

Joint Meeting of the Board of Trustees  
and  
Investment Advisory Committee

May 17, 2023



# Public Agenda Item #8

*Call Meeting of the ERS Board of Trustees to Order*

May 17, 2023

## Public Agenda Item #9

### *Call Meeting of the Investment Advisory Committee to Order*

May 17, 2023

## Public Agenda Item #10

### *Consideration of Annual Review of the ERS Incentive Compensation Plan Year 2024*

May 17, 2023

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
  - A summary of the ICP awards over the last five years
  - Information on any proposed plan changes
  - A draft plan document for the upcoming fiscal 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 1-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

#### (Quantitative & Qualitative)

Plan Year	Average Realization	Minimum Realization	Maximum Realization
<b>2022</b>	<b>83.2%</b>	<b>45.0%</b>	<b>100.0%</b>
<b>2021</b>	81.4%	45.0%	100.0%
<b>2020</b>	43.0%	15.0%	72.5%
<b>2019</b>	52.3%	16.3%	86.2%
<b>2018</b>	66.3%	25.8%	100.0%
<b>Average</b>	<b>65.2%</b>	<b>29.4%</b>	<b>91.7%</b>

### Trust Fund Returns by Performance Period

#### 1-Year

Total Trust Return	Excess Return Over Benchmark
<b>-1.59%</b>	<b>1.79%</b>
25.46%	6.96%
6.82%	<b>-1.35%</b>
3.00%	<b>-0.06%</b>
9.54%	1.60%
<b>8.64%</b>	<b>1.79%</b>

#### 3-Year

Total Trust Return	Excess Return Over Benchmark
<b>9.66%</b>	<b>2.27%</b>
11.34%	1.62%
6.42%	0.05%
8.15%	0.83%
8.94%	0.20%
<b>8.90%</b>	<b>1.00%</b>

#### 5-Year

Total Trust Return	Excess Return Over Benchmark
<b>8.27%</b>	<b>1.65%</b>
11.13%	1.50%
7.30%	<b>-0.16%</b>
5.99%	0.41%
8.27%	0.36%
<b>8.19%</b>	<b>0.75%</b>

Revised: 04/13/23



# Incentive Compensation Plan

## Plan Year 2024 – Proposed Material Change



### Elimination of the forfeiture provision:

- 6.3 If Global Composite Performance for the one-year Performance Period in the current plan year is not positive, then all Incentive Compensation Awards that otherwise would have been paid on the next Payment Date (including incentive compensation based on Performance Goals not related to Global Composite Performance and previously earned Incentive Compensation Awards remaining to be paid pursuant to the respective Payment Schedule) shall not be paid until the first Payment Date immediately following the next plan year in which the one-year Performance Period for Global Composite Performance is positive. ~~Any unpaid or partially unpaid Incentive Compensation Award shall be forfeited after three (3) years of deferral of payment under this Section.~~

# Incentive Compensation Plan

*Plan Year 2024 – Proposed Material Change*



## **Elimination of the forfeiture provision**

### **Reasons:**

- Provide better alignment with the Plan's objective to attract and retain investment-related staff.
- ERS is unique among its benchmark peers in requiring this forfeiture provision.

# Incentive Compensation Plan

## *Plan Year 2024 – Other Changes*



In addition to the proposed material change, 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.

# Incentive Compensation Plan

## Plan Year 2024 – Appendix A



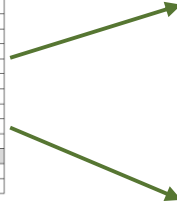
### APPENDIX A

#### ELIGIBLE EMPLOYEE POSITIONS WITH MAXIMUM INCENTIVE AWARD PERCENTAGES AND PAYMENT SCHEDULES

Plan Groups	Maximum Incentive Award Percentages	Payment Schedules (Year 1/2/3, see Section 6.2)
Investment Operations Manager	50%	50/25/25
<b>Operational Due Diligence Manager</b>	<b>50%</b>	<b>50/25/25</b>
Investment Analyst I & II	35%	50/25/25
Performance Specialist	35%	50/25/25
Investment Operations Specialist	25%	50/50/0
<b>Operational Due Diligence Specialist</b>	<b>25%</b>	<b>50/50/0</b>
Investment Administrative Support	5%	100/0/0

APPENDIX A  
ELIGIBLE EMPLOYEE POSITIONS WITH  
MAXIMUM INCENTIVE AWARD PERCENTAGES AND PAYMENT SCHEDULES

Plan Groups	Maximum Incentive Award Percentages	Payment Schedules (Year 1/2/3, see Section 6.2)
Executive Director	100%	50/25/25
Chief Investment Officer	100%	50/25/25
Deputy Chief Investment Officer	100%	50/25/25
Managing Director	100%	50/25/25
Program Director	90%	50/25/25
Supervising Portfolio Manager	90%	50/25/25
Portfolio Manager IV, V & VI	80%	50/25/25
Portfolio Manager I, II & III	70%	50/25/25
Chief Trader I & II	70%	50/25/25
Investment Analyst V	70%	50/25/25
Trader I, II & III	65%	50/25/25
Investment Analyst III & IV	58%	50/25/25
Investment Operations Manager	50%	50/25/25
<b>Operational Due Diligence Manager</b>	<b>50%</b>	<b>50/25/25</b>
Investment Analyst I & II	35%	50/25/25
Performance Specialist	35%	50/25/25
Investment Operations Specialist	25%	50/50/0
<b>Operational Due Diligence Specialist</b>	<b>25%</b>	<b>50/50/0</b>
Investment Administrative Support	5%	100/0/0
Investments and Securities, Attorney	65%	50/25/25
Investments and Securities, Paralegal	35%	50/25/25



# Incentive Compensation Plan

## Plan Year 2024 – Appendix B



Sub Category	Exec. Director	CIO Dep. CIO Inv. Serv.	Credit & Hedge Funds	Portfolio Mgmt.	Private Equity	Public Equity	Real Assets	Treasury & Trading	Legal Services
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**APPENDIX B**  
(Page 1 of 2)  
**PERFORMANCE GOAL WEIGHTINGS FOR INVESTMENT PROFESSIONALS AND LEADERSHIP EMPLOYEES**  
Pay weights from these weightings shall be approved by the Executive Director

Main Category Weight	Sub Category	Exec. Director	CIO Dep. CIO Inv. Serv.	Credit & Hedge Funds	Portfolio Mgmt.	Private Equity	Public Equity	Real Assets	Treasury & Trading	Legal Services
25% Individual (excluding CEO)	Global Composite Performance	65%	20%	20%	20%	20%	20%	20%	20%	20%
25% Weighted	A combination of one or more of the following, as indicated below (1)									
	Global Public Equity							X		
	Internal Global Public Equity							X		
	Individual Portfolio		X	X				X		
	Internally Traded Portfolio								X	
	Trading Performance								X	
	Public Credit-Internal		X							
	Public Credit-External		X							
	Rates									X
	Private Equity Public Market Equivalent (2)								10%	
	Private Equity Peer Comparison (3)								30%	
	Private Real Estate Public Market Equivalent (2) (4)							X		X
	Public Real Estate REIT(s)							X		
	Private Infrastructure Public Market Equivalent (2)							X		X
	Hedge Funds		X							X

Public Credit-Internal			X							
Private Credit-External			X							
Rates								X		
Private Equity Public Market Equivalent (2)						10%				X
Private Equity Peer Comparison (3)						30%				X
Private Real Estate Public Market Equivalent (2) (4)								X		X
Public Real Estate REIT(s)								X		

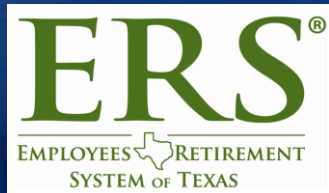
# Discussion

# Public Agenda Item #11

*\* Review of Investment Performance for  
1st Calendar Quarter of 2023 and Risk Update*

May 17, 2023

David T. Veal, Chief Investment Officer  
John McCaffrey, Managing Director of Portfolio Management  
Sam Austin, Partner, NEPC



# QUARTERLY PERFORMANCE REPORT

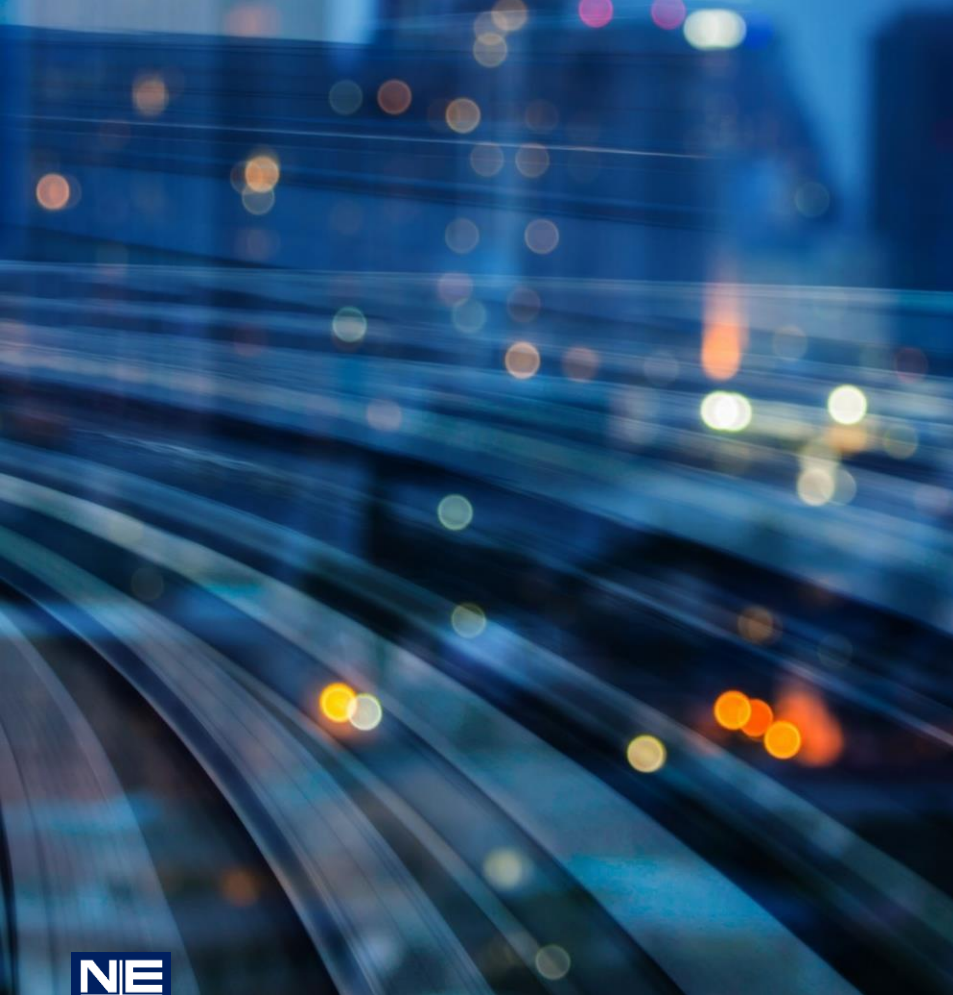
EMPLOYEES RETIREMENT SYSTEM OF  
TEXAS

MAY 17, 2023

Sam Austin, Partner  
Michael Malchenko, Consultant







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- Economic and Market Environment
- Executive Summary



# ECONOMIC AND MARKET ENVIRONMENT

# ECONOMIC ENVIRONMENT



**Inflation is decelerating  
but still above 2020 levels**

- Headline CPI increased 5% in March, down from the 6.5% increase in December and the peak 9.1% increase in June.
- The Producer Price Index decreased 0.5%, the first monthly decline since April 2020.



**Is the banking crisis the  
canary in a coal mine?**

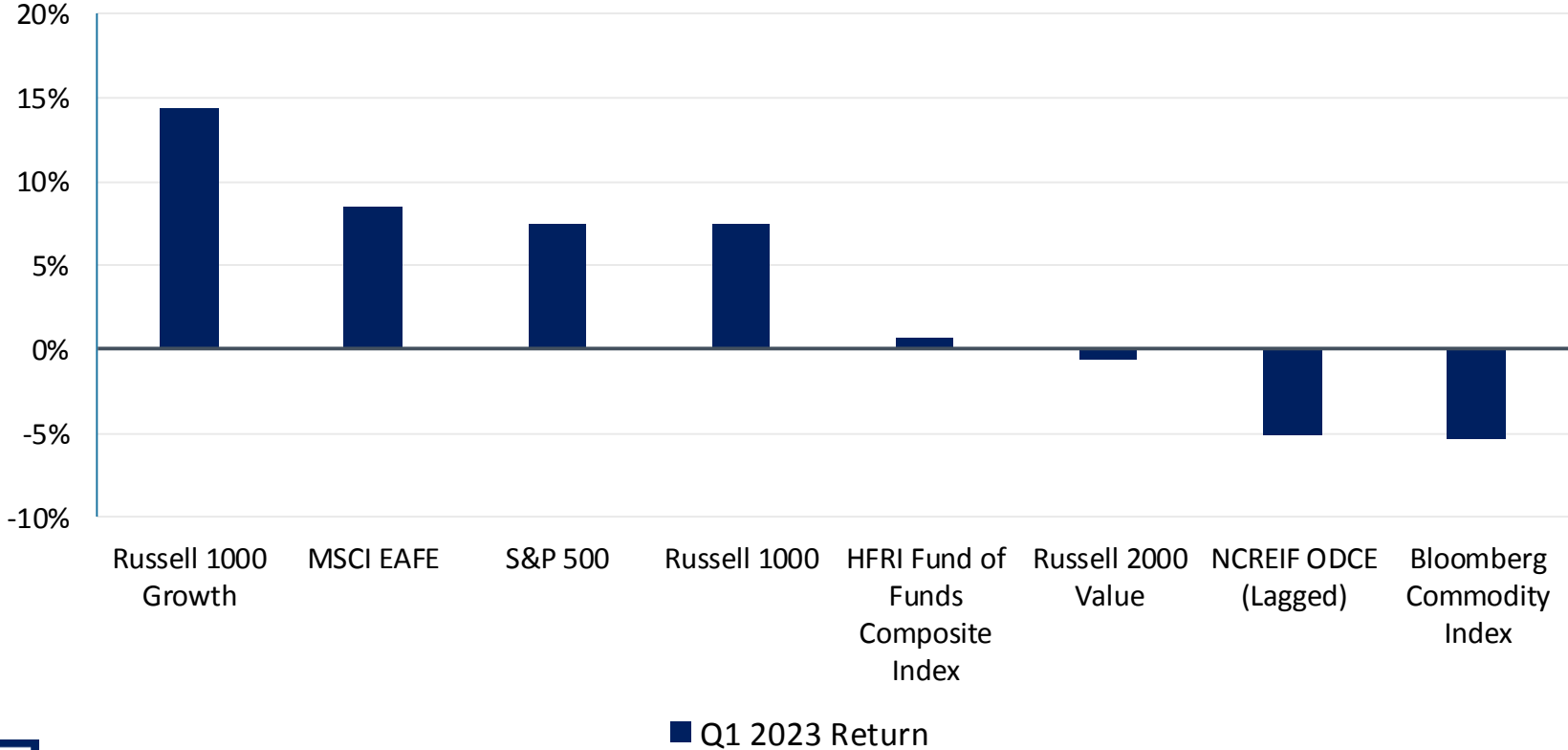
- SVB failure drove concerns over deposit stability in U.S. regional banks.
- The Federal Reserve's loan officer survey indicated tightening credit standards.



