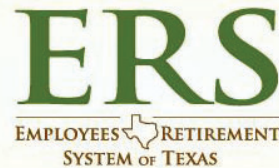


Joint Meeting of the Board of Trustees
and
Investment Advisory Committee

May 11, 2022



Public Agenda #5

Call Meeting of the Board of Trustees to Order

May 11, 2022

Public Agenda #6

Call Meeting of the Investment Advisory Committee to Order

May 11, 2022

Public Agenda #7

Consideration of the Minutes to the March 9, 2022 Joint Meeting of the Board of Trustees and Investment Advisory Committee – (Action)

May 11, 2022

Questions?
Action Item

Public Agenda Item #8

Consideration of Reappointments to the Investment Advisory Committee – (Action – Board Only)

May 11, 2022

David T. Veal, Chief Investment Officer

Investment Advisory Committee

Operating Framework



- Established at the discretion of the Board in Texas Administrative Code § 63.17(b).
- Consists of at least five members and not more than nine, and currently has nine.
- Members are selected based on experience:
 - in managing a business in which investment decisions are made, or
 - as a prominent educator in the fields of economics or finance.
- IAC members serve at the pleasure of the Board for staggered three-year terms.
- Members are subject to compliance with ERS Investment Policy and Texas law.

IAC Skills Assessment

	Term Ends	Investment Experience	Global Equity	Fixed Income	Private Equity	Real Estate	Hedge Funds	Infrastructure	Derivatives
IAC Chair, Gene L. Needles, Jr. Chairman, President and CEO – Resolute Investment Managers	May 2023	41 years	X	X	X	X	X		X
IAC Vice-Chair, Laurie Dotter Retired from Transwestern Corporate Properties - President	May 2022	37 years				X		X	
Bob Alley, CFA Retired from AIM Advisors Inc. - Chief Fixed Income Officer	Aug 2024	45 years	X	X	X				
Ryan Bailey, CFA, FRM, CAIA, CMT Managing Partner & CIO – Carbonado Partners	Mar 2026	22 years	X	X	X	X	X		
Caroline Cooley Managing Partner – Crestline Investors	Dec 2022	36 years		X			X		X
James Hille, CFA, CAIA Retired from TCU Endowment - CIO	Aug 2023	29 years	X	X	X	X	X		
Milton Hixson, CPA, CFP CEO – FMP Wealth Advisors	Mar 2023	48 years	X	X	X	X	X	X	
Ken Mindell Retired from Rosewood Management Corp - Sr. VP, Treasurer & Director of Investments	May 2022	40 years	X	X	X	X	X		X
Ruby Muñoz Dang Partner & Director – Garcia Hamilton	Mar 2026	25 years	X	X					

Ken Mindell

Professional Credentials



- IAC member at ERS since 2019
 - 100% attendance at Board/IAC meetings
 - Participant in 9 ACIC meetings
- Retired as the Senior Vice President and Treasurer for Rosewood Management Corporation in Dallas.
- Served on the Endowment Committee of Trinity Valley School in Fort Worth for almost two decades.
- Board member for John Bunker Sands Wetland Center and the WaterTower Theater
- Began his career in public accounting with Coopers & Lybrand in Dallas.



Laurie Dotter

Professional Credentials



- IAC member at ERS since 2019
 - 100% attendance at Board/IAC meetings
 - Participant in 36 ACIC meetings
 - Texa\$averSM Product Review Committee member
- Comptrollers Investment Advisory Board for Texas Treasury Safekeeping Trust Company since 2009.
- President, Transwestern Investment Group 2010-2016
- President, Transwestern Corp. Properties 2016-17
- Executive investment officer, Hunt Realty Investments from 1998 until 2010.
- Director of Real Estate Investments at the Teacher Retirement System of Texas, 1993 to 1998.



Questions?
Action Item -BOT

Public Agenda Item #9

Consideration of Annual Review of the ERS Incentive Compensation Plan

May 11, 2022

DeeDee Sterns, Director of Human Resources

Jamey Pauley, ICP Program Specialist

Incentive Compensation Plan (ICP)

Annual Review



- The Board of Trustees reviews and approves the ICP on an annual basis.
- For the May Board meeting, staff provides:
 - A review of the plan objectives and key features.
 - Information on any proposed plan changes.
 - A draft plan document for the upcoming fiscal year.
 - A summary of the ICP awards over the last five years (new this year).
- At the August Board meeting:
 - Staff presents the final proposed plan document for consideration and approval.

Incentive Compensation Plan

Objectives



- Communicate strategic performance priorities.
- Encourage sustained levels of high investment performance, without undue risk.
- Promote teamwork among employees.
- Support ERS' strategic and operational goals.
- Attract and retain key employees in a cost-effective manner.

Incentive Compensation Plan



Key Features

- Performance measures are based on 1-year, 3-year, and 5-year performance periods.
- Participants have individual and total trust performance benchmarks.
- Participants must exceed their benchmarks to receive an incentive award.
- Participants are evaluated on both quantitative (75%) and qualitative (25%) metrics.
- Payout of incentive award is done over a three-year period: 50/25/25.
- Awards can be earned, but the Trust Fund as measured by the one-year Global Composite Performance must be positive to pay awards.
- Award payments shall be deferred during non-positive years, and are forfeited after three consecutive years of non-positive returns.

Incentive Compensation Plan

Awards Summary



ICP Awards

Plan Year	Average Realization	Minimum Realization	Maximum Realization
2021	81.4%	45.0%	100.0%
2020	43.0%	15.0%	72.5%
2019	52.3%	16.3%	86.2%
2018	66.3%	25.8%	100.0%
2017	76.0%	41.3%	97.5%
5-Yr Average	63.8%	28.7%	91.2%

Trust Fund Returns by Performance Period

1-Year

Total Trust Return	Excess Return Over Benchmark
25.46%	6.96%
6.82%	-1.35%
3.00%	-0.06%
9.54%	1.60%
12.11%	1.03%
11.38%	1.63%

3-Year

Total Trust Return	Excess Return Over Benchmark
11.34%	1.62%
6.42%	0.05%
8.15%	0.08%
8.94%	0.20%
5.83%	0.19%
8.14%	0.43%

5-Year

Total Trust Return	Excess Return Over Benchmark
11.13%	1.50%
7.30%	-0.16%
5.99%	0.04%
8.27%	0.36%
8.34%	0.11%
8.21%	0.37%

Incentive Compensation Plan

Fiscal Year 2023 – Proposed Material Changes



- Revise the three and five year performance periods to be weighted more heavily.
- Increase the minimum percentage attributable to Global Composite Performance (overall Trust).
- Further simplify the Global Composite Performance calculation.
- Reduce the waiting periods for new hires.

Incentive Compensation Plan

Longer-term Performance (section 4.8c)



Employees with five or more years of plan participation

Current Performance Period Weightings:

1-Year	3-Year	5-Year
33%	33%	34%

Proposed:

1-Year	3-Year	5-Year
20%	30%	50%

Incentive Compensation Plan

Longer-term Performance (section 4.8b)



Employees with between three and five years of plan participation

Current Performance Period Weightings:

1-Year	3-Year
50%	50%

Proposed:

1-Year	3-Year
40%	60%

Incentive Compensation Plan

Longer-term Performance



Employees with less than three years of plan participation

No Change to Performance Period Weightings:

1-Year
100%

Incentive Compensation Plan

Longer-term Performance



Objective:

- Encourage an even greater emphasis on longer-term performance.

Incentive Compensation Plan



Overall Trust Performance *(section 4.7a, Appendix B)*

Current Goal Weightings:

Minimum to Overall Trust (Global Composite)	Maximum to Individual Portfolios	Maximum to Qualitative
25%	50%	25%

Proposed:

Minimum to Overall Trust (Global Composite)	Maximum to Individual Portfolios	Maximum to Qualitative
35%	40%	25%

Incentive Compensation Plan

Overall Trust Performance



Objective:

- Place greater emphasis on the shared goal of robust Trust performance (35%), while retaining a significant weight to strong portfolio performance (40%).

Incentive Compensation Plan

Simplification and Consistency (section 2.16)



Proposal:

Discontinue the exclusion of **securities litigation proceeds** from the Global Composite Performance calculation (overall Trust).

Incentive Compensation Plan

Simplification and Consistency



Background:

- In Fiscal Year 2011, ERS started calculating Global Composite Performance (GCP) net of cash performance and net of securities litigation proceeds.
- Performing the calculation in this manner results in a different return being used for ICP than is used for general reporting purposes (ACFR).
- Netting out cash performance from the GCP calculation was discontinued in Fiscal Year 2021 with Board approval.
- Now proposing discontinuing netting out securities litigation proceeds beginning in Fiscal Year 2023.

Incentive Compensation Plan

Simplification and Consistency



Objectives/Reasoning:

- Including securities litigation proceeds in the GCP calculation would provide the same base return used for ICP that is used for general reporting purposes (ACFR).
- Staff analysis of this change concludes that it would reduce the administrative burden of excluding these figures, while having an insignificant impact on the ICP awards.
- Over the previous five years, it would have actually had no impact on ICP awards.

Incentive Compensation Plan

Recruitment (section 3.2)



New Hire Waiting Periods

	Current	Proposed
Standard waiting period:	6 Months	3 Months
Exception to the standard waiting period (with written justification and approval by the Executive Director):	90 Days	0 Days

Incentive Compensation Plan

Recruitment



Objectives:

- Help attract needed talent, in general, within a very tight labor market.
- Help attract certain experienced hires who are expected to add value from day one (i.e., with ED authority to waive the waiting period).
- Provide better alignment with peer funds, whose new hire waiting periods are generally between zero and three months.

Incentive Compensation Plan

Fiscal Year 2023 – Other Changes



In addition to the material changes, staff is proposing some other changes to the Plan document that will:

- Provide clarification.
- Better reflect current processes and practices.

These changes are reflected in the draft Plan document.

Questions?

Public Agenda Item #10

Quarterly Report from Chief Investment Officer

May 11, 2022

David T. Veal, Chief Investment Officer, CFA, CAIA, FRM

Trust Performance

Mission & Objectives

Prudently maintain a high-performing, well-diversified, and cost-effective portfolio to support the provision of promised benefits.



Add value vs. benchmark
over rolling five-year periods



Earn appropriate returns
for the risks assumed

Trust Performance

Investment Strategy



Allocate assets
thoughtfully



Select effective
managers



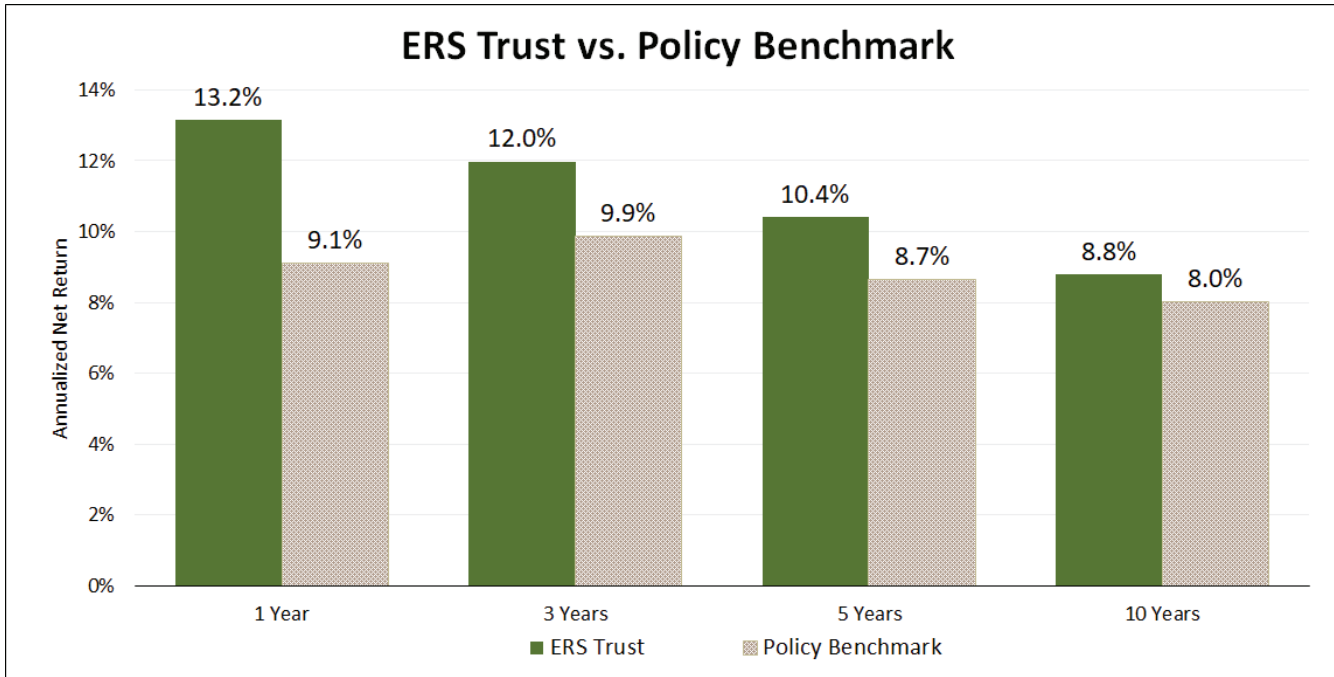
Diversify
across risks

ERS Trust Performance

Relative Return



- Strong performance vs. Policy Benchmark, including 175 bps on a 5-year basis

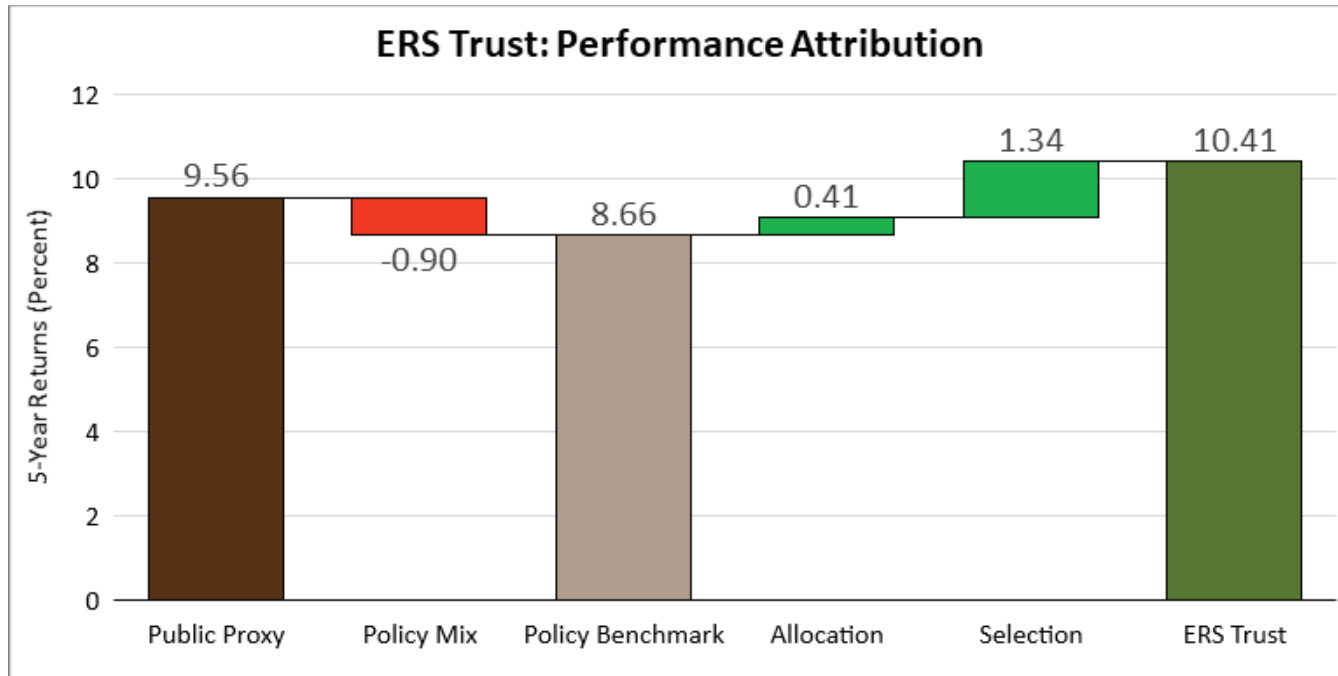


ERS Trust Performance

Attribution Analysis



- Meaningful excess return from both asset allocation and security selection decisions

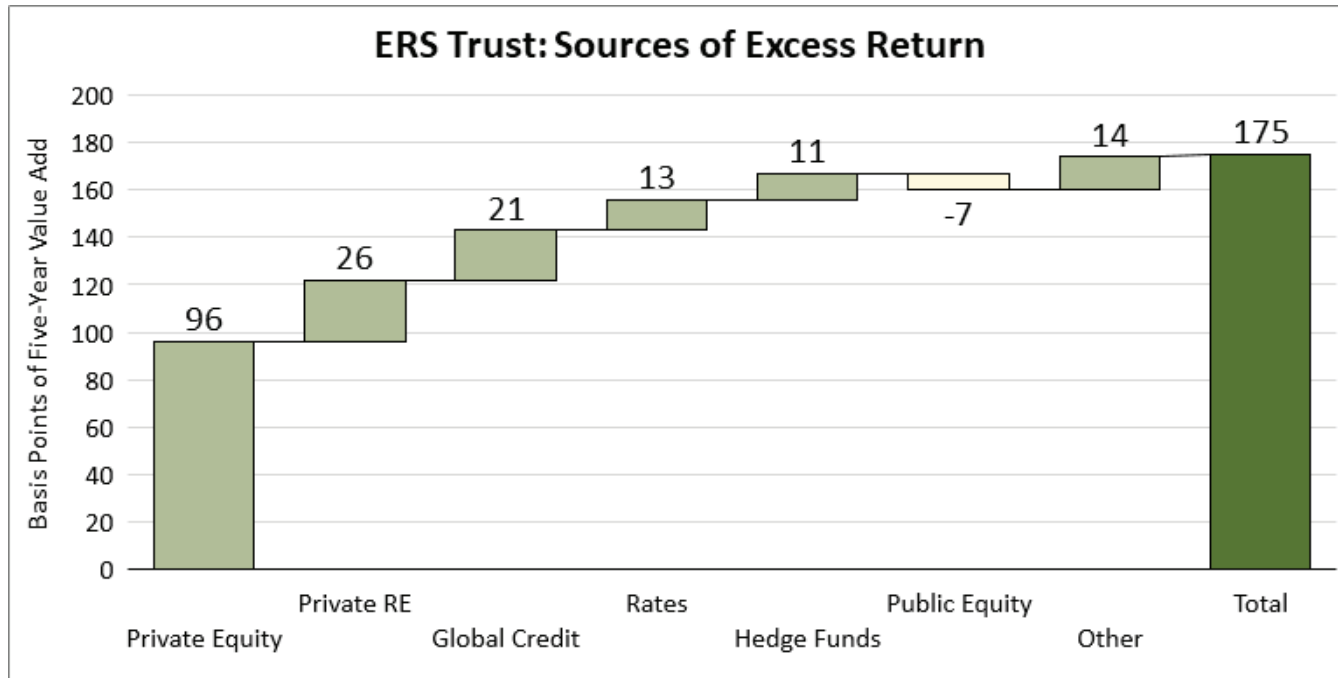


ERS Trust Performance

Attribution Analysis



- Private equity (+96 bps), hedge funds (+11 bps) represent 61% of 5-year value add

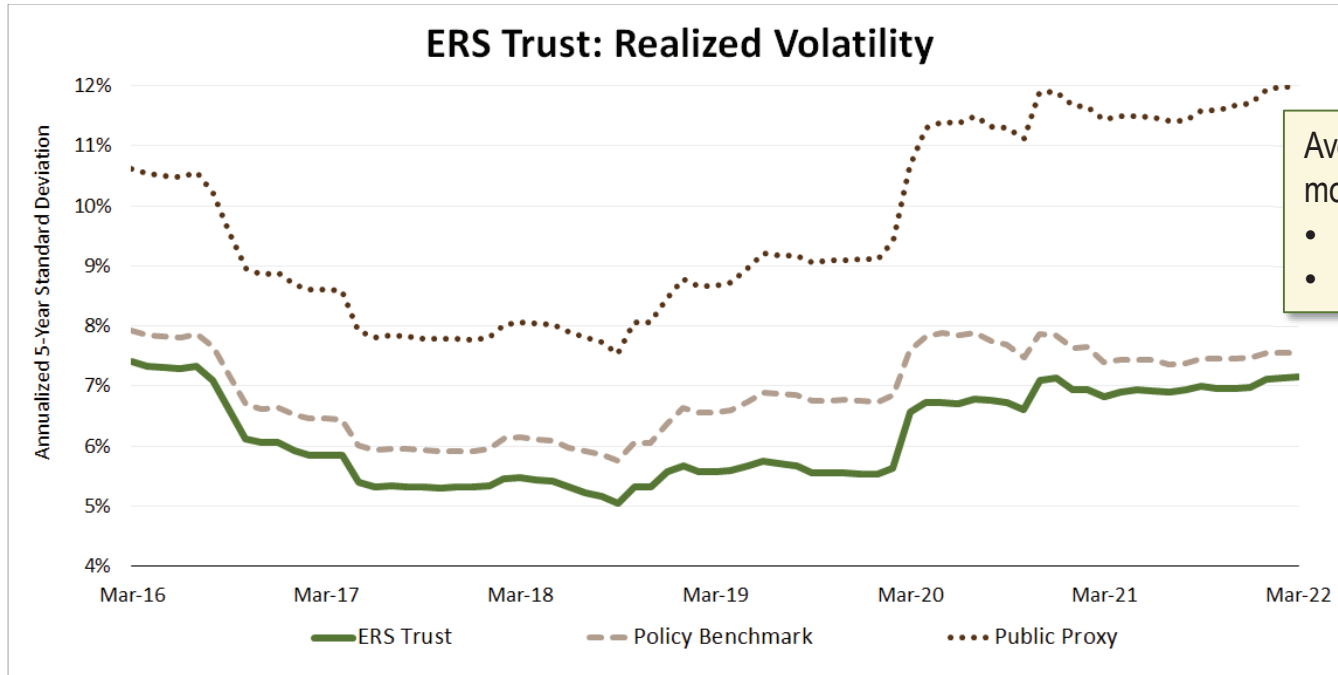


ERS Trust Performance

Absolute Risk



- Realized volatility levels flat at 7% and remain below that of the benchmark

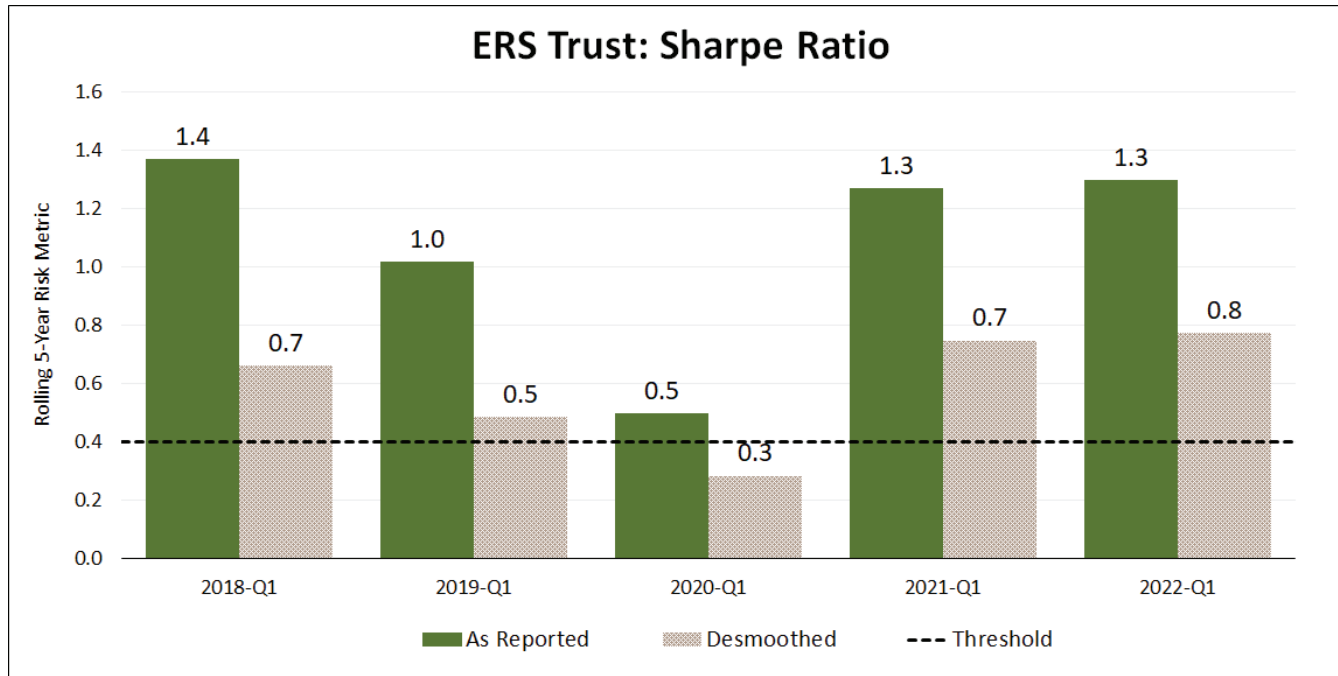


ERS Trust Performance

Risk-Adjusted Returns



- Good returns per unit of absolute risk, even when using risk levels of proxy

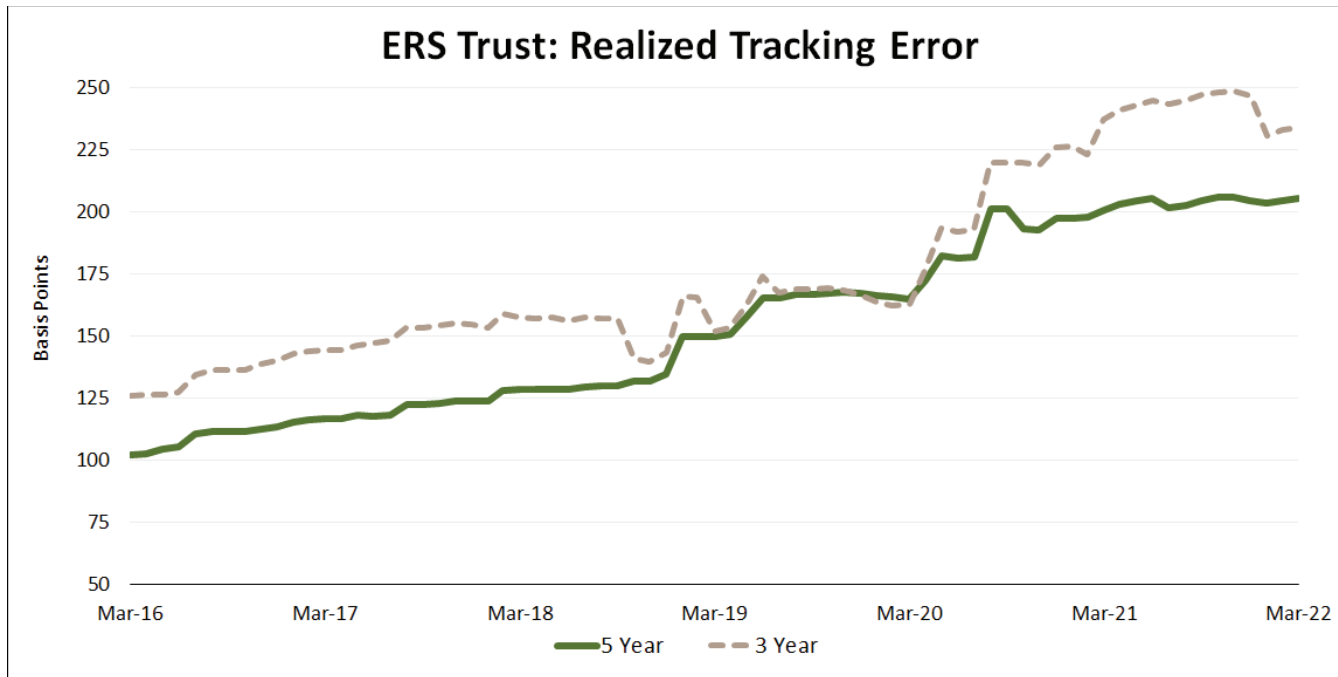


ERS Trust Performance

Relative Risk



- Tracking error trending upward over time on rising allocation to private markets

