OKLAHOMA
Teachers' Retirement System

History of Actuarial Funding Policies, Assets and Liabilities, and Investments

A SUMMARIZED HISTORY OF TRS SINCE 1943

Contents

The Teachers' Retirement System of Oklahoma is a state agency that manages retirement assets and provides income security to retirees. We deliver this security through a lifetime monthly retirement benefit to each of our members.

TRS was created by an act of the Oklahoma Legislature in 1943 after citizens amended the state constitution allowing the creation of a retirement program for public educators. We began operations on July 1, 1943, and began paying retirement checks to the first retirees on January 1, 1947.

Employees and retirees of approximately 600 local school districts, career technology schools, public colleges and universities are enrolled as members of TRS.

Mission

We collect, protect, and grow assets to provide a secure retirement income for public education employees.

Vision

- Provide quality service to our members in an efficient, economical manner,
- Provide our members on-demand and accurate access to their personal financial information,
- Educate our members about their retirement benefits,
- Manage the assets of the plan competently and prudently while achieving long-term risk-adjusted net returns in excess of market benchmarks as identified in the Board's Investment Policy, as well as exceeding the actuarial assumed return, and
- Inform our members about the financial status of TRS so they will be confident in our ability to provide their benefits.

Summarized History of TRS from an Asset & Liability Perspective

This comprehensive analysis traces more than eighty years of financial evolution within the Teachers' Retirement System of Oklahoma (TRS), examining how policy decisions and asset-liability management have shaped its trajectory from the 1940s through today. By reviewing the system's cashflows decade by decade, we can identify critical turning points and understand the long-term consequences of strategic choices made during periods of both prosperity and challenge.

Our examination begins with key summary observations that emerge from this historical review, followed by visual representations that bring the data to life—charting the interplay between assets, liabilities, and cashflows over eight decades. We then turn our attention to the investment portfolio itself, analyzing how asset allocations have shifted over time and the returns these strategies have generated.

The analysis includes detailed graphics illustrating both the broad financial landscape and the specific evolution of investment approaches. Finally, an appendix presents a focused case study on funds diverted from TRS, offering concrete conclusions about the impact of such policy decisions and their relevance to understanding the system's current position.

Together, these elements provide a complete picture of how past decisions continue to influence present realities and future possibilities.

Summary review of policy and A/L history - 1940s

Policy, Funding & Liabilities

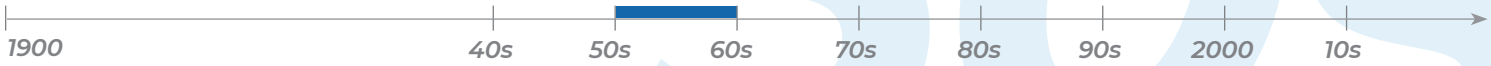
- The Oklahoma Retirement Benefits for Teachers Amendment, also known as State Question 306, was on the July 14, 1942, ballot in Oklahoma as a citizen initiated constitutional amendment, where it was approved.
- Official operations began on July 1, 1943 – TRS was an appropriated Agency. TRS began with over $10 million in unfunded liability and a funding ratio of 1.75%.
- Legislature met every other year (biennial)
- Early focus of actuarial reports was to determine appropriation request for next two years to fund 'normal cost' and 30-year amortization of prior service recognition cost.
- Failure to fund the actuary's recommended appropriations, along with benefit enhancements, was an early policy decision leading to solvency concerns before the end of the first decade.

Assets

- Separate, specific purpose funds established
- Focus on yield & book value vs total return & market value
- Assets custodied by State Treasurer
- 100% fixed income
  - US government & agency
  - OK State municipal bonds
  - OK District municipal bonds without default in past 10 years

1940s – Decade Change in Unfunded Liability

Beginning	$	10,477,000
Ending	$	28,758,518
Change	**$**	**18,281,518**



Summary review of policy and A/L history - 1950s

Policy, Funding & Liabilities

- As projected by the actuary, repeated appropriation deficiencies created large deficits.
- Actuary warns of fund depletions and the State entering a pay-as-you-go status.
- Unfunded liability increases to more than $65 million by decade's end.

Assets

- Focus on yield & book value vs total return & market value
- Assets custodied by State Treasurer
- 100% fixed income
  - US government & agency
  - OK State municipal bonds
  - OK District municipal bonds without default in past 10 years
  - Investment Grade non-OK municipal bonds and corporate Utility and Railroad bonds allowed in 1953

1950s – Decade Change in Unfunded Liability

Beginning	$	28,758,518
Ending	$	65,580,262
Change	**$**	**36,821,744**

Summary review of policy and A/L history - 1960s

Policy, Funding & Liabilities

- Failure to fund actuary's recommended appropriations intensifies solvency concerns.
- As the actuary warned, certain funds enter a pay-as-you-go status.
- In 1968, the Peat, Marwick Mitchell (PMM) report to the Special Legislative Committee on Teachers' Retirement System recommended that the State adopt a 'reasonable, systematic method of funding benefits' using accepted actuarial principles. The report noted that amendments have typically increased future System liabilities.
- In 1969, a new actuary recommended that serious consideration be given to amortization of the System's unfunded liability.

Assets

- Focus on yield & book value vs total return & market value
- Assets custodied by State Treasurer
- Until 1969, 100% fixed income
  - US government & agency
  - OK State municipal bonds
  - OK District municipal bonds without default in past 10 years
  - Investment Grade non-OK municipal bonds and Utility and Railroad bonds
  - OK Bank CD's, Savings & Loan accounts, and Mortgage Bonds added in late 1960's
- Consistent with PMM report recommendation, common stock was allowed up to 25% in 1969.

1960s – Decade Change in Unfunded Liability

Beginning	$	65,580,262
Ending	$	304,998,055
Change	**$**	**239,417,793**

Summary review of policy and A/L history - 1970s

Policy, Funding & Liabilities

- With advancements in technology, improved actuarial valuation methodologies were implemented to provide a more accurate understanding of liabilities, as well as a more accurate actuarial forecasting basis.
- 1970, first seriatim actuarial valuation performed
- In 1971, the actuary warned *"If the legislature chooses not to make increased appropriation voluntarily during present years, excessively large appropriations will ultimately become mandatory."*
- Federal passage of ERISA in 1974 establishes modern framework for retirement plans
- Segal & Co. Actuarial Study Report to the Special Committee on the Teachers' Retirement System lists unfunded accrued liability at $652.4 million as of June 30, 1976.

Assets

- Focus on yield and book value vs total return and market value began to change after ERISA
- Assets custodied by State Treasurer
- Allowed maximums set for investment types as follows:
  - US govt & agency & high-quality municipal bonds – max 75%
  - Investment Grade bonds – max 50%, increased to 100% in 1974
  - OK Bank CD's, Savings & Loan accounts – max 90%
  - Govt Guaranteed 1st Mortgage – max 25%
  - Common Stock – max 25%

1970s – Decade Change in Unfunded Liability

Beginning	$	304,998,055
Ending	$	576,094,150
Change	**$**	**271,096,095**

Summary review of policy and A/L history - 1980s

Policy, Funding & Liabilities

- 1981 the unfunded actuarial accrued liability (UAAL) rises above the $1 billion mark.
- In the early 1980s, higher oil and gas prices helped System funding, as they formed the basis of the State's contribution, which since 1957 had been set at 78% of natural gas Gross Production tax.
- But in 1982, policy makers placed a cap of $125 million on State dedicated revenue. In 1988, the percentage was reduced to 55.7%, and the maximum was increased to $175 million. (Subject of Case Study in Appendix)
- Unfunded benefit enhancements impede progress towards reducing the UAAL that might have otherwise occurred due to investment performance.
- Employer contributions mandated July 1989

1980s – Decade Change in Unfunded Liability

Beginning	$	576,094,150
Ending	$	3,162,379,159
Change	**$**	**2,586,285,009**

Assets

- Focus on total return & market value
- Assets custodied by State Treasurer until 1983, afterwards Federal Reserve Bank and/or Custodial Bank or Trust Co. allowed
- 1988, major statutory overhaul of plan provisions expanding on fiduciary duty, investment managers, custodial banks, competitive bid selections etc.
- Modern portfolio approach begins
- The Board forms its first Investment Committee in March 1988; in October 1988, it adopted an Investment Policy Statement, which increased the common stock maximum allocation to 50%.
- 1989, The Board hires Mercer as first investment consultant.
- Portfolio generates an annualized 10-year net return thru 6/30/90 of 11.7%.