**Probability of economic  
recession is increasing**

- The Conference Board forecasts a recession starting in 2023.
- The market is pricing in another Fed rate hike in May.
- PMI data suggest sticky price pressures.
- Weekly initial jobless claims increased through Q1.

# BEST AND WORST INDEX PERFORMANCE





# EXECUTIVE SUMMARY

# ERS TRUST DASHBOARD

Performance	CYTD	FYTD 2023
<b>Total Trust</b>	3.21% (83)	2.94% (52)
<b>Policy Benchmark</b>	3.11% (84)	2.83% (60)
<b>Excess Return</b>	0.10%	0.11%

Risk Statistics	5-Year	3-Year	
	Sharpe Ratio	Sortino Ratio	Tracking Error
<b>Total Trust</b>	0.79 (3)	1.19 (3)	2.36%
<b>Policy Benchmark</b>	0.59 (17)	0.88 (16)	-

## Attribution Summary

### Largest Contributors (Quarter)

Private Real Estate (+0.3%) contributed positively versus the Policy Benchmark.

### Largest Detractors (Quarter)

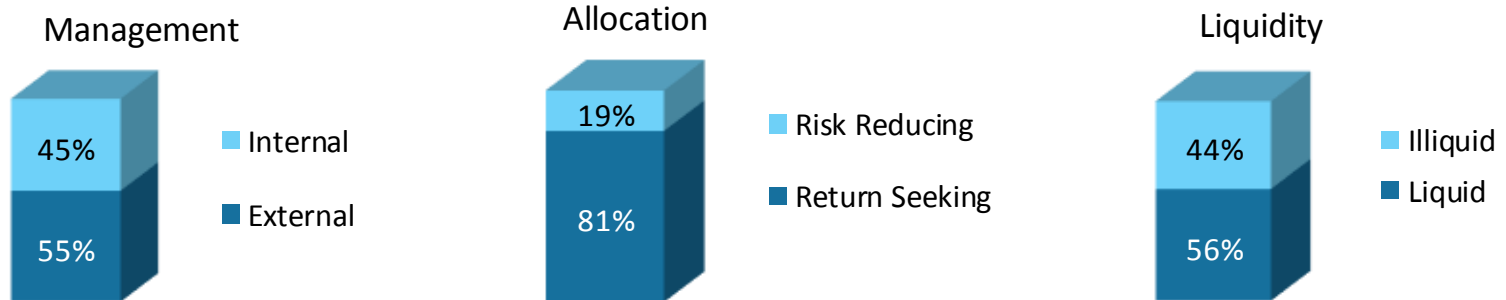
Global Public Equity (-0.1%) contributed negatively versus the Policy Benchmark.



Note: Numbers in parentheses indicate the Trust's rank among the peer universe of Public Defined Benefit plans greater than \$ 1 Billion.

# ERS TRUST DASHBOARD

Profile	
Market Value at March 31, 2023	\$33.89 Billion
Actuarial Accrued Liability August 31, 2022	\$45.9 Billion
Actuarial Value of Assets August 31, 2022	\$31.6 Billion
ERS Trust Funded Ratio August 31, 2022	68.9%
Actuarial Assumed Rate of Return	7.00%
Retirees and Beneficiaries August 31, 2022	122,720
Retirement Payments Year Ended August 31, 2022	\$3.91 Billion





# PERFORMANCE SUMMARY



# TOTAL TRUST PERFORMANCE DETAIL (NET OF FEES)

	Market Value	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
<b>Total Trust</b>	<b>\$33,891,622,898</b>	<b>3.2% (83)</b>	<b>2.9% (52)</b>	<b>-0.7% (3)</b>	<b>12.9% (12)</b>	<b>7.8% (3)</b>	<b>7.8% (6)</b>
<i>Policy Benchmark</i>		<i>4.1% (84)</i>	<i>2.8% (60)</i>	<i>-1.7% (11)</i>	<i>10.2% (86)</i>	<i>6.3% (45)</i>	<i>6.9% (56)</i>
<i>Passive Index</i>		<i>6.1%</i>	<i>5.4%</i>	<i>-6.0%</i>	<i>12.3%</i>	<i>6.0%</i>	<i>6.9%</i>

- **One-year period ended March 31, 2023, the Trust outperformed the policy benchmark by 1.0%.**
- **In the one-year period, the Trust's assets decreased from \$35.21 billion to \$33.89 billion. This includes a \$204 million net investment gain within the one-year period and a \$1.06 billion net investment gain within the first calendar quarter of 2023.**

Note: The Passive Index is comprised of 80% MSCI ACWI IMI and 20% Bloomberg Intermediate Treasury Index. Numbers in parentheses indicate the Trust's rank among the peer universe of Public Defined Benefit plans greater than \$1 Billion.



# TOTAL TRUST PERFORMANCE DETAIL (NET OF FEES)

## 3 Years Ending March 31, 2023

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio	Sortino Ratio
Total Trust	12.9% (12)	7.9% (4)	1.46 (3)	2.78 (3)
Policy Benchmark	10.2% (86)	8.2% (8)	1.11 (19)	1.96 (23)

## 5 Years Ending March 31, 2023

	Anlzd Ret	Anlzd Std Dev	Sharpe Ratio	Sortino Ratio
Total Trust	7.8% (3)	8.0% (6)	0.79 (3)	1.19 (3)
Policy Benchmark	6.3% (45)	8.6% (11)	0.59 (17)	0.88 (16)

- **The three-year and five-year Trust returns have outperformed the actuarial rate of return.**
- **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.**

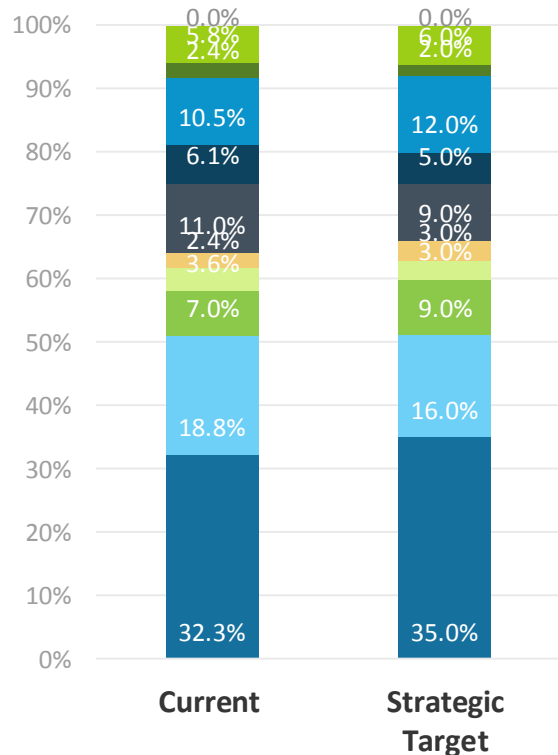


Note: Numbers in parentheses indicate the Trust's rank among the peer universe of Public Defined Benefit plans greater than \$ 1 Billion.

# TOTAL TRUST ASSET GROWTH SUMMARY

Summary of Cash Flows					
	Last Three Months	Fiscal Year-To-Date	One Year	Three Years	Five Years
<b>Beginning Market Value</b>	<b>\$33,167,264,323</b>	<b>\$33,321,662,960</b>	<b>\$35,211,542,388</b>	<b>\$26,156,889,219</b>	<b>\$28,361,237,547</b>
Contributions	\$1,471,376,743	\$18,268,703,188	\$22,612,954,888	\$53,918,381,037	\$81,433,185,281
Withdrawals	-\$1,807,040,355	-\$19,133,457,373	-\$24,103,713,022	-\$57,678,458,980	-\$87,739,557,725
Net Cash Flow	-\$340,197,207	-\$878,748,492	-\$1,523,953,319	-\$3,866,498,970	-\$6,439,652,891
Net Investment Change	\$1,064,555,782	\$1,448,708,429	\$204,033,829	\$11,601,232,649	\$11,970,038,242
<b>Ending Market Value</b>	<b>\$33,891,622,898</b>	<b>\$33,891,622,898</b>	<b>\$33,891,622,898</b>	<b>\$33,891,622,898</b>	<b>\$33,891,622,898</b>
Net Change	\$724,358,574	\$569,959,937	-\$1,319,919,491	\$7,734,733,679	\$5,530,385,351

# TRUST ASSET ALLOCATION VS. POLICY TARGETS

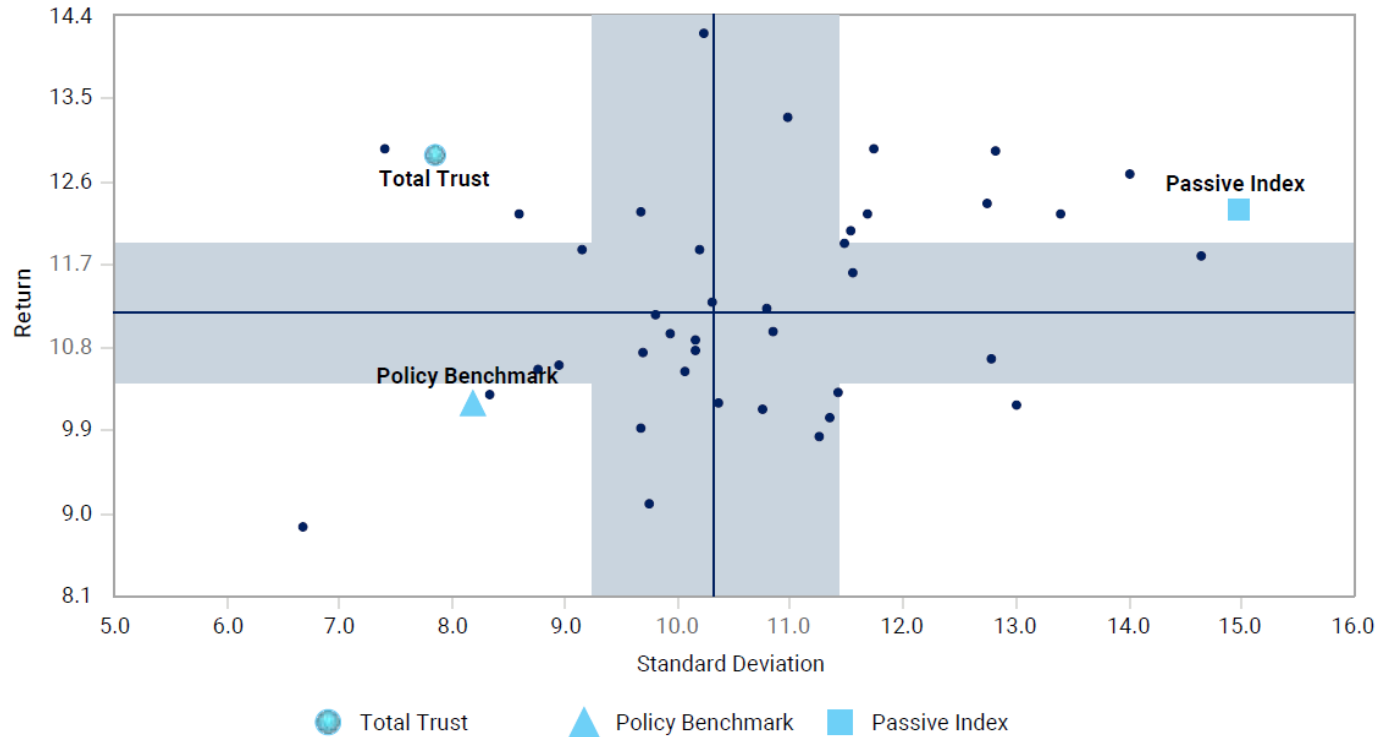


Asset Allocation as of March 31, 2023					
	Current Value	Current	Strategic Target	Tactical Range	
Public Equity	\$10,956,299,648	32.3%	35.0%	25.0% - 45.0%	
Private Equity	\$6,373,348,868	18.8%	16.0%	11.0% - 21.0%	
Public Credit	\$2,378,252,223	7.0%	9.0%	4.0% - 14.0%	
Private Credit	\$1,225,066,502	3.6%	3.0%	0.0% - 8.0%	
Real Estate - Public	\$805,267,321	2.4%	3.0%	0.0% - 13.0%	
Real Estate - Private	\$3,737,236,761	11.0%	9.0%	4.0% - 14.0%	
Infrastructure	\$2,055,327,122	6.1%	5.0%	0.0% - 10.0%	
Rates	\$3,569,135,489	10.5%	12.0%	7.0% - 17.0%	
Cash	\$825,563,149	2.4%	2.0%	1.0% - 3.0%	
Hedge Funds	\$1,966,125,814	5.8%	6.0%	0.0% - 11.0%	
Special Situations	\$0	0.0%	0.0%	0.0% - 5.0%	
<b>Total</b>	<b>\$33,891,622,898</b>	<b>100%</b>	<b>100%</b>		



