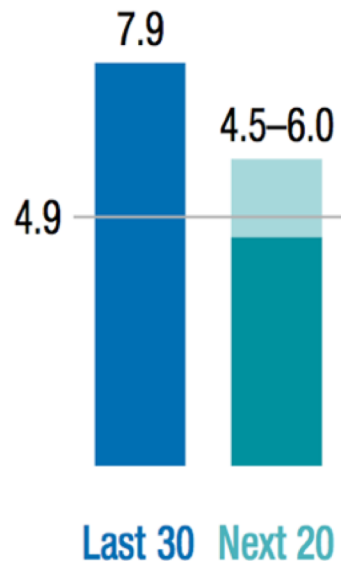
■ Historical real returns
— Last 100 years average return

■ Growth-recovery scenario
■ Slow-growth scenario

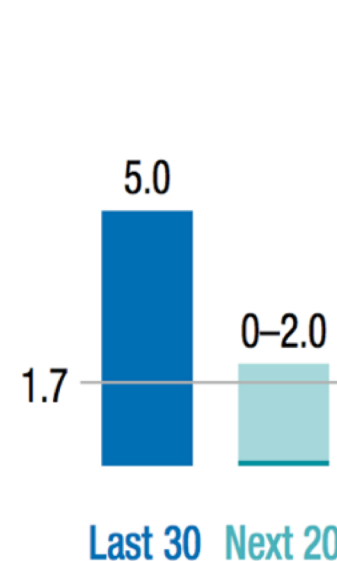
US equities



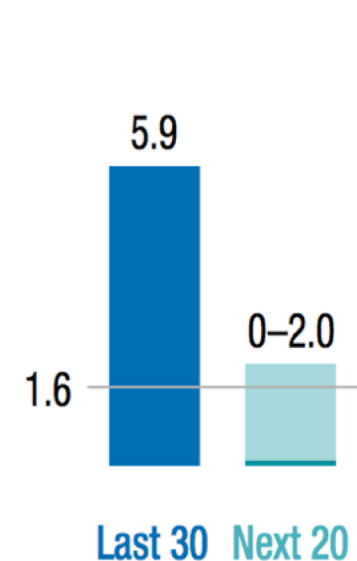
European equities



US bonds

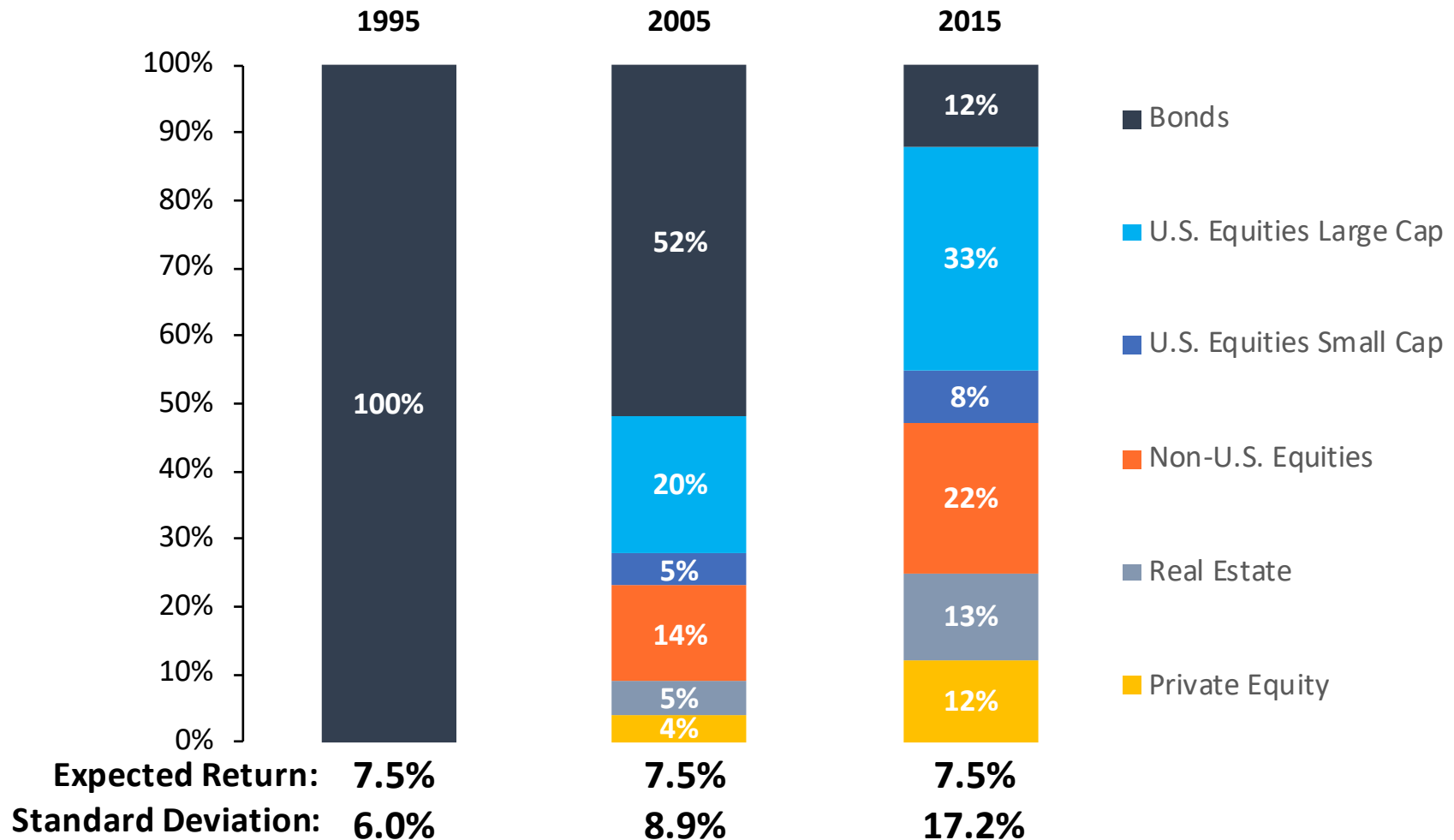


European bonds



New Normal: Market Trend Towards Risk

Average Portfolio Asset Allocation Necessary for a 7.5% Expected Return Has Required Shifting from 100% Bonds to a Riskier Mix of Asset Classes



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

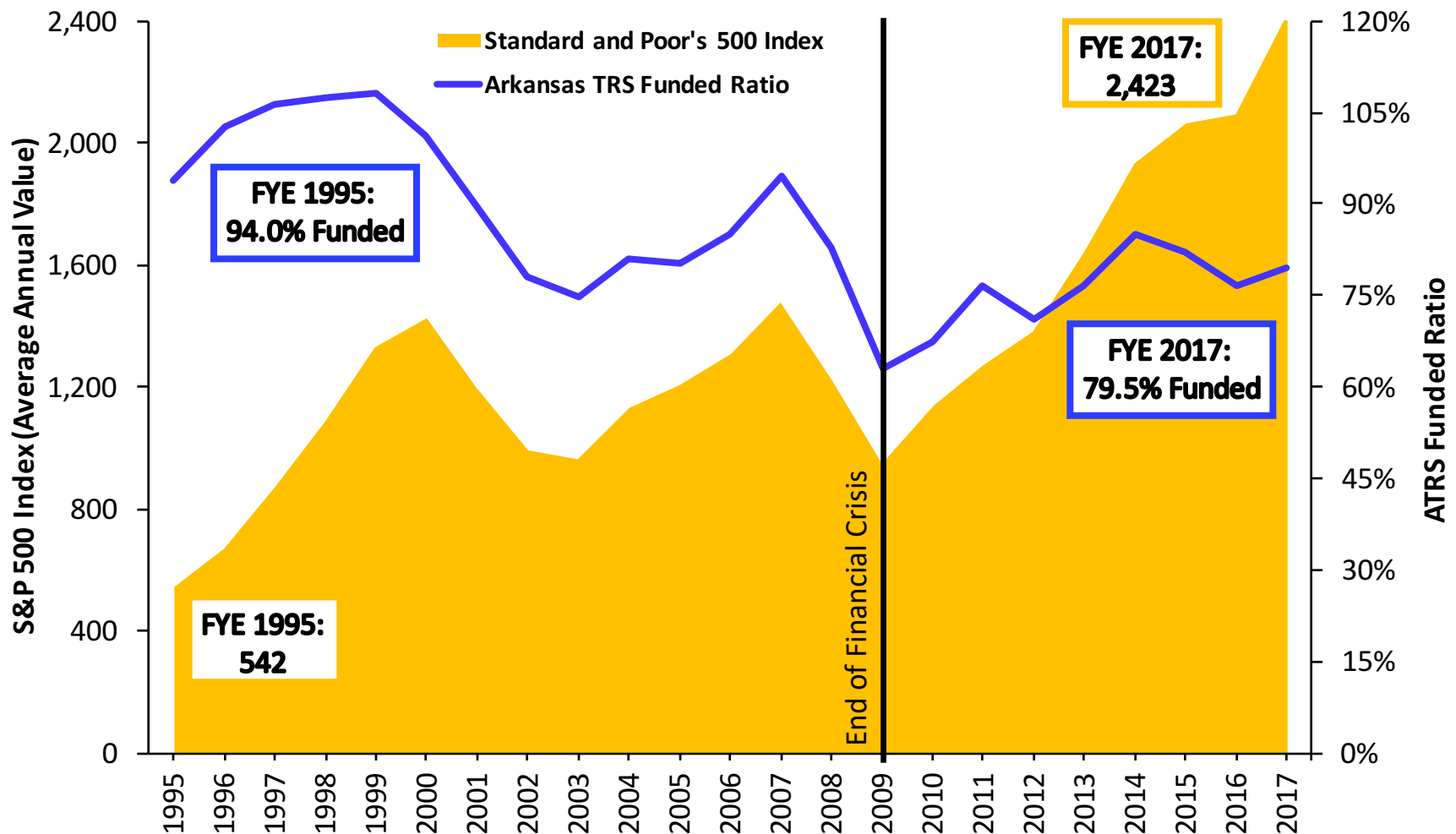


The “new normal” for institutional investing suggests that achieving even a 6% average rate of return is optimistic.

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.
3. As ATRS waits for the “recovery” its unfunded liabilities continue to grow.



New Normal: Markets Have Recovered Since the Crisis—ATRS's Funded Ratio Has Not



Probability Analysis: Measuring the Likelihood of ATRS Achieving Various Rates of Return



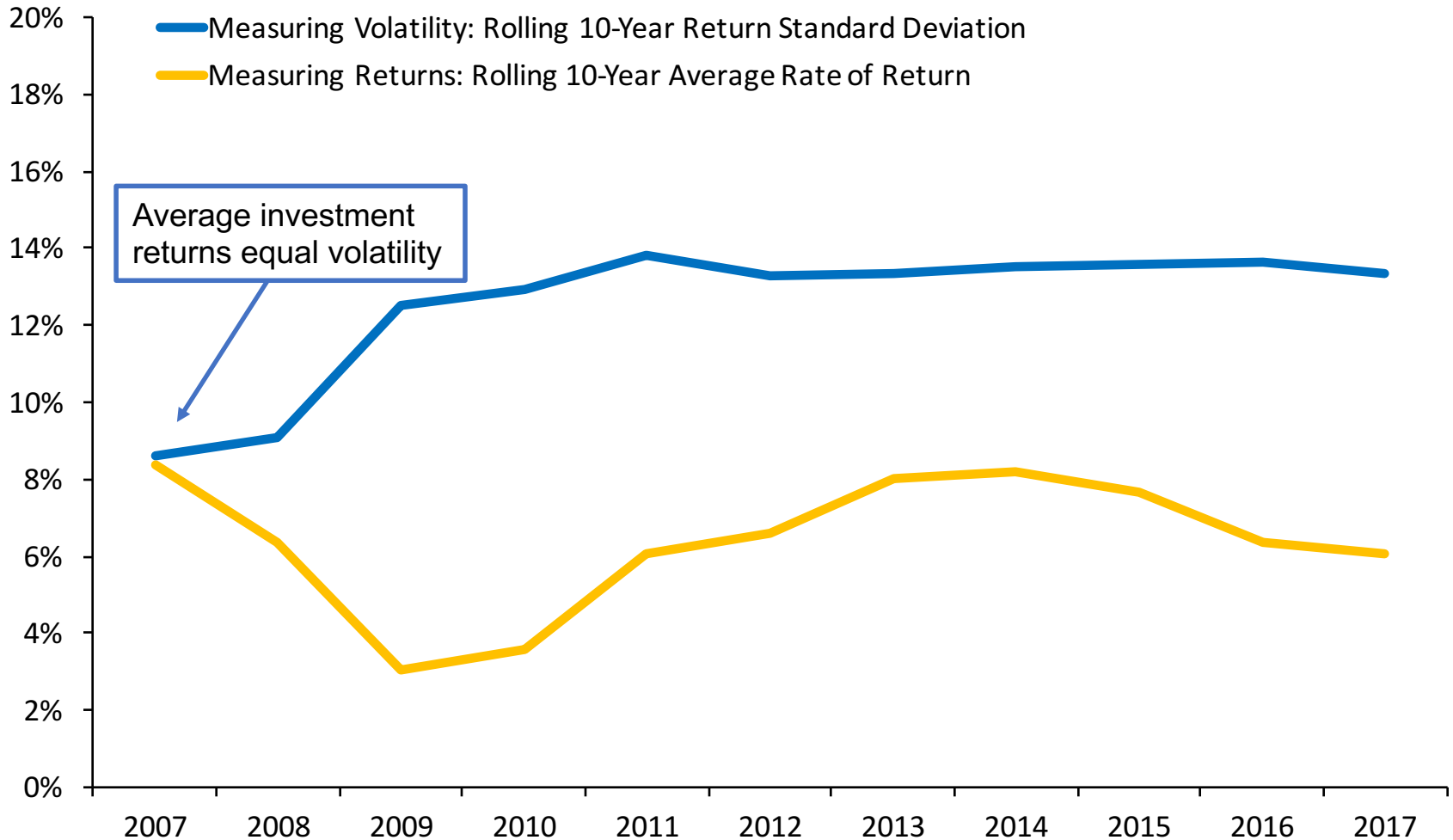
| Possible Rate of Return | Probability of ATRS Achieving A Given Return Based On: | | | | |
|-------------------------|--|------------------------------|--------------------------------|-------------------------------|---------------------------------------|
| | ATRS Expectations | BNY Mellon 10-Year Forecasts | JP Morgan 10-15 Year Forecasts | BlackRock Long-Term Forecasts | Research Affiliates 10-Year Forecasts |
| 8.50% | 33.1% | 18.9% | 18.5% | 21.2% | 18.3% |
| 7.50% | 49.4% | 30.1% | 30.1% | 32.2% | 29.1% |
| 7.00% | 58.2% | 36.4% | 37.2% | 38.2% | 35.0% |
| 6.50% | 66.4% | 44.1% | 44.7% | 44.7% | 41.6% |
| 6.00% | 73.9% | 51.8% | 51.7% | 51.4% | 48.5% |
| 5.50% | 80.5% | 59.4% | 59.2% | 57.4% | 55.1% |
| 5.00% | 85.8% | 66.7% | 66.2% | 64.3% | 62.0% |

Source: Pension Integrity Project Monte Carlo model based on ATRS 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 TRS.