Summary review of policy and A/L history - 1990s

Policy, Funding & Liabilities

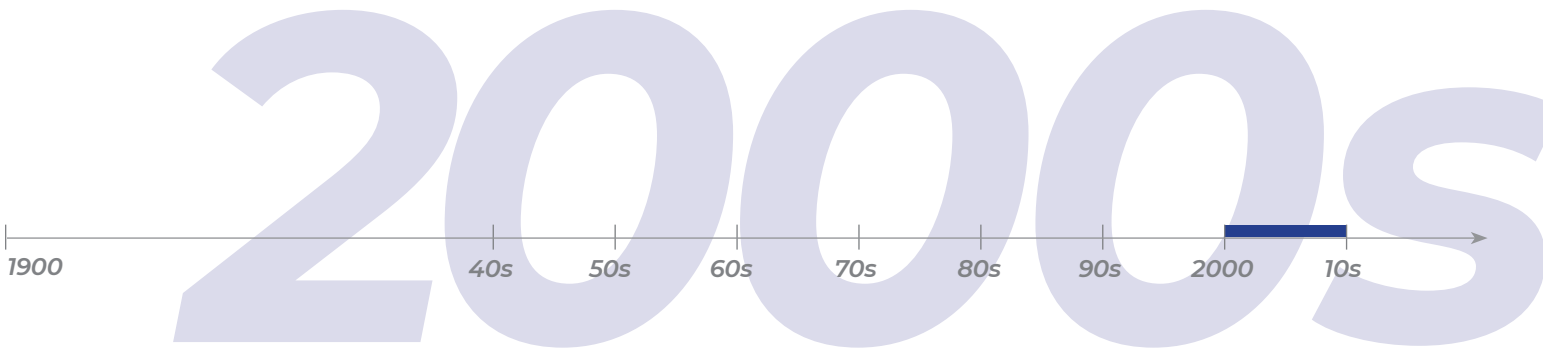
- A 1990 special actuarial study projected the System would run out of funds in 25 years unless portfolio average investment returns exceed 6.5%.
- A 1996 report listed TRS at 39.1% funded, making it the fourth most poorly funded statewide pension in the country.
- Strong investment returns, though sometimes offset by ad hoc benefit increases, improved the funded ratio to 49.8% by the end of the decade.
- Adequate funding would have enabled the system to capitalize on this period of robust investment performance.

Assets

- Diversified portfolio of US and international stocks and bonds with assets held by top tier custodial bank
- Poor funded status and large UAAL dictate a high risk/return posture
- Modern portfolio well-positioned in this very strong decade of financial market returns
- The portfolio generated an annualized 10-year net of fee return through June 30, 2000, of 13.2%

1990s – Decade Change in Unfunded Liability

Beginning	$	3,162,379,159
Ending	$	4,635,697,622
Change	**$**	**1,473,318,463**



Summary review of policy and A/L history - 2000s

Policy, Funding & Liabilities

- In 2001, actuarial principles dictated recognition of a pattern by the legislature of granting unfunded cost-of-living adjustments (COLAs) for retirees coinciding with election years. This lowered the funded ratio and pushed the funding period needed to amortize the UAAL rom 31 years to 62 years.
- Public pensions attract the attention of national credit rating agencies potentially impacting State bond ratings and borrowing costs.
- In 2000, State law changed TRS dedicated revenue sourcing from gross production taxes to the current sales, use, and income tax model, initially at 3.54%, with a stepped increase in rates from 3.75% in 2004 to 5% in 2007 to address chronic underfunding and growth in the UAAL
- Throughout the decade, TRS remained among the most poorly funded statewide pensions in the country with an average funded ratio of ~51% and a funding period ranging from 21.6 years to infinite.

Assets

- Diversified portfolio of US and International stocks and bonds with assets held by top tier custodial bank
- 2007, initial investment in private equity
- Poor funded status and large UAAL dictate a high risk/return posture
- The decade is difficult for returns beginning with the “dot-com” bust of the early 2000s and ending with the “great financial crisis” of 2008.
- The portfolio generated an annualized 10-year net of fee return through June 30, 2010, of 4.05%.

2000s – Decade Change in Unfunded Liability

Beginning	$	4,635,697,622
Ending	$	10,413,957,187
Change	**$**	**5,778,259,565**

Summary review of policy and A/L history - 2010s

Policy, Funding & Liabilities

- In 2011, pension reform (HB 2132), which mandated that COLAs be funded as opposed to passing the cost to TRS, helped to decrease the UAAL by approximately $2.8 billion and reduce the funding period from “infinite” down to 22 years.
- For fiscal year ending 2015, strong investment returns, as markets recovered from the GFC, decreased the UAAL and improved the funded status to 66.6%.
- Exceptionally low bond yields cause public pension funds to lower expected returns
- In 2017, TRS lowered its actuarial return assumption from 8% to 7.5%.
- In 2018, HB 1340 changed the definition on a “nonfiscal retirement bill” for purposes of OPLAAA to include certain one-time stipends - an unfunded stipend was granted adding $18 million to the UAAL.

Assets

- Diversified portfolio of US and International stocks and bonds with assets held by top tier custodial bank, private equity and real estate
- Added 2011 core real estate and 2014 non-core real estate
- Poor funded status and large UAAL dictate a high risk/return posture
- Low interest rates
- In late 2015, TRS retained internal professional investment staff
- The portfolio generated an annualized 10-year net return through June 30, 2020, of 9.1%

2010s – Decade Change in Unfunded Liability

Beginning	$	10,413,957,187
Ending	$	8,640,627,496
Change	**$**	**(1,773,329,691)**

2020 to Current

Summary review of policy and A/L history - 2020 to Current

Policy, Funding & Liabilities

- In 2020, HB 3350 granted an unfunded COLA of either 2% or 4% to retirees who had been retired at least two years, HB 2741 temporarily changed the rate of dedicated revenue from sales, use and personal and corporate income tax to 3.50% for FY21, and TRS's assumed rate of return was adjusted to 7.0% from 7.5% as part of a five-year experience study - this combination of events added $1.3 billion to the UAAL.
- In 2021, the rate of dedicated revenue from sales, use and personal and corporate income tax was restored to 5.00% for FY 2022 increasing the percentage to 5.25% for FY 2023 through FY 2027.
- The percentage is scheduled to return to 5.00% beginning in FY 2028.
- Continued discipline by policy makers to adhere to pension reforms of the past decade has helped reduce the UAAL by approximately $2.6 billion to the lowest level since 2003.
- Strong investment returns, as markets weathered the Covid-19 and inflation shocks, have helped decrease the UAAL and improve the funded status to a TRS historical high of 80.0%.
- Funding progress and higher interest rates allowed for the 2025 adoption of a less risky strategic asset allocation that still achieves return objectives, with a goal of being 100% funded within 9 years.

Assets

- Diversified portfolio of US and international stocks and bonds with assets held by a top tier custodial bank; includes private equity, real estate, and private credit. TRS is in the process of further diversifying into infrastructure investment.
- Retained AON, a top-tier investment consulting firm
- Perform comprehensive Asset Liability studies 2021 and 2025
- Interest rates rise significantly in 2022 responding late to 2021 inflation
- The portfolio has generated an annualized 5-year net return through June 30, 2025, of 9.9%.

2020 – 2025 Change in Unfunded Liability		
Beginning	$	8,640,627,496
Ending	$	6,078,370,289
Change	**$**	**(2,562,257,207)**

TRS has been a great economic benefit to the State of Oklahoma

Using the table to the right through the latest fiscal year end, we make the following observations*:

- As of 1985, the accumulated assets in the investment portfolio were $1.286 billion.
- Over the next 40-year period, the State contributed approximately $8.9 billion. Employer and matching contributions totaled $10.7 billion. TRS members contributed $9.5 billion.
- Over the same 40-year period, TRS has paid out $33.7 billion to members and beneficiaries creating significant economic benefit as most recipients (88%)continued to reside and spend in Oklahoma.
- The TRS investment portfolio, over the 40-year period, generated $29.6 billion in net investment earnings. As of June 30, 2025, the portfolio has a market value of $25.0 billion.

*Data are approximated above and as noted in the table footnote.

Positive Outcome for Oklahoma

Plan Net Asset Reconciliation

for the 40-year period from 6/30/1985 to 6/30/2025

6/30/1985	**Beginning Portfolio Value**	**$1,286,000,000**
Contributions		
State Contributions		$8,921,000,000
Employer & Matching Contributions		$10,688,000,000
Total State & Employer		**$19,609,000,000**
Member Contributions		$9,536,000,000
Total Contributions		**$29,146,000,000**
Distributions & Expenses		
Refunds Paid		($1,122,000,000)
Benefits Paid		($32,538,000,000)
Total Refunds & Benefits		**($33,659,000,000)**
Investment Expenses		($1,162,000,000)
Administration Expenses		($156,000,000)
Total Distributions & Expenses		**($34,978,000,000)**
Portfolio Investment Earnings		**$29,611,000,000**
6/30/2025	**Ending Portfolio Value**	**$25,065,000,000**

*Figures rounded to the nearest million dollars

OKLAHOMA Teachers' Retirement System

Actuarial History and Case Study Observations

- Over it's more than 80-year history, inconsistent funding mechanisms have been inadequate to fully amortize the unfunded liability which now stands at $6.1 billion.
- Unfunded benefit increases and reduced contributions have resulted in negative amortization and have increased the unfunded liability.
- Poor funding has required TRS Boards to maintain more aggressive portfolio allocations to achieve higher returns necessary to grow assets in support of promised benefits.