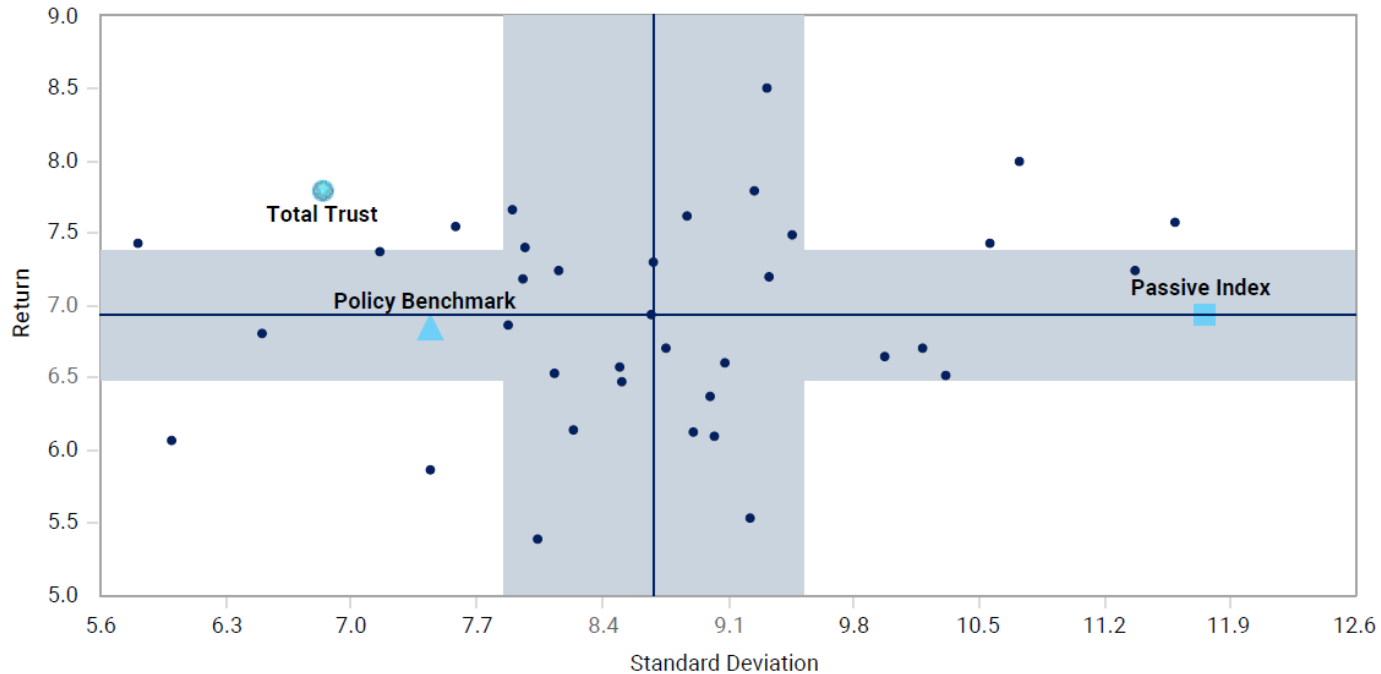
# TOTAL TRUST RISK/RETURN

3 Years Ending March 31, 2023  
vs. InvMetrics Public DB > \$1 Billion



# TOTAL TRUST RISK/RETURN

10 Years Ending March 31, 2023  
vs. InvMetrics Public DB > \$1 Billion

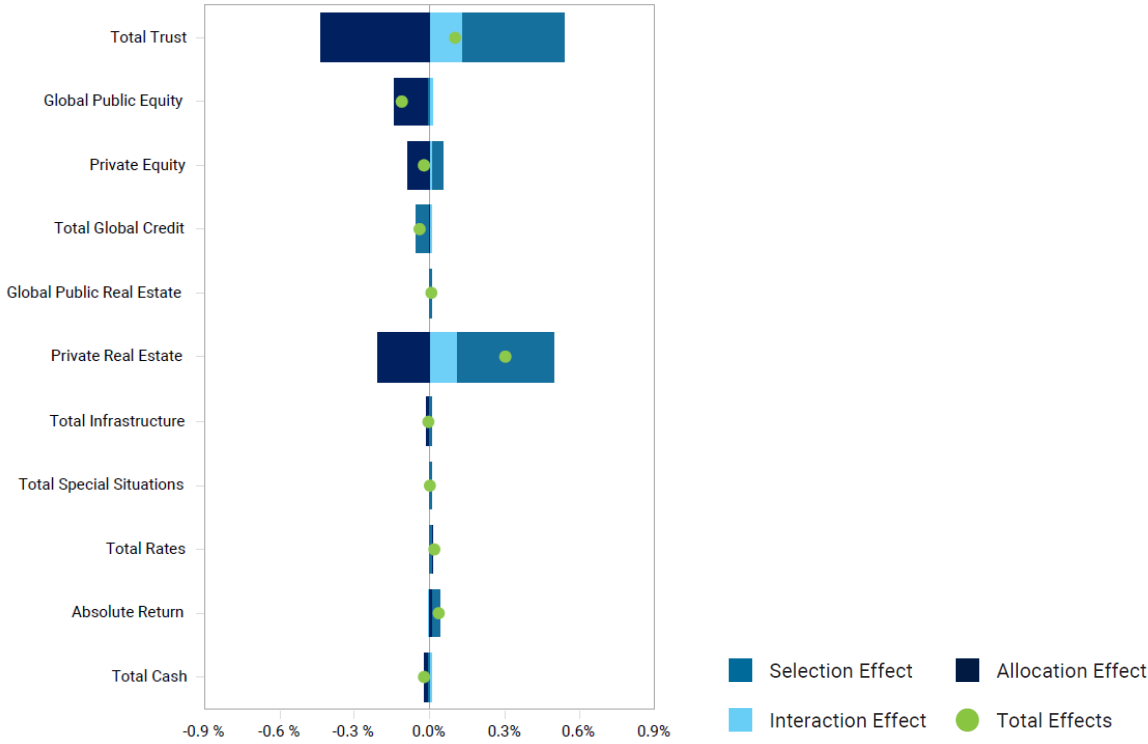


● Total Trust    ▲ Policy Benchmark    ■ Passive Index



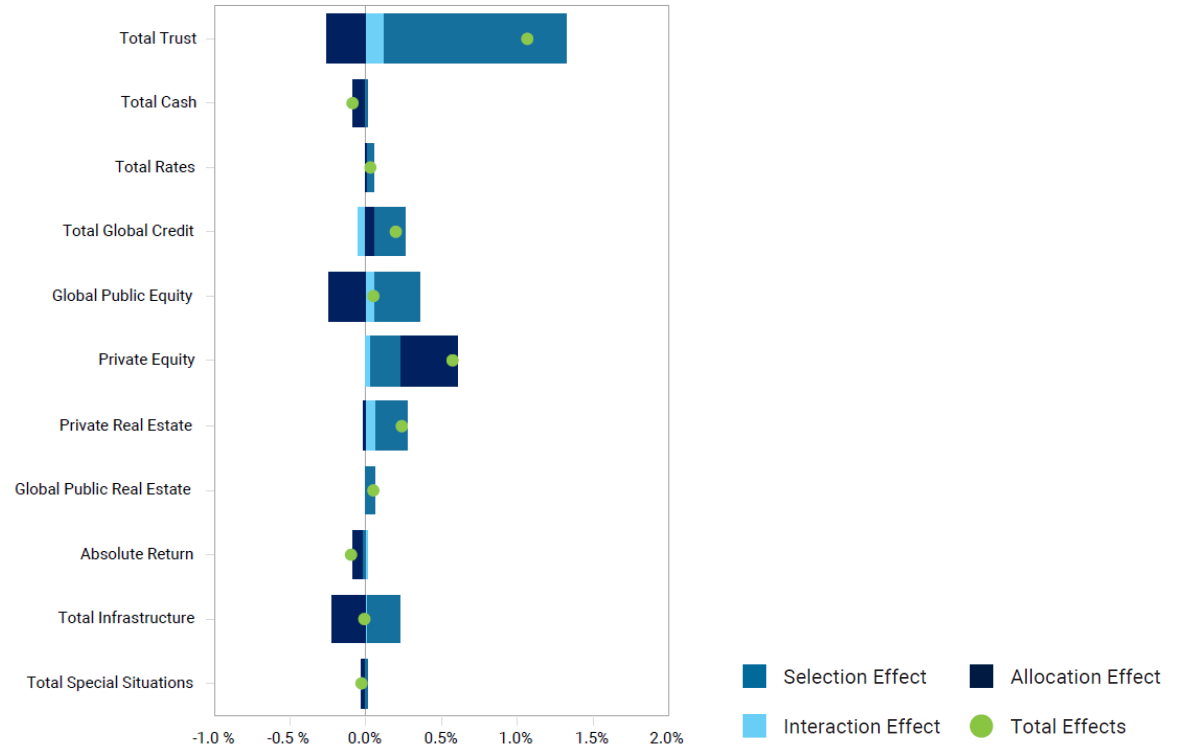
# TOTAL TRUST ATTRIBUTION ANALYSIS

Attribution Effects  
1 Quarter Ending March 31, 2023



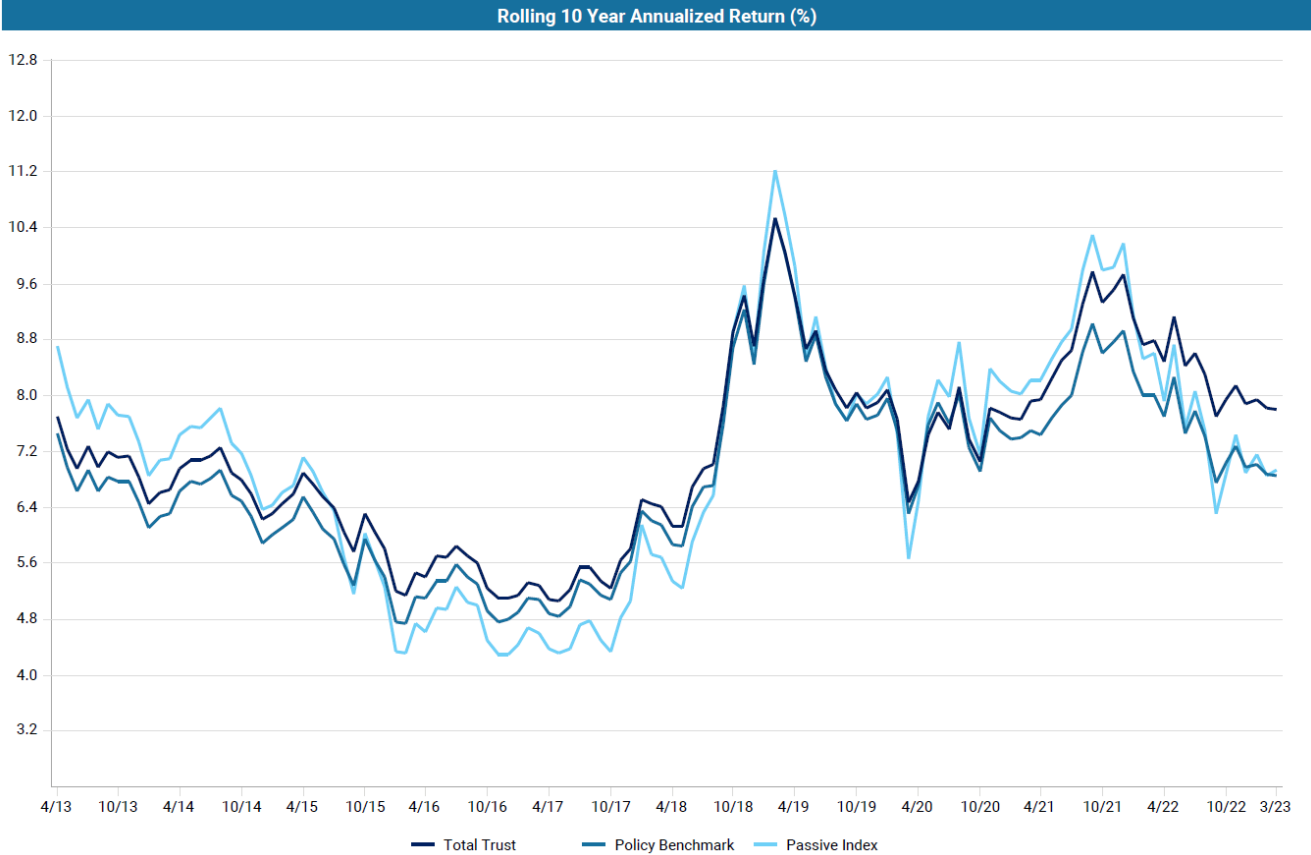
# TOTAL TRUST ATTRIBUTION ANALYSIS

Attribution Effects  
1 Year Ending March 31, 2023

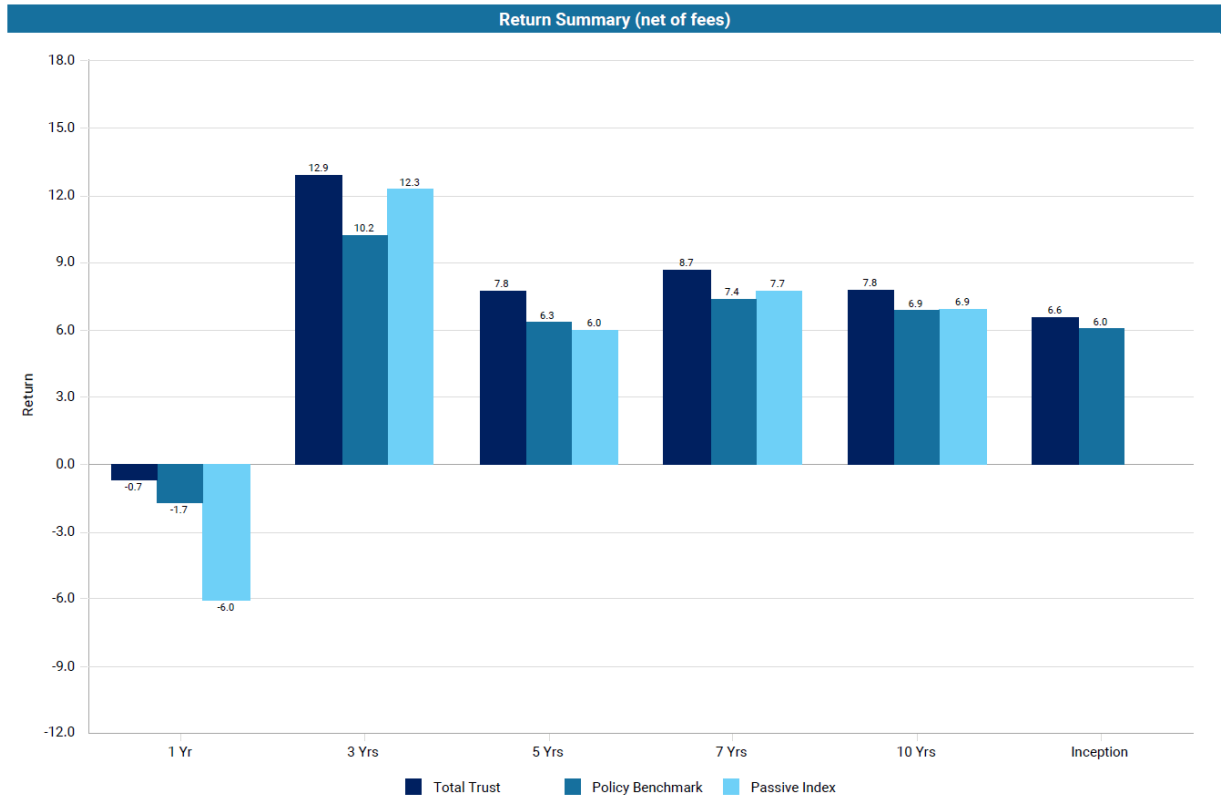




# LONG TERM INVESTMENT RESULTS



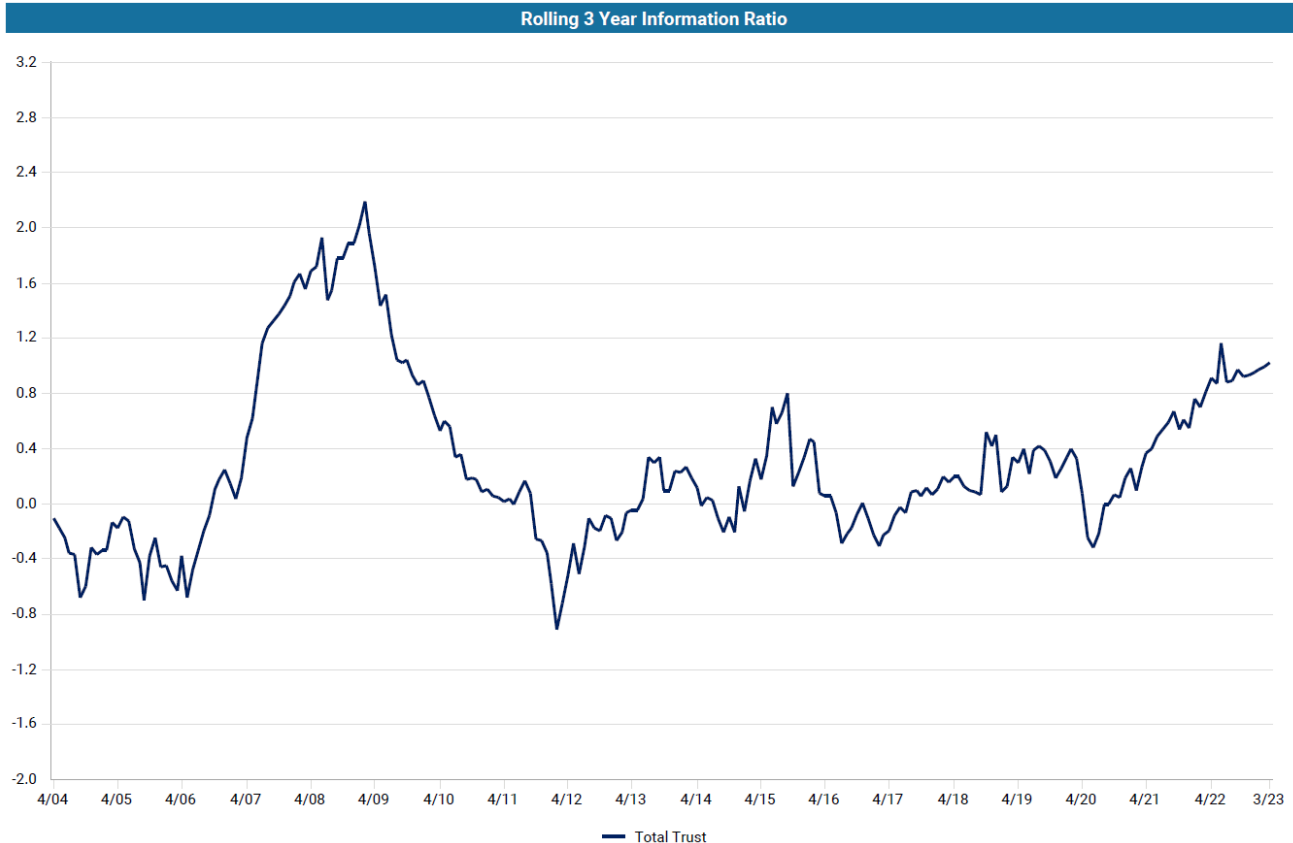
# LONG TERM INVESTMENT RESULTS



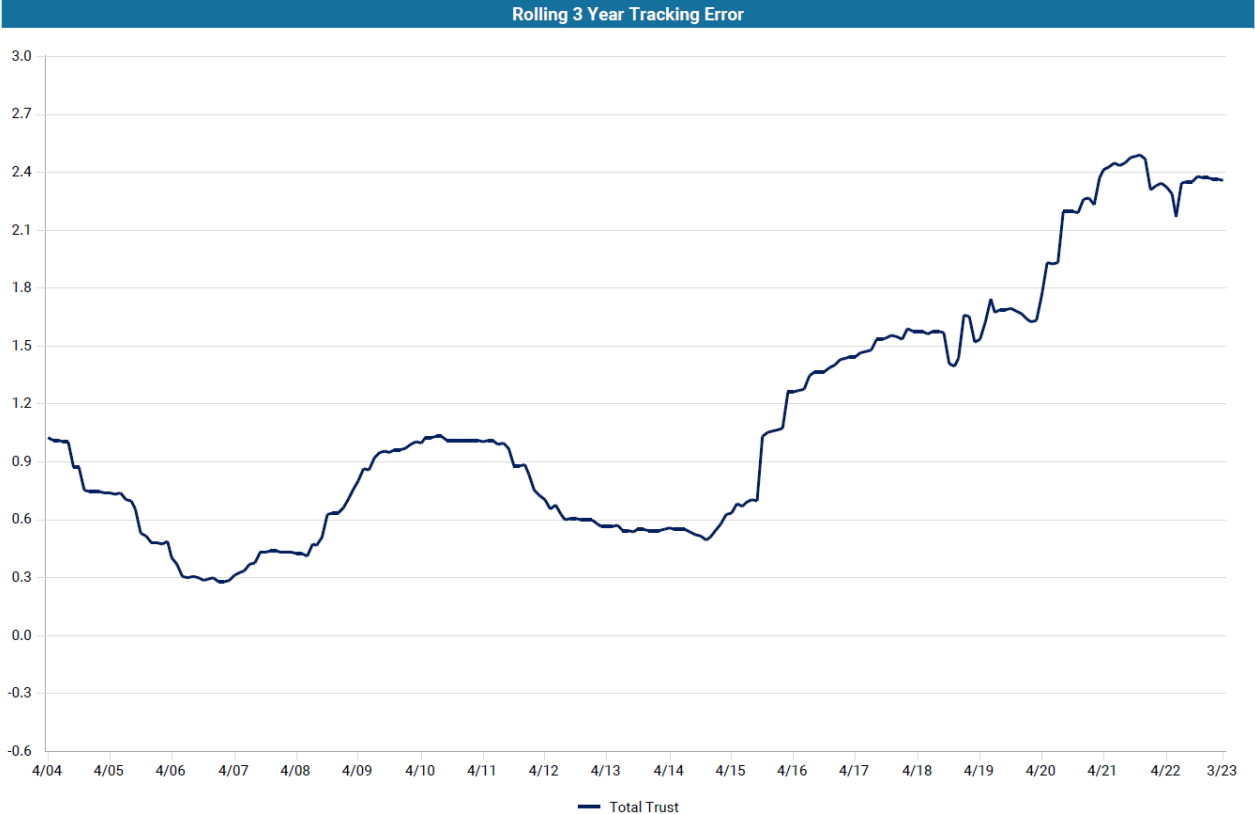
Note: The Passive Index is comprised of 80% MSCI ACWI IMI and 20% Bloomberg Intermediate Treasury Index. Index definitions can be found in the appendix.



# ROLLING INFORMATION RATIO



# ROLLING TRACKING ERROR



# PERFORMANCE SUMMARY COMMENTARY

- **Over the past 10 years, Total trust returns outperformed the Policy Benchmark by 0.9% and outperformed the Plan's actuarial rate of return of 7.0% by 0.8%.**