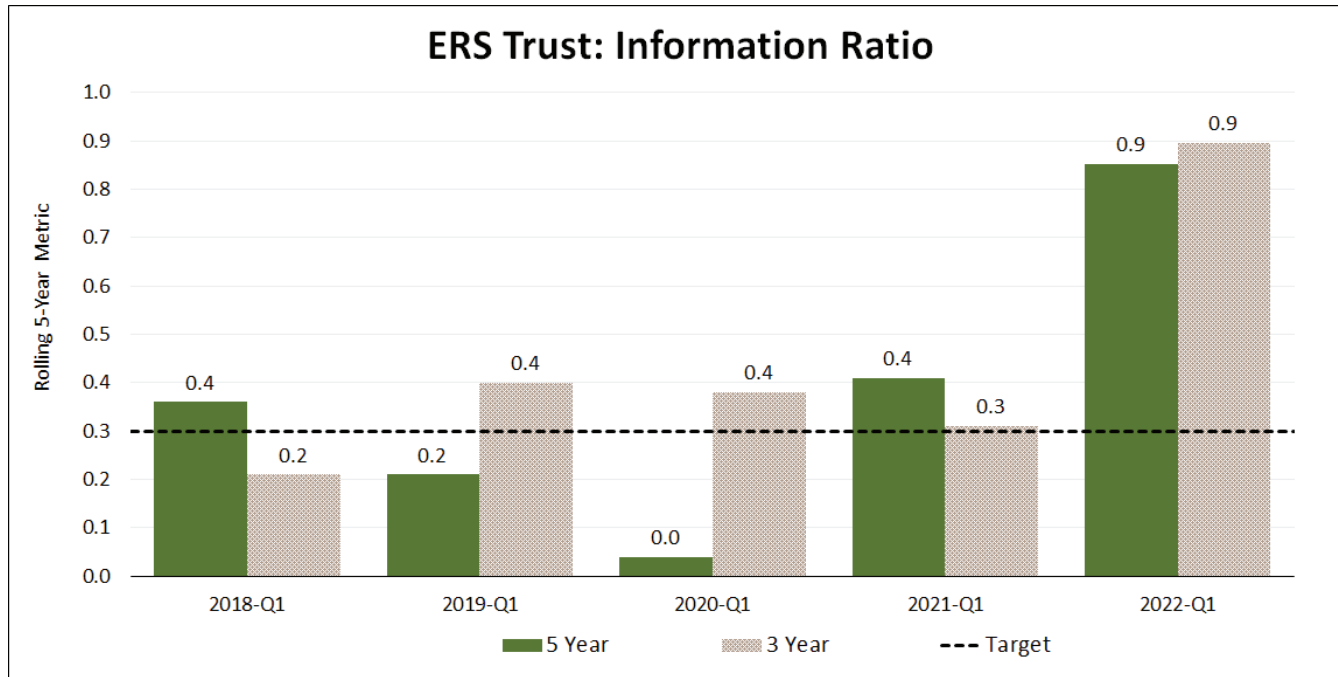


ERS Trust Performance

Risk-Adjusted Returns



- Returns per unit of relative risk now at their highest levels in several years

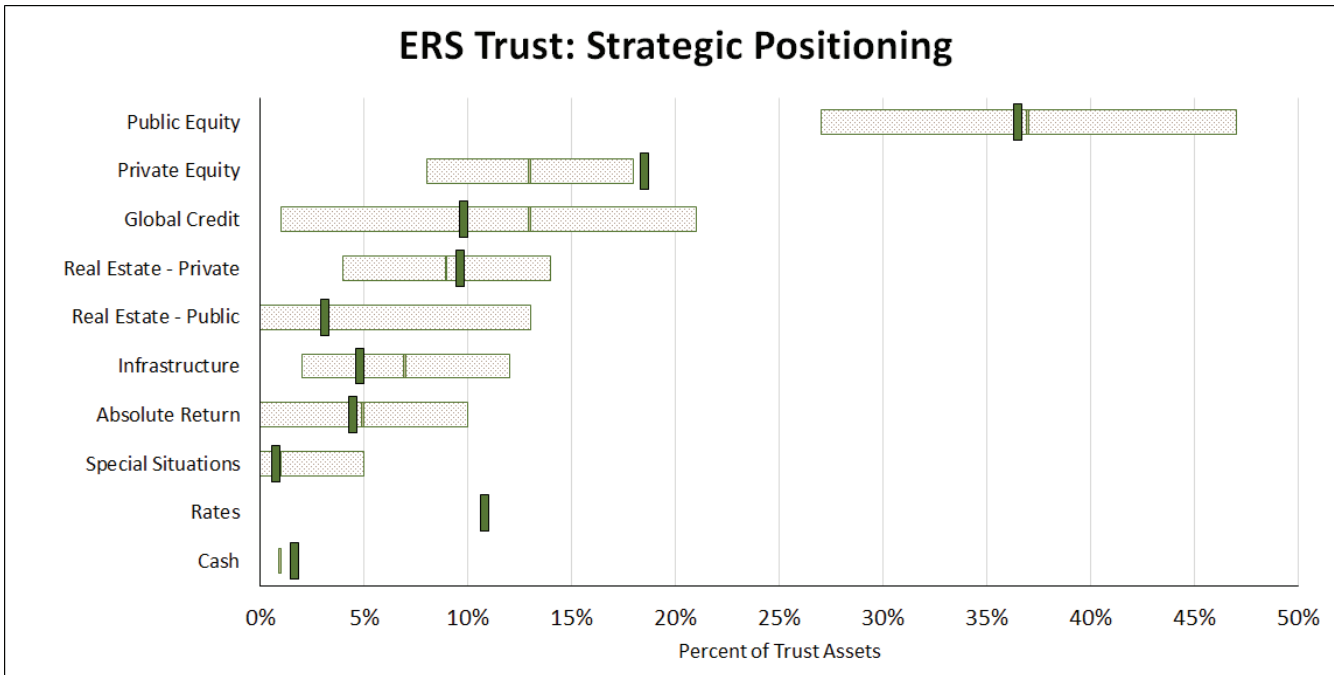


ERS Trust Performance

Asset Class Positioning



- Asset classes within ranges except private equity at 0.5% above 18% maximum

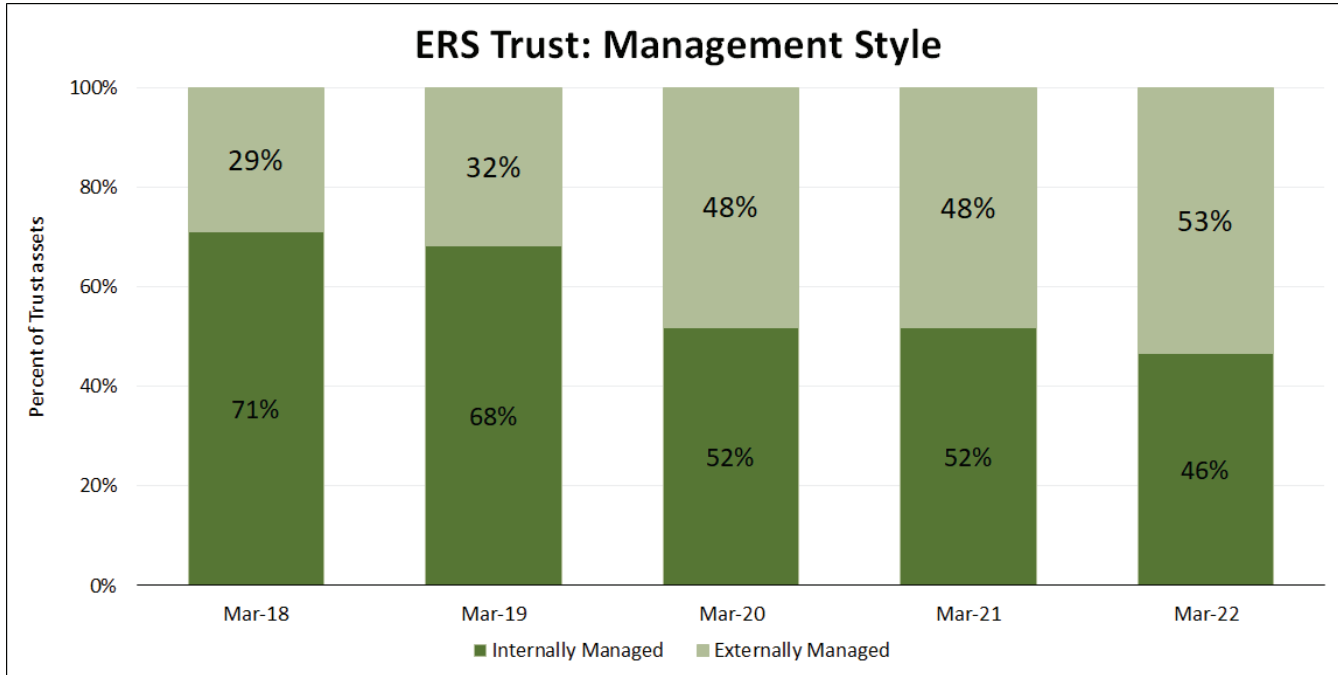


ERS Trust Performance

Management Style



- Mix shift has driven external management to become the majority of the Trust

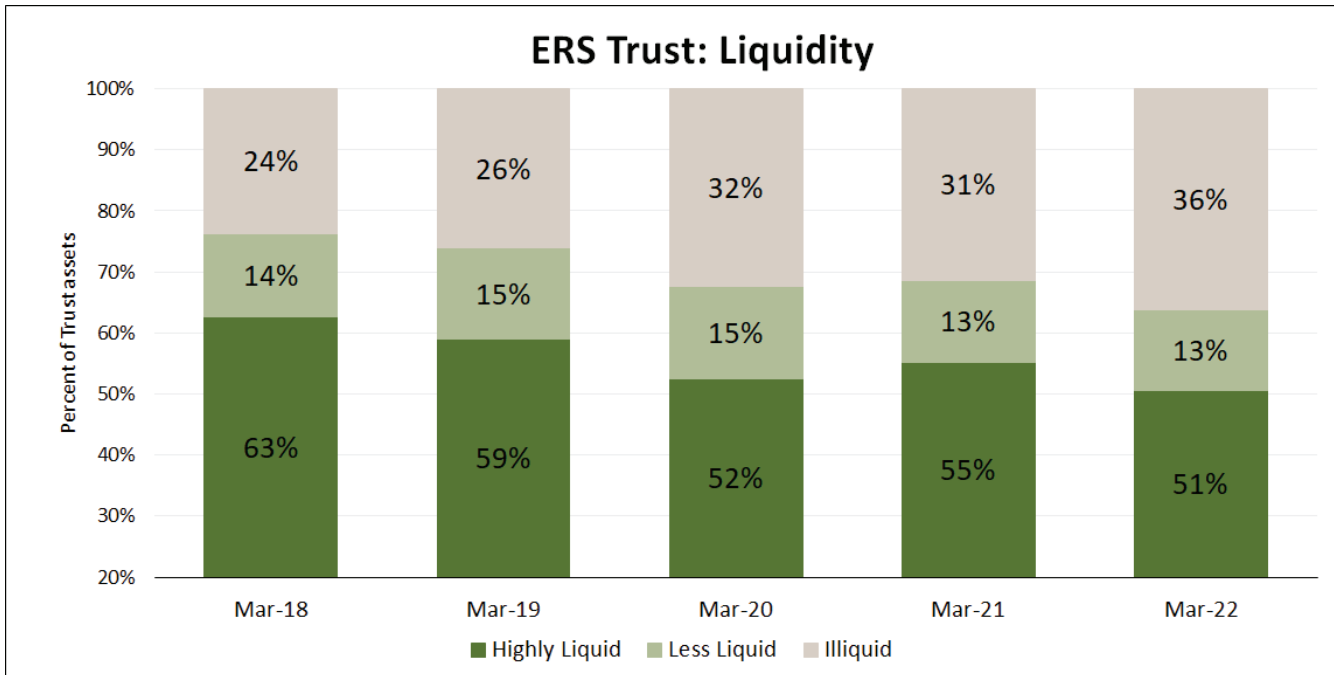


ERS Trust Performance

Liquidity Mix



- Mix shift toward private markets has made the Trust less liquid

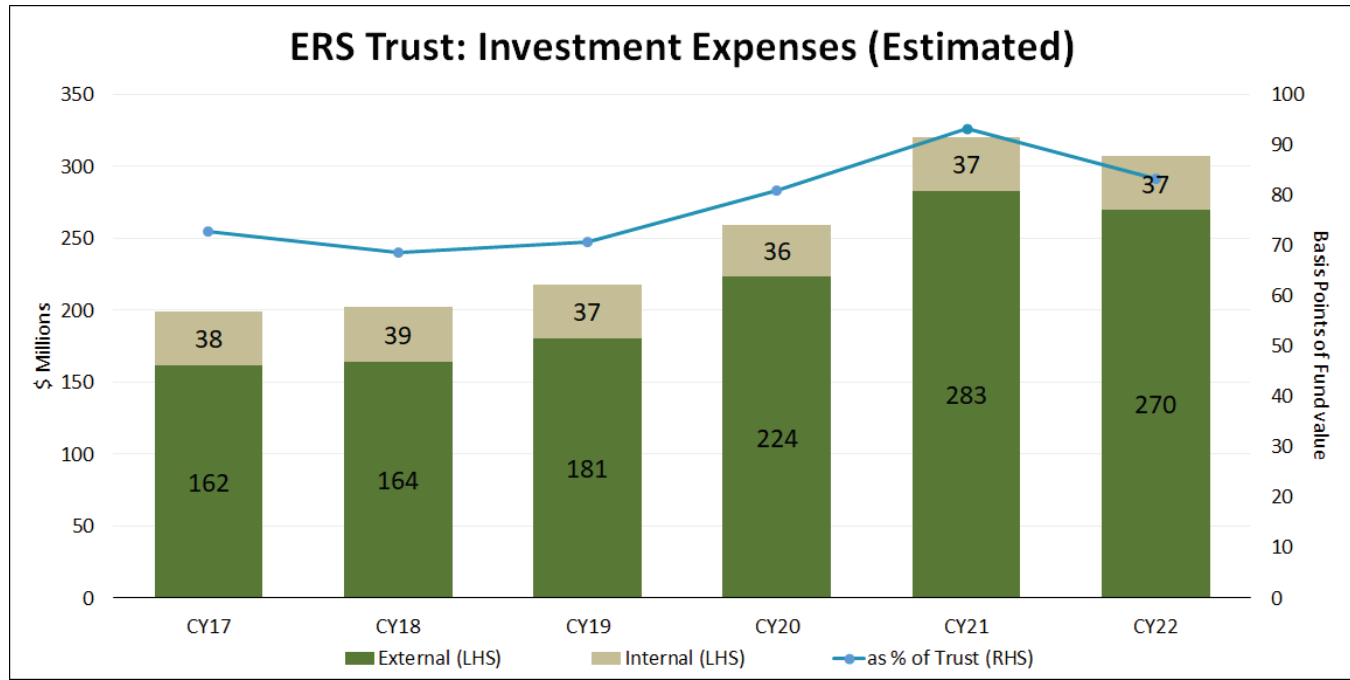


ERS Trust Performance

Investment Expenses



- Mix shift toward private markets has led to an increase in expense levels



2022 Priorities

Investments Division



- Revisit organizational structure
- Update key policies and procedures
- Complete Asset/Liability Study
- Address consultant & audit recommendations

Nick Maffeo

Director of Hedge Funds



- Joined ERS in 2012 as Portfolio Manager
- VP & Research Analyst, Altegris Investments, 2005-2011
- MBA from University of Florida, 2012
- Bachelors from Shippensburg University of PA, 2005
- Chartered Alternative Investment Analyst (CAIA)



Investment Policy Statement

Annual Update Process



- Board requires review of IPS by staff at least annually
- Review is underway by Investments, Compliance, Legal and Consultant
- Fresh eyes from CIO, General Counsel, and Compliance Officer
- Draft redline version to be circulated in June/July for feedback

Investment Policy Statement

Annual Update Focus



- Updates to Code of Ethics
- Updates to Personal Trading guidelines
- Streamline policies for Scrutinized Investments
- Expand ability to pursue securities actions
- Clarifications to scope and processes for ACICs

2022 Asset/Liability Study

Timeline for NEPC



Time Period	Activity
January-March	Receives background information from ERS
April	Conducts initial analysis of information
May	Provides draft findings to the ERS Board
August	Delivers final report to the ERS Board

Questions?

Public Agenda Item #11

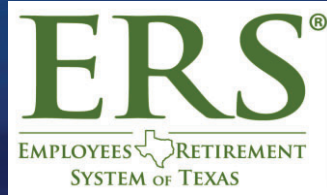
**Consideration of Quarterly Review of Investment Performance and Risk Update*

May 11, 2022

David T. Veal, Chief Investment Officer

Carlos Chujoy, CFA, Director of Risk Management and Applied Research

Sam Austin, Partner, NEPC



QUARTERLY PERFORMANCE REPORT

EMPLOYEES RETIREMENT SYSTEM OF
TEXAS

MAY 11, 2022

Sam Austin, Partner

Michael Malchenko, Consultant





TABLE OF CONTENTS

- Economic Environment
- Executive Summary
- Total Trust Performance Summary
- Appendix and Disclosures



ECONOMIC ENVIRONMENT

ECONOMIC ENVIRONMENT



Inflation is running hot

12-month CPI has risen to 8.67% in Q1 2022 from 7.12% in Q4 2021 and 2.73% in Q1 2021.



Fed is signaling more aggressive response

Market is now pricing in 9 rate hikes in 2022.



Equities may still have further to fall

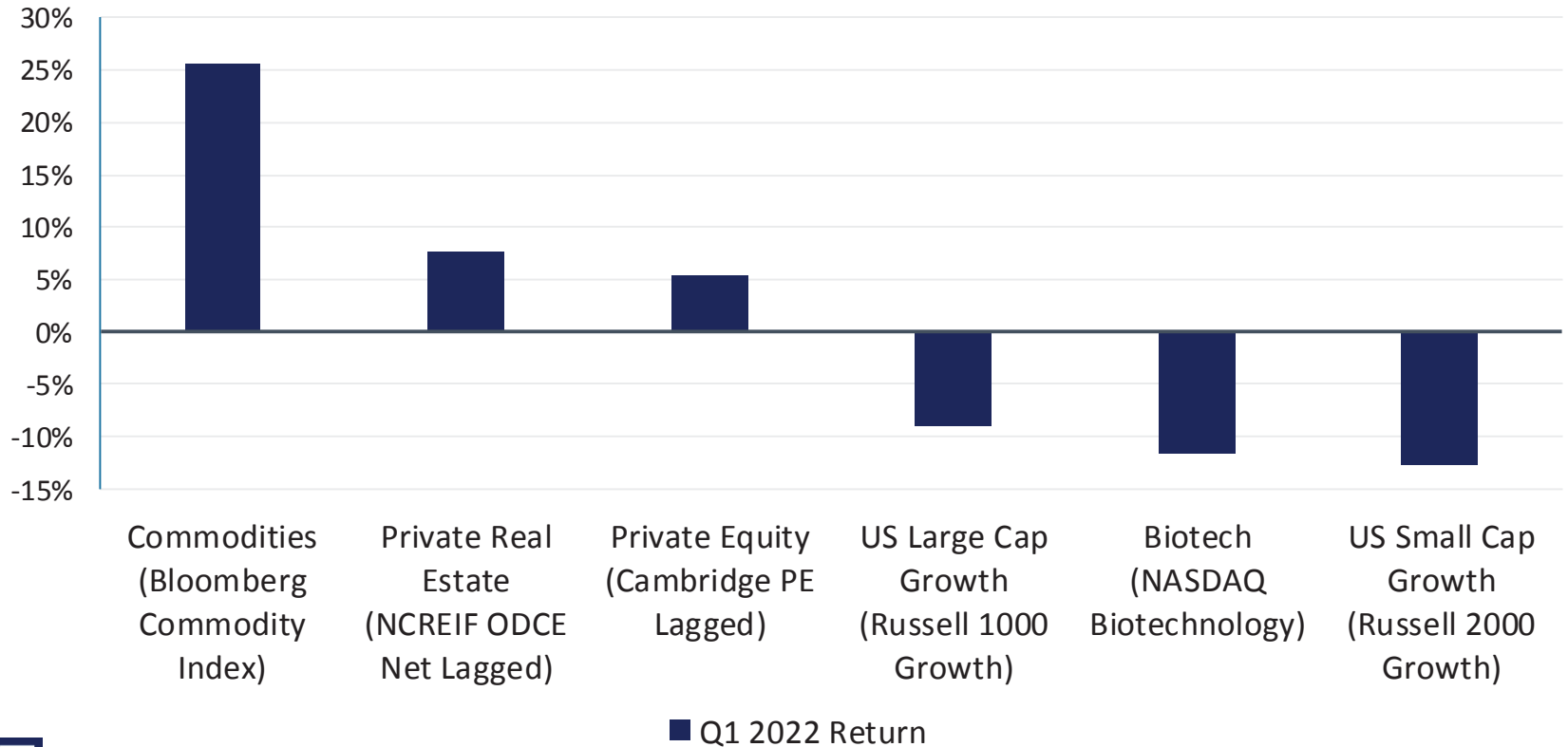
S&P 500 valuations decreased in Q1 2022 to 34.6x from 38.3x in Q4; 10-year average has been 28.3x.

MOST PUBLIC MARKET BENCHMARK RETURNS WERE NEGATIVE FOR 1ST QUARTER 2022

- 1 Broad Market U.S. Equities outperformed U.S. Core Bonds
U.S. Equities outperformed International Equities
- 2 Developed International Equity outperformed Emerging Markets
- 3 U.S. Large Cap outperformed U.S. Small Cap
- 4 Value outperformed Growth among U.S. Equity indices



BEST AND WORST PERFORMING BENCHMARKS





EXECUTIVE SUMMARY

ERS TRUST DASHBOARD

Performance	CYTD	FYTD 2021
Total Trust	-1.7% (7)	2.0% (3)
Policy Index	-1.6% (7)	1.1% (16)
Excess Return	-0.1%	0.9%

Risk Statistics	5-Year		3-Year
	Sharpe Ratio	Sortino Ratio RF	Tracking Error
Total Trust	1.41 (3)	1.58 (7)	2.34%
Policy Index	1.15 (31)	1.34 (26)	-

Attribution Summary

Largest Contributors (Quarter)

Total Global Credit (+0.3%) and Global Public Equity (+0.1%) contributed positively versus the policy benchmark.

Largest Detractors (Quarter)

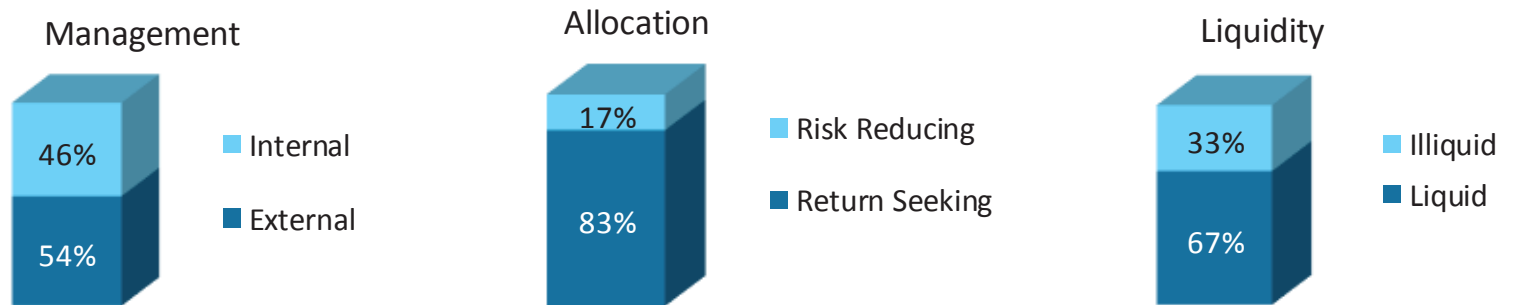
Private Equity (-0.2%) and Private Real Estate (-0.2%) contributed negatively versus the policy benchmark.



Note: Number in parentheses indicates percentile ranking among peers.

ERS TRUST DASHBOARD

Profile	
Market Value at March 31, 2022	\$35.21 Billion
Actuarial Accrued Liability August 31, 2021	\$44.2 Billion
Actuarial Value of Assets August 31, 2021	\$30.1 Billion
ERS Trust Funded Ratio August 31, 2021	68.0%
Actuarial Assumed Rate of Return	7.00%
Retirees and Beneficiaries August 31, 2021	120,294
Retirement Payments Year Ended August 31, 2021	\$2.79 Billion





PERFORMANCE SUMMARY

TOTAL TRUST PERFORMANCE DETAIL (NET OF FEES)

	Market Value	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Total Trust	\$35,211,542,388	-1.7% (7)	2.0% (3)	13.2% (1)	12.0% (14)	10.4% (7)	8.8% (25)
<i>Total Trust Policy Index</i>		-1.6% (7)	1.1% (16)	9.1% (20)	9.9% (67)	8.7% (64)	8.0% (57)
<i>Long Term Public Index</i>		-5.5% (91)	-4.2% (91)	4.2% (84)	11.2% (27)	9.6% (31)	8.4% (48)
InvMetrics Public DB > \$1B Net Median		-3.6%	-1.1%	6.9%	10.5%	8.9%	8.3%

- **One-year period ended March 31, 2022, the Trust outperformed the policy benchmark by 4.1% and ranked in the 1st percentile among its peers.**
- **In the one-year period, the Trust's assets increased from \$32.02 billion to \$35.21 billion. This includes a \$4.18 billion net investment gain within the one-year period and a \$609 million net investment loss within the first calendar quarter of 2022.**



Note: Long Term Public Index is comprised of 79% MSCI ACWI IMI and 21% Bloomberg Intermediate Treasury Index. Index definitions can be found in the appendix. Number in parentheses indicates percentile ranking among peers.

TOTAL TRUST PERFORMANCE DETAIL (NET OF FEES)

3 Years Ending March 31, 2022

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio	Sortino Ratio RF
Total Trust	11.98% (14)	8.01% (12)	1.41 (4)	1.58 (10)
Total Trust Policy Index	9.88% (67)	8.04% (13)	1.15 (28)	1.34 (20)

5 Years Ending March 31, 2022

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio	Sortino Ratio RF
Total Trust	10.41% (7)	7.15% (12)	1.31 (3)	1.47 (7)
Total Trust Policy Index	8.66% (64)	7.54% (21)	1.01 (31)	1.16 (26)

- **Three-year ended March 31, 2022, the Trust outperformed the benchmark by 2.1% and ranked in the 14th percentile among its peers.**
- **Five-year ended March 31, 2022, the Trust outperformed the benchmark by 1.8% and ranked in the 7th percentile.**
- **On a risk-adjusted basis, the three-year and five-year Sharpe and Sortino Ratios outperformed the benchmark, indicating that active management benefitted the plan.**
- **The three-year and five-year Trust returns have outperformed the actuarial rate of return.**



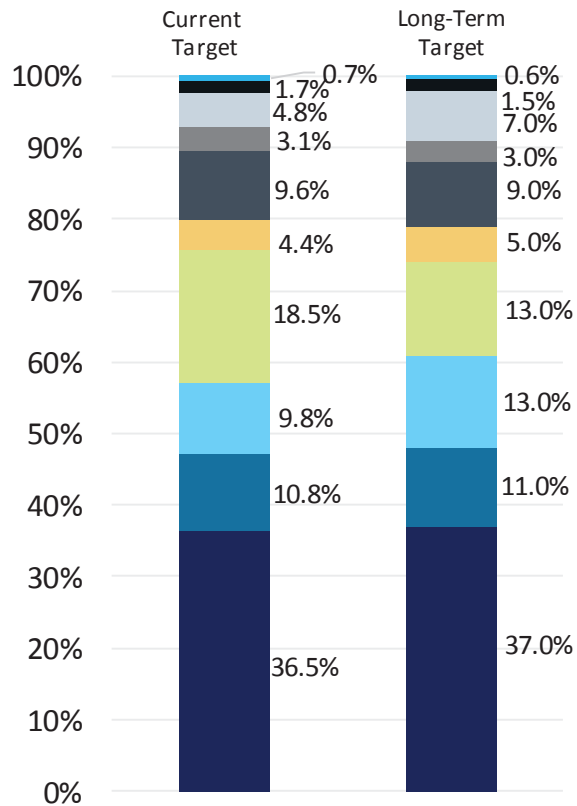
Note: Long Term Public Index is comprised of 79% MSCI ACWI IMI and 21% Bloomberg Intermediate Treasury Index. Index definitions can be found in the appendix. 99
 Number in parentheses indicates percentile ranking among peers.

TOTAL TRUST ASSET GROWTH SUMMARY

	Summary of Cash Flows				
	Last Three Months	Fiscal Year-To-Date	One Year	Three Years	Five Years
Beginning Market Value	\$36,195,726,325	\$34,909,583,238	\$32,023,039,283	\$28,285,241,189	\$26,285,425,950
Contributions	\$2,939,436,204	\$8,472,138,265	\$19,752,850,620	\$48,128,119,988	\$66,588,485,978
Withdrawals	-\$3,313,709,594	-\$8,875,724,573	-\$20,741,120,588	-\$51,760,431,571	-\$72,558,188,828
Net Cash Flow	-\$374,273,390	-\$403,581,074	-\$988,264,734	-\$3,632,096,650	-\$5,957,578,068
Net Investment Change	-\$609,910,546	\$705,540,224	\$4,176,767,839	\$10,558,397,849	\$14,883,694,506
Ending Market Value	\$35,211,542,388	\$35,211,542,388	\$35,211,542,388	\$35,211,542,388	\$35,211,542,388



TRUST ASSET ALLOCATION VS. POLICY TARGETS

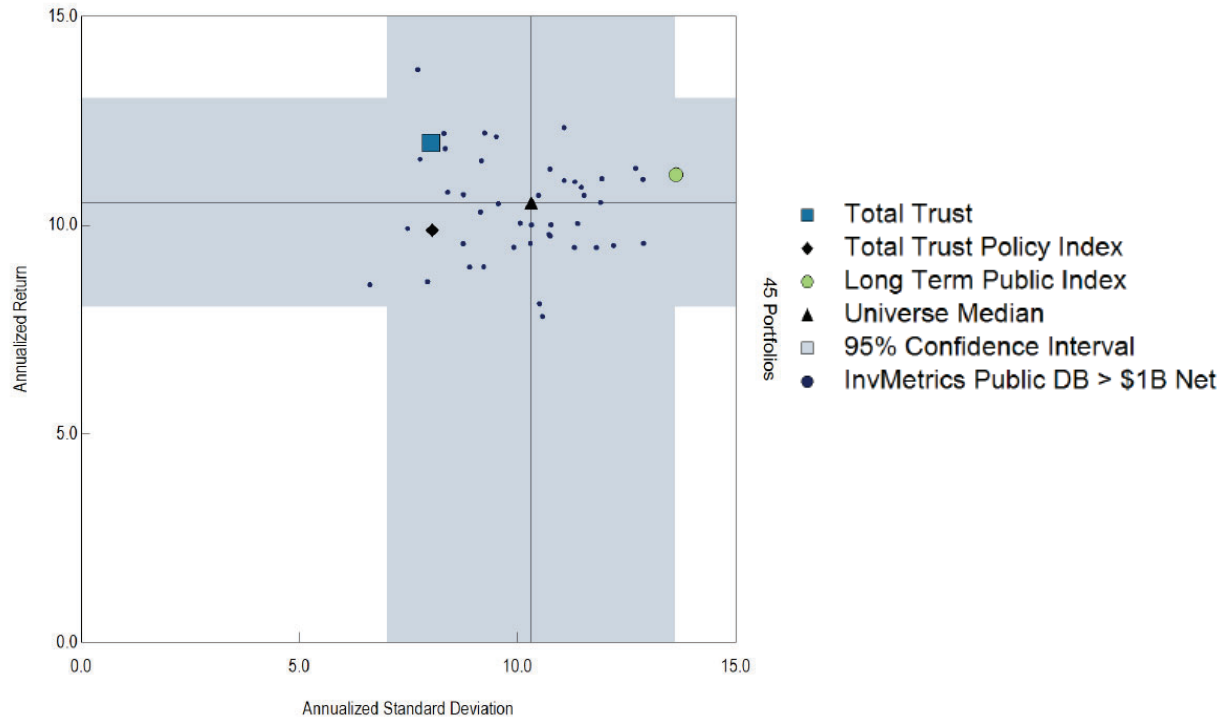


Asset Allocation on March 31, 2022				
	Current	Current	Long-Term Target	Long-Term Target Range
Public Equity	\$12,851,219,036	36.5%	37.0%	27.0% - 47.0%
Total Rates	\$3,807,233,807	10.8%	11.0%	--
Global Credit	\$3,455,138,754	9.8%	13.0%	1.0% - 21.0%
Private Equity	\$6,515,622,113	18.5%	13.0%	8.0% - 18.0%
Absolute Return	\$1,565,759,278	4.4%	5.0%	0.0% - 10.0%
Real Estate - Private	\$3,382,732,376	9.6%	9.0%	4.0% - 14.0%
Real Estate - Public	\$1,090,860,781	3.1%	3.0%	0.0% - 13.0%
Infrastructure	\$1,691,398,291	4.8%	7.0%	2.0% - 12.0%
Cash	\$588,902,705	1.7%	1.5%	--
Special Situations	\$262,675,249	0.7%	0.6%	0.0% - 5.0%
Total	\$35,211,542,388	100%	100.0%	



TOTAL TRUST RISK/RETURN

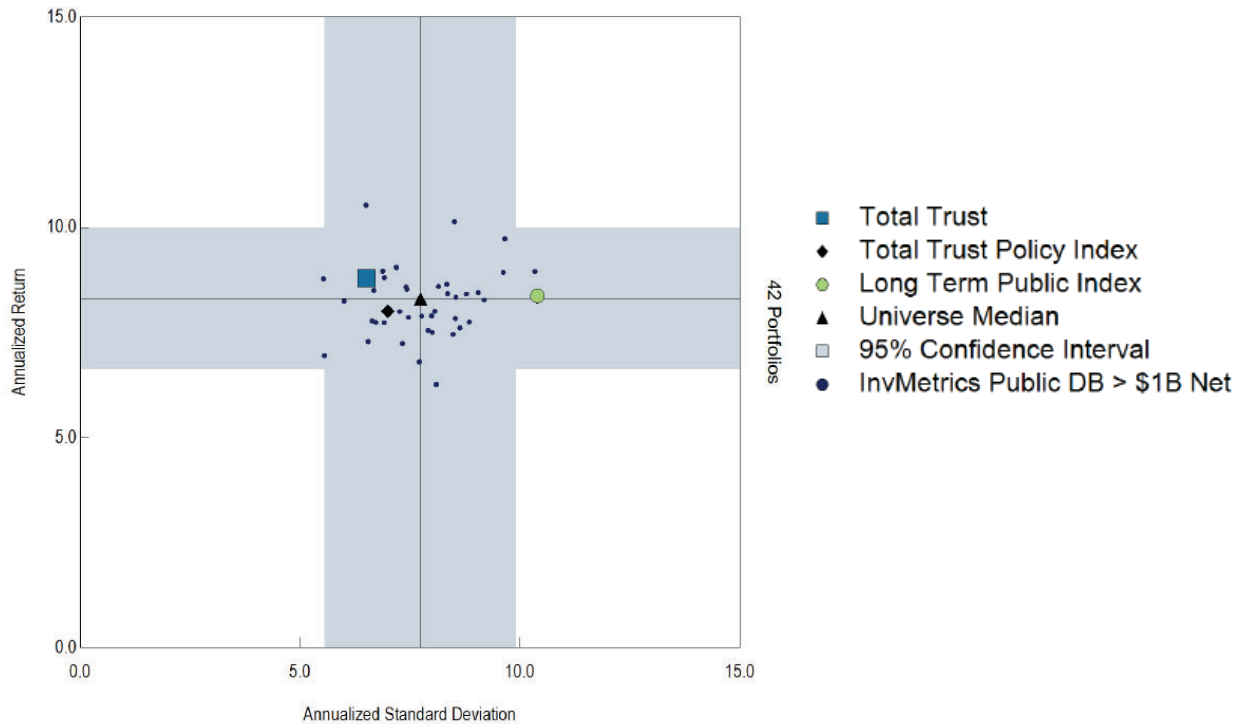
3 Years Ending March 31, 2022



Note: Long Term Public Index is comprised of 79% MSCI ACWI IMI and 21% Bloomberg Intermediate Treasury Index. Index definitions can be found in the appendix.