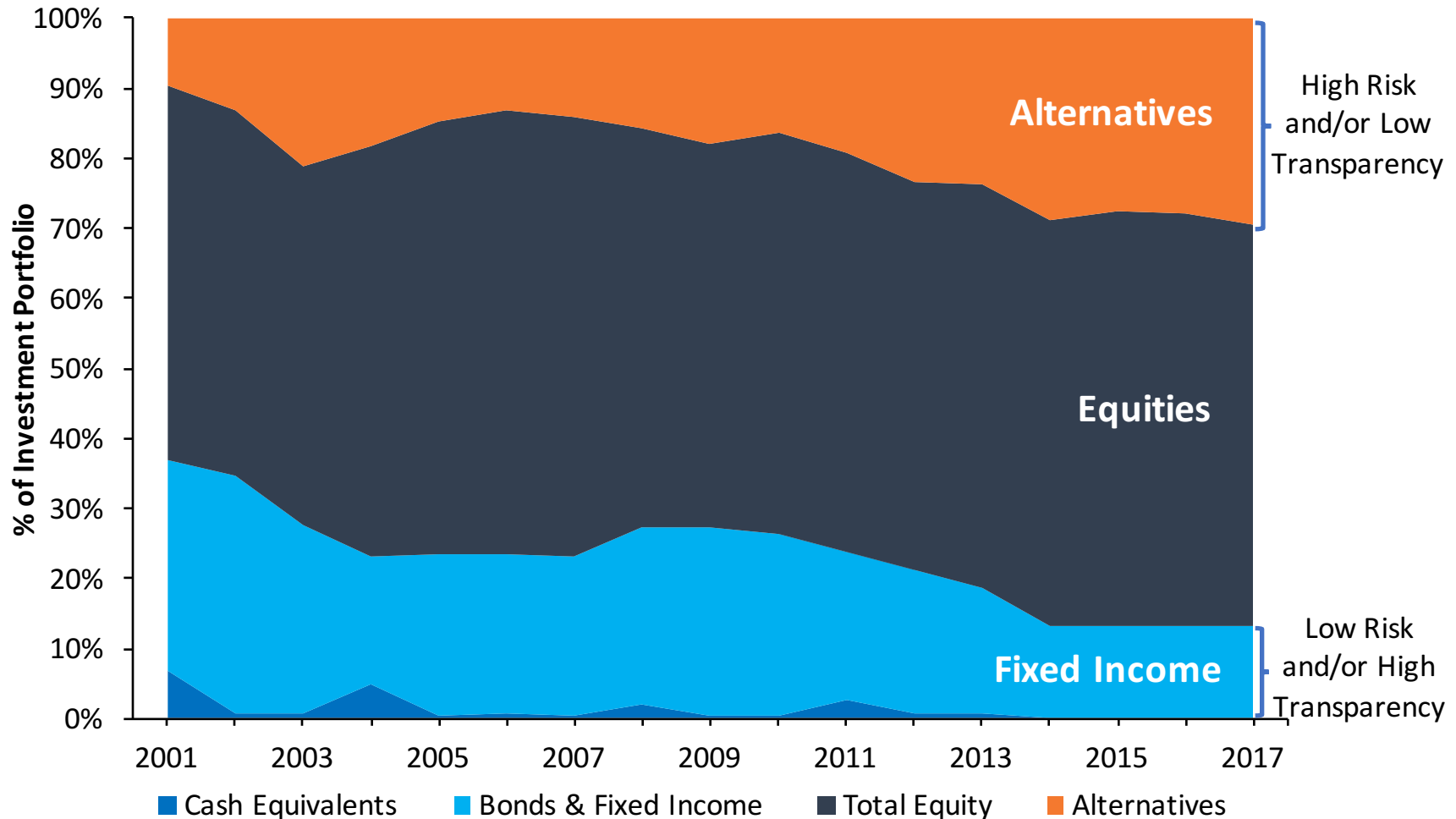
Probability estimates are approximate as they are based on the aggregated return by asset class. For complete methodology contact Reason Foundation.

ATRS's Investment Returns Are Experiencing Greater Volatility and Underperformance



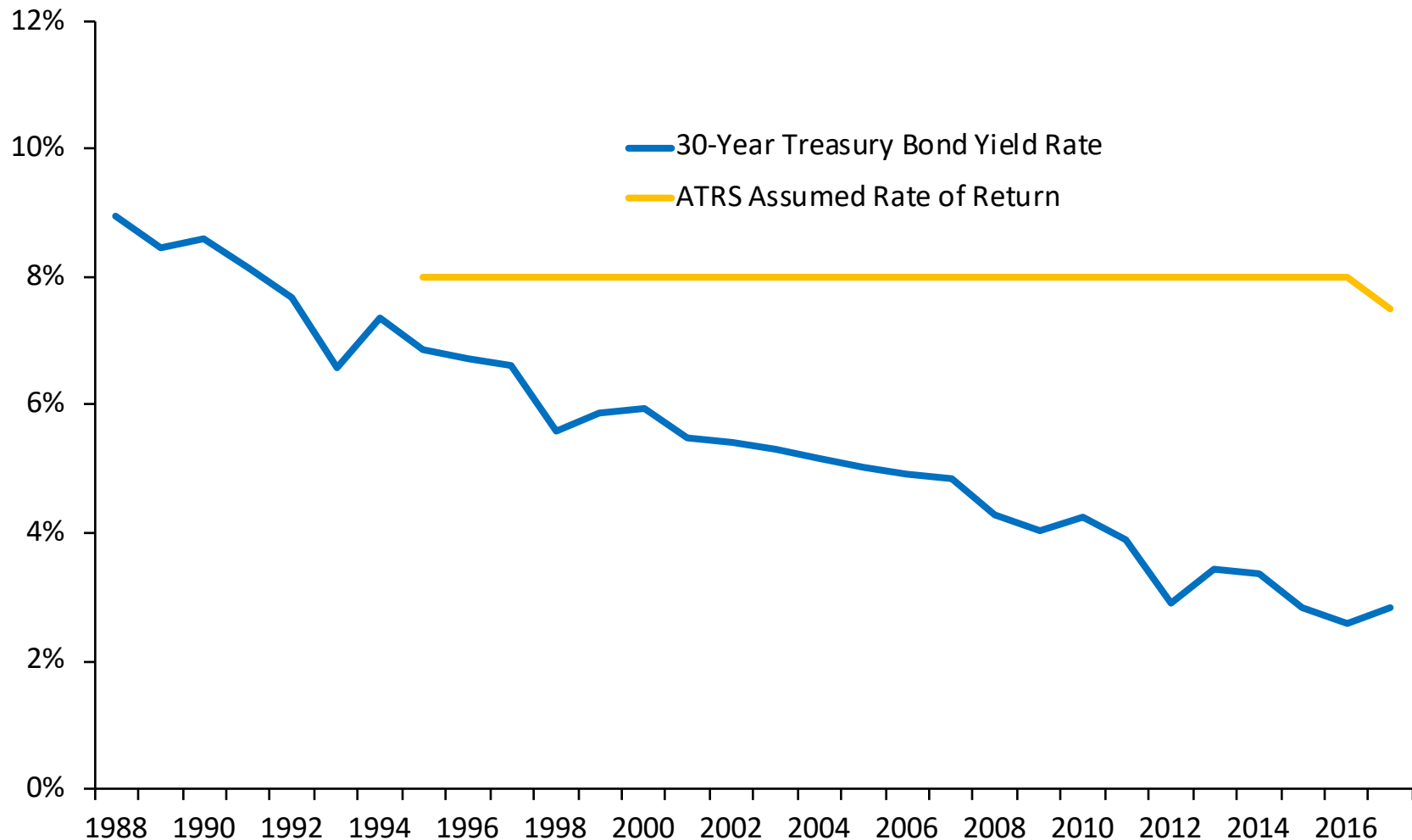
ATRS Asset Allocation (2001-2017)

Expanding Alternatives in Search for Yield



Source: Pension Integrity Project analysis of ATRS actuarial valuation reports and CAFRS.

The ATRS Assumed Rate of Return Was Not Adjusted Downward as Bond Yields Fell



Source: Federal Reserve average annual 30-Year Treasury constant maturity rate.

ATRS is Taking on More Investment Risk as Assets Underperform Relative to Assumptions



- ATRS has tried to adjust to the lower returns by reallocating assets towards higher risk but potentially higher yielding investments like mortgage-backed securities and real estate. ATRS has considerably less lower risk bonds today than 20 years ago. There is also more volatility.
 - The additional risk taken by ATRS is reflected in its “Sharpe Ratio” which is a measure of risk. Any Sharpe Ratio over 1 is considered lower risk and less than 1 considered risky.
 - The ATRS Sharpe Ratio for 10-year returns has fallen from 0.38 in 2007 (already risky) to around 0.26 in 2017.
 - In short, the average market returns greater than risk-free rates of return are decreasing considerably in relation to the rising portfolio volatility/total risk.

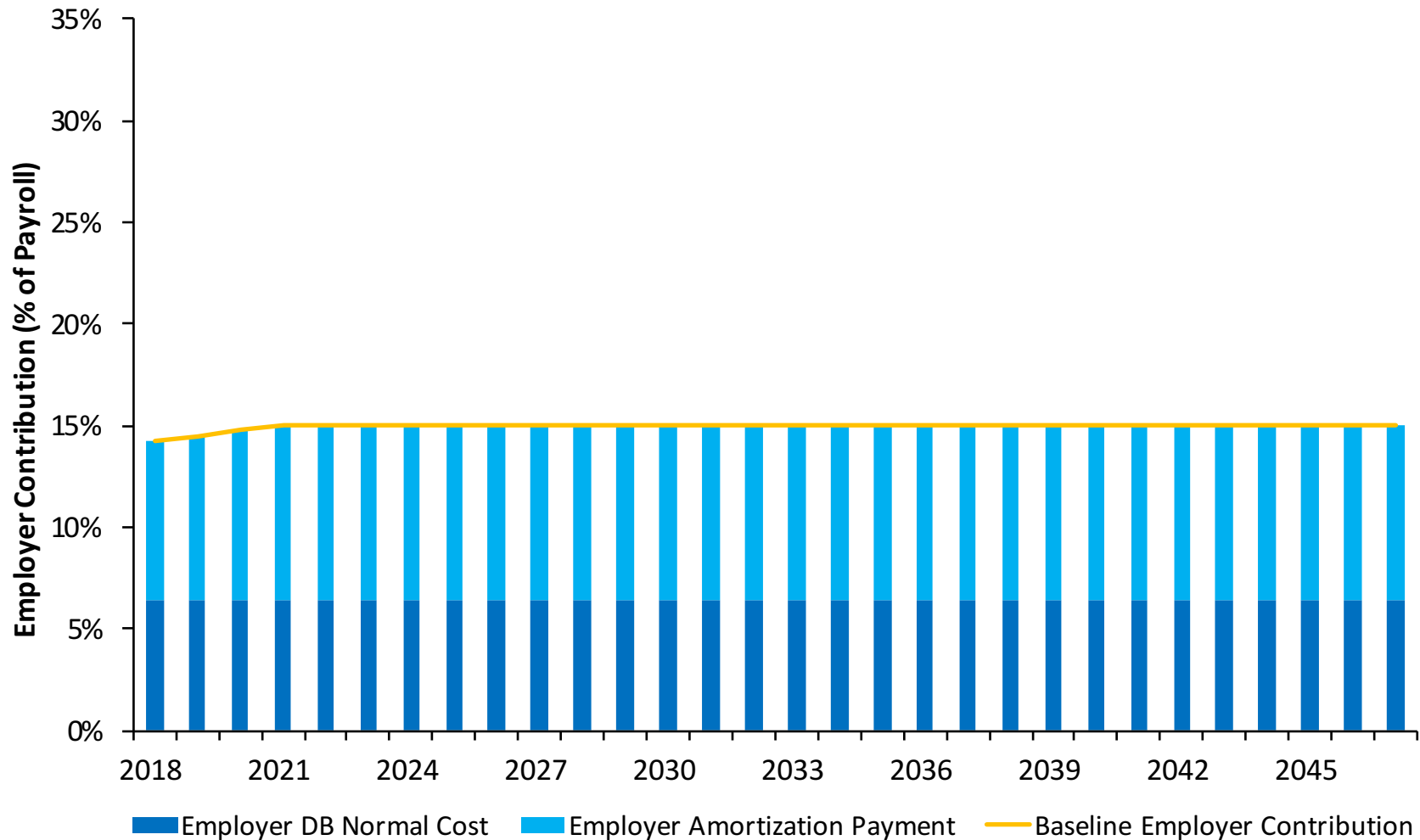


SENSITIVITY ANALYSIS AND STRESS TESTING

Employer Contribution 30-Year Forecast (% of Payroll)

ATRS Baseline: Normal Cost + Amortization Payment

Discount Rate: 7.5%, Assumed Return: 7.5%, Actual Return: 7.5%, Amo. Period: 30-Year, Closed