- **In the one-year period ended March 31, 2023, the Trust outperformed the Policy Benchmark by 1.0%.**
  - The largest contributors to performance against the benchmark were Private Equity (+0.6%), Private Real Estate (+0.2%), and Global Credit (+0.2%).
  - The sole detractor against the benchmark was Absolute Return (-0.1%).
- **In the past one-year, portfolio positioning at the asset class level detracted -0.3% from Total Trust returns versus the policy benchmark.**
  - An overweight position in Private Equity contributed positively (+0.4%).
  - An underweight position in Global Public Equity contributed negatively (-0.3%).
  - An overweight position in Infrastructure contributed negatively (-0.2%).

# Discussion

# *Risk Outlook*

May 17, 2023

David T. Veal, Chief Investment Officer

John McCaffrey, Managing Director of Portfolio Management

# Risk Outlook

## *Portfolio and Risk Management*



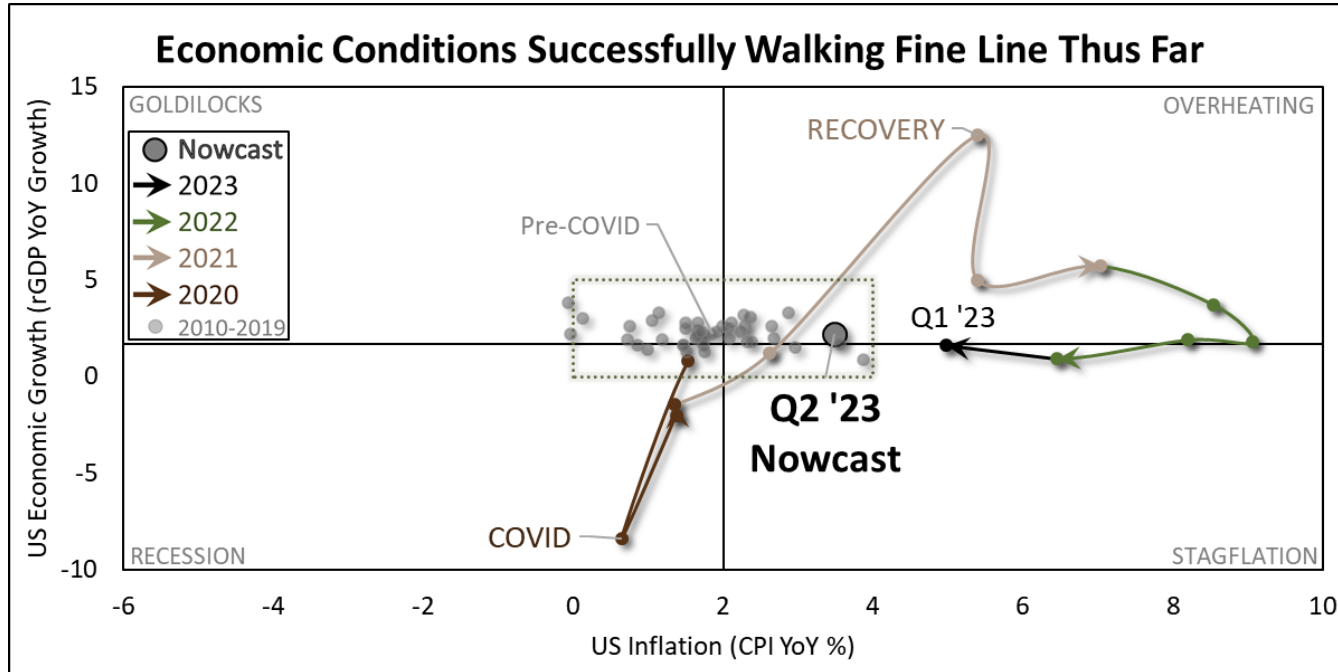
**Strategic goal:** balance risk and return in pursuit of the strategic objectives of the investment program.

- Ensure diversification appropriate to economic conditions
- Maintain acceptable levels of volatility given market conditions
- Provide short-term liquidity while investing for long-term growth