TOTAL TRUST RISK/RETURN

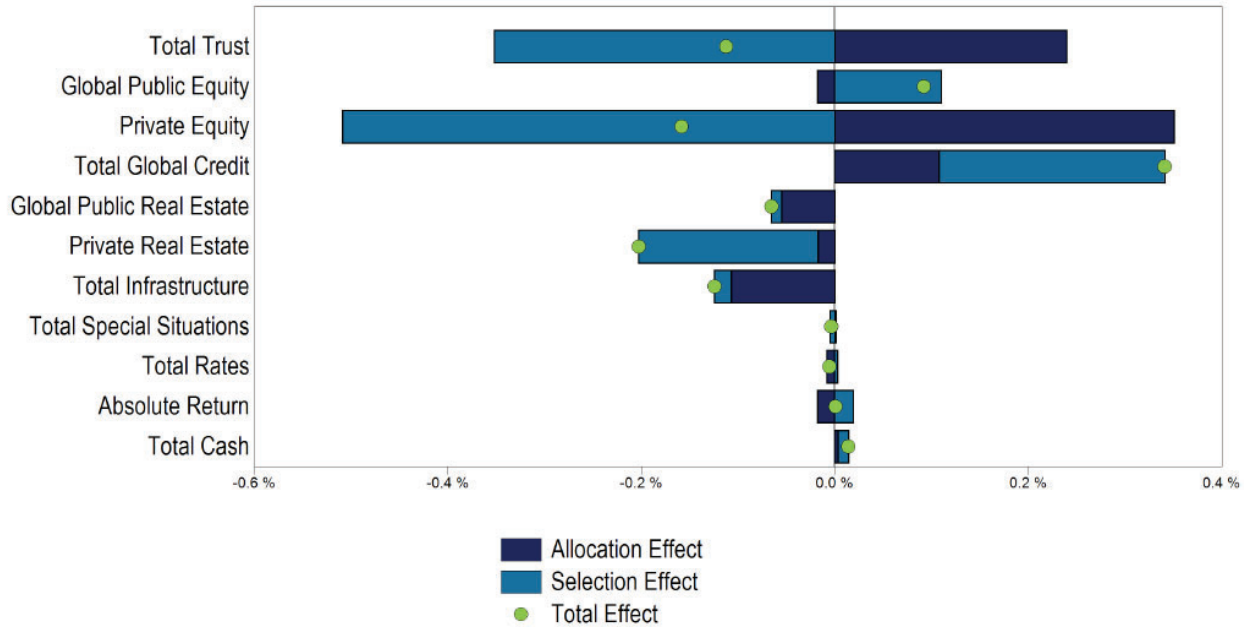
10 Years Ending March 31, 2022



Note: Long Term Public Index is comprised of 79% MSCI ACWI IMI and 21% Bloomberg Intermediate Treasury Index. Index definitions can be found in the appendix.

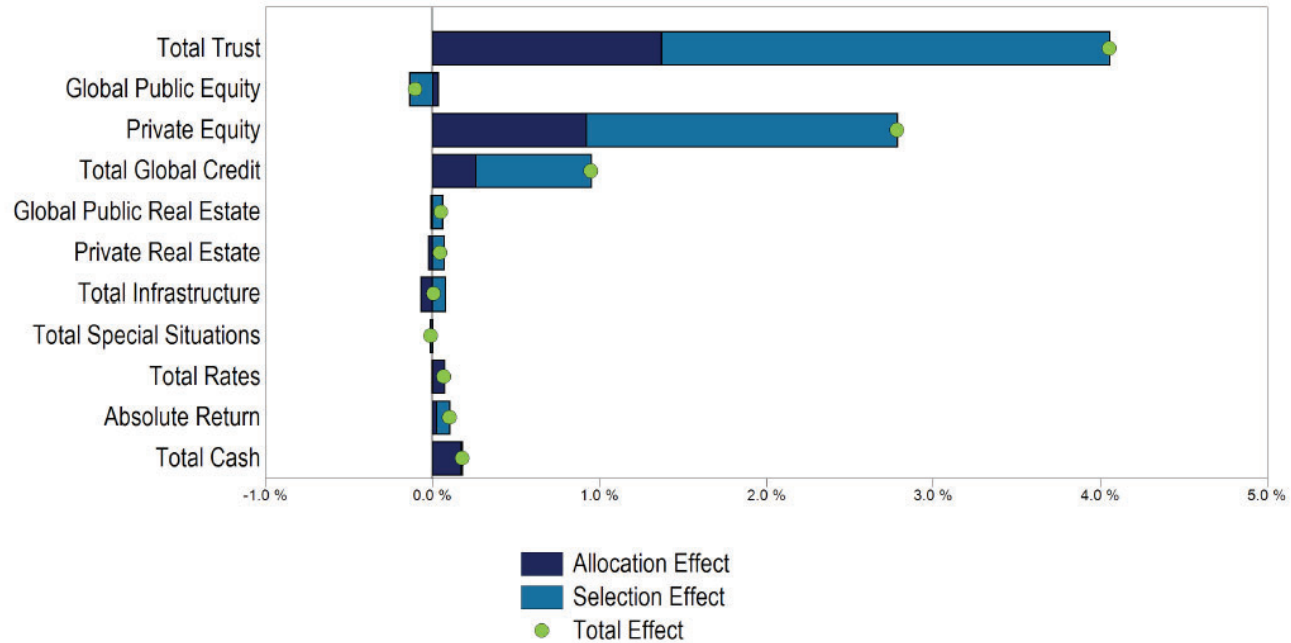
TOTAL TRUST ATTRIBUTION ANALYSIS

Attribution Effects
3 Months Ending March 31, 2022



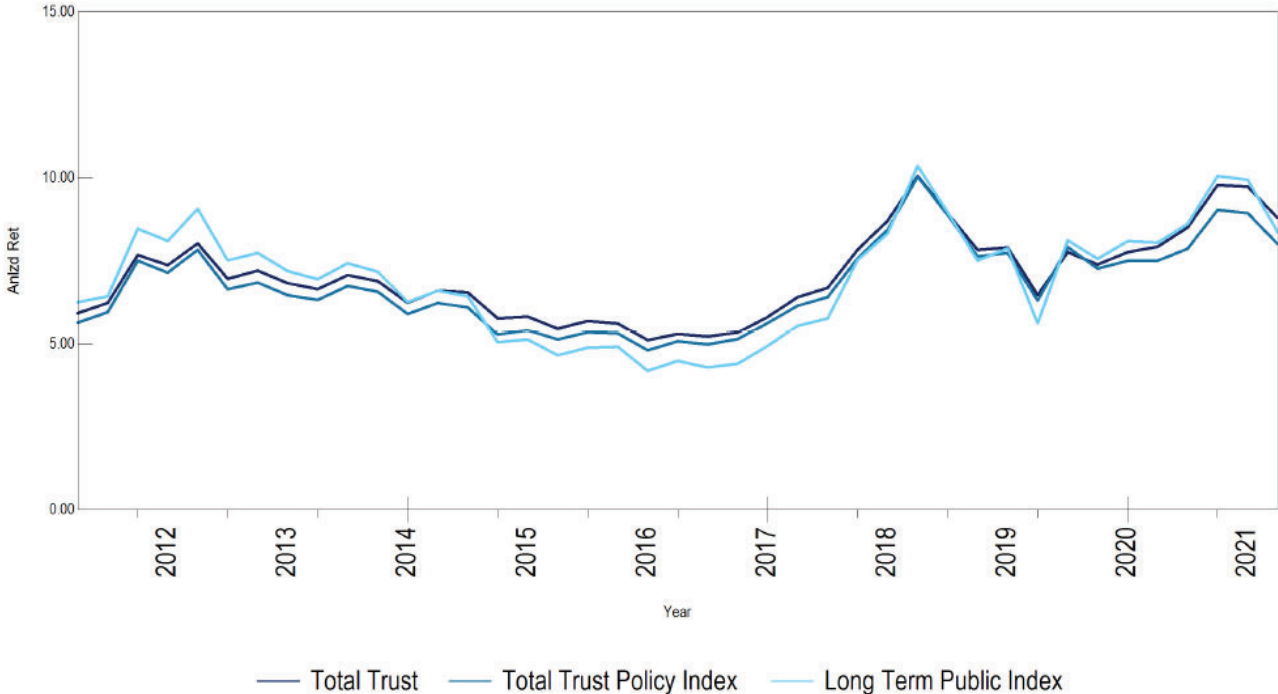
TOTAL TRUST ATTRIBUTION ANALYSIS

Attribution Effects 1 Year Ending March 31, 2022



LONG TERM INVESTMENT RESULTS

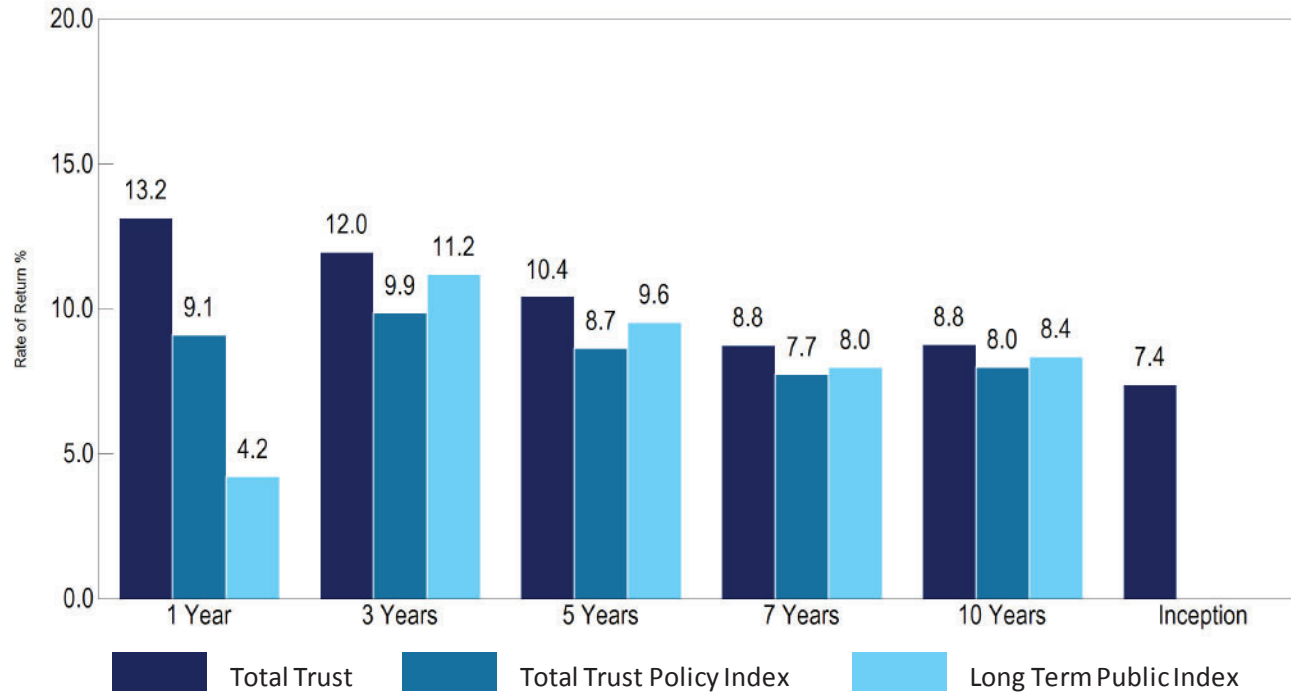
Rolling 10 Year Annualized Return (%)



Note: Long Term Public Index is comprised of 79% MSCI ACWI IMI and 21% Bloomberg Intermediate Treasury Index. Index definitions can be found in the appendix.

LONG TERM INVESTMENT RESULTS

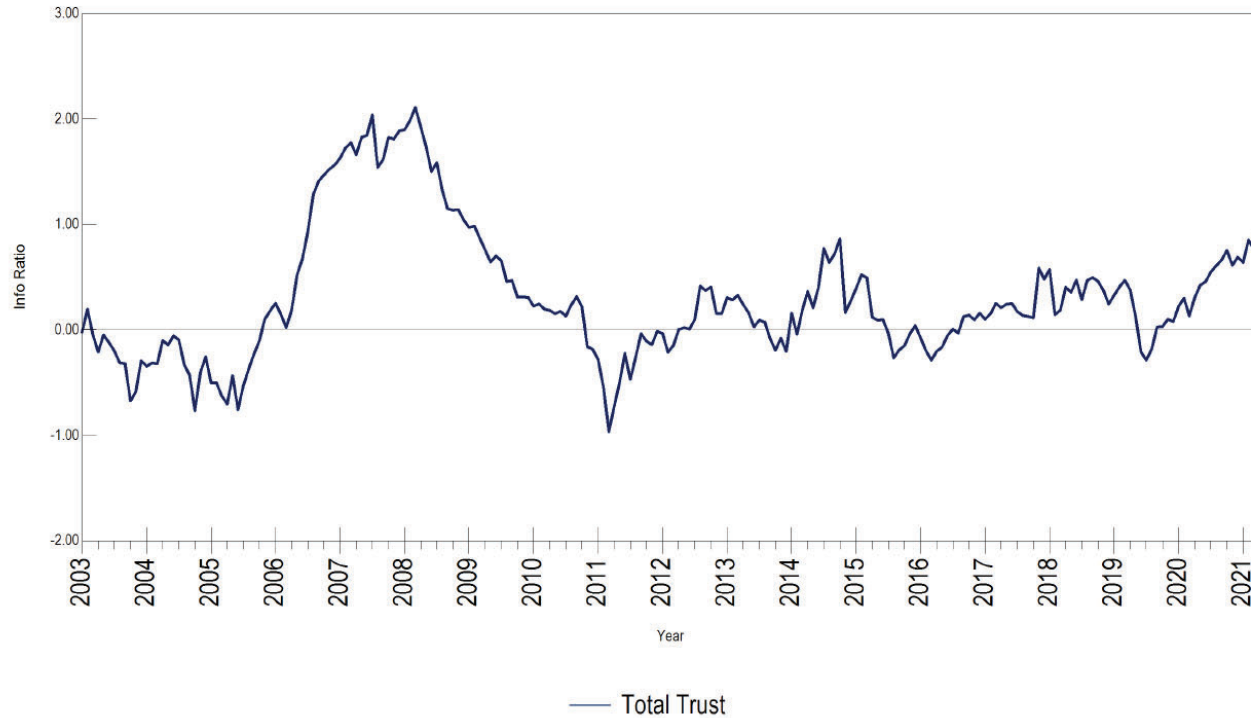
Return Summary Ending March 31, 2022



Note: Long Term Public Index is comprised of 79% MSCI ACWI IMI and 21% Bloomberg Intermediate Treasury Index. Index definitions can be found in the appendix.

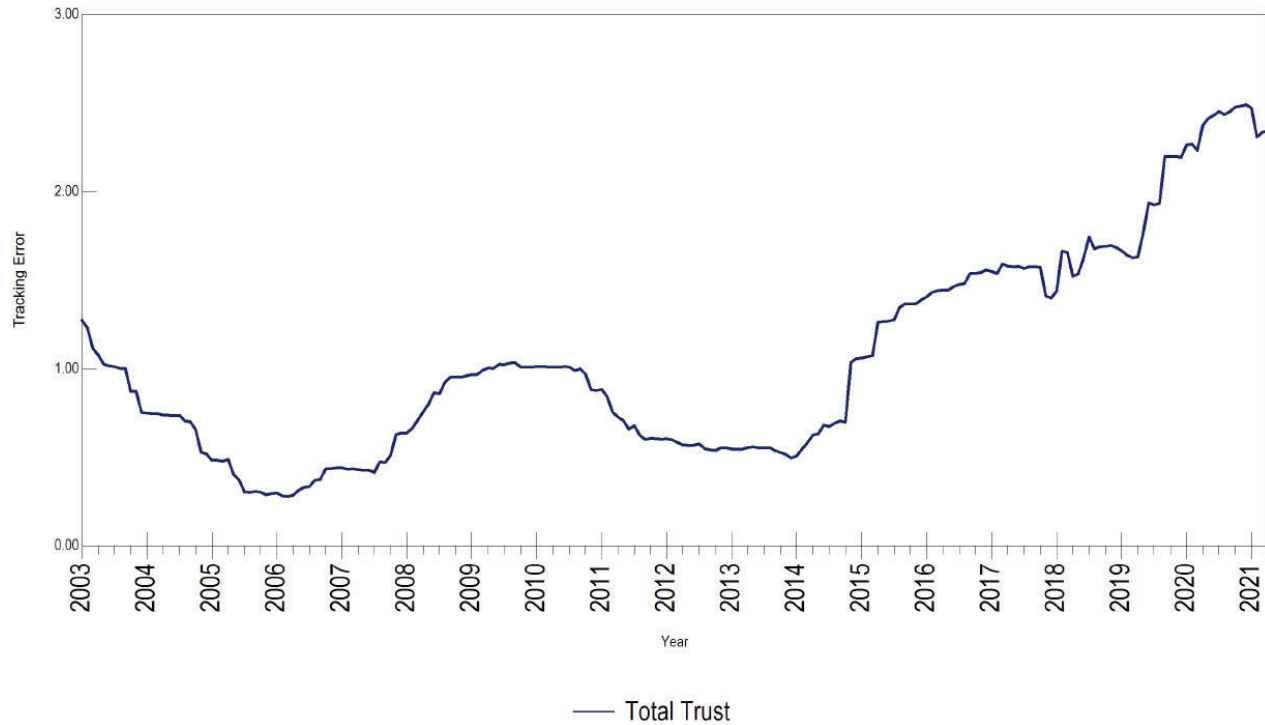
ROLLING INFORMATION RATIO

Rolling 3 Year Information Ratio



ROLLING TRACKING ERROR

Rolling 3 Year Tracking Error



PERFORMANCE SUMMARY COMMENTARY

- Over the past 10 years, Total Trust returns outperformed the policy benchmark by 0.8% and outperformed the Plan's actuarial rate of return (currently 7.0%).
- In the one-year ended March 31, 2022, the Trust outperformed the policy benchmark by 4.1%.
 - Private Equity contributed +2.8%, Global Credit contributed +0.9%, Total Rates contributed +0.1%, and Absolute Return contributed +0.1% versus the policy benchmark.
- In the past one-year, portfolio positioning at the asset class level contributed +1.4% to Total Trust returns versus the policy benchmark.
 - An overweight position to Private Equity contributed positively (+0.9%) to Total Trust returns versus the policy benchmark.
 - An underweight position in Global Credit contributed positively (+0.3%) to Total Trust returns versus the policy benchmark.



Risk Management & Applied Research Risk Update

Carlos Chujoy, CFA, Director of Risk Management & Applied Research

Risk Update

Agenda



- Key Takeaways
- Headwinds and Tailwinds
- Market Conditions
- ERS Trust Review

Risk Update

Key Takeaways



- Several concerns drove market sentiment and stress levels during the quarter
 - Geopolitical tensions
 - Interest rates on the rise
 - Recession fears
 - Growth concerns
- Risk indicators at stressed levels
- Sharp sell off and elevated market pessimism
- Commodities were a highlight for the quarter
- The ERS Trust performed well

Risk Update

First Quarter Of 2022 Update



Headwinds

- Geopolitical tensions
- Deceleration of commodity flows
- Acceleration of pace of rate increases
- High inflation readings and lower economic projections
- US housing demand to cool off

Tailwinds

- Global Central Bank tightening to slowdown due to geopolitical risk
- Oil price shock needs to be high and persistent to impact growth on a sustained basis
- Oversold conditions for segments in equity markets
- Cross-asset valuations lowered

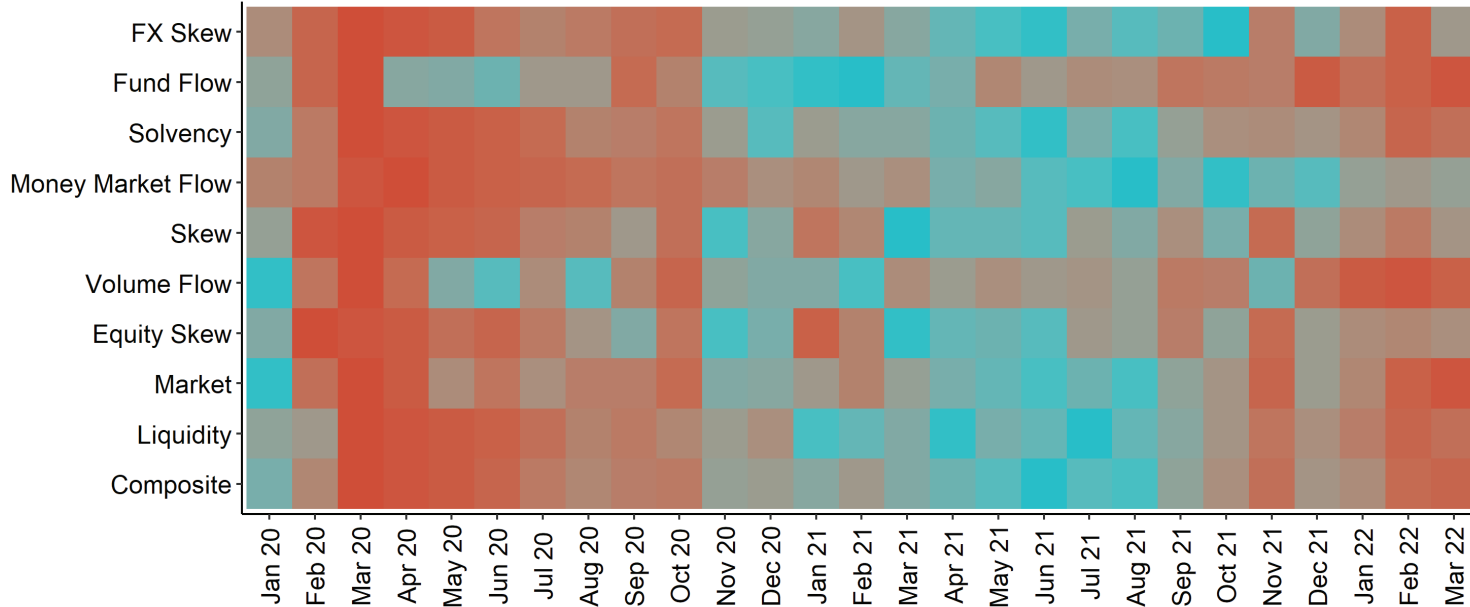
Risk Update

Global Financial Stress Indicators



Heatmap of Global Stress Financial Indicators

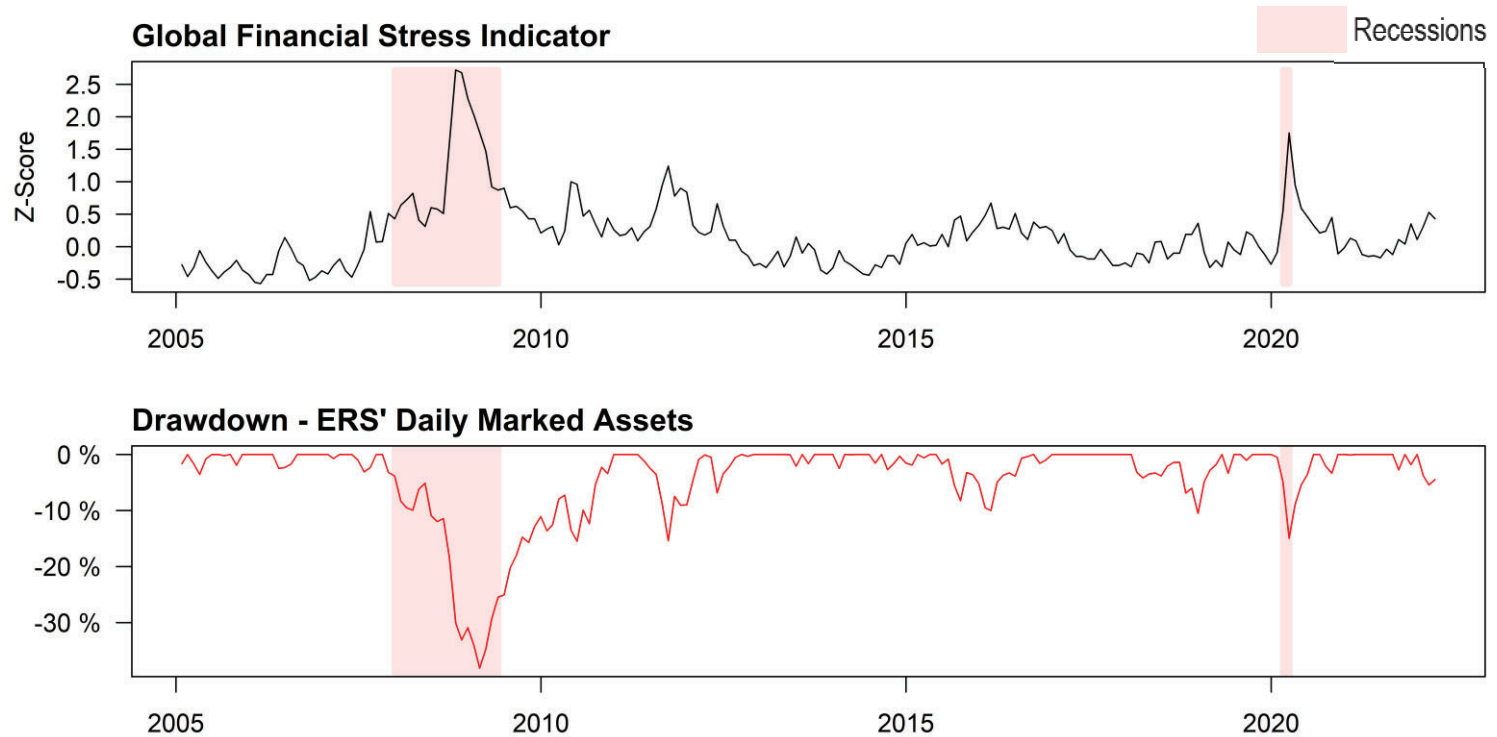
Breadth Of Stress Indicators - High



Source: ERS, Bloomberg, Bank of America

Risk Update

Stress Indicator And ERS Drawdown



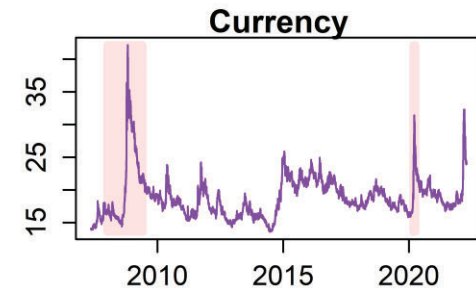
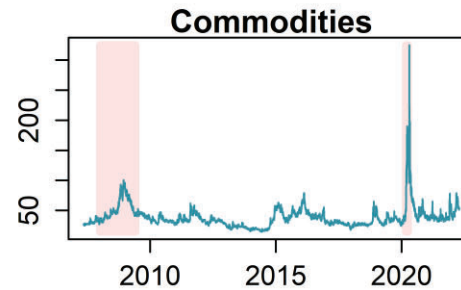
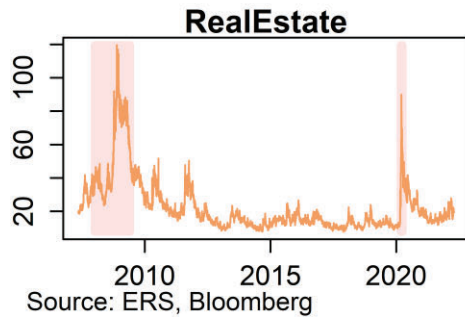
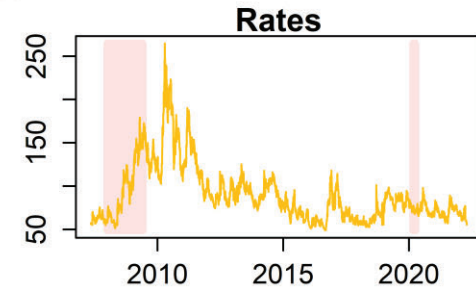
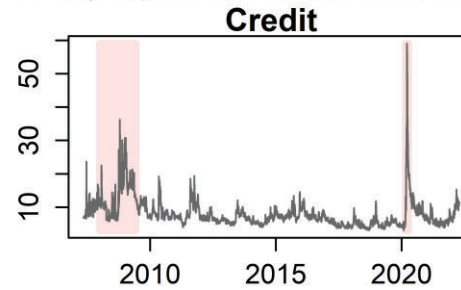
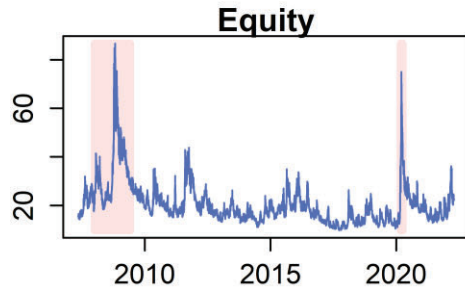
Source: ERS, Bloomberg

Risk Update

Cross Asset Class Risk

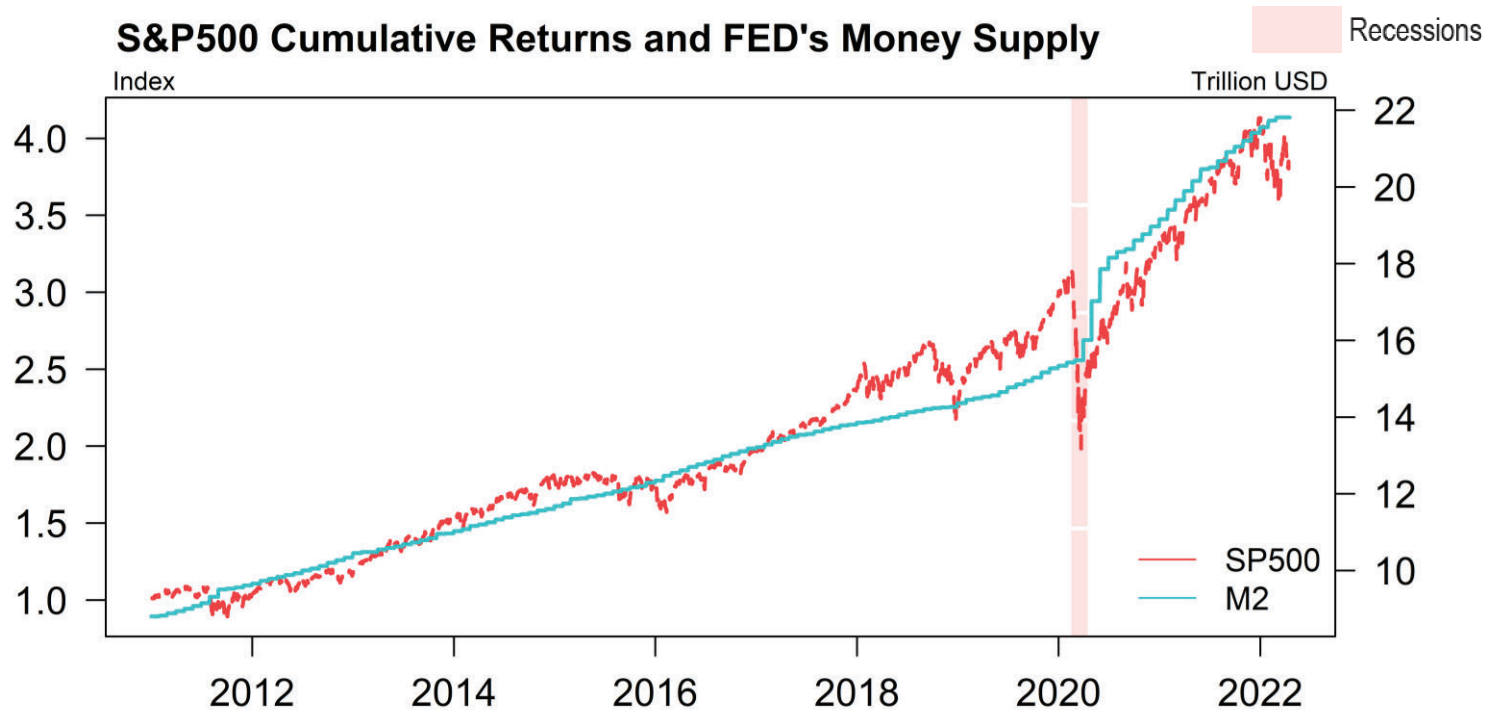
Monthly Cross Asset Class Volatility
30-day implied risk across asset classes