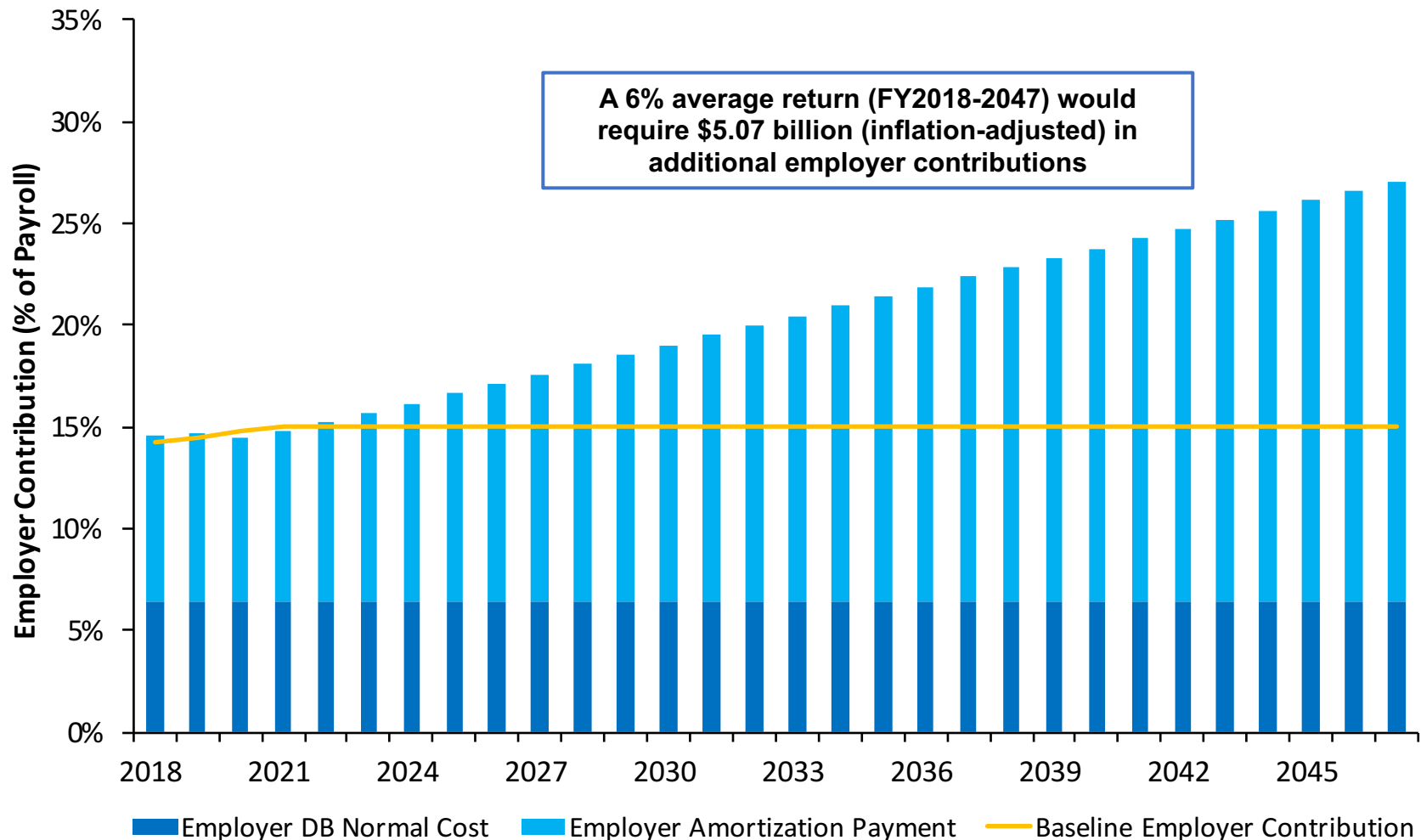


Source: Pension Integrity Project actuarial forecast of ATRS plan. Scenario includes recently adopted increases in employer contributions and assumes the state pays 100% of the statutorily set contribution rates after FY2023, has accurate assumptions, and keeps the closed amortization schedule intact.

Actuarially Determined Employer Contribution 30-Year Forecast (% of Payroll)

ATRS Underperforming Assets: 6% Average Return

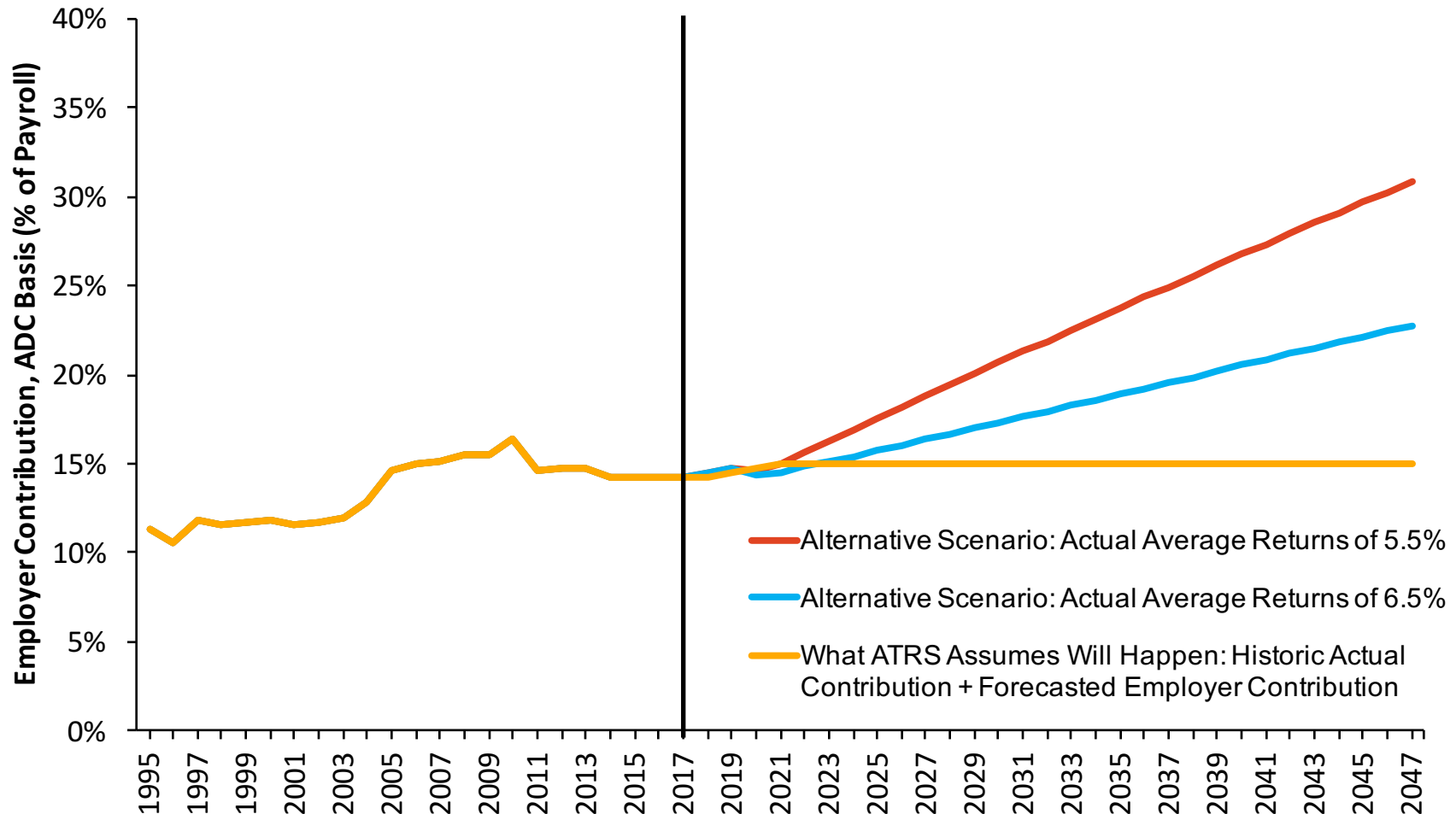
Discount Rate: 7.5%, Assumed Return: 7.5%, Actual Return: 6.0%, Amo. Period: 30-Year, Closed



Source: Pension Integrity Project actuarial forecast of ATRS plan. Scenario includes recently adopted increases in employer contributions and assumes the state pays 100% of the actuarially determined contribution after FY2023, has accurate assumptions, and keeps the closed amortization schedule intact.

What if Arkansas TRS Investments Continue Underperforming?

Sensitivity Analysis: Employer Contribution



Source: Pension Integrity Project actuarial forecast of ATRS. Scenario assumes that the state pays 100% of the actuarially determined contribution each year, based on a closed amortization period policy. Figures are adjusted for inflation.

What if ATRS Investments Underperform in the Short-term?

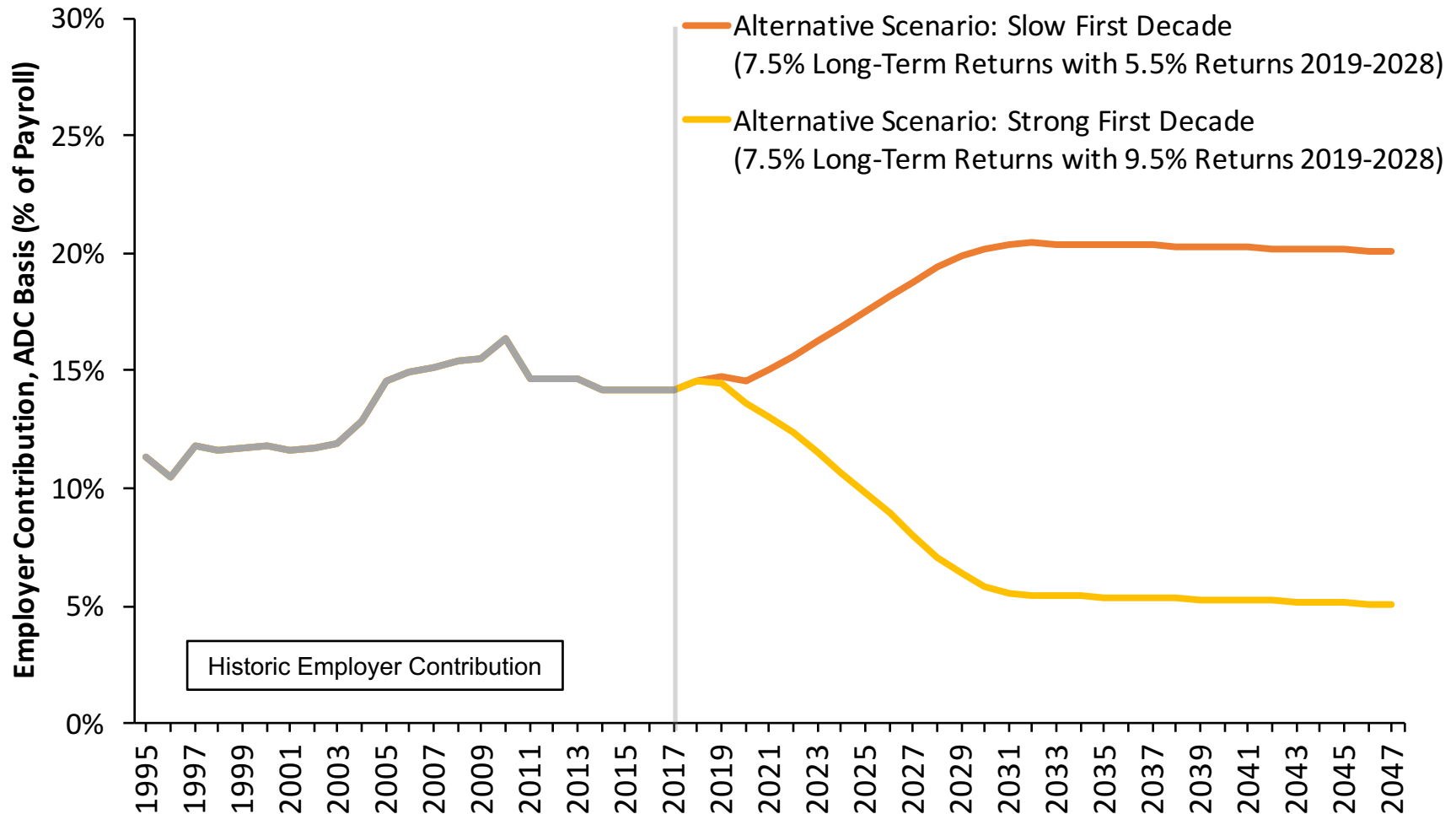


- Even if a pension plan hits its assumed rate of return on average, the *timing* of investment returns can have a major impact on a plan's actuarially required contributions over the long term.
- Consider the following few examples...



What if ATRS Investments Underperform in the Short-term?