# Risk Outlook

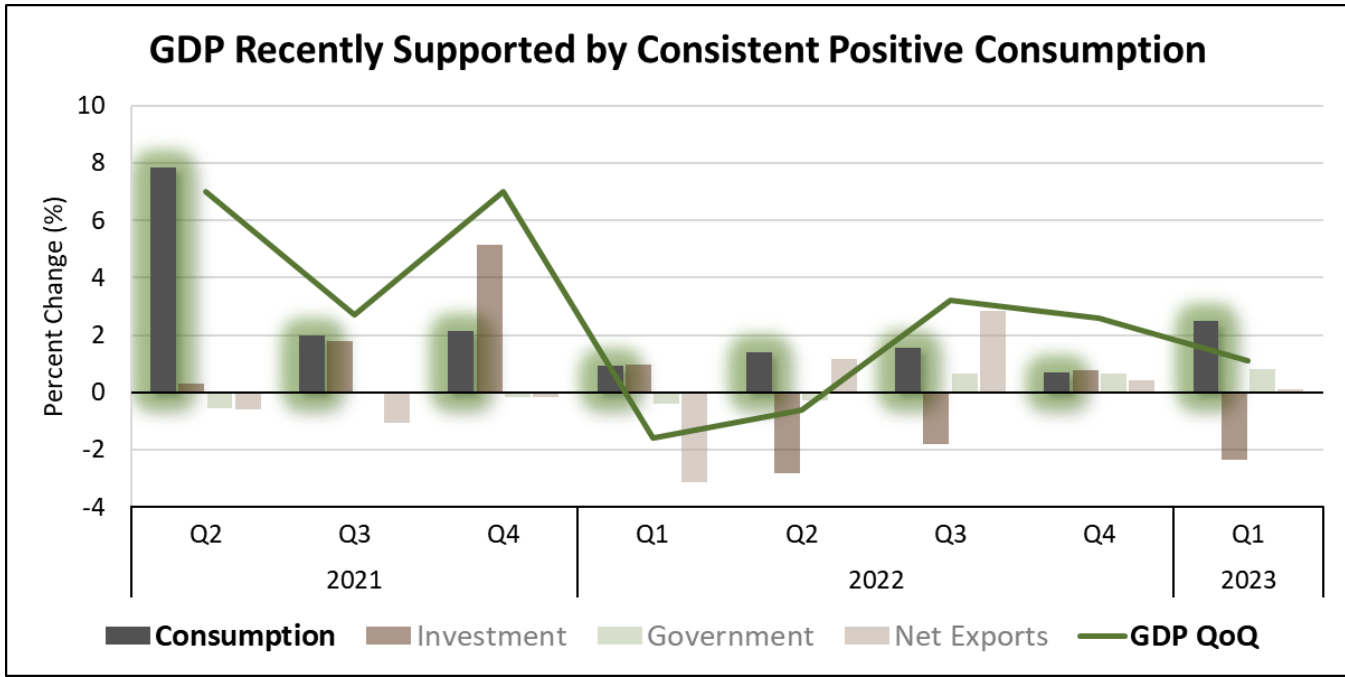
## Economic Growth and Inflation



Source: Bloomberg, US Bureau of Economic Analysis, US Bureau of Labor Statistics

# Risk Outlook

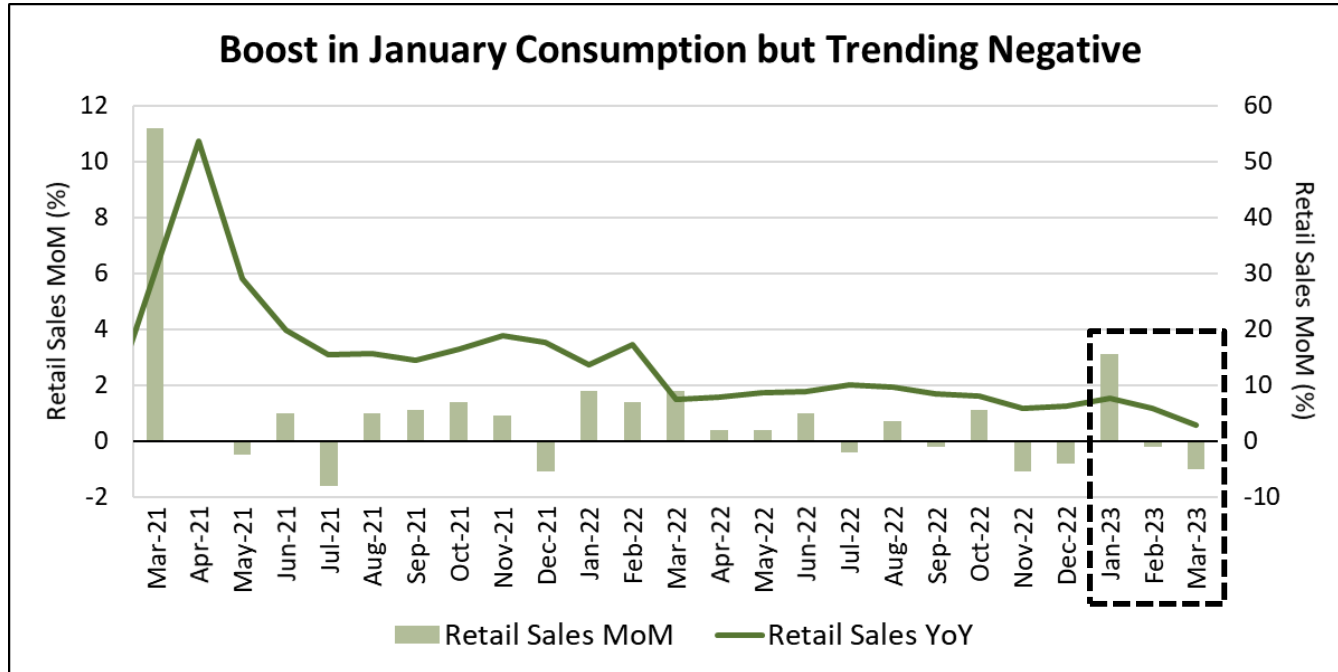
## Economic Growth – Consumer Spending



Source: Bloomberg, US Bureau of Economic Analysis

# Risk Outlook

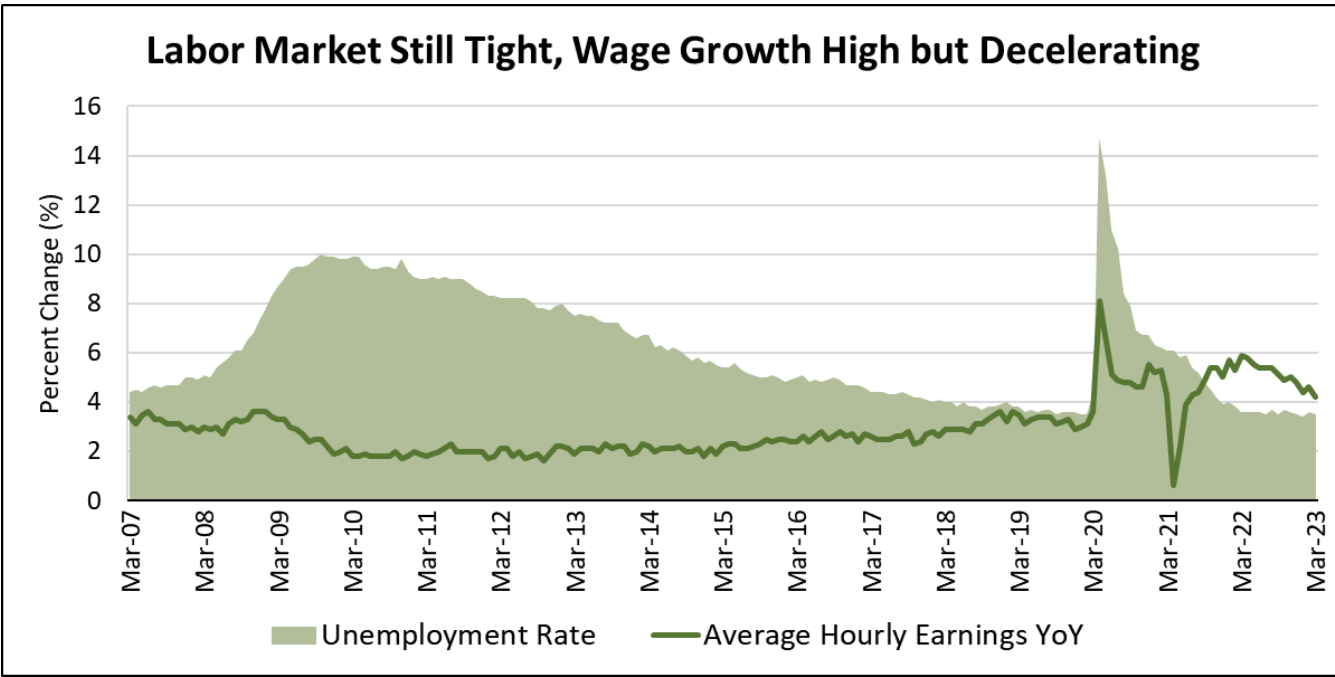
## Economic Growth – Consumer Spending



Source: Bloomberg, US Census Bureau

# Risk Outlook

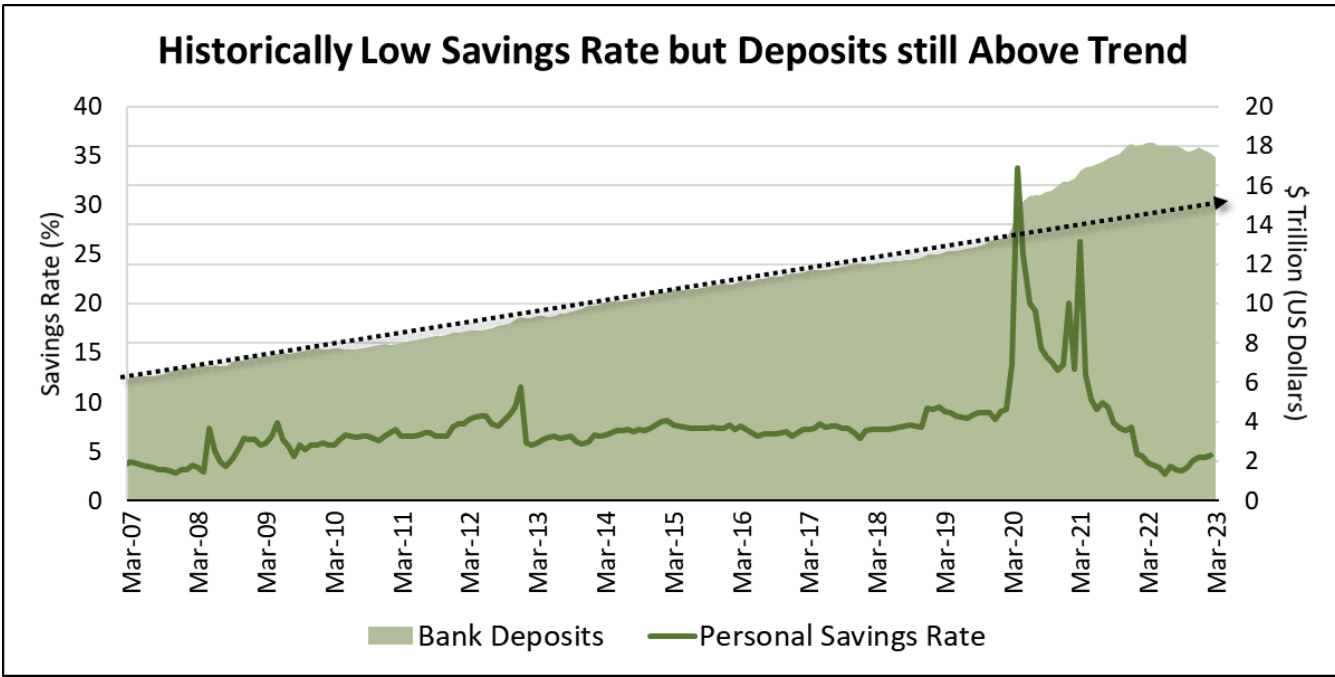
## Personal Consumption Outlook



Source: US Bureau of Labor Statistics

# Risk Outlook

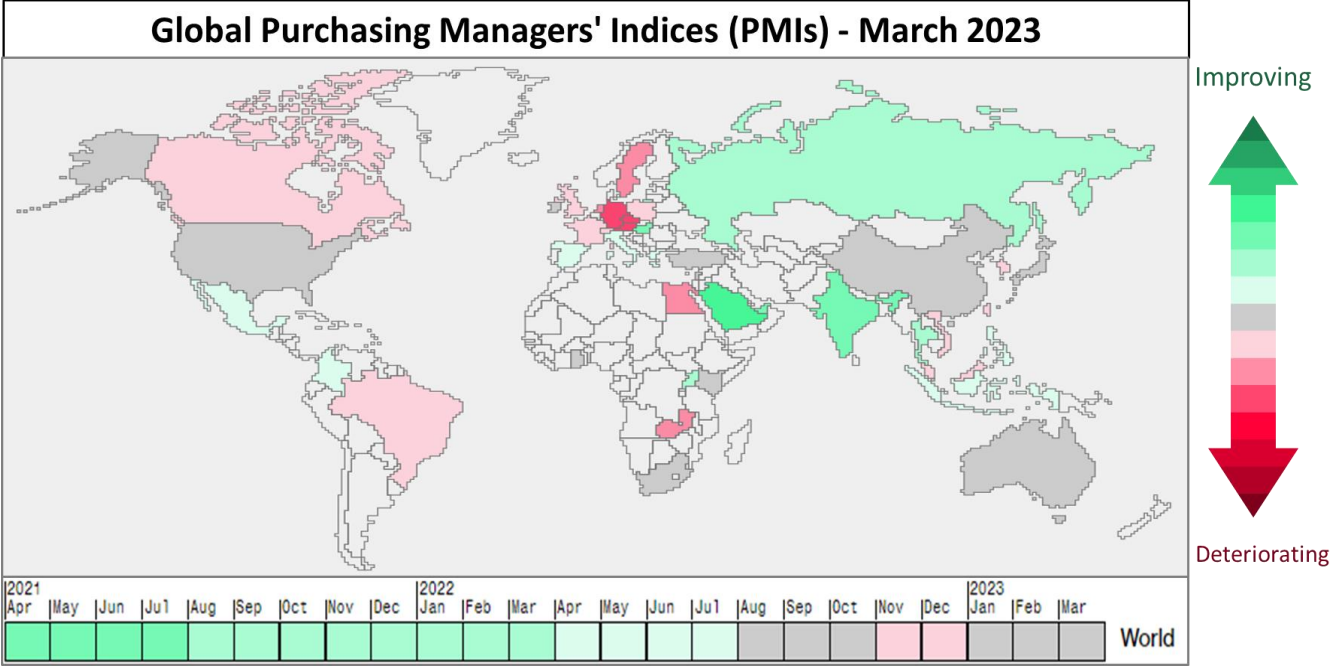
## Personal Consumption Outlook



Source: US Federal Reserve

# Risk Outlook

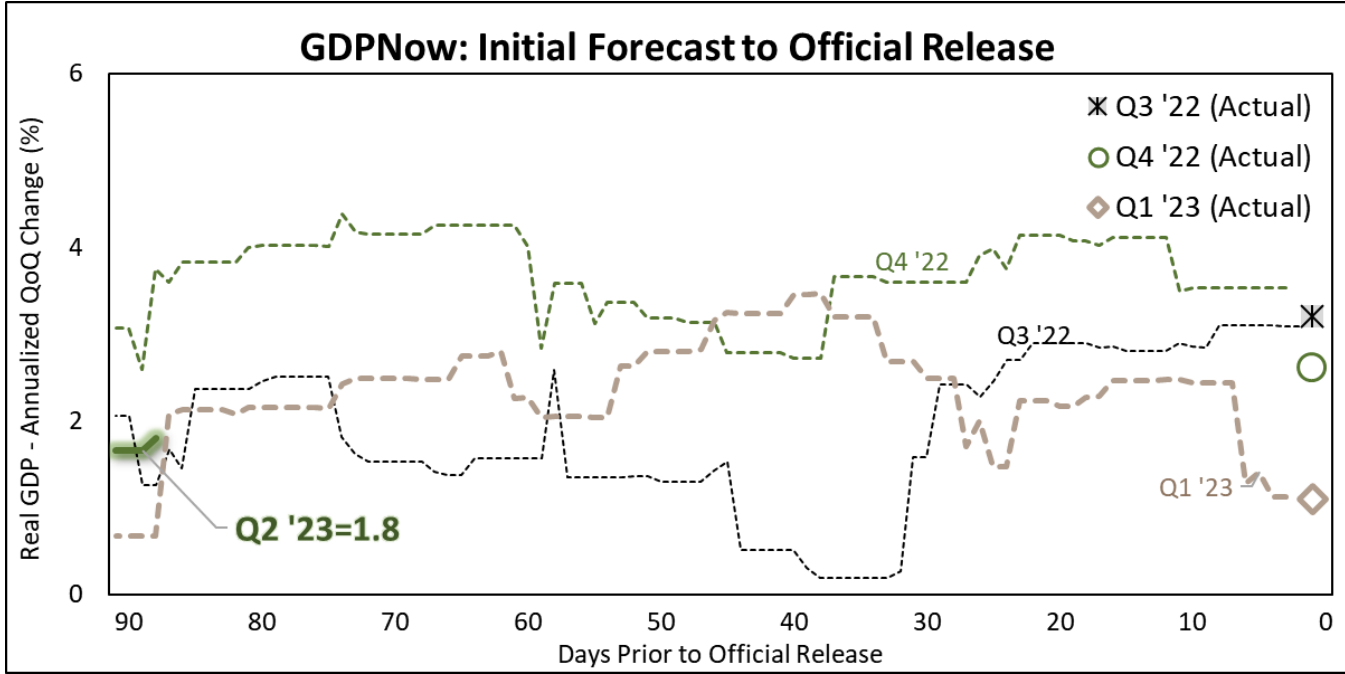
## Global Purchasing Managers' Indices (PMIs)



Source: Bloomberg, IHS Markit Economics.