Additional Observations

- States with poorly funded pension funds are viewed negatively from a taxation perspective. This is because businesses and residents presume they will be burdened with paying the future taxes as the bills for poorly funded pensions eventually come due.

- Recent Oklahoma policy makers **have** shown disciplined restraint by maintaining mostly stable contributions to TRS and limiting unfunded benefit increases that would increase the unfunded liability.

- States around the country have exercised fiscally conservative measures to reduce unfunded pension liabilities.

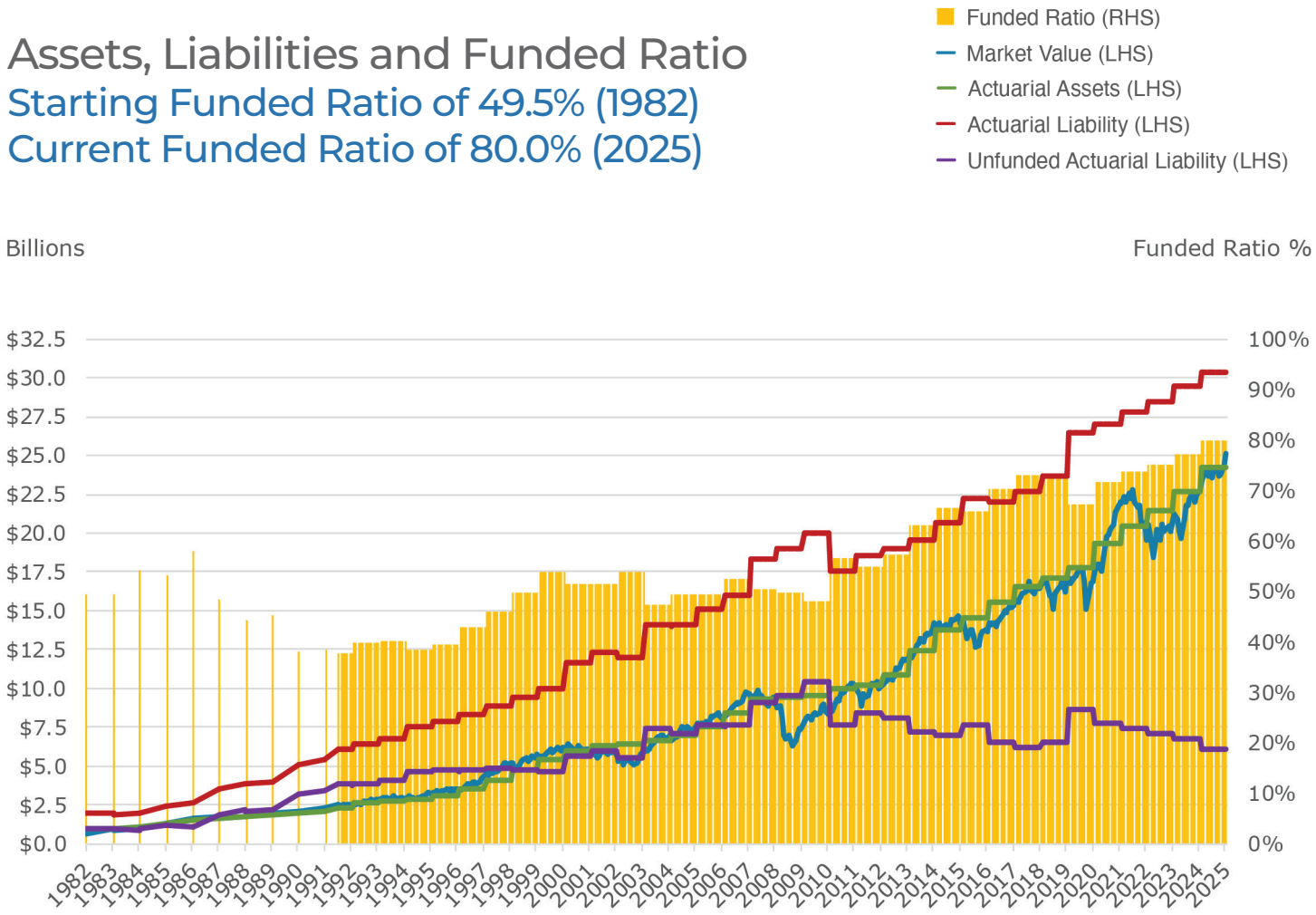
> According to a recent Pew study: To continue making progress despite uncertain economic conditions, state policymakers and pension plan administrators will need to build on their recent fiscal discipline and implement additional best practices, such as the innovative approaches implemented in states that have sustainably funded pension promises over the past 20 years. Successful states have not only consistently met contribution benchmarks, but also have adopted policies to manage risk, keep employers' costs relatively low and stable, and avoid saddling future generations of taxpayers with a bill or straining state budgets. **These policies include making extra payments to accelerate the process of paying down pension debt**—the amount of unfunded benefit obligations—and build a cushion against the next downturn; employing realistic investment return assumptions; designing benefits that adjust based on investment performance or on a plan's funding level; and conducting stress testing to help policymakers understand and plan for risk. *emphasis added*

Source: Pew Charitable Trusts, 'State Pension Contributions Hit Important Benchmark,' October 2022. Available at: https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2022/10/state-pension-contributions-hit-important-benchmark

Assets, Liabilities, and Cash Flows

Assets, Liabilities and Funded Ratio

Starting Funded Ratio of 49.5% (1982)
Current Funded Ratio of 80.0% (2025)

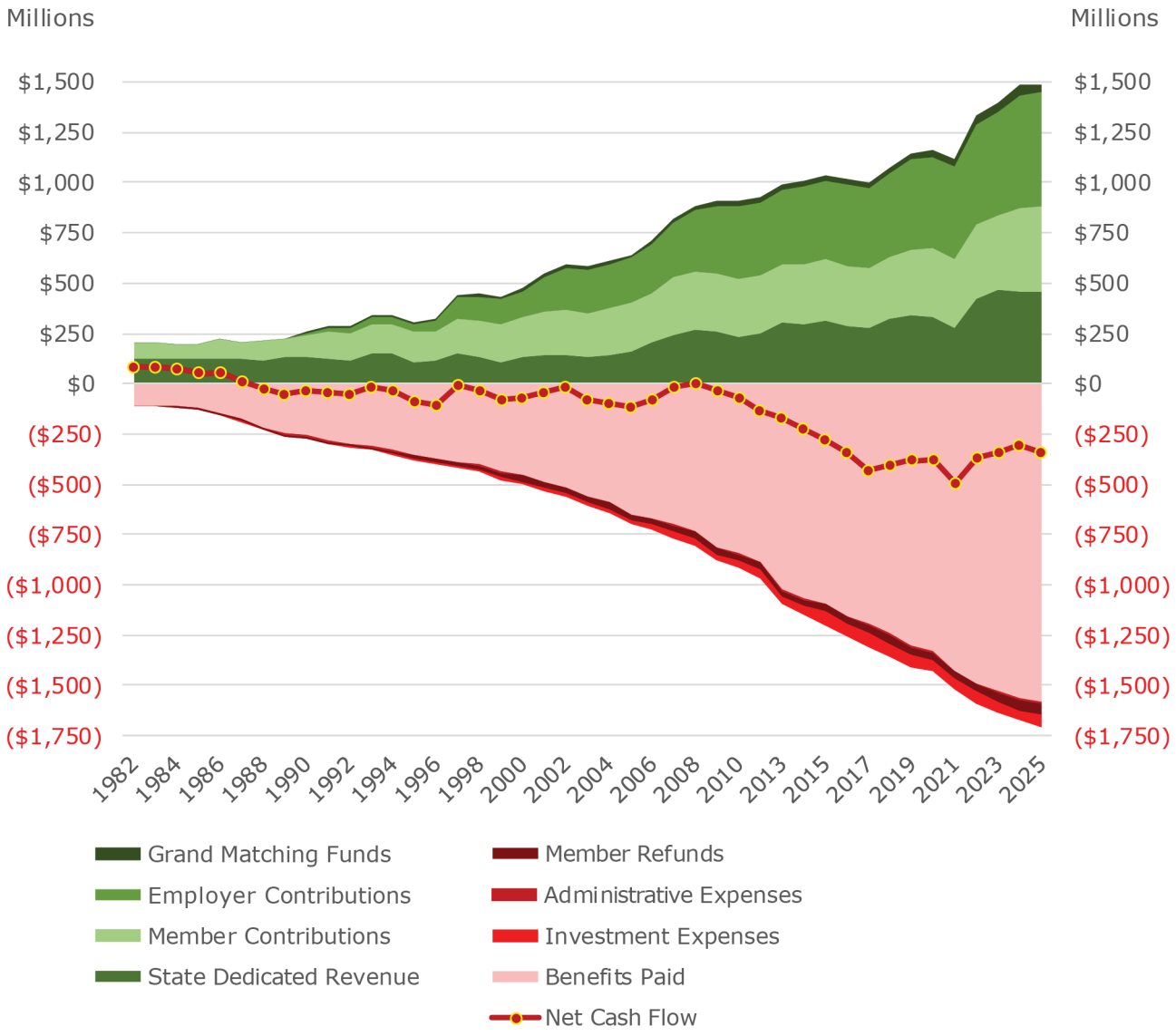


The funded ratio is a measure of the actuarial health of a pension plan. All else being equal, the greater the funded ratio, the better the actuarial health of the plan. The funded ratio is calculated as: Funded Ratio = Actuarial Value of Assets ÷ Actuarial Value of Liabilities. A plan is fully funded if the actuarial value of assets equals the actuarial value of liabilities— that is, when the funded ratio is 100%.