Sensitivity Analysis: Employer Contribution

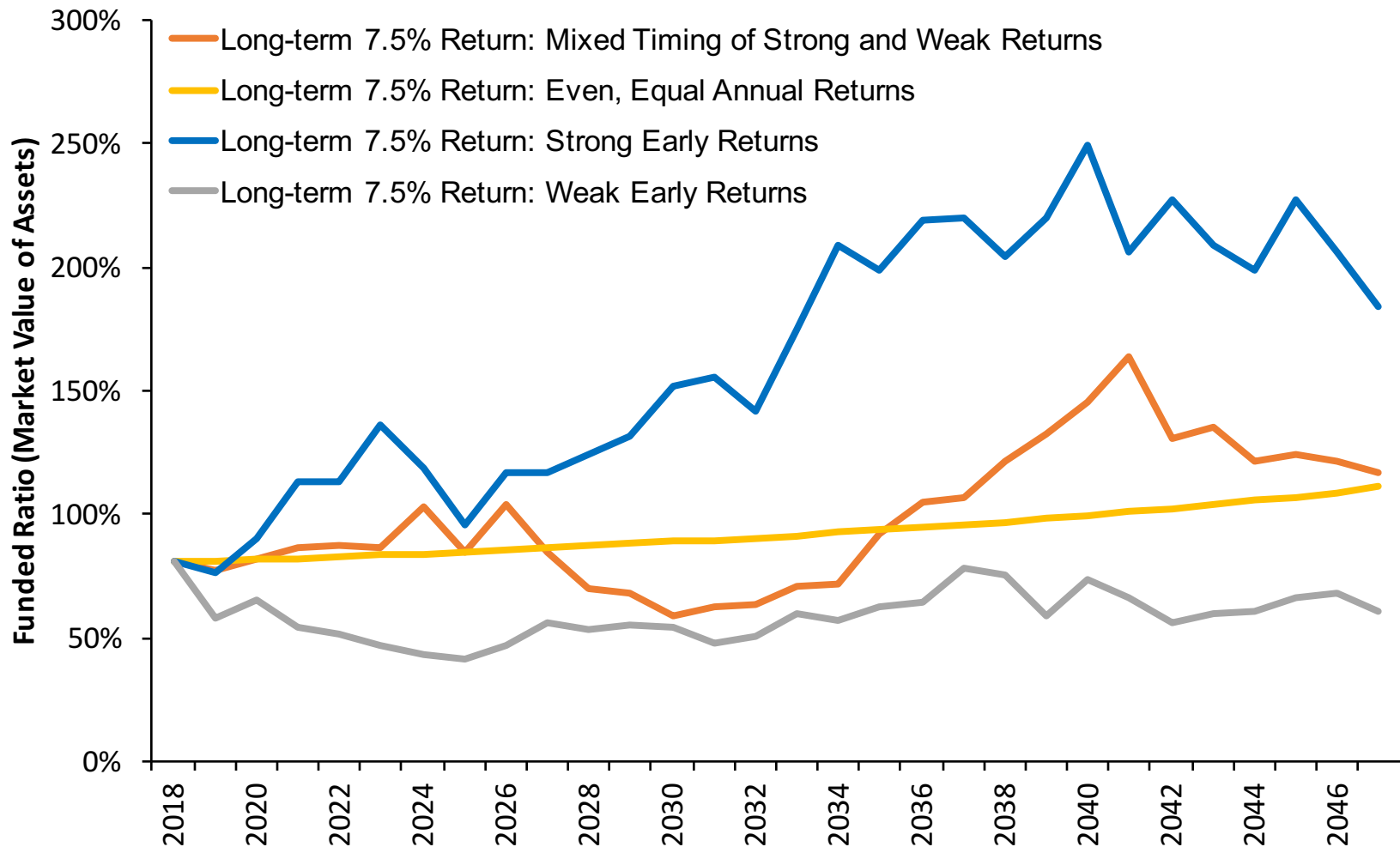


Source: Pension Integrity Project actuarial forecast of Arkansas TRS. Figures are adjusted for inflation.



What if ATRS Investments Underperform in the Short-term?

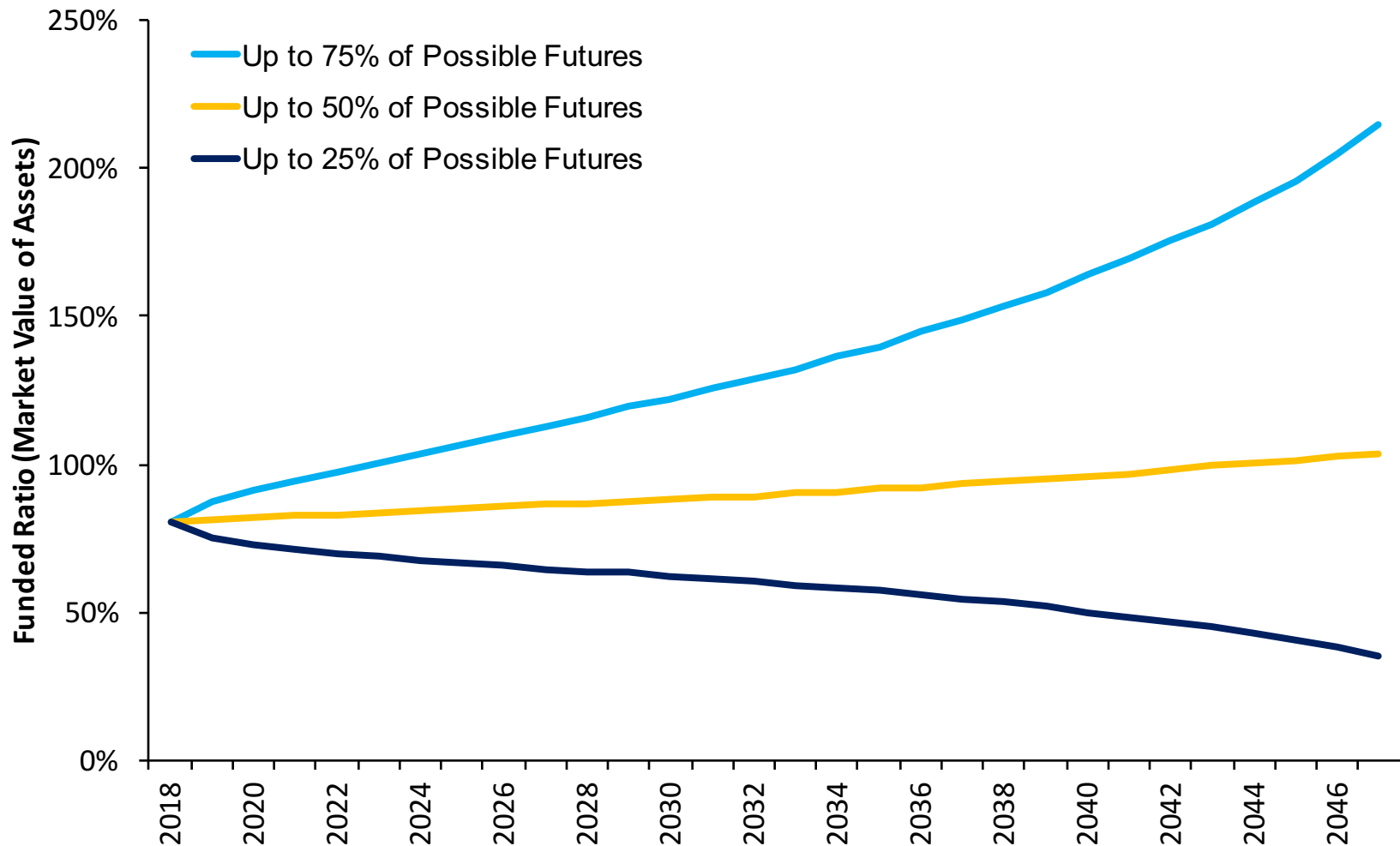
Sensitivity Analysis: Funded Ratio



Source: Pension Integrity Project actuarial forecast of ATRS plan. Strong early returns (TWRR = 7.5%, 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 = 6.4%)
 Scenario assumes that ATRS pays the actuarially required rate each year. Years are plan's fiscal years.

What if ATRS Achieves the 7.5% Return Assumption?

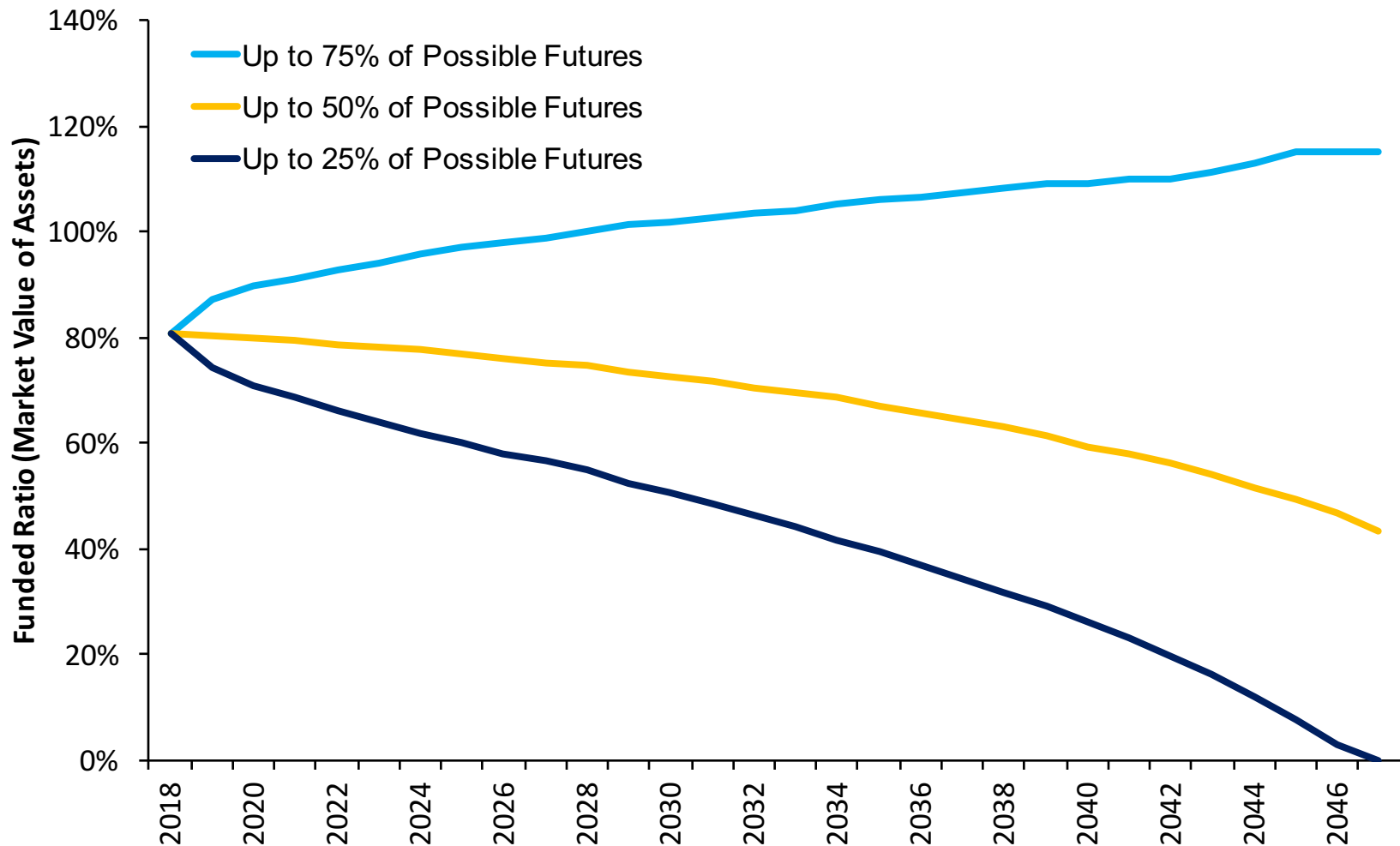
Possible Futures: Funded Ratio



Source: Pension Integrity Project actuarial forecast of ATRS plan. Scenario assumes that ATRS continues paying statutory contribution rates each year, hits all of the actuarial assumptions, and keeps the amortization method intact. Years are plan's fiscal years. The dark blue and light blue lines represent funded ratios with returns around, but not always exactly at, the 75th percentile and 25th percentile, respectively.

What if ATRS Achieves a 6.1% Return Instead?

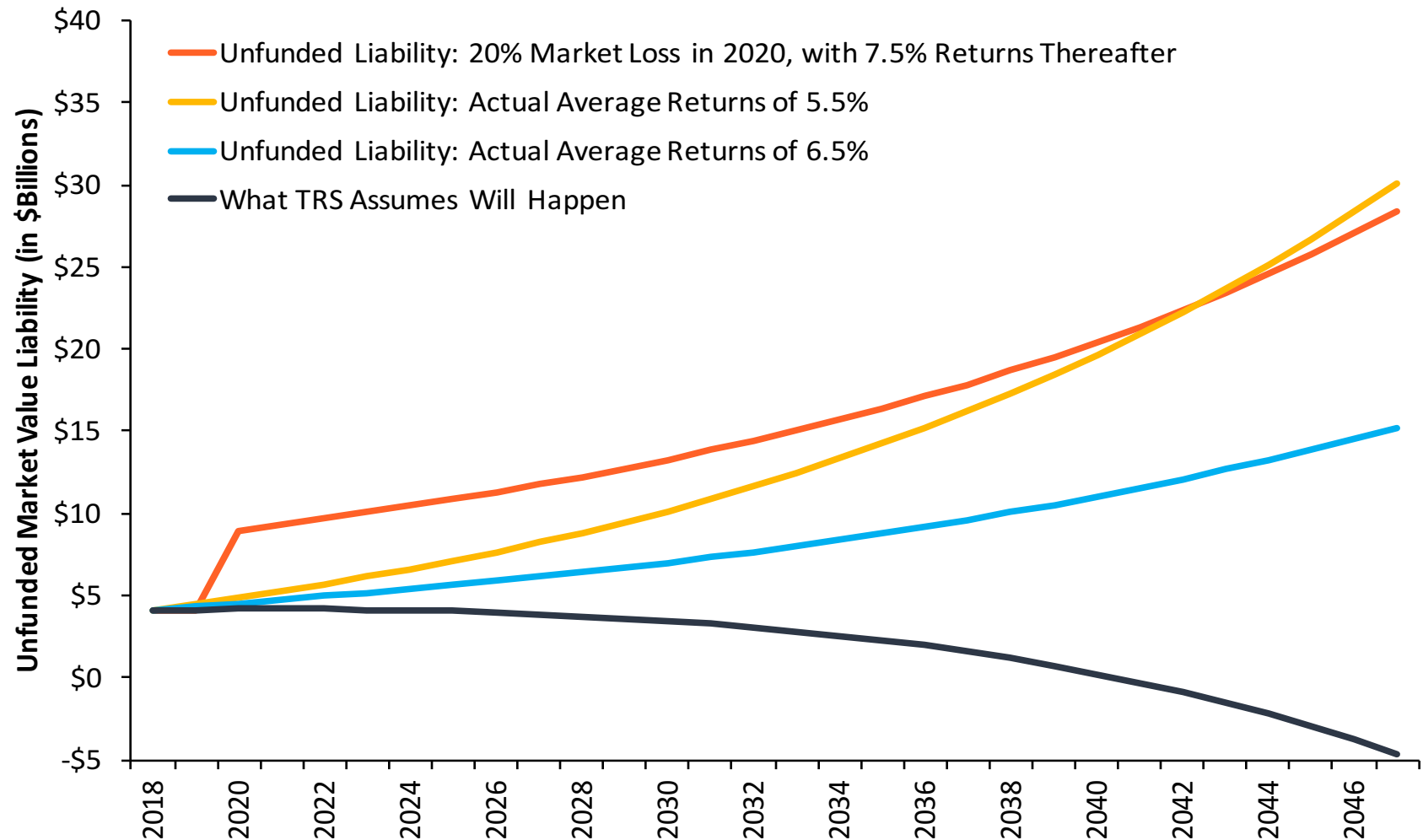
Possible Futures: Funded Ratio



Source: Pension Integrity Project actuarial forecast of ATRS plan. Scenario assumes that ATRS continues paying statutory contribution rates each year, hits all of the actuarial assumptions, except investment return, and keeps the amortization method intact. Years are plan's fiscal years. The dark blue and light blue lines represent funded ratios with returns around, but not always exactly at, the 75th percentile and 25th percentile, respectively.

