

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
10 CORPORATE WOODS DRIVE, ALBANY NY

Risk Committee Meeting

A meeting of the Risk Committee of the Retirement Board of the New York State Teachers' Retirement System was held at the System on April 27, 2022.

The following individuals were in attendance:

Committee Members: Elizabeth Chetney, David Keefe, Christopher Morin,
Nicholas Smirensky (via WebEx)

Board Members: Juliet Benaquisto, Eric Iberger (via WebEx), Jennifer Longtin, Oliver
Robinson

Risk Committee Advisors: Peter Cosgrove, Steven Huber

NYSTRS' Staff: Thomas Lee, Joseph Indelicato Jr., Noreen Jones, Ken Kasper,
Richard Young, Paul Cummins, Gerald Yahoudy, Dave Gillan,
Miriam Dixon, Mike Gregoire, Michael Federici, Ed Rezny, Matt
Tice, Matt Albano, John Rosenberg

Visitors: Joe Ebisa, With Intelligence

The meeting was called to order by C. Morin, Chair at 8:36 a.m. Upon motion of E. Chetney, seconded by D. Keefe and unanimously carried, the Committee went into Executive Session at 8:36 a.m. to hear an information security update.

With unanimous consent, the meeting came out of Executive Session at 8:53 a.m. and the following items were discussed:

1. Approval of the minutes of January 26, 2022

Upon motion of D. Keefe, seconded by E. Chetney and unanimously carried, the meetings minutes of the January 26, 2022 were approved.

2. Enterprise Risk Management Update

M. Albano and M. Tice presented an enterprise risk management update, OFAC review and risk assessment (Appendix A).

3. Investment Risk Report

M. Albano presented an investment risk report (Appendix B).

There being no further business, the Committee unanimously adjourned at 9:23 a.m.

Respectfully submitted,

A solid black rectangular box redacting the signature of Thomas K. Lee.

Thomas K. Lee



Enterprise Risk Management Update

MATTHEW ALBANO, CFA, RISK OFFICER

**MATTHEW TICE, ASSISTANT MANAGER RISK
MANAGEMENT**

APRIL 2022

Appendix A



The essence of risk management lies in maximizing the areas where we have some control over the outcome while minimizing the areas where we have absolutely no control over the outcome.

Peter L. Bernstein

WWW.STOREMYPIC.COM



Department risk factor surveys



Executive team discussion



Develop, rank and assign recommendations



Report to the Risk Committee of the Board
in April

Process

A Strong Foundation: NYSTRS' Strategic Objectives

- **Governance Structure**: Promote a governance model to appropriately manage System finances and risk
- **Shared Accountability**: Foster an environment of shared accountability, awareness and commitment
- **Customer Service**: Maintain a high level of customer service
- **Safeguard System Funds**: Safeguard System funds and invest them in a prudent and diversified manner in order to achieve optimum long-term returns with an appropriate level of risk
- **Quality Workforce**: Recruit, develop and retain a quality workforce

Enterprise Risk Management Update

Completed the 2021-22 annual enterprise-wide risk assessment, which focused on identifying high-level internal and external risk factors that could prevent NYSTRS from meeting its Strategic Objectives:

Governance Structure

- New or Proposed Laws Policies or Standards

Shared Accountability

- Impact of Data Security Event

Customer Service

- Complexity of Operations

Quality Workforce

- Staffing
- Ability to Recruit

New or Proposed Laws Policies or Standards

Risk Identification

- A continuously evolving situation requiring regular monitoring

Risk Mitigation

- Continue to monitor Federal and State guidelines
- Engage with outside counsel and consultants
- New departments directly addressing complex issues
- Engagement with stakeholders

Potential Impact of a Data Security Event

Risk Identification

- More cloud applications where the data is now stored offsite
- Infrastructure upgrades / encryption / transition to cloud computing
- Third party service providers

Risk Mitigations

- Cloud management tool set
- Information security initiatives
- Employee training

Complexity of Operations

Risk Identification

- Operation of the pension plan requires specialized skills and education, or advanced training to perform functions
- Resources used to perform/support pension functions range from basic to highly complex

Risk Mitigations

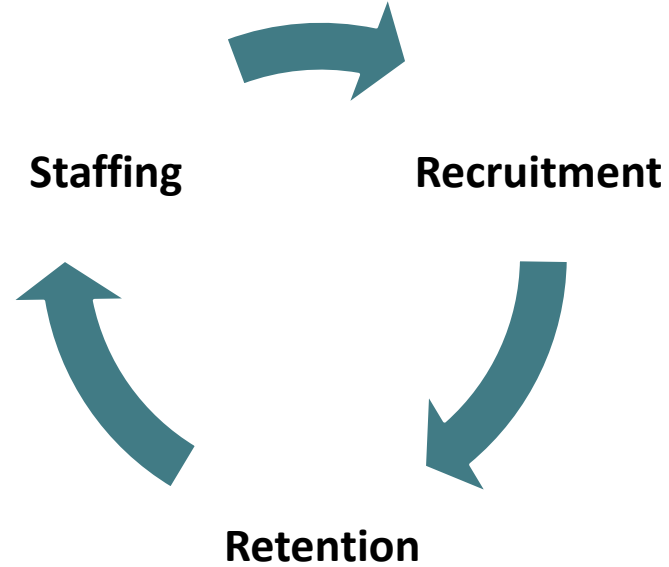
- Consolidation - Various platforms, hardware and software to minimize footprint
- New departments directly addressing complex issues
- Cross department committees
- Succession planning

Staffing

Recruitment

Retention

Risk Identification



Risk Mitigation

- Internal process improvements
- Update headcount
- Continuous recruitment
- Review position allocation
- Succession planning

2021-22 Enterprise Risk Assessment

Questions?



Office of Foreign Asset Control - Annual Risk Assessment

April 2022

Matthew Albano, CFA, Risk Officer

Matthew Tice, Assistant Manager of Risk Management

Agenda

- *OFAC Compliance Program
 - Five essential components of compliance
 - Annual Risk Assessment
- Overview of the Process for Sanction Compliance

*OFAC - Office of Foreign Asset Control - Department of the U.S. Treasury

Five Essential Components of OFAC Compliance

1. Management Commitment

- Commitment and support is one of the most important factors in the program's success

2. Risk Assessment

- Conduct a routine, and if appropriate, ongoing “risk assessment” for the purposes of identifying potential OFAC issues

3. Internal Controls

- Policies and procedures in place

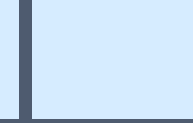
4. Testing and Auditing

- Audits assess the effectiveness of current processes

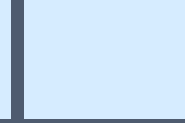
5. Training

- An effective training program is an integral component of a successful program

Annual OFAC Risk Assessment



Five essential components of compliance	NYSTRS Compliance program		
	Conforms	Generally Conforms	Developing
Management Commitment			
Risk Assessment			
Internal Controls			
Testing and Auditing			
Training			
Annual OFAC Risk Assessment			
NYSTRS is adequately addressing the risk of non-compliance with OFAC as it relates to investment management and non-investment transactions.			



OFAC Sanction Compliance Overview

OFAC Sanction Compliance Overview

- Monitoring for OFAC Activity
- Perform Screens Against Sanction List (SDN)
 - OFAC software continually screens database
- Investment Manager OFAC Certification
- Documented Policies and Procedures
- Outside Counsel Discussion and Policy Review

Risk and Compliance Update



Questions?

Investment Risk Update

Risk Management

Risk Committee Meeting: April 27, 2022

Matt Albano, CFA



**Risk Management
Investment Risk Board Report
April 2022**

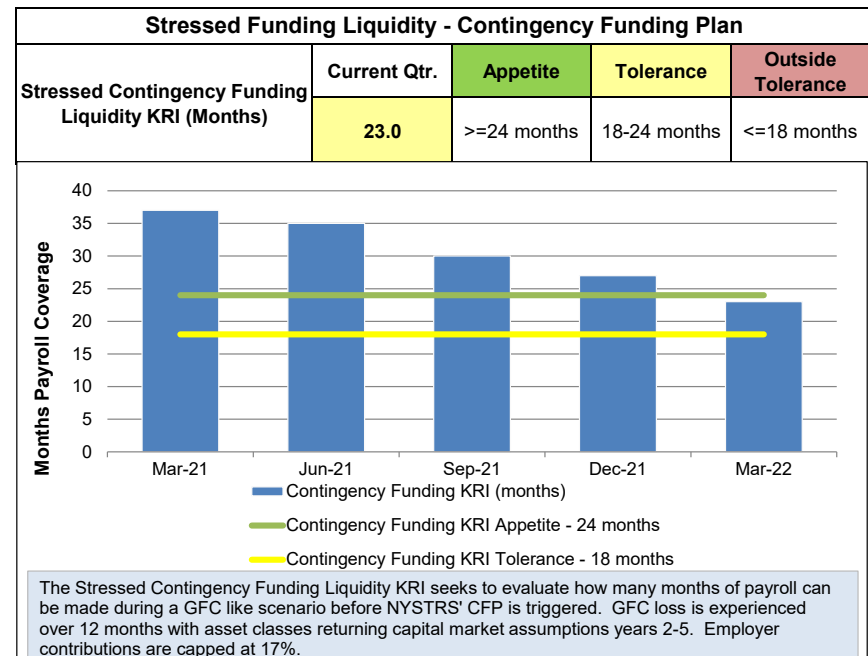
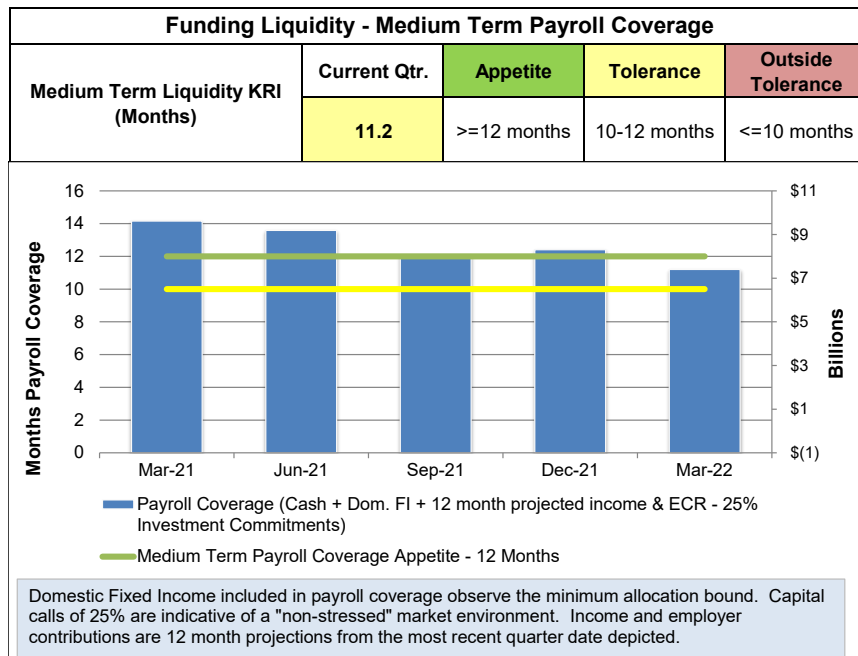
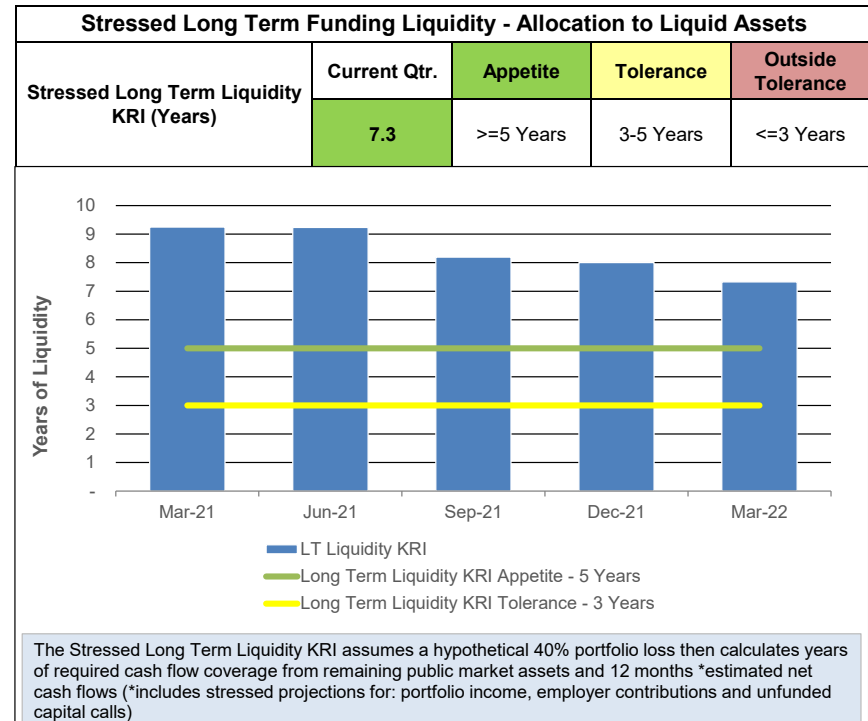
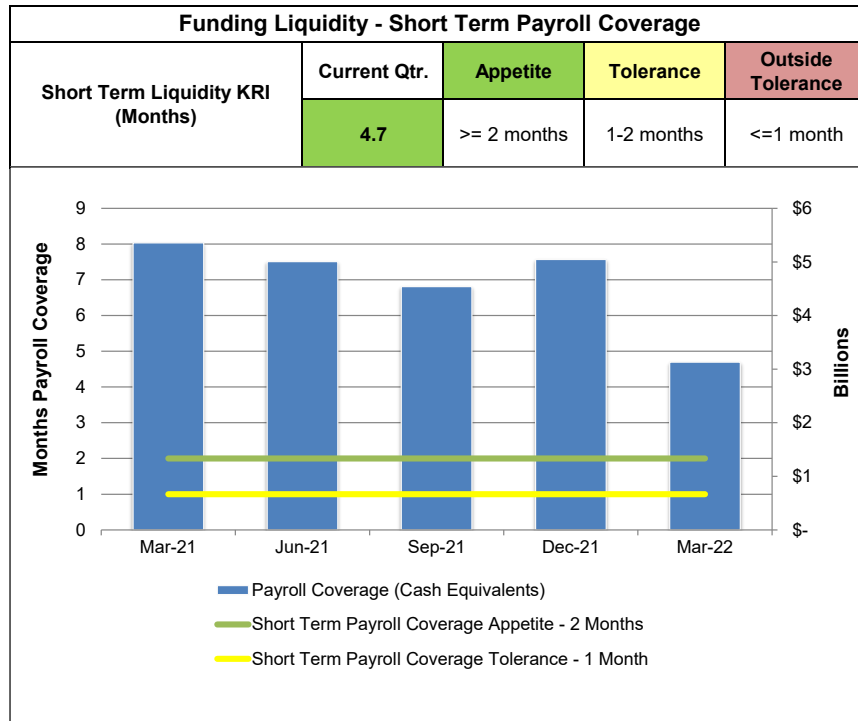
Investment Risk - Key Risk Indicators

Updates:

- The Medium Term Liquidity and Stressed Contingency Funding Liquidity moved to "Tolerance" from "Appetite", largely due to a temporary drop in NYSTRS cash balance. Cash balances have increased post-quarter end and have restored all liquidity metrics to within appetite
 - Risk Mitigation
 - Staff continues to meet weekly on asset allocation
- Methodology updated for Medium Term Liquidity KRI to include all Domestic Fixed Income to the asset class lower bound rather than only considering U.S. Treasuries
- Total Plan Risk; Tail Risk; and Risk Contributions by Asset Class, Sector, Geography, and Factor are as expected

Key Risk Indicator	Outside Tolerance	Risk Tolerance	Risk Appetite	Current Assessment
Asset Allocation (Market Risk Management)	One or More Asset Classes Out of Bounds	One or More Asset Classes Outside of Policy During Transition Period	All Asset Classes within Policy Range	All Asset Classes within Policy Range
Net Benefit Payments as % of Assets (Liquidity)	>10%	>5 - 10%	<= 5%	4.3%
Short Term Liquidity (Liquidity)	<= 1 Month	1 - 2 Months	>= 2 Months	4.7 Months
Medium Term Liquidity (Liquidity)	<= 10 Months	10 - 12 Months	>= 12 Months	11.2 Months
Stressed Contingency Funding Liquidity (Liquidity)	<= 18 Months	18 - 24 Months	>= 24 Months	23 Months
Stressed Long Term Liquidity (Liquidity)	<= 3 Years	3 - 5 Years	>= 5 Years	7.3 Years
Funded Ratio: Market Value of Total Plan Assets (Unfunded Liability)	<80% or >120%	80 - 90% or 110 - 120%	90 - 110%	97.3% (6/30/2020)
ECR Volatility (Unfunded Liability)	Δ +/- >3%	Δ +/- 2 - 3%	Δ +/- 2%	0.27% (6/30/2020)
ECR Level (Unfunded Liability)	<4% or >17%	4 - 6% or 12 - 17%	6 - 12%	9.8% (6/30/2020)
Actuarial Valuation: Quinquennial Full Scope Audit (Valuation Process)	Replicated Liabilities >4% of NYSTRS' Calculation	Replicated Liabilities 1 - 4% of NYSTRS' Calculation	Replicated Liabilities <=1% of NYSTRS' Calculation	0.04% (4/16/2019)
Actuarial Valuation: Annual Independent Review (Valuation Process)	Adverse Opinion	Modified Opinion	Unmodified Opinion	Unmodified Opinion (10/28/2021)

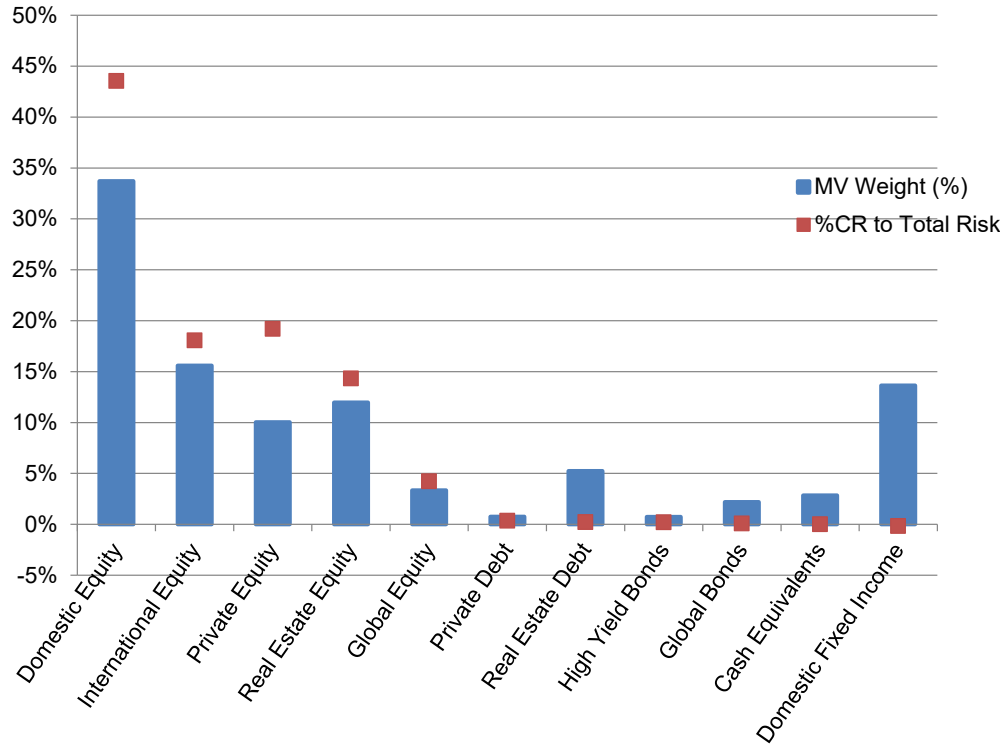
Risk Management Investment Risk Board Report April 2022



Risk Management Investment Risk Board Report April 2022

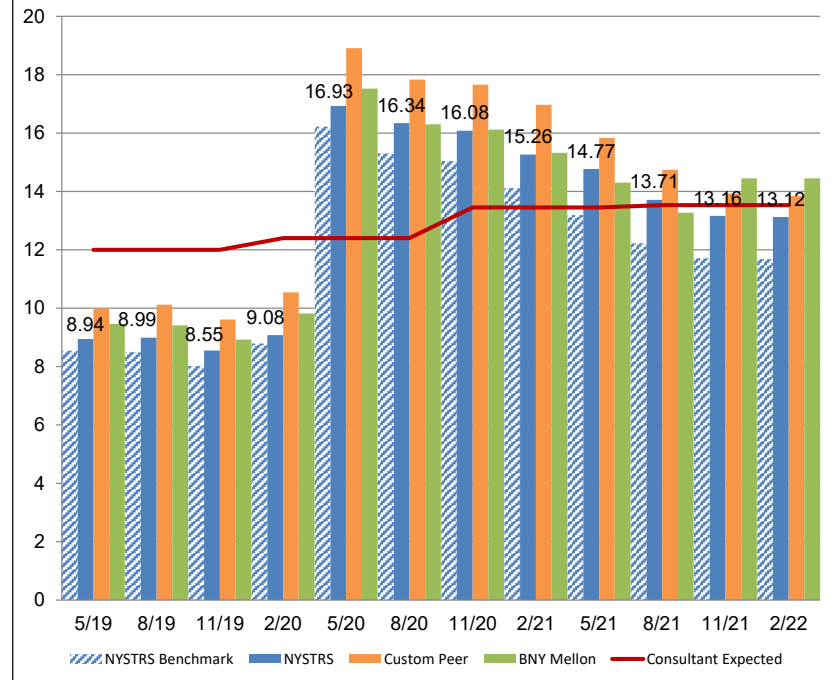
Total Predicted Risk by Asset Class

Asset class contributions to Total Predicted Risk are in line with expectations, with equity investments being the largest contributors.



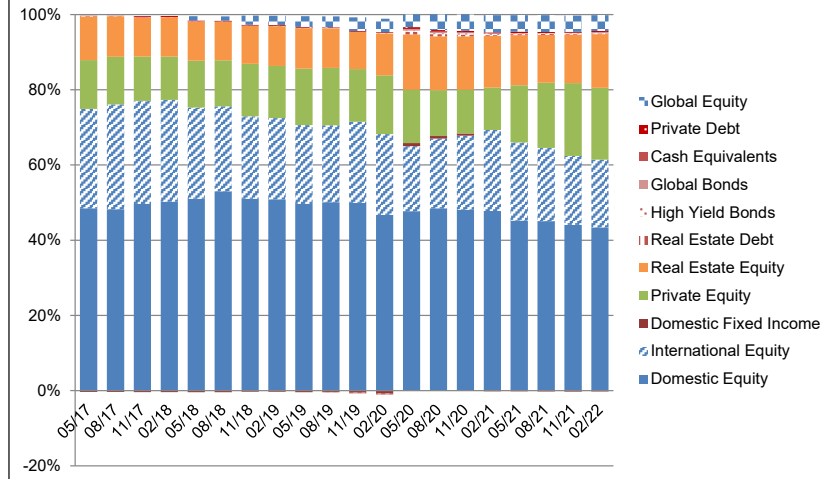
Total Predicted Risk and Peer Comparison

Long term expected risk target 13.53%; short term predicted risk 13.12%



Portfolio Name	Market Value (Millions \$)	Weight (%)	%CR to Total Risk	Total Plan Risk Cont.	Total Predicted Risk
Total Portfolio	\$ 144,625	100%	100%	13.12	13.12
Domestic Equity	\$ 48,748	33.71%	43.55%	5.71	17.56
International Equity	\$ 22,544	15.59%	18.07%	2.37	16.97
Private Equity	\$ 14,508	10.03%	19.19%	2.52	29.92
Real Estate Equity	\$ 17,315	11.97%	14.32%	1.88	19.22
Global Equity	\$ 4,818	3.33%	4.21%	0.55	17.07
Private Debt	\$ 1,084	0.75%	0.35%	0.05	8.89
Real Estate Debt	\$ 7,571	5.23%	0.21%	0.03	2.15
High Yield Bonds	\$ 1,054	0.73%	0.19%	0.02	4.92
Global Bonds	\$ 3,163	2.19%	0.08%	0.01	3.02
Cash Equivalents	\$ 4,104	2.84%	0.00%	0.00	0.04
Domestic Fixed Income	\$ 19,716	13.63%	-0.16%	-0.02	2.82

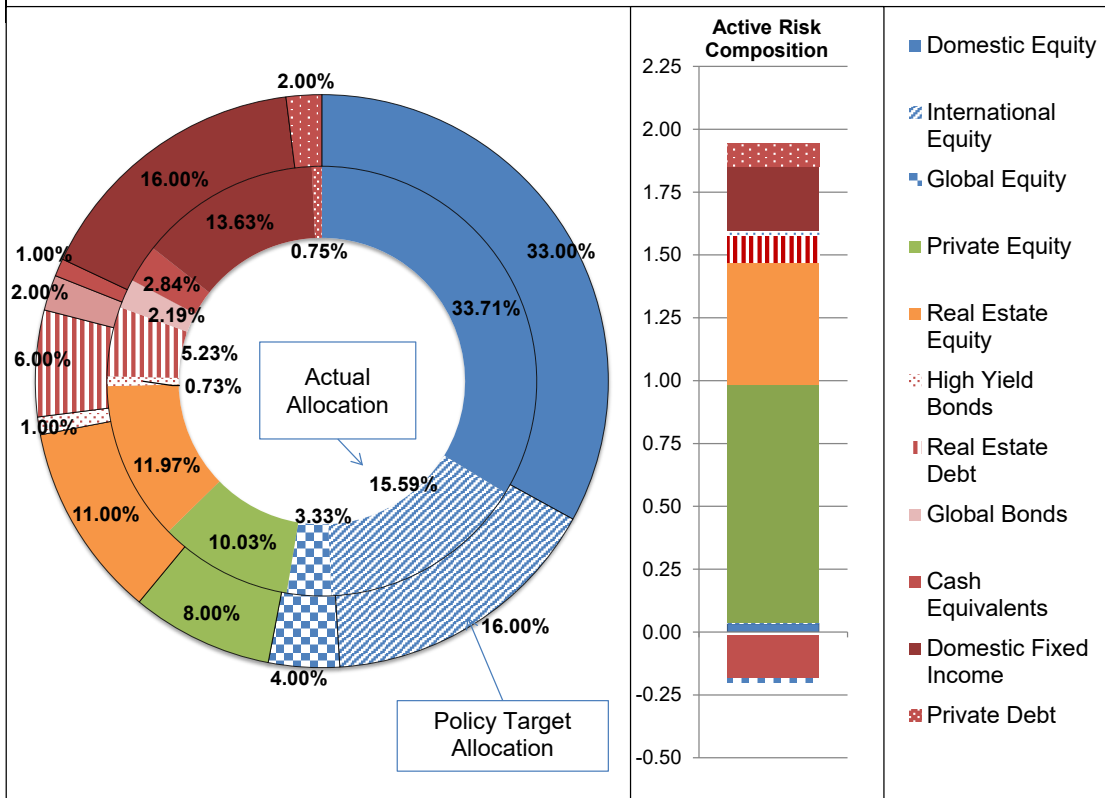
Historical Total Predicted Risk Contribution



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Active Predicted Risk

Active predicted risk 1.74; a decrease of 8 bps from last quarter.



Active Predicted Risk:

Active Predicted Risk is defined as the expected volatility of excess returns, and results from differences between actual portfolio weights and holdings vs. policy weights and holdings. Excess returns may be positive or negative.

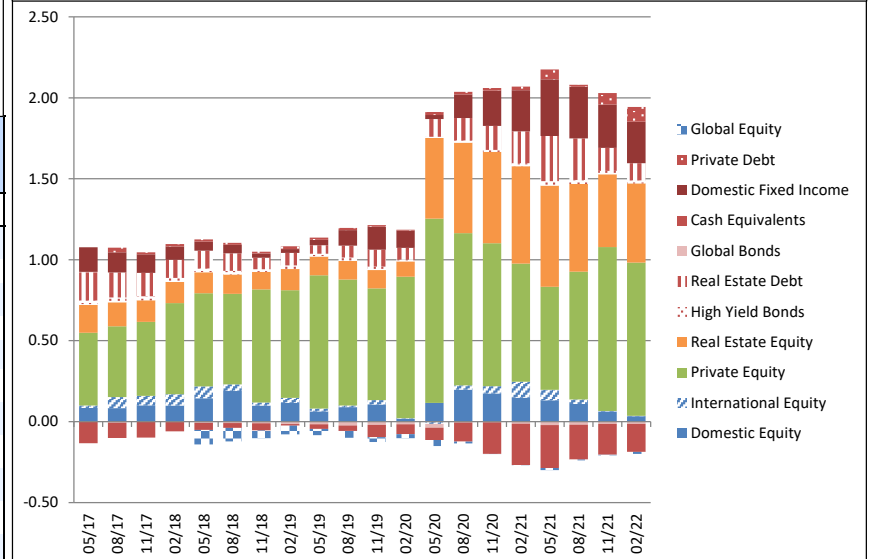
Observations:

Active Risk for the Fund is largely controlled by limiting the difference between the actual and policy benchmark (target) weights for each asset class.

Benchmarking issues associated with private market portfolios also affect the measurement of 'active' risk. We see this most significantly with NYSTRS' private equity portfolio.

Portfolio Name	Weight (%)	BMK Weight (%)	Active Weight (%)	Active Risk Cont.	% CR to Active Risk	Active Predicted Risk
Total Portfolio	100%	100%	0%	1.74	100%	1.74
Domestic Equity	33.71%	33.00%	0.71%	0.03	1.9%	0.08
International Equity	15.59%	16.00%	-0.41%	0.00	0.1%	0.36
Global Equity	3.33%	4.00%	-0.67%	-0.01	-0.8%	1.96
Private Equity	10.03%	8.00%	2.03%	0.95	54.3%	8.15
Real Estate Equity	11.97%	11.00%	0.97%	0.49	28.1%	6.09
High Yield Bonds	0.73%	1.00%	-0.27%	0.02	1.1%	0.27
Real Estate Debt	5.23%	6.00%	-0.77%	0.11	6.0%	2.06
Global Bonds	2.19%	2.00%	0.19%	-0.01	-0.8%	0.40
Cash Equivalents	2.84%	1.00%	1.84%	-0.17	-9.9%	0.04
Domestic Fixed Income	13.63%	16.00%	-2.37%	0.26	14.7%	1.22
Private Debt	0.75%	2.00%	-1.25%	0.09	5.2%	6.08

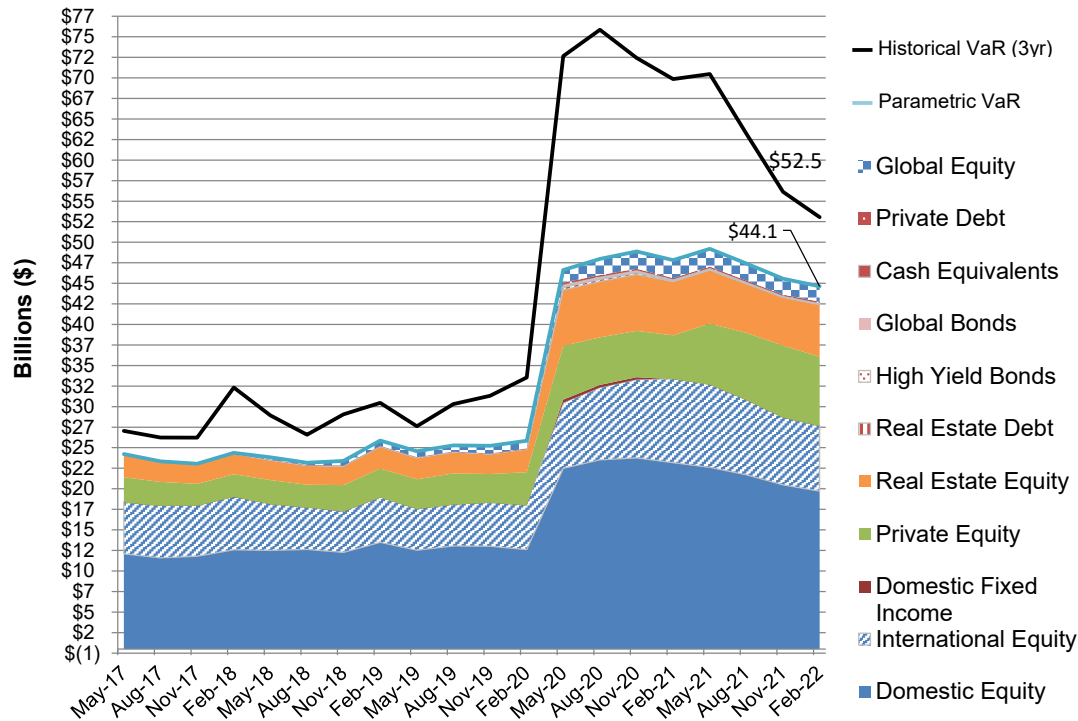
Historical Active Risk Contribution



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Value at Risk Contribution by Asset Class

VaR metrics remain elevated as a result of recent market volatility. NYSTRS' strong liquidity position provides significant downside protection against realized portfolio losses.