Another important actuarial measure is the unfunded actuarial liability, which is the amount by which actuarial liabilities exceed actuarial assets. The graph above shows each of these measures, along with the market value of the plan's assets, over time since 1982. Funded ratio progress from 49.5% in 1982 to the current 80.0% is shown on the right axis as tan-colored bars. The other values are displayed in billions of dollars on the left axis.

Assets, Liabilities, and Cash Flows

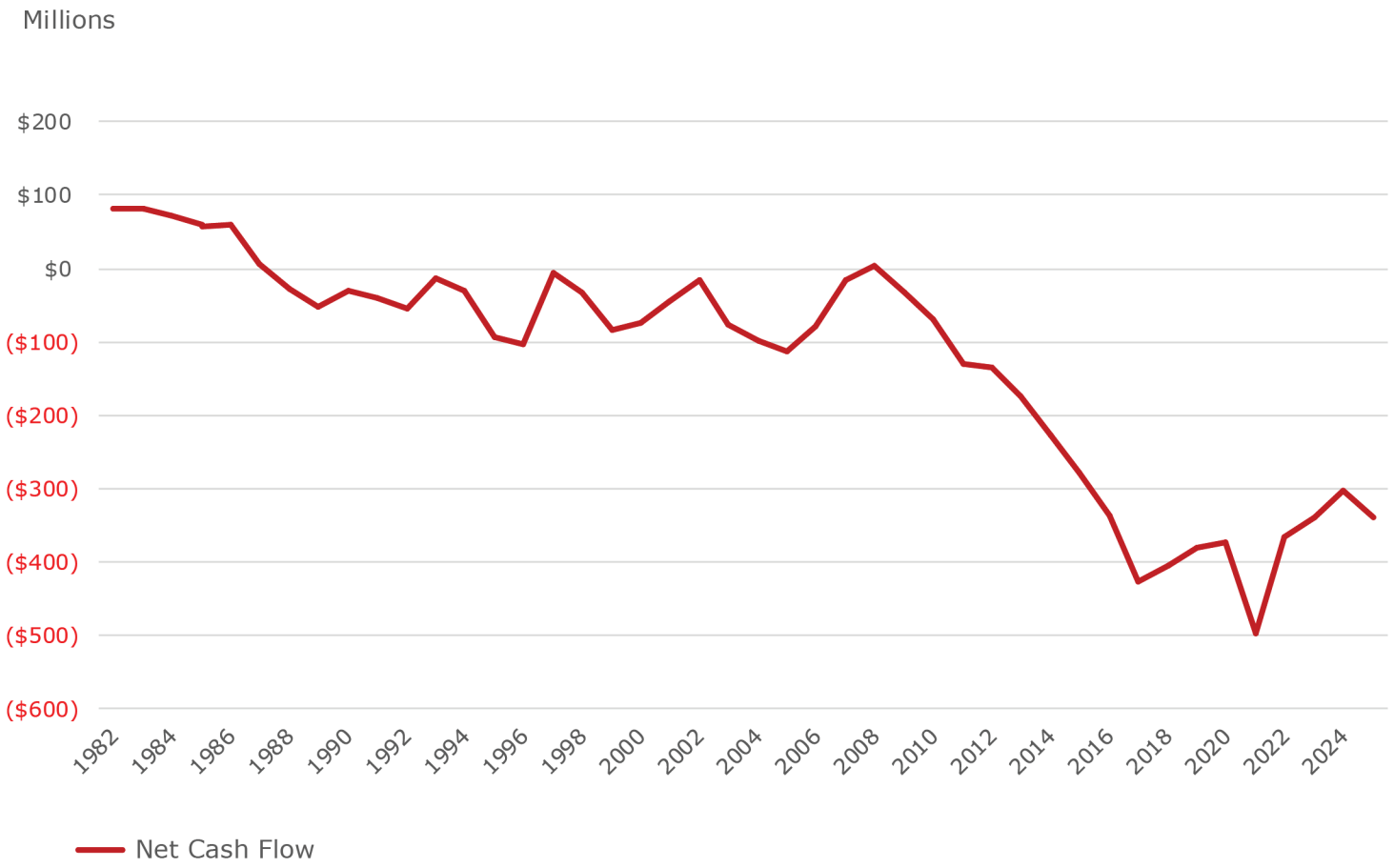
Annual System Cash Flows



The graph above shows TRS pension fund annual cash flows since 1982. Cash flows into the plan are shaded green, and cash flows out of the plan are shaded red. The net cash flow is shown as the red dotted line. A negative net cash flow is common—and expected—for a mature public pension plan such as TRS, which has been in operation since 1943.

Assets, Liabilities, and Cash Flows

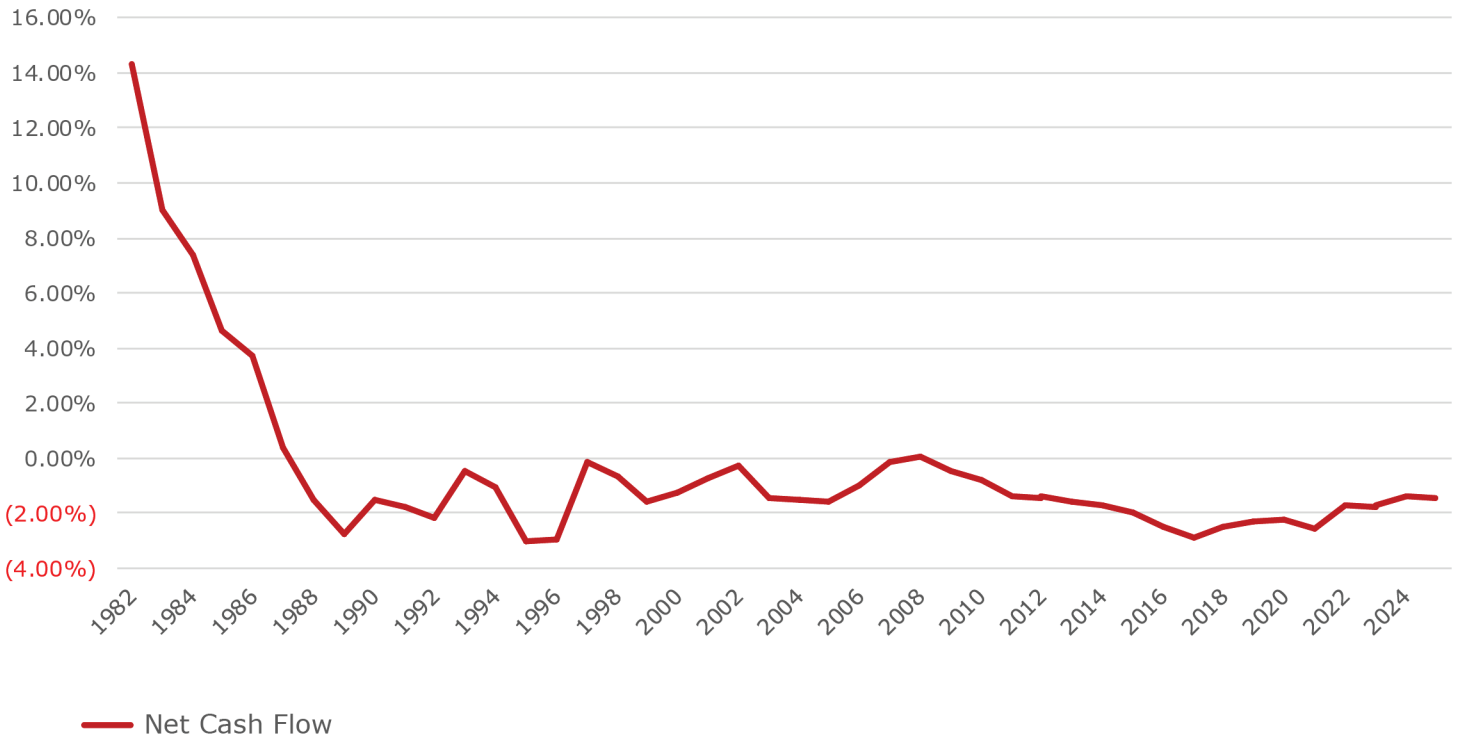
Net Annual System Cash Flows



The graph above shows net cash flows for the TRS pension fund since 1982. As noted on the previous page, it is common for a mature pension fund to pay out more in benefits than it receives in contributions. As a system that began in 1943, TRS is a mature pension fund. The presence of a sizable, well-invested trust fund portfolio makes this negative cash flow pattern sustainable.