What Happens to Pension Debt if We Have Another Market Downturn?

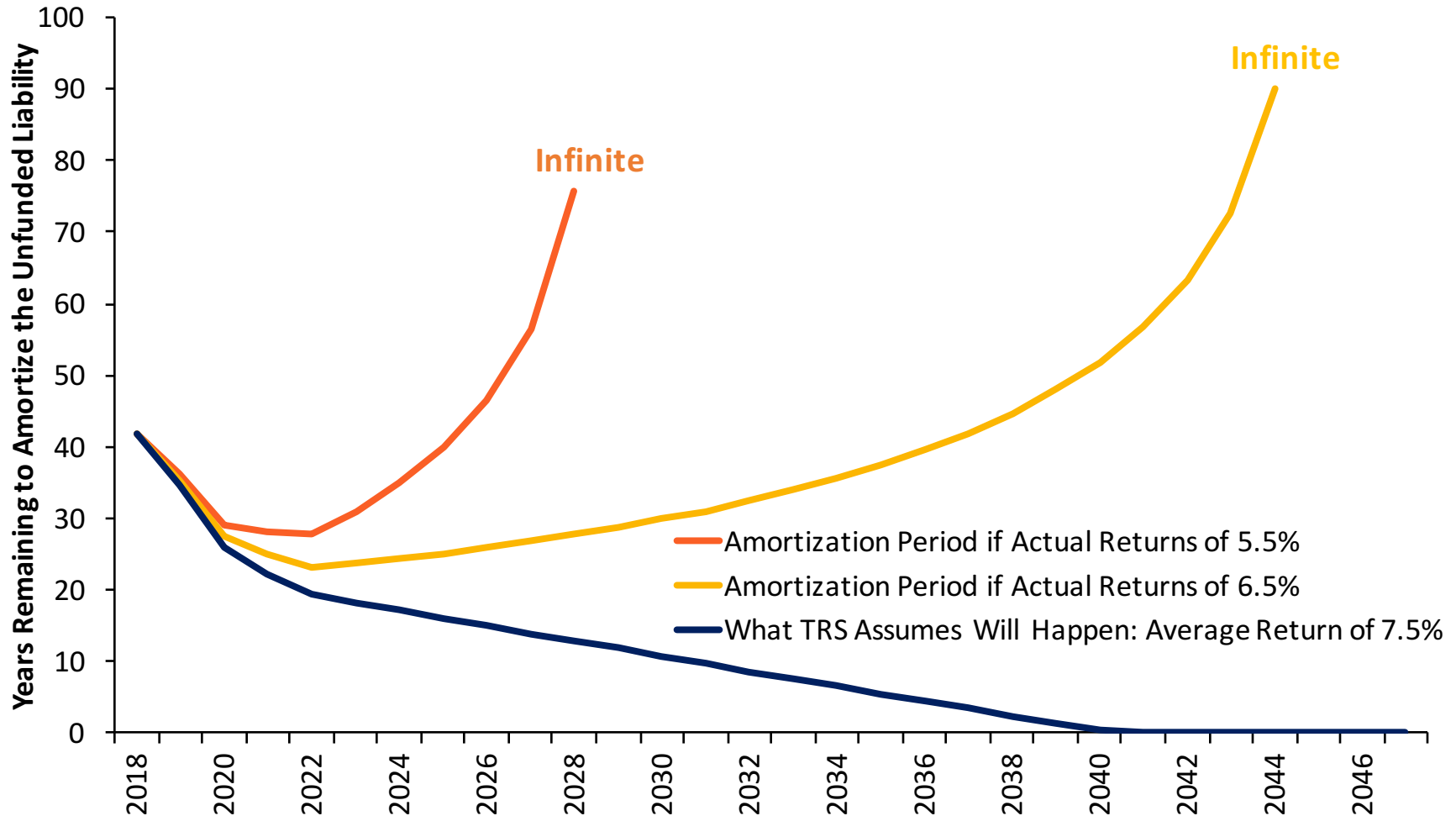
Stress Test: Unfunded Liability Forecast



How Long Will it Take to Pay Off the Pension Debt?

Sensitivity Analysis: Amortization Period

Analysis by Pension Integrity Project



Source: Pension Integrity Project actuarial forecast of Arkansas TRS. Scenario assumes that the state make planned statutorily-based contributions. The “implied funding period” shown may differ from the ones provided in the plan’s CAFRs and valuation reports.

Sensitivity Analysis: Normal Cost Comparison Under Alternative Assumed Rates of Return



(Amounts to be Paid in 2018-19 Contribution Fiscal Year, % of projected payroll)

| | Employer Normal Cost | Employer Normal Cost | Employee Normal Cost (Average) |
|--|-------------------------|-------------------------|--------------------------------------|
| 7.5% Assumed Return (FYE 2017 Baseline) | 12.18% | 6.24% | 5.94% |
| 6.5% Assumed Return | 15.03% | 9.09% | 5.94% |
| 5.5% Assumed Return | 18.55% | 12.61% | 5.94% |
| 4.5% Assumed Return | 22.90% | 16.96% | 5.94% |

Note: These alternative gross normal cost figures should be considered approximate guides to how much more normal cost should be under different discount rates. Any policy changes should be based on more precise normal cost forecasts using detailed plan data. Alternative normal cost rates based reported liability sensitivity from the FYE 2017 ATRS CAFR.

Source: Pension Integrity Project forecasting analysis based on ATRS actuarial valuation reports



PROBLEM 2: INSUFFICIENT EMPLOYER CONTRIBUTIONS

-
- Since 2011 ATRS' pension plans have been falling behind their Actuarially Determined Contributions, which resulted in need for much higher contributions today

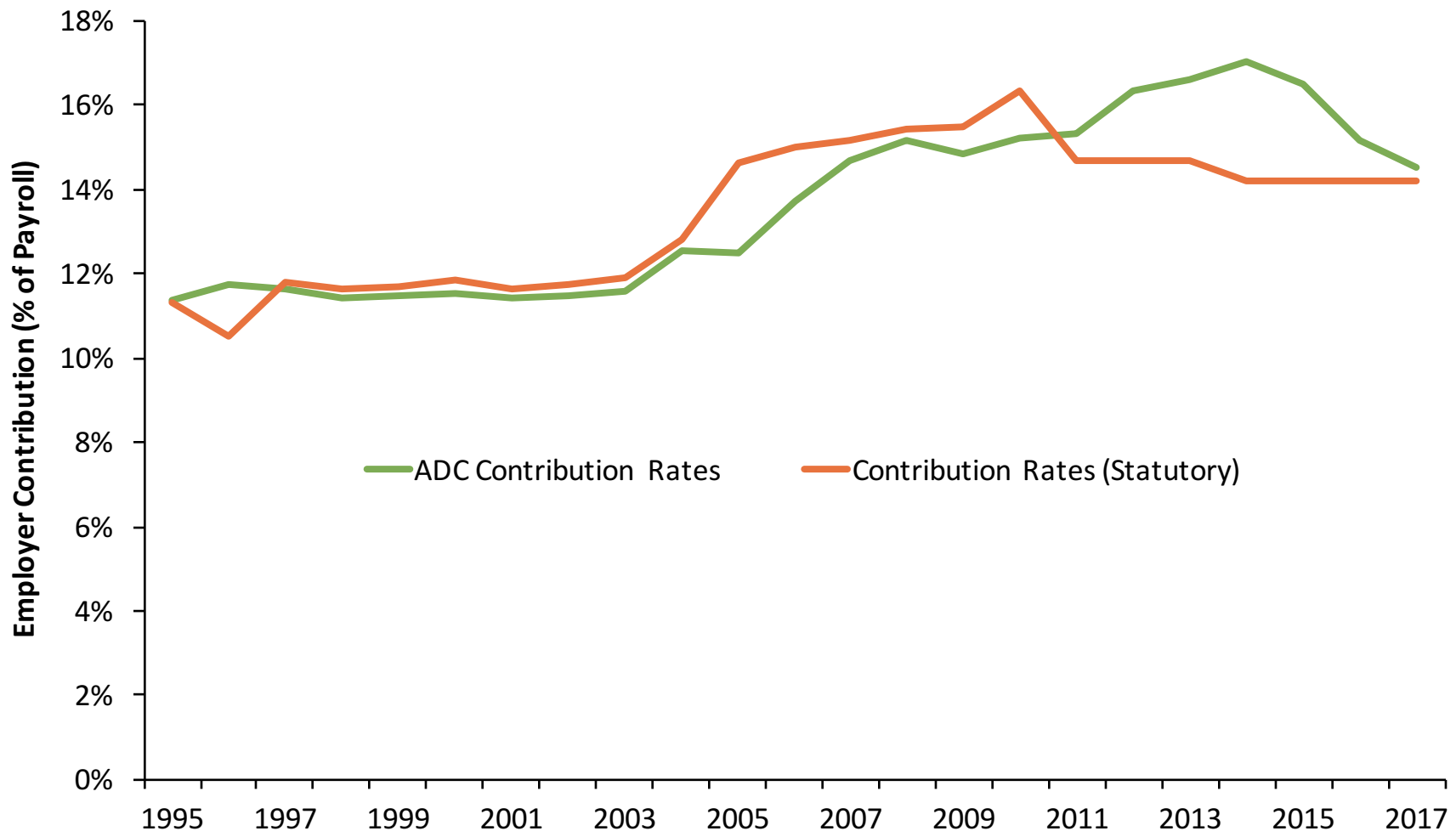
State Statutes Have Created a Structural Underfunding Problem for ATRS



- Over the past five years, employer contributions have regularly been short of the actuarially determined contribution (ADC).
- Employer contribution rates determined by legislative statute are not enough to keep up with the actual amount necessary to amortize the debt.
- **2017: Employer ADC v. Statute**
 - *Statutory* Employer Contribution: 14% of payroll
 - *Actuarially Determined* Contribution: 14.51% of payroll

Employer Contribution Trend, 1995-2017

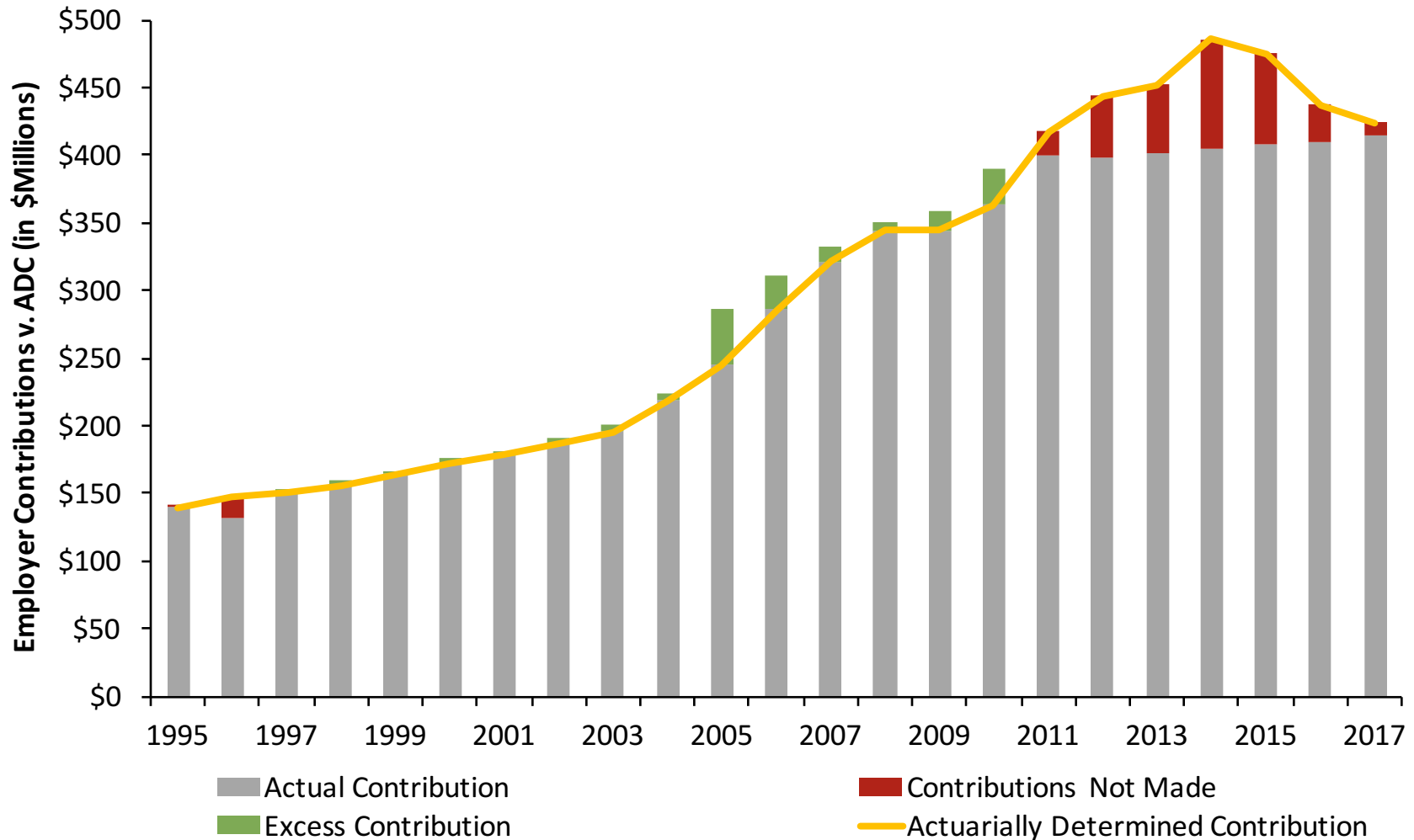
ADC v. Statutory Contribution Rates



Source: Pension Integrity Project analysis of ATRS actuarial reports and CAFRs.