Portfolio Name	Total Portfolio VaR	Diversification Benefit	\$ Contribution to VaR (millions)	%Contribution to VaR
Total Portfolio	\$50,808	-\$6,687	\$44,122	100%
Domestic Equity	\$19,913		\$19,213	43.55%
International Equity	\$8,898		\$7,972	18.07%
Private Equity	\$10,099		\$8,467	19.19%
Real Estate Equity	\$7,743		\$6,320	14.32%
High Yield Bonds	\$121		\$84	0.19%
Real Estate Debt	\$378		\$92	0.21%
Global Bonds	\$222		\$34	0.08%
Cash Equivalents	\$4		-\$1	0.00%
Domestic Fixed Income	\$1,292		-\$72	-0.16%
Private Debt	\$224		\$155	0.35%
Global Equity	\$1,914		\$1,858	4.21%

Value at Risk:

Value at Risk (VaR) is an estimate of the maximum portfolio loss over a specified time period and confidence interval given normal market conditions. VaR can be expressed in % loss or dollar terms. In this analysis, we use a 1 year time horizon and a 99% confidence interval. VaR can also be stated as: There is a 99% chance that the portfolio's market value will not lose more than [VaR amount] over the next year.

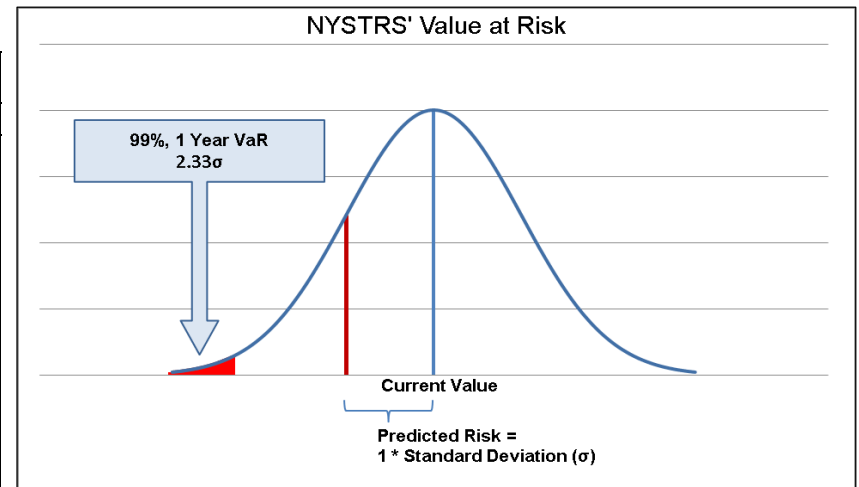
Methods Used:

- ▶ *Parametric VaR*: $99\%VaR(\$) = 2.33\sigma * \text{Portfolio Market Value}$
- ▶ *Historical Simulation VaR*: $99\%VaR(\$) = \text{Simulated P\&L of portfolio utilizing empirical daily risk factor/price changes. 3 year lookback period (756 trading days) observed.}$

Drawbacks:

Parametric VaR assumes asset returns are normally distributed which may not be realistic. This could underestimate the VaR due to unfavorable asset returns having a higher chance of occurring in real life.

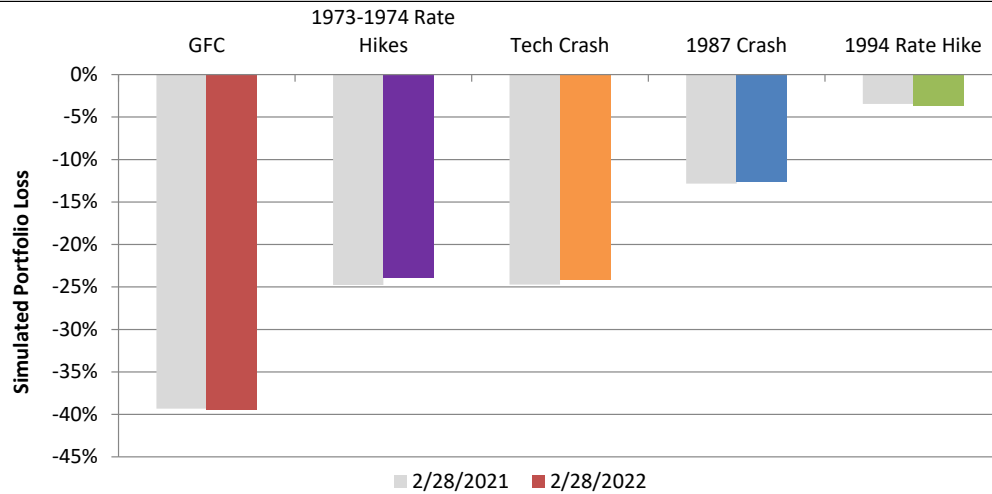
Historical Simulation VaR assumes past returns are indicative of future returns which may not be realistic. The specific return period analyzed directly impacts results which may or may not capture typical volatility, market extremes, or cyclicity.



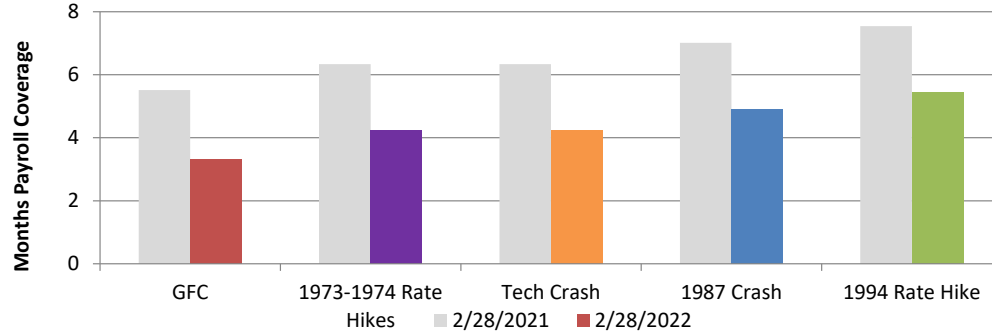
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Historical Scenario Analysis

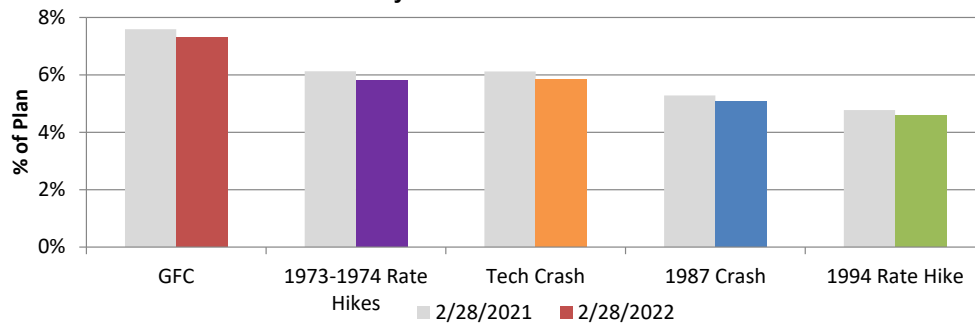
Scenario analysis is in line with expectations. Net Benefit Payments as a % of Assets in the most severe scenario is approximately 7%.



Historical Scenario Funding Liquidity



Net Benefit Payments as % of Stressed Assets



Scenario Analysis

A scenario analysis seeks to determine how a portfolio may be affected by subjecting it to various historical or hypothetical market conditions.

Historical Scenarios:

The following historical scenarios apply market conditions experienced during their respective timeframes to NYSTRS' current portfolio as an instantaneous shock with no ability to rebalance or otherwise manage assets during the event. Simulated losses are illustrated on the chart to the top left. High level scenario inputs are provided below for context:

Historical Scenario	Domestic Equity	UST Yields: 2y/5y/10y (bps)	Credit Spreads: AA/BB/CCC (bps)
Global Financial Crisis: (9/30/07-3/4/09)	-54%	-308/-226/-115	+234/+849/+3779
1973-1974 Stagflation & Rate Hikes: (1/1/73-8/31/74)	-35%	+347(1y)/+239/+158	LIBOR +334
Tech Crash & Recession: (1/9/00-3/12/03)	-47%	-488/-387/-281	-13/+244/+1151
1987 Stock Market Crash: (8/3/87-11/30/87)	-27%	Unchanged	Unchanged
1994 US Rate Hike: (1/31/94-12/13/94)	-6%	+162/+152/+131	+2/+36/+0

Funding Liquidity:

The middle chart depicts how each historical scenario would impact funding liquidity after a one-time rebalance to target policy weights. Cash and U.S. Treasury coverage represents how much of each asset could be used to make payroll before lower asset allocation bounds were breached and additional rebalancing was required. The attribution of each payroll coverage asset and cash flow component (in months coverage) is as follows:

Funding Liquidity Assumptions	Months Coverage	
	2/28/2021	2/28/2022
Cash + U.S. Treasuries	3.4 to 5.5	3.6 to 5.7
Portfolio Income/Maturities	8.8	6.8
Employer Contributions	2.7	2.6
Capital Calls	-9.4	-9.7
Total Payroll Coverage	6 to 8	3 to 5

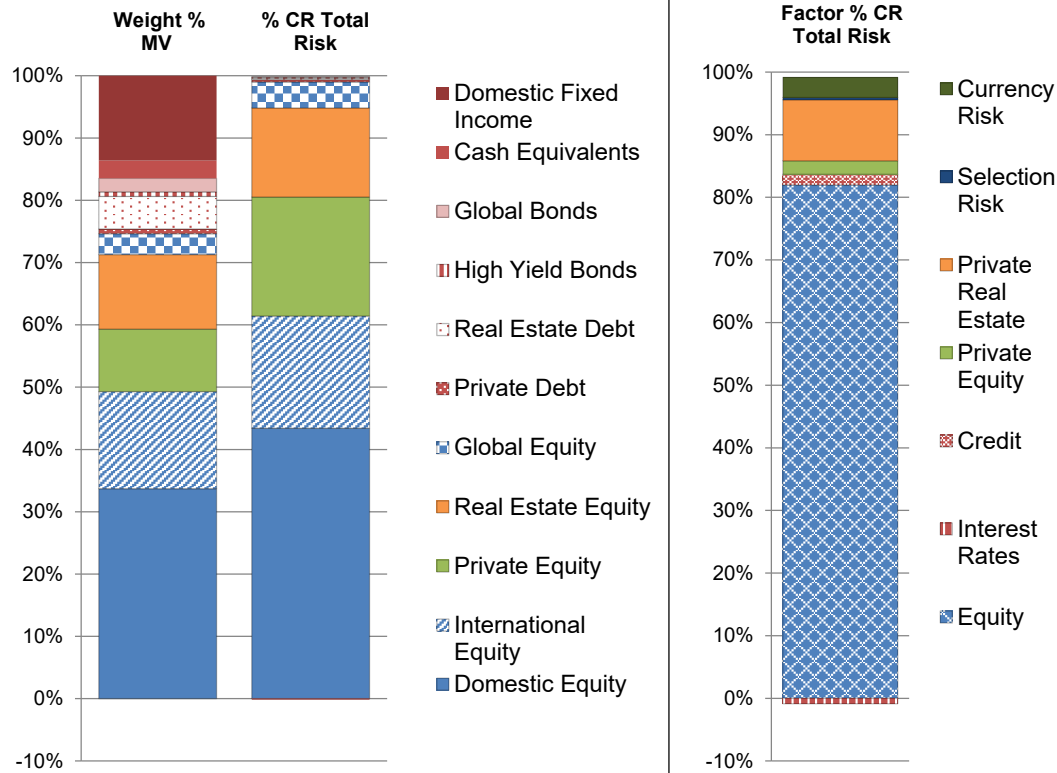
Net Benefit Payments as % of Assets:

The bottom chart depicts how each historical scenario would impact net benefit payments as a percentage of assets. Figures are representative of each scenario's market bottom and do not incorporate expected cash flows or market recovery. (*Net Benefit Payments=Annual Benefit Payments-Employer &

Risk Management Investment Risk Board Report April 2022

Total Predicted Risk by Risk Factor

As expected, equity markets are the largest contributor to the Plan's total risk while interest rates slightly diversify away risk.



Risk Factors:

Risk factors are characteristics shared by a group of securities that influence their risk and return as well as their correlations.

The five risk factor groups used for this analysis (equity, interest rates, credit, private equity, and private real estate) can be further decomposed into underlying factors such as industry, style, interest rate term structure, and geography. Each factor has an expected volatility and correlation with the other risk factors.

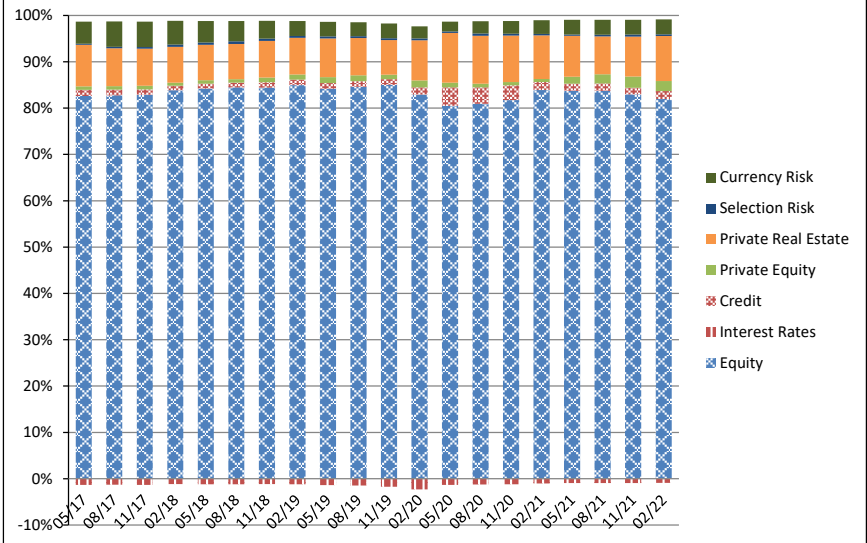
All of NYSTRS holdings are modeled according to their exposures to individual risk factors.

Observations:

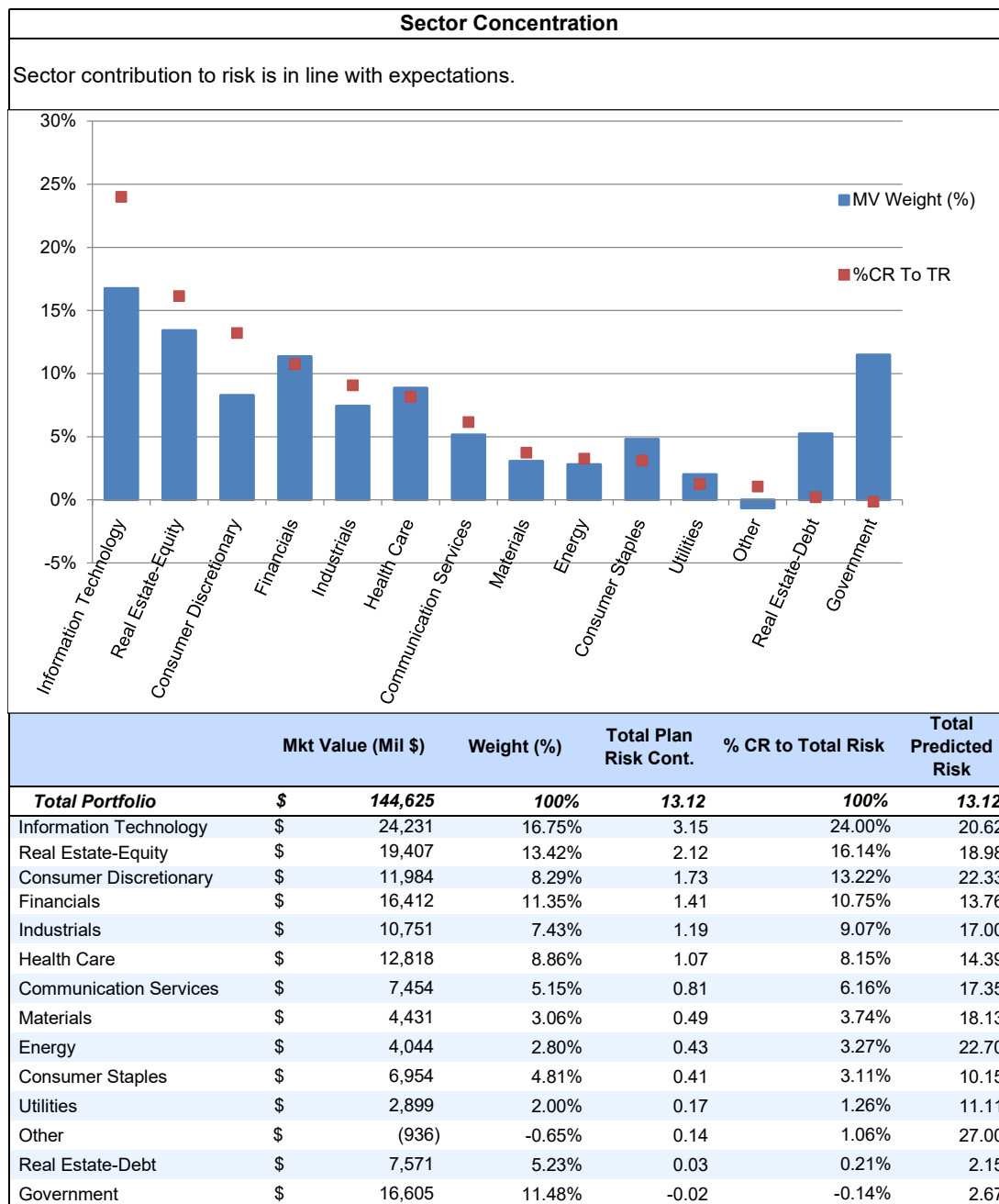
As expected, Total Plan risk is primarily driven by the equity markets and NYSTRS' exposure to interest rates reduces Total Plan risk.

Risk Source	Total Plan Risk Cont.	%CR to Total Risk	BMK Risk Cont.	BMK %CR to Total Risk	% CR to Active Risk
Total Risk	13.12	100%	11.68	100.00%	100%
Local Market Risk	12.69	96.75%	11.32	96.93%	96.54%
Common Factor Risk	12.64	96.38%	11.25	96.35%	90.02%
Equity	10.94	83.40%	9.57	81.93%	68.69%
Interest Rates	-0.11	-0.88%	-0.14	-1.20%	6.07%
Credit	0.23	1.75%	0.34	2.89%	-4.90%
Private Equity	0.29	2.20%	0.12	1.03%	19.93%
Private Real Estate	1.30	9.91%	1.37	11.69%	0.23%
Selection Risk	0.05	0.37%	0.07	0.58%	6.52%
Currency Risk	0.43	3.25%	0.36	3.07%	3.46%

Historical Risk Factor Contribution to Total Risk



**Risk Management
Investment Risk Board Report
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Sectors:

In developing the sector schedule, NYSTRS began with industry recognized sectors used by MSCI and S&P.

Five custom sectors were added to this base to accommodate the Fund's allocation to Government, Real Estate Debt, Real Estate Equity, Cash and "Other" investments.

Defensive sectors such as Utilities, and Consumer Staples tend to be more stable and less volatile regardless of the condition of the overall financial markets. Because these sectors are not highly correlated with the business cycle, they are also known as "non-cyclical". Cyclical sectors such as Consumer Discretionary and Materials tend to be correlated with the business cycle and can be more volatile than defensive sectors. ¹

These characteristics can be seen in the chart. The risk contribution by the defensive sectors is less than their market value allocation and the risk contribution by the cyclical sectors is higher than their market value allocation.

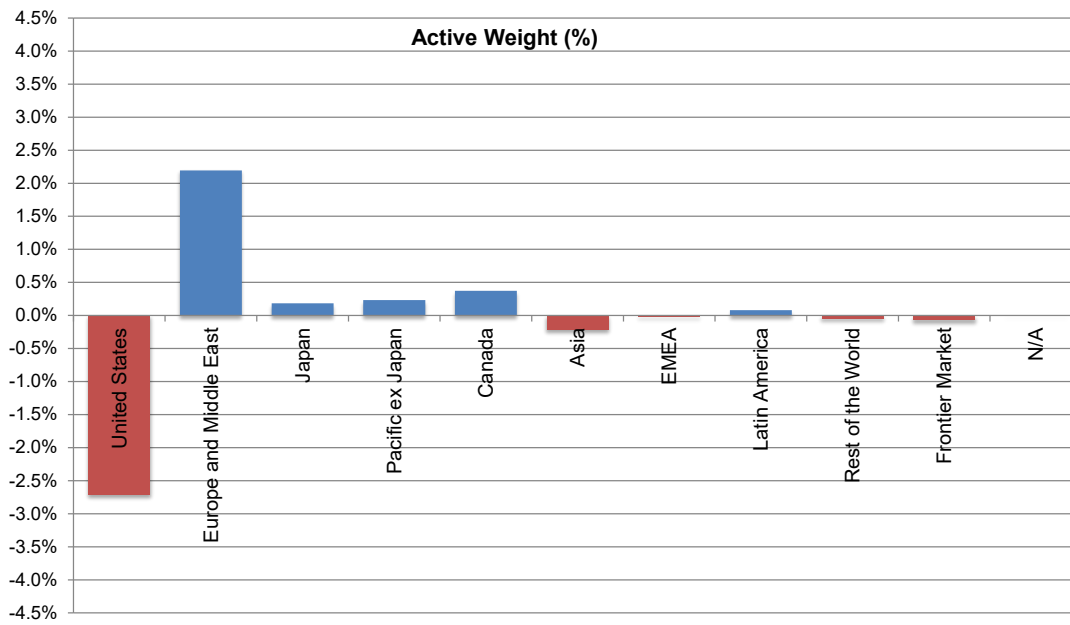
¹Investopedia

"Other" primarily consists of Cash, Private Equity fund liabilities; fund of funds; derivatives; and asset backed securities.

**Risk Management
Investment Risk Board Report
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Geographic Region Concentration

Total developed and emerging market regions are within 1.0% of benchmark.



Observations:

As expected, the largest contribution on a geographic basis comes from NYSTRS exposure to U.S. investments.

Geographic Region*	Mkt Value (Mil \$)	Weight (%)	Bmk Weight (%)	Active Weight (%)	Total Plan Risk Cont.	Total Predicted Risk
Total Portfolio	\$ 144,625	100%	100%	0%	13.12	13.12
Total Developed	\$ 135,241	93.51%	93.24%	0.27%	12.25	13.12
United States	\$ 109,194	75.50%	78.21%	-2.71%	9.61	12.92
Europe and Middle East	\$ 16,410	11.35%	9.15%	2.19%	1.81	17.90
Japan	\$ 4,158	2.87%	2.69%	0.19%	0.28	14.19
Pacific ex Japan	\$ 2,495	1.73%	1.49%	0.23%	0.27	18.82
Canada	\$ 2,985	2.06%	1.69%	0.37%	0.28	15.64
Total Emerging	\$ 8,648	5.98%	6.13%	-0.15%	0.84	17.87
Asia	\$ 6,991	4.83%	5.05%	-0.22%	0.61	16.97
EMEA	\$ 795	0.55%	0.57%	-0.02%	0.12	28.97
Latin America	\$ 862	0.60%	0.52%	0.08%	0.11	28.95
Total Other	\$ 737	0.51%	0.63%	-0.12%	0.02	7.05
Rest of the World	\$ 454	0.31%	0.36%	-0.05%	0.00	2.50
Frontier Market	\$ 284	0.20%	0.27%	-0.07%	0.02	17.88
N/A	\$ (1)	0.00%	0.00%	0.00%	0.01	-

*See appendix for countries included in each geographic region.

**Risk Management
Investment Risk Board Report
April 2022**

Glossary:

%CR to Active Risk: Percent of Plan's Active Predicted Risk contributed by each component. This column sums to 100%.

%CR to Total Risk: Percent of Plan's Total Predicted Risk contributed by each component. Negative numbers imply a diversification benefit. This column sums to 100%.

Active Predicted Risk: Asset class portfolios' Active Predicted Risk compared to its respective benchmark.

Active Risk Cont.: Absolute contribution to Plan's Active Predicted Risk from each asset class portfolio. This column sums to the Plan's Active Predicted Risk.

Active Weight (%): Difference between the Plan's current weight and the Plan's benchmark policy weight.

BMK %CR to Total Risk: Percent of Total Predicted Risk for the Plan's Policy Benchmark contributed by each component. This column sums to 100%.

BMK Risk Cont.: Absolute contribution to Total Predicted Risk for Plan's Policy Benchmark from each Risk Factor group.

Total Predicted Risk: Individual components' distinct Total Predicted Risk.

Total Plan Risk Cont.: Absolute contribution to Plan's Total Predicted Risk from each component. Negative numbers imply a diversification benefit. This column sums to the Plan's Total Predicted Risk.

Total Portfolio VaR: The expected loss to a specified degree of confidence (99%) when subjected to a historical stress simulation. Also could be stated as there is a 99% chance that the total portfolio or individual asset classes' market value will not lose more than the [VaR amount] over the next year.

Diversification Benefit: The benefit achieved by owning a diversified portfolio comprised of assets with correlations < 1.

Notes:

BNY Mellon Peer Median; >\$10B: BNY Mellon Total Public Fund > \$10B median allocation.

- 41 public pension funds with an average plan size of \$41.6B. Aggregate assets of \$1,706.1B.

NYSTRS Custom Peer Group Median: NYSTRS' custom peer group used during annual asset allocation study. Allocation data provided by Pension Fund Date Exchange, Ltd. (PFDE).

- 5 public pension funds with an average plan size of \$160B and median plan size of \$99B.
 - California State Teacher' Retirement System
 - New Jersey Division of Investment
 - Oregon Public Employees' Retirement Fund
 - State Board of Administration of Florida
 - State Teachers Retirement System of Ohio

**Risk Management
Investment Risk Board Report
April 2022**

Appendix:

MSCI ACWI & FRONTIER MARKETS INDEX									
MSCI ACWI INDEX						MSCI EMERGING & FRONTIER MARKETS INDEX			
MSCI WORLD INDEX			MSCI EMERGING MARKETS INDEX			MSCI FRONTIER MARKETS INDEX			
DEVELOPED MARKETS			EMERGING MARKETS			FRONTIER MARKETS			
Americas	Europe & Middle East	Pacific	Americas	Europe, Middle East & Africa	Asia	Europe & CIS	Africa	Middle East	Asia
Canada	Austria	Australia	Argentina	Czech Republic	China	Croatia	Kenya	Bahrain	Bangladesh
United States	Belgium	Hong Kong	Brazil	Egypt	India	Estonia	Mauritius	Jordan	Sri Lanka
	Denmark	Japan	Chile	Greece	Indonesia	Lithuania	Morocco	Kuwait	Vietnam
	Finland	New Zealand	Colombia	Hungary	Korea	Kazakhstan	Nigeria	Lebanon	
	France	Singapore	Mexico	Poland	Malaysia	Romania	Tunisia	Oman	
	Germany		Peru	Qatar	Pakistan	Serbia	WAEMU ²		
	Ireland			Russia	Philippines	Slovenia			
	Israel			Saudi Arabia	Taiwan				
	Italy			South Africa	Thailand				
	Netherlands			Turkey					
	Norway			United Arab Emirates					
	Portugal								
	Spain								
	Sweden								
	Switzerland								
	United Kingdom								
MSCI STANDALONE MARKET INDEXES ¹									
						Americas	Europe & CIS	Africa	Middle East
						Jamaica	Bosnia Herzegovina	Botswana	Palestine
						Panama	Bulgaria	Zimbabwe	
						Trinidad & Tobago	Malta		
							Iceland		
							Ukraine		

*MSCI.com/market-classification

NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
10 CORPORATE WOODS DRIVE, ALBANY NEW YORK

A meeting of the Investment Committee of the Retirement Board of the New York State Teachers' Retirement System was held at the System on April 27, 2022.

Nicholas Smirensky, Chair, called the meeting to order at 9:32 a.m.

ATTENDANCE:

Investment Committee Members

Elizabeth Chetney, David Keefe, Jennifer Longtin, Christopher Morin, Nicholas Smirensky (via WebEx)

Board Members

Juliet Benaquisto, Eric Iberger (via WebEx), Oliver Robinson

Staff

Thomas Lee, Paul Cummins, Richard Young, Joseph Indelicato Jr., Ken Kasper, David Gillan, Noreen Jones, Michael Gregoire, Ed Rezny, Gerald Yahoudy, Margaret Andriola, Matt Albano, Michael Federici, Miriam Dixon, Danny Malavé, Don Ampansiri, Melody Prangle, Chris O'Grady, John Rosenberg, Chris Brown, Heidi Brennan, Sam Silver, Bridget Seager, Stacey Lesser Meehan

System Consultants

Callan – Tom Shingler, Jay Kloepfer, Angel Haddad

StepStone – Jose Fernandez, Scott Schwind

System Risk Advisors

Peter Cosgrove, Steven Huber

Visitors

Joe Ebisa – With Intelligence

Approval of Minutes

A. Approval of Minutes of January 26, 2022 and February 24, 2022 Investment Committee Meetings

There being no additions or corrections to the minutes of the January 26, 2022 and February 24, 2022 Investment Committee meetings, the minutes were approved with a motion made by J. Longtin, seconded by E. Chetney and unanimously carried.

Staff Updates

1. Investment Committee Executive Summary (Appendix A, pp. 5-13)
2. Public Equities Update (Appendix B, pp. 14-15)
3. Fixed Income Update (Appendix C, p. 16)
4. Real Estate Update (Appendix D, pp. 17-19)
5. Private Equity/Debt Update (Appendix E, p. 20)

Presentations

A. Callan – Asset Allocation Review

T. Shingler and J. Kloepfer from Callan reviewed the results and recommendations of the System's asset allocation review (Appendix F pp. 21-54).

Policy Review and Action

A. Consent Agenda Recommendation Item 1 (Appendix G, p. 55)

Upon motion of J. Longtin, seconded by E. Chetney and unanimously

carried, the Committee voted to recommend the following resolutions to the Board:

1. Renew Agreements

- Adelante Capital Management LLC

RESOLVED, That the System's Executive Director and Chief Investment Officer is authorized to renew the agreement with Adelante Capital Management LLC to manage a portion of the System's portfolio, to be actively invested in the securities of real estate investment trusts ("REITs") and real estate operating companies ("REOCs"), for a period of one year, effective July 1, 2022.

- JP Morgan Chase Bank NA (Securities Lending)

RESOLVED, the Executive Director and Chief Investment Officer is authorized to renew the agreement with JPMorgan Chase Bank, N.A., to act as an agency securities lender for a portion of the System's public securities assets for a period of one year, effective July 1, 2022.

- LSV Asset Management

WHEREAS, LSV Asset Management was hired as an international equity manager on July 25, 2011 and as a global equity manager on February 15, 2018; now be it therefore

RESOLVED, That, the Executive Director and Chief Investment Officer is authorized to renew the agreement with LSV Asset Management for a period of one year, effective July 25, 2022, to manage (i) a portion of the System's assets as an international equity manager benchmarked to the MSCI ACWI ex-US index, and (ii) a portion of the System's assets as a global equity manager benchmarked to the MSCI ACWI index.

- Wellington Management Company LLP

RESOLVED, That the Executive Director and Chief Investment Officer is authorized to renew the agreement with Wellington Management Company, LLP to manage a portion of the System's fixed income portfolio in a Global Aggregate fixed income mandate benchmarked to the Bloomberg Global Aggregate Float Adjusted ex CNY Bond Index in U.S. Dollars hedged to the U.S. Dollar for a period of one year, effective June 20, 2022.

There being no further business and with unanimous consent, the meeting adjourned at 11:20 a.m.