Assets, Liabilities, and Cash Flows

Net Annual System Cash Flows as a Percentage of Average Yearly Market Value of Portfolio



The graph above shows net cash flows for the TRS pension fund since 1982 expressed as a percentage of the market value of the TRS portfolio. The cash flow for TRS has hovered around negative 2% (or –2%) since the early 1990s.

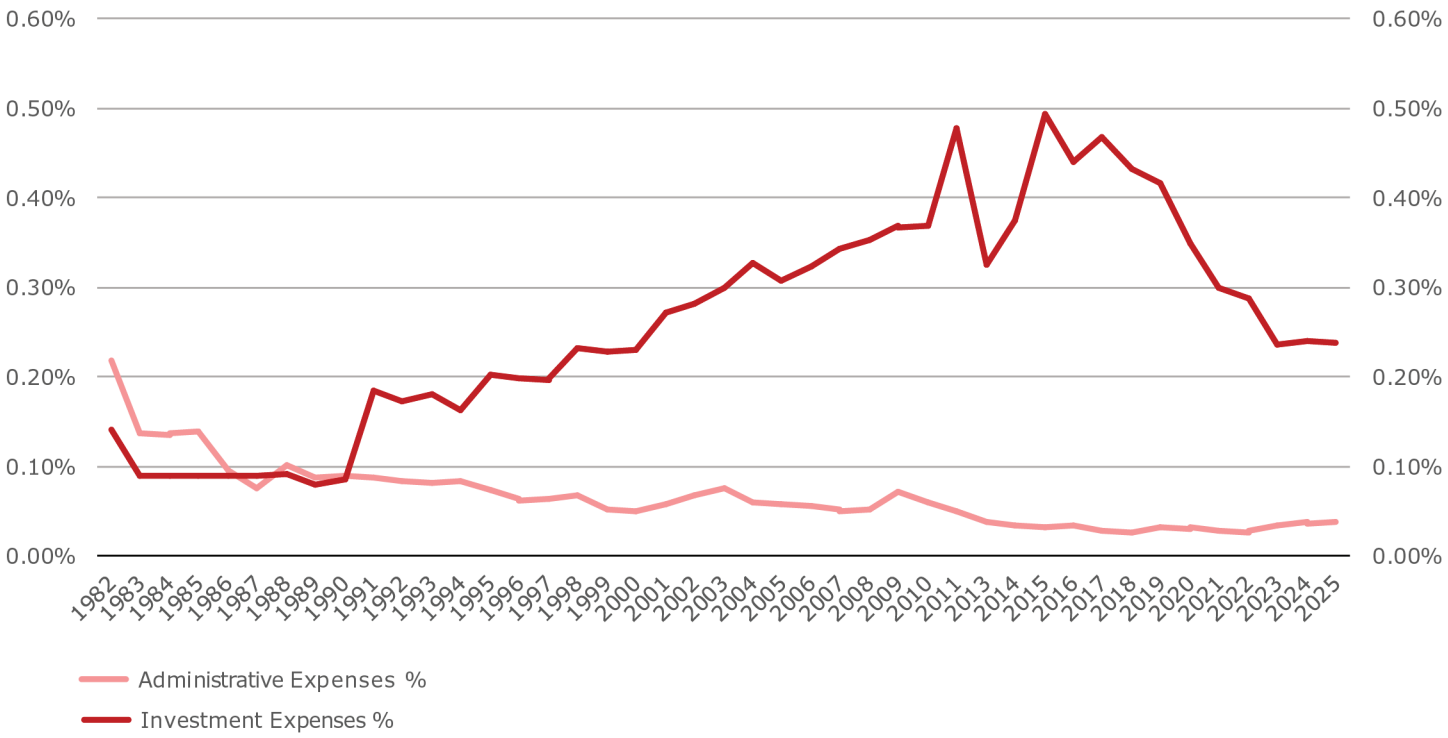
Assets, Liabilities, and Cash Flows

Annual System Discretionary Cash Flows: Administration and Investment Expenses

The graph above shows plan cash flows that are, to some degree, within the discretion of TRS. Investment expenses generally increase with the increasing size of assets under management; however, some investment strategies are more expensive than others. Administrative expenses tend to correspond with membership size and the level of services delivered to plan members.

Assets, Liabilities, and Cash Flows

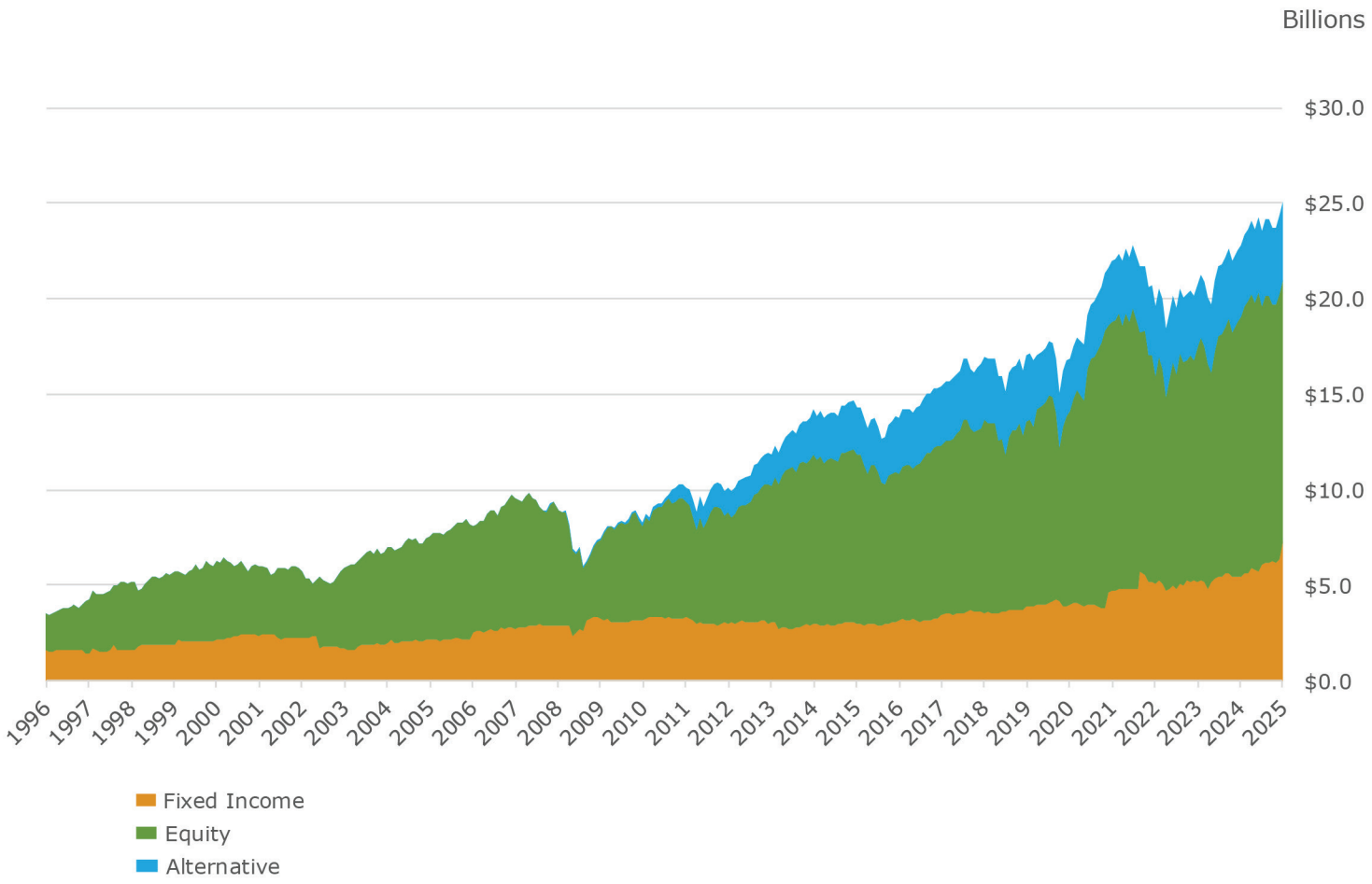
Annual System Discretionary Cash Flows: Administration and Investment Expenses



The graph above shows plan cash flows as a percentage of the market value of the TRS portfolio. Since 2015, TRS has reduced investment expenses as a percentage of market value to reflect market efficiencies and to retain and reinvest more assets in the portfolio. While TRS membership has grown significantly over the years, administrative expenses have been maintained at levels that make TRS one of the most efficiently run public pension funds in the country.