Recessions



Risk Update

Liquidity And Market Performance



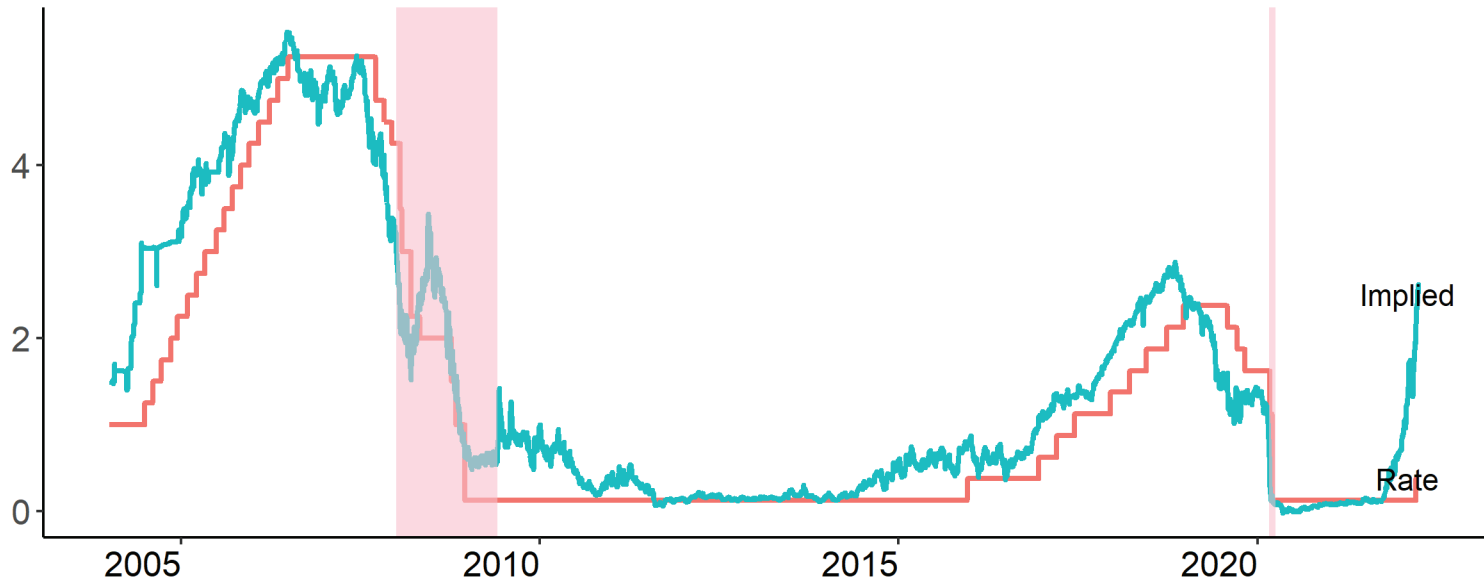
Source: ERS, Bloomberg

Risk Update

Interest Rate Risk

Fed Funds Futures

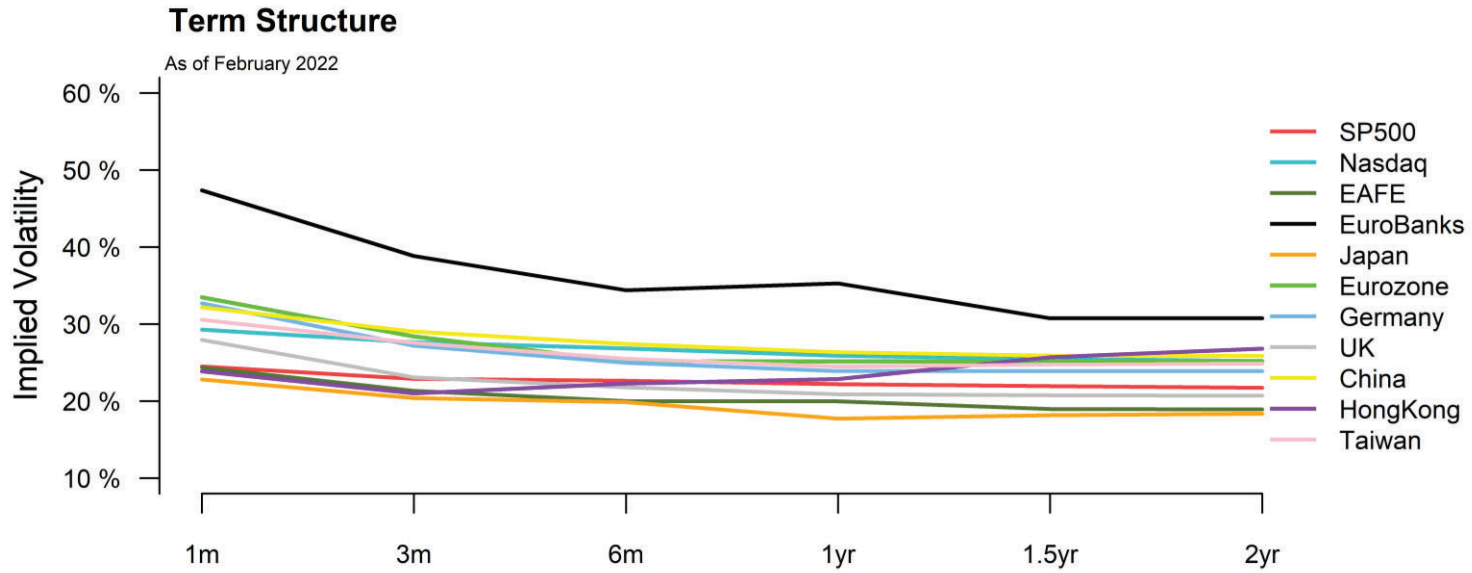
Imply 8 rate hikes over the coming year



Source: ERS, Bloomberg

Risk Update

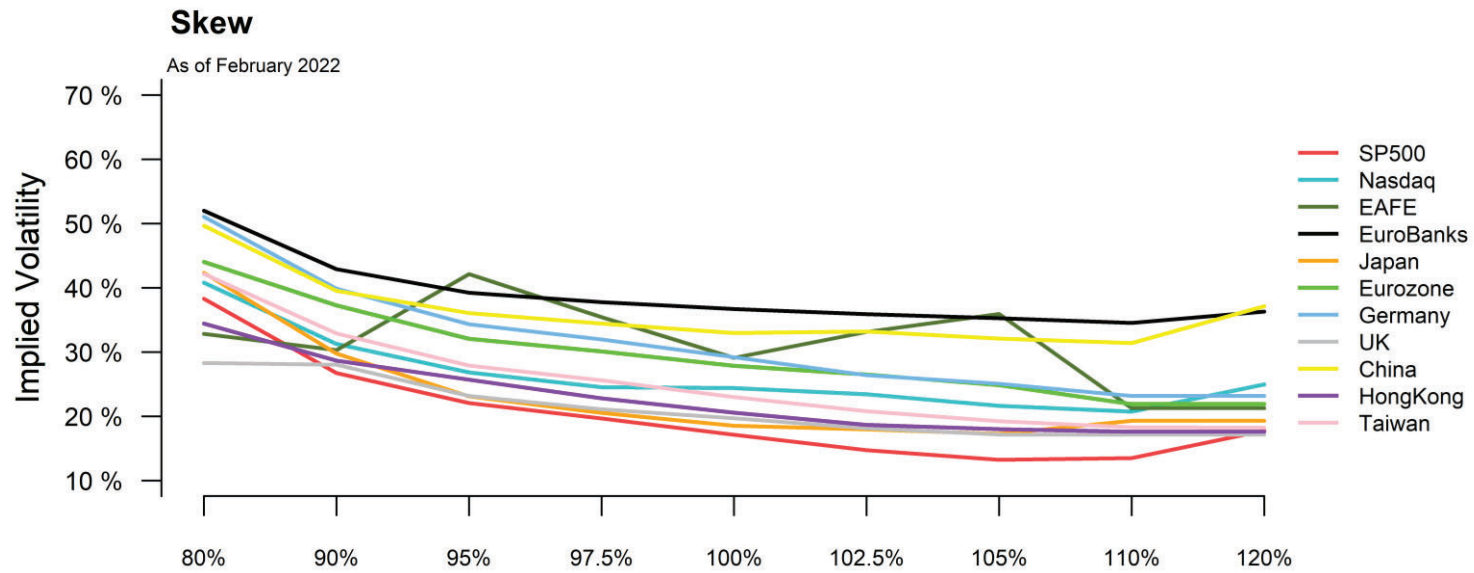
Price Of Risk Over An Investment Period



Source: ERS, Bloomberg

Risk Update

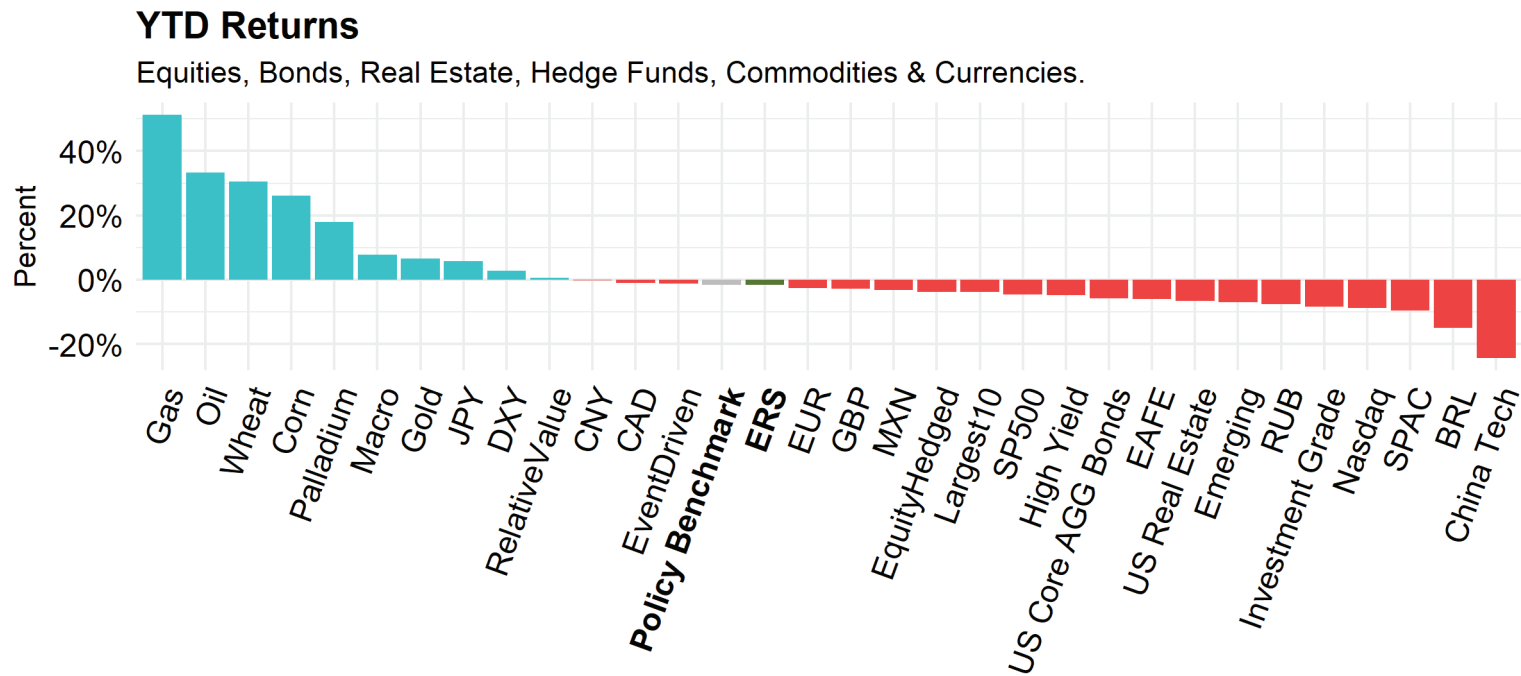
Demand For Downside Protection



Source: ERS, Bloomberg

Risk Update

Commodities And Rest Of The Market



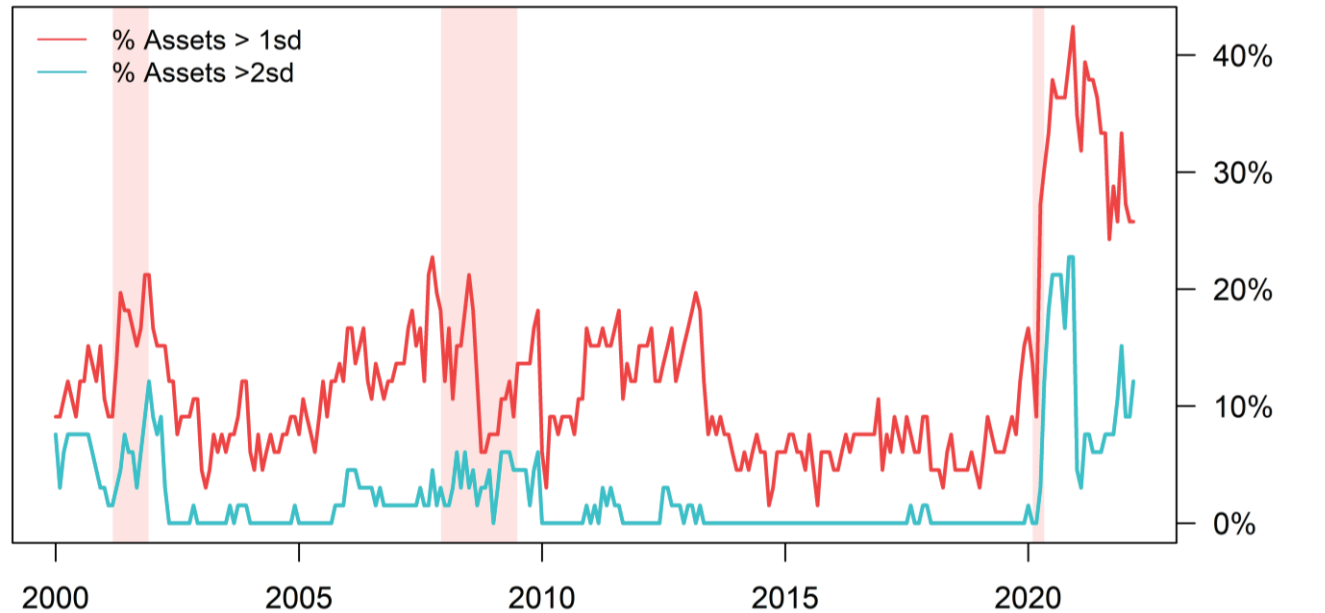
Source: ERS, Bloomberg

Risk Update

Cross Asset Class Valuation



Percent Assets Trading Expensive



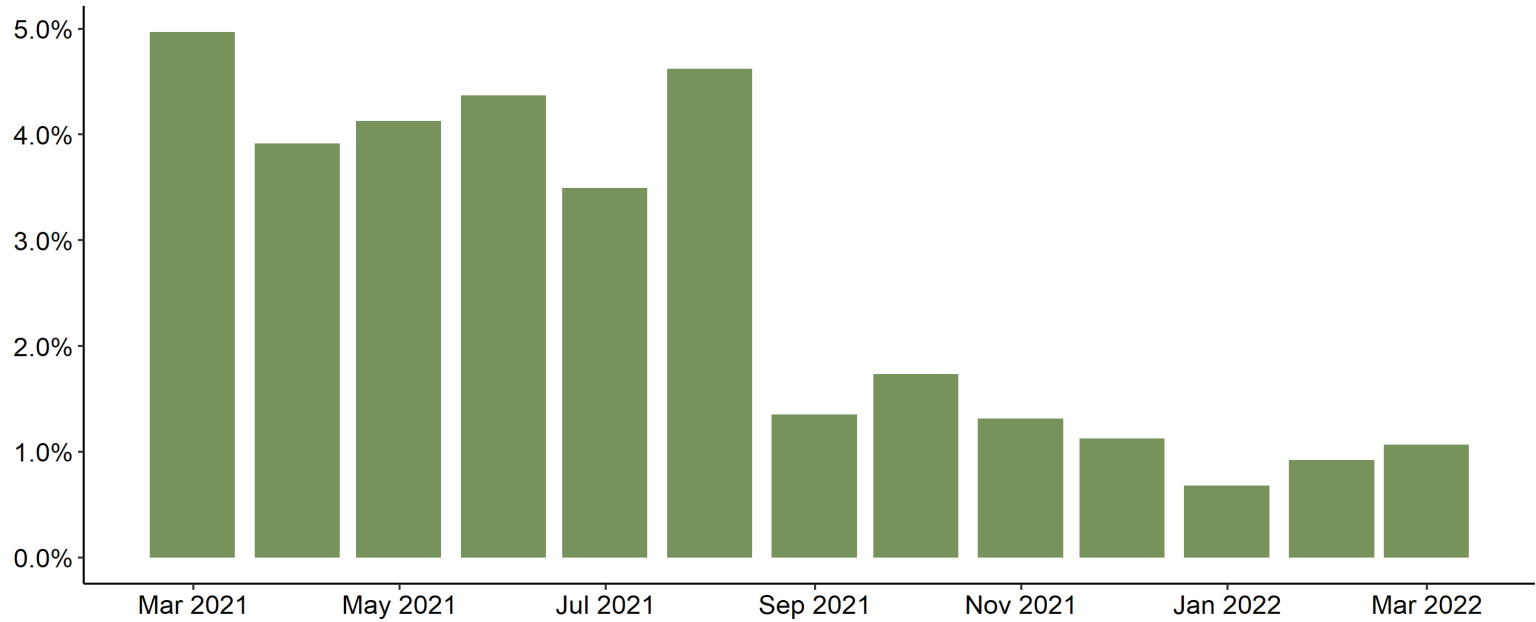
Source: ERS, Bloomberg

Risk Update

Trust Positioning



ERS' Return Seeking Relative Policy Weight



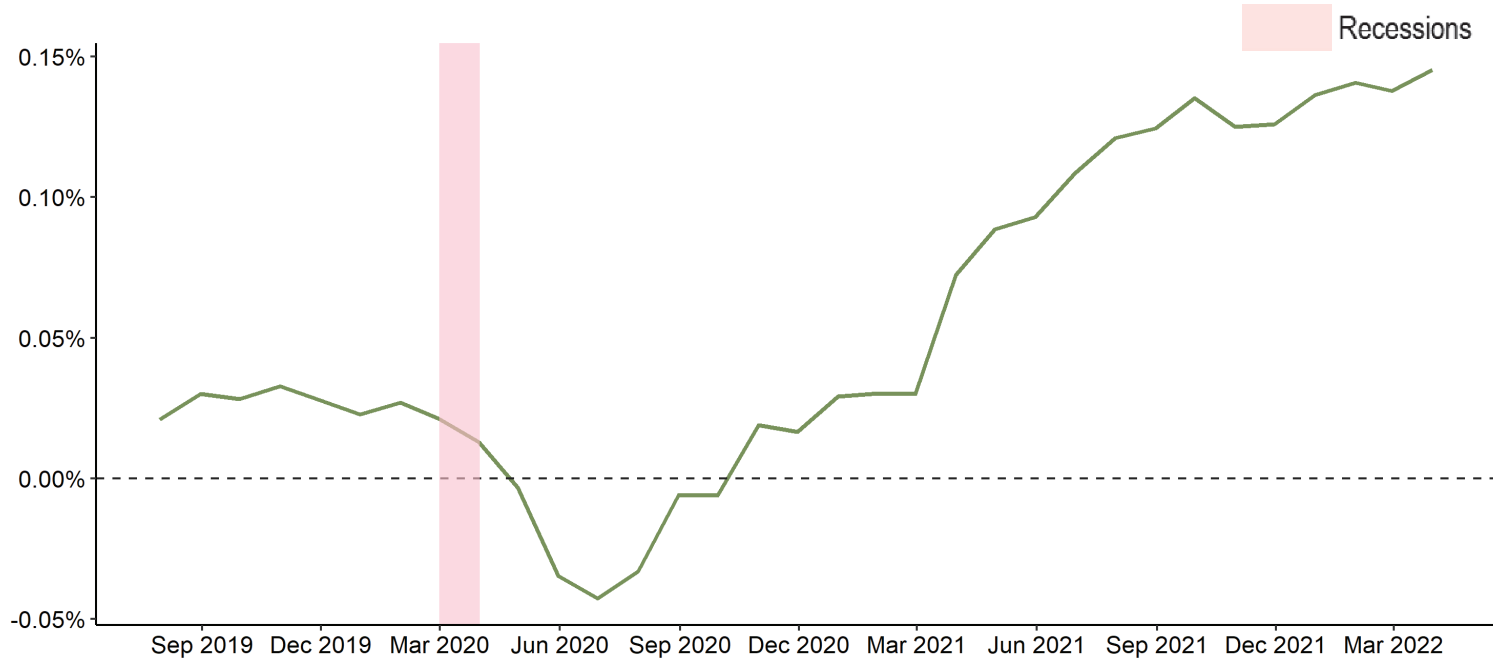
Source: ERS, BNYM

Risk Update

Healthy Excess Return Despite Market Correction



ERS' Rolling 5-Year Monthly Excess Returns



Source: ERS, BNYM

Risk Update

Asset Class Correlation



Asset Class Correlations Against Total Plan Returns

Rolling 12-months



Source: ERS, BNYM

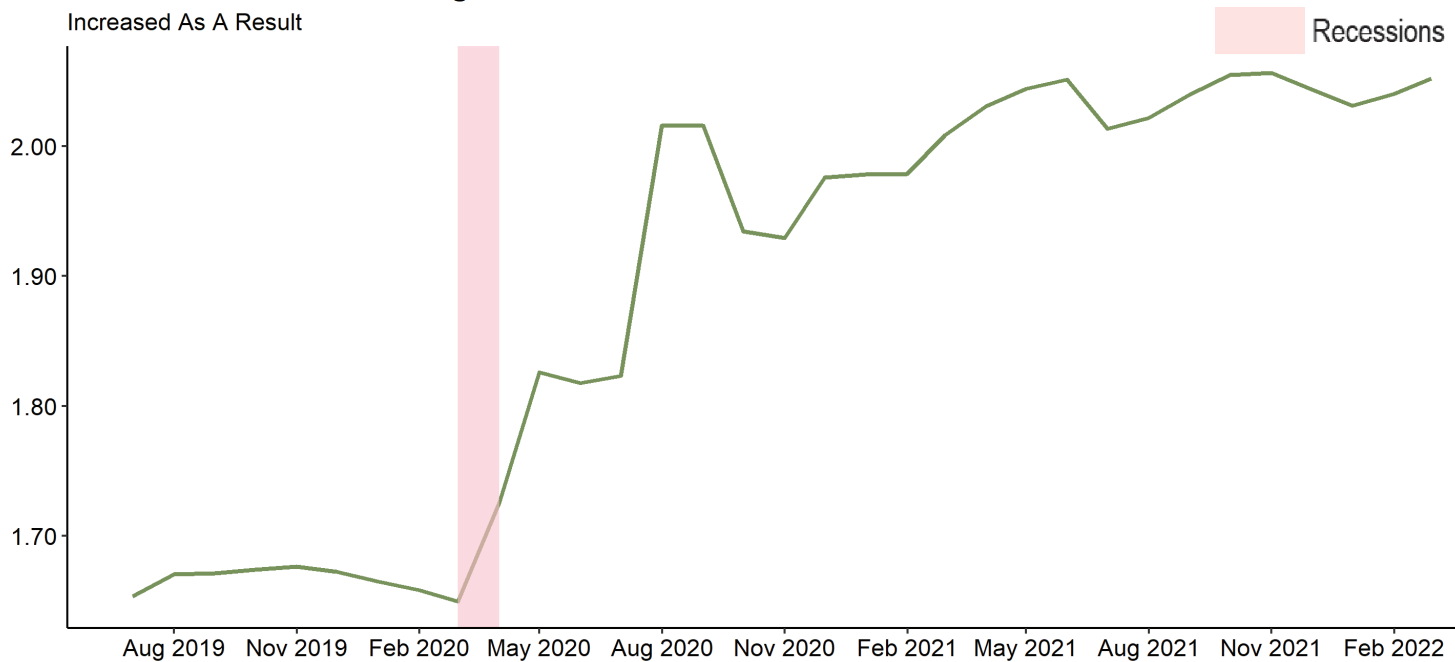
Risk Update

Plan Level Tracking Error



ERS' Trust Returns Tracking Error

Increased As A Result



Source: ERS, BNYM

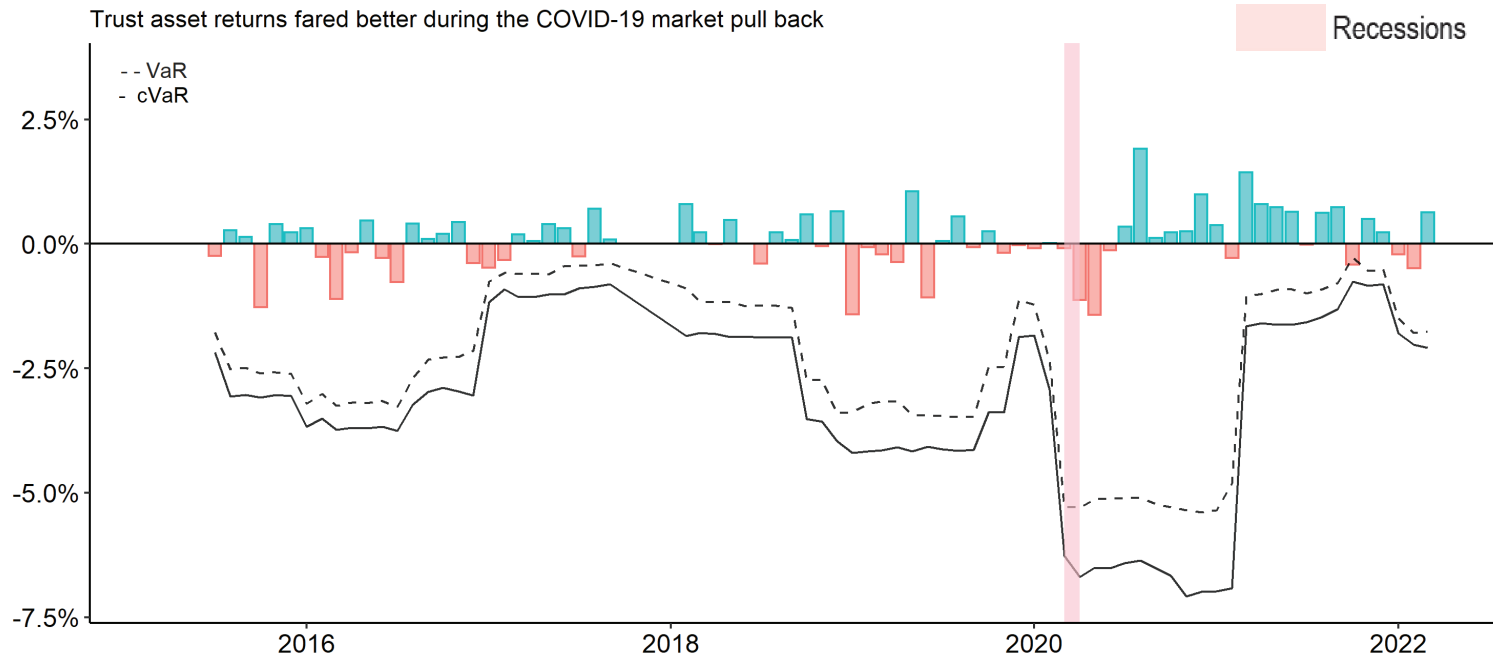
Risk Update

Left Tail Risk



ERS' Monthly Excess Return and Left Tail Risk

Trust asset returns fared better during the COVID-19 market pull back



Source: ERS, BNYM

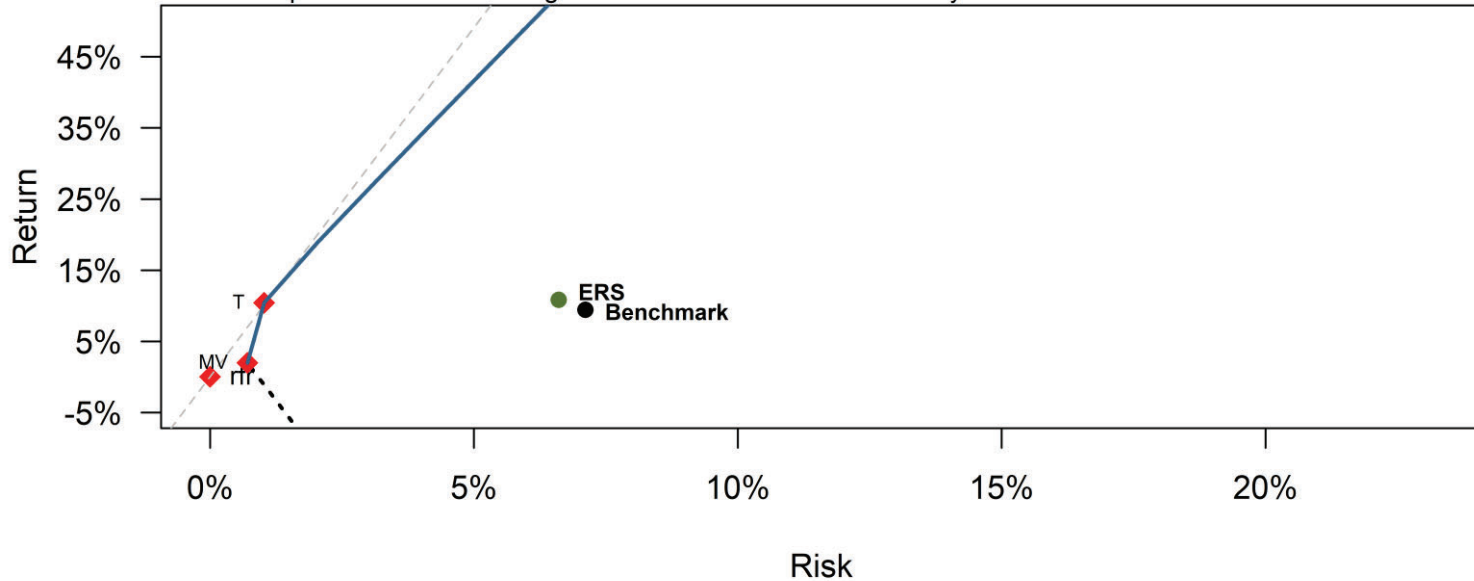
Risk Update

Risk-Adjusted Returns



Efficient Frontier

ERS' Trust performance shows higher returns and lower risk vs Policy Benchmark



Questions?