Actuarially Determined Employer Contribution History, 1995-2017

Actual v. Required Contributions

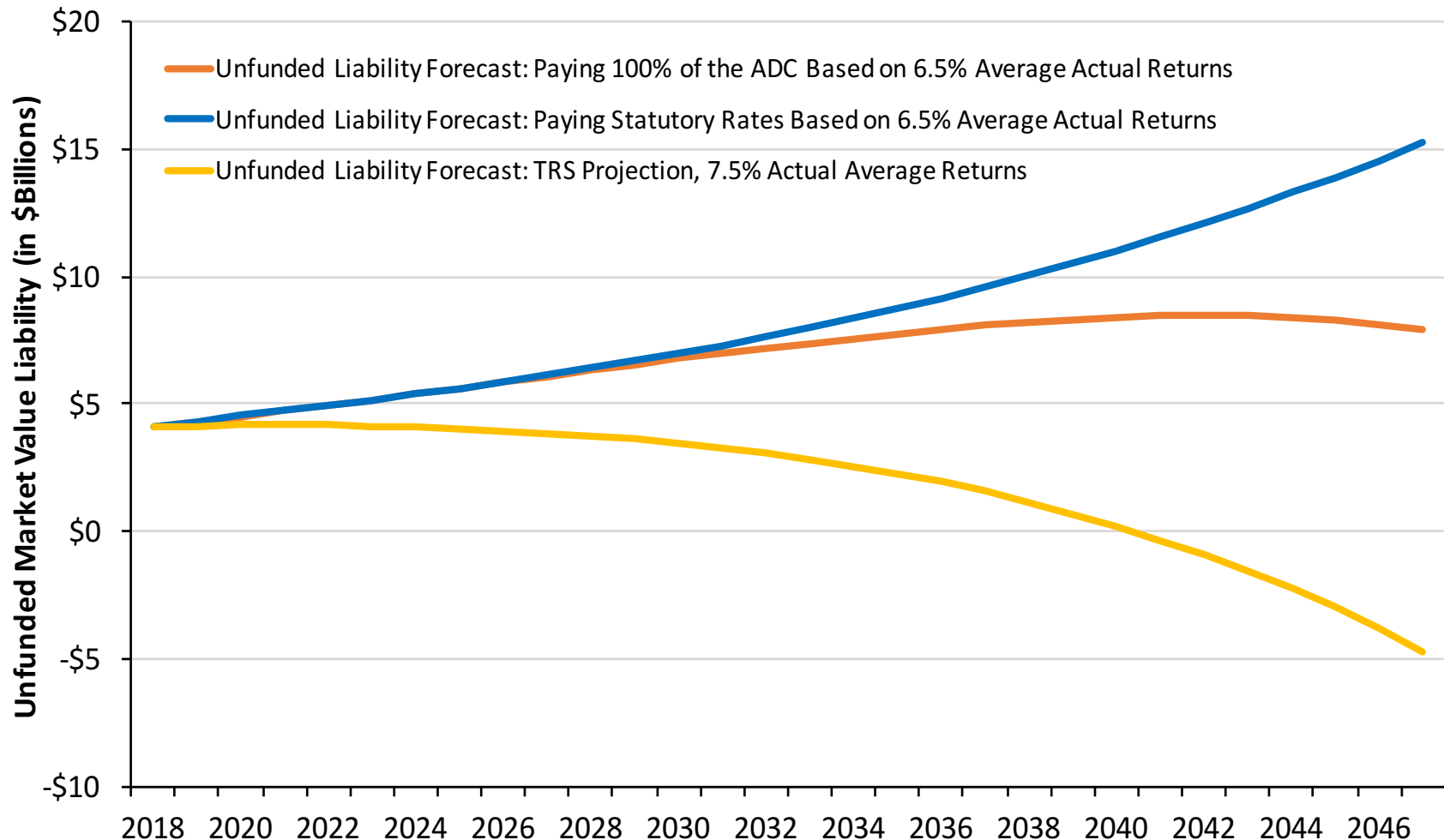


Source: Pension Integrity Project analysis of ATRS actuarial reports and CAFRs.

ADC v. Statutory Contributions: Unfunded Liability Forecast if Assets Underperform



Discount Rate: 7.5%, Assumed Return: 7.5%, Actual Return: 6.5%



Source: Pension Integrity Project actuarial forecast of ATRS plan.

Scenario shows that continuing to pay statutory rates under subdued investment returns can lead to higher unfunded liabilities.

Contribution Rate Policy & Negative Amortization



- ATRS's statutory contribution rate means high variance in the years needed to amortize unfunded liabilities based on the capped employer contributions
 - 2008: 21-year amortization period
 - 2013: 70-year amortization period
 - 2017: 29-year amortization period
- These long amortization periods are indicators that the contribution rate policy is not keeping up with what is necessary to pay down the unfunded liability and avoid *negative amortization* (when contributions are less than the interest accruing on unfunded liabilities).
- According to ATRS reports, to avoid negative amortization in 2016 the system would have needed to use an 18-year amortization period and that would have required employer contributions to increase to 17% of payroll.

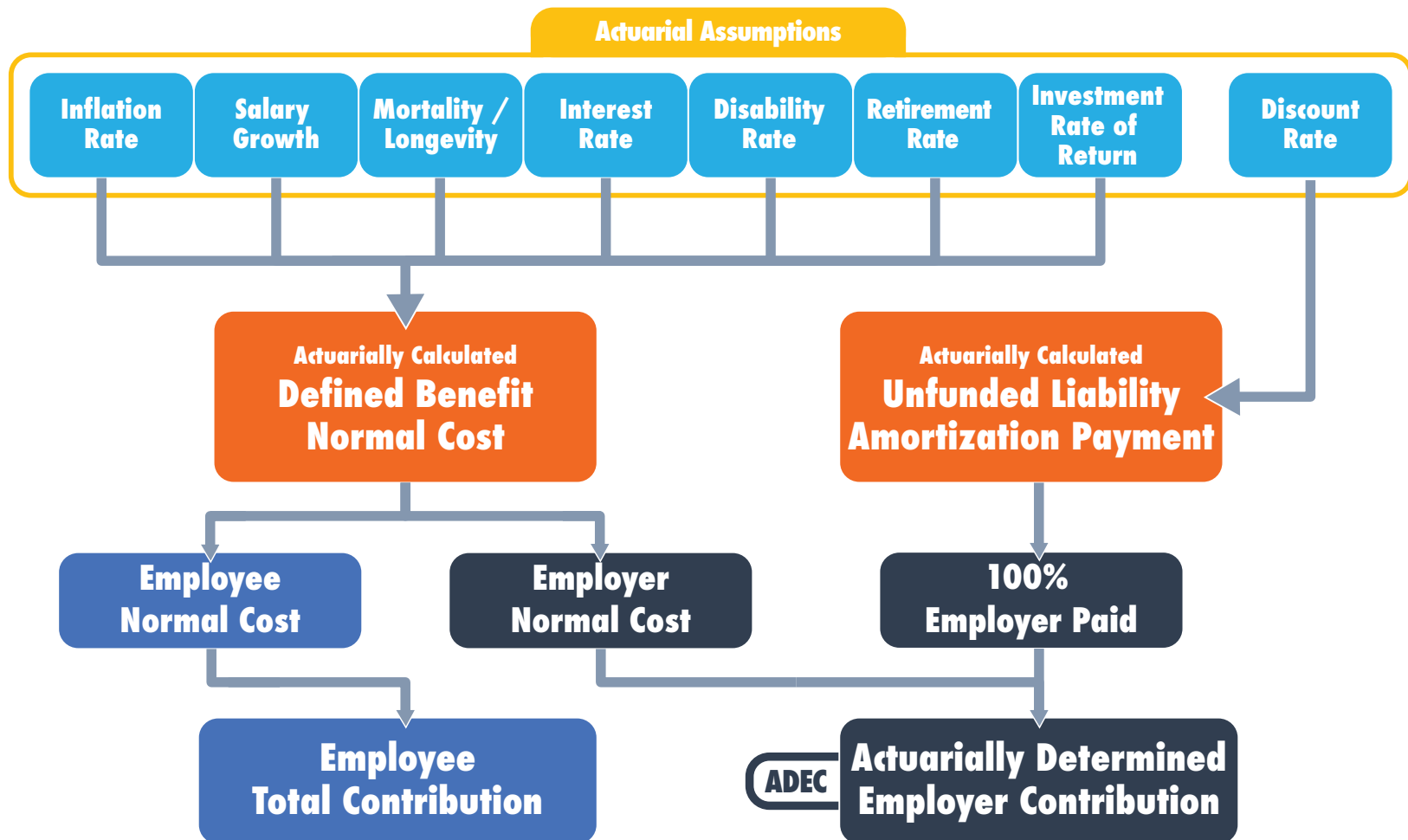


PROBLEM 3: DISCOUNT RATE AND UNDERVALUING DEBT

- The discount rate is likely undervaluing the recognized amount of existing pension obligations



How Actuarially Required Contributions are Calculated for Pension Plans



ATRS Discount Rate

Methodology is Undervaluing Liabilities



1. The “discount rate” for a public pension plan should reflect the risk inherent in the pension plan’s liabilities:
 - Most public sector pension plans — including ATRS — use the assumed rate of return and discount rate interchangeably, even though each serve a different purpose.
 - The **Assumed Rate of Return** (ARR) adopted by ATRS estimates what the plan will return on average in the long run and is used to calculate contributions needed each year to fund the plans.
 - The **Discount Rate** (DR), on the other hand, is used to determine the net present value of all of the already promised pension benefits and supposed to reflect the risk of the plan sponsor not being able to pay the promised pensions.

ATRS Discount Rate

Methodology is Undervaluing Liabilities



- 2. Setting a discount rate too high will lead to undervaluing the amount of pension benefits actually promised:**
 - If a pension plan is choosing to target a high rate of return with its portfolio of assets, and that high assumed return is then used to calculate/discount the value of existing promised benefits, the result will likely be that the actuarially recognized amount of accrued liabilities is undervalued.
- 3. It is reasonable to conclude that there is almost no risk that Arkansas would pay out less than 100% of promised retirement income benefits to members and retirees.**
 - Promised benefits for vested members represent a legal contract.
- 4. The discount rate used to account for this minimal risk should be appropriately low.**
 - The higher the discount rate used by a pension plan, the higher the implied assumption of risk for the pension obligations.



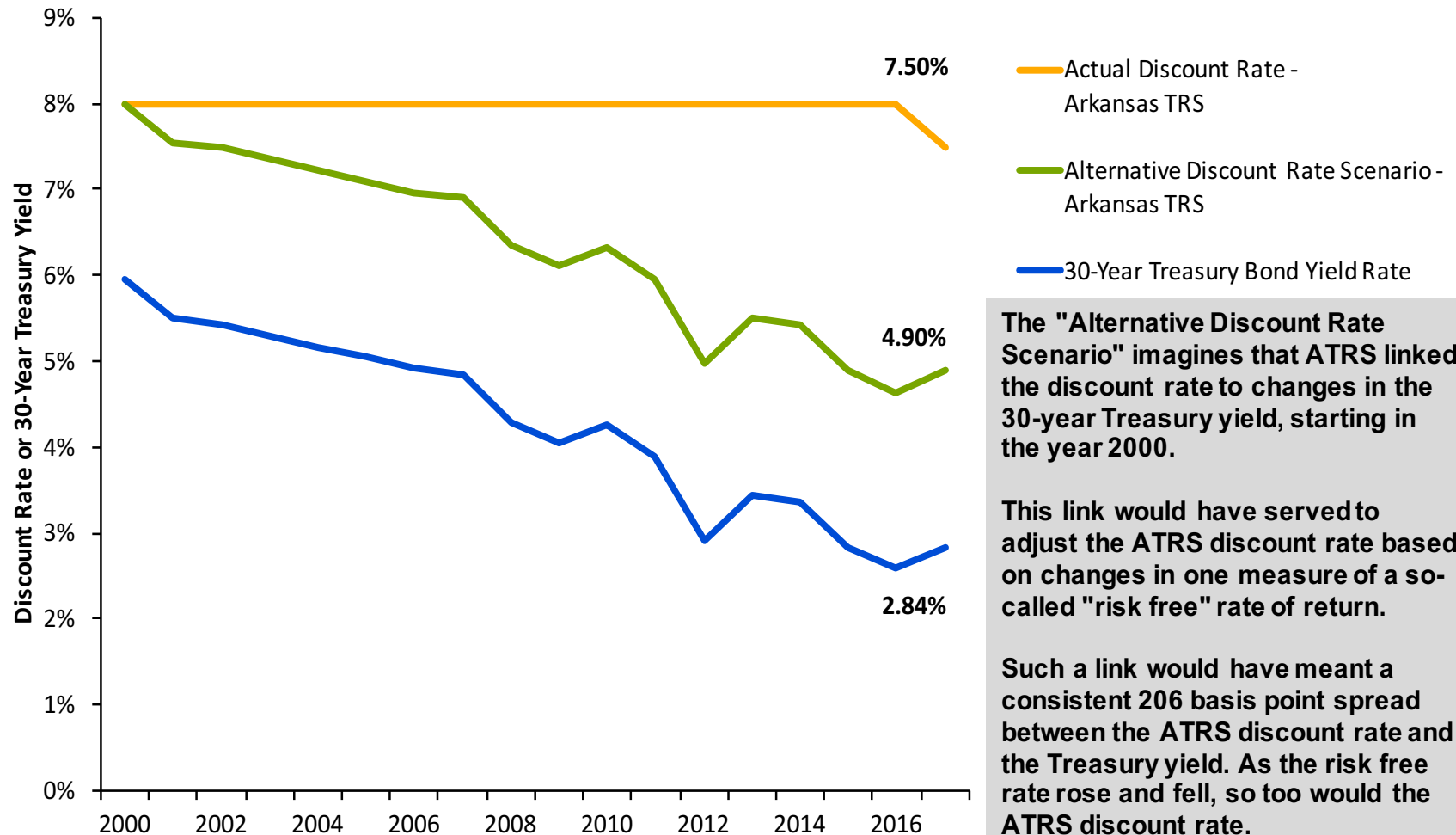
ATRS Pension Debt Sensitivity

FYE 2017 Net Pension Liability Under Varying Discount Rates

| | Funded Ratio (Market Value) | Unfunded Liability (Market Value) | Actuarial Accrued Liability |
|--------------------|--------------------------------|--------------------------------------|--------------------------------|
| 7.5% Discount Rate | 79.5% | \$4.2 billion | \$20.5 billion |
| 6.5% Discount Rate | 70.7% | \$6.7 billion | \$23.0 billion |
| 5.5% Discount Rate | 62.3% | \$9.8 billion | \$26.1 billion |
| 4.5% Discount Rate | 54.2% | \$13.8 billion | \$30.1 billion |