Investment Portfolio History

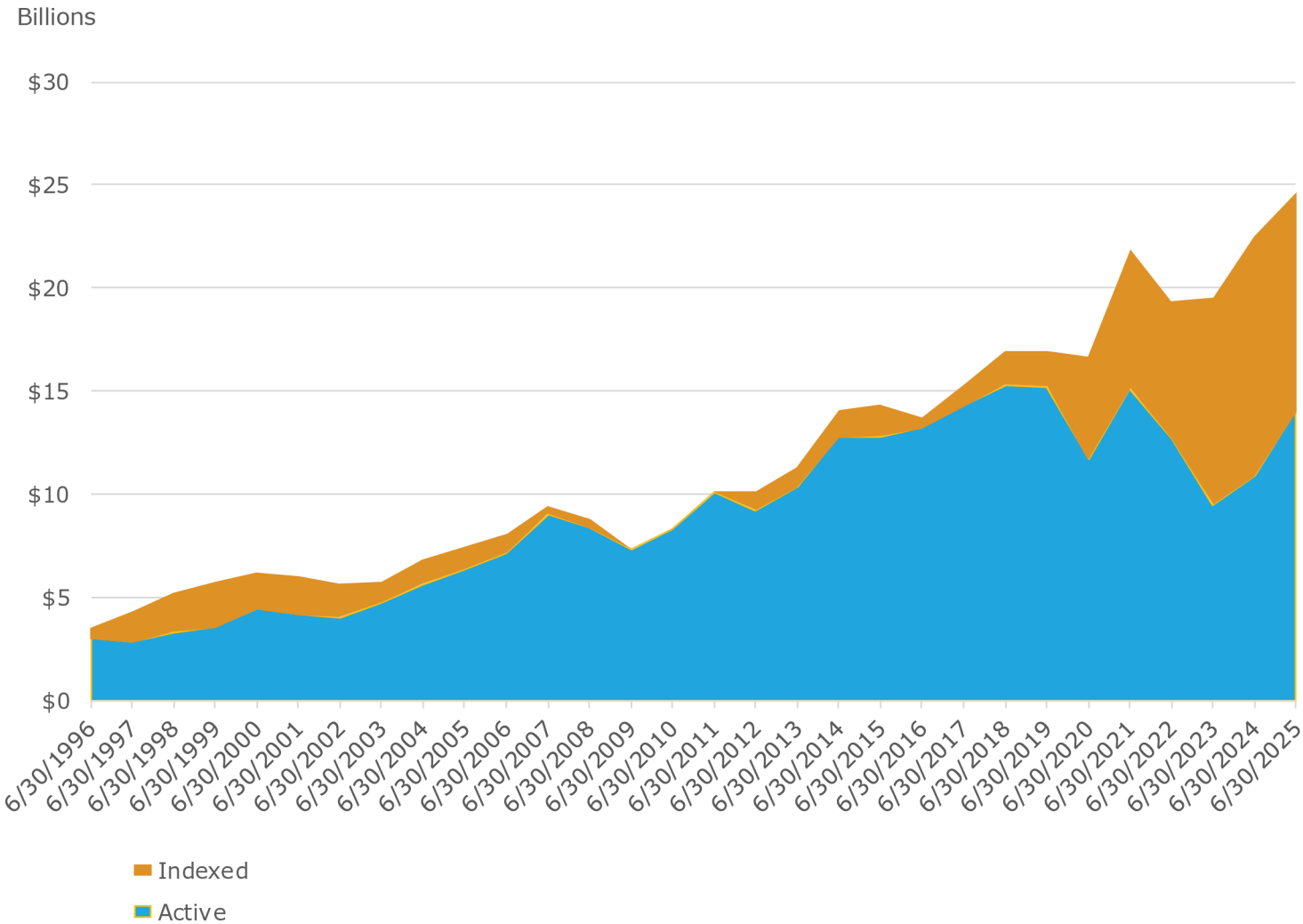
TRS Asset Allocation History by Broad Asset Class



Since the adoption of modern portfolio management practices in the late 1980s, the Board of TRS has been tasked with maintaining a diversified investment portfolio. The graph above shows portfolio diversification over time since 1996 by broad asset categories of fixed income, equities, and alternatives.

Investment Portfolio History

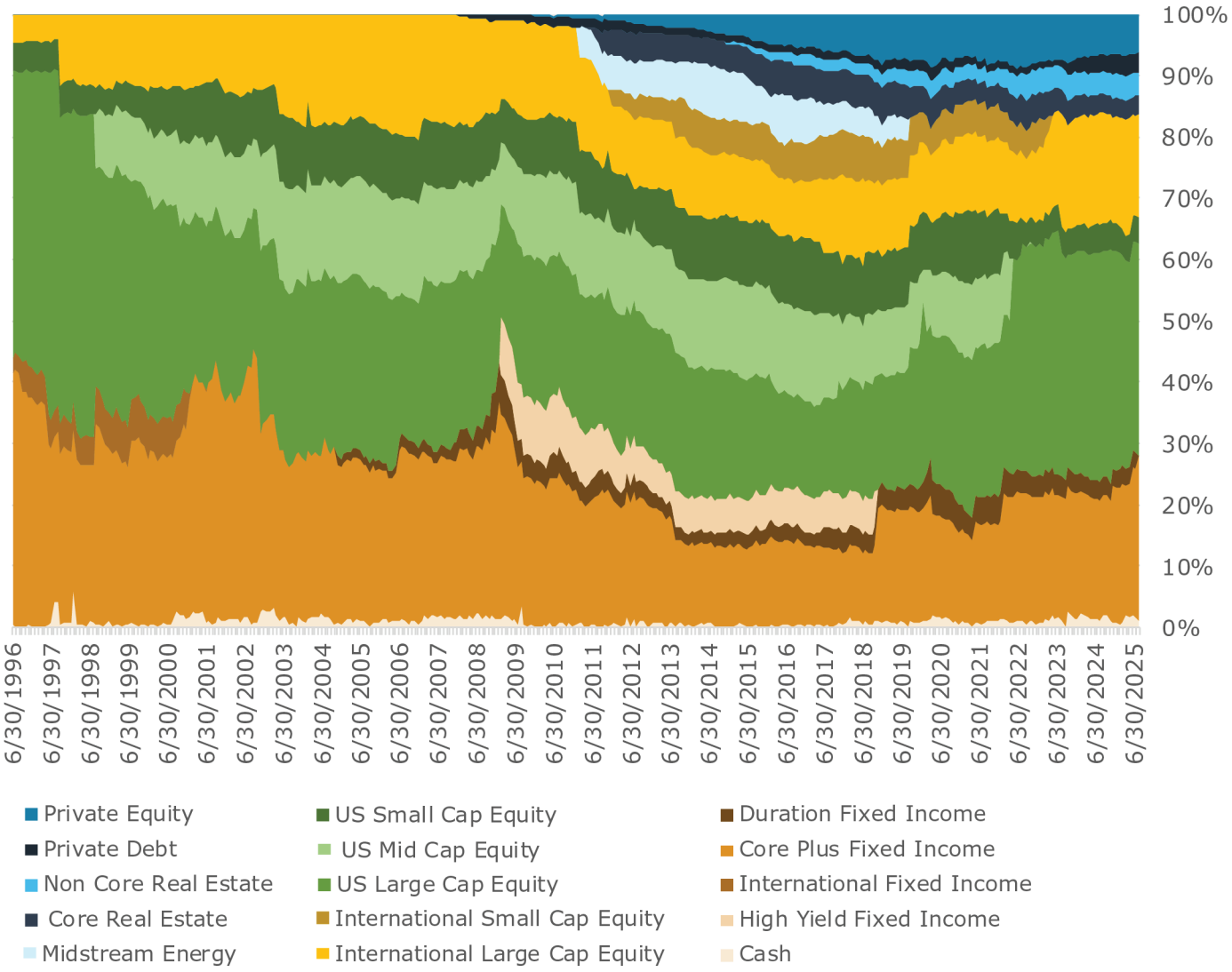
TRS Active versus Index Dollar Allocation History



Investment management can be classified by using indexed approaches to achieve low-cost asset class exposure, and active approaches that are used in pursuit of excess returns at a higher cost. The graph above shows portfolio diversification over time since 1996 by indexed and active investment approaches.