Public Agenda Item #12

Consideration of 2022 Asset Liability Study

May 11, 2022

David T. Veal, Chief Investment Officer

Rob Goldthorpe, NEPC

Sam Austin, Partner, NEPC

PRELIMINARY ASSET-LIABILITY STUDY

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

APRIL 2022

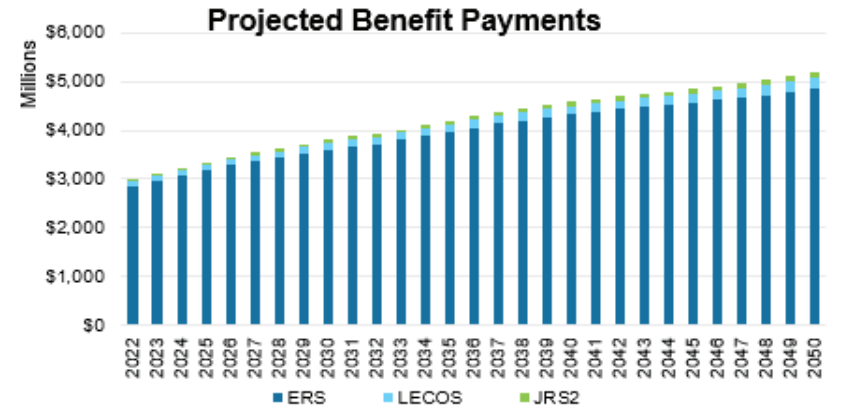
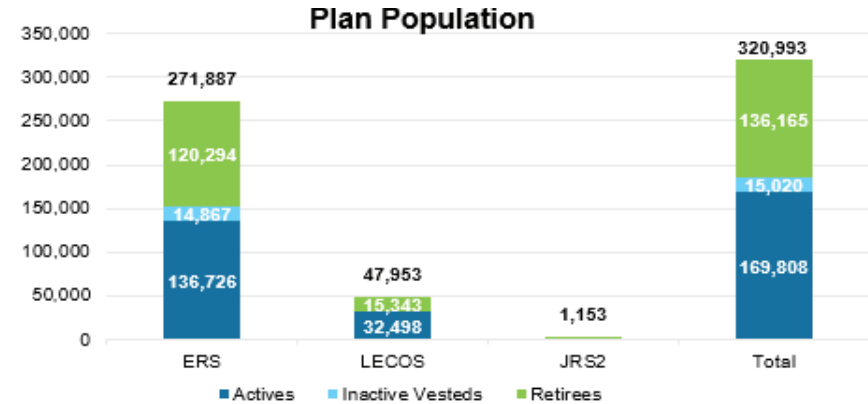


PROPRIETARY & CONFIDENTIAL

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

PLAN CHARACTERISTICS

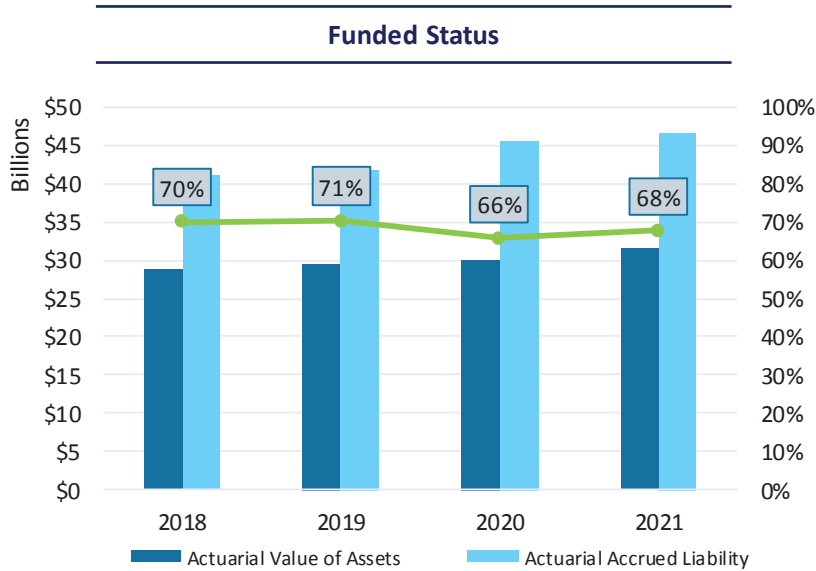
- **Texas ERS administers 3 pension plans**
 - Employees Retirement System (ERS)
 - Law Enforcement and Custodial Officer Supplemental Retirement Fund (LECOS)
 - Judicial Retirement System Plan 2 (JRS2)
- **ERS is by far the main cost driver**
 - 85% of all participants and 95% of all liabilities
- **As of August 31, 2021 Texas ERS is 68.0% funded based on a smoothed asset value**
 - 76.0% funded on a market value basis
- **Due to recent legislative changes, ERS is now on a better path toward full funding**
 - “Legacy Payments” are now appropriated in order to reach full funding by 2054
- **Asset allocation has followed a diversified total return approach with a mix of public and private equity, debt and real estate along with hedge funds**
 - 30-yr expected return of 6.6% vs. 7.0% liability discount rate



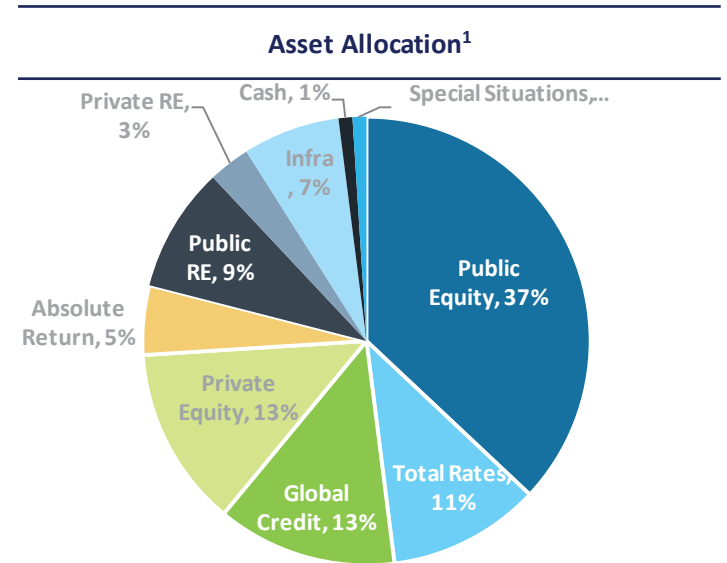
Source: GPS

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

PLAN RISK PROFILE



Liability Discount Rate	7.0%
Funded Status	68.0%



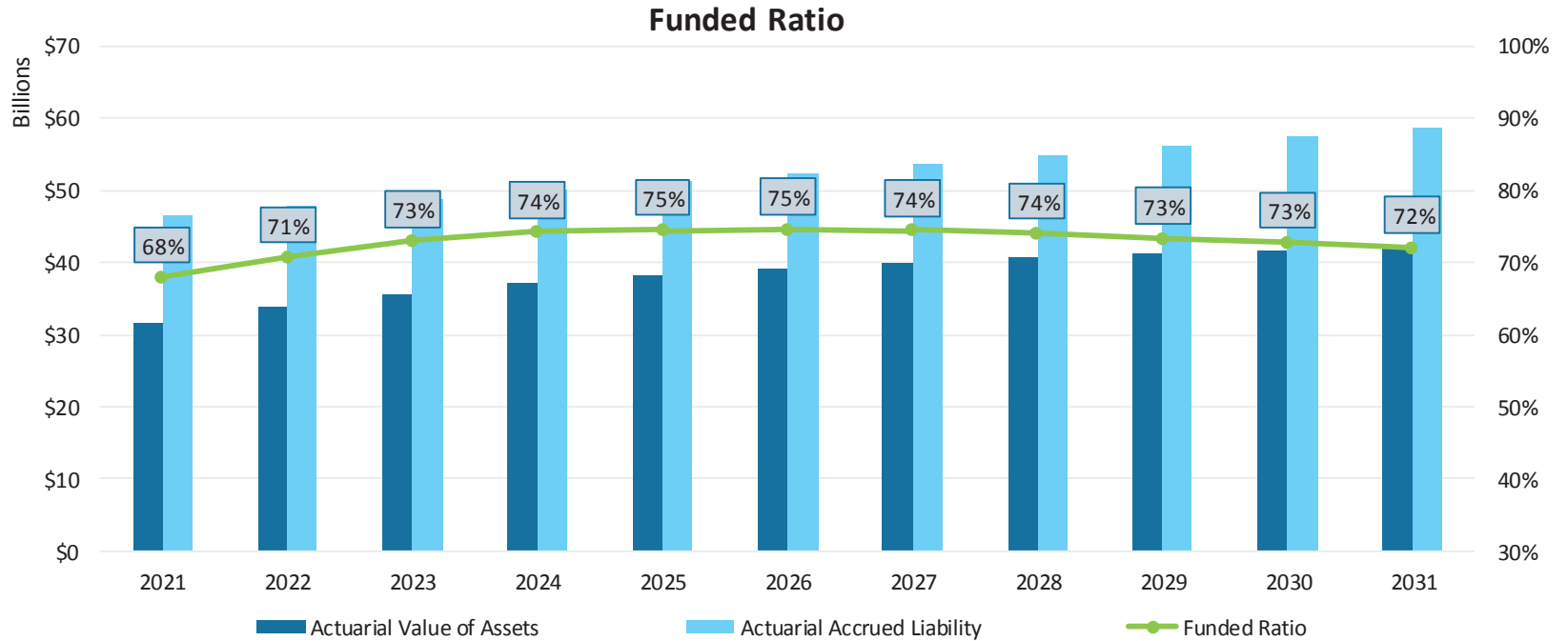
Expected Return on Assets (10 years)	5.4%
Expected Return on Assets (30 years)	6.6%
Asset Volatility	12.4%



Notes: ¹Current Policy targets

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

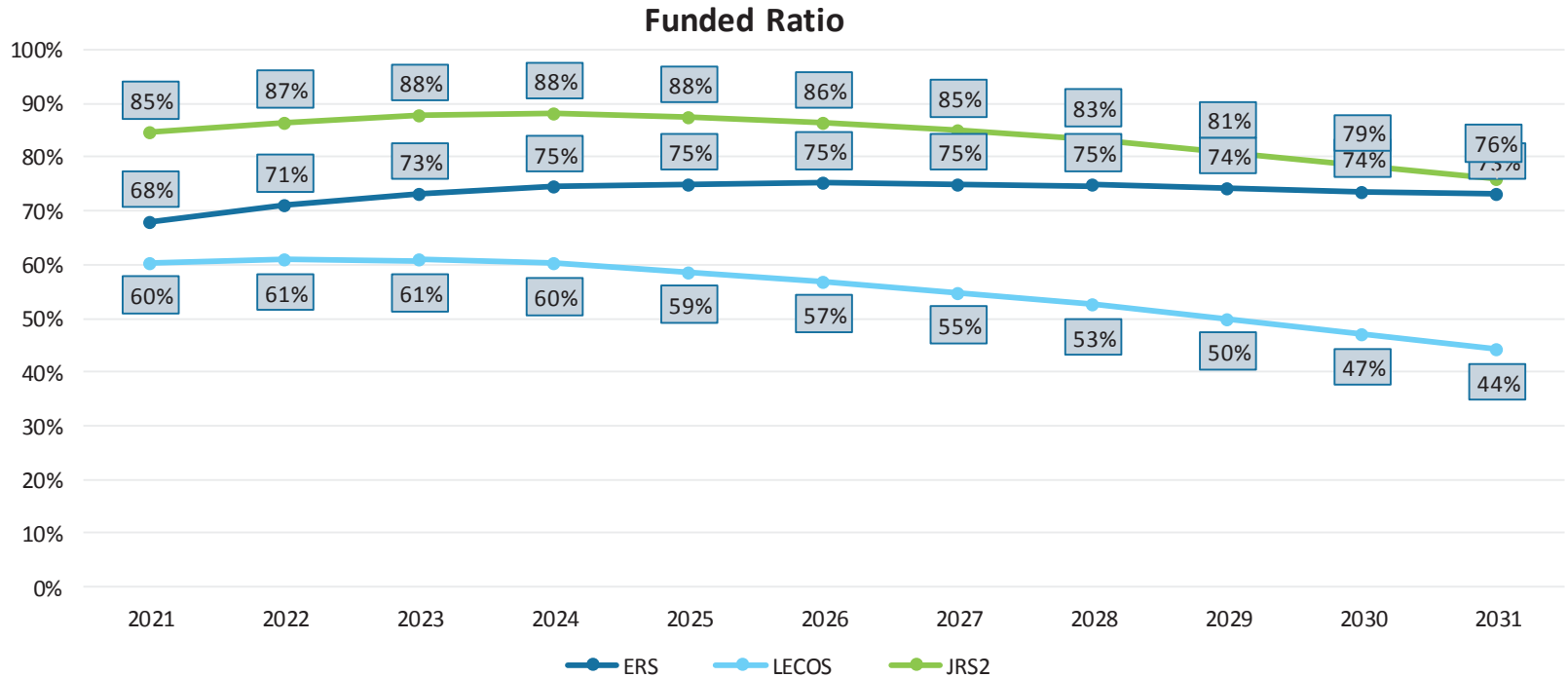
10-YR FUNDED STATUS PROJECTION – TOTAL SYSTEM



Notes: As of August 31; Assumes Current Policy allocation 10-yr expected return of 5.4% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

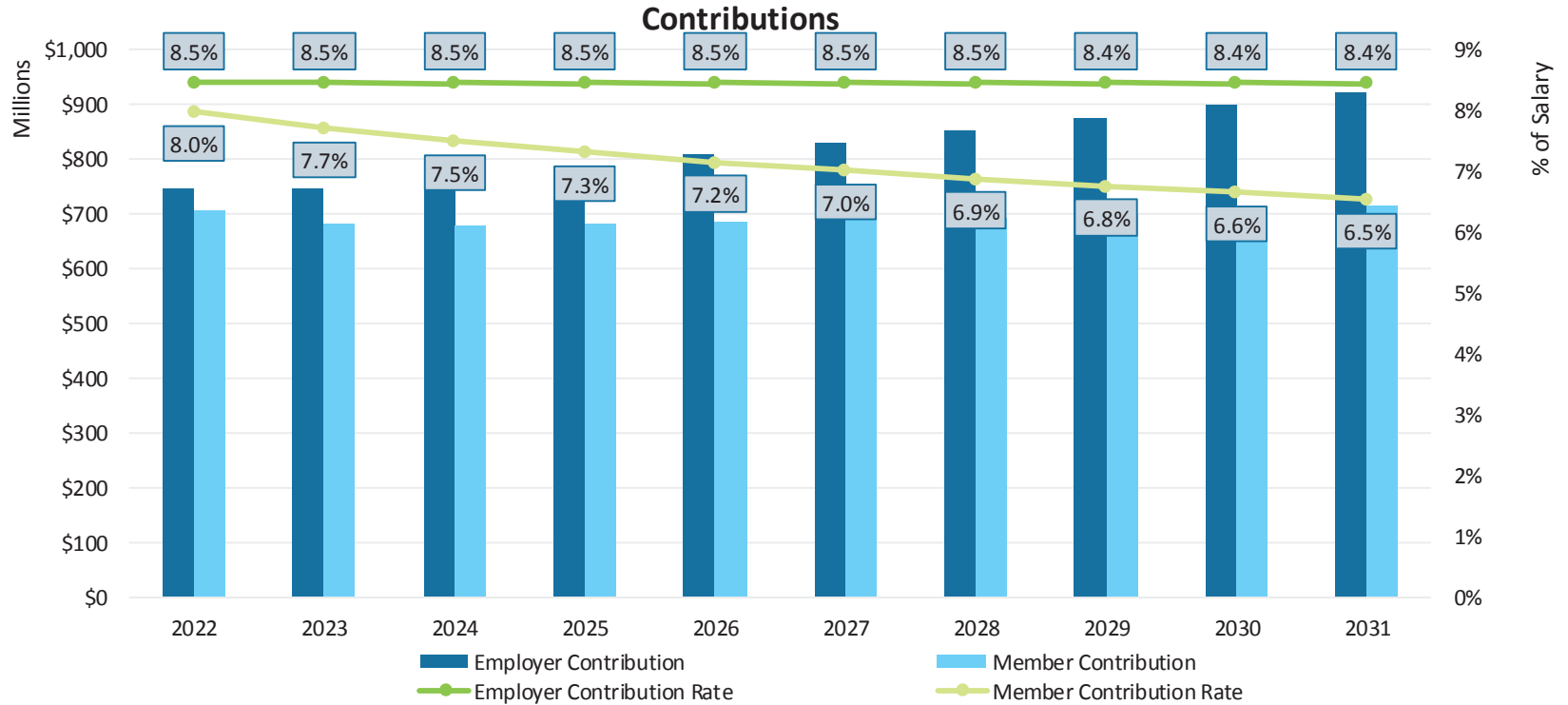
10-YR FUNDED STATUS PROJECTION – PLAN LEVEL



Notes: As of August 31; Assumes Current Policy allocation 10-yr expected return of 5.4% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

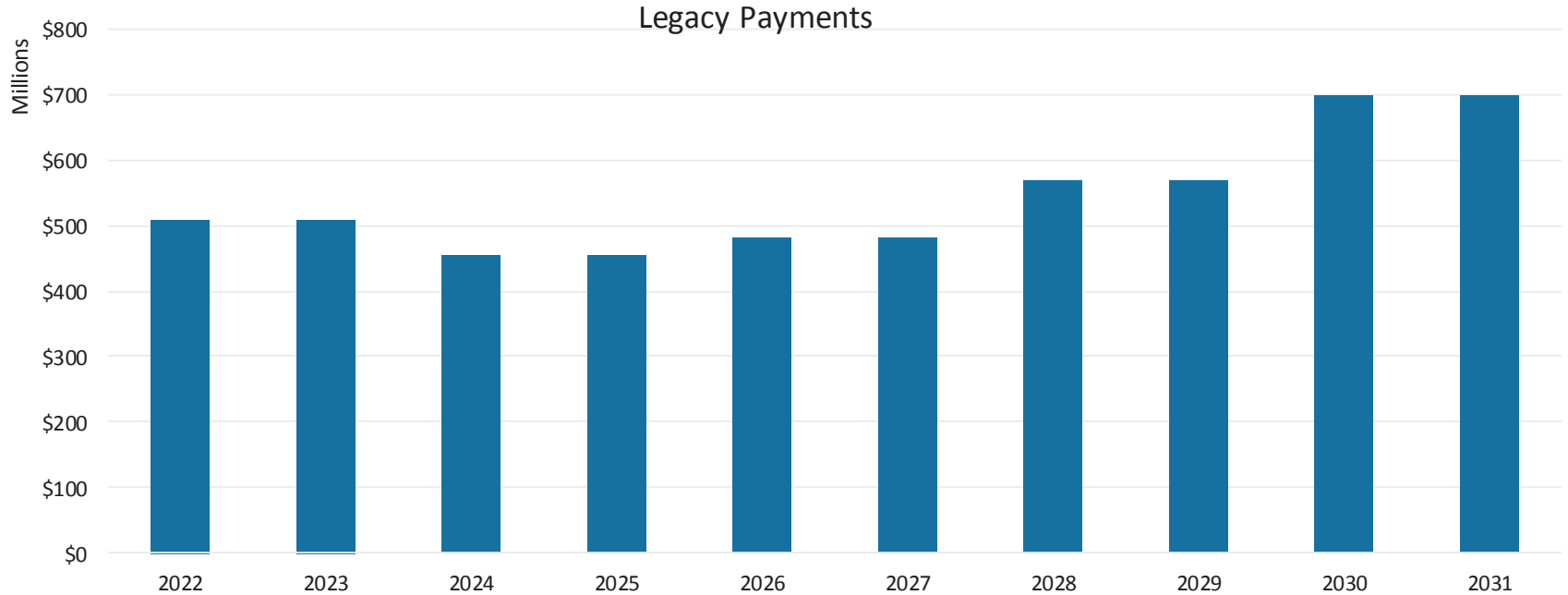
10-YR CONTRIBUTION PROJECTION – TOTAL SYSTEM



Notes: For the fiscal year ending August 31; Assumes Current Policy allocation 10-yr expected return of 5.4% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

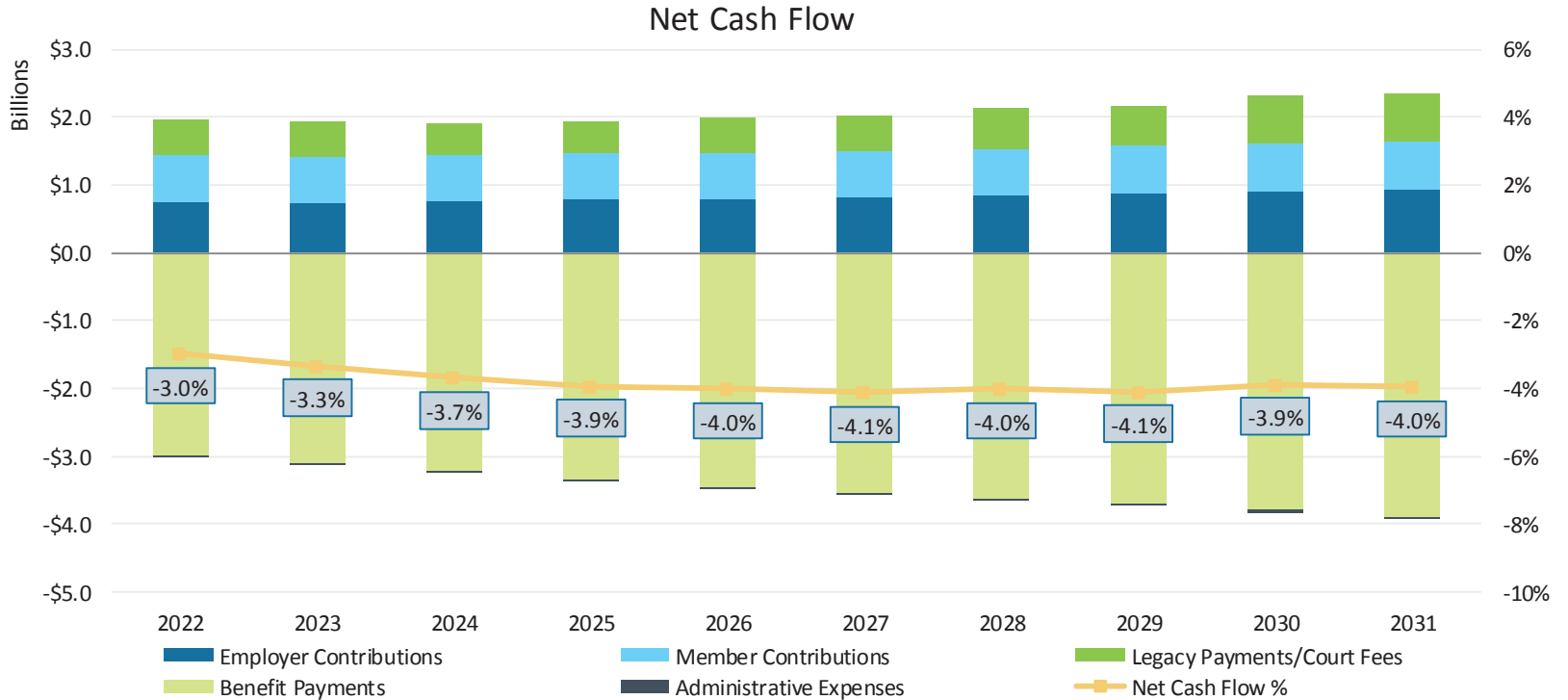
10-YR CONTRIBUTION PROJECTION – ERS LEGACY PAYMENTS



Notes: For the fiscal year ending August 31; Assumes Current Policy allocation 10-yr expected return of 5.4% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

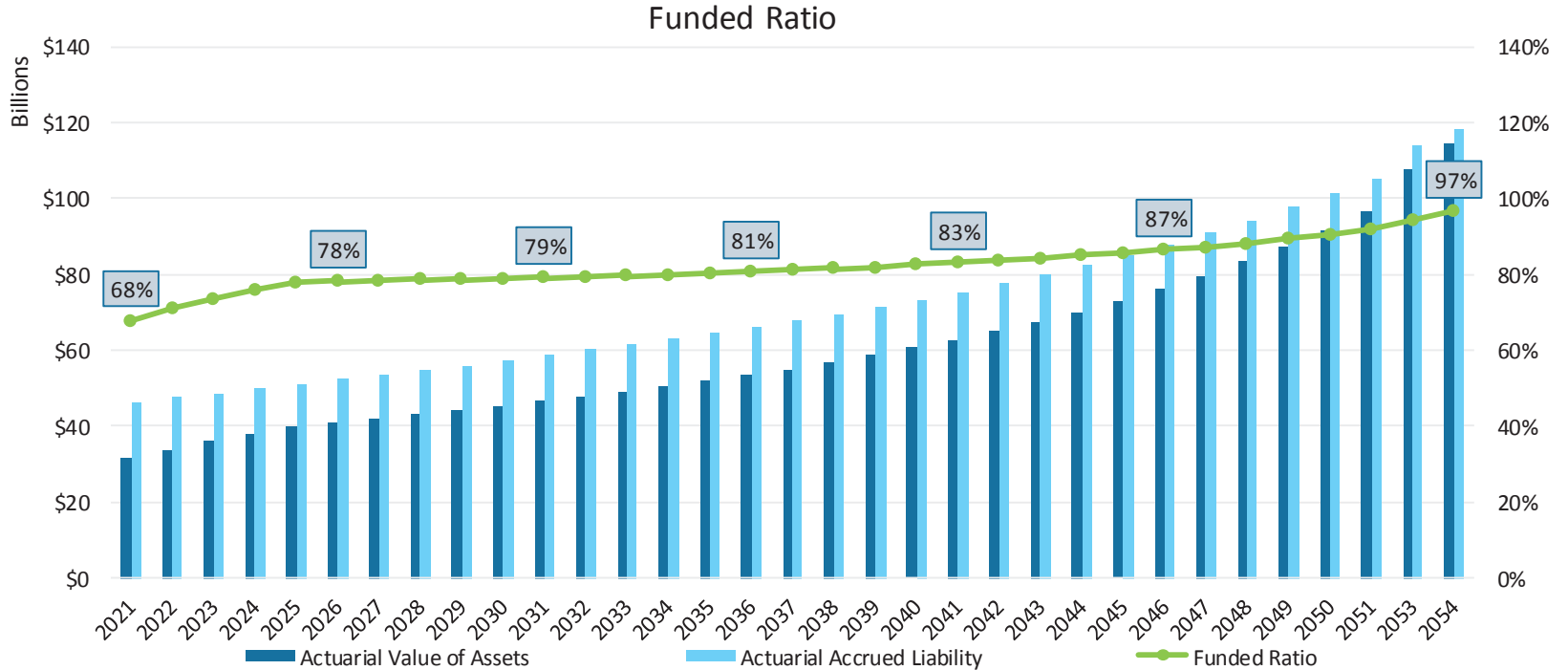
10-YR NET CASH FLOW – TOTAL SYSTEM



Notes: For the fiscal year ending August 31; Assumes Current Policy allocation 10-yr expected return of 5.4% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

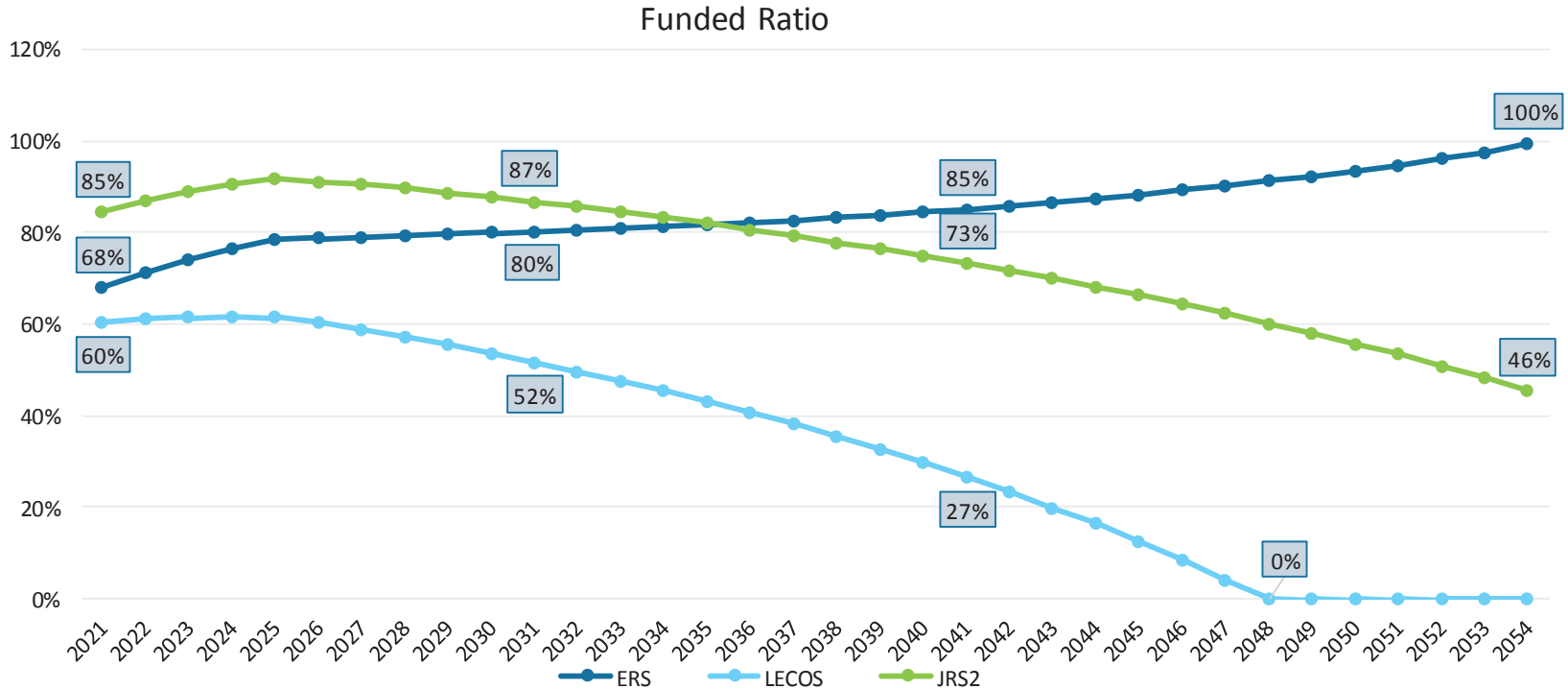
30-YR FUNDED STATUS PROJECTION – TOTAL SYSTEM



Notes: As of August 31; Assumes Current Policy allocation 30-yr expected return of 6.6% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

30-YR FUNDED STATUS PROJECTION – PLAN LEVEL

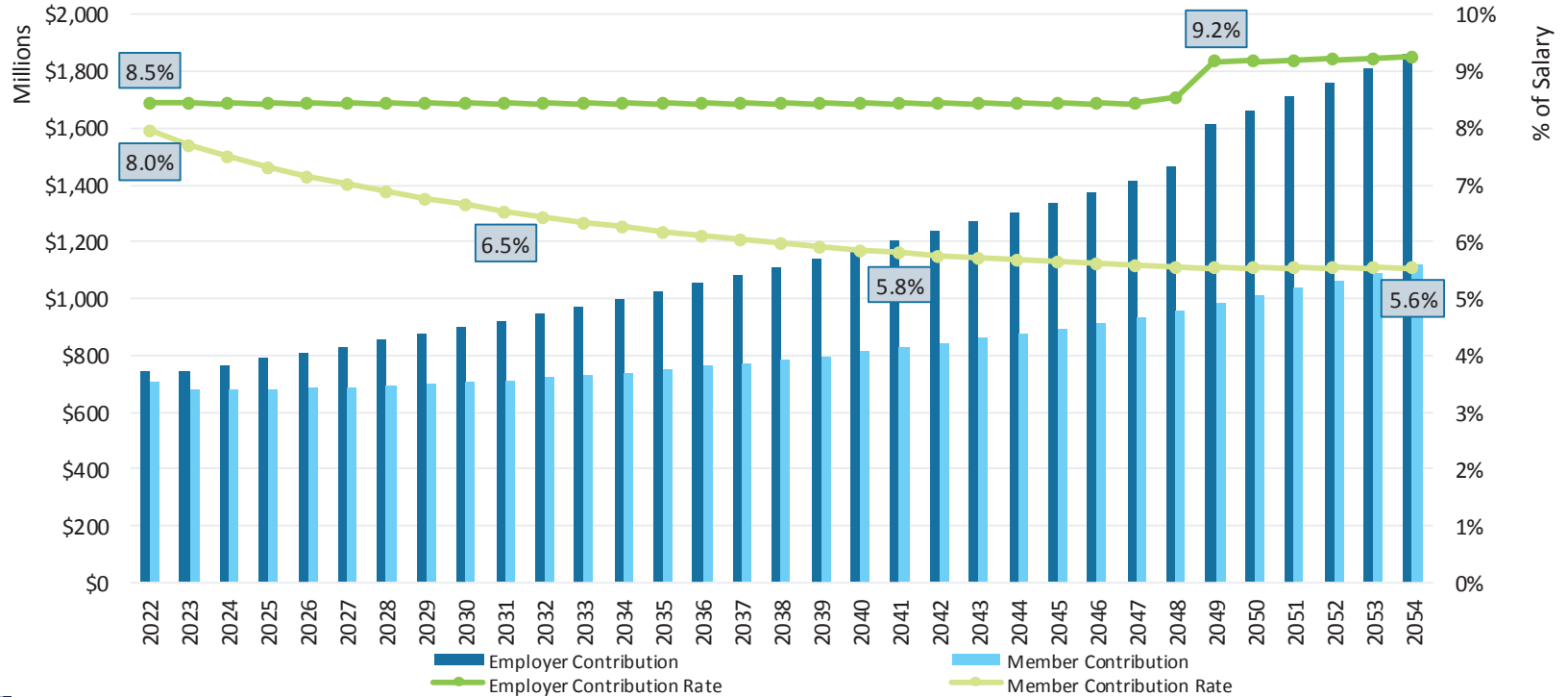


Notes: As of August 31; Assumes Current Policy allocation 30-yr expected return of 6.6% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

30-YR CONTRIBUTION PROJECTION – TOTAL SYSTEM

Contributions

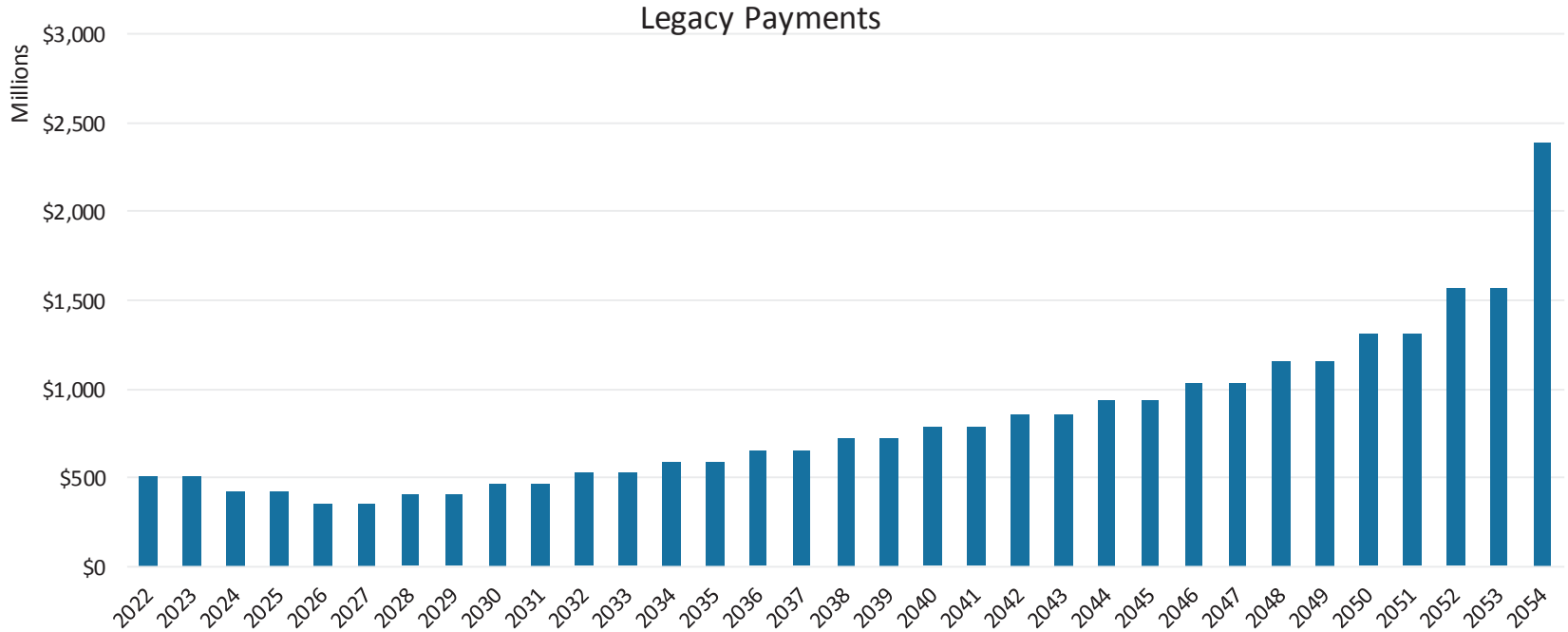


Notes: For the fiscal year ending August 31; Assumes Current Policy allocation 30-yr expected return of 6.6% per annum