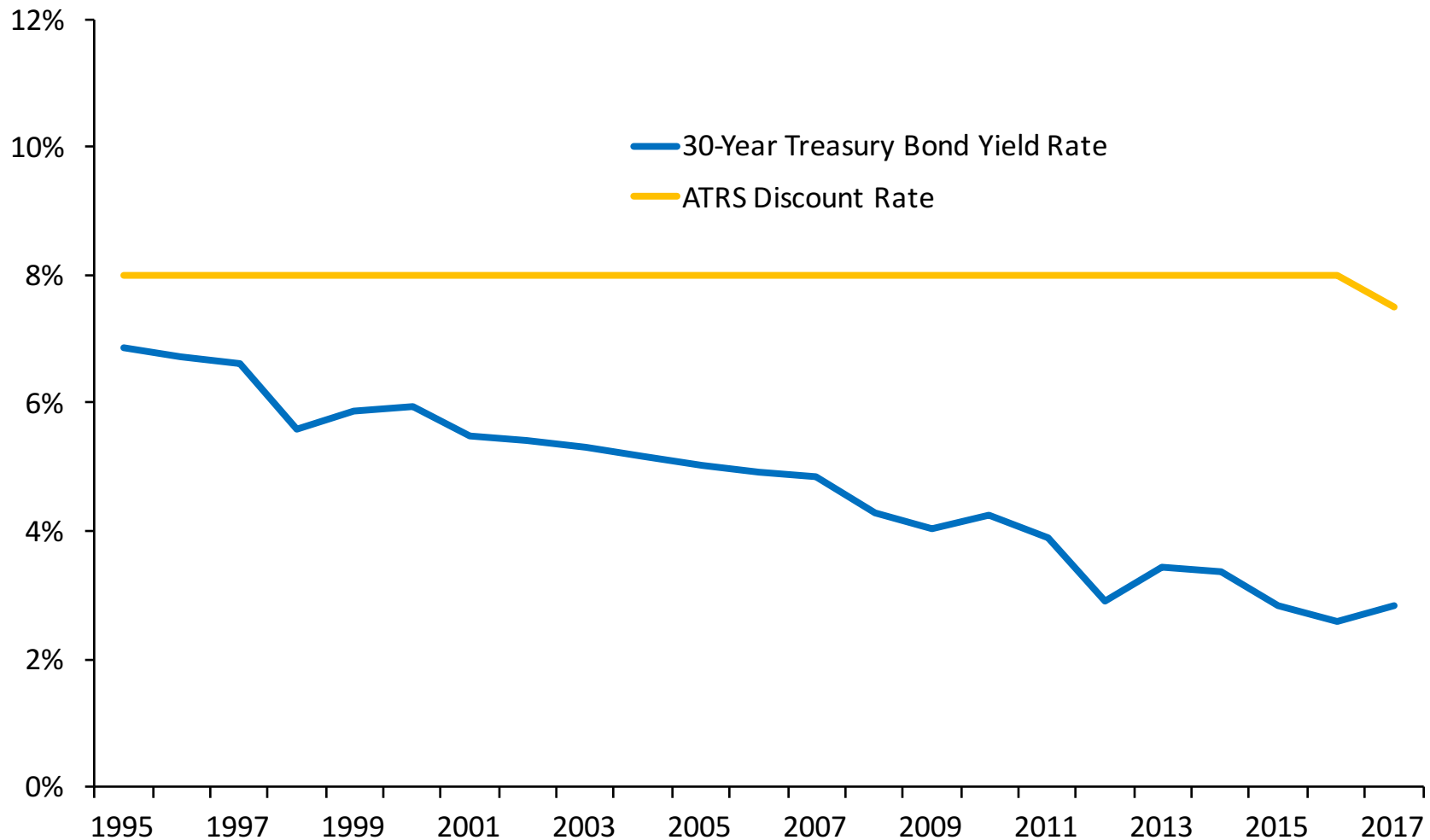
Source: Pension Integrity Project analysis of ATRS GASB Statements.
Market values used are fiduciary net position and actuarial accrued liability is total pension liability. Figures are rounded.

Change in the Risk Free Rate Compared to Discount Rate (2000-2017)



Source: Federal Reserve average annual 30-year treasury constant maturity rate

Risk Free Returns Have Declined Sharply, But the Discount Rate Has Stayed Flat



Source: Federal Reserve average annual 30-Year Treasury constant maturity rate.



PROBLEM 4: ACTUARIAL ASSUMPTIONS AND METHODS

- The combination of unmet actuarial assumptions and slow-paced changes to those assumptions is likely resulting in an understated size of actuarial liabilities and unfunded liabilities

Challenges from Aggressive Actuarial Assumptions

Actual Experience Different from Actuarial Assumptions



- **(-) Retirement Assumptions**

- Teachers have been retiring earlier than expected, receiving retirement benefits over longer time periods, thereby increasing actuarial liabilities by \$225.3 million between 2000-2017.

- **(+) Death, Disability, and Withdrawal Rate Assumptions**

- Although the total amount of accrued liabilities decreases whenever a member leaves employment before she starts qualifying for retirement benefits by foregoing the employer match, high overall turnover rates suggest that the state is facing challenges retaining and properly rewarding high-quality employees.

Challenges from Aggressive Actuarial Assumptions

Actual Experience Different from Actuarial Assumptions



- **(+) Overestimated Payroll Growth**

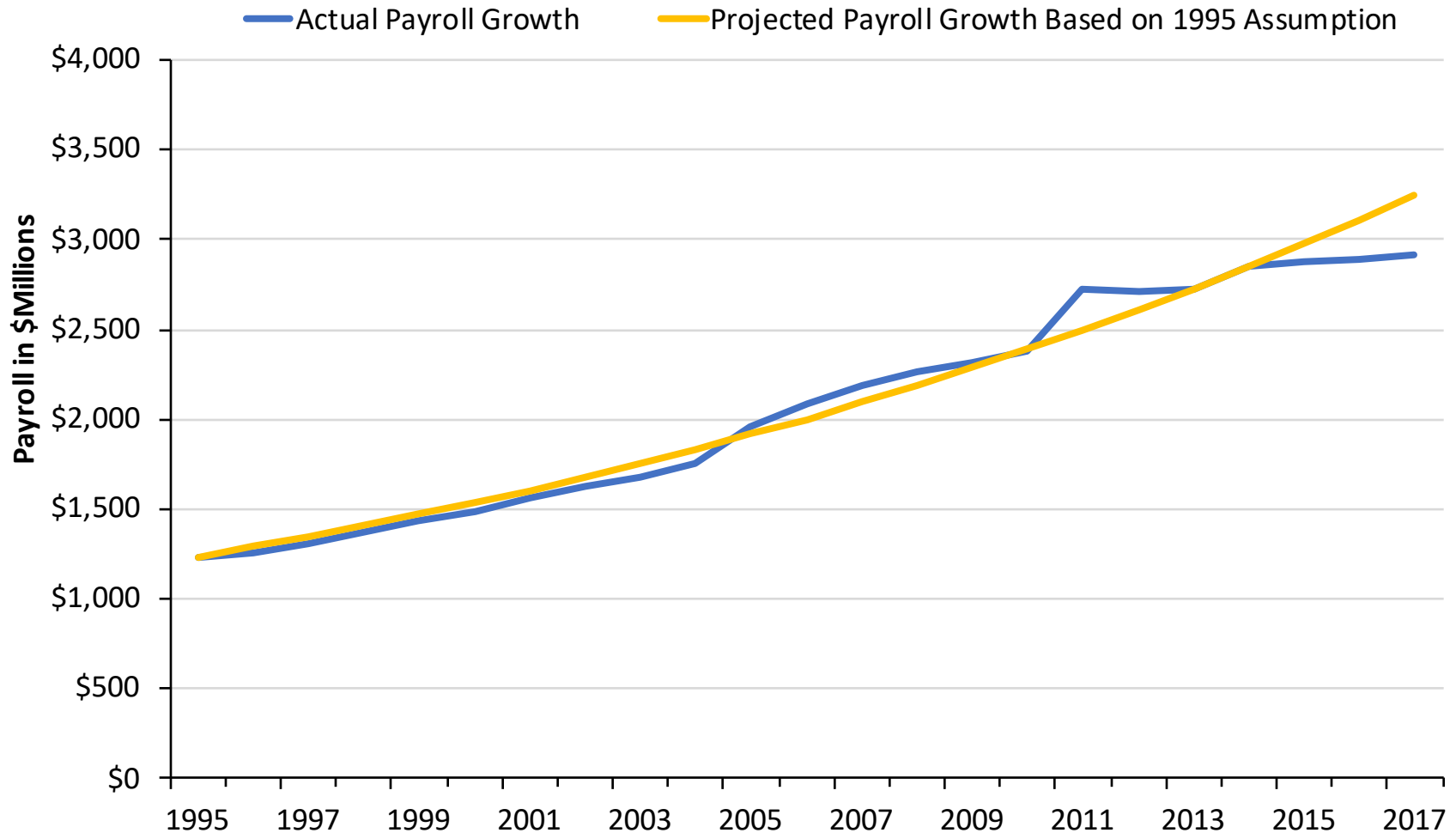
- *ATRS employers have not raised salaries as fast as expected, resulting in lower payrolls and thus lower earned pension benefits. This has meant a reduction in actuarial liabilities of \$1.1 billion from 2000 to 2017.*

- **(-) Overestimated Payroll Growth**

- However, overestimating payroll growth is creating a long-term problem for ATRS because of its combination with the level-percentage of payroll amortization method used by the plan.
- This method *backloads pension debt payments* by assuming that future payrolls will be larger than today (a reasonable assumption). But when payroll does not grow as fast as expected, employer contributions must rise as a percentage of payroll. This means the amortization method combined with the inaccurate assumption is delaying debt payments.

Challenges from Aggressive Actuarial Assumptions, 1995-17

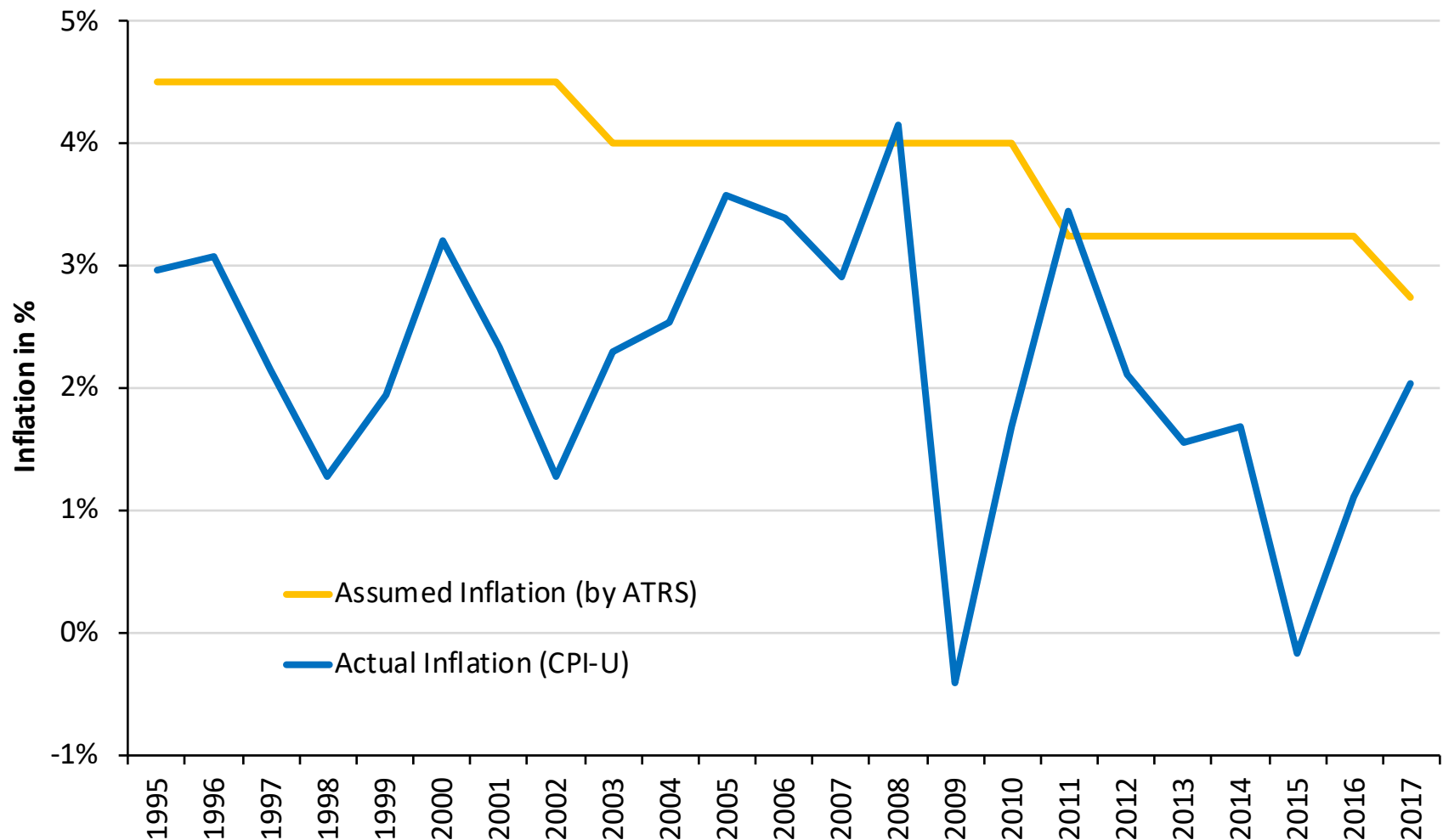
Actual Change in Payroll v. Assumption



Source: Pension Integrity Project forecasting based on ATRS actuarial valuation reports and CAFRs.