Respectfully submitted,



Thomas K. Lee

Investment Committee Executive Summary
Office of the CFO: Investment Operations Department

Investment Committee Meeting: April 27, 2022

Margaret Andriola, CIPM, CPA



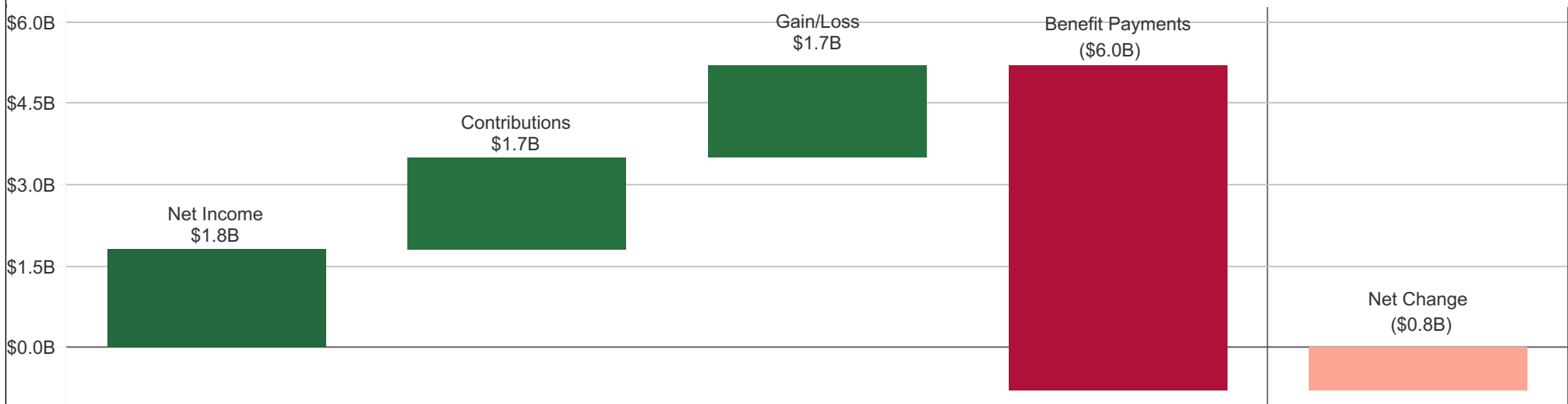
Investment Committee Executive Summary

Market Value Summary ('000s)

Asset Category	Asset Class	March 31, 2022		December 31, 2021		March 31, 2021	
		Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value	Net Asset Value	% Net Asset Value
Equity	Domestic Equity	\$50,367,368	34.6%	\$53,046,331	35.0%	\$48,508,538	35.2%
	International Equity	\$22,707,432	15.6%	\$24,090,138	15.9%	\$24,285,515	17.6%
	Global Equity	\$4,925,344	3.4%	\$5,264,148	3.5%	\$4,739,656	3.4%
	Real Estate Equity	\$17,211,717	11.8%	\$16,387,778	10.8%	\$13,356,842	9.7%
	Private Equity	\$14,561,238	10.0%	\$14,203,217	9.4%	\$11,747,384	8.5%
	Asset Category Subtotal	\$109,773,099	75.4%	\$112,991,612	74.7%	\$102,637,935	74.4%
Fixed Income	Domestic Fixed Income	\$19,183,766	13.2%	\$20,062,181	13.3%	\$17,869,061	13.0%
	Global Bonds	\$3,053,009	2.1%	\$3,216,147	2.1%	\$2,933,389	2.1%
	High Yield	\$1,072,273	0.7%	\$1,041,419	0.7%	\$852,000	0.6%
	Real Estate Debt	\$7,924,667	5.4%	\$7,598,189	5.0%	\$7,232,570	5.2%
	Private Debt	\$1,320,108	0.9%	\$1,239,531	0.8%	\$1,052,004	0.8%
	Cash & Short Term Debt	\$3,171,553	2.2%	\$5,209,933	3.4%	\$5,292,221	3.8%
Asset Category Subtotal	\$35,725,376	24.6%	\$38,367,399	25.3%	\$35,231,246	25.6%	
Total Plan		\$145,498,475	100.0%	\$151,359,011	100.0%	\$137,869,180	100.0%

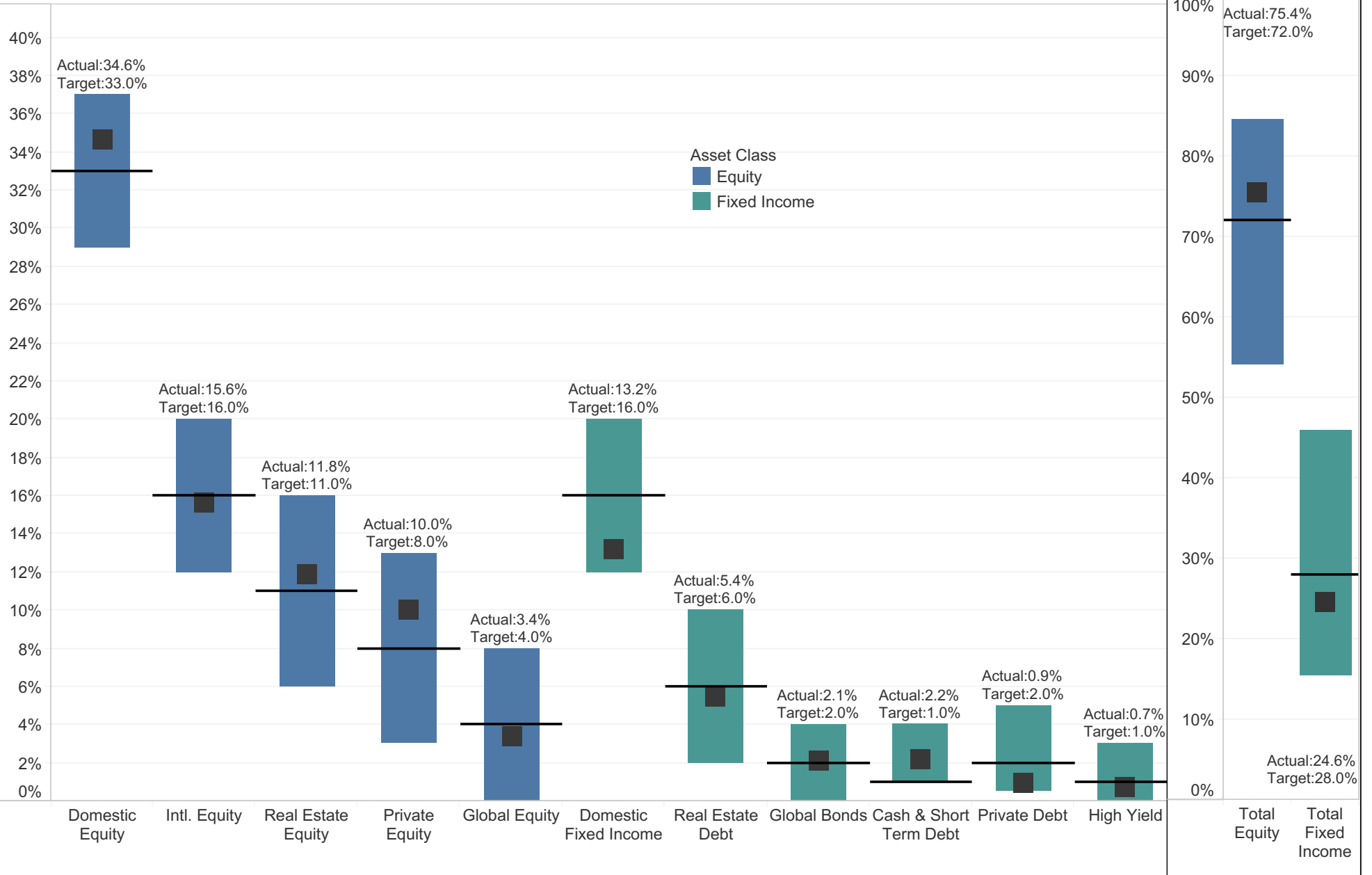
Due to rounding, numbers may not sum to 100%.

Components of Change in Total Investments FYTD: 7/1/2021 to 3/31/2022 \$146.3B to \$145.5B



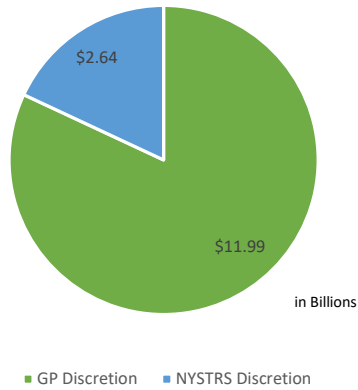
Investment Committee Executive Summary

NYSTRS' Asset Allocation: \$145.5B (March 31, 2022)

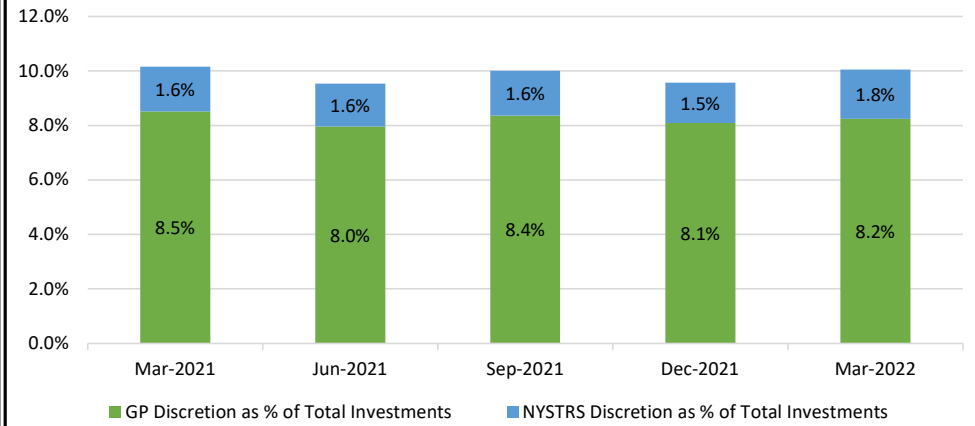


Unfunded Commitments - Private Assets

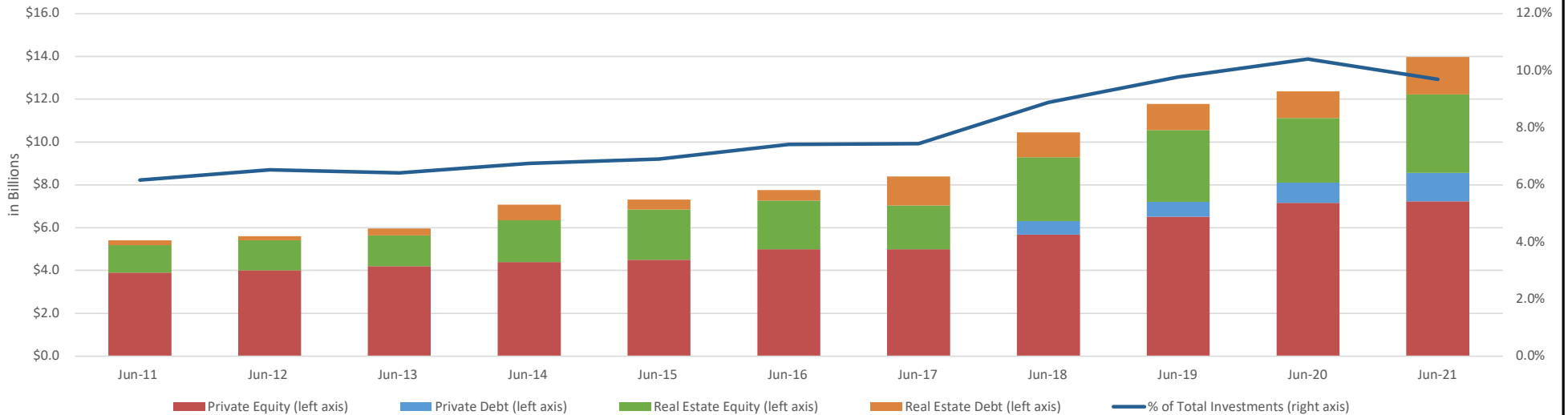
Total Unfunded Commitments at 3/31/2022 \$14.6B



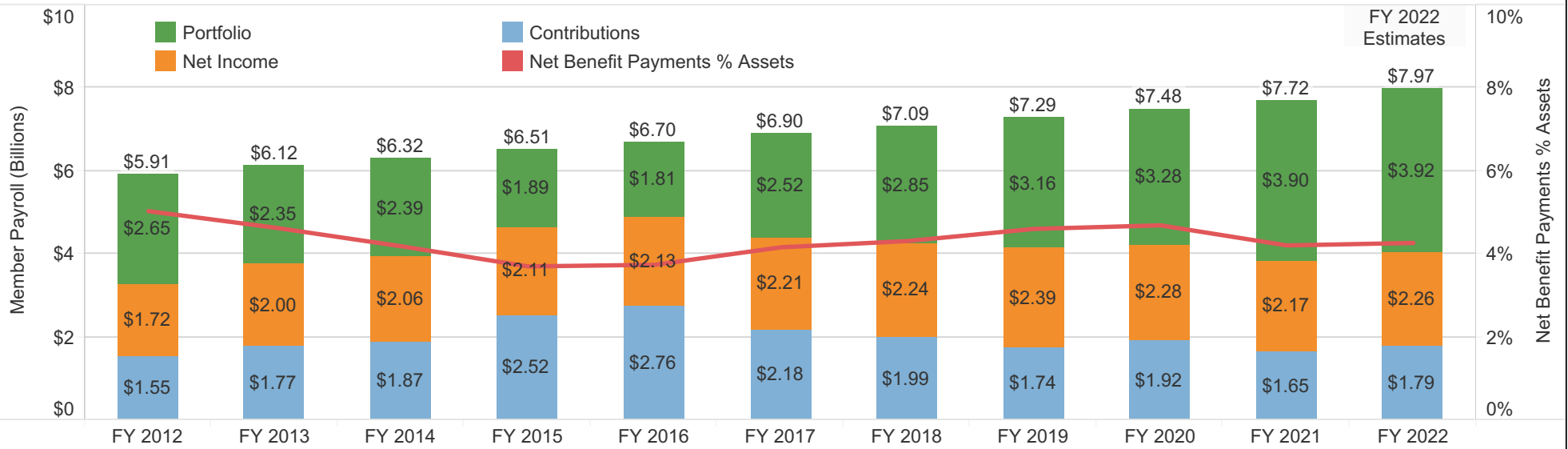
Unfunded Commitments - GP vs. NYSTRS Discretion



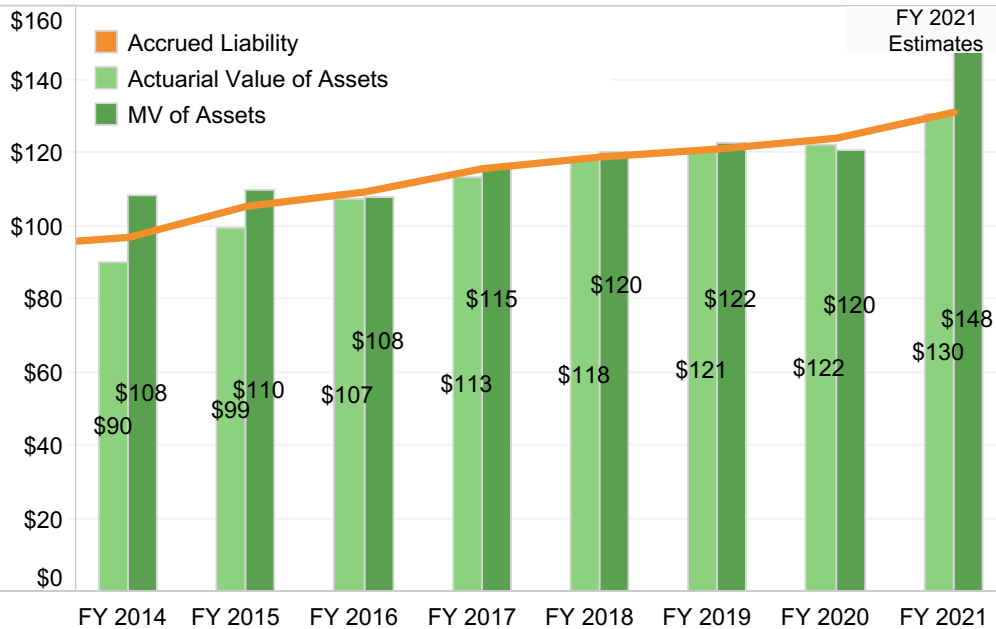
Unfunded Commitments - by Asset Class and % of Total Investments



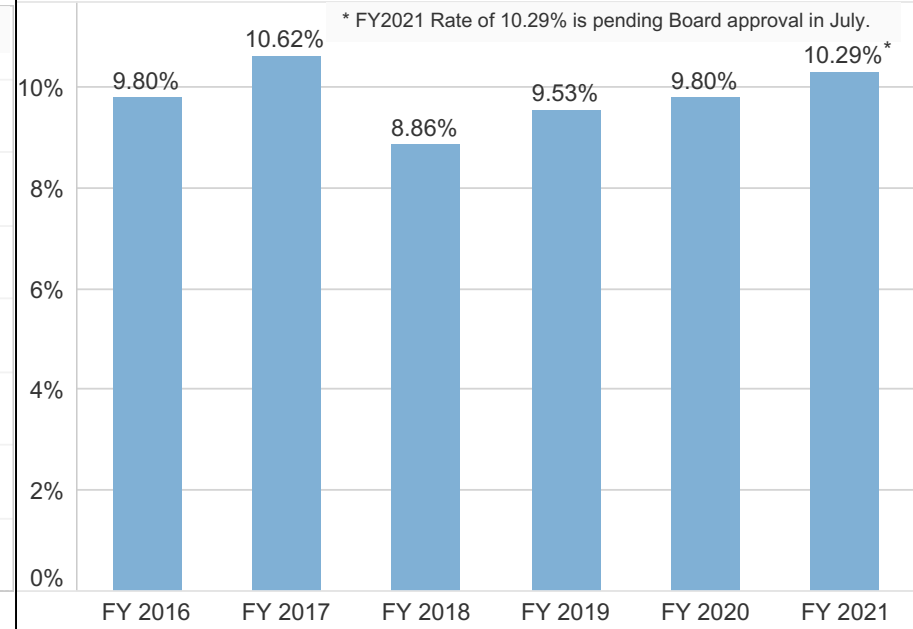
Member Payroll Funding Sources



Assets & Actuarial Accrued Liability



Employer Contribution Rate



Investment Committee Executive Summary

Public Market Performance as of March 31, 2022

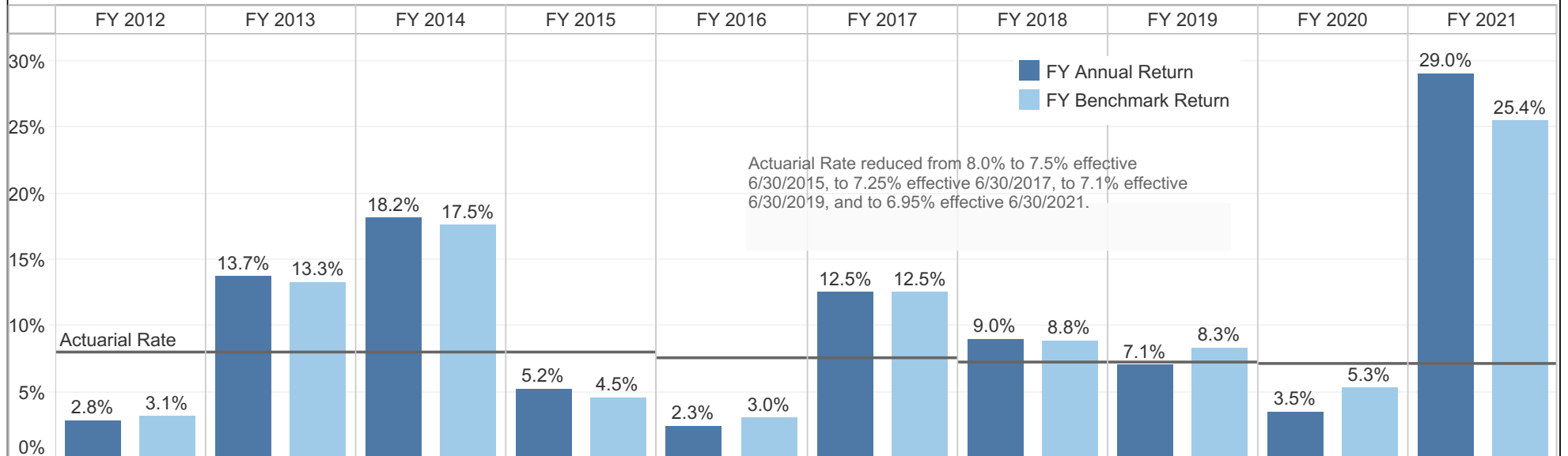
Asset Class	Current QTR	
	Net Return	Excess Return
Domestic Equity	-4.7%	0.0%
International Equity	-5.8%	-0.3%
Global Equity	-6.5%	-1.2%
Private Equity	N/A	N/A
Real Estate Equity	-4.4%	-0.6%
Domestic Fixed Income	-4.9%	1.1%
Global Bonds	-5.1%	0.6%
High Yield Bonds	-4.3%	0.3%
Private Debt	N/A	N/A
Real Estate Debt	-4.6%	0.7%
Short Term	0.0%	0.0%

RE Equity is REITs only and RE Debt is CMBS only.
For additional performance information see Supplemental Materials.

Total Fund Performance as of December 31, 2021

Asset Class	QTR		FYTD		10YR	
	Net Return	Excess Return	Net Return	Excess Return	Net Return	Excess Return
Domestic Equity	10.7%	0.0%	11.0%	-0.1%	16.3%	-0.1%
International Equity	1.6%	-0.2%	-1.2%	0.0%	7.8%	0.5%
Global Equity	4.7%	-1.9%	3.8%	-1.7%	N/A	N/A
Private Equity	2.4%	-9.9%	9.9%	-4.2%	17.7%	-3.8%
Real Estate Equity	8.7%	1.0%	14.5%	-0.1%	11.4%	1.6%
Domestic Fixed Income	-0.5%	-0.6%	-0.5%	-0.5%	2.4%	-0.5%
Global Bonds	-0.2%	-0.1%	-0.2%	-0.2%	N/A	N/A
High Yield Bonds	0.7%	0.0%	1.5%	-0.2%	N/A	N/A
Private Debt	4.0%	2.5%	7.9%	4.6%	N/A	N/A
Real Estate Debt	0.3%	-0.1%	1.0%	0.2%	5.0%	0.5%
Short Term	0.0%	0.0%	0.0%	0.0%	0.7%	0.3%
Total Fund	5.2%	-0.8%	6.2%	-0.4%	11.1%	0.0%

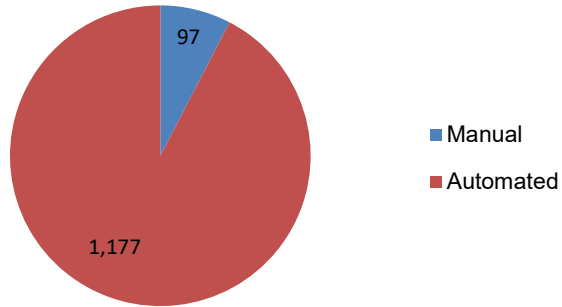
Annual Performance



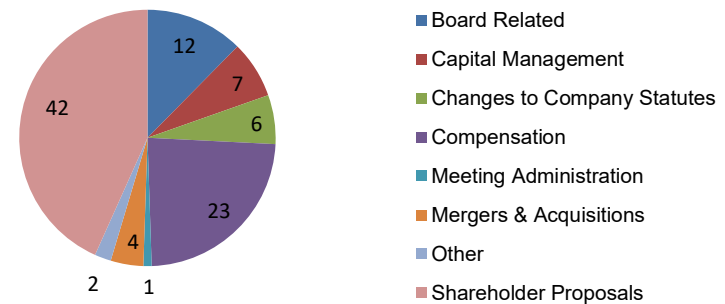
Investment Committee Executive Summary

Proxy Voting Summary: 1/1/2022 - 3/31/2022

Total Proxy Proposals - 1,274



Manual Proposals - 97



The System has implemented automated voting for those issues that can reliably be voted according to established policy without review. Those requiring review are voted manually utilizing research provided by our proxy advisory service to support the decision. In general, the System supports corporate management if management's position appears reasonable, is not detrimental to the long range economic prospects of the company, and does not tend to diminish shareholder rights. Should a sensitive issue arise which is not included in the established guidelines, the Executive Director and Chief Investment Officer or his designee is authorized to exercise best judgment in voting such issue.

Board Related - The System generally supports independent directors outside of management, gender diversity on boards, and considers related party transactions.

Capital Management - The System generally supports proposals that provide the company with flexibility provided they do not limit shareholder rights.

Changes to Company Statutes - The System generally supports proposals relating to bylaw or organizational changes provided they do not limit shareholder rights.

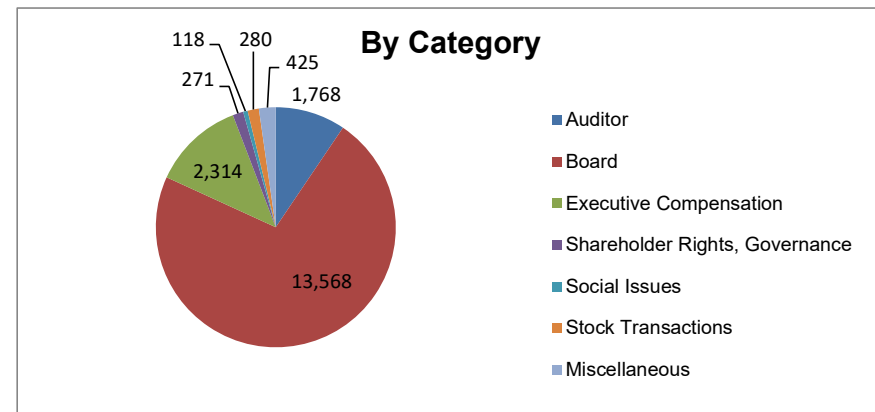
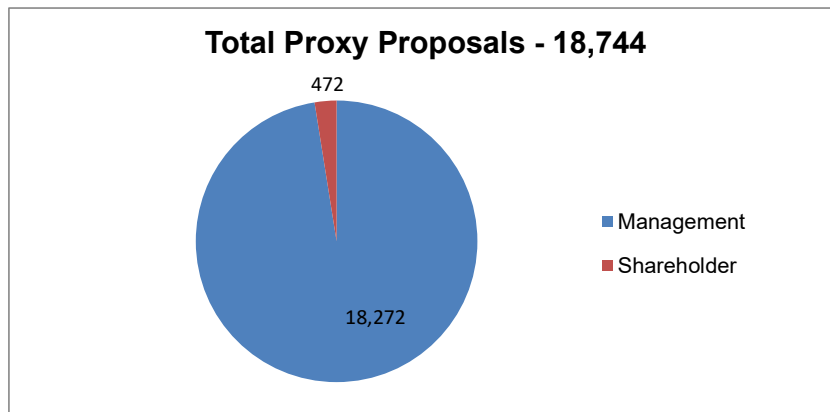
Compensation - The System generally supports reasonable compensation plans which are tied to objective performance measures. Stock option plans should be used to motivate corporate personnel.

Mergers & Acquisitions - Proposals are reviewed on a case by case basis.

Shareholder Proposals (type & number) - Compensation: 4, Environment: 6, Governance: 19, Other: 1, and Social: 12



Annual Proxy Voting Report: 1/1/2021 - 12/31/2021 Domestic and Canadian Portfolios



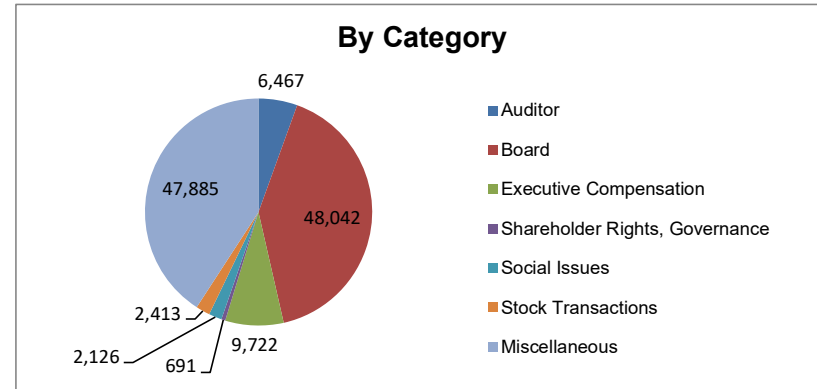
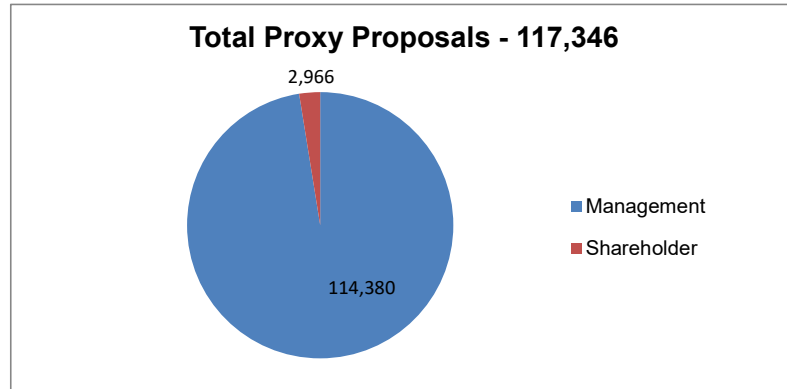
	Proposals	For	% For	Against	% Against	Abstain	% Abstain
Management	18,272	16,221	88.8%	2,007	11.0%	44	0.2%
Shareholder Proposals	472	283	60.0%	186	39.4%	3	0.6%
	18,744	16,504	88.1%	2,193	11.7%	47	0.3%
Auditor	1,768	1,757	99.4%	11	0.6%	-	0.0%
Board	13,568	12,254	90.3% *	1,282	9.5%	32	0.2%
Executive compensation	2,314	1,675	72.4%	638	27.6%	1	0.0%
Shareholder Rights, Governance	271	178	65.7%	93	34.3%	-	0.0%
Social Issues	118	73	61.9%	45	38.1%	-	0.0%
Stock Transactions	280	244	87.1%	35	12.5%	1	0.4%
Miscellaneous	425	323	76.0%	89	20.9%	13	3.1%
	18,744	16,504	88.1%	2,193	11.7%	47	0.3%

The Statistics above represent proposals presented at 1,844 meetings for the companies in the System's domestic equity and Canadian portfolios. Meetings and proposals at companies held in multiple portfolios are counted once.

* A partial audit of our custom policy recommendations by our Proxy Service Provider in March of 2021 uncovered a policy implementation error. The System's policy is to vote against the nominating committee chair when the company has neither an independent board chair nor an independent lead director. Our Proxy Service Provider miscoded this policy as a requirement for both an independent chair and independent lead director. As a result, votes were incorrectly cast against the nominating committee chair at 15 meetings in 2021. Our Proxy Service Provider confirmed that the error did not impact any meeting outcomes. At NYSTRS's request, our Proxy Service Provider conducted a full audit of the implementation of our policy and has confirmed that there are no other discrepancies.



Annual Proxy Voting Report: 1/1/2021 - 12/31/2021
External Managers - International and Global Equities



	Proposals	For	% For	Against	% Against	Abstain	% Abstain
Management	114,380	100,163	87.6%	11,691	10.2%	2,526	2.2%
Shareholder Proposals	2,966	1,862	62.8%	986	33.2%	118	4.0%
	117,346	102,025	86.9%	12,677	10.8%	2,644	2.3%
Auditor	6,467	6,251	96.7%	161	2.5%	55	0.9%
Board	48,042	41,280	85.9% *	4,904	10.2%	1,858	3.9%
Executive compensation	9,722	7,862	80.9%	1,761	18.1%	99	1.0%
Shareholder Rights, Governance	691	452	65.4%	214	31.0%	25	3.6%
Social Issues	2,126	1,521	71.5%	601	28.3%	4	0.2%
Stock Transactions	2,413	2,039	84.5%	354	14.7%	20	0.8%
Miscellaneous	47,885	42,620	89.0%	4,682	9.8%	583	1.2%
	117,346	102,025	86.9%	12,677	10.8%	2,644	2.3%

The statistics above represent proposals presented at 10,563 meetings for the companies in the System's externally managed, international and global equity portfolios. Meetings and proposals at companies held in multiple portfolios are counted for each portfolio.