EMPLOYEES RETIREMENT SYSTEM OF TEXAS

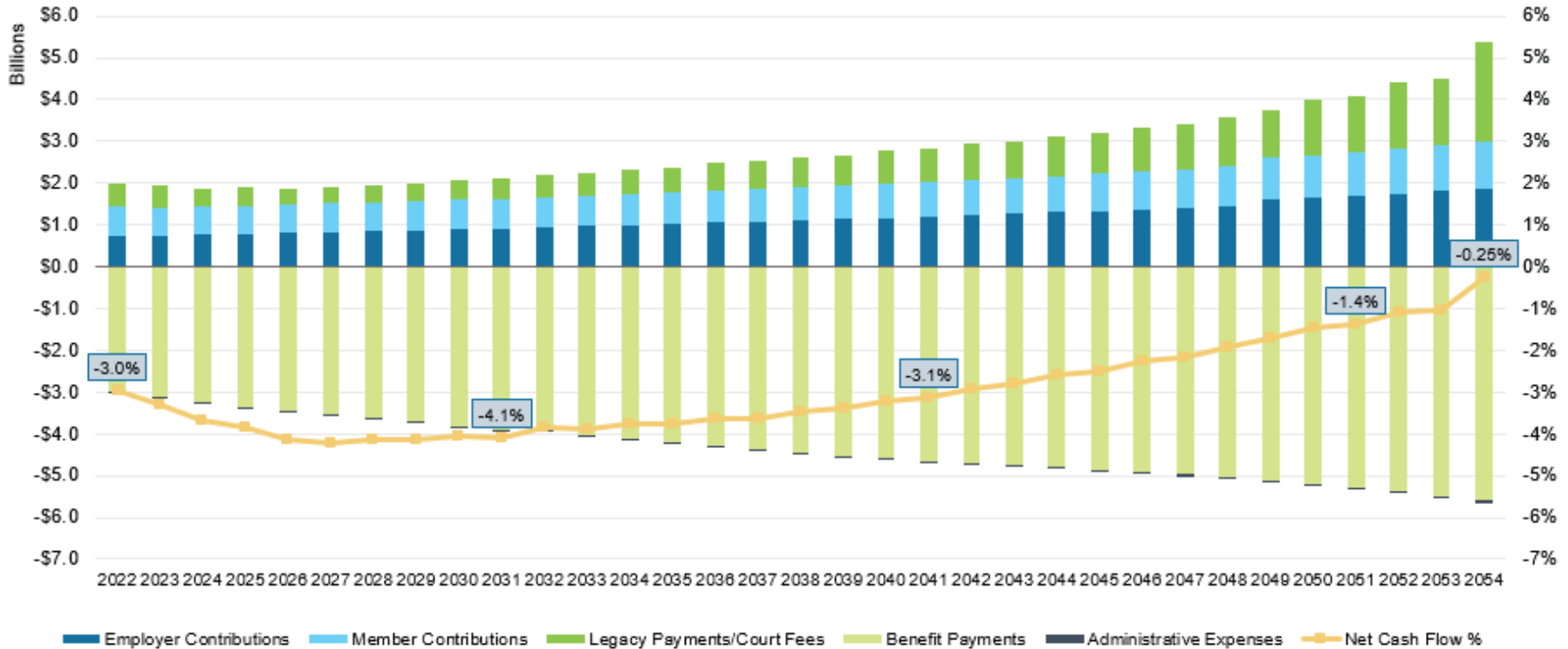
30-YR CONTRIBUTION PROJECTION – ERS LEGACY PAYMENTS



Notes: For the fiscal year ending August 31; Assumes Current Policy allocation 30-yr expected return of 6.6% per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

Net Cash Flow

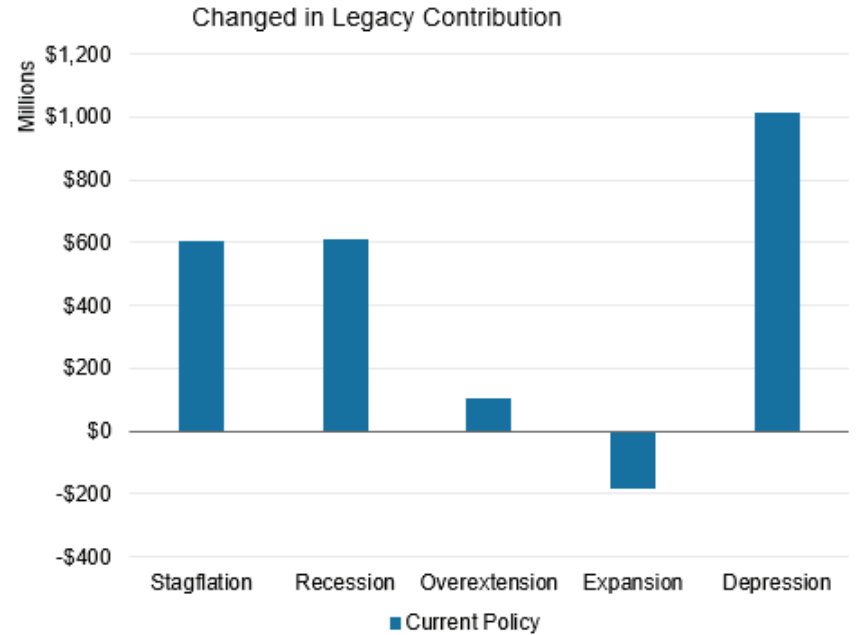
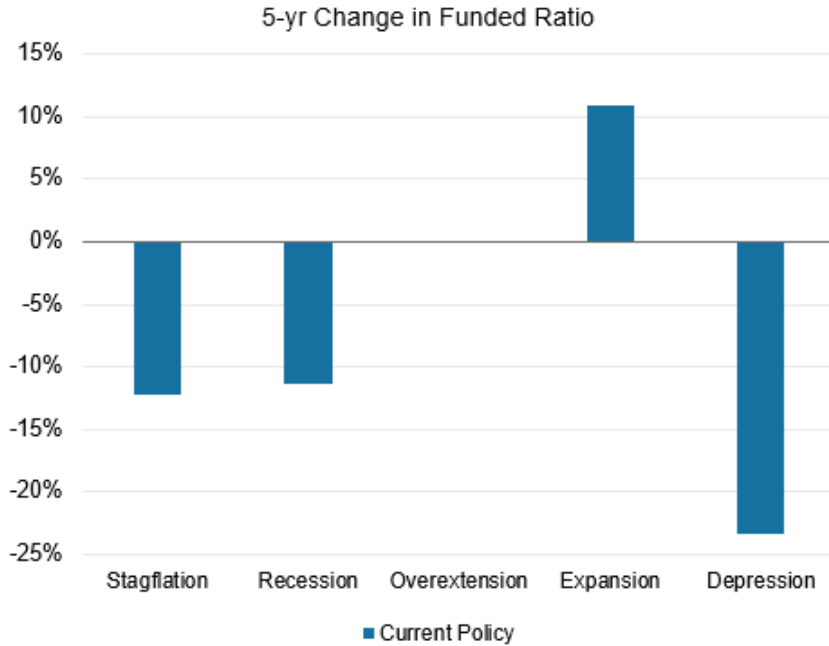


Notes: For the fiscal year ending August 31; Assumes Current Policy allocation 30-yr expected return of 6.6% per annum



EMPLOYEES RETIREMENT SYSTEM OF TEXAS

SCENARIO ANALYSIS

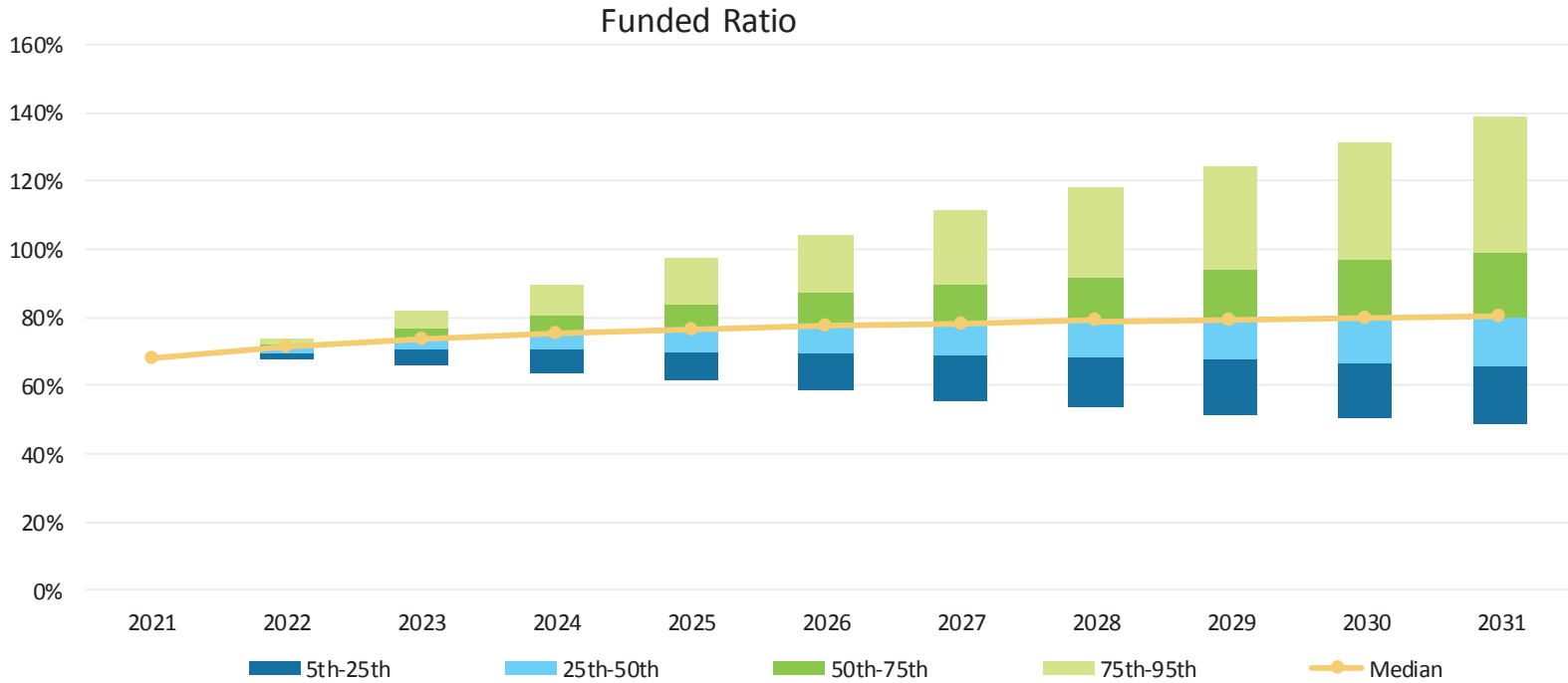


Notes: Scenarios reflect a 5-yr time horizon; Funded status change is relative to 68.0% as of August 31, 2021; Legacy Contribution change is relative to \$510 million for the year ending August 31, 2022



EMPLOYEES RETIREMENT SYSTEM OF TEXAS

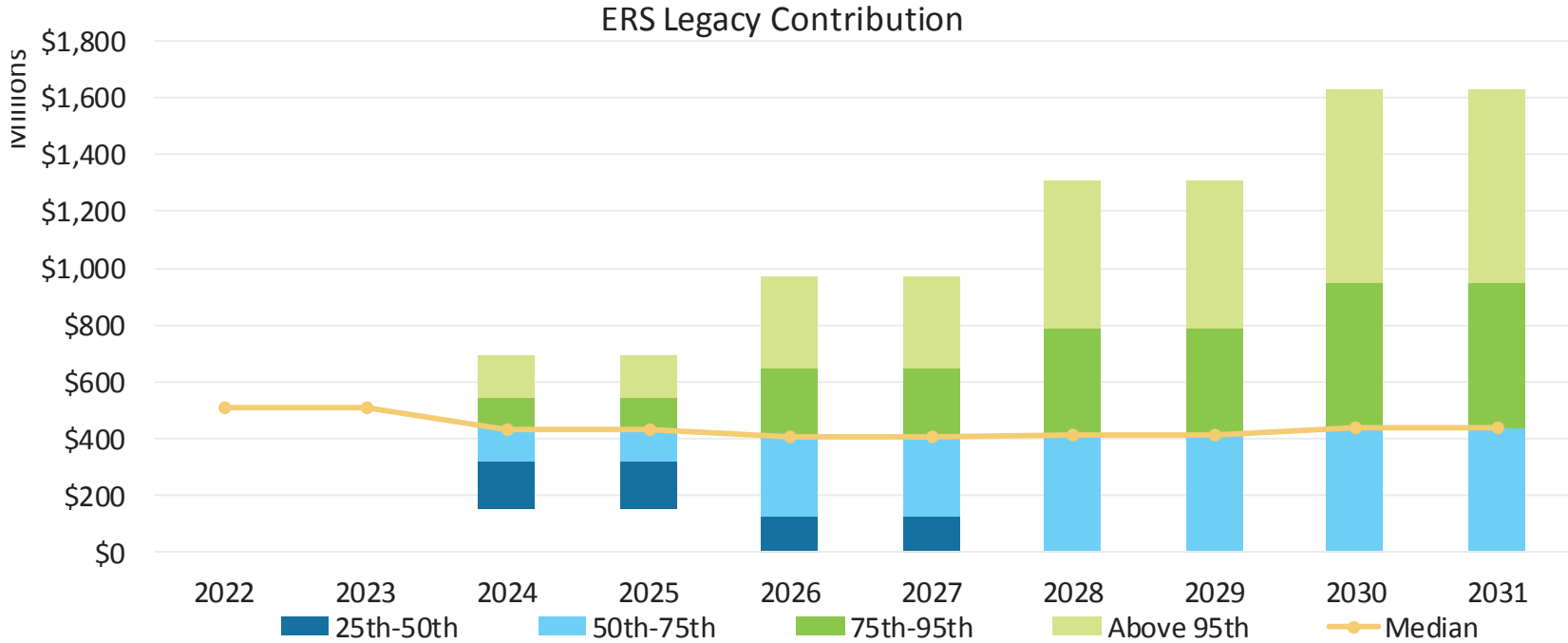
STOCHASTIC ANALYSIS – FUNDED RATIO



Notes: As of August 31; Assumes mean expected return equal to the 30-year expected return of 6.6% with 12.4% volatility per annum

EMPLOYEES RETIREMENT SYSTEM OF TEXAS

STOCHASTIC ANALYSIS – ERS LEGACY CONTRIBUTIONS



Notes: For the fiscal year ending August 31; Assumes mean expected return equal to the 30-year expected return of 6.6% with 12.4% volatility per annum



Questions?

Public Agenda Item #13

*Consideration of Annual Review of Private Equity Program and Proposed Private Equity Tactical Plan- (**Action**)*

May 11, 2022

David T. Veal, Chief Investment Officer

Ricardo Lyra, Director of Private Equity

Private Equity

Program Overview



Private Equity Program

- Program inception in 2008
- Cumulative commitments totaling \$11.4 billion

Investment Objective

- Outperform its benchmark over rolling 10-year periods
- Maintain risk compliance through portfolio diversification

Private Equity

Key Characteristics

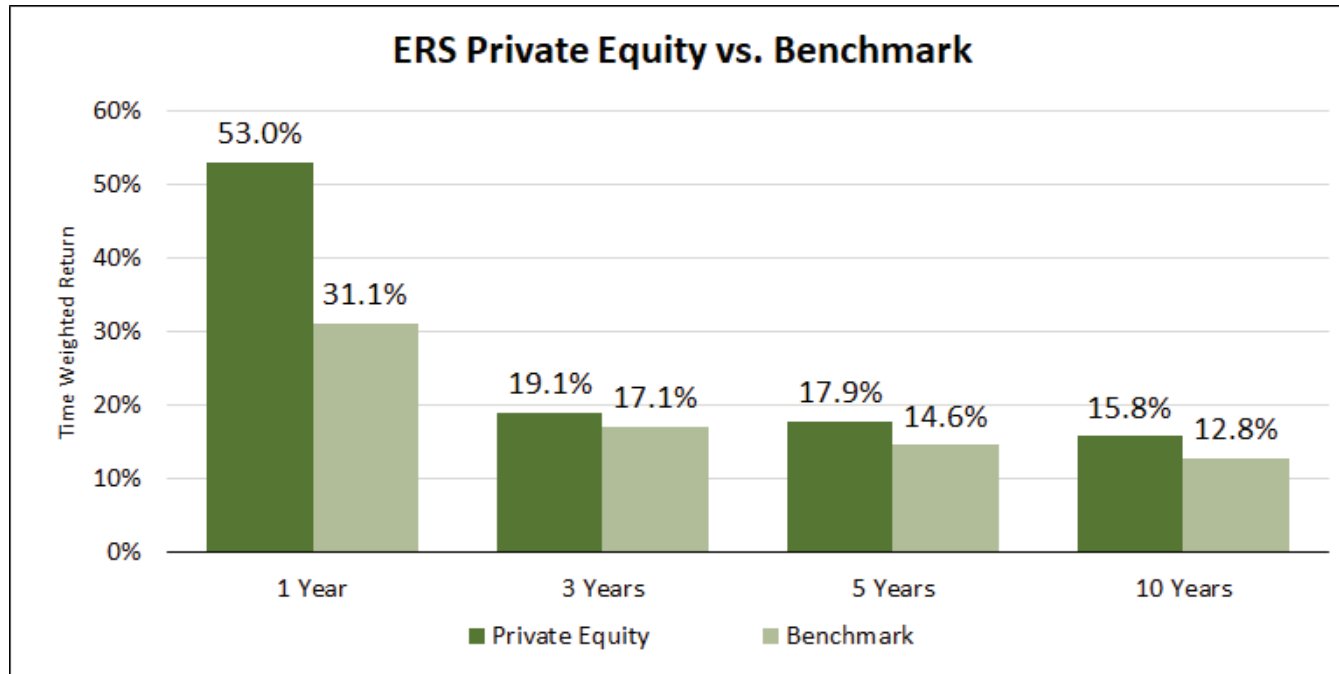


Attribute	Private Equity Portfolio
Type of Allocation	Return Seeking
Policy Allocation	Target weight of 13%, range from 8% to 18%
Performance Objective	Exceed median return of peers in Wilshire TUCS
Management Style	Externally managed closed-end funds
	Participate in co-investments to mitigate investment expenses
Risk Mitigation	Diversification across vintages, geographies, strategies, sectors and managers
Investment Expenses	252 bps external, 8 bps internal for FY21

Private Equity

Performance Snapshot

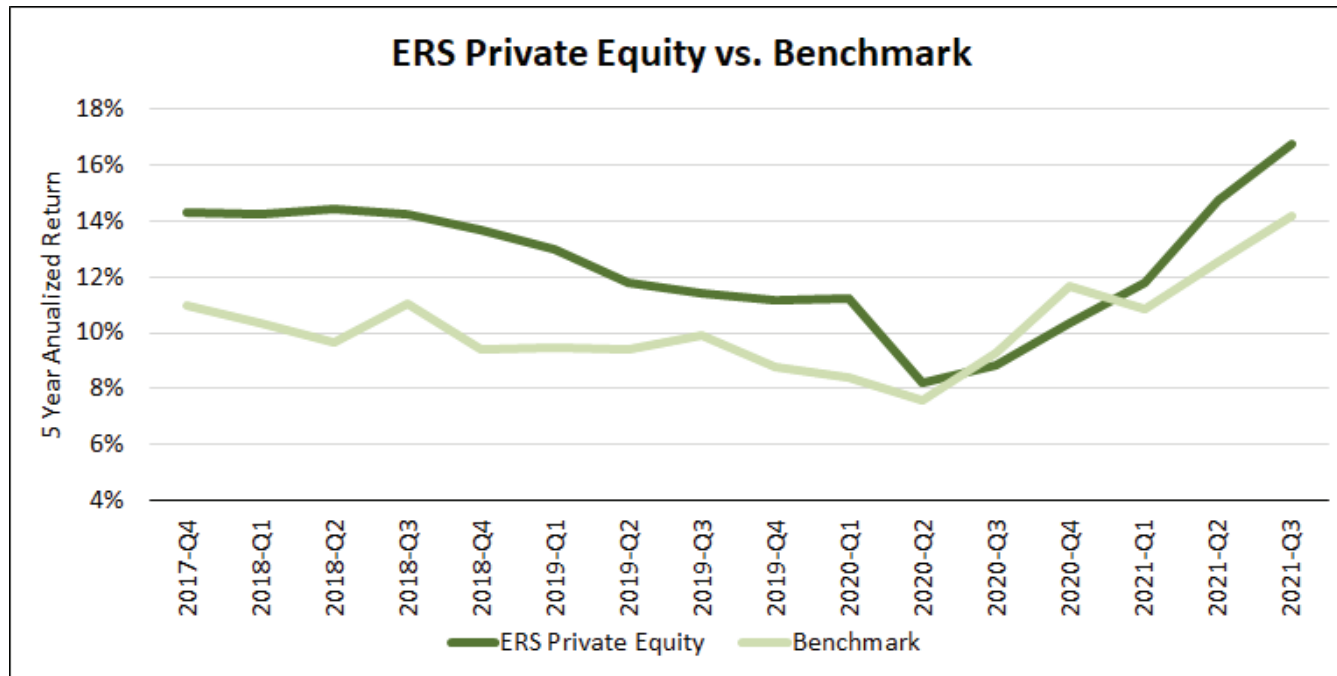
- Strong performance across all time horizons, including +301 bps over ten years



Private Equity

Historical Performance

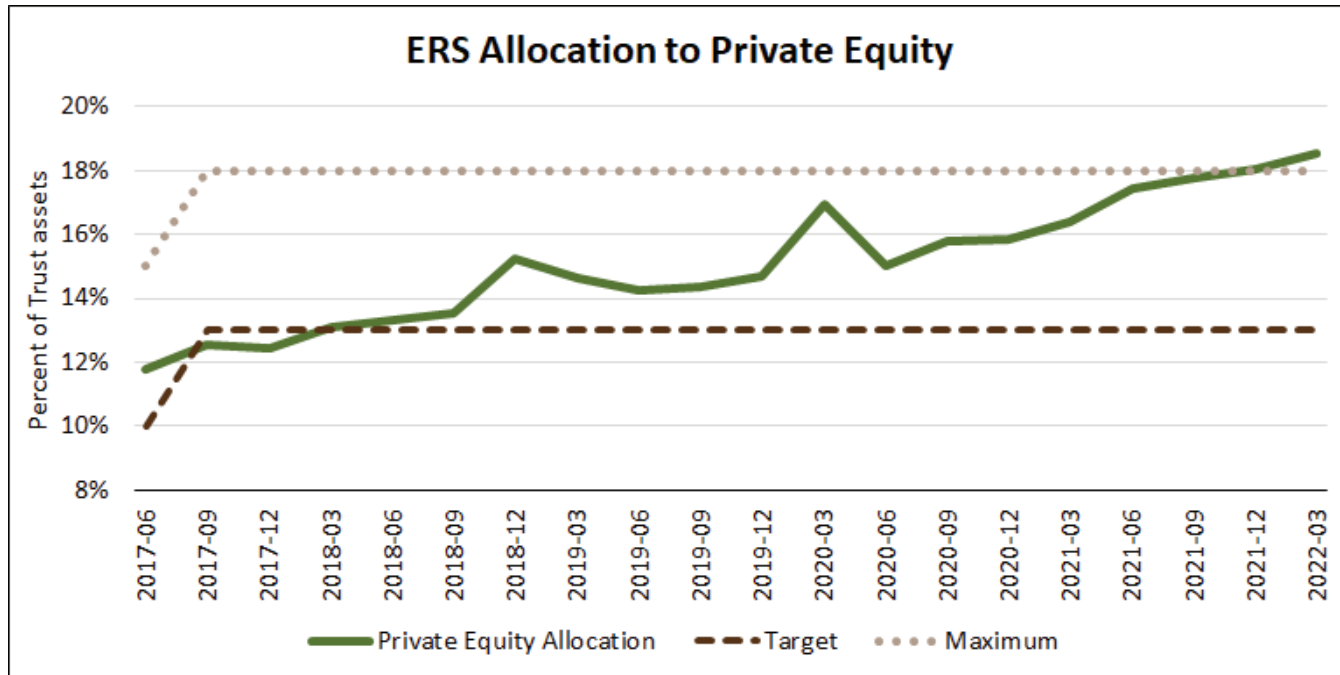
- Strong performance against peer universe across recent horizons



Private Equity

Historical Allocation

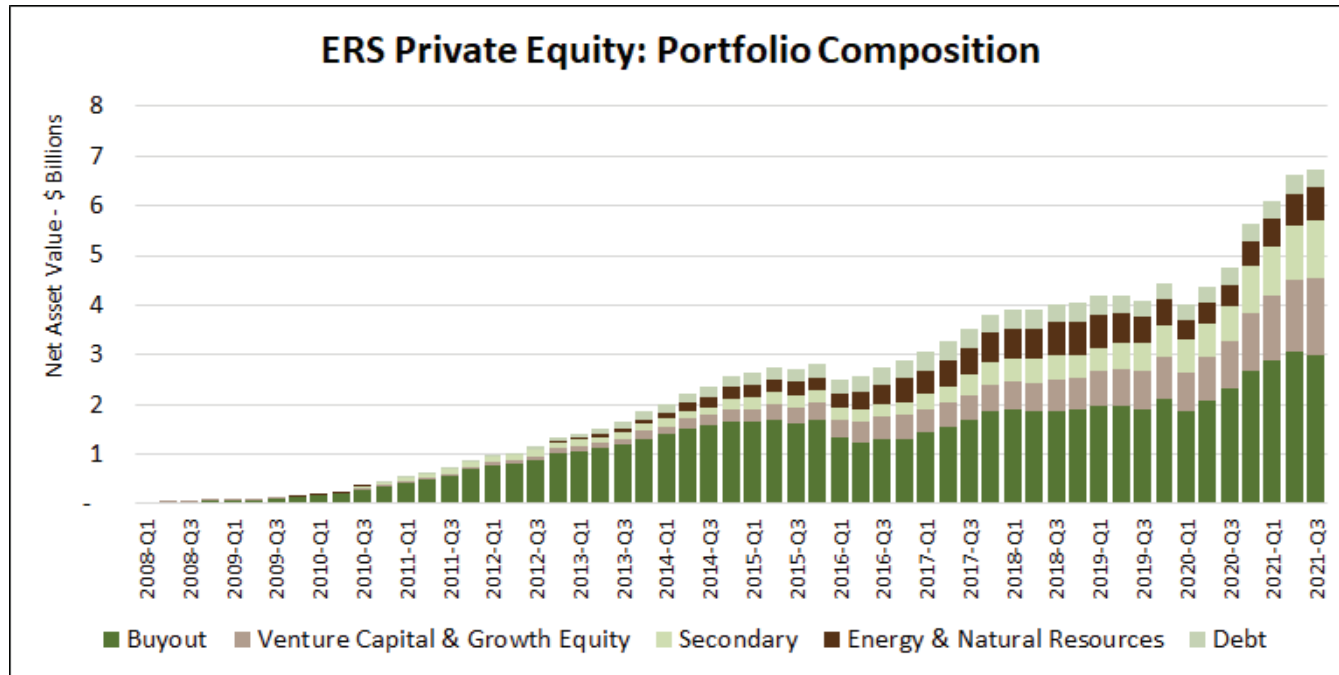
- Strong performance has led to increased allocation to Private Equity



Private Equity

Historical Composition

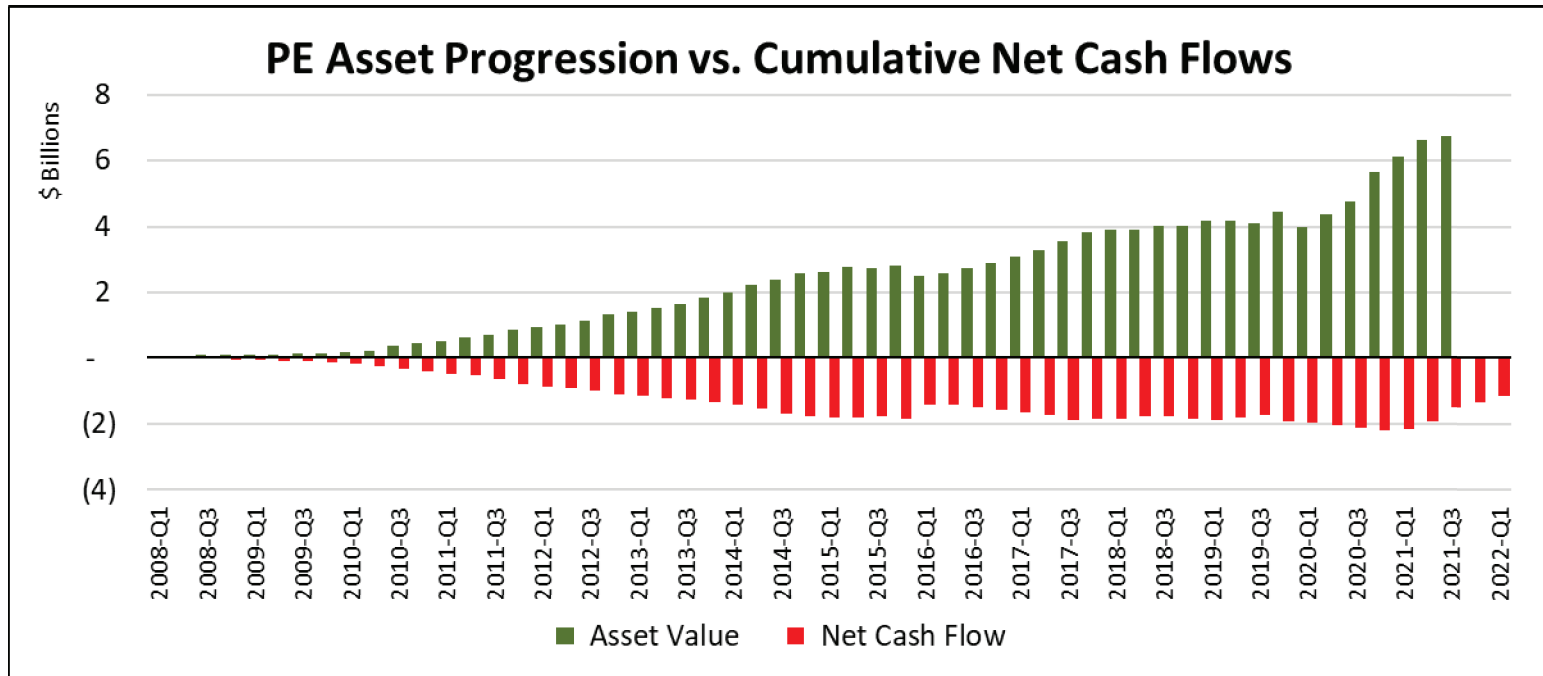
- Portfolio has remained highly diversified as assets have grown over time