Investment Portfolio History

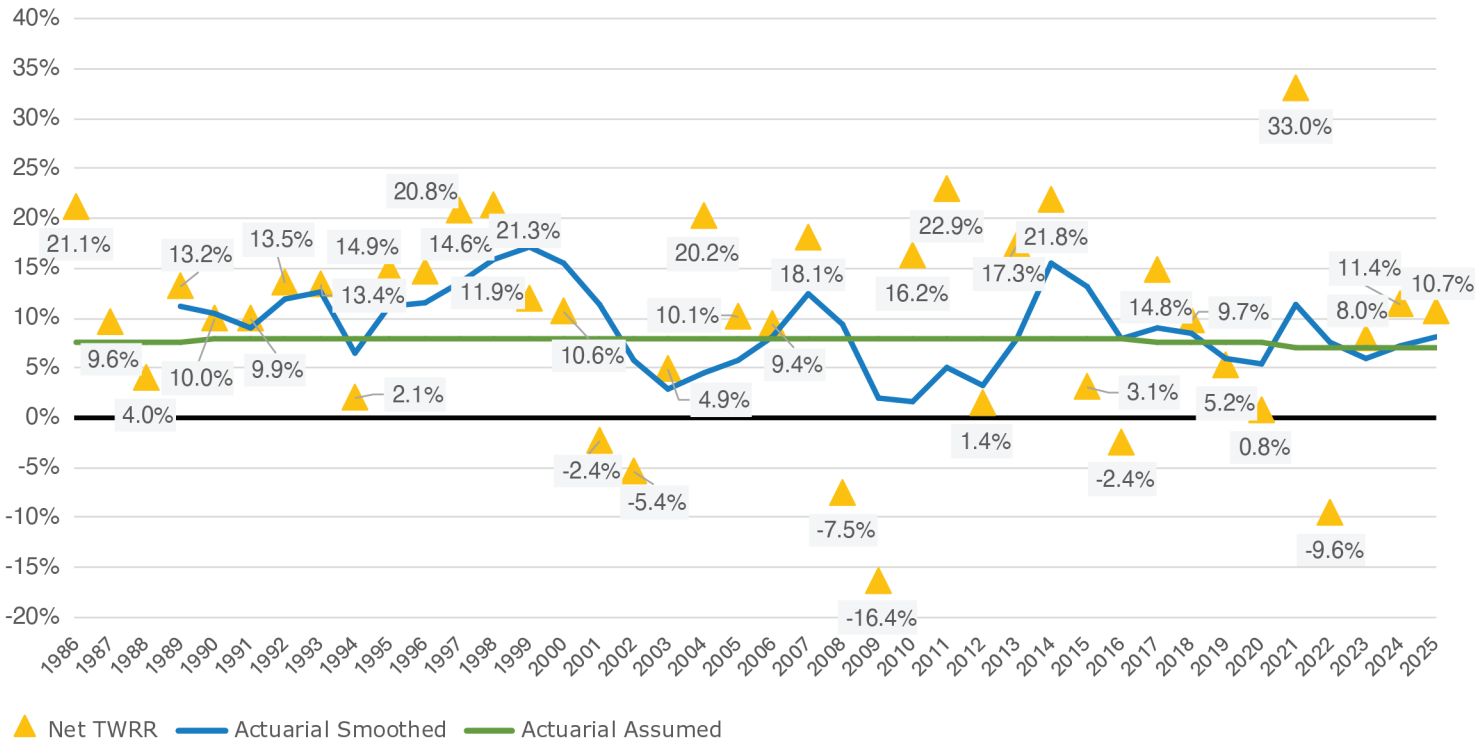
TRS Asset Allocation History (% by Asset Type)



In keeping with the goal of maintaining a diversified investment portfolio, the Board of TRS has employed multiple strategies within asset classes in varying proportions over the years. While the portfolio has changed over time, the overall goal of producing high, risk-adjusted returns to reduce the unfunded liability has remained constant. The graph above shows portfolio diversification by investment strategies since 1996.

Investment Portfolio History

TRS Net of Fee Returns by Fiscal Year



	TRS	Actuarial Ret.
40 Year Compound Annualized Return	9.20%	7.77%
Standard Deviation	9.94%	0.36%

The graph above shows net-of-fee, time-weighted TRS portfolio investment returns by fiscal year since 1986. Each year's return is shown along with the actuarial assumed return and the actuarially smoothed return, which is designed to mitigate year-to-year volatility.

Relative to other public pension funds, the TRS portfolio has needed to maintain a higher risk posture than its peers in pursuit of returns necessary to reduce the significant unfunded actuarial liability. The higher risk posture has been well rewarded over the period, as evidenced by the compound annualized return of 9.20%, which exceeded the average actuarial return target of 7.77%.

Appendix

OKLAHOMA
Teachers' Retirement System

OKLAHOMA Teachers' Retirement System

Opportunity Cost Case Study

Was money EVER taken from Teachers Retirement System?

- Following an eight-fold increase in the price of natural gas from 1974 to 1982, an annual cap of $125 million was placed on State contributions to TRS and the $311 million excess was diverted by lawmakers to other purposes.

- By March of 1996, TRS Executive Secretary, Tommy Beavers estimated the diverted funds would have grown to $1.2 billion.

Was money EVER taken from TRS?
(This is a paraphrased response to a member's recent inquiry to the Executive Secretary)

Between 1982 and 1986, a portion of the State's contribution to the Teachers' Retirement System was indirectly transferred to other areas of the state government. In 1982, a ceiling (cap) was placed on the amount of revenue TRS could receive from the tax on natural gas. The cap was set at $125 million per year. Approximately $311 million in gas tax collections that could have come to Teachers' Retirement was placed in the State Pension Reserve Fund.

Most of the money deposited in the State Pension Reserve Fund was used to establish two state-run pension plans for firefighters and police, but some money was appropriated to the Department of Human Services and the Department of Transportation. The appropriations were to provide state money to obtain federal matching funds.

By 1986, the annual gas tax collections dedicated to Teachers' Retirement had fallen below $125 million. No new money was going into the Reserve Fund and appropriations from the fund eventually exhausted the remaining balance. It is important to remember that the tax collections were the property of the citizens of Oklahoma, and the State Legislature has an obligation to use taxes in the best interest of all citizens. However, the Teachers' Retirement received and invested the $311 million, the value would ***now*** *be approximately $1.2 billion. Naturally, TRS would like to have that money to invest for the benefit of TRS members. Even with the additional money, the Retirement Fund would still be seriously underfunded, but we would be much better funded had we received those funds.*

In 1988, $39.6 million was directly transferred from Teachers' Retirement to the State and Education Employees Group Insurance Plan. This money was used to establish reserves when active and retired education employees were allowed to join the insurance program operated for state employees. In 1995, the Supreme Court ruled this transfer valid because it benefited members of the Teachers' Retirement System.

House Bill 2475 calling for a return of $25 million from the group insurance board to Teachers' Retirement passed the House of Representatives on February 21, 1996. Hopefully, the Senate will take quick action on this measure.

(Note: The cap on gas ***tax*** *receipts was increased to* ***$175*** *million in* ***1988****, and removed in* ***1992****. The most TRS ever received from the gas tax in one year was* ***$151.7*** *million in* ***1993****.)*

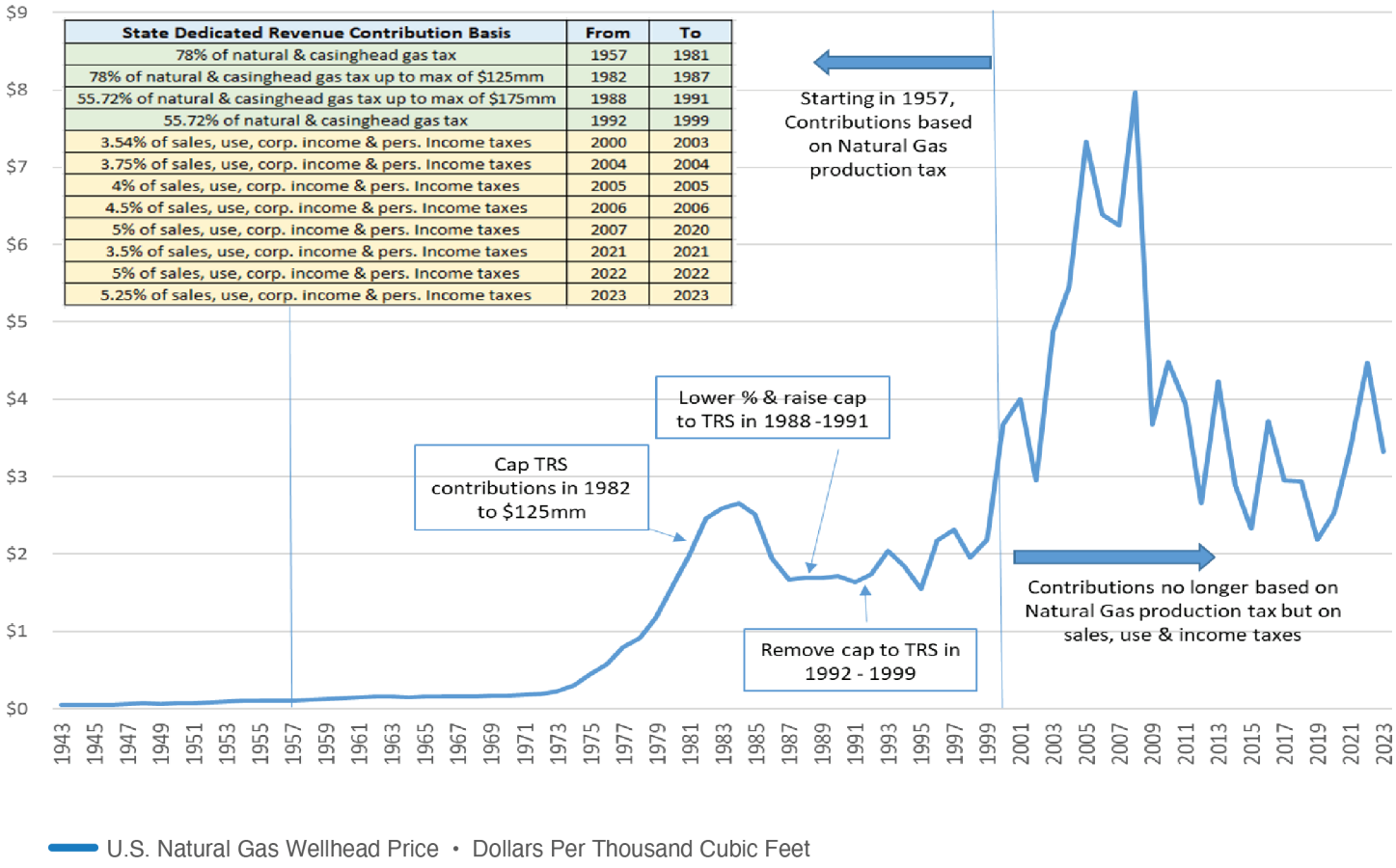
For Original document see Advisor archives under Publications on the TRS website...
https://oklahoma.gov/content/dam/ok/en/trs/documents/trendsmar1996.pdf