* A partial audit of our custom policy recommendations by the Proxy Service Provider in March of 2021 uncovered a policy implementation error. The System's policy is to vote against the nominating committee chair when the company has neither an independent board chair nor an independent lead director. The Proxy Service Provider miscoded this policy as a requirement for both an independent chair and independent lead director. As a result, votes were incorrectly cast against the nominating committee chair at 3 meetings across three managers in 2021. The Proxy Service Provider confirmed that the error did not impact any meeting outcomes. At NYSTRS's request, the Proxy Service Provider conducted a full audit of the implementation of our policy and has confirmed that there are no other discrepancies.



Appendix B

Public Equities Managing Director Update

Investment Committee April 27th, 2022

Paul Cummins, CFA, CAIA

Public Equities



Public Equity MD Update

Investment Committee April 27th, 2022

Portfolio Values				Asset Allocation			
Portfolio Values (000)	03/31/22	03/31/21	Difference	Asset Allocation	Range	Target	Actual 03/31/22
Domestic Equity	\$50,367,368	\$48,508,538	\$1,858,830	Domestic:	29-37%	33.0%	34.6%
International Equity	\$22,707,432	\$24,285,515	(\$1,578,083)	International:	12-20%	16.0%	15.6%
Global Equity	\$4,925,344	\$4,739,656	\$185,688	Global:	0-8%	4.0%	3.4%
Total Public Equity	\$78,000,144	\$77,533,709	\$466,435				

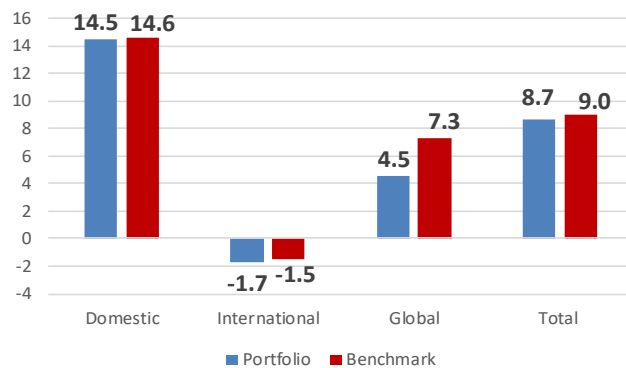
Public Equity Portfolio Values:

- During the one-year period ended 03/31/22:
 - o \$4.9B (including dividends swept) was raised from domestic equities.
 - o \$1.3B was raised from international equities.
 - o \$50M was raised from global equities.
- Hence, the public equity portfolio increased in value by \$6.7B for the one-year period.

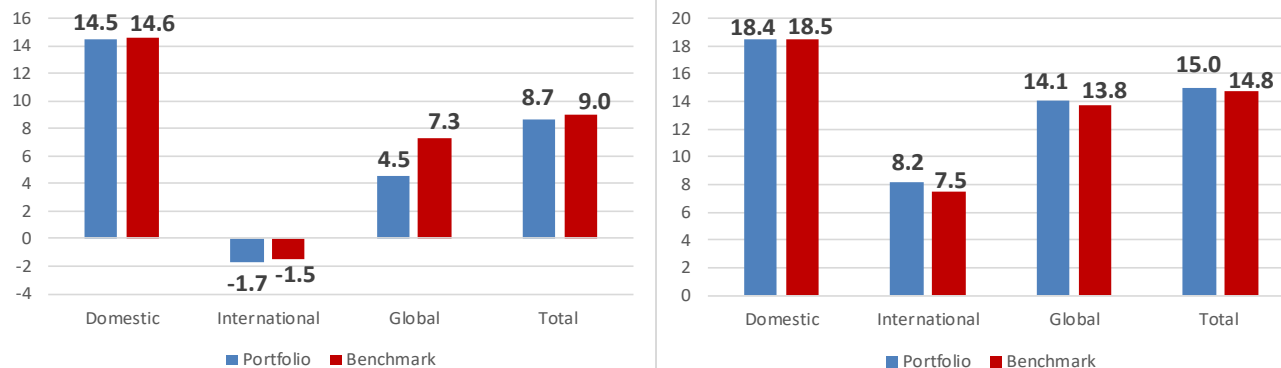
Asset Allocation

- Public equities asset classes remain close to target and well within their asset allocation ranges.
- \$31.4M was raised from the domestic portfolio during the quarter due to index activity.

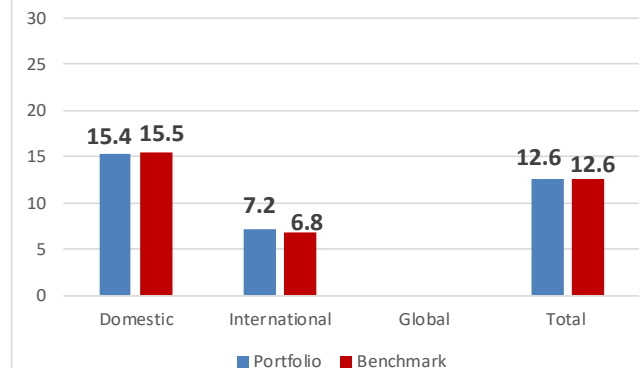
1-Year Returns



3-Year Returns



5-Year Returns



Commentary:

- All managers remain in good standing and are performing within our range of expectations.
- We are closely monitoring our external manager holdings of illiquid Russian securities.
- Trading of the thermal coal divestment list was completed in March. Climate team has initiated engagement with restricted list companies.



Fixed Income MD Update Appendix C

Investment Committee

Investment Committee Meeting: April 27, 2022

Internally Managed	Externally Managed
<p style="text-align: center;"><u>Short Term Bonds (STB) \$3.2bn</u></p> <ul style="list-style-type: none"> • 2.2% vs. 1% target and 1-4% range • Excess Return: +0.04% (portfolio +0.04%, benchmark 0.00%) • Fed: raised rates in March; 200bp more expected by year end • STB yield increasing; focus on high-quality and diversification 	<p style="text-align: center;"><u>U.S. High Yield (HY) \$1.1bn</u></p> <ul style="list-style-type: none"> • 0.7% vs. 1% target and 0-3% range • Excess return: +0.28% (portfolio -4.30%, benchmark -4.58%) • Outperformed from holding cash and loans and security selection in consumer goods, autos, and healthcare
<p style="text-align: center;"><u>Domestic Fixed Income (DFI) \$19.2bn</u></p> <ul style="list-style-type: none"> • 13.2% vs. 16% target and 12-20% range • Excess Return: +1.10% (portfolio -4.91%, benchmark -6.01%) • Outperformed due to lower duration (interest rate risk) and security selection that offset small negative industry allocation 	<p style="text-align: center;"><u>Global Bonds (GB) \$3.1bn</u></p> <ul style="list-style-type: none"> • 2.1% vs. 2% target and 0-4% range • Excess return: +0.55% (portfolio -5.12%, benchmark -5.67%) • Outperformed due to lower duration, currency positioning, security selection, and an underweight to Russian bonds.
<ul style="list-style-type: none"> • DFI duration is -1.8 years versus benchmark (-1.5 ex holdings under 1 year); reducing duration underweight as rates rise • Staffing: Have 3 active Investment Officer searches in process • In response to high global inflation, central banks are signaling tighter monetary policy than expected a few months ago. Besides the immediate effect of higher rates in fixed income, this poses financial stability and growth risks. • <u>Other Macroeconomic and Geopolitical Risks</u> <ul style="list-style-type: none"> • Russia/Ukraine war (short/long-term considerations) • Inflation in all forms (CPI, commodities, housing, wages) • COVID risk: currently centered around China • Global supply chain disruptions • US Labor market shortages and dislocations • China: growth concerns (property market) 	

Commercial Real Estate (CRE) Investments - Managing Director Update

CRE Equity	<u>3/31/22 Value</u>	<u>Target</u>	<u>Range</u>	<u>Actual</u>	<u>w/Commit</u>	
	\$17,212	11%	6%-16%	11.8%	14.6%	
Performance for Periods Ended <u>December 31, 2021</u>						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Year	10 Year	Since Inception
Direct Properties (2/90)	\$6,139	6.2%	22.2%	8.2%	11.2%	9.8%
Core Funds (7/85)	\$1,751	4.6%	14.3%	4.6%	7.7%	6.9%
Value Added (12/89)	\$1,289	12.9%	49.8%	20.9%	18.8%	12.4%
Opportunistic (3/99)	\$2,429	8.7%	27.4%	11.4%	11.6%	11.4%
U.S. RE Securities (7/95)	\$3,573	13.3%	38.2%	12.2%	11.9%	12.4%
Global RE Securities (9/17)	\$1,677	9.8%	27.9%	-	-	8.4%
Timber (12/98)	\$277	4.8%	10.2%	4.7%	5.2%	4.4%
Total CRE Equity Portfolio	\$17,135	8.7%	27.5%	10.1%	11.4%	8.7%
NCREIF-ODCE (Spliced)	-	7.7%	21.0%	8.3%	9.8%	6.8%

Return Drivers:

Appendix D

- Once again Industrial (+39%) and Residential (+45%) have been the key drivers of returns this past year, although retail increased 19% driven by our grocery- anchored shopping centers. Office space (+1.5%), outside of our recently developed asset in Seattle, continues to struggle. In addition, public REIT securities on a US (+38.2%) and Global (+27.9%) basis drove the strong returns this past year.

Market Conditions

- Borrowing costs have moved up 125-150 bps driven by recent inflation numbers and corresponding rate hikes announced by the Federal Reserve for 2022.
- Increased rent levels driven by housing shortages, consumer expense inflation and increased borrowing costs continue to put pressure on all housing costs including residential rents. Investors that aggressively underwrote rent growth may find it difficult to achieve their projections. Affordability of rents relative to household incomes will continue to be an important metric for NYSTRS analyses as a way to determine the sustainability of rent levels in different markets.
- There is a bifurcation in the office sector, where newer, higher quality properties continue to have strong demand as opposed to older assets, especially in central business districts which continue to struggle. Corporate tenants want new space with the latest amenities to attract staff in a very competitive labor market..
- Industrial space remains somewhat insulated from these dynamics, as rents represent a small percentage of overall product costs to the consumer. The supply chain disruption has caused tenants to increase inventories in advance of long-term demand in order to avoid “bare shelves”; e.g., 2022 holiday season inventories began to fill in January of this year.

Commercial Real Estate (CRE) Investments - Managing Director Update

CRE Equity	<u>3/31/22 Value</u>	<u>Target</u>	<u>Range</u>	<u>Actual</u>	<u>w/Commit</u>	
	\$17,212	11%	6%-16%	11.8%	14.6%	
Performance for Periods Ended <u>December 31, 2021</u>						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Year	10 Year	Since Inception
Direct Properties (2/90)	\$6,139	6.2%	22.2%	8.2%	11.2%	9.8%
Core Funds (7/85)	\$1,751	4.6%	14.3%	4.6%	7.7%	6.9%
Value Added (12/89)	\$1,289	12.9%	49.8%	20.9%	18.8%	12.4%
Opportunistic (3/99)	\$2,429	8.7%	27.4%	11.4%	11.6%	11.4%
U.S. RE Securities (7/95)	\$3,573	13.3%	38.2%	12.2%	11.9%	12.4%
Global RE Securities (9/17)	\$1,677	9.8%	27.9%	-	-	8.4%
Timber (12/98)	\$277	4.8%	10.2%	4.7%	5.2%	4.4%
Total CRE Equity Portfolio	\$17,135	8.7%	27.5%	10.1%	11.4%	8.7%
NCREIF-ODCE (Spliced)	-	7.7%	21.0%	8.3%	9.8%	6.8%

Portfolio Focus:

- Residential remains of interest but we will be cognizant of affordability and potential repricing of assets with borrowing rates increasing.
- Cold storage and traditional industrial space still offer the most appealing growth story for the mid to long term.
- The department has begun reviewing infrastructure opportunities to expand the opportunity set for debt and equity investments.

First Quarter Investment Activity:

• Acquisitions and Commitments

- \$370M to Edens, in the now national grocery-anchored shopping center company
- \$500M funding to the Principal US REIT strategy (reallocation from existing REIT separate accounts)
- \$100M to Artemis focused on mid-market US equity and opportunistic debt strategies
- \$150M to Cabot for their core strategy focused on US stabilized industrial assets
- \$188M acquisition of the Berkman apartments, adjacent to the Mayo clinic campus in Rochester, MN.
- 270M Euros to Aermont Capital for a European opportunistic strategy focusing on real estate platforms and individual assets.
- \$83M to Bentall Green Oak cold storage strategy...remainder of overall \$300M commitment

• Operating Company and Individual Asset Sales

- Sale of Donahue Schriber. Proceeds for NYSTRS' net interest were \$936M [REDACTED]
- Sale of the Fitzgerald Multifamily property in Baltimore, MD. Proceeds for NYSTRS net interest were \$31.3M, [REDACTED]

Commercial Real Estate (CRE) Investments - Managing Director Update₁₉

CRE Debt	<u>3/31/22 Value</u>	<u>Target</u>	<u>Range</u>	<u>Actual</u>	<u>w/Commit</u>	
	\$7,925	6%	2%-10%	5.4%	7.0%	
Performance for Periods Ended December 31, 2021						
Strategy (Inception Date)	Net Asset Value	Current Quarter	1 Year	5 Years	10 Years	Since Inception
First Mortgages (7/85)	\$3,496	-0.1%	1.5%	4.7%	4.6%	8.1%
Commercial MBS (4/01)	\$1,962	-0.6%	3.3%	4.3%	4.4%	5.0%
Core Plus Strategies (8/04)	\$1,617	1.4%	6.3%	5.6%	6.2%	5.5%
Opportunistic Debt (9/01)	\$524	2.4%	7.9%	7.4%	10.5%	0.7%
Total CRE Debt Portfolio	\$7,599	0.3%	3.2%	5.0%	5.0%	8.1%
Gilberto-Levy Custom Index (Spliced)	-	0.3%	1.9%	5.2%	4.5%	8.3%

Return Drivers:

- Returns over the past year were driven by NYSTRS' floating rate bridge and mezzanine lending programs. Increased market lending rates resulted in NYSTRS fixed rate assets (primarily first mortgage and CMBS) to experience markdowns this past quarter. The markdowns were somewhat tempered by a very short, 2-year duration for the larger fixed rate mortgage portfolio.

Market Conditions:

- U.S. treasury yields have significantly increased during 2022 with all-in mortgage rates widening approximately 125 basis points, resulting in 5-10-year coupons now in the 4.25%-4.50% range. Borrowers are opting for longer term loans due to the flatness of the yield curve.
- Yields on investment grade SASB and conduit CMBS securities have increased resulting in all in yields in excess of 4.125%.
- Private bridge and senior mezzanine loans are now providing net yields in excess of 6.00% when including the forward SOFR curve.

Portfolio Focus:

- After a long hiatus in the first mortgage lending space, due to very low yields (2-3% coupons), NYSTRS is now actively looking to originate 5-10 year first mortgages at yields in excess of 4.125%.
- Continue to focus on senior mezzanine and bridge lending to supplement first mortgage and CMBS yields, while providing floating rate loans which temper the longer durations that accompany fixed rate product..
- Look to add CMBS investment grade debt (SASB & Conduit) focusing on all-in yields in excess of 4.125%.

First Quarter Investment Activity:

- The System closed on \$600 million of commitments to two separate accounts (Artemis and Federal Capital Partners) targeting bridge and mezzanine loans, including Freddie Mac subordinate multifamily positions. The System also funded \$100M to Blackrock's CMBS strategy.

Private Equity/Debt MD Update

20

Investment Committee

April 27, 2022

Appendix E

Private Equity – 8% Target (3-13%)	Private Debt – 2% Target (0.5-5%)																																				
<ul style="list-style-type: none">3/31/22 - \$14.6bn or approx. 9.8% vs. target\$6.4bn unfunded	<ul style="list-style-type: none">3/31/22 - \$1.3bn or approx. 0.9% vs. target\$1.2bn unfunded																																				
<u>Performance (as of 12/31/21, time-weighted)</u>	<u>Performance (as of 12/31/21, time-weighted)</u>																																				
<table border="1"><thead><tr><th>Yrs</th><th>TWRReturn</th><th>S&P500 +5%</th></tr></thead><tbody><tr><td>QTR</td><td>2.4%</td><td>12.3%</td></tr><tr><td>1</td><td>38.7%</td><td>33.7%</td></tr><tr><td>3</td><td>25.8%</td><td>31.1%</td></tr><tr><td>5</td><td>21.6%</td><td>23.5%</td></tr><tr><td>10</td><td>17.7%</td><td>21.6%</td></tr><tr><td>15</td><td>13.8%</td><td>15.7%</td></tr><tr><td>20</td><td>14.7%</td><td>14.5%</td></tr></tbody></table>	Yrs	TWRReturn	S&P500 +5%	QTR	2.4%	12.3%	1	38.7%	33.7%	3	25.8%	31.1%	5	21.6%	23.5%	10	17.7%	21.6%	15	13.8%	15.7%	20	14.7%	14.5%	<table border="1"><thead><tr><th>Yrs</th><th>TWRReturn</th><th>S&P/LSTA +3%</th></tr></thead><tbody><tr><td>QTR</td><td>4.0%</td><td>1.5%</td></tr><tr><td>1</td><td>17.7%</td><td>8.2%</td></tr><tr><td>3</td><td>10.9%</td><td>8.6%</td></tr></tbody></table>	Yrs	TWRReturn	S&P/LSTA +3%	QTR	4.0%	1.5%	1	17.7%	8.2%	3	10.9%	8.6%
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Market Overview:

- Fundraising continues to be strong providing plenty of quality investment opportunities; Staff remains highly selective and focused primarily on reups;
- Strong deal activity and elevated pricing are expected to continue in 2022 despite concerns of inflation, increasing interest rates, supply chain issues, etc.;
- Private debt markets continue to grow; attractive opportunities particularly in the lower/middle market, largely avoiding the upper end of the market which is highly competitive and more sponsor oriented.

Other Items:

- Team – recent internal promotion; continue to look for opportunistic hires; starting to travel for meetings
- Consultants – Supplemental RFP in process; completion expected this Fall

April 27, 2022



**New York State Teachers'
Retirement System**

2022 Capital Market Assumptions
Asset Allocation Alternatives

Jay Kloepfer
Capital Market Research

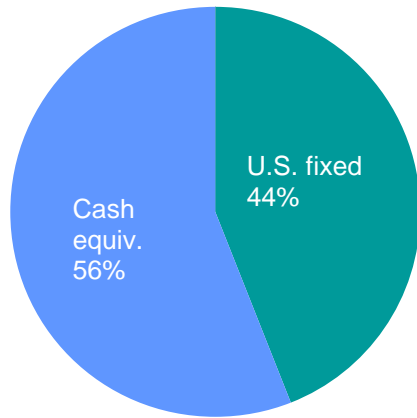
Tom Shingler
Fund Sponsor Consulting

Millie Viqueira
Fund Sponsor Consulting

Angel Haddad
Fund Sponsor Consulting

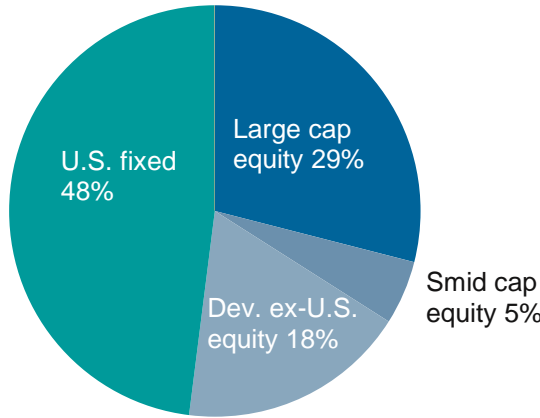
7% Expected Returns Over Past 30 Years

Increasing Complexity →



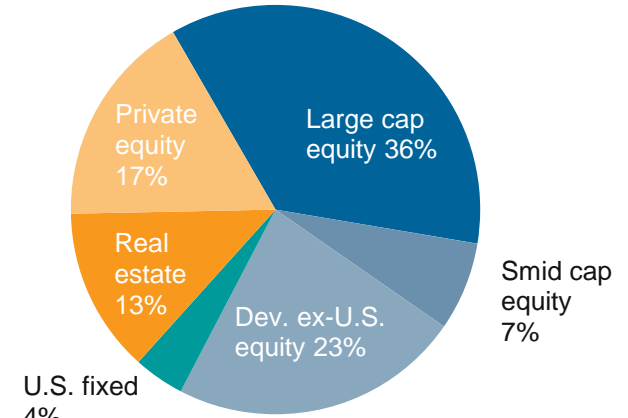
1992

Return: 7.0%
Risk: 3.2%



2007

Return: 7.0%
Risk: 9.4%



2022

Return: 7.0%
Risk: 16.8%

Increasing Risk →

In 1992, our expectations for cash and broad U.S. fixed income were 6.2% and 7.9%, respectively
Return-seeking assets were not required to earn a 7% projected return

15 years later, an investor would have needed over half of the portfolio in public equities to achieve a 7% projected return, with approximately 3x the portfolio volatility of 1992

Today an investor is required to include 96% in return-seeking assets (including 30% in private market investments) to earn a 7% projected return at over 5x the volatility compared to 1992

Source: Callan LLC

How are Capital Market Projections Constructed?

Guiding objectives and process

Underlying beliefs guide the development of the projections:

- An initial bias toward long-run averages
- A conservative bias
- An awareness of risk premiums
- A presumption that markets are ultimately clear and rational

Reflect our beliefs that long-term equilibrium relationships between the capital markets and lasting trends in global economic growth are key drivers to setting capital market expectations

Long-term compensated risk premiums represent “beta”—exposure to each broad market, whether traditional or “exotic,” with limited dependence on successful realization of alpha

The projection process is built around several key building blocks:

- Advanced modeling at the individual asset class level (e.g., a detailed bond model, an equity model)
- A path for interest rates and inflation
- A cohesive economic outlook
- A framework that encompasses Callan beliefs about the long-term operation and efficiencies of the capital markets

2022 Callan Capital Market Projections – Standard Set, 10 Year Horizon

Risk and return: 2022–2031

Asset Class	Index	PROJECTED RETURN			PROJECTED RISK	2021 - 2030		
		1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	1-Year Arithmetic	10-Year Geometric*	Standard Deviation
Equities								
Broad U.S. Equity	Russell 3000	8.00%	6.60%	4.35%	17.95%	8.00%	6.60%	17.95%
Large Cap U.S. Equity	S&P 500	7.85%	6.50%	4.25%	17.70%	7.85%	6.50%	17.70%
Small/Mid Cap U.S. Equity	Russell 2500	8.75%	6.70%	4.45%	21.30%	8.75%	6.70%	21.30%
Global ex-U.S. Equity	MSCI ACWI ex USA	8.70%	6.80%	4.55%	20.70%	8.70%	6.80%	20.70%
Developed ex-U.S. Equity	MSCI World ex USA	8.25%	6.50%	4.25%	19.90%	8.25%	6.50%	19.90%
Emerging Market Equity	MSCI Emerging Markets	9.80%	6.90%	4.65%	25.15%	9.80%	6.90%	25.15%
Fixed Income								
Short Duration Gov't/Credit	Bloomberg Barclays 1-3 Yr G/C	1.50%	1.50%	-0.75%	2.00%	1.50%	1.50%	2.00%
Core U.S. Fixed	Bloomberg Barclays Aggregate	1.80%	1.75%	-0.50%	3.75%	1.80%	1.75%	3.75%
Long Government	Bloomberg Barclays Long Gov	1.85%	1.10%	-1.15%	12.50%	1.35%	0.60%	12.50%
Long Credit	Bloomberg Barclays Long Cred	2.60%	2.10%	-0.15%	10.50%	2.95%	2.45%	10.50%
Long Government/Credit	Bloomberg Barclays Long G/C	2.30%	1.80%	-0.45%	10.40%	2.30%	1.80%	10.40%
TIPS	Bloomberg Barclays TIPS	1.35%	1.25%	-1.00%	5.05%	1.80%	1.70%	5.05%
High Yield	Bloomberg Barclays High Yield	4.40%	3.90%	1.65%	10.75%	4.85%	4.35%	10.75%
Global ex-U.S. Fixed	Bloomberg Barclays GI Agg xUSD	1.20%	0.80%	-1.45%	9.20%	1.15%	0.75%	9.20%
Emerging Market Sovereign Debt	EMBI Global Diversified	4.00%	3.60%	1.35%	9.50%	3.90%	3.50%	9.50%
Alternatives								
Core Real Estate	NCREIF ODCE	6.60%	5.75%	3.50%	14.20%	6.60%	5.75%	14.10%
Private Infrastructure	MSCI Glb Infra/FTSE Dev Core 50/50	7.10%	6.10%	3.85%	15.45%	7.00%	6.00%	15.45%
Private Equity	Cambridge Private Equity	11.45%	8.00%	5.75%	27.60%	11.50%	8.00%	27.80%
Private Credit	N/A	6.40%	5.50%	3.25%	14.60%	7.15%	6.25%	14.60%
Hedge Funds	Callan Hedge FoF Database	4.35%	4.10%	1.85%	8.20%	4.25%	4.00%	8.00%
Commodities	Bloomberg Commodity	4.05%	2.50%	0.25%	18.00%	3.80%	2.25%	18.00%
Cash Equivalents								
	90-Day T-Bill	1.20%	1.20%	-1.05%	0.90%	1.00%	1.00%	0.90%
Inflation								
	CPI-U		2.25%		1.60%		2.00%	1.50%

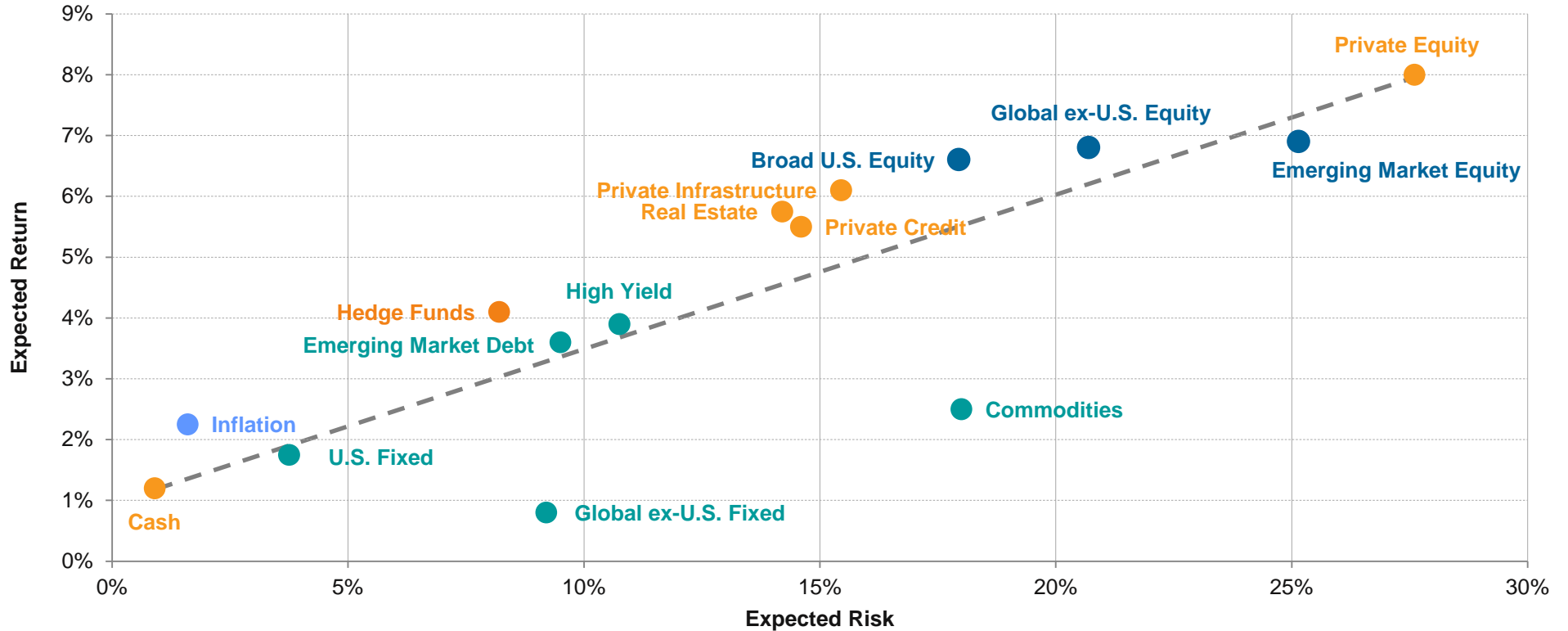
Note that return projections for public markets assume index returns with no premium for active management.

* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).

Source: Callan LLC

Relationship Between Expected Return and Risk – Capital Market Line

Visualizing Callan’s 2022–2031 capital markets assumptions



Our forecasts link expected return to risk

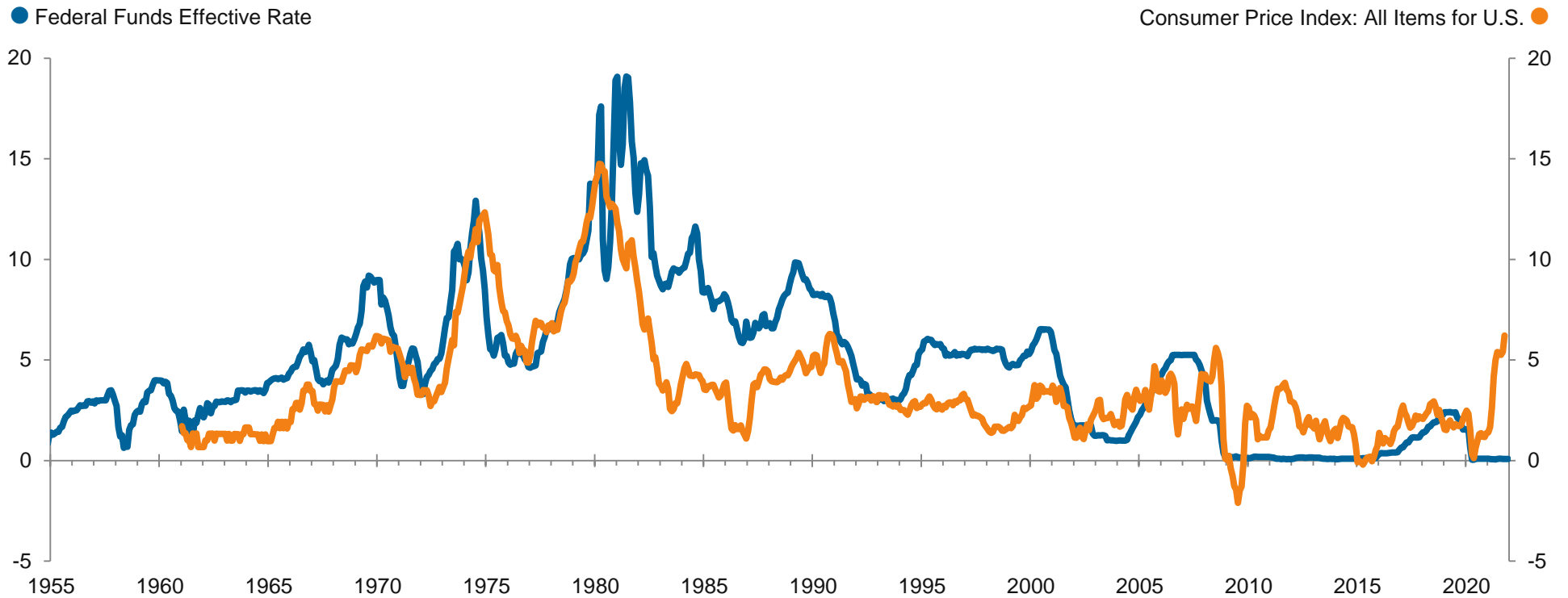
For example, investors demand a greater return from private equity than public equity as compensation for higher risk

Source: Callan LLC

Economic Outlook and Focus on Inflation

Inflation versus Interest Rates Over the Long Term

Federal Funds vs. Consumer Price Index



We are a long way from the inflation and interest rate spike of 1980–1981, the last rise in inflation was from 2005–2008.