Challenges from Aggressive Actuarial Assumptions, 1995-17

Actual Inflation v. Assumption



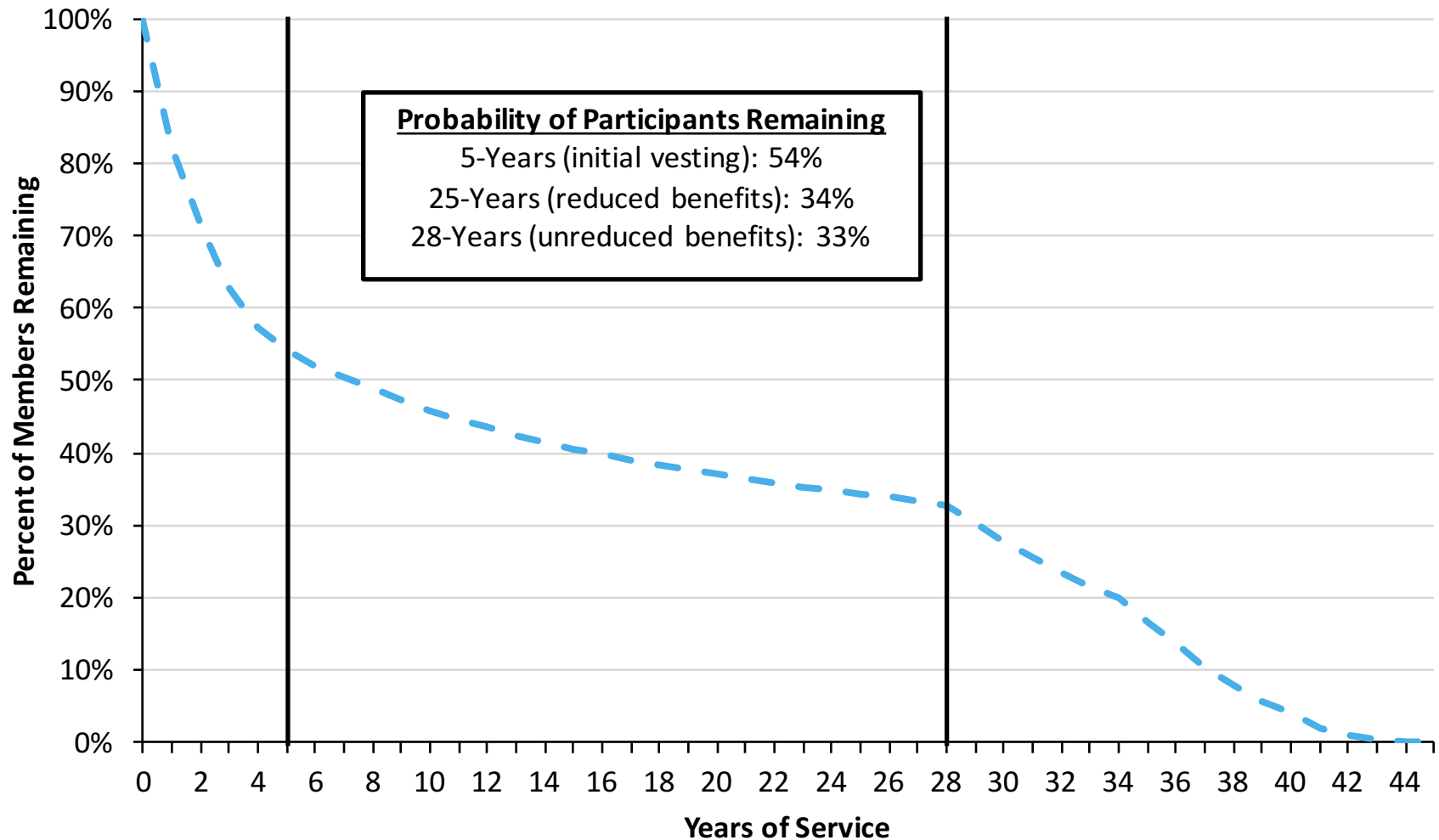


PROBLEM 5: THE EXISTING BENEFIT DESIGN DOES NOT WORK FOR EVERYONE

- The turnover rate for members of ATRS suggests that the current retirement benefit design is not supporting goals for retention



Probability of Teachers Remaining in ATRS, Cumulative



Source: Pension Integrity Project analysis of ATRS actuarial reports and CAFRs.

Illustration is based on plan's 2016 assumptions and a hypothetical analysis of an average male teacher hired at the age of 25

Does Arkansas TRS Retirement Plan Work for All Employees?



- **43%** of new teachers leave before 5 years
 - Teachers need to work for 5 years before their benefits become vested.
 - Teachers who leave the plan before then must forfeit contributions their school or state made on their behalf.
 - Another 5% to 10% of new teachers who are still working after 5 years will leave before 10 years of service.
- **Just 37%** of all new teachers will reach the “break even” point
 - On average, teachers of the ATRS need to work **more than 20 years** before the value of their accumulated pension benefits exceed the present value of their own contributions + interest
- **34%** of all paid members hired next year will still be working after 25 years, long enough to qualify for a reduced benefits
 - Arkansas ensures that all teachers have access to Social Security benefits.



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

- **Problems 1 & 4: Assumptions**

- *Reform Area 1:* Reduce investment risk and align assumed return with a more realistic probability of success
- *Reform Area 4:* Review the process of setting and reviewing assumptions to ensure the overall governance is in line with best practices

- **Problems 2 & 3: Contribution Methods & Discount Rate**

- *Reform Area 2:* Consider switching from paying statutorily determined contributions to paying actuarially determined contributions
- *Reform Area 3:* Consider changing discount rate method to better price the estimated value of promised benefits

- **Problem 5: Benefit Design**

- *Reform Area 5.1:* Consider whether adjustments to the current system could reduce costs and risks, while still ensuring retirement security
- *Reform Area 5.2:* Consider whether a new benefit system design could work for more ATRS members and reduce future risks

The Landscape of Changes to Pension Systems Over Past 20 Years



- **Systems creating choice-based DB or DC plans**
 - *Default to DB*: South Carolina State & Local (2012), Arizona Police/Fire (2016), Arizona Corrections (2017)
 - *Default to DC*: Michigan Teachers (2017)
- **Systems creating choice-based Hybrid or DC plans**
 - Utah (2014), Pennsylvania State & Teachers (2017)
- **Systems creating DC-only plans**
 - Michigan State (1996), Alaska State (2005), Alaska Teachers (2005), Arizona Elected Officials (2013), Arizona Corrections (2017)
- **Systems creating CB-only plans**
 - Nebraska State (2002), Nebraska Local (2002), Kansas State (2012), Kentucky State & State Police (2014), Kentucky Local (2014)
- **Systems creating Hybrid-only plans**
 - Oregon State & Teachers (2003), Georgia State (2008), Rhode Island State & Teachers (2011), Virginia (2012), Tennessee (2013)

Policy Reform Scenarios

Prospective Reform Options



- Risk-Managed Defined Benefit Plans
 - Create a new DB plan for new hires—built from the beginning with very conservative assumptions and contribution rate methods, and explicit cost and risk sharing to secure long-term solvency
- Primary Retirement Income-Focused Defined Contribution Plans
 - Fixed contribution rates; no additional unfunded liabilities
- Choice-Based Retirement Plans (*Example*):
 - Enroll members in a DC Plan, but offer choice of a 'Risk-Managed DB' Plan
- Hybrid DB/DC Plans (*Example*):
 - 1% multiplier for the DB, with normal cost split 50/50, and
 - 3% DC employer contribution rate
 - 4% or more DC employee contribution rate
- Cash Balance Plans:
 - Defined benefit system that guarantees a certain rate of return on investment

Pension Reforms and Addressing the Legacy Unfunded Liability



- **Positive Approaches** to Addressing Legacy UAL
 - *Utah (2014), Oklahoma (2015)* — included in statute a requirement that employers make amortization payments as a percentage of total payroll; effect has been that unfunded liability amortization payments in dollars have been effective the same as if there had been no changes
 - *Arizona Police & Fire (2016), Arizona Corrections (2017), Michigan Teachers (2017)* — included in statute a requirement that employers make amortization payments as a percentage of total payroll + required future UAL to be paid off over 10-year, level-dollar layered amortization bases
- **Negative Approaches** to Addressing Legacy UAL
 - *Michigan State Employees (1996), Alaska State & Teachers (2005), Kentucky State and Local (2014), Pennsylvania (2017)* — made no change with respect to legacy UAL, then made limited or no changes to the assumed rate of return and amortization method + failed to pay 100% of actuarially determined rate, collectively leading to a growth in the legacy UAL
 - *Arizona Elected Officials (2013)* — created a fixed payment schedule for legacy UAL + no change to assumed return over time; led to insufficient funding deemed unconstitutional by trial court in 2017



Reform Case Studies:

Limits of Recent Pension Reforms

- **Michigan Teachers**

- Plan to lower the assumed return requires future action by the MPSERS board, state treasurer, and legislature and that could be politically reversed
- Choice-based approach has a one-time option without ability to change the choice within three to five years once a teacher better understands their own career trajectory

- **Arizona Police/Fire & Probation**

- More conservative funding policy is needed and will require future action by the PSPRS board, and there is no guarantee the incentive approach will work
- New defined benefit plan uses the same assumed rate of return as the legacy plan, instead of starting at a lower rate

- **Pennsylvania State and Teachers**

- New defined benefit plans (within the DB/DC Hybrid plans) use the same assumed rate of return, amortization method, and other funding policies of the legacy plan instead of starting with better assumptions and methods
- Default for all members is into the max hybrid plan option instead of into the plan option that best aligns with the demographics and participation rates of each group of members within PPSERS and PSERS
- DC Only plan option has just a 2% employer match, which may not be enough to ensure the plan option can provide for retirement security
- No plan for changes to the existing assumed return or amortization policy



Questions?

Pension Integrity Project at Reason Foundation

Len Gilroy, Senior Managing Director

leonard.gilroy@reason.org

Zachary Christensen, Policy Analyst

zachary.christensen@reason.org

Anil Niraula, Policy Analyst

anil.niraula@reason.org

Andrew Abbott, Policy Analyst

andrew.abbott@reason.org



APPENDIX: REFORM CASE STUDIES



Reform Case Studies:

Michigan Teachers (2017-18)

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
- Legislative commitment to future amortization method changes



Reform Case Studies:

Michigan Teachers (2017-18)

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



Reform Case Studies:

Arizona Police & Fire (2016)

Why?

- Underperforming investment returns
- Permanent benefit increase (PBI) program was skimming investment returns and destabilizing asset growth
- Prior reforms (2011) had negative effect on growth in unfunded liabilities and vesting requirements; reforms making retroactive benefit changes found unconstitutional by AZ Supreme Court

What?

- New choice-based retirement system for new hires (DB or DC)
 - New amortization method, cost-sharing contribution rate policy, and graded multiplier for new-hire DB plan
- Constitutional ballot measure to change the PBI to a pre-paid COLA that adjusts based on funded ratio
- Retroactive benefit improvement for post-2011 employees
- Change board composition to align with risks within the system and incentivize better future funding policy



Reform Case Studies:

Arizona Corrections & Probation (2017)

Why?

- Underperforming investment returns
- Permanent benefit increase (PBI) program skimming investment returns and destabilizing asset growth
- Existing benefit not proving to be a recruiting tool for the high turnover prone jobs represented by the plan

What?

- New choice-based retirement system (DB or DC) for new probation & surveillance officers
 - New amortization method, cost-sharing contribution rate policy, and graded multiplier for new hire defined benefit plan
- New DC plan for correctional officers
- Constitutional ballot measure to change the PBI to a pre-paid COLA that adjusts based on funded ratio



Reform Case Studies:

Pennsylvania State & Teachers (2017)

Why?

- Underperforming investment returns
- History of failing to pay the actuarially determined contribution rate
- Prior reforms having a limited effect on the growth in unfunded liability amortization payments

What?

- Create new choice-based retirement system (Hybrid or DC) for new hires
 - Cost-sharing contribution rate policy for DB component of new Hybrid plans
- Create commission to target savings by lowering investment fees paid to asset managers
- Require that any savings resulting from these changes be put back into the fund to pay down unfunded liabilities



Reform Case Studies:

Oklahoma State Employees (2014)

Why?

- Underperforming investment returns
- History of failing to pay the actuarially determined contribution rate
- Existing benefit structure does not prove itself as an effective recruiting tool leading to higher than desired turnover

What?

- All future COLA increases now required funding by cash before granting the benefit
- New employees (except hazardous duty employees) to participate in a DC plan instead of the previous DB plan



Reform Case Studies:

Utah Retirement System (2010)

Why?

- Underperforming investment returns
- After recession, reaching 100% funding through previous amortization schedule became impossible
- History of failing to pay the actuarially determined contribution rate

What?

- Create new choice-based retirement system for new hires
- New employees could choose to participate in a DC plan or a limited DB plan
- Closed loophole allowing “double-dipping” with retirees returning to the workforce and still receiving pension checks