Private Equity

Historical Performance

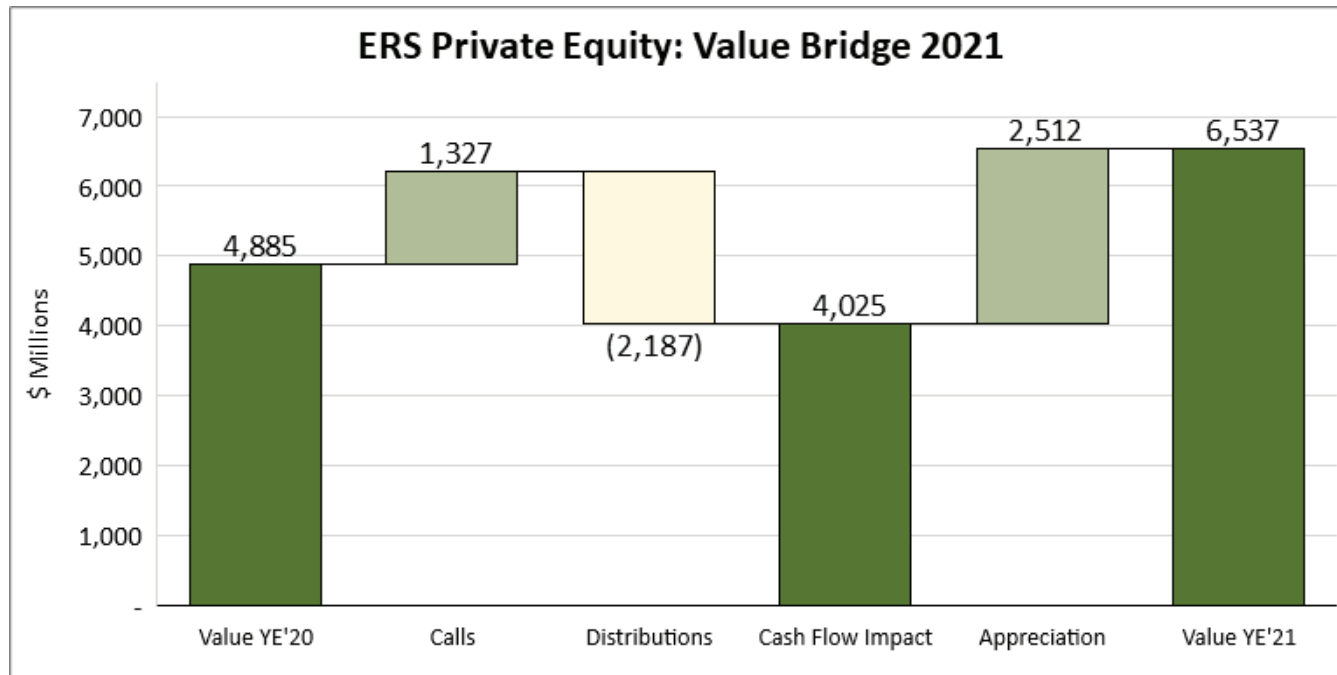
- Asset value of the portfolio continues to rise even as cash flow has turned positive



Private Equity

Historical Performance

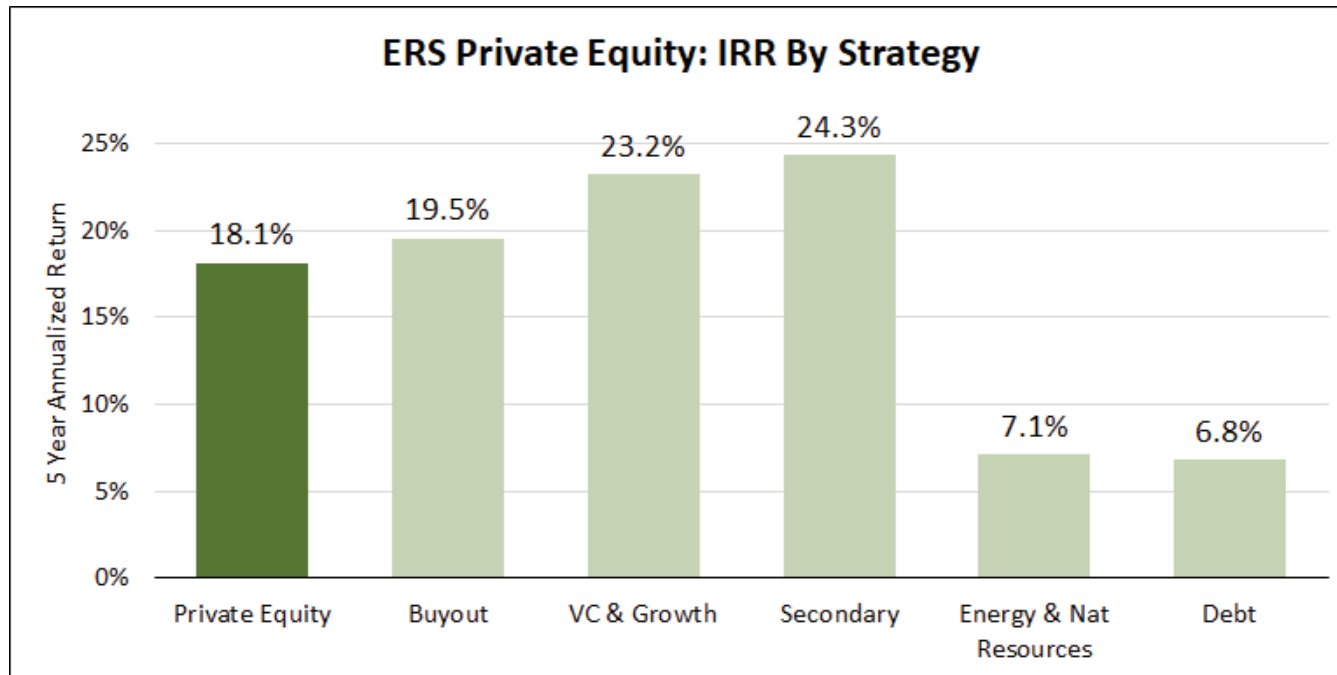
- Portfolio is cash flow positive with appreciation driving the increase in value



Private Equity

Performance Drivers

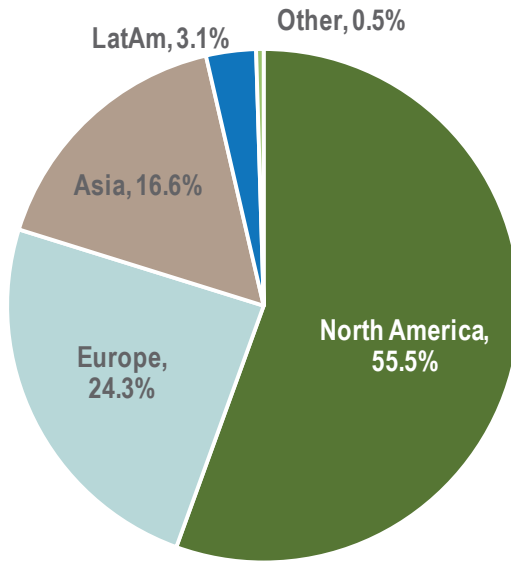
- Best performance from secondaries as well as venture capital/growth



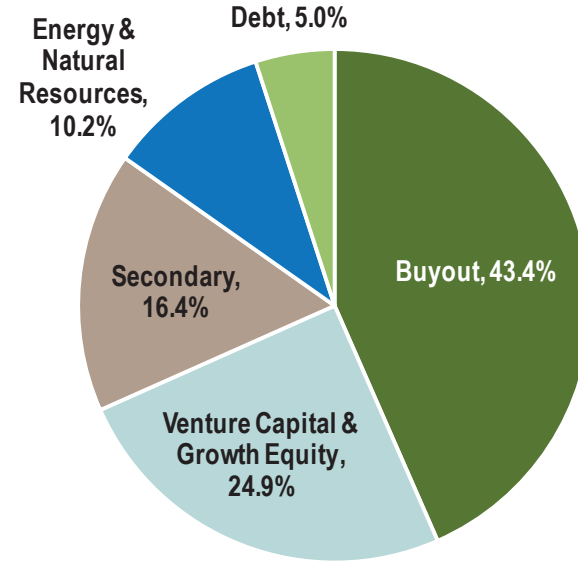
Private Equity

Risk Diversification

Portfolio Value by Geography

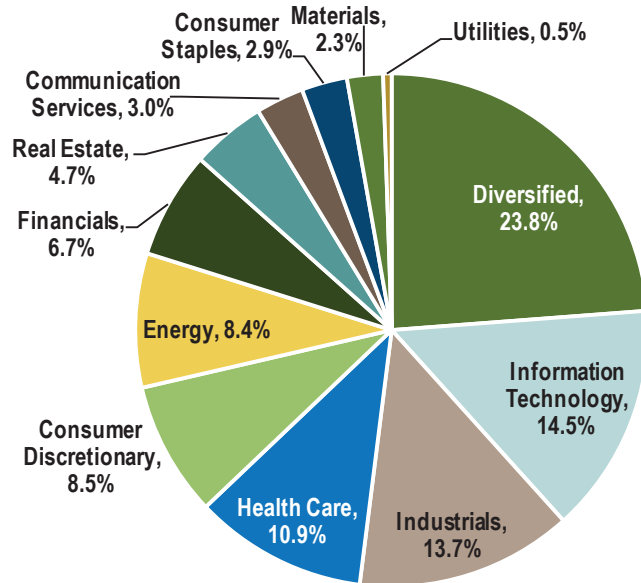


Portfolio Value by Strategy

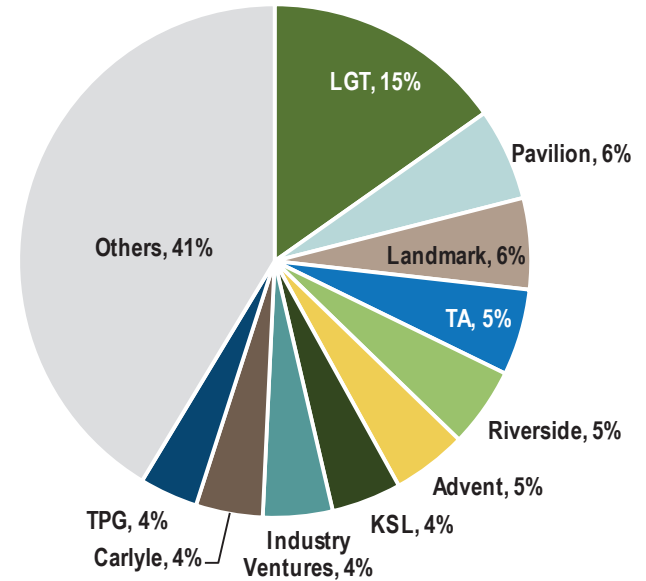


Private Equity Risk Diversification

Portfolio Value by Sector



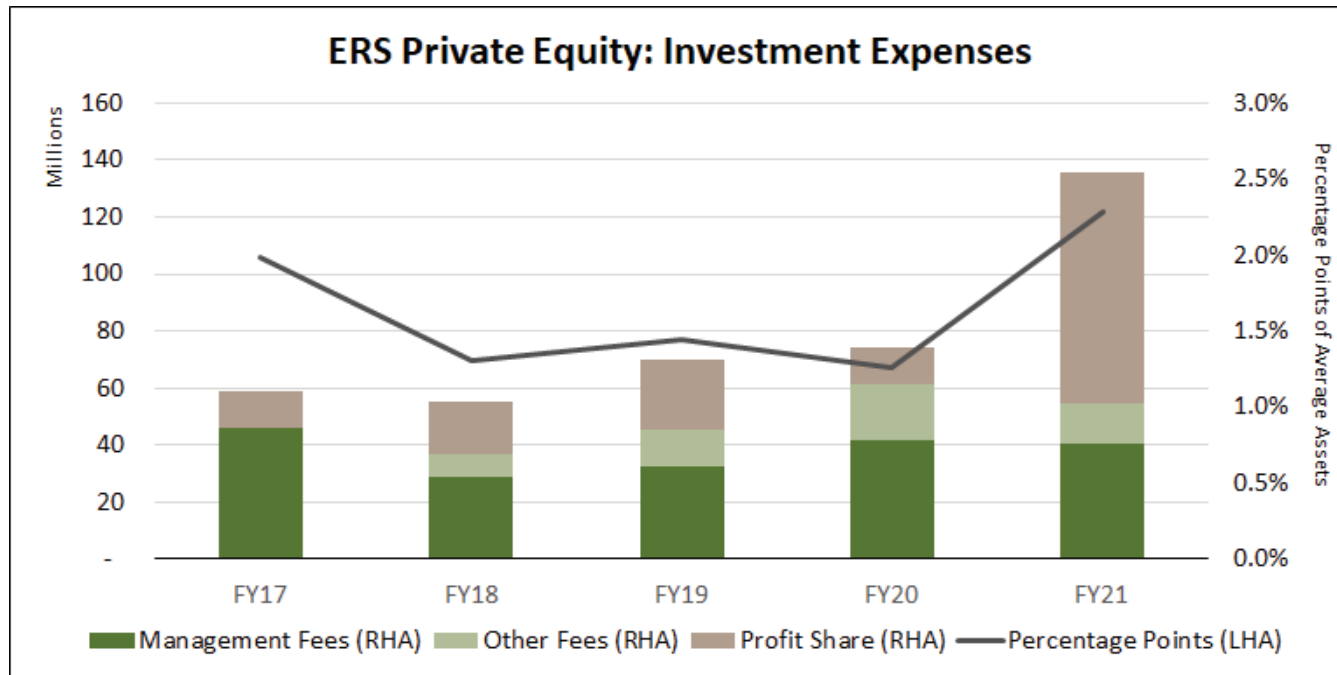
Economic Exposure by Manager



Private Equity

Investment Expenses

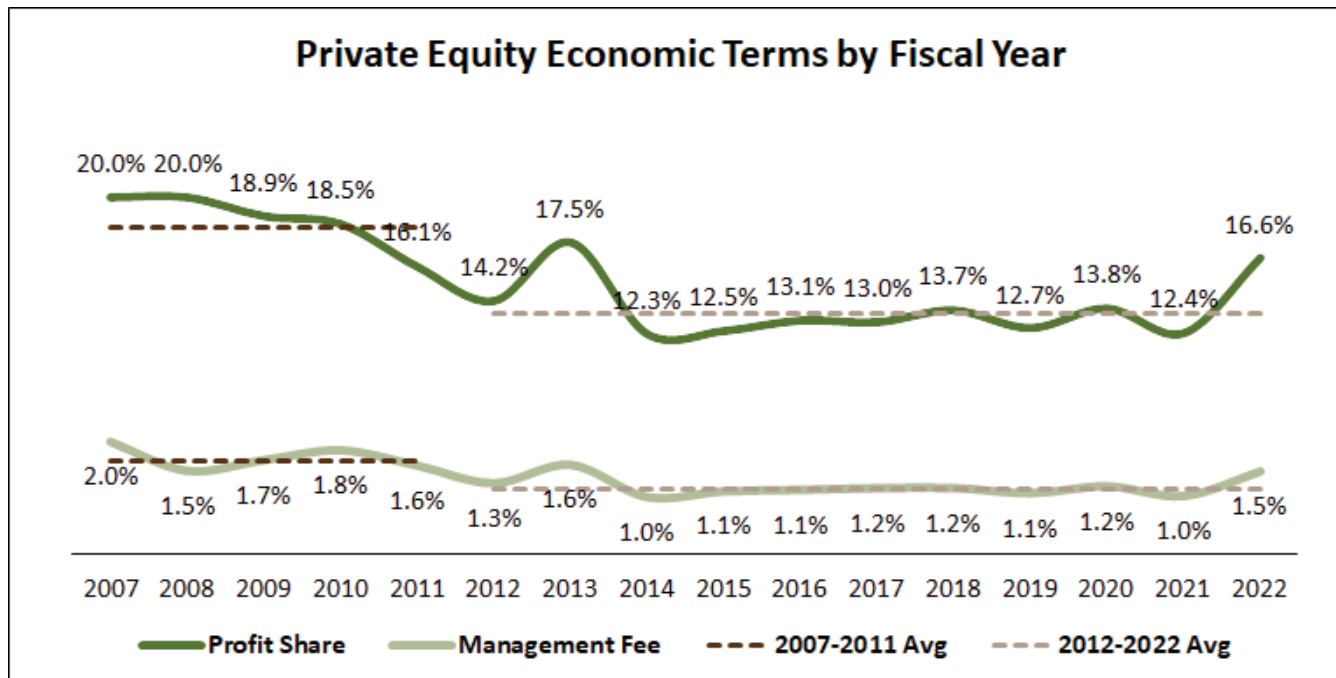
- Very strong performance in FY21 translated into above average profit share



Private Equity

Investment Expenses

- Strong performance from allocation to co-investments and negotiated terms



Private Equity Program

Goals and Objectives for Fiscal Years 2022 & 2023



Fiscal Year 2022

- Execute on Capital Plan – Ongoing
- Sector Focused Commitments – Ongoing
- European Portfolio Review – Ongoing
- Target Allocation Strategy Adjustments

Fiscal Year 2023

- Execute on Capital Plan
- Target Allocation Strategy Adjustments

Questions?

Consideration of Proposed Private Equity Tactical Plan

Ricardo Lyra, Director of Private Equity

Tactical Plan

Proposal for Fiscal Year 2023



Review and consideration of ERS Private Equity Annual Tactical Plan for FY23:

- Commitments totaling \$600 million
 - 10 to 12 new funds
 - 3 to 4 co-investments
- Commitment target range \pm 25% (\$420M – \$780M)

Tactical Plan

Pacing Model Assumptions



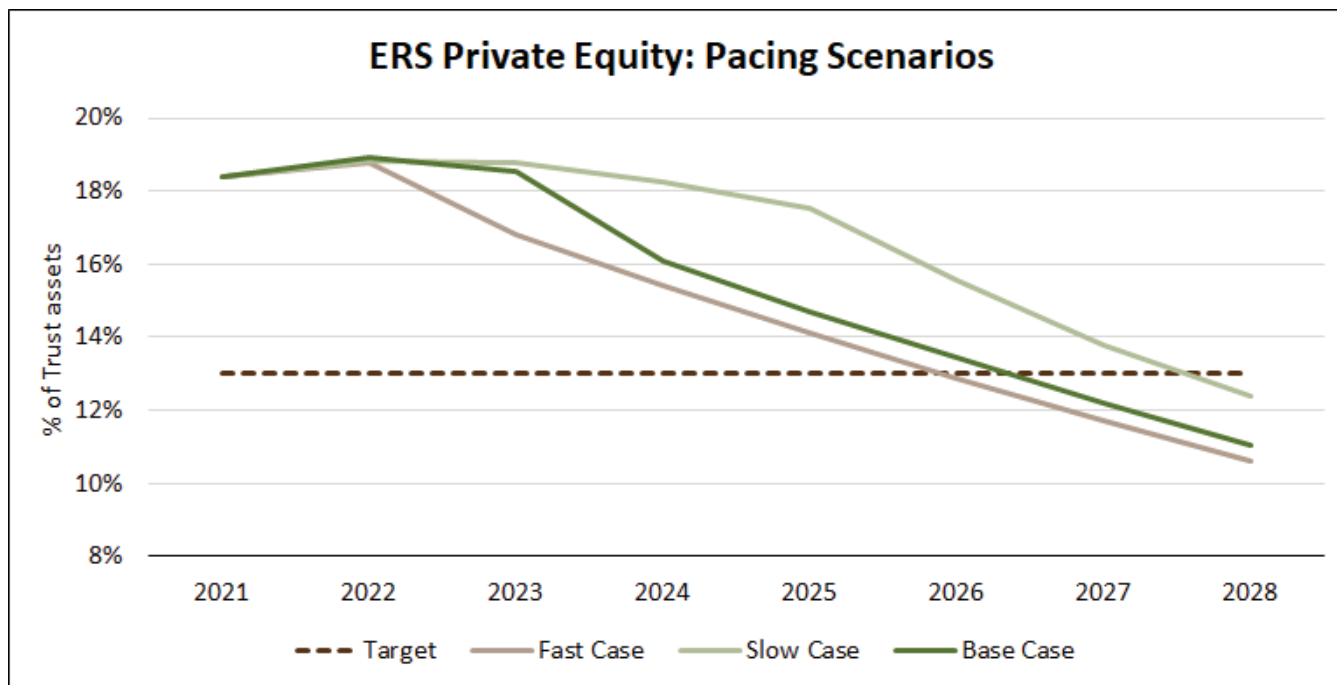
	Fast Case	Base Case	Slow Case
2022	Slowdown due to geopolitical and inflationary pressures.	Slowdown due to geopolitical and inflationary pressures.	<p>Significant slowdown in market activity.</p> <p>All asset classes are impacted and Trust sees 0% total net growth.</p> <p>PE returns are impacted as well as levels of positive cash flows.</p> <p>ERS Private Equity allocation of 13%</p>
2023	Reduced returns vs. prior years	Reduced returns vs. prior years, impacting M&A activity vis-à-vis pace of cash flows.	
2024	PE returns normalize to 10-year annualized levels	PE returns normalize to 10-year annualized levels	
2025			
2026	ERS Private Equity allocation of 13%		
2027		ERS Private Equity allocation of 13%	
2028			

Tactical Plan

Pacing Model Output



- Projected return to allocation target between 2026 and 2028



Questions?
Action Item

Public Agenda Item #14

Consideration of Annual Review of Hedge Fund Program and Proposed Hedge Fund Tactical Plan - (Action)

May 11, 2022

David T. Veal, Chief Investment Officer

Nick Maffeo, Director of Hedge Funds

Panayiotis Lambropoulos, Hedge Funds Portfolio Manager

Hedge Fund Program

Program Overview



Key Components

- Absolute Return Portfolio
- Directional Growth Portfolio
- Launchpad Portfolio

Hedge Fund Program

Program Overview



Investment Objective

- Outperform relevant benchmark over rolling five-year periods
- Maintain compliance with risk and exposure guidelines

Absolute Return Portfolio

Key Characteristics

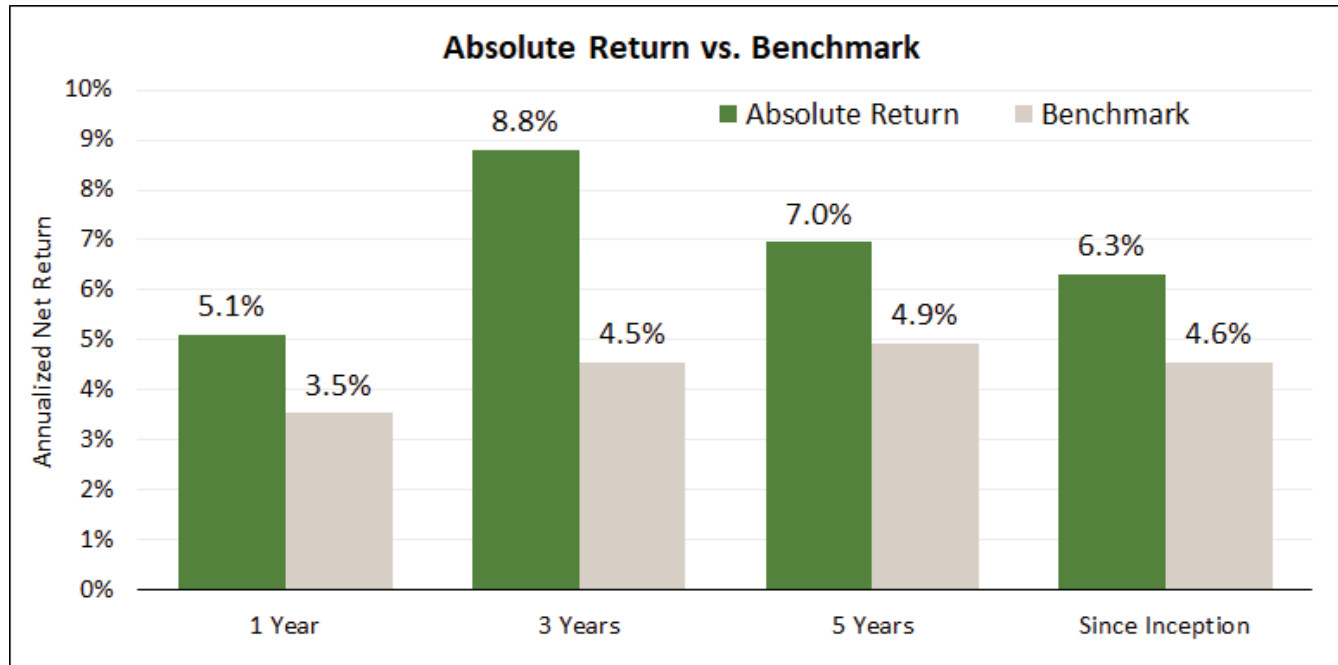


Attribute	Absolute Return Portfolio
Type of Allocation	Risk Reducing
Policy Allocation	Target weight of 5%, range of 0-10%
Management Style	External via limited partnership interests
Return Target	T-bills + 3.5% or better
Risk Budget	Volatility target of 4% to 8%
Beta Target	≤ 0.4 versus the Trust
Investment Expenses	~417 bps external, ~17 bps internal for FY21

Absolute Return Portfolio

Performance Snapshot

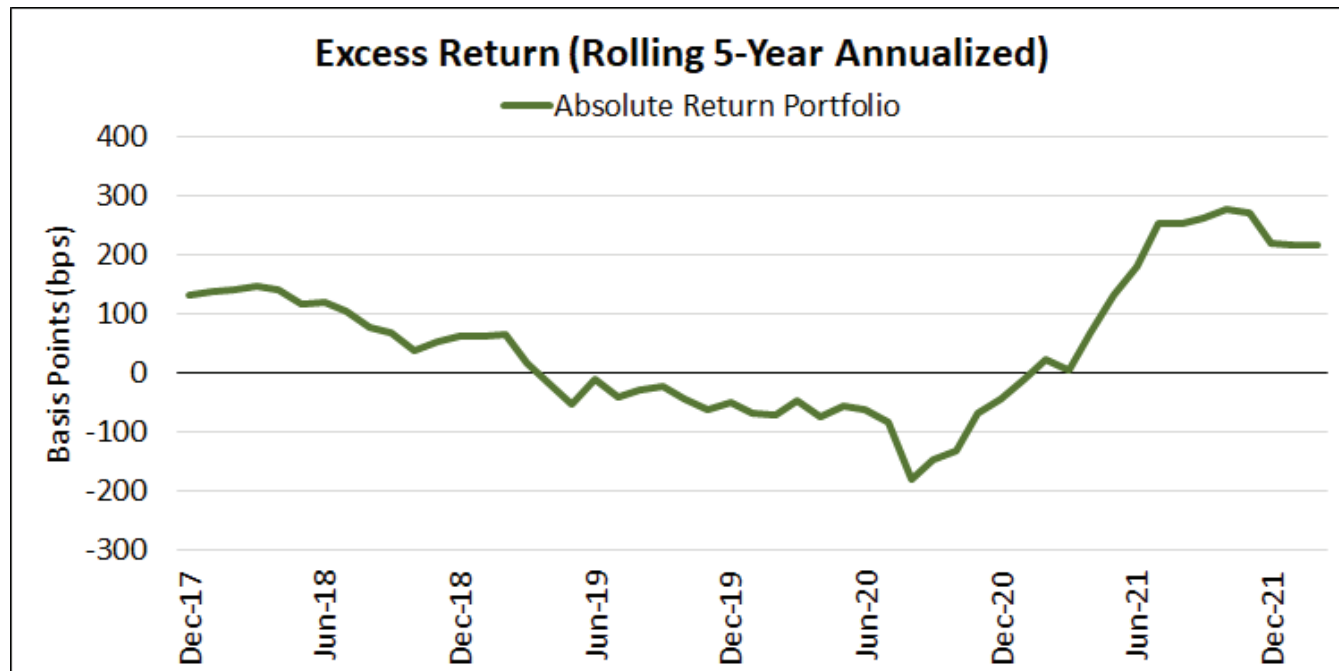
- Strong performance across all time horizons