Source: Federal Reserve Bank of St. Louis

Economic Outlook – 10-Year Projections

Role of economic variables

GDP and inflation

- GDP forecasts provide a very rough estimate of future earnings growth
- Inflation forecasts provide an approximate path for short-term yields
- Inflation is added to the real return forecasts for equity and fixed income

GDP forecasts

- 2% to 2.5% for the U.S.
- 1.5% to 2.0% for developed ex-U.S. markets
- 4% to 5% for emerging markets
- All forecasts are below long-term averages
- Path to longer-term growth will include cycles with recessions

Inflation forecasts

- 2.0% to 2.5% for the U.S.
- 1.75% to 2.25% for developed ex-U.S. markets
- 2.40% to 2.90% for emerging markets

NYSTRS 2022 Return and Risk Potential Alternative Portfolio Mixes

Recommendation: NYSTRS Current and Proposed Target Allocations and Ranges

Asset Class	Current Target	Current Target Range Allocations	Proposed Target	Recommended Target Range
Domestic Equity	33%	29 - 37%	33%	29 - 37%
International Equity	16%	12 - 20%	15%	11 - 19%
Global Equity	4%	0 - 8%	4%	0 - 8%
Domestic Fixed Income	16%	12 - 20%	16%	12 - 20%
Real Estate Equity	11%	6 - 16%	11%	6 - 16%
Real Estate Debt	6%	2 - 10%	6%	2 - 10%
Private Equity	8%	3 - 13%	9%	4 - 14%
Private Credit	2%	0.5 - 0.5%	2%	0.5 - 5.0%
Global Bonds	2%	0 - 4%	2%	0 - 4%
High Yield Bonds	1%	0 - 3%	1%	0 - 3%
Short Term Investments (Cash Equivalents)	1%	1 - 4%	1%	0 - 4%

- Proposed asset allocation target and range changes noted in red.
- International Equity target reduced by a percentage point and range adjusted accordingly.
- Private Equity target raised by a percentage point and range adjusted accordingly.
- International Equity target reduced due to lower expected returns and opportunity set versus Private Equity; this change can be made without impacting the use of the leeway clause.
- This proposed incremental change also moves Private Equity's target allocation closer to the actual allocation.

Note that a floor of 0% on the target range does not imply that the target allocation can be eliminated without Board approval.

Customized NYSTRS Capital Market Projections – 10-Year Time Horizon

NYSTRS Asset Allocation Model 2022-2031- Target and Recommended Mix

Asset Class	Target Weight	Recommended	PROJECTED RETURN	PROJECTED RISK
			10-Year Geometric Return	Annualized Standard Deviation
Public Equity	53.0%	52.0%		
Broad US Equity (1)	33.0%	33.0%	6.60%	17.95%
Global Ex-US Equity (2)	16.0%	15.0%	6.80%	20.50%
Global Equity (3)	4.0%	4.0%	6.85%	18.25%
Private Market Equity	19.0%	20.0%		
Real Estate Equity (4)	11.0%	11.0%	6.75%	16.80%
Private Equity	8.0%	9.0%	8.00%	27.60%
Private Debt	2.0%	2.0%		
Private Debt	2.0%	2.0%	5.50%	14.60%
Fixed Income	25.0%	25.0%		
Core U.S. Fixed Income	16.0%	16.0%	1.75%	3.75%
Global Fixed Income (5)	2.0%	2.0%	1.20%	3.10%
Real Estate Debt (6)	6.0%	6.0%	3.40%	4.65%
High Yield	1.0%	1.0%	3.90%	10.75%
Cash Equivalents	1.0%	1.0%		
Cash Equivalents	1.0%	1.0%	1.20%	0.90%
Inflation			2.25%	1.50%
Total Fund	100.0%	100.0%		
Single-Period Arithmetic Return	6.84%	6.87%		
10-Year Geometric Return	6.12%	6.15%		
Annualized Standard Deviation	13.33%	13.39%		

Projection set customized to reflect specific NYSTRS strategies:

- Real estate equity, real estate debt, global fixed income

Current target projected return of 6.12% compounded over 10 years, at a risk (standard deviation) of 13.33%

- Recommend: shift 1% from international equity to private equity

(1) Broad US equity = 85% large cap, 15% mid and small cap

(2) Global ex-US equity = 75% developed markets, 25% emerging markets

(3) Global Equity = 55% broad US, 45% global ex-US

(4) Real estate equity = 55% core real estate, 30% non-core real estate, 15% REITs

(5) Global fixed income = 60% non-US developed market bonds, 40% core US fixed income

(6) Real estate debt = 80% commercial mortgages/20% private mezzanine debt

Source: Callan LLC

Customized NYSTRS Capital Market Projections – 20-Year Time Horizon

NYSTRS Asset Allocation Model 2022-2041 - Target and Recommended Mix

Asset Class	Target Weight	Recommended	PROJECTED RETURN	PROJECTED RISK
			20-Year Geometric Return	Annualized Standard Deviation
Public Equity	53.0%	52.0%		
Broad US Equity (1)	33.0%	33.0%	7.15%	17.95%
Global Ex-US Equity (2)	16.0%	15.0%	7.30%	20.50%
Global Equity (3)	4.0%	4.0%	7.40%	18.25%
Private Market Equity	19.0%	20.0%		
Real Estate Equity (4)	11.0%	11.0%	7.20%	16.80%
Private Equity	8.0%	9.0%	8.45%	27.60%
Private Debt	2.0%	2.0%		
Private Debt	2.0%	2.0%	6.10%	14.60%
Fixed Income	25.0%	25.0%		
Core U.S. Fixed Income	16.0%	16.0%	2.65%	3.75%
Global Fixed Income (5)	2.0%	2.0%	2.10%	3.10%
Real Estate Debt (6)	6.0%	6.0%	4.10%	4.65%
High Yield	1.0%	1.0%	4.60%	10.75%
Cash Equivalents	1.0%	1.0%		
Cash Equivalents	1.0%	1.0%	1.70%	0.90%
Inflation			2.25%	1.50%
Total Fund	100.0%	100.0%		
Single-Period Arithmetic Return	7.43%	7.45%		
20-Year Geometric Return	6.74%	6.76%		
Annualized Standard Deviation	13.33%	13.39%		

Projection set customized to reflect specific NYSTRS strategies:

- Real estate equity, real estate debt, global fixed income

Current target projected return of 6.74% compounded over 20 years, at a risk (standard deviation) of 13.33%

- Recommend: shift 1% from international equity to private equity

(1) Broad US equity = 85% large cap, 15% mid and small cap

(2) Global ex-US equity = 75% developed markets, 25% emerging markets

(3) Global Equity = 55% broad US, 45% global ex-US

(4) Real estate equity = 55% core real estate, 30% non-core real estate, 15% REITs

(5) Global fixed income = 60% non-US developed market bonds, 40% core US fixed income

(6) Real estate debt = 80% commercial mortgages/20% private mezzanine debt

Source: Callan LLC

Customized NYSTRS Capital Market Projections – 30-Year Time Horizon

NYSTRS Asset Allocation Model 2022-2051 - Target and Recommended Mix

Asset Class	Target Weight	Recommended	PROJECTED RETURN	PROJECTED RISK
			30-Year Geometric Return	Annualized Standard Deviation
Public Equity	53.0%	52.0%		
Broad US Equity (1)	33.0%	33.0%	7.60%	19.95%
Global Ex-US Equity (2)	16.0%	15.0%	7.80%	20.50%
Global Equity (3)	4.0%	4.0%	7.90%	18.25%
Private Market Equity	19.0%	20.0%		
Real Estate Equity (4)	11.0%	11.0%	7.45%	16.80%
Private Equity	8.0%	9.0%	8.90%	27.60%
Private Debt	2.0%	2.0%		
Private Debt	2.0%	2.0%	6.80%	14.60%
Fixed Income	25.0%	25.0%		
Core U.S. Fixed Income	16.0%	16.0%	3.50%	3.75%
Global Fixed Income (5)	2.0%	2.0%	2.95%	3.10%
Real Estate Debt (6)	6.0%	6.0%	4.70%	4.65%
High Yield	1.0%	1.0%	5.25%	10.75%
Cash Equivalents	1.0%	1.0%		
Cash Equivalents	1.0%	1.0%	2.15%	0.90%
Inflation			2.25%	1.50%
Total Fund	100.0%	100.0%		
Single-Period Arithmetic Return	7.92%	7.95%		
30-Year Geometric Return	7.26%	7.28%		
Annualized Standard Deviation	13.33%	13.39%		

Projection set customized to reflect specific NYSTRS strategies:

- Real estate equity, real estate debt, global fixed income

Current target projected return of 7.26% compounded over 30 years, at a risk (standard deviation) of 13.33%

- Recommend: shift 1% from international equity to private equity

(1) Broad US equity = 85% large cap, 15% mid and small cap

(2) Global ex-US equity = 75% developed markets, 25% emerging markets

(3) Global Equity = 55% broad US, 45% global ex-US

(4) Real estate equity = 55% core real estate, 30% non-core real estate, 15% REITs

(5) Global fixed income = 60% non-US developed market bonds, 40% core US fixed income

(6) Real estate debt = 80% commercial mortgages/20% private mezzanine debt

Source: Callan LLC

Leeway Clause Impact for Each Asset Mix

Source: NYSTRS

Estimated Leeway

Current Policy Target	Estimated		Add 1% to Private Equity	Estimated	
	Allocation	Leeway		Allocation	Leeway
Domestic Equity	33%	0.00%	Domestic Equity	33%	0.00%
International Equity	16%	6.00%	International Equity	15%	5.00%
Global Equity (1)	4%	1.80%	Global Equity (1)	4%	1.80%
Real Estate Equity (2)	11%	0.00%	Real Estate Equity (2)	11%	0.00%
Private Equity	8%	8.00%	Private Equity	9%	9.00%
	72%	15.80%		72%	15.80%
Domestic Fixed Income	16%	0.00%	Domestic Fixed Income	16%	0.00%
High Yield Bonds (3)	1%	1.00%	High Yield Bonds (3)	1%	1.00%
Global Bonds (4)	2%	1.10%	Global Bonds (4)	2%	1.10%
Real Estate Debt (2)	6%	0.00%	Real Estate Debt (2)	6%	0.00%
Private Debt	2%	2.00%	Private Debt	2%	2.00%
Cash Equivalents	1%	0.00%	Cash Equivalents	1%	0.00%
	28%	4.10%		28%	4.10%
	100%	19.90%		100%	19.90%
Other (5)		1.75%	Other (5)		1.75%
Leeway Assets (6)		21.65%	Leeway Assets (6)		21.65%
Available Leeway		3.35%	Available Leeway		3.35%

Notes:

(1) Assumes Global Equity is split 55% domestic 45% international.

(2) Only a portion of the Real Estate Equity and Debt asset classes --- Directly Owned Properties and Real Estate Funds --- contribute to the 10% limit for Real Estate. Estimated Leeway was calculated with 68% of the Real Estate Equity asset class and 28% of the Real Estate Debt asset class contributing to the 10% limit based on actual amounts as of 12/31/2021.

(3) Assumes 100% of High Yield Bonds are below investment grade.

(4) Assumes 55% of Global Bonds are foreign or below investment grade.

(5) Includes securities held with a market capitalization less than \$1B, foreign securities held in domestic portfolios, equity holdings more than 2% of fund assets, domestic fixed income securities below investment grade, and applicable securities lending collateral as of 12/31/2021.

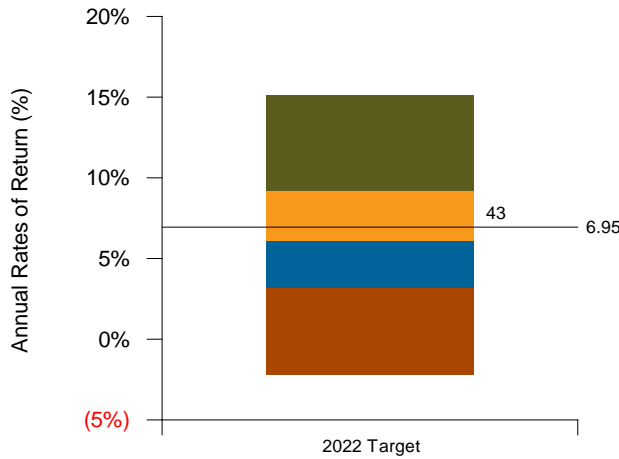
(6) Estimated Leeway percentages are based on assumptions and historical data, and are not intended to precisely predict future percentages. Actual Leeway was 20.87% as of 12/31/21.

Source: NYSTRS Office of the CFO/Investment Operations Department

Range of Projected Rates of Return vs. 6.95% Assumed Return

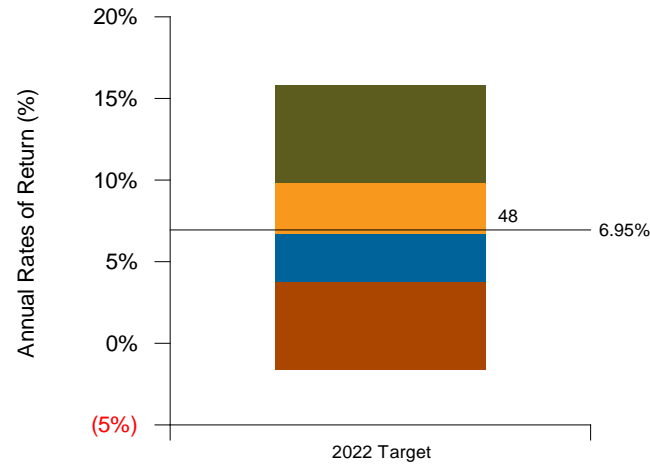
Probability of Exceeding 0% and 6.95% Over Ten, Twenty and Thirty Years

Range of Projected Rates of Return
Projection Period: 10 Years
Optimization Set: 2022 10-Year



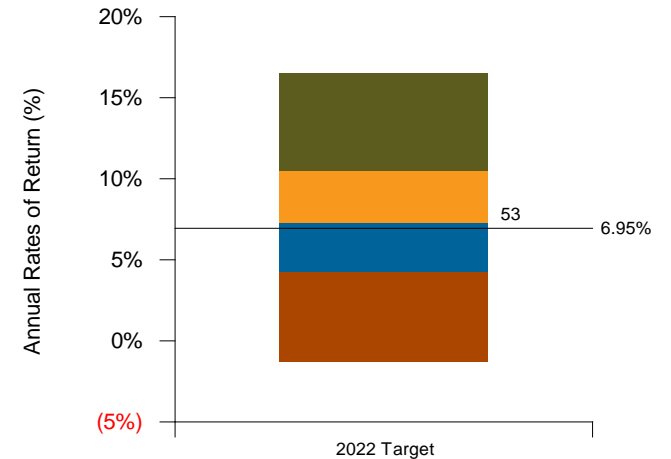
2.5th Percentile	15.1%
25th Percentile	9.2%
Median	6.1%
75th Percentile	3.1%
97.5th Percentile	(2.2%)
Prob > 6.95%	43%
Prob > 0%	92%

Range of Projected Rates of Return
Projection Period: 20 years
Optimization Set: 2022 20-Year



2.5th Percentile	15.8%
25th Percentile	9.8%
Median	6.7%
75th Percentile	3.7%
97.5th Percentile	(1.6%)
Prob > 6.95%	48%
Prob > 0%	94%

Range of Projected Rates of Return
Projection Period: 30 Years
Optimization Set: 2022 30-Year

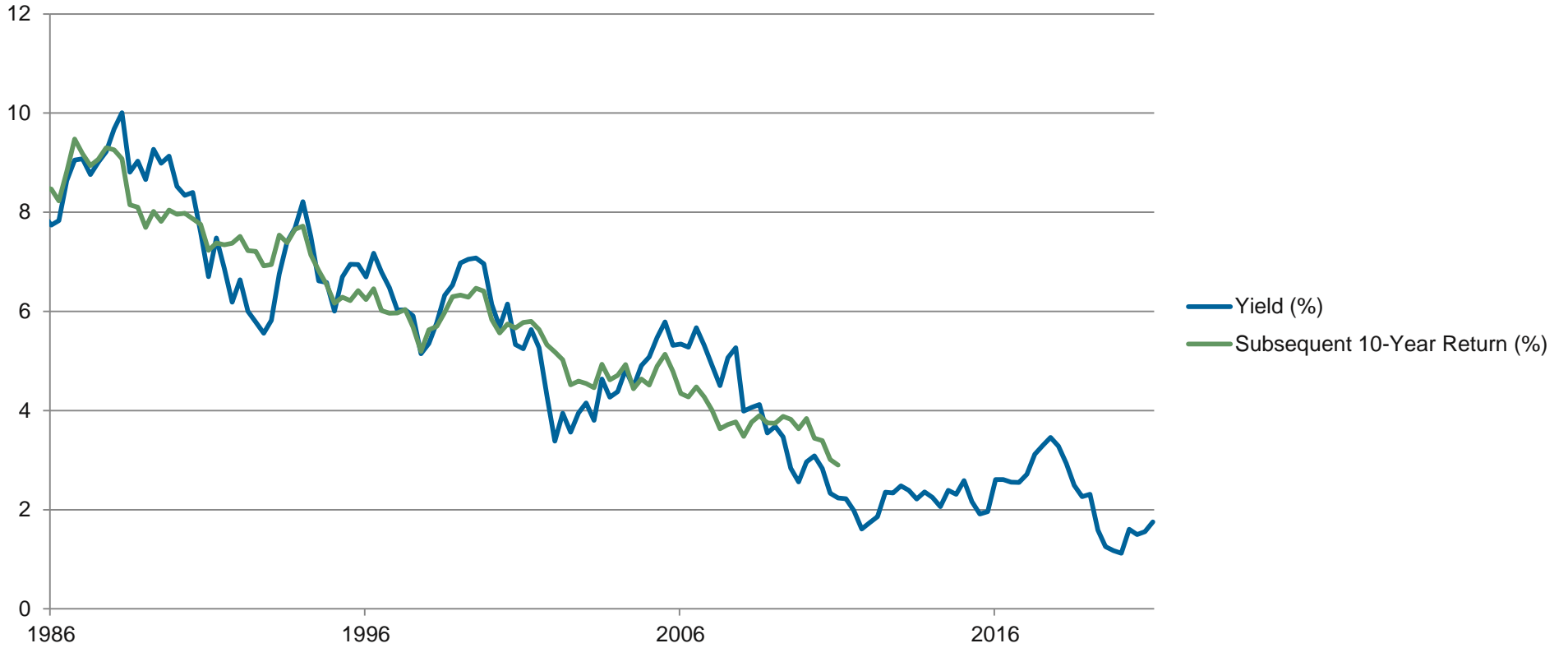


2.5th Percentile	16.5%
25th Percentile	10.4%
Median	7.3%
75th Percentile	4.3%
97.5th Percentile	(1.3%)
Prob > 6.95%	53%
Prob > 0%	95%

Source: Callan LLC

Appendix

Core Fixed Income Starting Yield vs. Subsequent 10-Year Return

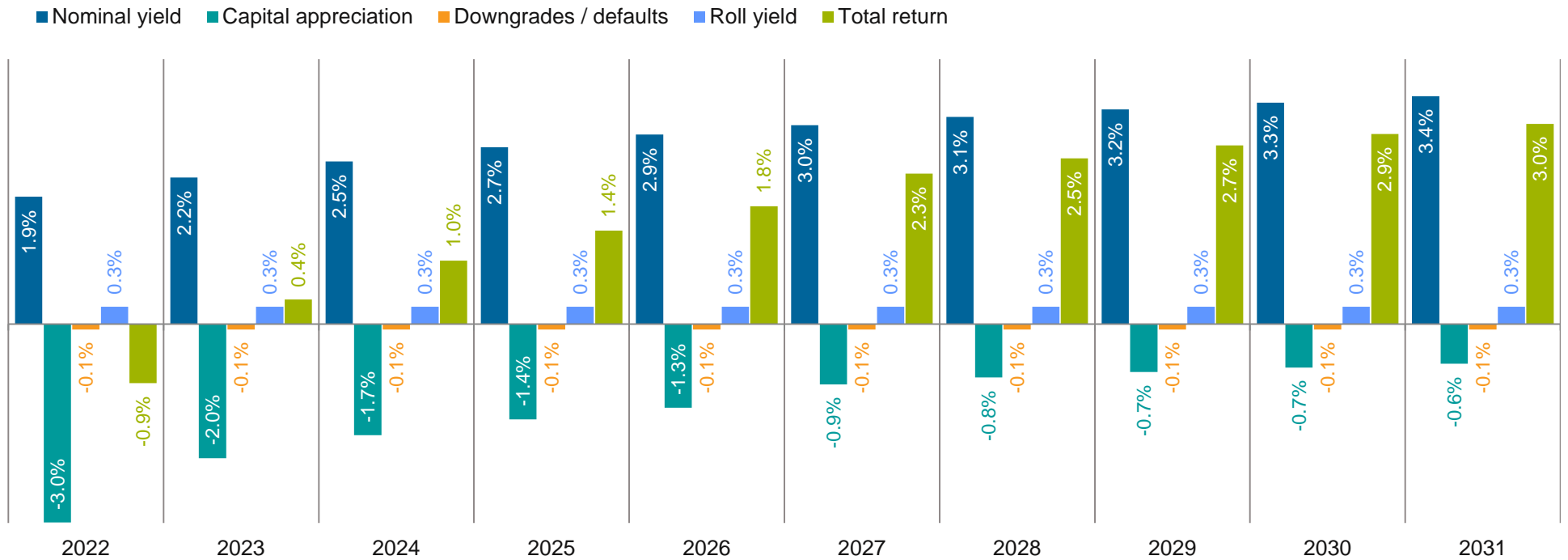


Fixed income returns are closely linked to yields

Source: Callan LLC

Core Fixed Income Return Components

Total Return Attribution



Higher yields relative to last year are offset by capital losses from our rising rate projection.

- We project rates to rise faster early in the forecast, leading to larger capital losses and lower total returns.
- As rates stabilize, the carry from yield outweighs capital losses, leading to positive total returns.

Source: Callan LLC

10-Year Expected Returns – Callan Fixed Income Model

10-Year Projections

	Income Return	+	Capital Gain/Loss	+	Credit Default	+	Roll Return	=	2022 Expected Return	2021 Expected Return	Change
Cash	1.20%		0.00%		0.00%		0.00%		1.20%	1.00%	0.20%
Short Duration 1-3 Year G/C	1.65%		-0.40%		0.00%		0.25%		1.50%	1.50%	0.00%
1-3 Year Government	1.55%		-0.40%		0.00%		0.25%		1.40%		
1-3 Year Credit	2.15%		-0.50%		-0.10%		0.25%		1.80%		
Intermediate G/C	2.35%		-0.80%		-0.10%		0.25%		1.70%	1.50%	0.20%
Intermediate Government	2.05%		-0.80%		0.00%		0.25%		1.50%		
Intermediate Credit	2.95%		-1.00%		-0.20%		0.25%		2.00%		
Aggregate	2.90%		-1.30%		-0.10%		0.25%		1.75%	1.75%	0.00%
Government	2.25%		-1.20%		0.00%		0.25%		1.30%		
Securitized	2.55%		-0.90%		0.00%		0.25%		1.90%		
Credit	3.85%		-1.80%		-0.30%		0.25%		2.00%		
Long Duration G/C	4.25%		-2.85%		-0.20%		0.60%		1.80%	1.80%	0.00%
Long Government	3.30%		-2.80%		0.00%		0.60%		1.10%		
Long Credit	4.70%		-2.90%		-0.30%		0.60%		2.10%		
TIPS	2.50%		-1.50%		0.00%		0.25%		1.25%	1.70%	-0.45%
Non-U.S. Fixed (unhedged)	2.15%		-1.50%		-0.10%		0.25%		0.80%	0.75%	0.05%
High Yield	6.95%		-1.30%		-2.00%		0.25%		3.90%	4.35%	-0.45%
Emerging Market Debt	6.05%		-1.40%		-1.30%		0.25%		3.60%	3.50%	0.10%
Bank Loans	6.50%		-0.30%		-1.60%		0.00%		4.60%	4.30%	0.30%

Source: Callan LLC

Public Equity Assumptions

Index	Current Dividend Yield*	Forecasts Dividend Yield	Net Buyback Yield	Inflation	Real Earnings Growth**	Valuation Adjustment	Total Geometric Return	2021 Return	Change
S&P 500	1.35%	1.75%	0.50%	2.25%	2.25%	-0.25%	6.50%	6.50%	0.00%
Russell 2500	1.17%	1.50%	0.00%	2.25%	2.95%	0.00%	6.70%	6.70%	0.00%
Russell 3000	1.24%	1.70%	0.45%	2.25%	2.35%	-0.20%	6.55%	6.60%	-0.05%
MSCI World ex USA	2.53%	2.75%	0.00%	2.00%	1.75%	0.00%	6.50%	6.50%	0.00%
MSCI Emerging Markets	2.38%	2.10%	-2.10%	2.65%	4.25%	0.00%	6.90%	6.90%	0.00%
Aggregate							1.75%	1.75%	0.00%
Cash							1.20%	1.00%	0.20%

No changes in public equity projections

- Change in Russell 3000 projection due to a difference in rounding
- 25 bps increase in inflation is offset by a 25 bps decrease in dividend yields

* Index yields as of December 31, 2021

** S&P 500 real earnings growth is forecast real GDP growth. R 2500 real earnings growth is 70 bps spread over S&P 500. Developed and emerging markets earnings growth in line with their respective GDP assumptions.

Source: Callan LLC

International Equity Challenge for Investors

Long Periods of Cumulative Underperformance – \$USD Non-US equity

Cumulative Returns for Periods ended 12/31/21

	4 Quarters	5 Years Ending December 31, 2021	10 Years Ending December 31, 2021	25 Years Ending December 31, 2021
U.S. Equity				
Russell 3000	25.66	128.45	352.85	936.69
S&P 500	28.71	133.41	362.57	925.44
Russell 2000	14.82	76.39	246.52	760.35
Global ex-U.S. Equity				
MSCI World ex USA	12.62	58.37	112.68	271.28
MSCI Emerging Markets	-2.54	60.16	70.66	--
MSCI ACWI ex USA Small Cap	12.93	70.07	146.92	434.52

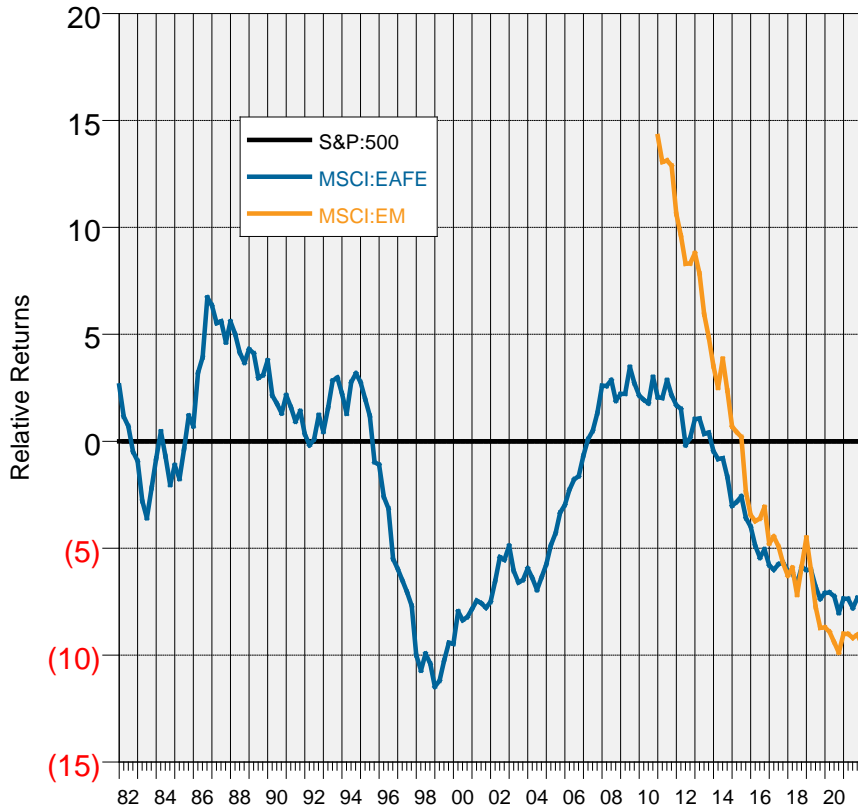
U.S. Investors have endured underperformance by non-US equity over long cumulative periods of return

Source: Callan LLC

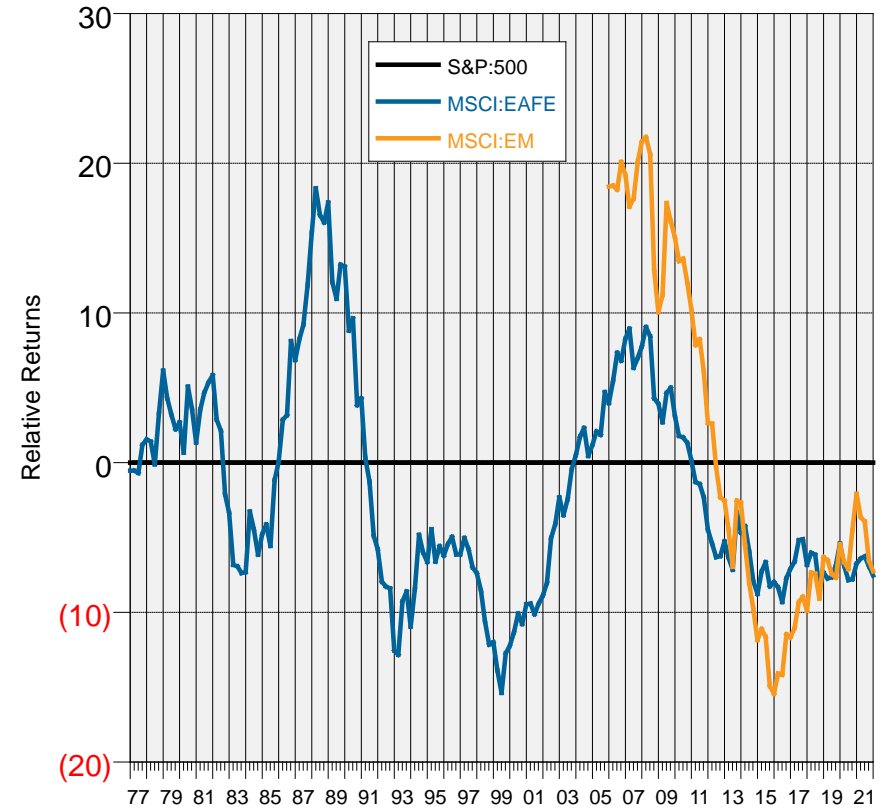
The International Equity Challenge for U.S. Investors

Long Periods of Relative Underperformance

Rolling 10-Year Relative Returns vs. S&P:500



Rolling 5-Year Relative Returns vs. S&P:500



U.S. investors have at times endured underperformance by non-US equity over rolling five- and ten-year periods

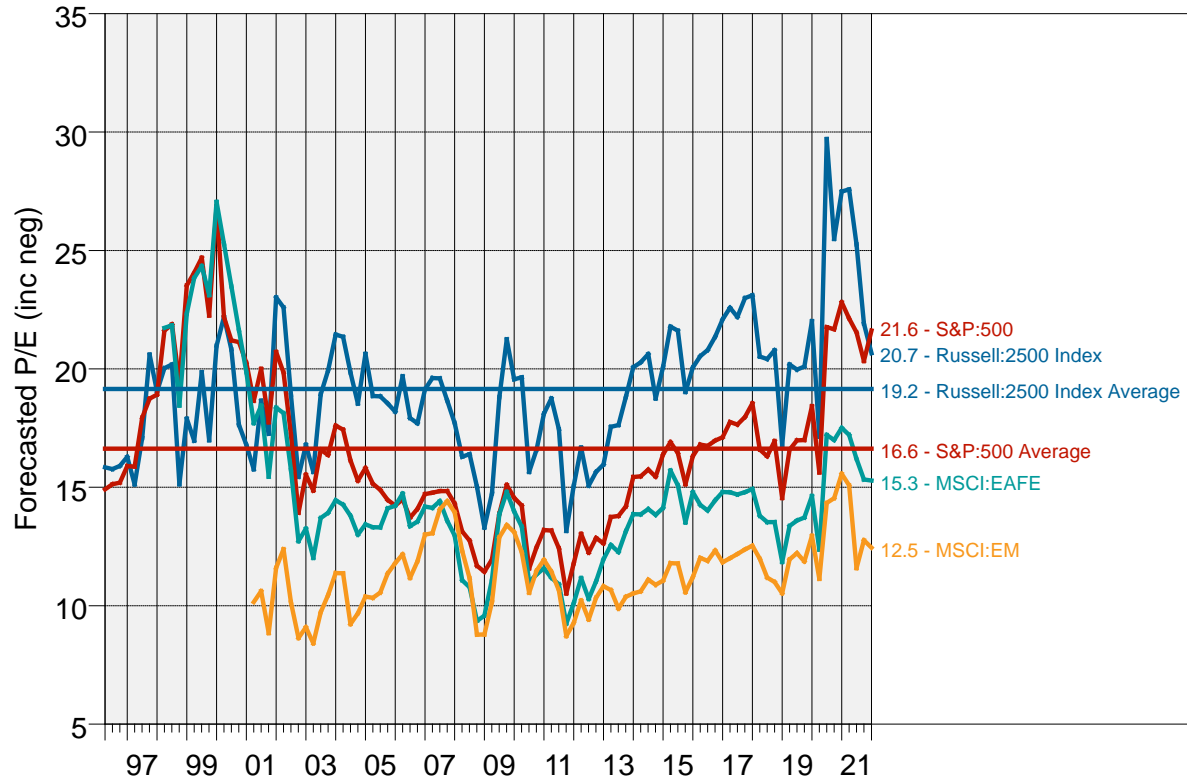
Is now the time to abandon the diversification benefit to non-US equity, given the cycles of performance and relative valuations?