# Risk Outlook

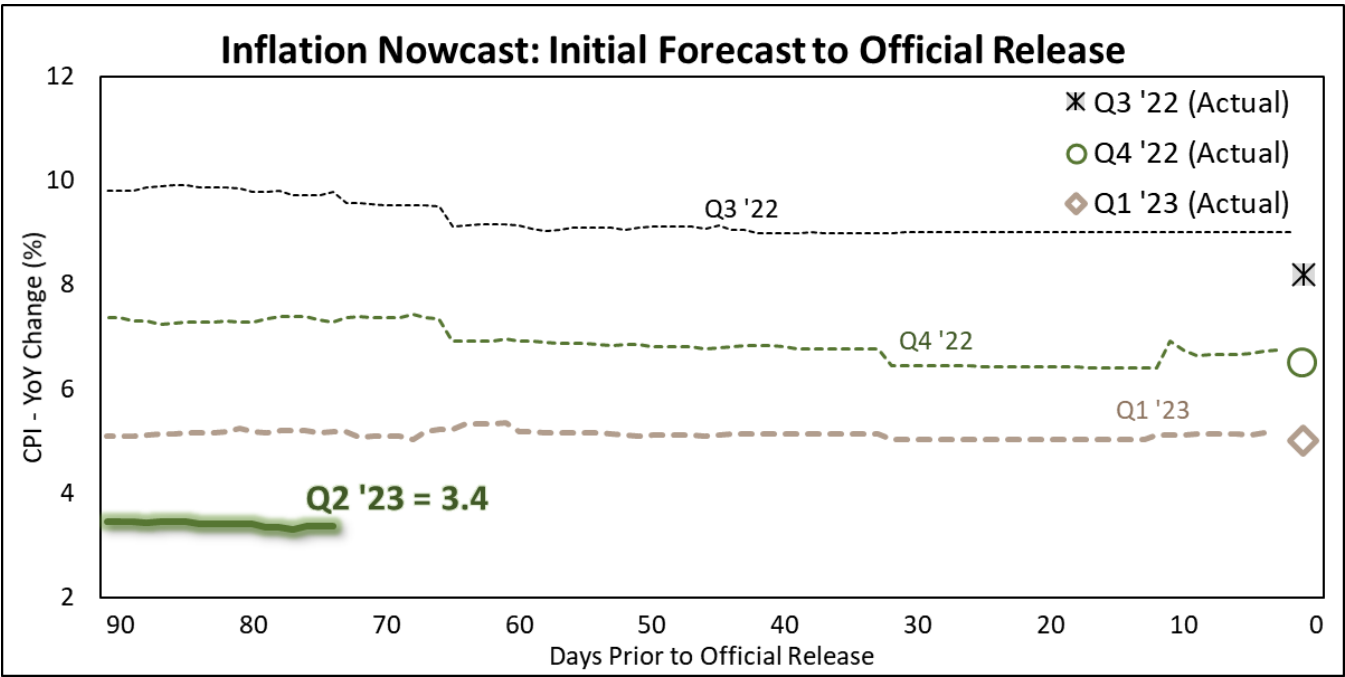
## GDPNow Model



Source: Bloomberg, Federal Reserve Bank of Atlanta. As of May 1, 2023.

# Risk Outlook

## Inflation Nowcast



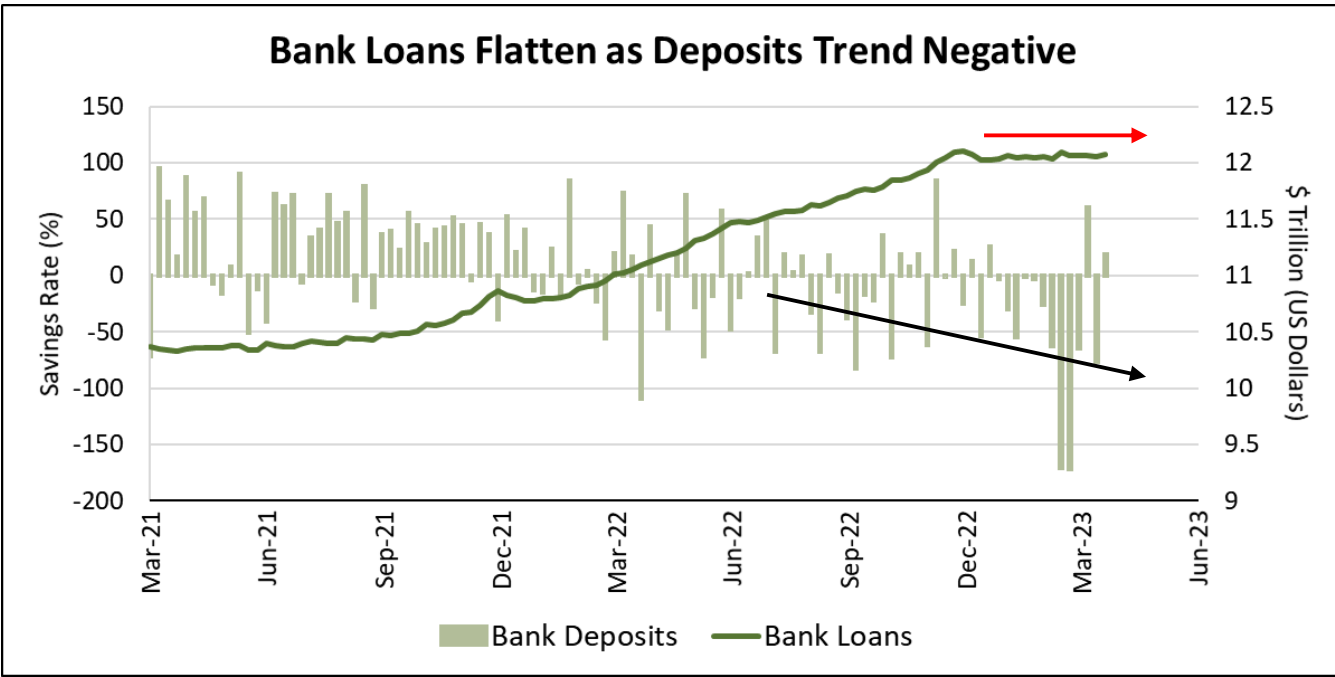
Source: Bloomberg, Federal Reserve Bank of Cleveland. As of May 1, 2023.





# Risk Outlook

## Financial Conditions – Banking Liquidity

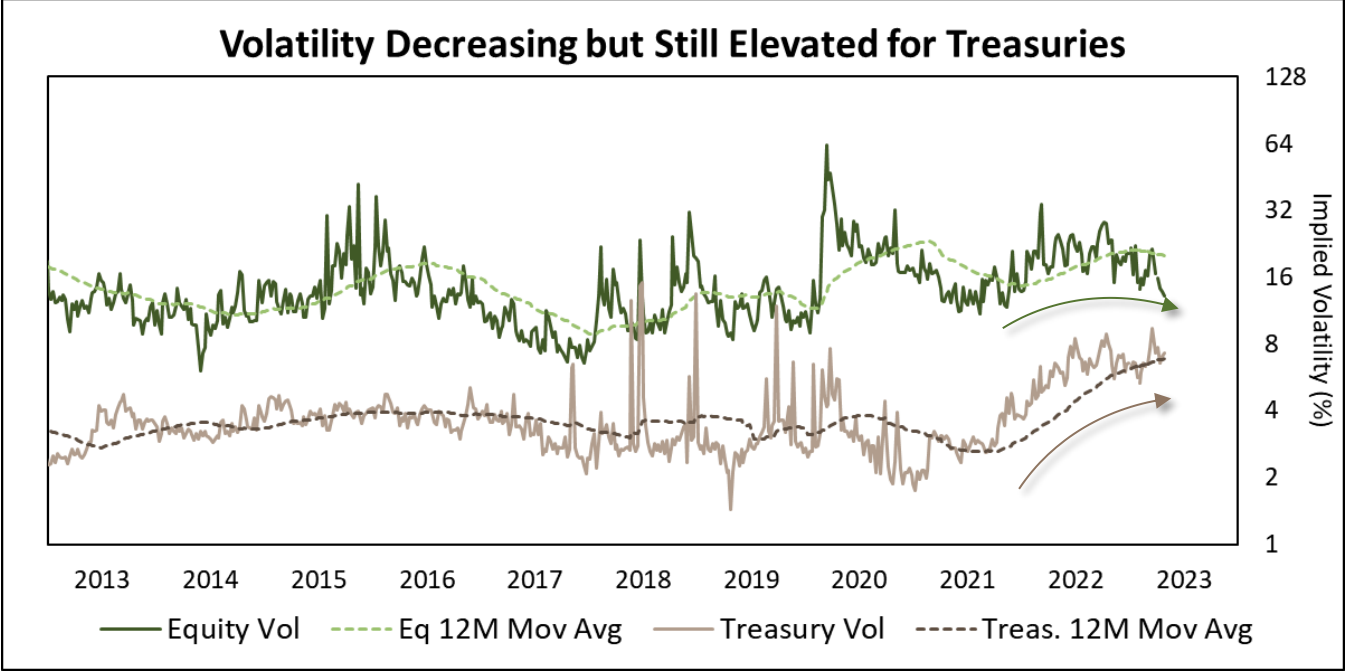


Source: Bloomberg, US Federal Reserve



# Risk Outlook

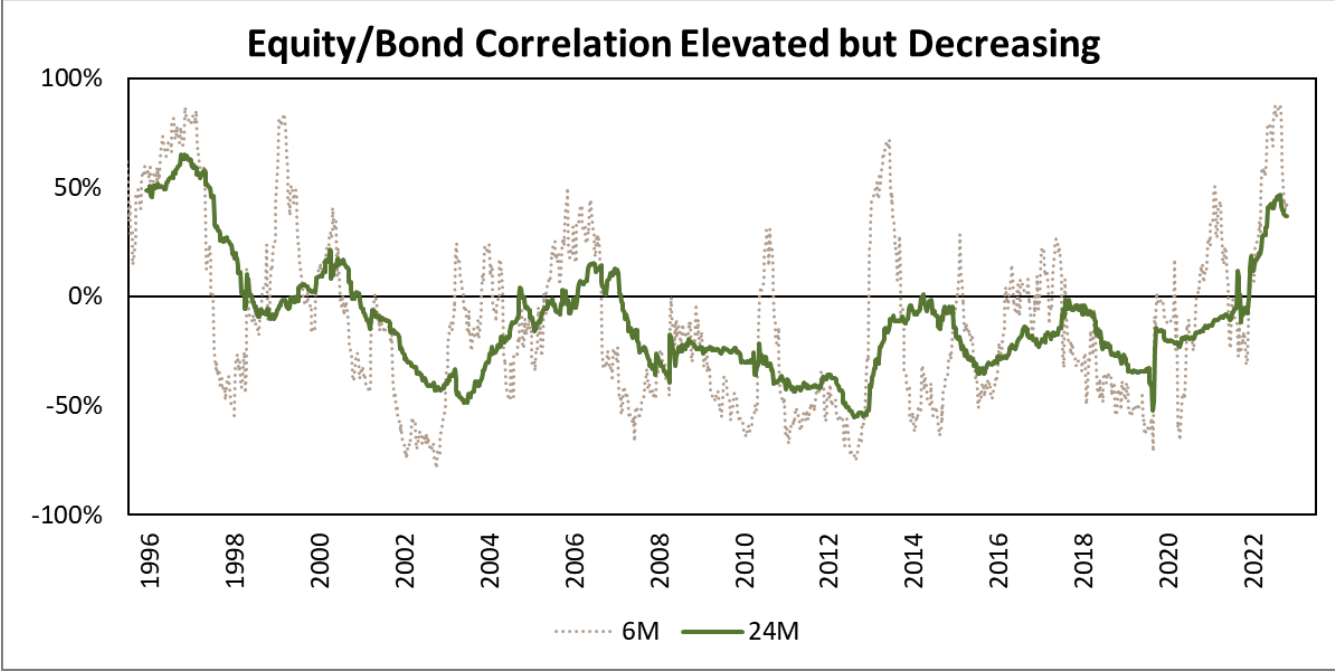
## Volatility



Source: Bloomberg, MSCI Inc.

# Risk Outlook

## Correlations



Source: Bloomberg, MSCI Inc.

# Risk Outlook

## *Summary Review*



- Economic growth resilient while inflation has moderated thus far
- Outlook going forward hinges upon consumption trends
  - Consumer health remains strong but trending negatively
- Financial conditions continue easing but face potential challenges
- Markets are pricing in rates disjointed from Fed guidance
- Portfolio positioning will be paramount as markets find firm direction
- Balanced near-term positioning reflects market uncertainty

# Public Agenda Item #12

## *Quarterly Report from Chief Investment Officer*

May 17, 2023

David T. Veal, CFA, CAIA, FRM

# Investment Performance

## *Mission & Objectives*



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



Add value vs. benchmark  
over rolling five-year periods



Earn appropriate returns  
for the risks assumed

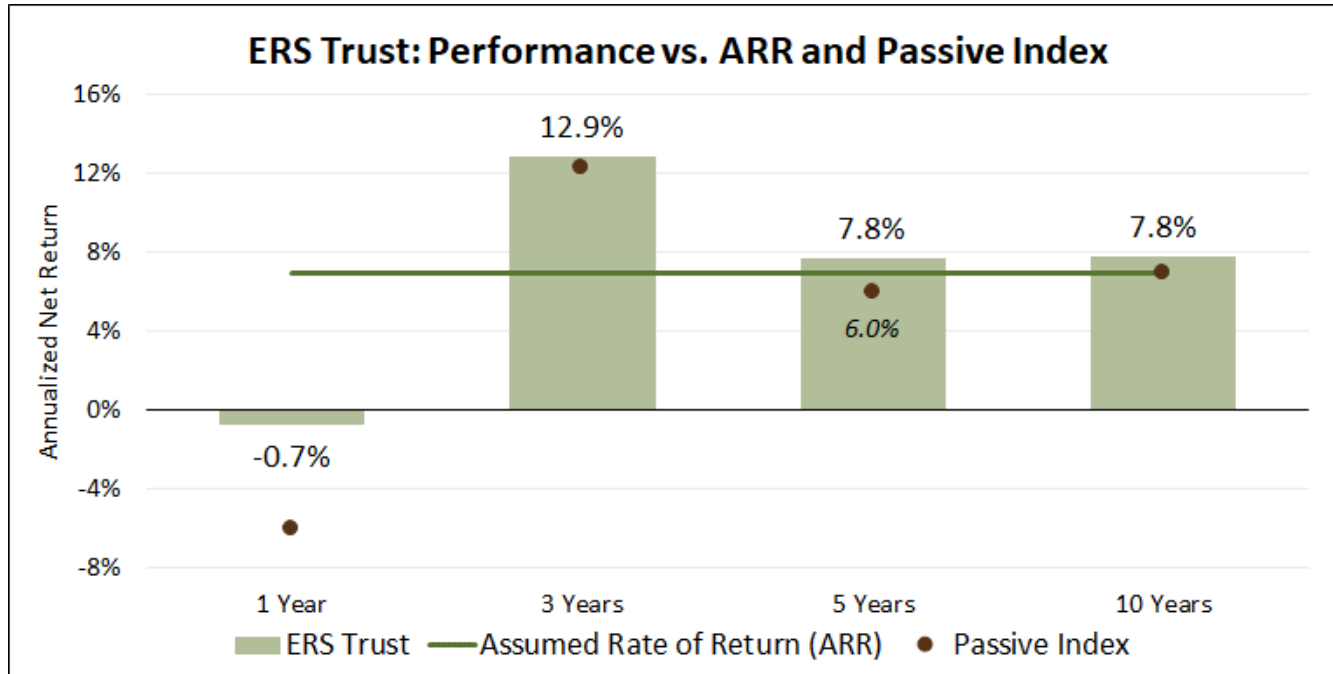


# Retirement Fund Performance

## Absolute Return



- Meeting strategic objectives despite weak returns from passive public market portfolios