Opportunity Cost Case Study

"Was money EVER taken from TRS?"

TRS State Contribution - Basis, Changes and Natural Gas Prices

State Dedicated Revenue Contribution Basis	From	To
78% of natural & casinghead gas tax	1957	1981
78% of natural & casinghead gas tax up to max of $125mm	1982	1987
55.72% of natural & casinghead gas tax up to max of $175mm	1988	1991
55.72% of natural & casinghead gas tax	1992	1999
3.54% of sales, use, corp. income & pers. Income taxes	2000	2003
3.75% of sales, use, corp. income & pers. Income taxes	2004	2004
4% of sales, use, corp. income & pers. Income taxes	2005	2005
4.5% of sales, use, corp. income & pers. Income taxes	2006	2006
5% of sales, use, corp. income & pers. Income taxes	2007	2020
3.5% of sales, use, corp. income & pers. Income taxes	2021	2021
5% of sales, use, corp. income & pers. Income taxes	2022	2022
5.25% of sales, use, corp. income & pers. Income taxes	2023	2023



Sources: Oklahoma Statutes, TRS Actuarial Reports & Bloomberg

Opportunity Cost Case Study

"Was money EVER taken from TRS?"

If diverted funds would have grown to $1.2 billion by 1996, where would we be today in terms of:

- Portfolio market value,
- Unfunded liabilities vs portfolio market value,
- Funded ratio on a market value basis?

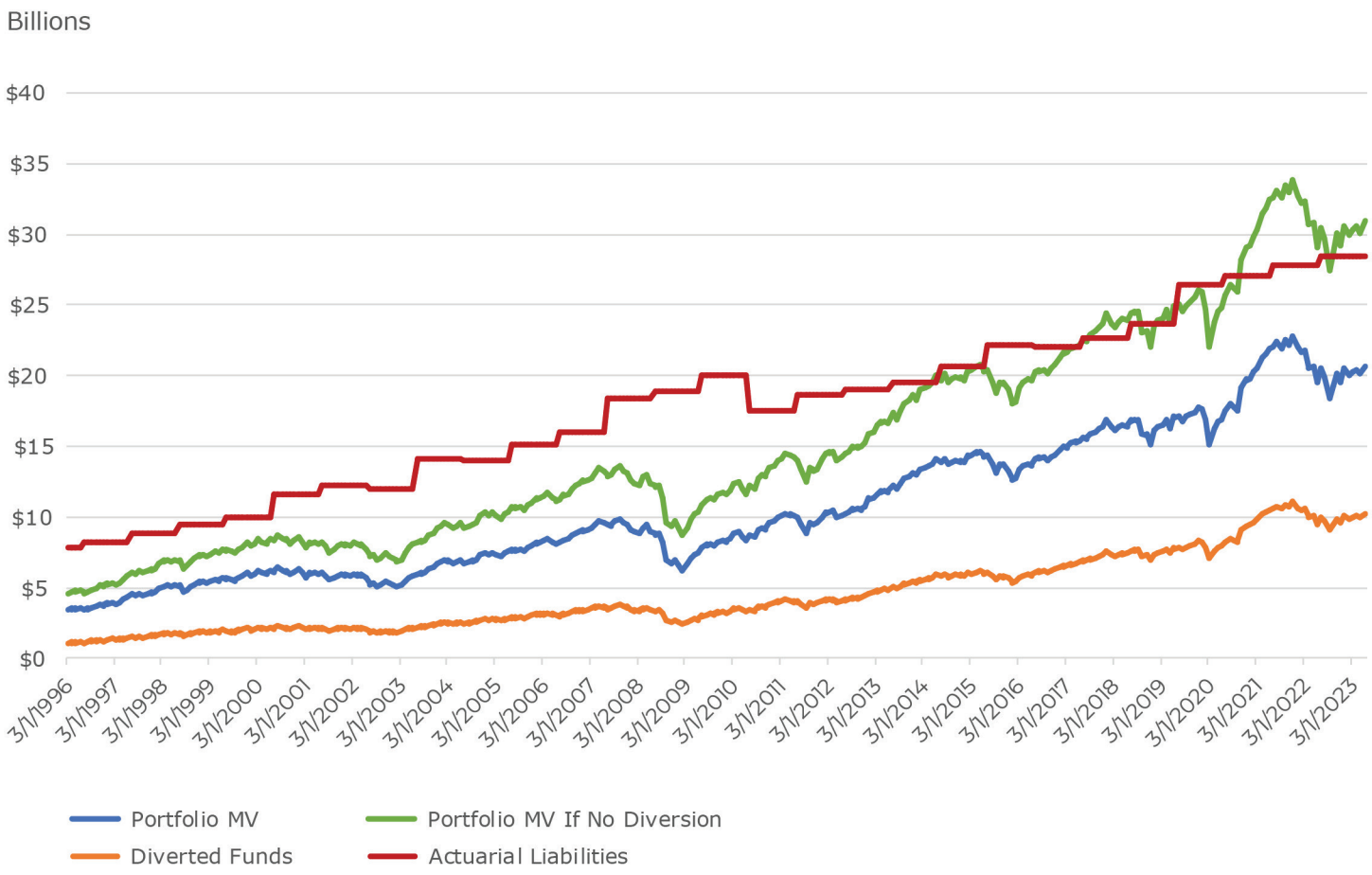
[What would be the implications?]

Sources: Oklahoma Statutes, TRS Actuarial Reports & Bloomberg

Opportunity Cost Case Study

"Was money EVER taken from TRS?"

Actual and Hypothetical Portfolio Market Values vs Actuarial Liabilities 1996-2023



Had funds not been diverted from TRS, the market value of the portfolio (green line labeled "Portfolio MV If No Diversion") would have first matched the actuarial liabilities in 2014 and would have well exceeded the actuarial liabilities in the early 2020s. While funded ratio is an actuarial measure that uses the actuarially smoothed value of assets, instead of the market value of assets, it is likely that TRS would have achieved 100% funded status in the early 2020s.

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Actual and Hypothetical Market Values Minus Actuarial Liabilities

Had funds not been diverted from TRS, the unfunded liabilities (green line) would have first moved below zero by June of 2014 and would have mostly stayed below zero since May of 2017.

Opportunity Cost Case Study

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Actual and Hypothetical Funded Ratios: Actuarial and Market

Had funds not been diverted from TRS, the funded ratio by market value (green line labeled "MV Funded Ratio w/ Diverted Funds") would have first achieved 100% by 2014 and would have hovered consistently around 100% since 2017.

Opportunity Cost Case Study

"Was money EVER taken from TRS?"

If diverted funds would have grown to $1.2 billion by 1996, where would we be as of 6/30/23* in terms of:

- Portfolio market value:
  $30.9 billion vs actual $20.7 billion
- Unfunded liabilities vs portfolio market value:
  Surplus of $2.5 billion
  vs actual liabilities of $7.7 billion
- Funded ratio on a market value basis:
  108.7% vs actual 72.7%
  (actuarial funded ratio is 75.1%)

[What would be the implications?]

Even accounting for decades of inadequate funding policies, the 1982 diversion of $311 million from TRS proved pivotal. Without that withdrawal, strong investment returns over the following 30+ years would have naturally restored the System to full funding by around 2014, eliminating the need for State contributions to pay down the unfunded liability.

* Illustrative hypotheticals make the perhaps unlikely assumption that policy makers would have left State contributions unchanged.

History of Actuarial Funding Policies, Assets and Liabilities, and Investments

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A SUMMARIZED HISTORY OF TRS SINCE 1940