Source: Callan LLC

Current Valuations – Public Equity

As of December 31, 2021

Forecasted Price/Earnings Ratio



U.S. public equity markets look very richly valued relative to long term averages

Source: Callan LLC

Periodic Table Highlights Benefit of International Equity Diversification

Annual Returns for Key Indices Ranked in Order of Performance (2002–2021)

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Gbl ex-U.S. Fixed 22.37%	Emerging Market Equity 55.82%	Real Estate 37.96%	Emerging Market Equity 34.00%	Real Estate 42.12%	Emerging Market Equity 39.38%	U.S. Fixed Income 5.24%	Emerging Market Equity 78.51%	Small Cap Equity 26.85%	U.S. Fixed Income 7.84%	Real Estate 27.73%	Small Cap Equity 38.82%	Real Estate 15.02%	Large Cap Equity 1.38%	Small Cap Equity 21.31%	Emerging Market Equity 37.28%	Cash Equivalent 1.87%	Large Cap Equity 31.49%	Small Cap Equity 19.96%	Large Cap Equity 28.71%
U.S. Fixed Income 10.26%	Small Cap Equity 47.25%	Emerging Market Equity 25.55%	Real Estate 15.35%	Emerging Market Equity 32.17%	Dev ex-U.S. Equity 12.44%	Gbl ex-U.S. Fixed 4.39%	High Yield 58.21%	Real Estate 19.63%	High Yield 4.98%	Emerging Market Equity 18.23%	Large Cap Equity 32.39%	Large Cap Equity 13.69%	U.S. Fixed Income 0.55%	High Yield 17.13%	Dev ex-U.S. Equity 24.21%	U.S. Fixed Income 0.01%	Small Cap Equity 25.52%	Large Cap Equity 18.40%	Real Estate 26.09%
Real Estate 2.82%	Real Estate 40.69%	Dev ex-U.S. Equity 20.38%	Dev ex-U.S. Equity 14.47%	Dev ex-U.S. Equity 25.71%	Gbl ex-U.S. Fixed 11.03%	Cash Equivalent 2.06%	Real Estate 37.13%	Emerging Market Equity 18.88%	Gbl ex-U.S. Fixed 4.36%	Dev ex-U.S. Equity 16.41%	Dev ex-U.S. Equity 21.02%	U.S. Fixed Income 5.97%	Cash Equivalent 0.05%	Large Cap Equity 11.96%	Large Cap Equity 21.83%	High Yield -2.08%	Dev ex-U.S. Equity 22.49%	Emerging Market Equity 18.31%	Small Cap Equity 14.82%
Cash Equivalent 1.78%	Dev ex-U.S. Equity 39.42%	Small Cap Equity 18.33%	Large Cap Equity 4.91%	Small Cap Equity 18.37%	U.S. Fixed Income 6.97%	High Yield -26.16%	Dev ex-U.S. Equity 33.67%	High Yield 15.12%	Large Cap Equity 2.11%	Small Cap Equity 16.35%	High Yield 7.44%	Small Cap Equity 4.89%	Real Estate -0.79%	Emerging Market Equity 11.19%	Small Cap Equity 14.65%	Gbl ex-U.S. Fixed -2.15%	Real Estate 21.91%	Gbl ex-U.S. Fixed 10.11%	Dev ex-U.S. Equity 12.62%
High Yield -1.37%	High Yield 28.97%	Gbl ex-U.S. Fixed 12.54%	Small Cap Equity 4.55%	Large Cap Equity 15.79%	Large Cap Equity 5.49%	Small Cap Equity -33.79%	Small Cap Equity 27.17%	Large Cap Equity 15.06%	Cash Equivalent 0.10%	Large Cap Equity 16.00%	Real Estate 3.67%	High Yield 2.45%	Dev ex-U.S. Equity -3.04%	Real Estate 4.06%	Gbl ex-U.S. Fixed 10.51%	Large Cap Equity -4.38%	Emerging Market Equity 18.44%	Dev ex-U.S. Equity 7.59%	High Yield 5.28%
Emerging Market Equity -6.16%	Large Cap Equity 28.68%	High Yield 11.13%	Cash Equivalent 3.07%	High Yield 11.85%	Cash Equivalent 5.00%	Large Cap Equity -37.00%	Large Cap Equity 26.47%	Dev ex-U.S. Equity 8.95%	Small Cap Equity -4.18%	High Yield 15.81%	Cash Equivalent 0.07%	Cash Equivalent 0.03%	Small Cap Equity -4.41%	Dev ex-U.S. Equity 2.75%	Real Estate 10.36%	Real Estate -5.63%	High Yield 14.32%	U.S. Fixed Income 7.51%	Cash Equivalent 0.05%
Dev ex-U.S. Equity -15.80%	Gbl ex-U.S. Fixed 19.36%	Large Cap Equity 10.88%	High Yield 2.74%	Gbl ex-U.S. Fixed 8.16%	High Yield 1.87%	Dev ex-U.S. Equity -43.56%	Gbl ex-U.S. Fixed 7.53%	U.S. Fixed Income 6.54%	Real Estate -6.46%	U.S. Fixed Income 4.21%	U.S. Fixed Income -2.02%	Emerging Market Equity -2.19%	High Yield -4.47%	U.S. Fixed Income 2.65%	High Yield 7.50%	Small Cap Equity -11.01%	U.S. Fixed Income 8.72%	High Yield 7.11%	U.S. Fixed Income -1.54%
Small Cap Equity -20.48%	U.S. Fixed Income 4.10%	U.S. Fixed Income 4.34%	U.S. Fixed Income 2.43%	Cash Equivalent 4.85%	Small Cap Equity -1.57%	Real Estate -48.21%	U.S. Fixed Income 5.93%	Gbl ex-U.S. Fixed 4.95%	Dev ex-U.S. Equity -12.21%	Gbl ex-U.S. Fixed 4.09%	Emerging Market Equity -2.60%	Gbl ex-U.S. Fixed -3.09%	Gbl ex-U.S. Fixed -6.02%	Gbl ex-U.S. Fixed 1.49%	U.S. Fixed Income 3.54%	Dev ex-U.S. Equity -14.09%	Gbl ex-U.S. Fixed 5.09%	Cash Equivalent 0.67%	Emerging Market Equity -2.54%
Large Cap Equity -22.10%	Cash Equivalent 1.15%	Cash Equivalent 1.33%	Gbl ex-U.S. Fixed -8.65%	U.S. Fixed Income 4.33%	Real Estate -7.39%	Emerging Market Equity -53.33%	Cash Equivalent 0.21%	Cash Equivalent 0.13%	Emerging Market Equity -18.42%	Cash Equivalent 0.11%	Gbl ex-U.S. Fixed -3.08%	Dev ex-U.S. Equity -4.32%	Emerging Market Equity -14.92%	Cash Equivalent 0.33%	Cash Equivalent 0.86%	Emerging Market Equity -14.57%	Cash Equivalent 2.28%	Real Estate -9.04%	Gbl ex-U.S. Fixed -7.05%

Source: Callan LLC

Private Credit

Background

Return projection is anchored on middle market direct lending where yields have returned to pre-COVID lows.

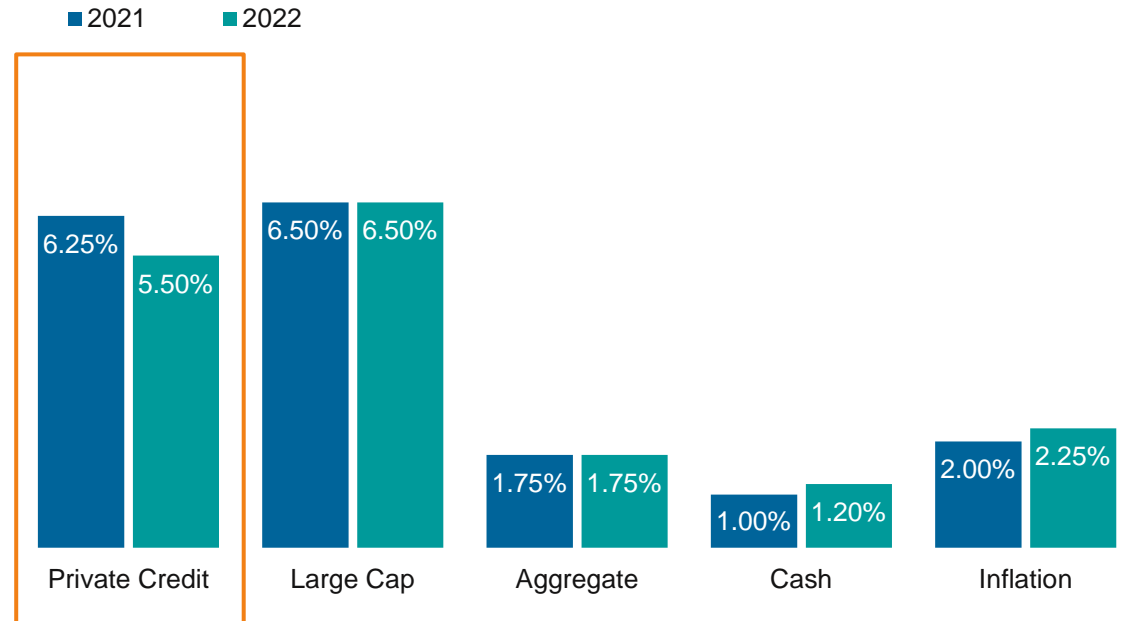
While banks are no longer major investors in this market, there is strong appetite from institutional and retail investors.

~160 bps is a reasonable return premium relative to high yield (3.9%) and leveraged loans.

A portfolio with more distressed and specialty finance exposure would have a higher return though with a lower current yield and higher volatility and higher correlation to public and private equity.

2022 private credit return projection: 5.5% (down 75 bps)

Return Projections



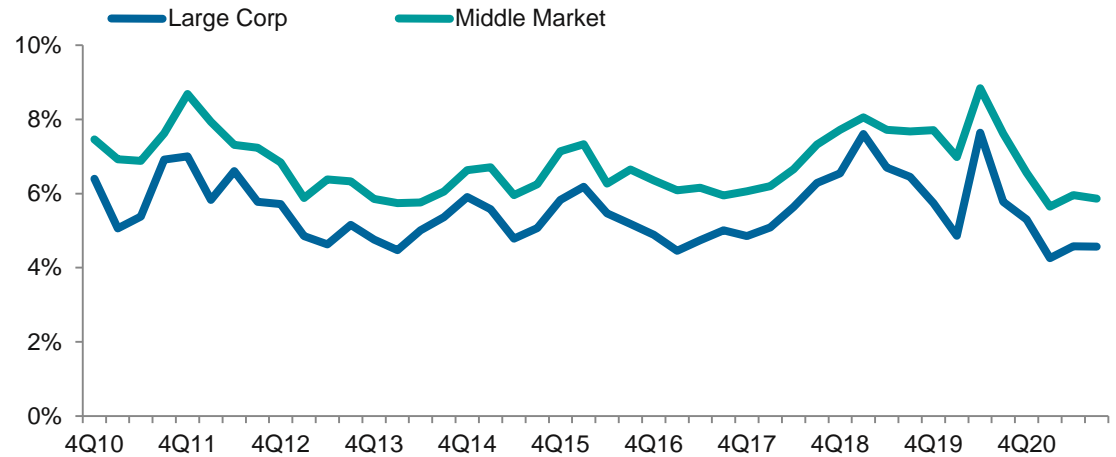
Source: Callan LLC

Private Credit

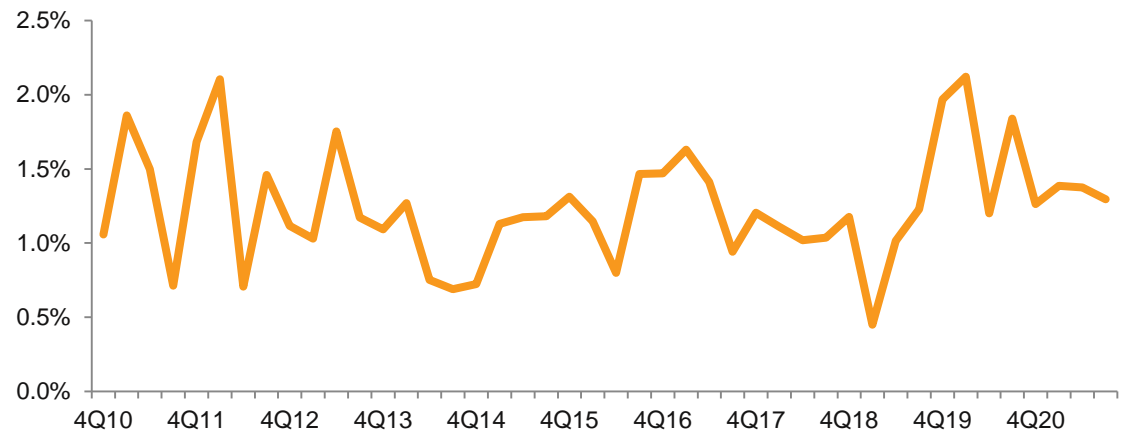
- Return calculations assume 3.7% cost of leverage and 0.75% unlevered loss ratio
- Corresponds to 5.50% geometric

Unlevered Yield	7.2%
Leverage	0.85x
Levered Yield	10.2%
Management Fee and Operating Expense	1.7%
Incentive Rate	15%
Hurdle	4%
Incentive Fee	0.7%
Total Fees and Exp.	2.4%
Loss Ratio	1.4%
Net Arithmetic	6.4%

Loan Yields



Middle Market Premium



Source: Refinitiv LPC. All-in yield (LIBOR + Spread + OID) assuming 3-year takeout
 Note: 2Q20 was deemed less reliable due to lack of data points to calculate a MM institutional all-in yield statistic

Private Equity

Background

The private equity market in aggregate is driven by many of the same economic factors as public equity markets. Buyout valuations appear reasonable while venture/growth equity valuations are high.

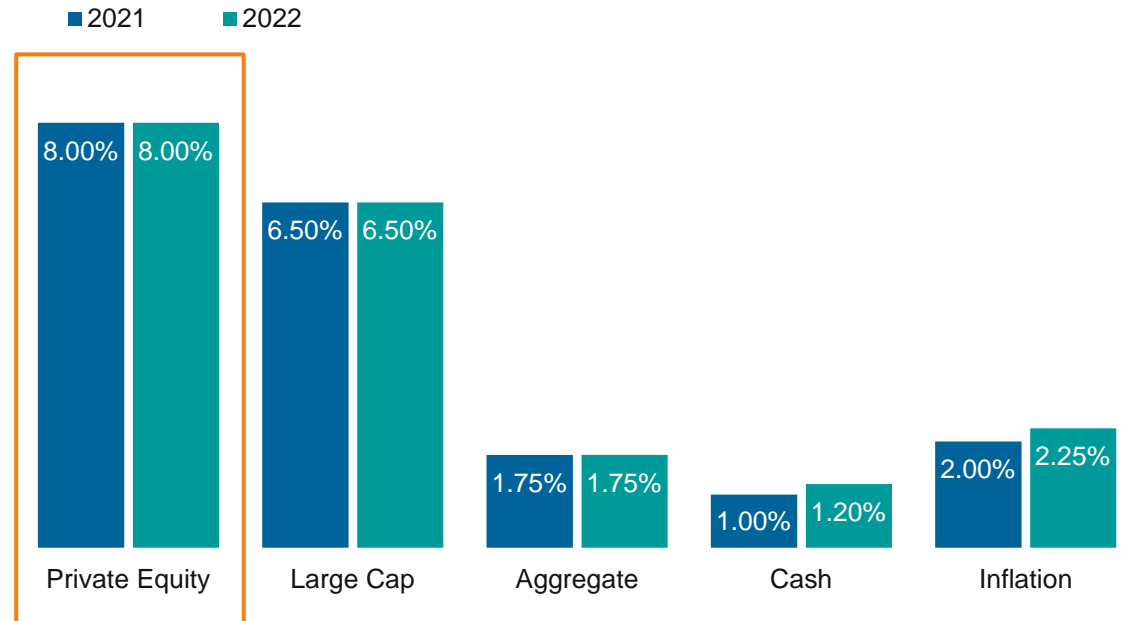
Consequently, the private equity performance expectations did not change relative to where they were last year.

We see tremendous disparity between the best- and worst-performing private equity managers.

The ability to select skillful managers could result in realized returns significantly greater than projected here.

2022 private equity return projection: 8.00% (unchanged)

Return Projections



Source: Callan LLC

Private Equity

Directional Changes Relative to 2021

Return

- Maintain spread to public equity (~ 150 bps)
 - Buyout valuations are still reasonable (even lower since 2019) relative to public markets
 - Offset by high valuations on the venture/growth equity side
 - Dry powder not much changed relative to public equity valuations
 - 150 bps spread is low and 8% is the bare minimum hurdle rate

Risk

- Move slightly lower (~20-25 bps)
 - Less COVID-related uncertainty versus 1 year ago (hopeful?)

Yield

- No change

2021 / 2022

Return: 8.00% / 8.00%

Risk: 27.80% / 27.60%

Yield: 0.00% / 0.00%

Source: Callan LLC

Real Estate

Background

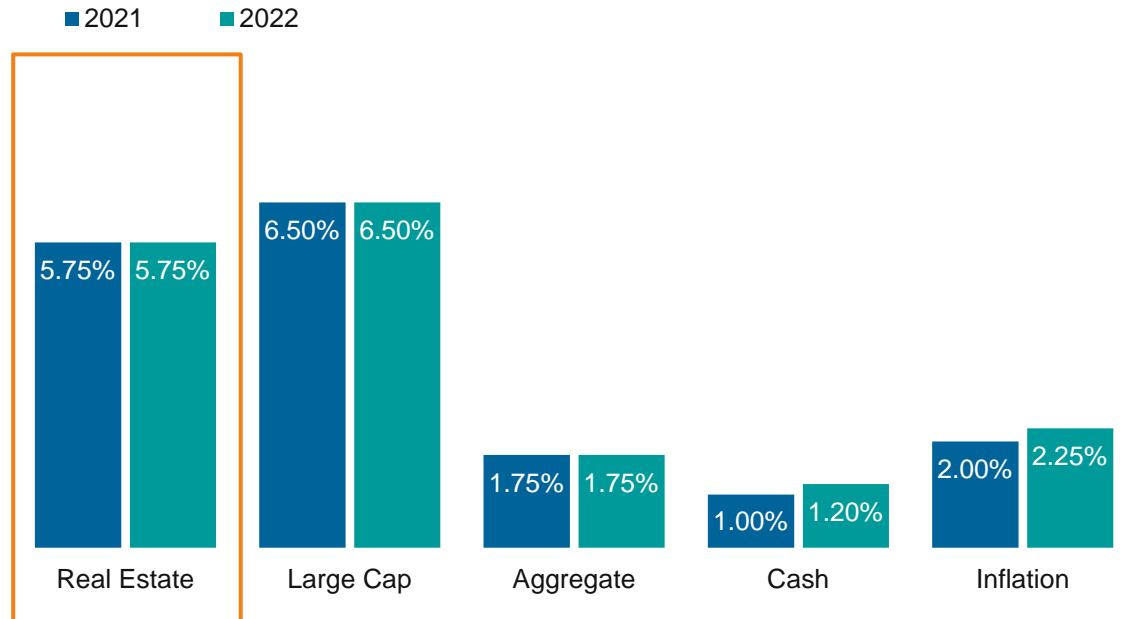
The foreseeable low interest rate environment should help to ensure that real estate continues to garner interest from investors seeking income, supporting returns.

Weakening expectations for some real estate sectors, such as office and retail may continue to be offset by other sectors such as industrial and residential. Non-traditional sectors like medical office and data centers continue to grow in institutional portfolios.

No change to the outlook for real estate returns compared to last year.

2022 real estate return projection: 5.75% (unchanged)

Return Projections



Source: Callan LLC

Real Estate

Directional Changes Relative to 2021

Return

- No change
 - Weakening expectations for some real estate sectors such as U.S. gateway office and mall retail may continue to be offset by other sectors such as industrial, residential, grocer-anchored retail, and life sciences
 - There is also an emergence of non-traditional sectors such as medical office and data centers, which continue to grow in institutional portfolios
 - This balance should help maintain return expectations
 - Uncertainty around U.S. gateway office and mall retail will contribute to overall increased risk
 - Underlying rents may lag some of the rapid property value changes during the short-term, but will eventually adjust, helping to maintain long-term dividend expectations

Risk

- Standard deviation - increase slightly

Yield

- No change

2021 / 2022

Return: 5.75% / 5.75%

Risk: 14.10% / 14.20%

Yield: 4.40% / 4.40%

Source: Callan LLC

2022 Capital Market Assumption Correlations

Summary of Callan's long-term capital market projections (2022 – 2031)

U.S. Large Cap	1.00																																								
U.S. Smid Cap	0.90	1.00																																							
Dev ex-U.S. Equity	0.77	0.77	1.00																																						
Em Market Equity	0.79	0.76	0.84	1.00																																					
Short Dur Gov/Credit	-0.06	-0.08	-0.06	-0.10	1.00																																				
Core U.S. Fixed	-0.10	-0.12	-0.11	-0.14	0.78	1.00																																			
Long Government	-0.15	-0.16	-0.13	-0.16	0.67	0.84	1.00																																		
Long Credit	0.28	0.25	0.26	0.24	0.64	0.80	0.69	1.00																																	
TIPS	-0.08	-0.08	-0.09	-0.10	0.56	0.70	0.53	0.52	1.00																																
High Yield	0.71	0.68	0.69	0.69	-0.01	0.00	-0.08	0.40	0.06	1.00																															
Global ex-U.S. Fixed	0.01	0.00	0.05	0.08	0.48	0.50	0.42	0.49	0.45	0.12	1.00																														
EM Sovereign Debt	0.56	0.54	0.55	0.61	0.08	0.14	0.05	0.35	0.18	0.60	0.15	1.00																													
Core Real Estate	0.64	0.60	0.60	0.56	-0.01	-0.04	-0.09	0.24	-0.02	0.53	-0.02	0.33	1.00																												
Private Infrastructure	0.65	0.60	0.61	0.58	0.00	0.01	-0.03	0.27	-0.02	0.50	0.03	0.35	0.76	1.00																											
Private Equity	0.77	0.73	0.73	0.72	-0.10	-0.19	-0.21	0.15	-0.14	0.59	0.06	0.40	0.50	0.62	1.00																										
Private Credit	0.68	0.65	0.65	0.64	0.00	-0.06	-0.10	0.28	-0.09	0.63	0.06	0.48	0.47	0.52	0.65	1.00																									
Hedge Funds	0.79	0.74	0.75	0.74	0.10	0.13	0.07	0.39	0.09	0.64	0.05	0.53	0.45	0.47	0.57	0.61	1.00																								
Commodities	0.28	0.27	0.27	0.27	-0.10	-0.10	-0.10	0.01	0.10	0.15	0.15	0.19	0.21	0.18	0.23	0.17	0.23	1.00																							
Cash Equivalents	-0.06	-0.08	-0.10	-0.10	0.30	0.15	0.08	-0.05	0.12	-0.11	0.00	-0.07	0.00	-0.07	0.00	-0.06	-0.04	-0.02	1.00																						
Inflation	-0.02	0.02	0.00	0.03	-0.21	-0.25	-0.23	-0.25	0.08	0.05	-0.10	0.00	0.10	0.06	0.06	0.06	0.15	0.29	0.05	1.00																					
	Lg Cap	Smid Cap	Dev	Em Markets	Short Duration	Core Fixed	Long Gov	Long Credit	TIPS	High Yield	GI ex-US Fixed	EM	Core Real Est	Private Infra	Private Equity	Private Credit	Hedge Funds	Comm	Cash Equiv	Inflation																					

– Relationships between asset classes are as important as standard deviation

– To determine portfolio mixes, Callan employs mean-variance optimization

– Return, standard deviation, and correlation determine the composition of efficient asset mixes

Source: Callan LLC

Customized NYSTRS Capital Market Projections – 30-Year Time Horizon

NYSTRS Correlation Matrix

Correlation Matrix	Broad US	Glb ex US	Glbl Eq	RE Eq	Timber	Priv Infra	Priv Eq	Priv Cred	Core Fix	Glbl Fix	RE Debt	Hi Yield	Cash
Broad US Equity	1.000												
Global ex-US Equity	0.817	1.000											
Global Equity	0.955	0.951	1.000										
Real Estate Equity	0.749	0.733	0.778	1.000									
Timber	0.730	0.689	0.744	0.679	1.000								
Private Infrastructure	0.651	0.623	0.668	0.727	0.630	1.000							
Private Equity	0.774	0.755	0.803	0.697	0.620	0.620	1.000						
Private Credit	0.685	0.668	0.710	0.625	0.540	0.520	0.650	1.000					
Core US Fixed	-0.104	-0.123	-0.118	-0.101	0.000	0.010	-0.190	-0.060	1.000				
Global Fixed Income	-0.138	-0.128	-0.138	-0.142	0.007	0.027	-0.092	-0.036	0.735	1.000			
Real Estate Debt	0.711	0.694	0.738	0.639	0.608	0.620	0.889	0.626	0.191	0.189	1.000		
High Yield	0.715	0.715	0.750	0.571	0.510	0.500	0.589	0.630	-0.004	-0.009	0.623	1.000	
Cash Equivalents	-0.064	-0.104	-0.088	-0.035	-0.010	-0.070	0.000	-0.060	0.150	0.072	0.061	-0.110	1.000

Projection set customized to reflect specific NYSTRS strategies:

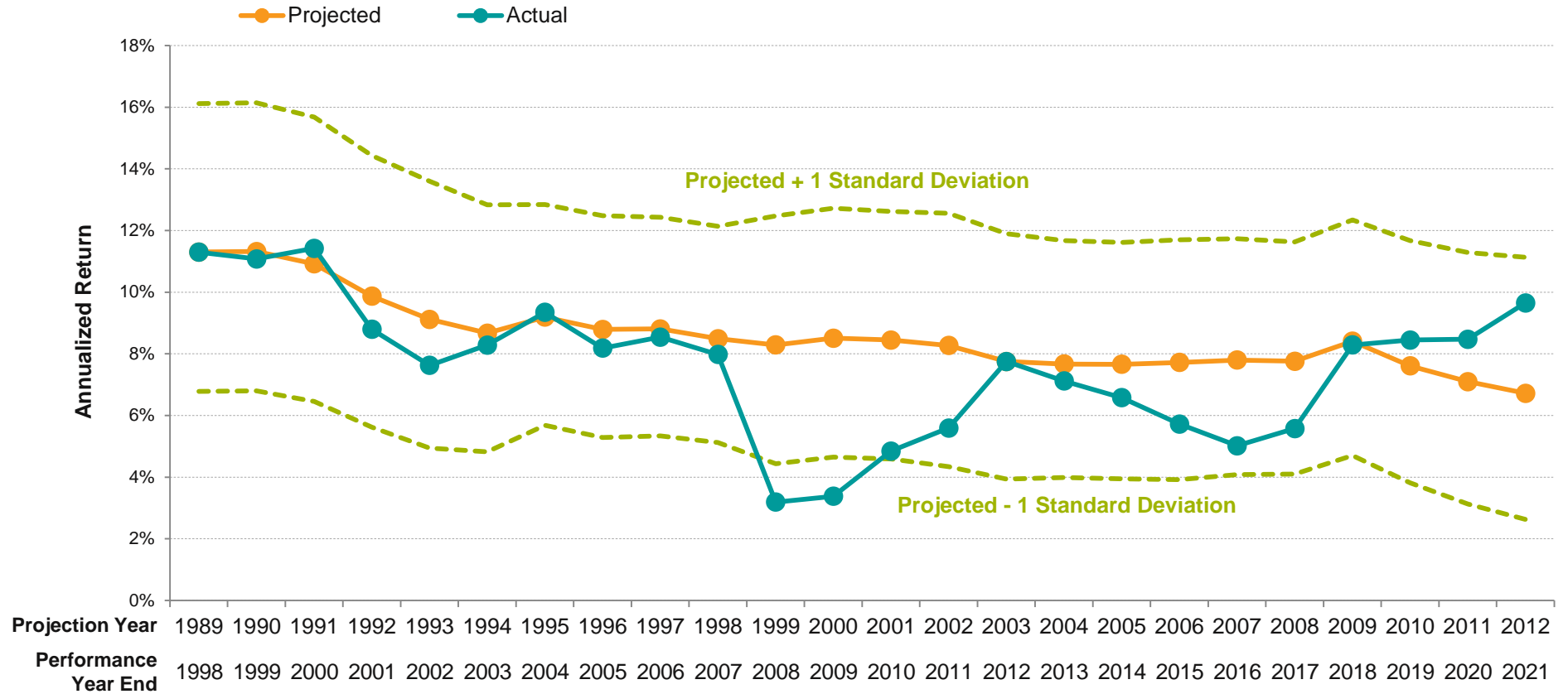
- Real estate equity, real estate debt, global fixed income

Source: Callan LLC

Actual Returns versus Callan Projections

Projection Years 1989-2012

Historical Comparison: Actual Returns vs. Callan Capital Markets Projections
 Portfolio (60% Equity, 30% Fixed, 10% Real Estate)



Source: Callan LLC

Disclaimers

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.

Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forward-looking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forward-looking statements.



Appendix G

NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
10 Corporate Woods Drive Albany, New York

Investment Committee Meeting

April 27, 2022

COMMITTEE MEMBERS

Nicholas Smirensky, Chair

Elizabeth Chetney, David Keefe, Jennifer Longtin, Ruth Mahoney, Christopher Morin

AGENDA p. 45

A. Approval of Minutes of January 26, 2022 and February 24, 2022 Investment Committee Meetings pp. 46-55

STAFF UPDATES

- A. Investment Committee Executive Summary – M. Andriola pp. 56-64
- B. Managing Director Updates
- Public Equities Update – P. Cummins p. 65
 - Fixed Income Update – M. Federici p. 66
 - Real Estate Update – D. Gillan p. 67-69
 - Private Equity/Debt Update – G. Yahoudy p. 70

PRESENTATIONS

- A. Asset Allocation Review – Callan pp. 71-104

INVESTMENT COMMITTEE ACTION REQUIRED

- A. **Consent Agenda Recommendation Item #1** pp. 105-108
1. Renew Agreements
- Adelante Capital Management LLC p. 105
 - J.P. Morgan Chase Bank NA (Securities Lending) p. 106
 - LSV Asset Management p. 107
 - Wellington Management Company LLP p. 108

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
10 Corporate Woods Drive, Albany NY

Ethics Committee Meeting

A meeting of the Ethics Committee of the Retirement Board was held at the System on April 27, 2022. The meeting was called to order by Christopher Morin, Chair, at 11:25 a.m.

The following individuals were in attendance:

Committee Members: Juliet Benaquisto, Christopher Morin, Oliver Robinson, Thomas Lee, Joseph Indelicato Jr.

Board Members: Elizabeth Chetney, Eric Iberger (via WebEx), David Keefe, Jennifer Longtin, Nicholas Smirensky (via WebEx)

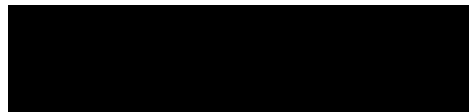
NYSTRS Staff: Noreen Jones, Matt Tice

Upon motion of J. Benaquisto seconded by O. Robinson, the minutes from the January 26, 2022 meeting were approved.

M. Tice gave an update on the conflicts of interest policy.

C. Morin asked the Committee if any discussion was needed on the EDCIO quarterly disclosures. The Committee agreed no further discussion was needed. There being no further business, the meeting unanimously adjourned at 11:26 a.m.

Respectfully submitted,

A solid black rectangular box used to redact the signature of Thomas K. Lee.