Absolute Return Portfolio

Historical Performance

- Relative performance the strongest in recent years

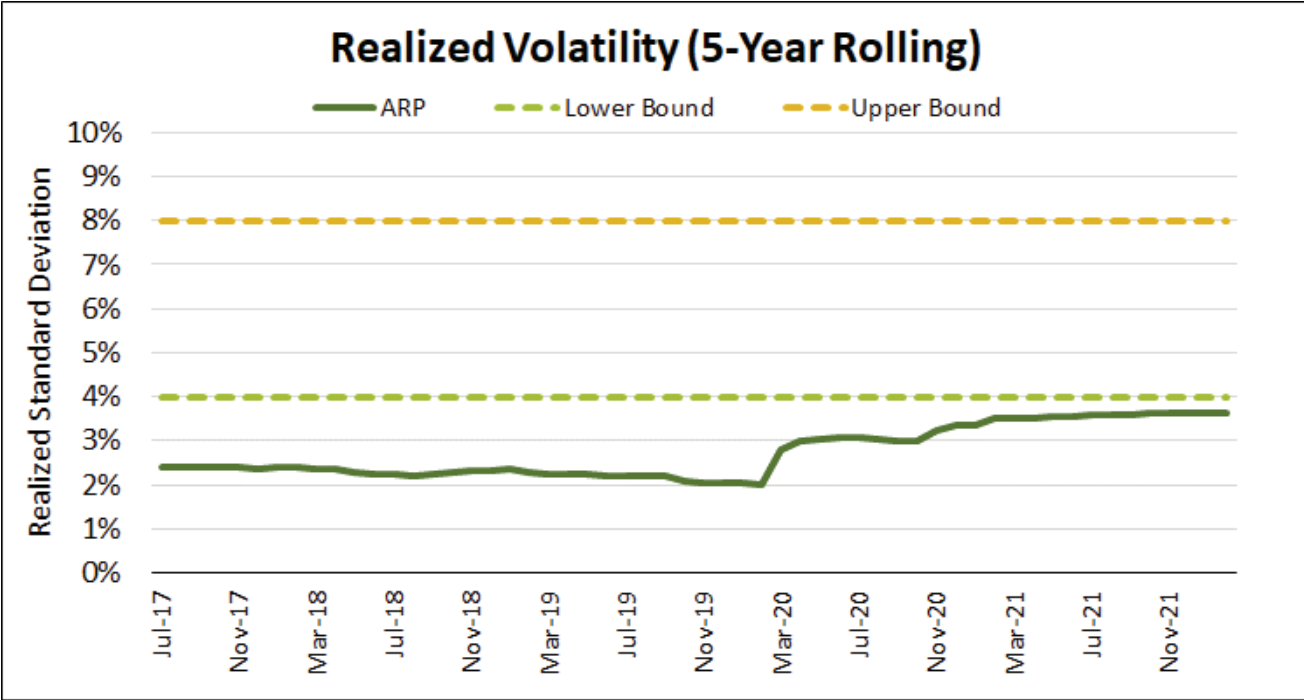


Absolute Return Portfolio

Historical Risk



- Risk levels consistently below target have still delivered strong performance

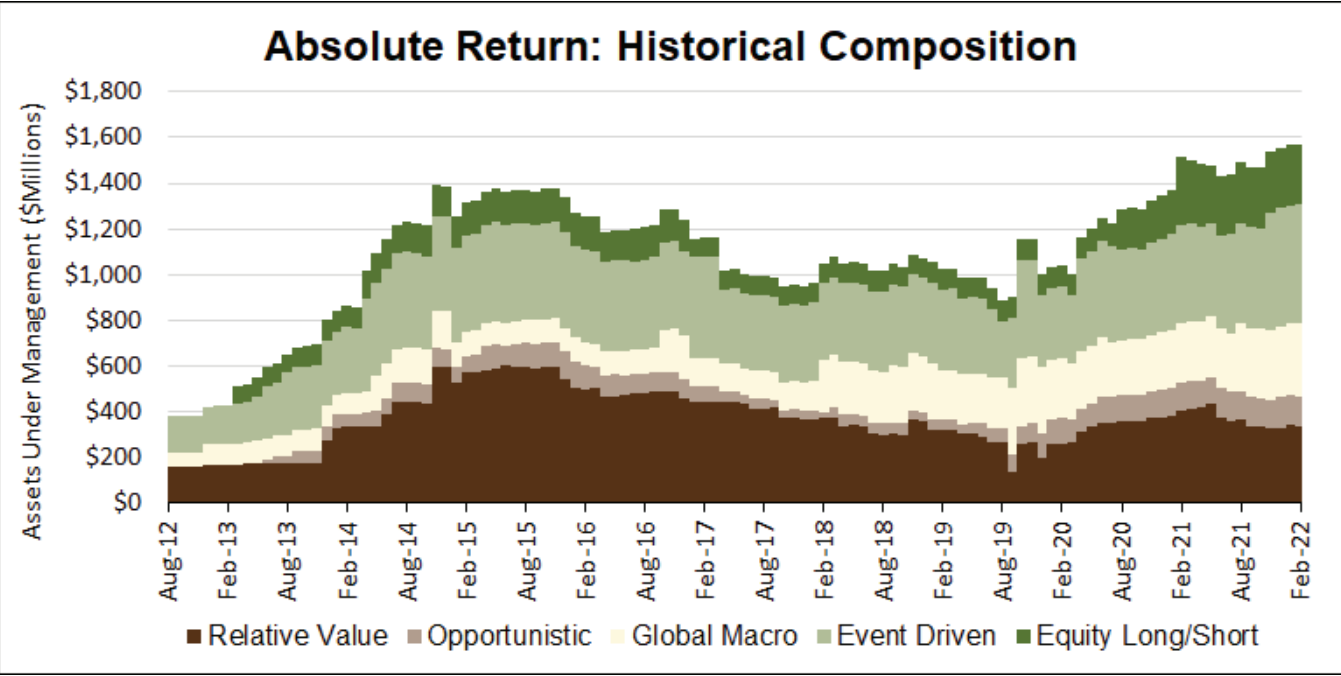


Absolute Return Portfolio

Historical Composition



- Portfolio has maintained diversification throughout its growth over time

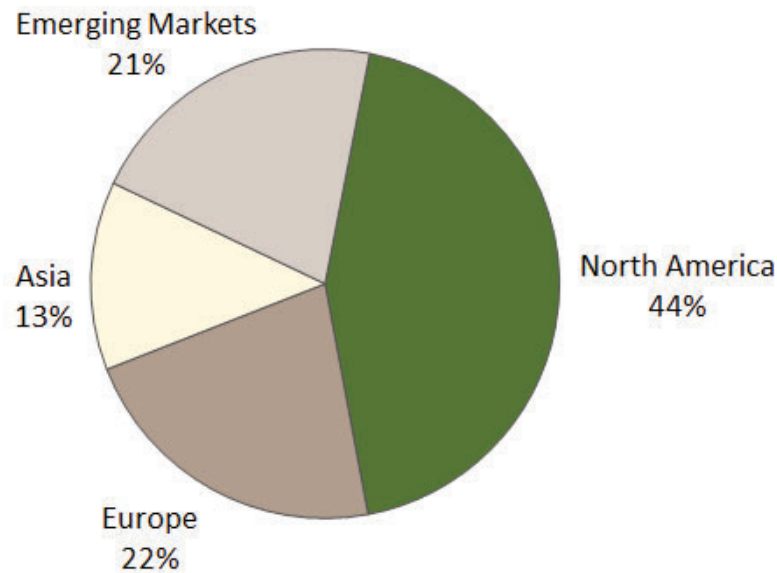


Absolute Return Portfolio

Composition by Geographic Region

- Portfolio remains well-diversified across geographies and within guidelines

Absolute Return: Geographic Exposure



Directional Growth Portfolio

Key Characteristics

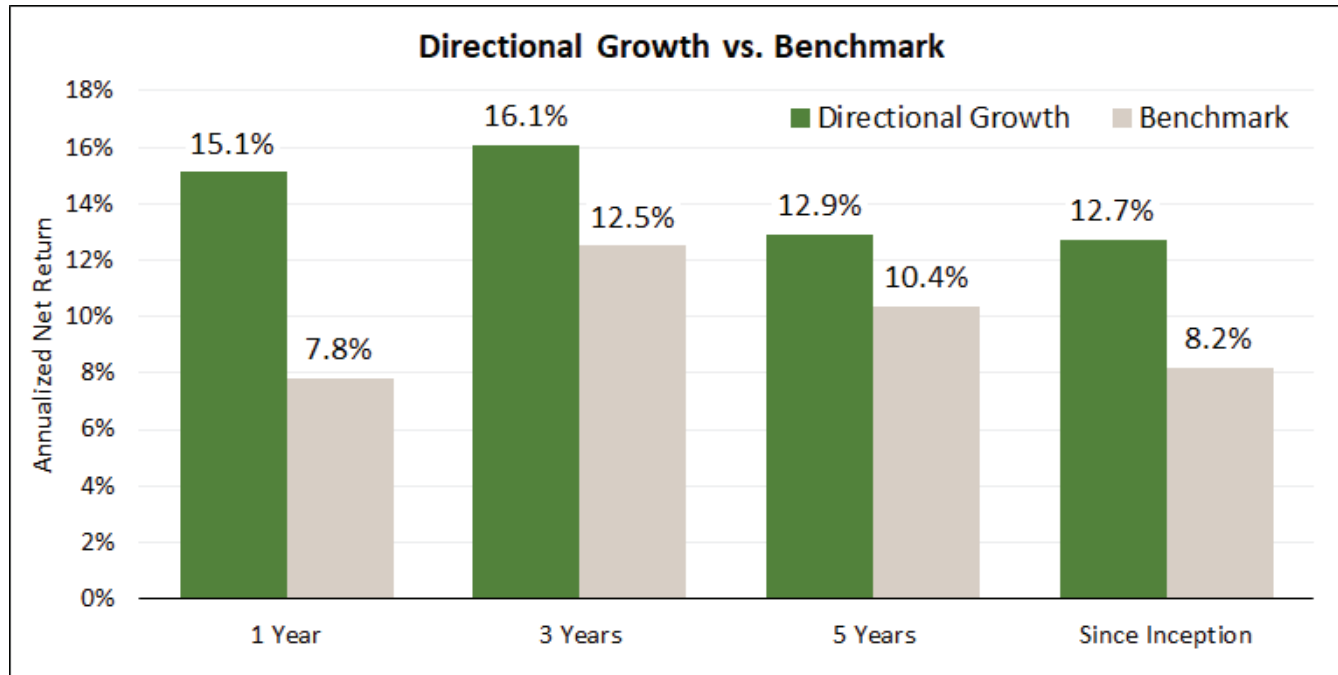


Attribute	Directional Growth Portfolio
Type of Allocation	Return Seeking
Policy Allocation	Opportunistic
Management Style	External via internal allocation decisions
Return Target	Outperform underlying benchmarks (i.e. MSCI ACWI)
Tracking Error	Target of 200-400 bps
Information Ratio	Target of 0.25
Investment Expenses	~124 bps external, ~6 bps internal for FY21

Directional Growth Portfolio

Performance Snapshot

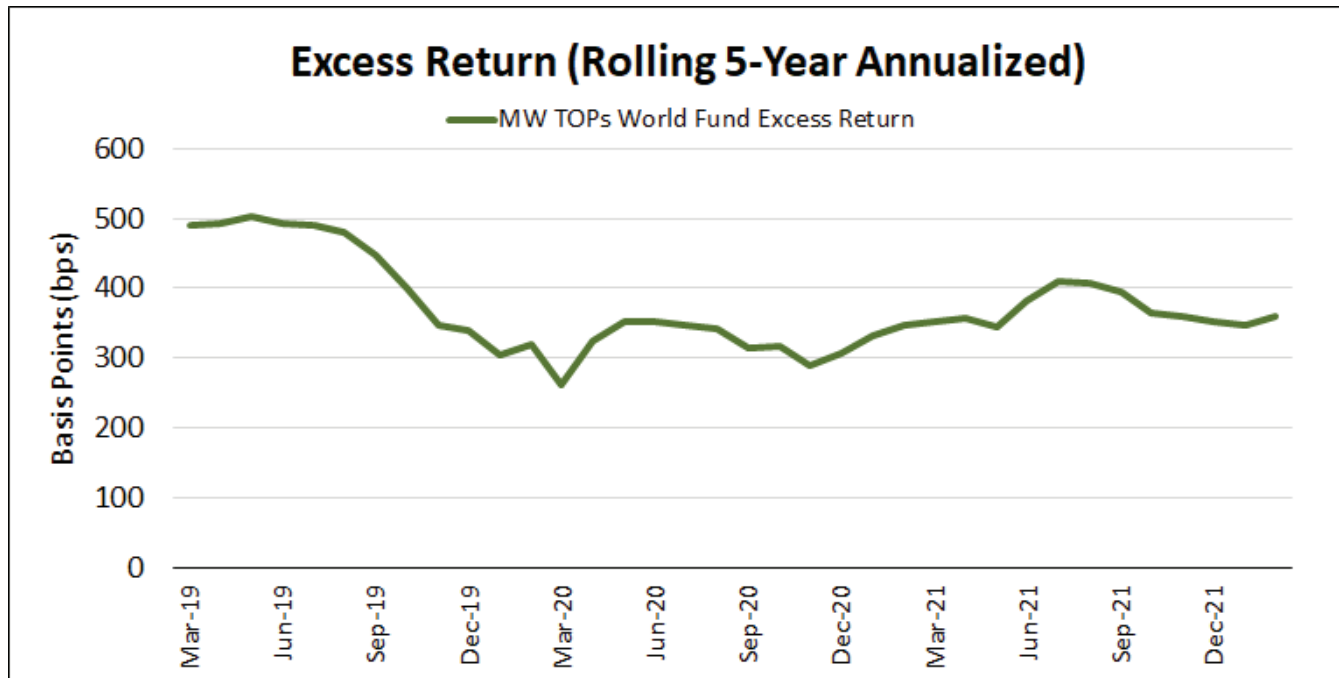
- Performance remains strong across all time horizons



Directional Growth Portfolio

Historical Performance

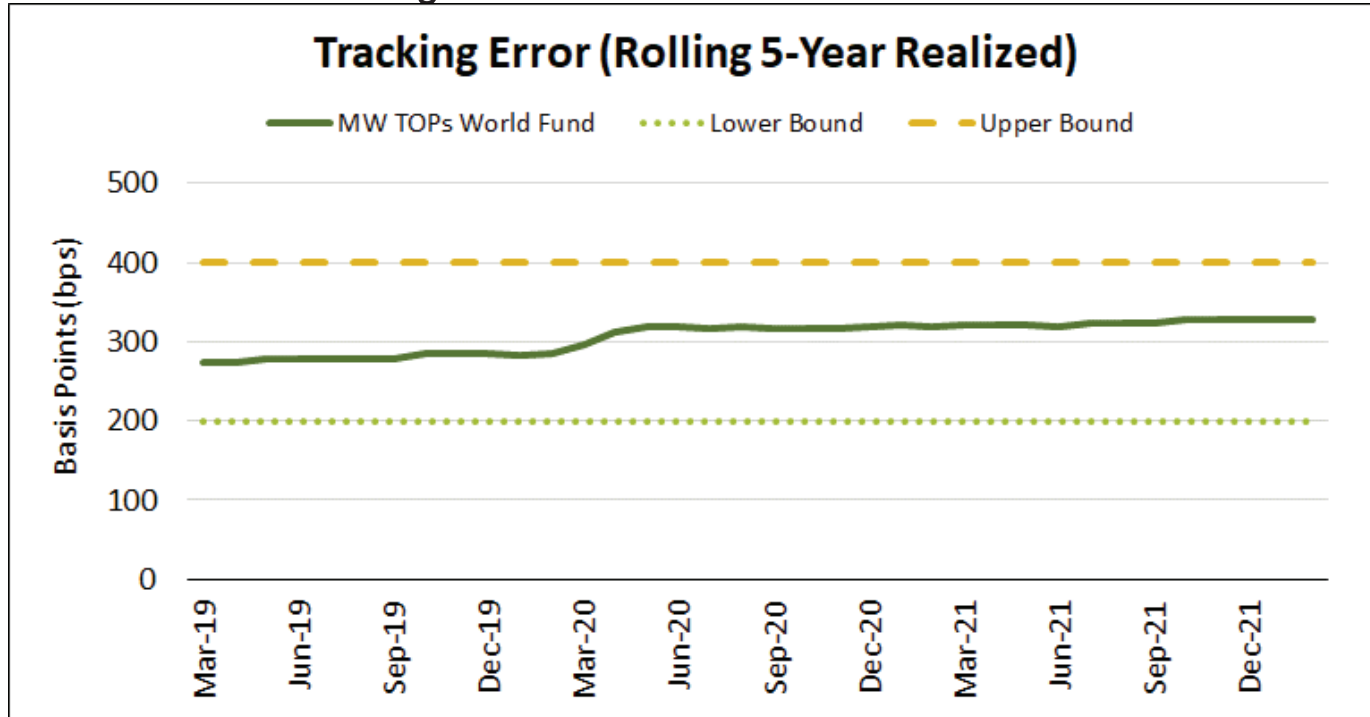
- Performance for the current holding has been steady and consistent



Directional Growth Portfolio

Historical Risk

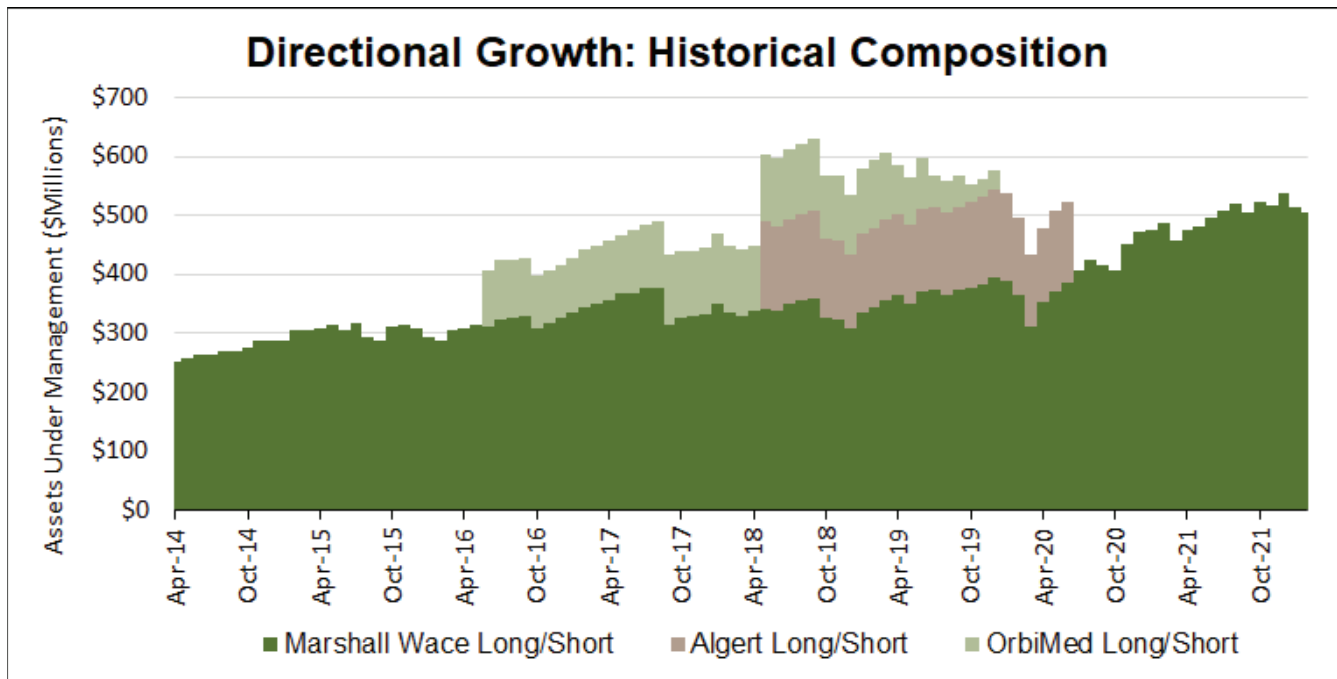
- Risk levels remain within the guidelines for this allocation



Directional Growth Portfolio

Historical Composition

- Portfolio is currently one allocation but has included others over time



Launchpad Portfolio

Key Characteristics



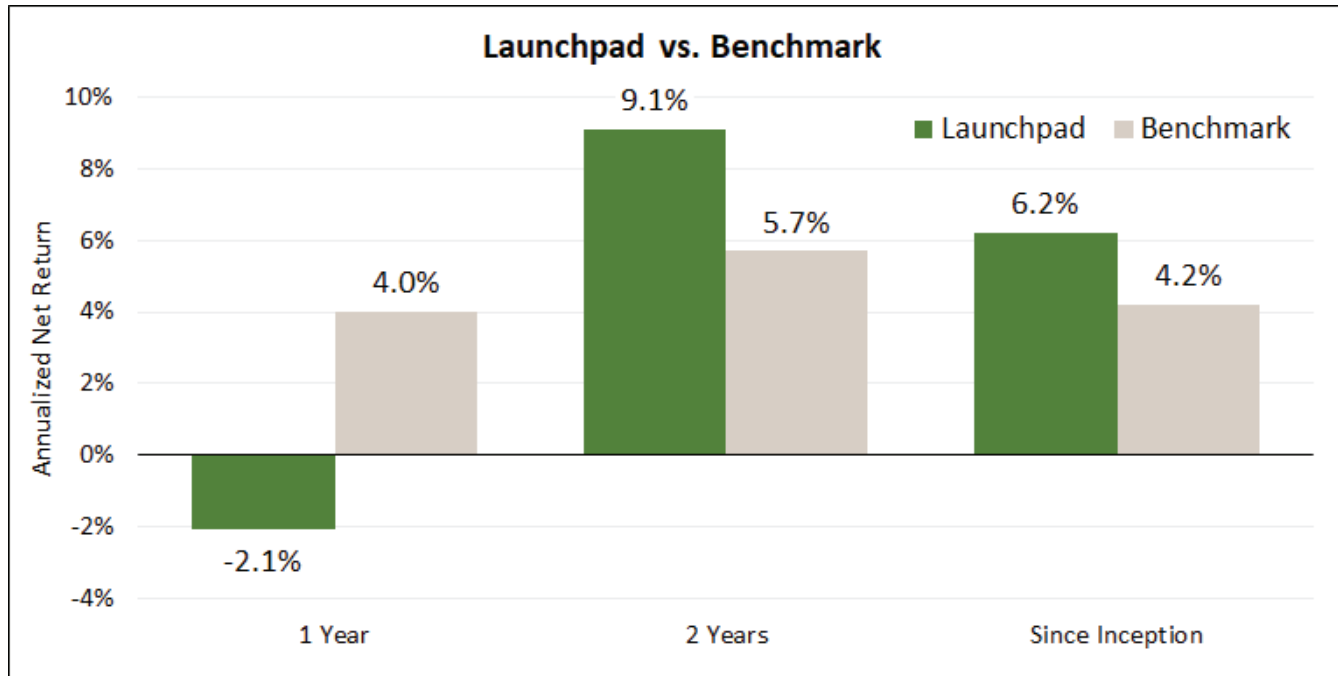
Attribute	ERS PAAMCO Launchpad
Type of Allocation	Return Seeking
Policy Allocation	Opportunistic
Management Style	External, with ERS retaining investment decisions through PAAMCO Prisma collaboration
Return Target	Blended benchmark based on underlying strategies
Risk Budget	Volatility target of 4-8%
Other Characteristics	All relationships include revenue sharing economics
Investment Expenses	~479 bps external, ~19 bps internal for FY21

Launchpad Portfolio

Performance Snapshot



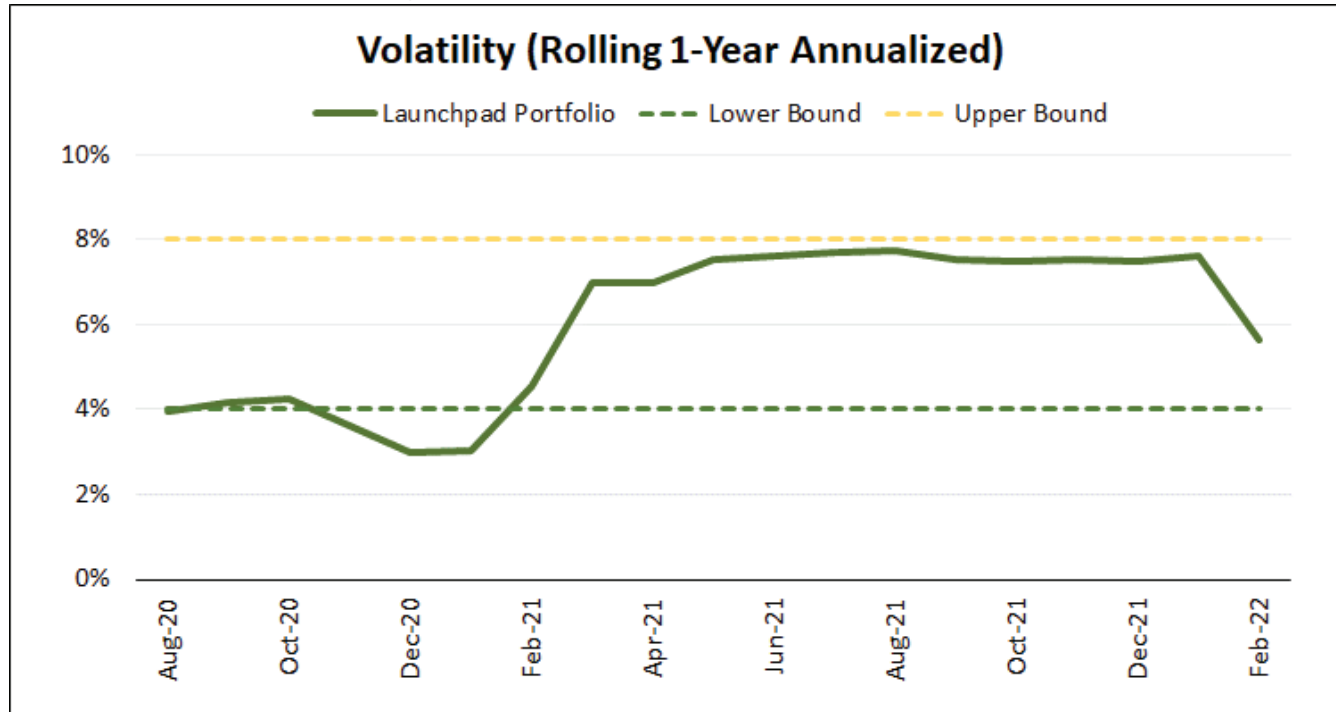
- Good performance since inception despite weak results recently



Launchpad Portfolio

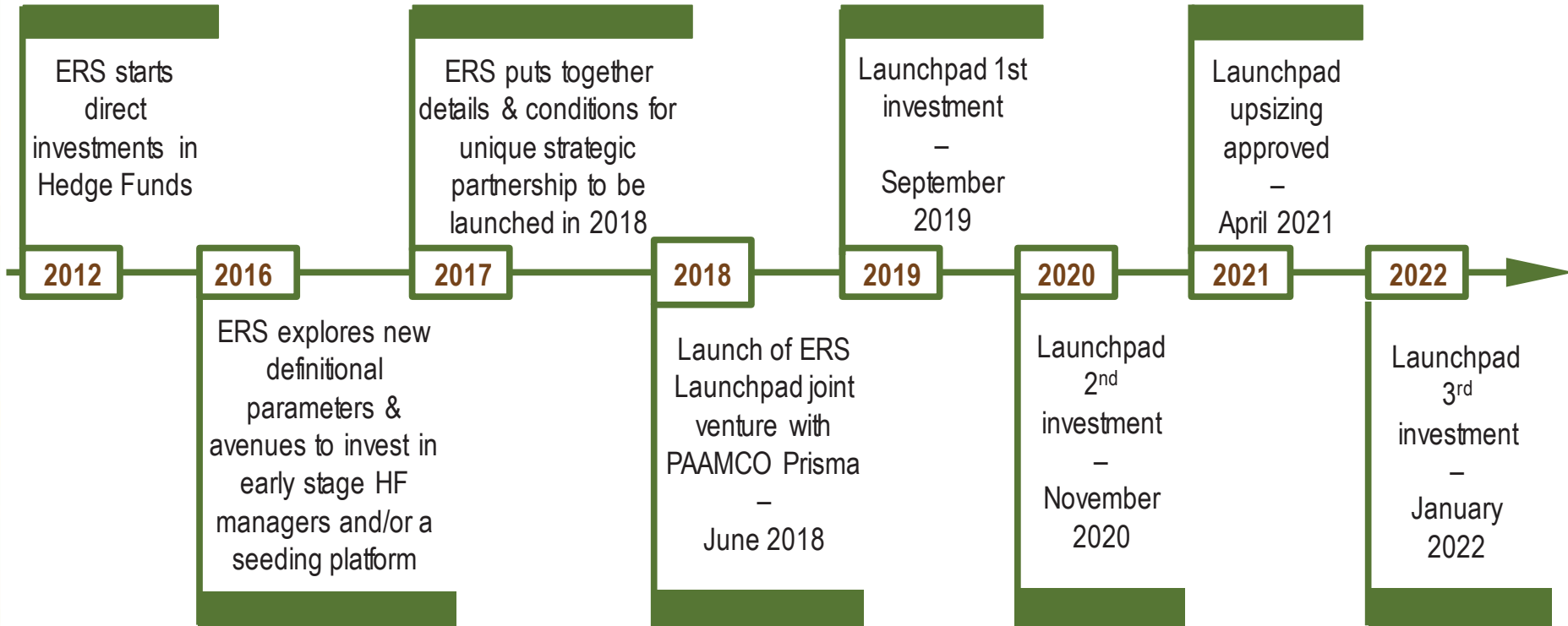
Historical Risk

- Risk levels remain within the guidelines for this allocation



Launchpad Portfolio

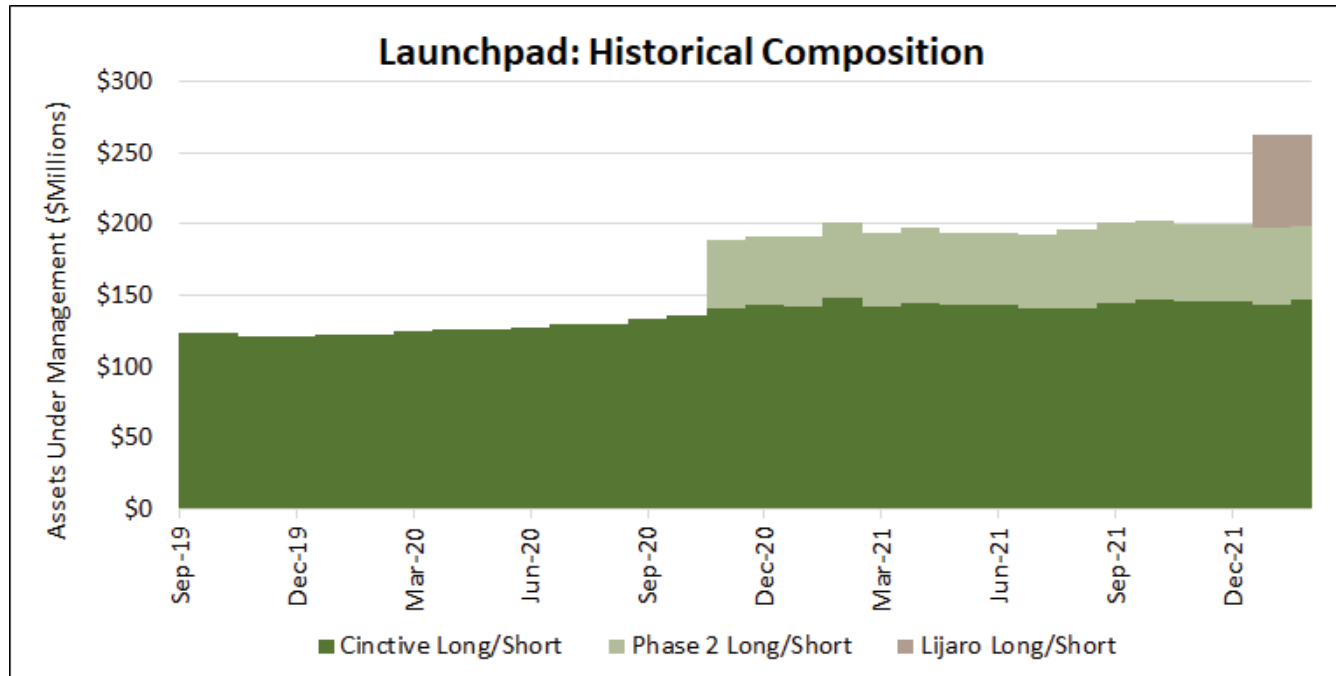
History



Launchpad Portfolio

Historical Composition

- Three allocations completed since inception with another in the pipeline



Launchpad Portfolio

Objectives



- Partner with high quality managers for attractive long term, risk-adjusted returns
- Build the Trust's "farm system" of next generation managers
- Communicate with industry about the unique structure and benefits of Launchpad
- Build a strong pipeline with potential Managers across the globe

Launchpad Portfolio

Accomplishments



- Launchpad has successfully seeded 3 strategies in the last 3 years
- Launchpad has been broadly recognized for its innovative structure
- ERS and PAAMCO Prisma have built a healthy pipeline of ideas globally
- Active sourcing (contact with ~300 managers last 12 months) leads to an active pipeline
- Demand for seed/acceleration capital puts ERS in strong economic position

Hedge Fund Program

Initiatives for FY23



Launchpad Portfolio

- Transition from Special Situations to Hedge Funds for FY23
- Manage opportunistically

Absolute Return Portfolio

- Hedge Fund Program at target allocation of 5%
- Manage opportunistically

Directional Growth Portfolio

- External Public Equity to become primary in FY23

Questions?

Review and Approval of Proposed Hedge Fund Tactical Plan for Fiscal Year 2023

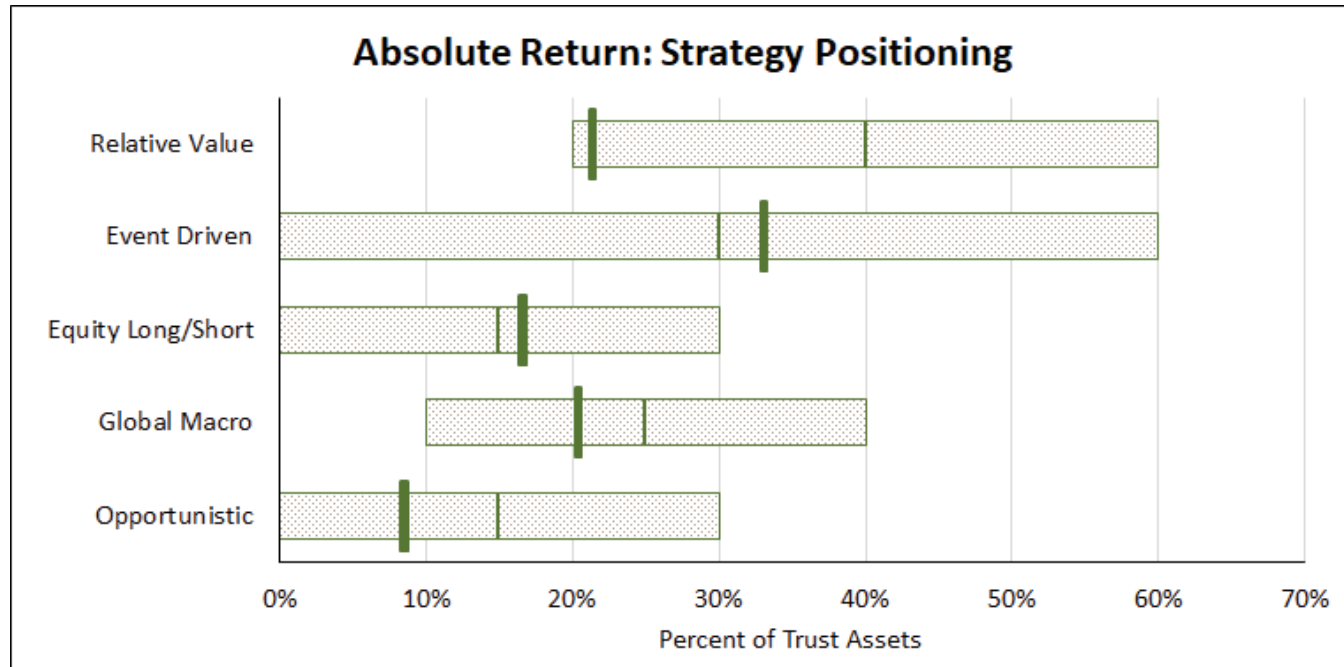
Nick Maffeo, Director of Hedge Funds

Tactical Plan

Proposed Allocation for Fiscal Year 2023



- With the proposed transition of Launchpad for FY23, the Program is at its 5% target.



Tactical Plan

Portfolio Plans for Fiscal Year 2023



- Absolute Return: 0-2 new exposures including replacements or enhancements to existing allocations.
- Launchpad: 0-1 new exposures including replacements or enhancements to existing allocations.
- Directional Growth: assist with transition to External Public Equities
- Maintain emphasis on diversifying strategies to complement existing investments across all three allocations

Questions?
Action Item

Public Agenda Item #15

*Reminder Regarding Future Meetings of the Board of Trustees,
Investment Advisory Committee, and Audit Committee*

May 11, 2022

Next Meeting Dates



2022 Meeting Dates

Wednesday, March 9, 2022

Wednesday, May 11, 2022

Wednesday, August 24, 2022

Public Agenda Item #16

*Adjournment of the Joint Meeting of the Board of Trustees and
Investment Advisory Committee*

May 11, 2022

Public Agenda Item #17

Recess of the Board of Trustees. Following a temporary recess, the Board of Trustees will reconvene to take up the Board agenda items

May 11, 2022