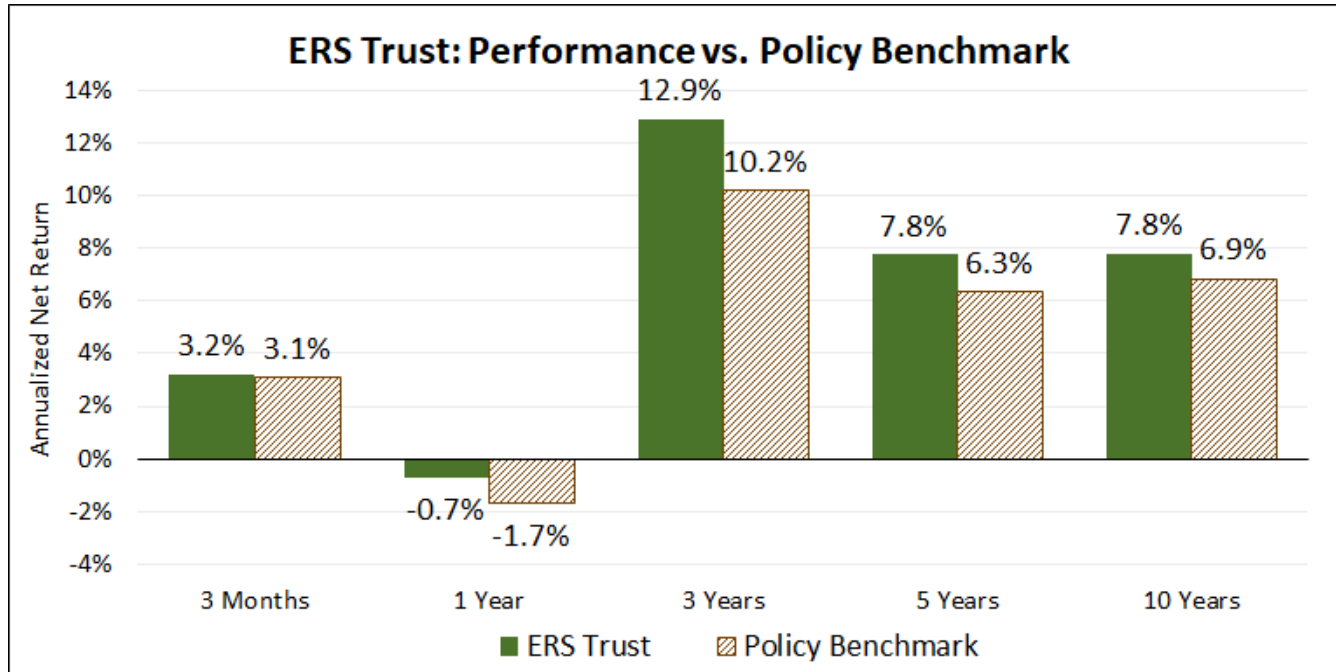


# Retirement Fund Performance

## Relative Return



- Strong performance vs. Policy Benchmark, including +142 bps on a 5-year basis

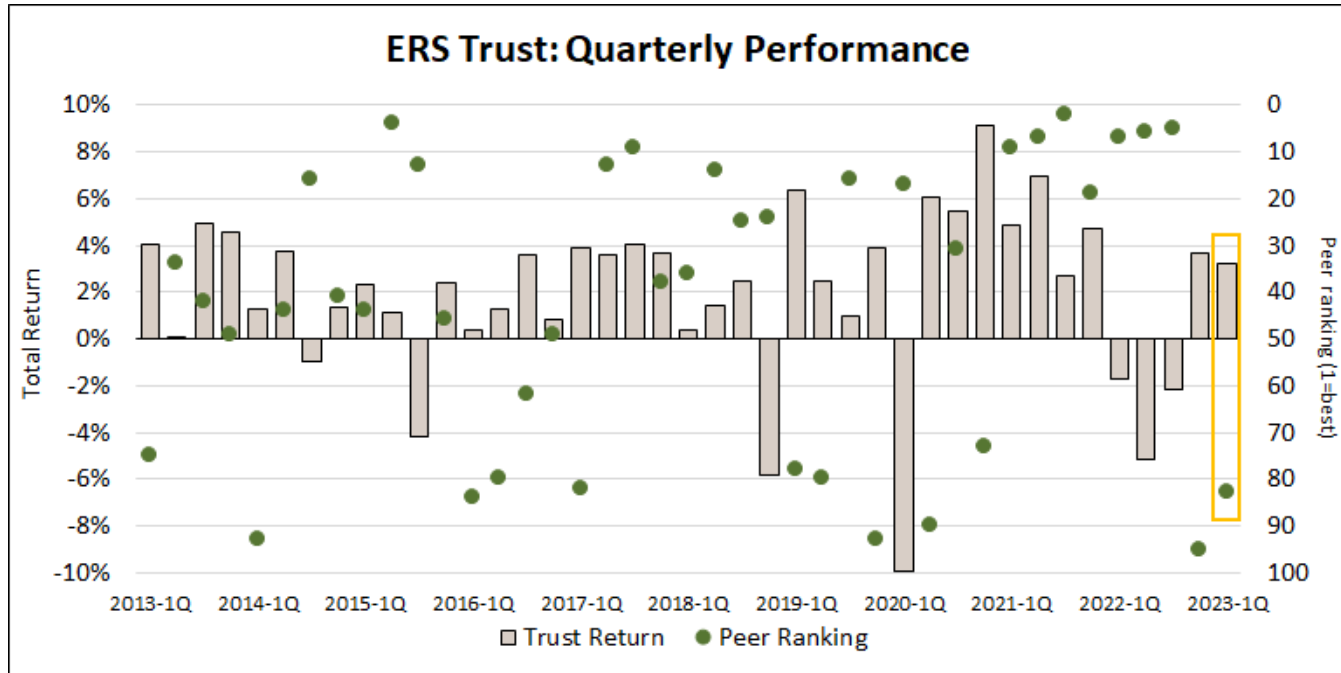


# Retirement Fund Performance

## Quarterly Performance



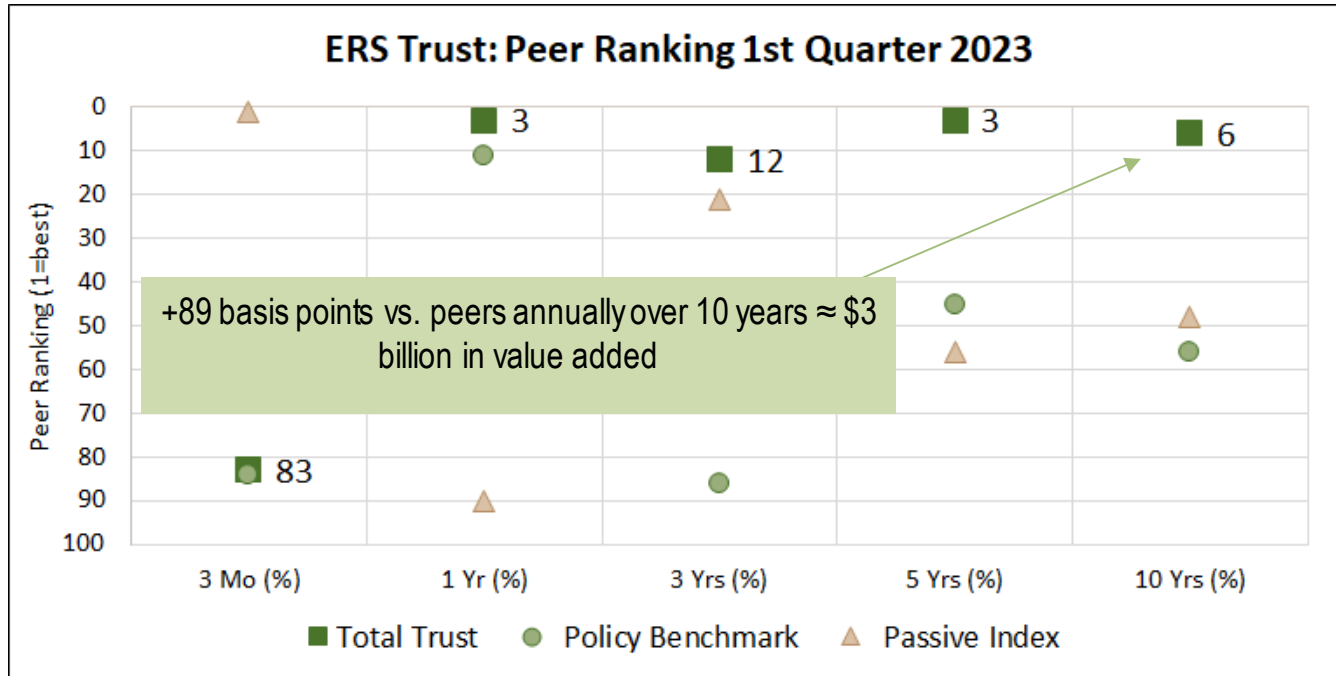
- Positive absolute returns for second consecutive quarter, though with low peer ranking



# Retirement Fund Performance

## Peer Rankings for Current Quarter

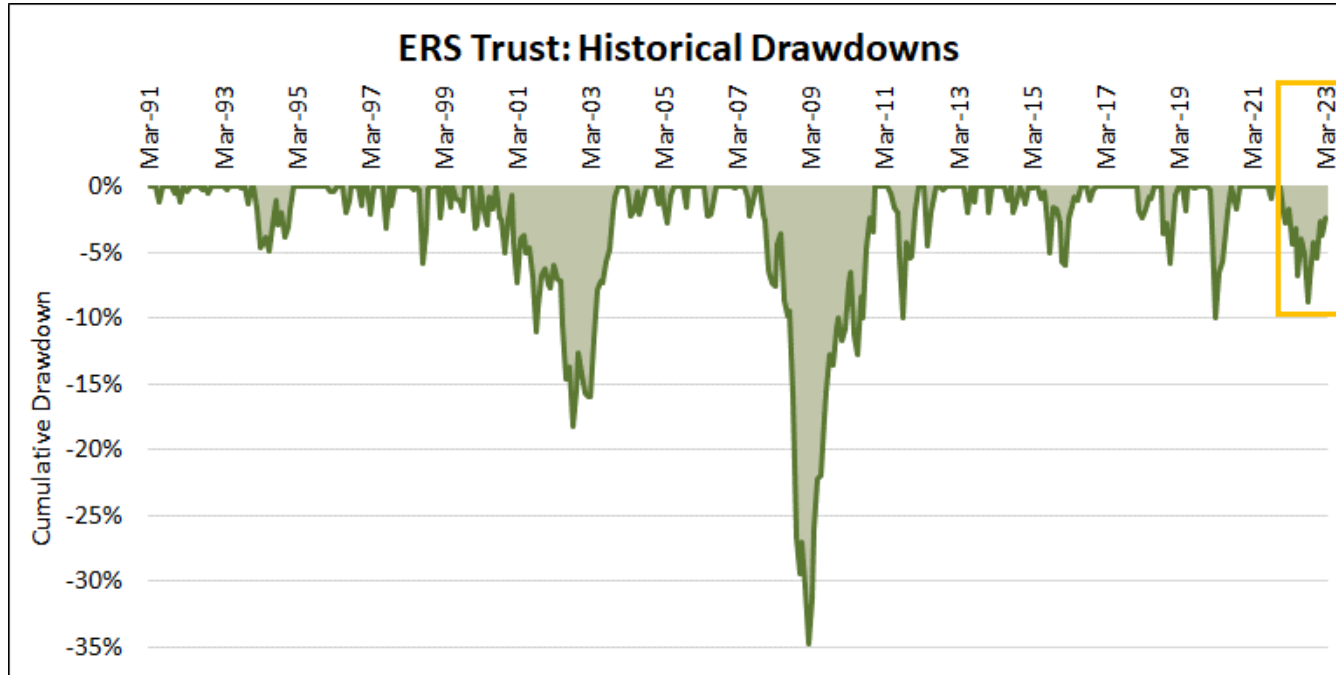
- Superior performance over long horizons, including top decile of peers over 5-10 years