Thomas K. Lee

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
10 CORPORATE WOODS DRIVE, ALBANY NY

Disability Review Committee Meeting

A meeting of the Disability Review Committee of the Retirement Board was held at the System on April 27, 2022. The meeting was called to order at 11:26 a.m. by Elizabeth Chetney, Chair.

The following individuals were in attendance:

Committee Members: Juliet Benaquisto, Elizabeth Chetney, Eric Iberger (via WebEx), David Keefe, Oliver Robinson

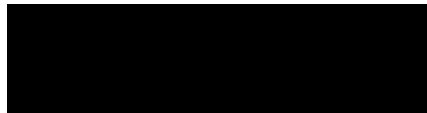
Board Members: Jennifer Longtin, Christopher Morin, Nicholas Smirensky (via WebEx)

Upon motion of J. Benaquisto, seconded by D. Keefe and unanimously carried, the meeting minutes of January 26, 2022 were approved.

E. Chetney, Chair, reported that the System's Medical Board had met monthly over the prior three months and that there was a disability denial and a disability rescission resolution that would be brought to the Board at the Board meeting on April 28, 2022.

With unanimous consent, the Committee adjourned at 11:29 a.m.

Respectfully submitted,

A solid black rectangular box redacting the signature of Thomas K. Lee.

Thomas K. Lee

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM
10 CORPORATE WOODS DRIVE, ALBANY NY

Executive Committee Meeting

A meeting of the Executive Committee of the Retirement Board of the New York State Teachers' Retirement System was held at the System on April 27, 2022.

The following individuals were in attendance:

Committee Members: David Keefe, Christopher Morin, Oliver Robinson

Board Members: Juliet Benaquisto, Elizabeth Chetney, Eric Iberger (via WebEx), Jennifer Longtin, Nicholas Smirensky (via WebEx)

NYSTRS Staff: Thomas Lee, Joseph Indelicato, Yiselle Ruoso

With unanimous consent, the meeting was called to order at 11:29 a.m. by D. Keefe, Chair. The following items were discussed:

1. Approval of January 26, 2022, March 24, 2022, April 4, 2022, April 12, 2022 meeting minutes

Upon motion of C. Morin, seconded by O. Robinson, and unanimously carried, the meeting minutes from January 26, 2022, March 24, 2022, April 4, 2022 and April 12, 2022 were approved.

2. System's Operating Budget

Upon motion of O. Robinson, seconded by C. Morin, and unanimously carried, the Committee voted to recommend the following resolution to the Board:

WHEREAS, System staff has presented to the Retirement Board a proposed Operating Budget for Fiscal Year 2022-23, a copy of which is annexed hereto and made a part hereof as Appendix A, pp. 3-15; be it

RESOLVED, That the Operating Budget for Fiscal Year 2022-23 is approved as presented.

3. Legislative Update

J. Indelicato Jr. and Y. Ruoso gave an overview of 2022 legislation including bills introduced and bills signed into law (Appendix B, pp. 16-32).

4. Short-Term Executive Director/CIO Succession Plan

The Committee reviewed the completed Annual Executive Director and Chief Investment Officer Short-Term Succession Plan designations for the period July 1, 2022 – June 30, 2023 (Appendix C, pp. 33-35).

5. Finance Reports

The Committee members reviewed the Statement of Fiduciary Net Position, Statement of Changes in Fiduciary Net Position and Schedule of Administrative Expenses (Appendix D, pp. 36-40).

With unanimous consent, the Committee adjourned the meeting at 12:19 p.m.

Respectfully submitted,



Thomas K. Lee

Appendix A

DATE: April 28, 2022
TO: Executive Committee
FROM: T. Lee
SUBJECT: 2022-23 Proposed Budget
CC: N. Jones, M. Dixon, R. Kannan

Attached is the 2022-23 proposed budget.

- The overall System budget for 2022-23 is proposed to be \$81.76 million, which is a 8.3% increase from the 2021-2022 budget.
- The administrative expense rate for 2022-2023 is proposed to remain at 0.26% of member salary base for the fifth consecutive year.
- The number of total authorized positions is proposed to increase to 430.
- Capital Improvement Program:
 - The 2022-23 budget for the Capital Improvement Program will remain at \$5.25 million for the seventh consecutive year.
 - The System's Capital Improvement Program includes funding for depreciation and maintenance costs of fixed assets at the Albany and Malta locations.
- The budget contains an estimated contribution of \$6.0 million for other postemployment benefits (other than pensions), which is the same as 2021-22. NYSTRS' actuarial consultant, Cheiron, estimates with this contribution the funded ratio for the trust will be 63.4%. Cheiron will be providing a final report at the completion of the fiscal year. The report, final contribution and funded ratio will be presented to the board at the July meeting.

New York State Teachers' Retirement System



FY 2022-2023 Proposed Budget

Presented by: Rebecca Kannan

Agenda

- Budget Summary and Highlights
- Budget Overview
- Administrative Expense Rate
- Personnel Overview
- Retirement Administration
- Asset Management
- Asset Management Cost

Budget Summary and Highlights

System Budget		
<i>(dollars in thousands)</i>	FY 2022-23	% of Budget
Personnel	\$ 62,515	76.5%
Non-personnel (recurring)	12,493	15.3
Capital improvement	5,250	6.4
Total recurring	80,258	98.2
Non-personnel (non-recurring)	1,497	1.8
Total Budget	\$ 81,755	100.0%

Highlights - Recurring Budget

Salaries and Benefits Expense:

- Increase budgeted and authorized headcount
- Annual contractual salary increases (increments and COLA)
- Increased health and dental insurance premiums
- Estimated OPEB trust contribution of \$6.0 million (63.4% estimated funded)

Non-Personnel (Recurring) Expense:

- Rising IT software and service costs
- Rising insurance costs

Capital Improvement Program:

- Budget remains \$5.25 million

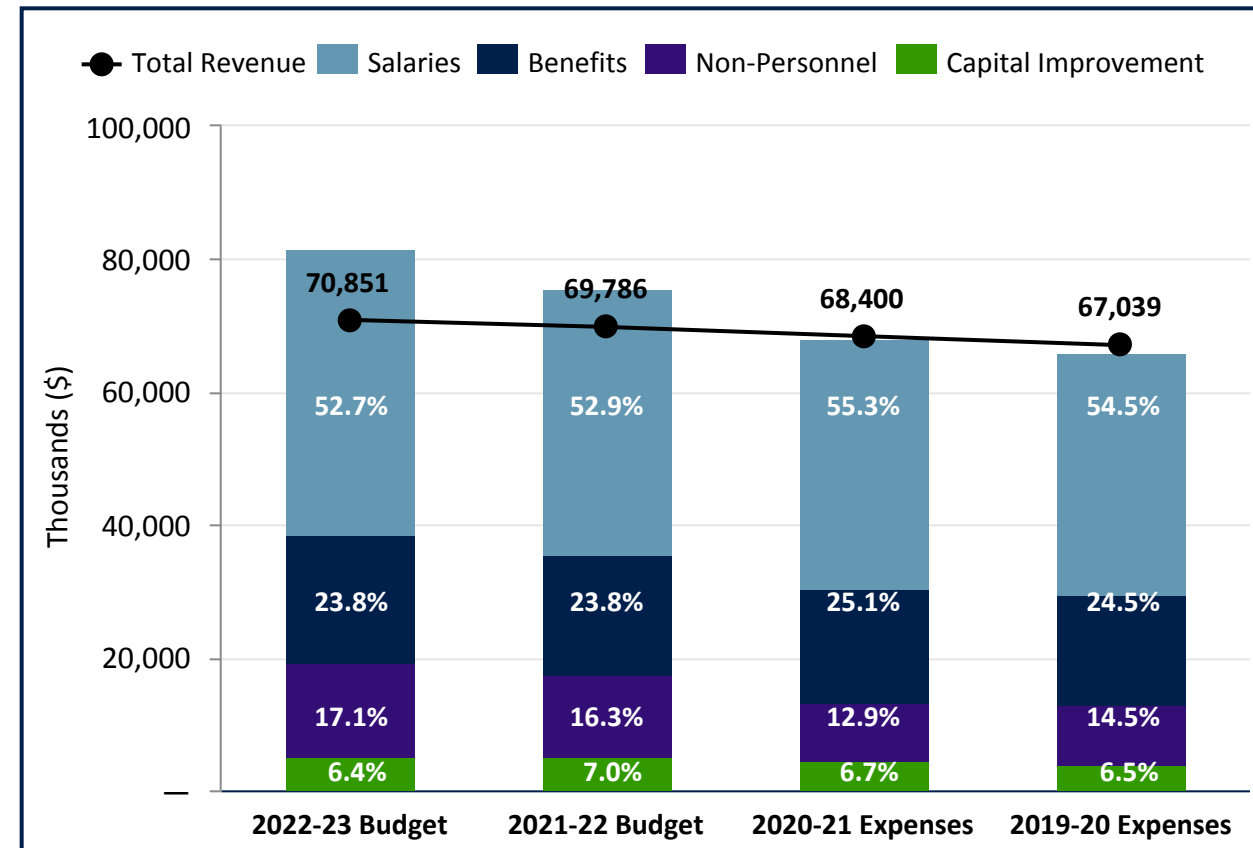
Highlights - Non-recurring Budget

Non-recurring (Non-Personnel) Expense:

- Rising IT software and service costs
- Rising insurance costs

Proposed Budget

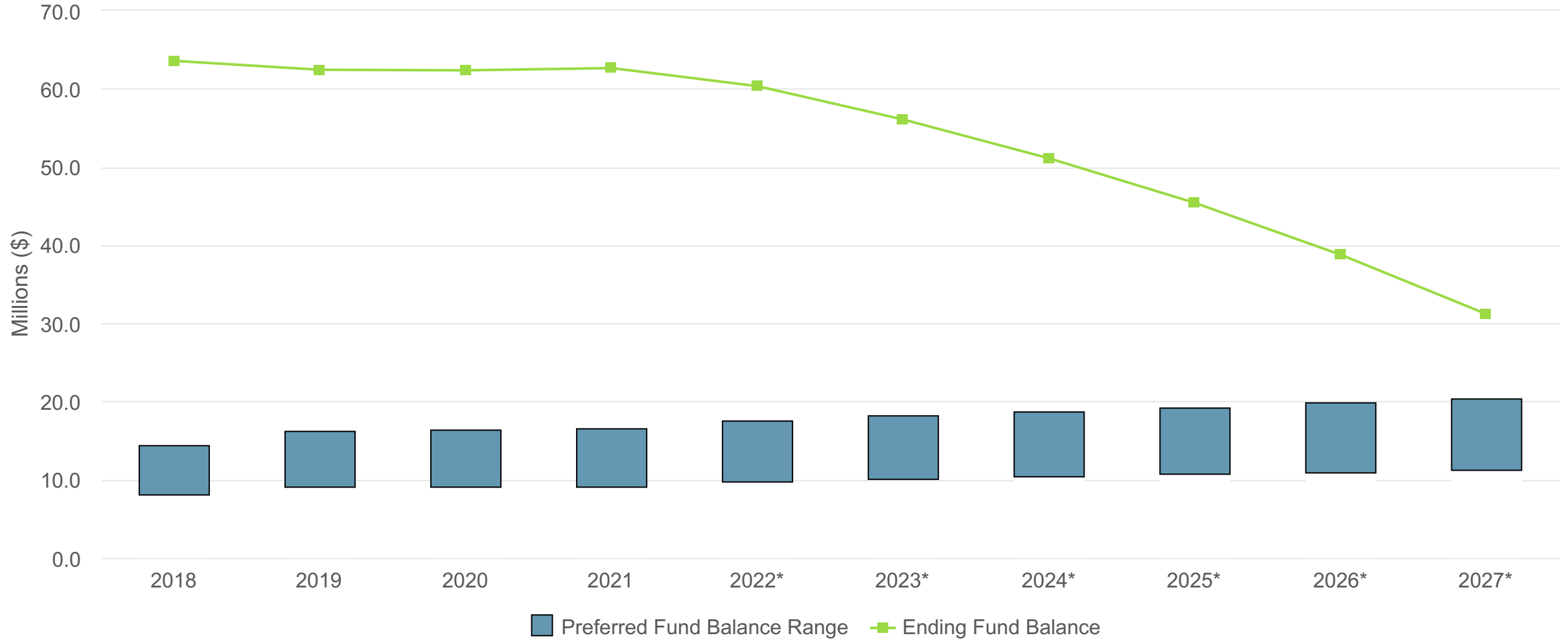
System Budget				
<i>(dollars in thousands)</i>	FY 2022-23 Budget	FY 2021-22 Budget	FY 2020-21 Actual	FY 2019-20 Actual
Revenue				
Retirement administration	\$ 44,847	\$ 45,465	\$ 44,430	\$ 43,707
Asset management	28,424	26,088	24,130	23,334
Total revenue	73,271	71,553	68,560	67,041
Expenses				
Personnel costs	62,515	57,912	54,728	53,018
Non-personnel costs	13,990	12,340	8,809	9,701
Capital improvement	5,250	5,250	4,576	4,393
Total expenses	81,755	75,502	68,113	67,112
Change in fund balance	\$ (8,484)	\$ (3,949)	\$ 447	\$ (71)
Administrative Rate	0.26 %	0.26 %	0.26 %	0.26 %



Revenue budget increase of \$1,718,000 (2.4%)

Expense budget increase of \$6,253,000 (8.3%)

Administrative Expense Rate



* Estimated fund balance

System Memberships

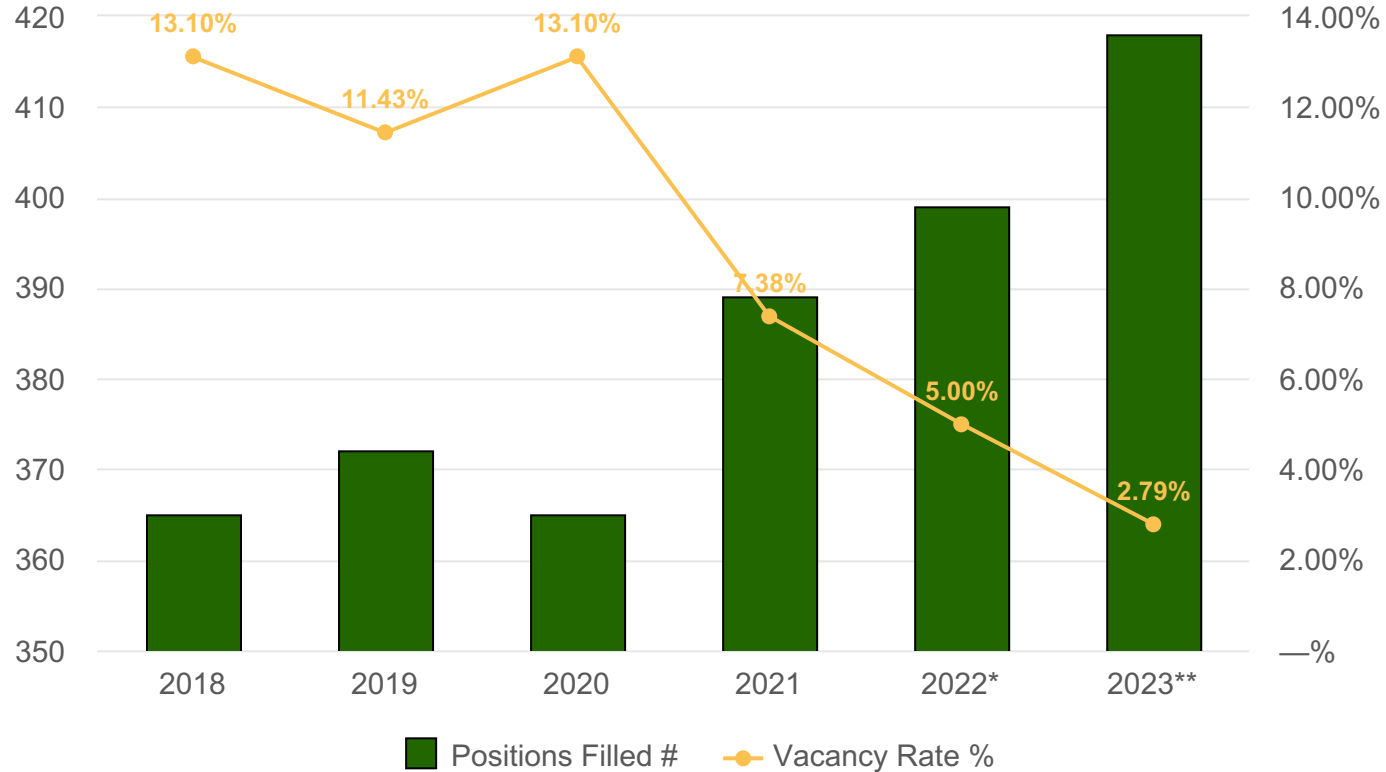
Retirement Administration:		
Institute of Certified Professional Managers	\$	28,000
Sustainability Accounting Standards Board		20,000
National Institute on Retirement Security		17,200
National Council on Teacher Retirement		5,030
National Association of State Retirement Administration		4,110
National Conference on Public Employee Retirement Systems		4,100
Government Finance Officers Association		1,650
Pension Fund Data Exchange		1,250
International Foundation of Employee Benefit Plans		1,100
New York State Council of School Superintendents		125
Total	\$	82,565

Asset Management:		
Council of Institutional Investors	\$	30,000
Pacific Pension Institute		15,000
Investor Network on Climate Risk		9,200
National Council of Real Estate Investment Fiduciaries		2,500
Pension Real Estate Association		330
Urban Land Institute		305
Certified Commercial Investment Member		250
International Council of Shopping Centers		100
Total	\$	57,685

Personnel Overview

Vacancy Rate and Filled Positions

As of July 1



Headcount		
	Current	Proposed
Authorized	420	430
Budgeted	402	420

As of March 2022

- 376 positions filled
- 10.48% vacancy rate
- 24 positions in recruitment
- 0 pending hires

Year to Date

- 31 separations
- 24 hires

* Estimated

** Estimated and vacancy rate based on proposed 430 headcount

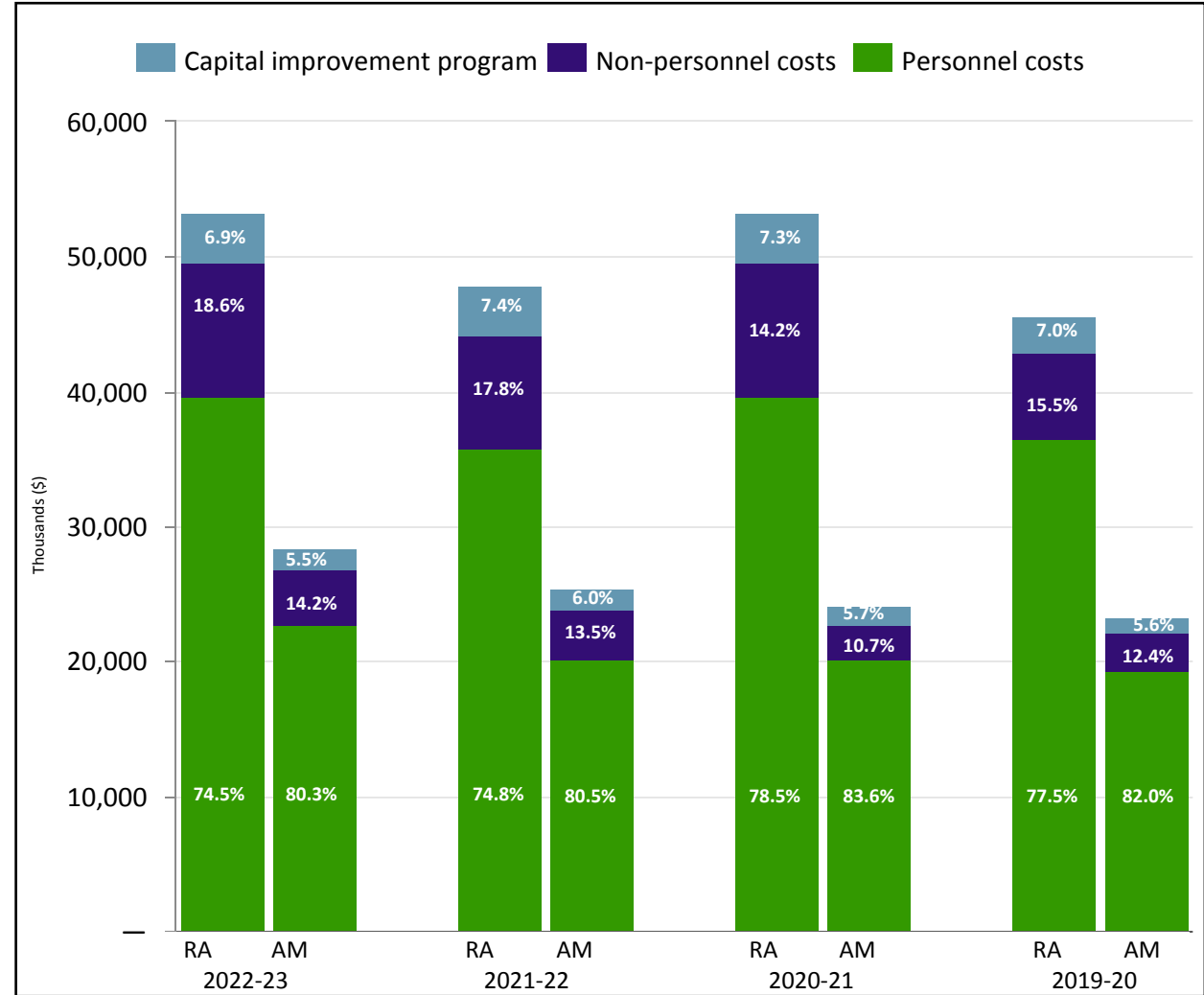
Retirement Administration Segment and Asset Management Segment

Retirement Administration Segment				
<i>(dollars in thousands)</i>	FY 2022-23 Budget	FY 2021-22 Budget	FY 2020-21 Actual	FY 2019-20 Actual
Expenses				
Personnel costs	\$ 39,716	\$ 35,801	\$ 34,552	\$ 36,470
Non-personnel costs	9,940	8,487	6,228	6,446
Capital improvement program	3,675	3,675	3,203	2,687
Total expenses	\$ 53,331	\$ 47,963	\$ 43,983	\$ 45,603

Funding: 100% from Admin Expense rate
 Expense Allocation: 100% of Direct Member-Related Expenses
 70% of Support Department Expenses

Asset Management Segment				
<i>(dollars in thousands)</i>	FY 2022-23 Budget	FY 2021-22 Budget	FY 2020-21 Actual	FY 2019-20 Actual
Expenses				
Personnel costs	\$ 22,799	\$ 20,207	\$ 20,176	\$ 19,372
Non-personnel costs	4,050	3,644	2,581	2,756
Capital improvement program	1,575	1,575	1,373	1,151
Total expenses	\$ 28,424	\$ 25,426	\$ 24,130	\$ 23,279

Funding: 100% from Investment Income
 Expense Allocation: 100% of Direct Investment-Related Expenses
 30% of Support Department Expenses



Asset Management Cost

	Internally Managed Investments**	Total Internal Managed Expenses**	Basis Points
FY 2020-2021	\$ 82,755,001	\$ 60,407	7.3
FY 2019-2020	70,840,469	56,606	8.0
FY 2018-2019	71,918,660	55,347	7.7
FY 2017-2018	71,366,012	48,334	6.8
FY 2016-2017	69,387,083	46,525	6.7
Five Year Average	73,253,445	53,444	7.3

	Externally Managed Investments	Total External Managed Expenses	Basis Points
FY 2020-2021	\$ 63,570,275	\$ 303,264	47.7
FY 2019-2020	47,915,730	296,736	61.9
FY 2018-2019	48,564,123	262,090	54.0
FY 2017-2018	46,742,963	249,634	53.4
FY 2016-2017	43,951,065	222,135	50.5
Five Year Average	50,148,831	266,772	53.2

	Total Investments*	Total Investment Expenses	Basis Points
FY 2020-2021	\$ 146,325,276	\$ 363,671	24.9
FY 2019-2020	118,756,199	353,342	29.8
FY 2018-2019	120,482,783	317,437	26.3
FY 2017-2018	118,108,975	297,968	25.2
FY 2016-2017	113,338,148	268,660	23.7
Five Year Average	123,402,276	320,215	25.9

*Investments are presented at net asset value, which is consistent with asset allocation reporting but differs from financial statement presentation.

**Investments are classified as internally managed when NYSTRS retains investment discretion. Fees may be paid to external advisors related to these investments and those fees are included as Internal Managed Expenses.

Information provided by: Office of the CFO/Investment Operations Department

New York State Teachers' Retirement System
 FY 2022-23 Budget Proposal
 All Segments

	3-Year Historical Expenses			FY 2021-22		FY 2022-23 Budget		
	2018-19	2019-20	2020-21	Budget	YTD Actual	Proposed	\$ Increase	% Increase
Salaries:								
Salaries	\$ 31,654,000	\$ 34,181,000	\$ 35,153,000	\$ 37,318,000	\$ 17,240,000	\$ 40,210,000	\$ 2,892,000	7.7 %
Social Security	2,214,000	2,384,000	2,462,000	2,636,000	1,136,000	2,843,000	207,000	7.9
	33,868,000	36,565,000	37,615,000	39,954,000	18,376,000	43,053,000	3,099,000	7.8
Benefits:								
Employees retirement	9,908,000	4,517,000	4,383,000	5,003,000	2,779,000	5,266,000	263,000	5.3
Health and dental insurance	6,519,000	5,883,000	6,419,000	6,895,000	3,257,000	8,136,000	1,241,000	18.0
Civil Service	47,000	49,000	50,000	60,000	29,000	60,000	—	—
	16,474,000	10,449,000	10,852,000	11,958,000	6,065,000	13,462,000	1,504,000	12.6
OPEB Trust:								
OPEB trust	5,500,000	6,004,000	6,261,000	6,000,000	3,000,000	6,000,000	—	—
	5,500,000	6,004,000	6,261,000	6,000,000	3,000,000	6,000,000	—	—
Building Occupancy Expenses:								
Building operation expenses	871,000	903,000	710,000	963,000	380,000	1,111,000	148,000	15.4
Office supplies and expenses	180,000	186,000	114,000	244,000	133,000	233,000	(11,000)	(4.5)
Utilities and municipal assessments	890,000	920,000	911,000	1,150,000	529,000	1,213,000	63,000	5.5
	1,941,000	2,009,000	1,735,000	2,357,000	1,042,000	2,557,000	200,000	8.5
Computer Expenses:								
IT hardware and software	708,000	1,184,000	957,000	1,296,000	480,000	1,406,000	110,000	8.5
IT contracts and maintenance	2,704,000	2,779,000	3,414,000	4,058,000	2,569,000	4,670,000	612,000	15.1
	3,412,000	3,963,000	4,371,000	5,354,000	3,049,000	6,076,000	722,000	13.5
Personnel and Meeting Expenses:								
Board - meetings, travel and education	77,000	93,000	28,000	100,000	31,000	126,000	26,000	26.0
Delegates' meeting	63,000	47,000	3,000	65,000	1,000	65,000	—	—
Preretirement seminars	154,000	134,000	—	90,000	(4,000)	90,000	—	—
Professional development	786,000	773,000	561,000	924,000	229,000	1,052,000	128,000	13.9
Travel and automobile expenses	221,000	133,000	3,000	156,000	11,000	187,000	31,000	19.9
Other personnel expenses	62,000	83,000	64,000	84,000	90,000	94,000	10,000	11.9
	1,363,000	1,263,000	659,000	1,419,000	358,000	1,614,000	195,000	13.7
Professional and Governmental Expenses:								
Auditor expenses	534,000	567,000	200,000	580,000	419,000	580,000	—	—
Disability medical examinations	80,000	68,000	94,000	80,000	51,000	100,000	20,000	25.0
Postage and cartage	701,000	770,000	779,000	786,000	514,000	780,000	(6,000)	(0.8)
Publications	173,000	114,000	152,000	166,000	89,000	170,000	4,000	2.4
Other professional fees	999,000	947,000	818,000	1,598,000	1,282,000	2,113,000	515,000	32.2
	2,487,000	2,466,000	2,043,000	3,210,000	2,355,000	3,743,000	533,000	16.6
Capital Improvement Program:								
Amortization and depreciation	2,977,000	2,816,000	3,563,000	3,386,000	1,603,000	3,250,000	(136,000)	(4.0)
Capital improvement maintenance	860,000	1,577,000	1,013,000	1,434,000	694,000	1,434,000	—	—
Capital contingency	—	—	—	430,000	—	566,000	136,000	31.6
	3,837,000	4,393,000	4,576,000	5,250,000	2,297,000	5,250,000	—	—
Total	\$ 68,882,000	\$ 67,112,000	\$ 68,112,000	\$ 75,502,000	\$ 36,542,000	\$ 81,755,000	\$ 6,253,000	8.3 %

New York State Teachers' Retirement System
 FY 2022-23 Budget Proposal
 Retirement Administration Segment

	3-Year Historical Expenses			FY 2021-22		FY 2022-23 Budget		
	2018-19	2019-20	2020-21	Budget	YTD Actual	Proposed	\$ Increase	% Increase
Salaries:								
Salaries	\$ 20,015,000	\$ 21,256,000	\$ 21,527,000	\$ 23,190,000	\$ 10,728,000	\$ 24,802,000	\$ 1,612,000	7.0 %
Social Security	1,424,000	1,506,000	1,533,000	1,664,000	734,000	1,774,000	110,000	6.6
	21,439,000	22,762,000	23,060,000	24,854,000	11,462,000	26,576,000	1,722,000	6.9
Benefits:								
Employees retirement	6,585,000	2,850,000	2,706,000	3,129,000	1,748,000	3,304,000	175,000	5.6
Health and dental insurance	4,563,000	4,055,000	4,368,000	4,704,000	2,224,000	5,594,000	890,000	18.9
Civil Service	33,000	34,000	35,000	42,000	20,000	42,000	—	—
	11,181,000	6,939,000	7,109,000	7,875,000	3,992,000	8,940,000	1,065,000	13.5
OPEB Trust:								
OPEB trust	3,850,000	4,203,000	4,383,000	4,200,000	2,100,000	4,200,000	—	—
	3,850,000	4,203,000	4,383,000	4,200,000	2,100,000	4,200,000	—	—
Building Occupancy Expenses:								
Building operation expenses	610,000	632,000	497,000	674,000	266,000	778,000	104,000	15.4
Office supplies and expenses	129,000	133,000	80,000	176,000	94,000	167,000	(9,000)	(5.1)
Utilities and municipal assessments	623,000	644,000	638,000	805,000	370,000	849,000	44,000	5.5
	1,362,000	1,409,000	1,215,000	1,655,000	730,000	1,794,000	139,000	8.4
Computer Expenses:								
IT hardware and software	496,000	829,000	670,000	907,000	336,000	984,000	77,000	8.5
IT contracts and maintenance	1,901,000	1,953,000	2,410,000	2,980,000	1,906,000	3,455,000	475,000	15.9
	2,397,000	2,782,000	3,080,000	3,887,000	2,242,000	4,439,000	552,000	14.2
Personnel and Meeting Expenses:								
Board - meetings, travel and education	54,000	65,000	20,000	70,000	22,000	88,000	18,000	25.7
Delegates' meeting	63,000	47,000	3,000	65,000	1,000	65,000	—	—
Preretirement seminars	154,000	134,000	—	90,000	(4,000)	90,000	—	—
Professional development	456,000	449,000	359,000	542,000	147,000	614,000	72,000	13.3
Travel and automobile expenses	79,000	61,000	2,000	62,000	8,000	76,000	14,000	22.6
Other personnel expenses	43,000	58,000	45,000	59,000	63,000	66,000	7,000	11.9
	849,000	814,000	429,000	888,000	237,000	999,000	111,000	12.5
Professional and Governmental Expenses:								
Auditor expenses	374,000	397,000	140,000	406,000	293,000	406,000	—	—
Disability medical examinations	80,000	68,000	94,000	80,000	50,000	100,000	20,000	25.0
Postage and cartage	518,000	566,000	571,000	577,000	360,000	573,000	(4,000)	(0.7)
Publications	157,000	99,000	125,000	143,000	80,000	146,000	3,000	2.1
Other professional fees	710,000	664,000	574,000	1,174,000	948,000	1,483,000	309,000	26.3
	1,839,000	1,794,000	1,504,000	2,380,000	1,731,000	2,708,000	328,000	13.8
Capital Improvement Program:								
Amortization and depreciation	2,084,000	1,971,000	2,494,000	2,370,000	1,122,000	2,275,000	(95,000)	(4.0)
Capital improvement maintenance	602,000	1,104,000	709,000	1,004,000	486,000	1,004,000	—	—
Capital contingency	—	—	—	301,000	—	396,000	95,000	31.6
	2,686,000	3,075,000	3,203,000	3,675,000	1,608,000	3,675,000	—	—
Total	\$ 45,603,000	\$ 43,778,000	\$ 43,983,000	\$ 49,414,000	\$ 24,102,000	\$ 53,331,000	\$ 3,917,000	7.9 %

New York State Teachers' Retirement System
 FY 2022-23 Budget Proposal
 Asset Management Segment

	3-Year Historical Expenses			FY 2021-22		FY 2022-23 Budget		
	2018-19	2019-20	2020-21	Budget	YTD Actual	Proposed	\$ Increase	% Increase
Salaries:								
Salaries	\$ 11,639,000	\$ 12,925,000	\$ 13,626,000	\$ 14,128,000	\$ 6,512,000	\$ 15,408,000	\$ 1,280,000	9.1 %
Social Security	790,000	878,000	929,000	972,000	402,000	1,069,000	97,000	10.0
	12,429,000	13,803,000	14,555,000	15,100,000	6,914,000	16,477,000	1,377,000	9.1
Benefits:								
Employees retirement	3,323,000	1,667,000	1,677,000	1,874,000	1,031,000	1,962,000	88,000	4.7
Health and dental insurance	1,956,000	1,828,000	2,051,000	2,191,000	1,033,000	2,542,000	351,000	16.0
Civil Service	14,000	15,000	15,000	18,000	9,000	18,000	—	—
	5,293,000	3,510,000	3,743,000	4,083,000	2,073,000	4,522,000	439,000	10.8
OPEB Trust:								
OPEB trust	1,650,000	1,801,000	1,878,000	1,800,000	900,000	1,800,000	—	—
	1,650,000	1,801,000	1,878,000	1,800,000	900,000	1,800,000	—	—
Building Occupancy Expenses:								
Building operation expenses	261,000	271,000	213,000	289,000	114,000	333,000	44,000	15.2
Office supplies and expenses	51,000	53,000	34,000	68,000	39,000	66,000	(2,000)	(2.9)
Utilities and municipal assessments	267,000	276,000	273,000	345,000	159,000	364,000	19,000	5.5
	579,000	600,000	520,000	702,000	312,000	763,000	61,000	8.7
Computer Expenses:								
IT hardware and software	212,000	355,000	287,000	389,000	144,000	422,000	33,000	8.5
IT contracts and maintenance	803,000	826,000	1,004,000	1,078,000	663,000	1,215,000	137,000	12.7
	1,015,000	1,181,000	1,291,000	1,467,000	807,000	1,637,000	170,000	11.6
Personnel and Meeting Expenses:								
Board - meetings, travel and education	23,000	28,000	8,000	30,000	9,000	38,000	8,000	26.7
Delegates' meeting	—	—	—	—	—	—	—	—
Preretirement seminars	—	—	—	—	—	—	—	—
Professional development	330,000	324,000	202,000	382,000	82,000	438,000	56,000	14.7
Travel and automobile expenses	142,000	72,000	1,000	94,000	3,000	111,000	17,000	18.1
Other personnel expenses	19,000	25,000	19,000	25,000	27,000	28,000	3,000	12.0
	514,000	449,000	230,000	531,000	121,000	615,000	84,000	15.8
Professional and Governmental Expenses:								
Auditor expenses	160,000	170,000	60,000	174,000	126,000	174,000	—	—
Disability medical examinations	—	—	—	—	1,000	—	—	—
Postage and cartage	183,000	204,000	208,000	209,000	154,000	207,000	(2,000)	(1.0)
Publications	16,000	15,000	27,000	23,000	9,000	24,000	1,000	4.3
Other professional fees	289,000	283,000	244,000	424,000	334,000	630,000	206,000	48.6
	648,000	672,000	539,000	830,000	624,000	1,035,000	205,000	24.7
Capital Improvement Program:								
Amortization and depreciation	893,000	845,000	1,069,000	1,016,000	481,000	975,000	(41,000)	(4.0)
Capital improvement maintenance	258,000	473,000	304,000	430,000	208,000	430,000	—	—
Capital contingency	—	—	—	129,000	—	170,000	41,000	31.8
	1,151,000	1,318,000	1,373,000	1,575,000	689,000	1,575,000	—	—
Total	\$ 23,279,000	\$ 23,334,000	\$ 24,129,000	\$ 26,088,000	\$ 12,440,000	\$ 28,424,000	\$ 2,336,000	9.0 %

LEGISLATIVE UPDATE

April 2022

Joseph J. Indelicato, Jr. & Yiselle R. Ruoso



Appendix B

2022 LEGISLATIVE SESSION

- Bills Introduced and Amended 2994
- Bills Passed Both Houses 210
- Bills Signed Into Law 171
- Veto Messages 0

Data as of 4/19/22

A blue circular logo with a white border containing the text "NYSTRS PROGRAM BILL 2022-4" in white, serif, all-caps font.

NYSTRS
PROGRAM
BILL
2022-4

Amends various provisions of law to reinstate the transfer of pension reserves in cases in which a member of NYSTRS or other NY public plans (except for state/city police and fire plans) transfers a membership with ten or more year of credited service at the time of transfer is initiated.

- Introduced in 2021 as S6537
- Waiting on NYC Fiscal note and houses will introduce
- If enacted, estimated to be no additional annual cost to employers of members of NYSTRS

A blue circular logo with a white border containing the text "NYSTRS PROGRAM BILL 2022-6" in white, serif, all-caps font.

NYSTRS
PROGRAM
BILL
2022-6

Allows NYSTRS retirees who return to active service and suspend their retirement benefit, the option of electing to combine their service credit earned prior to their retirement with service credit earned after their restoration to active service,

- Retiree must have earned at least 2 years of service credit since restoration to active service.
- The member must return the amount of pension previously received or have their benefit actuarially reduced for life.
- Introduced and amended with 2022 FN as A7184-A
- Assembly bill has been reported to Ways and Means
- Working with Senate for introduction
- Amends Education Law 503(11)
- Cost of bill is negligible
- Have received memos in support from stakeholders

**2022 BUDGET
LEGISLATION
COMPONENTS
IMPACTING
NYSTRS**

**Chapter 56 of the Laws of 2022,
Education, Labor, Housing and Family
Assistance (ELFA)**

- Part HH – Earnings in Retirement
- Part SS – Employee Contribution Rate for Tier 6 Members
- Part TT – Vesting for Tier 5 and 6 Members
- Part WW – Open Meetings Law Amendments on Videoconferencing

**Chapter 58 of the Laws of 2022,
Transportation, Economic
Development and Environmental
Conservation (TED)**

- Part R – Gender “X” option on forms

EARNINGS IN RETIREMENT

Under Executive Order

Earnings limit under §212 has been suspended temporarily during the Covid-19 state of emergency

Annual Limit is currently \$35,000

Executive Order provision expires April 30, 2022

Under New Law

Amends Retirement and Social Security Law to waive the income limitations and approval under Section 211, to allow a NYSTRS retiree to be employed and earn compensation in a position at a school district or BOCES without any impact on retirement status, suspension or diminution of their retirement allowance.

Effective immediately (4/9/22) and expires on June 30, 2023.

EMPLOYEE CONTRIBUTION RATE FOR TIER 6 MEMBERS

DATE OF MEMBERSHIP ON OR AFTER APRIL 1, 2012

- Effective April 1, 2022, and applicable to school year beginning July 1, 2022.
- Permits the employee contribution rate for Tier 6 members to be determined using only a member's annual base wages for contributions to be made during the two fiscal years ending June 30, 2023 and June 30, 2024.
- Compensation earned for extracurricular programs, or any other pensionable earnings paid in addition to the annual base wages, will not be included in the employee contribution rate determination (has been traditionally).
- Tier 6 members will still be required to pay the applicable contribution rate on all pensionable earnings in those years.
- Employer contributions will be billed on all earnings.

VESTING FOR TIER 5 AND 6 MEMBERS

- Effective April 9, 2022.
- Reduces the number of years of credited service required for vesting to 5 years.
- Tier 5 and 6 members now eligible for a service retirement benefit or deferred-vested retirement benefit at 5 years.
- Prior to this change, these members needed to have 10 years of credited service to be vested.
- Members who have ceased teaching with 5-10 years of service credit will have the option of either receiving a refund of accumulated member contributions or receiving the deferred-vested retirement benefit (when eligible).

OPEN MEETINGS LAW

Under Executive Order, due to state of emergency, Open Meetings Law provisions providing access to the public to in-person meetings was suspended

Current Executive Order expires May 15th

Amended Open Meetings Law to allow a public body, in their discretion, to use videoconferencing, regardless of declaration of emergency.

- Requires minimum number of the public body to be present to meet a quorum and at the same physical location where the public attends
- For NYSTRS purposes, requires a Board resolution to authorize use of videoconferencing
- Requires establishment of written procedures governing attendance
- If use videoconferencing, the broadcast needs to utilize technology to permit access under the ADA
- Provision is effective immediately (April 9, 2022) and expires July 1, 2024
- Temporary extension of current flexibility under EO provided from April 9, 2022 - June 8, 2022
- Staff will return with recommendation at future Board meeting

GENDER OPTION ON FORMS

Chapter 58 – Part R

- Effective immediately with implementation date of January 1, 2023
- Department of Labor, Office of Children and Family Services, Office of Temporary and Disability Assistance and Division of Criminal Justice Services, January 1, 2024
- Builds on Gender Expression Non-Discrimination Act
- “State Agencies” will offer gender identity option of “X” on forms
- Already required on state driver’s licenses and identification cards

Staff have been in the process of reviewing forms and publications and will continue to update Retirement Board as we make any changes

LEGISLATIVE SESSION

2022 Legislative Session
scheduled to end June 2, 2022

Legislative Chart provided with
Board materials

- S8532/A9668
Investment Legal List amendments
- S6619-B/A7730
Ordinary Death Benefit Age Reductions
- S4783-A/A6331-A
Teachers' Fossil Fuel Divestment Act
 - ❖ 93 sponsors
 - ❖ 26 in Senate and 67 in Assembly
- Other Pension related proposals and special interest bills

Next update will be at the August
Retirement Board meeting

QUESTIONS



2022 LEGISLATION OF INTEREST TO NYSTRS

Senate No. Assembly No.	Subject	Introduced By
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I. BUDGET

S8006C A9006C (Part HH)	<p>Amends Retirement and Social Security Law to waive the income limitations and approval under Section 211, to allow a retiree to be employed and earn compensation in a position at a school district or BOCES without any impact on retirement status, suspension or diminution of their retirement allowance. Effective immediately (4/9/22) and expires on June 30, 2023.</p> <p>Last Action: 04/08/22 Passed Senate 04/08/22 Passed Assembly 04/09/22 Delivered to Governor 04/09/22 Signed by the Governor [Chapter 56 of the Laws of 2022]</p>	Budget Article VII (ELFA)
S8006C A9006C (Part SS)	<p>Amends Retirement and Social Security Law to permit the employee contribution rate for Tier 6 members to be calculated using a member's annual base wages for contributions to be made during FYs ending 6/30/23 and 6/30/24. Compensation earned for extracurricular programs, or any other pensionable earnings paid in addition to the annual base wages, will not be included in the employee contribution rate determination. Implementation date: school year July 1, 2022.</p> <p>Last Action: 04/08/22 Passed Senate 04/08/22 Passed Assembly 04/09/22 Delivered to Governor 04/09/22 Signed by the Governor [Chapter 56 of the Laws of 2022]</p>	Budget Article VII (ELFA)
S8006C A9006C (Part TT)	<p>Amends Retirement and Social Security Law to reduce the 10-year vesting requirement for Tier 5 and Tier 6 members to 5-year vesting for purposes of eligibility for a service retirement benefit or a deferred vested retirement benefit. Effective immediately.</p> <p>Last Action: 04/08/22 Passed Senate 04/08/22 Passed Assembly 04/09/22 Delivered to Governor 04/09/22 Signed by the Governor [Chapter 56 of the Laws of 2022]</p>	Budget Article VII (ELFA)
S8006C A9006C (PP)	<p>Amends Executive Law and Military Law to establish the veterans' services law and replaces the term "division of veterans services" with "department of veterans' services"; makes technical changes to existing law.</p> <p>Last Action: 04/08/22 Passed Senate 04/08/22 Passed Assembly 04/09/22 Delivered to Governor 04/09/22 Signed by the Governor [Chapter 56 of the Laws of 2022]</p>	Budget Article VII (ELFA)

Committees: GE = Assembly Governmental Employees; W&M = Ways and Means
CSP = Senate Civil Service and Pensions

S8006C A9006C (WW)	<p>Amends Open Meetings Law to allow a public body, in their discretion, to use videoconferencing, regardless of declaration of emergency. Requires rules to be adopted by the public body.</p> <p>Last Action: 04/08/22 Passed Senate 04/08/22 Passed Assembly 04/09/22 Delivered to Governor 04/09/22 Signed by the Governor [Chapter 56 of the Laws of 2022]</p>	Budget Article VII (ELFA)
S8008C A9008C (Part R)	<p>Amends Civil Rights Law to require all “state agencies” to update applicable forms and data systems to include a gender “X” option.</p> <p>Last Action: 04/08/22 Passed Senate 04/08/22 Passed Assembly 04/09/22 Delivered to Governor 04/09/22 Signed by the Governor [Chapter 58 of the Laws of 2022]</p>	Budget Article VII (TED)

II. APPROPRIATIONS

S8715 A9766	<p>Provides emergency appropriations to various State departments and agencies to allow certain payments due from April 1 to April 7, 2022 be made absent enactment of the Budget.</p> <p>Governor Program #9 Last Action: 04/04/22 Passed Senate 04/04/22 Passed Assembly 04/04/22 Delivered to Governor 04/04/22 Signed by the Governor [Chapter 174 of the Laws of 2022]</p>	Krueger Weinstein
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III. AMENDMENTS TO THE RETIREMENT AND SOCIAL SECURITY LAW

S8532 A9668	<p>Amends Section 177 to increase the percentage of assets which may be invested in foreign equity securities from 10% to 30% and investments under the “basket clause” from 25% to 35%. Applicable to city and state plans.</p> <p>Last Action: 03/09/22 Referred to CS 03/28/22 Referred to GE</p>	Jackson Abbate
S5437A A6860A	<p>Decreases the amount of payment required for Tier 6 members who are obtaining military service credit under RSSL 1000 from 6% to 3% of the member’s compensation earned during the twelve months of credited service immediately preceding the date that the member made application for credit.</p> <p>Last Action: 03/22/22 Amend and Recommit to CS, Print# 5437S 03/25/22 Amend and Recommit to GE, Print#6860A</p>	Brooks Abbate

S6619B A7730A	<p>Changes the age at which reductions to the ordinary death benefit commence for active members (NYSTRS and NYSLRS). Currently, the ordinary death benefit is reduced by four percent per year commencing at age 61.</p> <p>This bill would change the age at which reductions commence to age 62 for members with a date of membership prior to April 1, 2012 and to age 63 for members with a date of membership on or after April 1, 2012. The post-retirement death benefit for affected members, which is based on the ordinary death benefit, would be increased as well.</p> <p>OSC Program Bill #1 Last Action: 01/05/22 Referred to GE 01/05/22 Referred to CS 02/14/22 Amend and Recommit to CS, Print# 6619B 03/23/22 Reported and Referred to W&M</p>	Gounardes Abbate
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IV. AMENDMENTS TO THE EDUCATION LAW

S4783A A6331A	<p>Establishes the “Teachers’ Fossil Fuel Divestment Act” requiring the NYSTRS Board to create an exclusion list of coal producers and oil and gas producers and provides timeframes for divesting any investments in companies included on the exclusion list; requires reporting to the legislature.</p> <p>Last Action: 01/05/22 Referred to CS 01/05/22 Referred to GE</p>	Brisport Kelles
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V. AMENDMENTS TO THE CIVIL SERVICE LAW

S8529 A9513	<p>Extends provisions of Chapter 77 of the Laws of 2021 to grant public employees four hours of excused leave to receive the COVID-19 vaccination; extends until December 31, 2023.</p> <p>Last Action: 03/09/22 Referred to CS 03/16/22 Referred to GE</p>	Gounardes Fall
S907A A1871	<p>Permits state employees up to four hours of excused leave without loss of pay to donate blood and permits employers to require proof of the donation.</p> <p>Last Action: 01/05/22 Referred to GE 02/15/22 Reported Referred to W&M 03/22/22 Passed Senate 03/22/22 Delivered to Assembly and Referred to W&M</p>	Sanders Dinowitz

VI. PUBLIC OFFICERS LAW

<p>S7623A A8591</p>	<p>Extends the current authorization for state and local government entities to meet remotely, as long as the public has the ability to view or listen, until the current declared state of emergency ends. Chapter 417 of 2021 expired Jan 15, 2022 and Chapter 1 extended the authority.</p> <p>Last Action: 01/11/22 Passed Assembly 01/11/12 Passed Senate 01/12/22 Delivered to Governor 01/14/22 Signed by the Governor, Approval Memo 1 [Chapter 1 of the Laws of 2022]</p>	<p>Gaughran Thiele</p>
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VII. OTHERS

<p>S123A A5913A</p>	<p>Amends the Executive Law to establish a statewide campaign for acceptance, inclusion, tolerance and understanding diversity. Effective April 1, 2023.</p> <p>Last Action: 03/30/22 Passed Assembly 03/31/22 Passed Senate 03/31/22 Returned to Assembly</p>	<p>Kaplan Lavine</p>
<p>S812B A2035B</p>	<p>Amends Executive Law to establish a toll free confidential hotline for complaints of workplace sexual harassment.</p> <p>Last Action: 03/01/22 Passed Assembly 03/07/22 Passed Senate 03/15/22 Delivered to Governor 03/16/22 Signed by the Governor [Chapter 138 of the Laws of 2022]</p>	<p>Biaggi Niou</p>
<p>S8288 A9277</p>	<p>Amends Executive Law to rename the office of the advocate for people with developmental disabilities to the chief disability officer and move the office from the Department of State to the Executive Chamber.</p> <p>Last Action: 02/28/22 Passed Senate 03/15/22 Passed Assembly 03/18/22 Delivered to Governor 03/18/22 Signed by the Governor [Chapter 170 of the Laws of 2022]</p>	<p>Skoufis Steck</p>
<p>S5870 A7101</p>	<p>Amends the Executive law to prohibit employers from releasing employee personnel records as a retaliatory action against employees who file a complaint, civil or criminal action or judicial or administrative proceeding.</p> <p>Last Action: 03/01/22 Passed Senate 03/02/22 Passed Assembly 03/15/22 Delivered to Governor 03/16/22 Signed by the Governor [Chapter 140 of the Laws of 2022]</p>	<p>Gounardes Gonzales-Rojas</p>

<p>S7780 A8691</p>	<p>Amends Executive Law to establish electronic notarization through the use of communication technology that will enable the notary public to meet with individuals to sign documents. The electronic notarization system is scheduled to be online January 31, 2023.</p> <p>Electronic notarization was allowed temporarily through Executive Order during the COVID-19 state of emergency.</p> <p>Last Action: 01/20/22 Passed Senate 02/07/22 Passed Assembly 02/24/22 Delivered to Governor 02/24/22 Signed by the Governor [Chapter 104 of the Laws of 2022]</p>	<p>Skoufis Rozic</p>
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New York State Teachers' Retirement System

10 Corporate Woods Drive
Albany, New York 12211-2395
(800) 348-7298 or (518) 447-2900
NYSTRS.org

RETIREMENT BOARD ³³	
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Ruth Mahoney	Albany
Christopher Morin	Scarsdale
Nicholas Smirensky	Delmar
Thomas K. Lee, Executive Director & CIO	

Appendix C

Annual Executive Director & Chief Investment Officer Short Term Succession Plan

Pursuant to Section 13 of the ED&CIO Charter, and as further set forth in the Short Term ED&CIO Succession Plan, I, Thomas K Lee, hereby name the following members of the executive staff to assume my duties in the event of an emergency where I cannot be reached, or in the event of a temporary incapacitation preventing me from fulfilling my responsibilities. The individuals designated below will assume respective ED and CIO responsibilities as indicated on the attached schedule A.

ED Responsibilities

Primary: Ed Rezny
Backup: Miriam Dixon

CIO Responsibilities

Primary: Dave Gillan
Backup: Gerald Yahoudy

These designations will remain in effect from July 1, 2022 - June 30, 2023, unless alternative names are submitted to the Board prior to the end of this period.

Thomas K. Lee

4/18/22
Date

Charter for the Executive Director/Chief Investment Officer

Purpose and Responsibilities: The Executive Director/Chief Investment Officer is the chief executive officer of the System. The Executive Director/Chief Investment Officer has the following primary responsibilities:

1. Oversee the orderly and efficient operation of the System and ensure the System's business is conducted in accordance with applicable law and the System's Bylaws, Rules and Regulations, and established policies and procedures. **[ED]**
2. Oversee the preparation of the System's budget and presentation to the Retirement Board. **[ED]**
3. Oversee the Actuary's calculation of the employer contribution rate and recommendations for any changes in actuarial factors submitted to the Retirement Board for its approval. **[ED]**
4. Develop and recommend to the Retirement Board necessary investment policies and procedures and assure timely and proper implementation of policies and procedures approved by the Retirement Board. **[CIO]**
5. Oversee the investment of System assets in accordance with the directions and policies established by the Retirement Board, and monitor and report to the Retirement Board on the activities and performance of the System's internally managed investment portfolios and third-party investment managers. **[CIO]**
6. Oversee the administration and payment of System benefits and report to the Retirement Board on the significant activities of benefits staff. **[ED]**
7. Ensure an effective system of internal control is in place for financial reporting and risk management and oversee the work of the System's internal audit staff and external independent auditor. **[ED/CIO]**
8. Serve as the System's primary representative to constituent groups, industry organizations and all other interested parties and stakeholders. **[ED/CIO]**
9. Oversee the preparation and submission of the System's legislative program, the preparation of any necessary changes to the System's Rules and Regulations recommended for approval by the Retirement Board, and reporting on any litigation to which the System is a party. **[ED/CIO]**
10. Serve on the Ethics Committee of the Retirement Board. **[ED]**
11. Be available to discuss matters of importance with the Retirement Board and its Committees, and ensure the Board is informed regarding any matter of importance to the System. **[ED/CIO]**
12. Provide reports for the Retirement Board regarding succession planning, actual or impending vacancies among executive staff positions, evaluations of the executive staff, and status of the employee contract negotiations. **[ED/CIO]**

13. Ensure continuity of services by naming one or more executives to temporarily assume the Executive Director's duties in the event the Executive Director cannot be reached during an emergency or becomes temporarily incapacitated. If more than one executive is named, the specific responsibilities assigned to each executive will be clearly defined. **[ED]**

14. Coordinate the scheduling of meetings of the Retirement Board and Retirement Board Committees; coordinate the preparation of meeting agendas and the assembly of all documentation and presentations for such meetings; and cause minutes to be taken of all such meetings. **[ED]**

15. Perform such other duties as may be assigned by the Retirement Board. **[ED/CIO]**

The Board may, by resolution, authorize the Executive Director/Chief Investment Officer to delegate any or all of his/her duties.

(Source: NYSTRS Bylaws)

Appendix D

NEW YORK STATE
TEACHERS' RETIREMENT SYSTEM

MEMORANDUM

TO: T. Lee

FROM: Office of the CFO / Finance Department

DATE: April 27, 2022

SUBJECT: Retirement Board Package

Attached are the System's quarterly financial statements and related schedules for the quarters ended March 31, 2022 and 2021.

The following is a list of the documents included:

1. Statements of Fiduciary Net Position (Unaudited)
2. Statements of Changes in Fiduciary Net Position (Unaudited)
3. Schedule of Administrative Expenses (Unaudited)



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
Statements of Fiduciary Net Position (Unaudited)

37

March 31, 2022 and 2021

Assets	2022	2021
Investments at fair value:		
Domestic equity	\$ 50,334,512,390	\$ 48,474,919,904
International equity	22,607,055,431	24,195,817,109
Global equity	4,918,722,576	4,740,592,107
Real estate equity	17,151,215,660	13,356,344,690
Private equity	14,561,238,255	11,747,384,272
Domestic fixed income	19,089,226,552	17,781,550,075
High-yield bonds	1,063,937,178	846,727,004
Global bonds	3,115,653,083	2,956,759,339
Real estate debt	7,927,026,151	7,247,971,685
Private debt	1,320,107,871	1,052,004,052
Cash equivalents	3,196,085,925	5,298,935,736
Total investments	<u>145,284,781,072</u>	<u>137,699,005,973</u>
Receivables:		
Employer	1,254,355,770	1,223,930,210
Member	101,894,731	89,204,929
Investment income	303,957,871	282,645,714
Investment sales	398,451,294	391,847,122
Total receivables	<u>2,058,659,666</u>	<u>1,987,627,975</u>
Other assets:		
Securities lending collateral, invested	503,585,062	449,597,548
Member loans	236,458,328	243,291,284
Net investment in capital assets	21,534,934	23,584,485
Miscellaneous assets	6,679,327	11,157,941
Total other assets	<u>768,257,651</u>	<u>727,631,258</u>
Total assets	<u>148,111,698,389</u>	<u>140,414,265,206</u>
Deferred outflows of resources:		
Changes in net OPEB liability	10,903,816	7,517,798
Changes in net pension liability	21,766,822	17,742,531
Total deferred outflows of resources	<u>32,670,638</u>	<u>25,260,329</u>
Liabilities		
Securities lending collateral, due to borrowers	501,954,106	448,144,819
Investment purchases payable	479,615,600	486,546,370
Mortgage escrows and deposits, net of investments	10,275,157	5,156,388
Net OPEB liability	47,187,493	51,932,884
Other liabilities	143,796,084	166,637,447
Total liabilities	<u>1,182,828,440</u>	<u>1,158,417,908</u>
Deferred inflows of resources:		
Changes in net OPEB liability	4,276,117	6,811,423
Changes in net pension liability	32,275,181	645,618
Total deferred inflows of resources	<u>36,551,298</u>	<u>7,457,041</u>
Net position restricted for pensions	<u>\$146,924,989,289</u>	<u>\$139,273,650,586</u>



For the nine months ending March 31, 2022 and 2021

Additions:	<u>2022</u>	<u>2021</u>
Investment income:		
Net appreciation in fair value of investments	\$ 1,709,713,263	\$ 21,675,739,031
Interest	584,090,855	573,032,460
Dividends	1,009,134,896	945,370,147
Real estate, net operating income	392,198,646	293,625,296
Securities lending, gross earnings	2,271,887	2,916,254
Other (net)	10,332,290	15,935,971
	<u>3,707,741,837</u>	<u>23,506,619,159</u>
Less: Investment expenses	304,415,634	237,675,017
Securities lending:		
Broker rebates	(708,768)	(2,396,219)
Management fees	401,863	735,944
Depreciation on collateral	200,830	1,242,012
Net investment income	<u>3,403,432,278</u>	<u>23,269,362,405</u>
Contributions:		
Employer	1,292,512,367	1,257,989,223
Member	119,480,981	107,256,097
Transfers	5,618,729	8,360,570
Total contributions	<u>1,417,612,077</u>	<u>1,373,605,890</u>
Net additions	<u>4,821,044,355</u>	<u>24,642,968,295</u>
Deductions:		
Retirement benefit payments, periodic	5,926,916,387	5,748,765,875
Beneficiary payments	51,515,466	37,476,714
Return of contributions	12,953,131	12,335,449
Administrative expenses	53,127,445	50,245,050
Total deductions	<u>6,044,512,429</u>	<u>5,848,823,088</u>
Net (decrease) increase in net position	(1,223,468,074)	18,794,145,207
Net position restricted for pensions, beginning of year	<u>148,148,457,363</u>	<u>120,479,505,379</u>
Net position restricted for pensions, end of period	<u>\$146,924,989,289</u>	<u>\$139,273,650,586</u>



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
 Schedule of Administrative Expenses (Unaudited)
Compared to Budget Appropriations for 2021-2022

	Budget Appropriations 2021-2022	Expenses and Encumbrances YTD 03/31/2022	Remaining Balance 3/31/2022	Actual Expenses YTD 03/31/2022
Salaries:				
Salaries	\$ 37,280,024	\$ 26,879,481	\$ 10,400,543	\$ 26,879,481
Overtime salaries	38,000	22,057	15,943	22,057
Social Security	2,635,917	1,846,509	789,408	1,846,509
Subtotal Salaries	39,953,941	28,748,047	11,205,894	28,748,047
Benefits				
Employees retirement	5,002,923	4,164,799	838,124	4,164,799
Dental insurance	290,627	204,846	85,781	204,846
Health insurance	6,604,475	4,874,180	1,730,295	4,874,180
OPEB contribution	6,000,000	4,500,000	1,500,000	4,500,000
Civil service	60,000	42,750	17,250	42,750
Subtotal Benefits	17,958,025	13,786,575	4,171,450	13,786,575
Total salaries and benefits	57,911,966	42,534,622	15,377,344	42,534,622
Building occupancy:				
Building security and vending	435,000	292,846	142,154	187,186
Building supplies and expenses	128,500	76,420	52,080	72,970
Heat, light and power	367,500	362,824	4,676	362,824
Insurance	400,000	522,222	(122,222)	522,222
Municipal assessments	227,500	183,649	43,851	183,649
Office supplies and expenses	187,450	93,822	93,628	75,381
Storage	56,000	59,746	(3,746)	35,730
Telephone	555,000	345,443	209,557	315,938
Total building occupancy	2,356,950	1,936,972	419,978	1,755,900
Computer:				
IT Hardware Purchases	600,000	477,239	122,761	361,282
IT Software Purchases	675,000	543,227	131,773	129,677
Software and support services	4,057,500	3,503,089	554,411	2,485,418
Computer supplies	20,000	—	20,000	—
Total computer	5,352,500	4,523,555	828,945	2,976,377



NEW YORK STATE TEACHERS' RETIREMENT SYSTEM
 Schedule of Administrative Expenses (Unaudited) (Continued)

Compared to Budget Appropriations for 2021-2022

	Budget Appropriations 2021-2022	Expenses and Encumbrances YTD 03/31/2022	Remaining Balance 3/31/2022	Actual Expenses YTD 03/31/2022
Personnel and meeting:				
Board - meetings, travel and education	100,000	39,626	60,374	39,626
Delegates meeting	65,000	1,304	63,696	1,304
Dues	310,011	222,770	87,241	222,770
Library	42,364	35,554	6,810	32,895
Overtime meals	695	633	62	633
Personnel expenses	75,000	100,151	(25,151)	91,744
Pre-retirement seminars	90,000	(3,584)	93,584	(3,584)
Staff schooling	521,385	189,041	332,344	128,441
Travel and automobile expense	155,900	29,954	125,946	29,954
Tuition assistance	50,000	21,041	28,959	21,041
Wellness fund	8,750	1,830	6,920	1,830
Total personnel and meeting	<u>1,419,105</u>	<u>638,320</u>	<u>780,785</u>	<u>566,654</u>
Professional and governmental services:				
Auditors - financial	420,000	806,438	(386,438)	450,236
Auditors - insurance department	160,000	—	160,000	—
Disability medical examinations	80,000	72,063	7,937	72,063
Postage and cartage	785,150	701,342	83,808	701,342
Professional fees and services	1,465,600	1,505,807	(40,207)	707,543
Publications	165,000	127,989	37,011	86,726
Statutory custodian charges	133,000	102,500	30,500	102,500
Total professional and governmental services	<u>3,208,750</u>	<u>3,316,139</u>	<u>(107,389)</u>	<u>2,120,410</u>
Capital improvement program:				
Depreciation - building and improvements	2,007,872	1,462,805	545,067	1,462,805
Depreciation - equipment	157,167	109,626	47,541	109,626
Amort./depreciation - computer micro	1,284,577	830,955	453,622	830,955
Building improvement expense	125,000	41,513	83,487	23,410
Building maintenance contracts	713,000	652,815	60,185	622,657
Equipment	121,000	48,825	72,175	1,437
Equipment maintenance	74,838	66,842	7,996	66,842
Computer equipment maintenance	387,788	43,860	343,928	43,860
Fleet maintenance	30,000	11,890	18,110	11,890
Capital contingency	348,756	—	348,756	—
Total capital improvement program	<u>5,249,998</u>	<u>3,269,131</u>	<u>1,980,867</u>	<u>3,173,482</u>
Total Administration Expenses	<u>\$ 75,499,269</u>	<u>\$ 56,218,739</u>	<u>\$ 19,280,530</u>	<u>\$ 53,127,445</u>