# Retirement Fund Performance

## *Historical Drawdowns*

- Fund performance recovering from down 9% to only down 3% currently

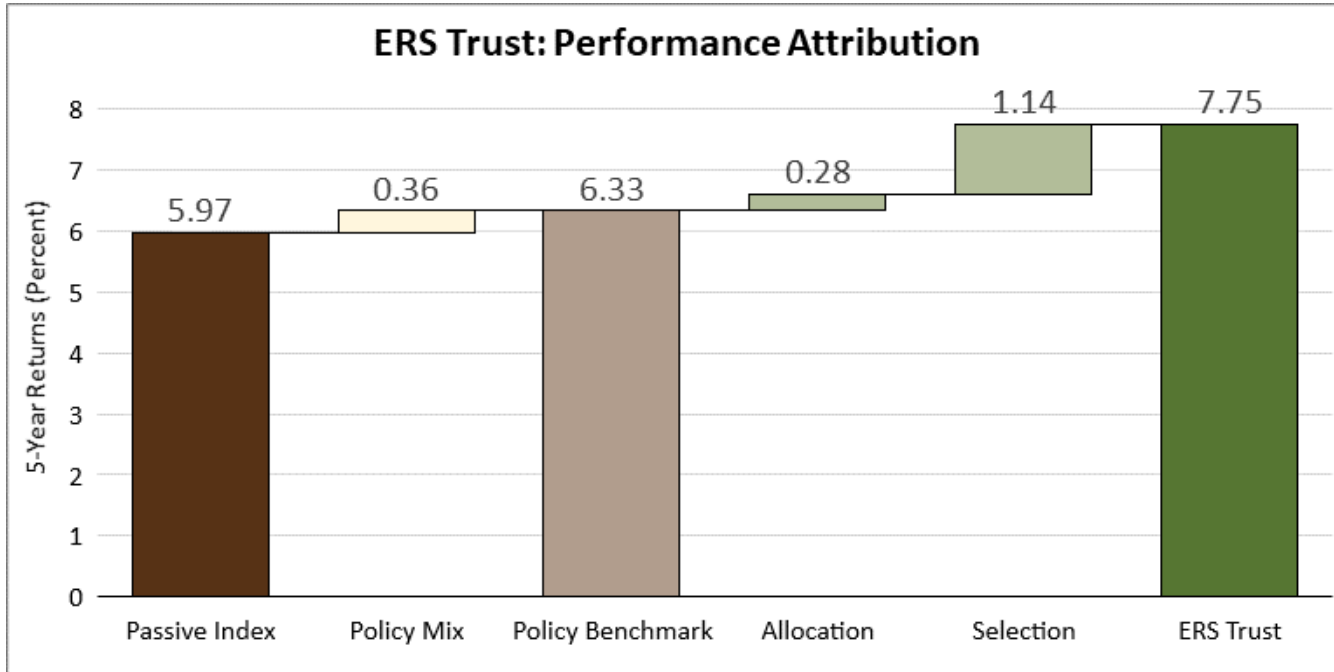


# Retirement Fund Performance

## Attribution Analysis



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

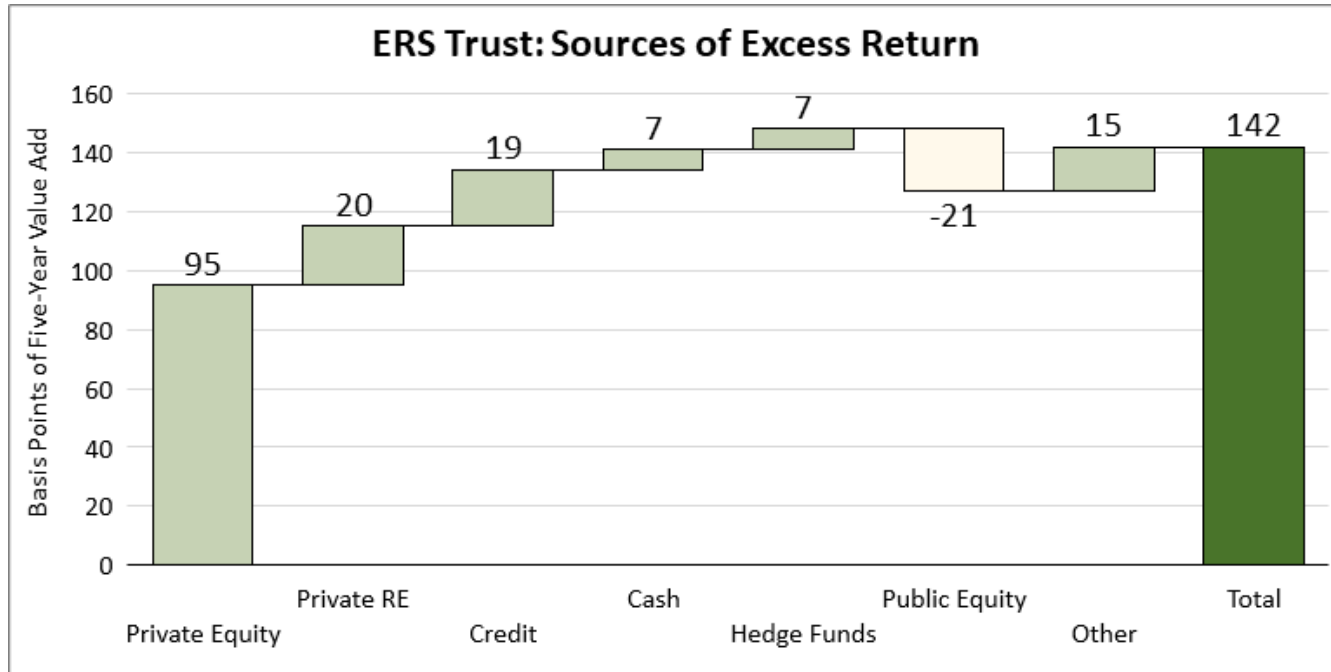


# Retirement Fund Performance

## Attribution Analysis



- Private equity, private real estate, and credit represent 95% of five-year value add

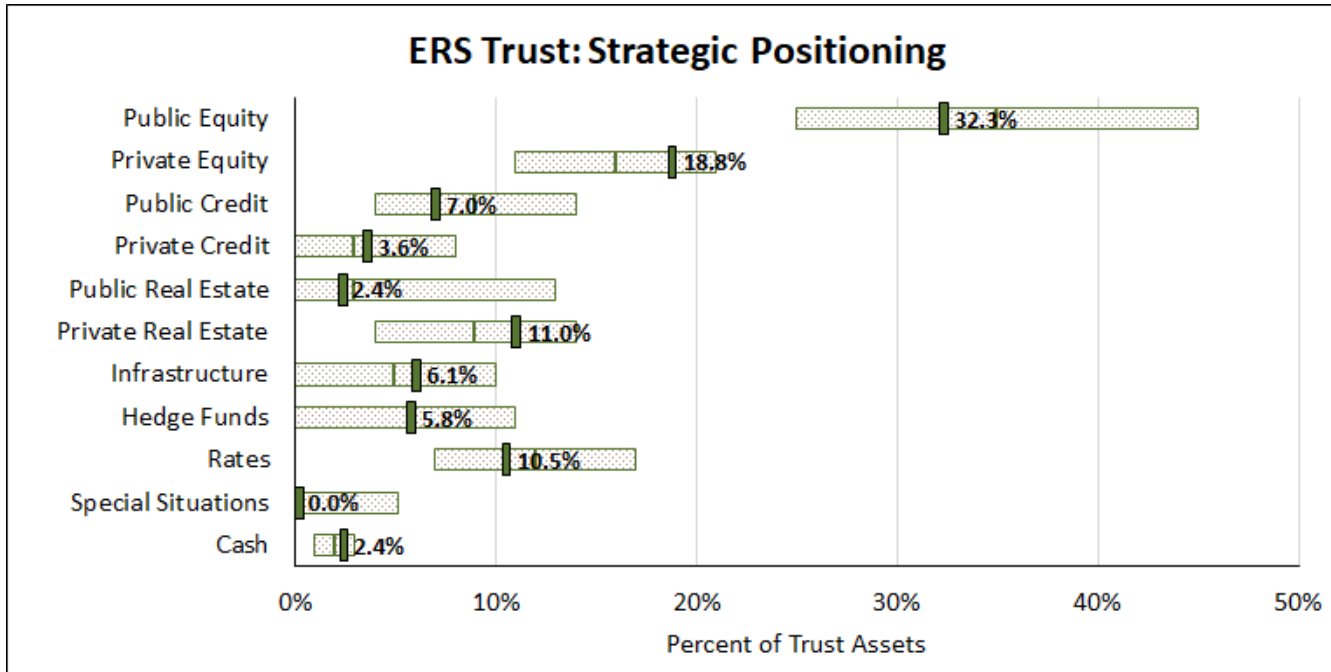


# Retirement Fund Performance

## Asset Class Positioning



- Asset classes within ranges including private equity at 18.8%, well below 21% maximum





# Developments & Initiatives

## *Investments Division*



- Focus on attracting and retaining talent
- Stewardship activities including proxy voting
- Investment Practices Review with NEPC
- Potential recommendations for IPS in August
- Division moves to 5<sup>th</sup> floor of legacy building
- RFQ for all seven investment consulting roles

# ERS Approach to Valuation of Investments

# Valuation Analysis

## Accounting Standards



- Set by Government Accounting Standards Board (GASB)
- GASB Statement #72: Fair Value Measurement and Application
- Adopted by ERS beginning in Fiscal Year 2016



Investments for which  
fair value is assigned by  
**ERS staff**



Investments for which  
fair value is assigned by  
**ERS managers**

What is fair value?

The price that would be received from the orderly sale of an asset to another market participant on the measurement date.

# Valuation Analysis

## Methods for ERS Staff



- GASB 72 establishes a valuation hierarchy with three levels

①

Uses unadjusted quoted prices for identical assets in active markets.

Example: exchange-traded stocks

②

Uses quoted prices for identical or similar assets in active or inactive markets, or

Uses a model in which all significant inputs are observable.

Example: high yield bonds traded over the counter

③

Uses techniques in which significant inputs are unobservable.

Example: mortgage-backed securities

# Valuation Analysis

## *Methods for ERS Managers*



- Managers report Net Asset Value (NAV) of investment to ERS
- Governed by Financial Accounting Standards Board (FASB)
- US standards set by ASC 820, Fair Value Measurement

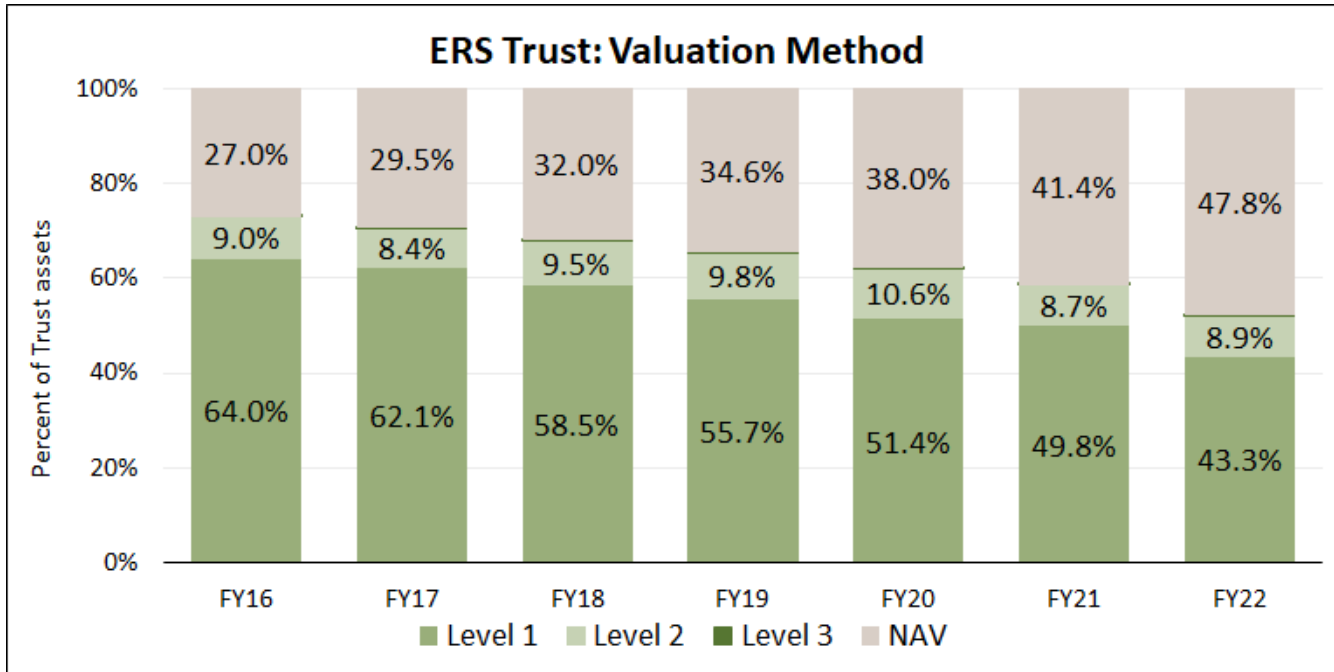


GASB 72 requires ERS to verify the consistent application of these standards

# Valuation Analysis

## Unrealized Gain/Loss by Asset Class

- Valuations increasingly determined by managers and less by ERS



# Valuation Analysis

## Methods for ERS Managers



- ASC 820 provides for three techniques to measure fair value

①

### Market Approach

Uses prices and other relevant information generated by market transactions involving identical or comparable assets.

**“Comparable Transactions”**

②

### Income Approach

Uses a financial model to convert future earnings to a single present amount based on current expectations about those future amounts.

**“Discounted Cash Flows”**

③

### Cost Approach

Uses the amount that would currently be required to replace the service capacity of an asset.

**“Replacement Cost”**

# Valuation Analysis

## Practical Example

- Assigning fair value regularly to a hypothetical home-based business



### House

Value using **Comparable Transactions**  
in the local real estate market

### Business

Value using **Discounted Cash Flows**  
from projections of future growth

### Computer

Value using **Replacement Cost** based  
on market research

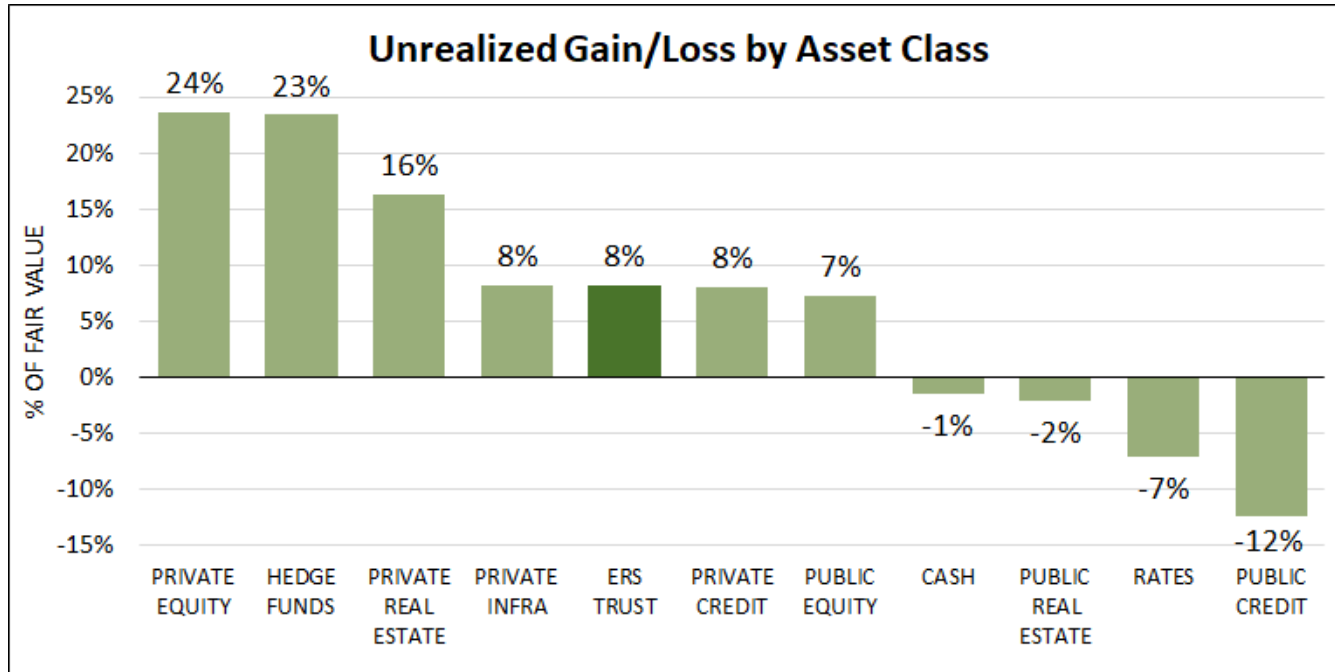
Assigning fair value to an asset  
results in  
unrealized gains  
and/or losses  
relative to what the owner paid  
for the asset



# Valuation Analysis

## Unrealized Gain/Loss by Asset Class

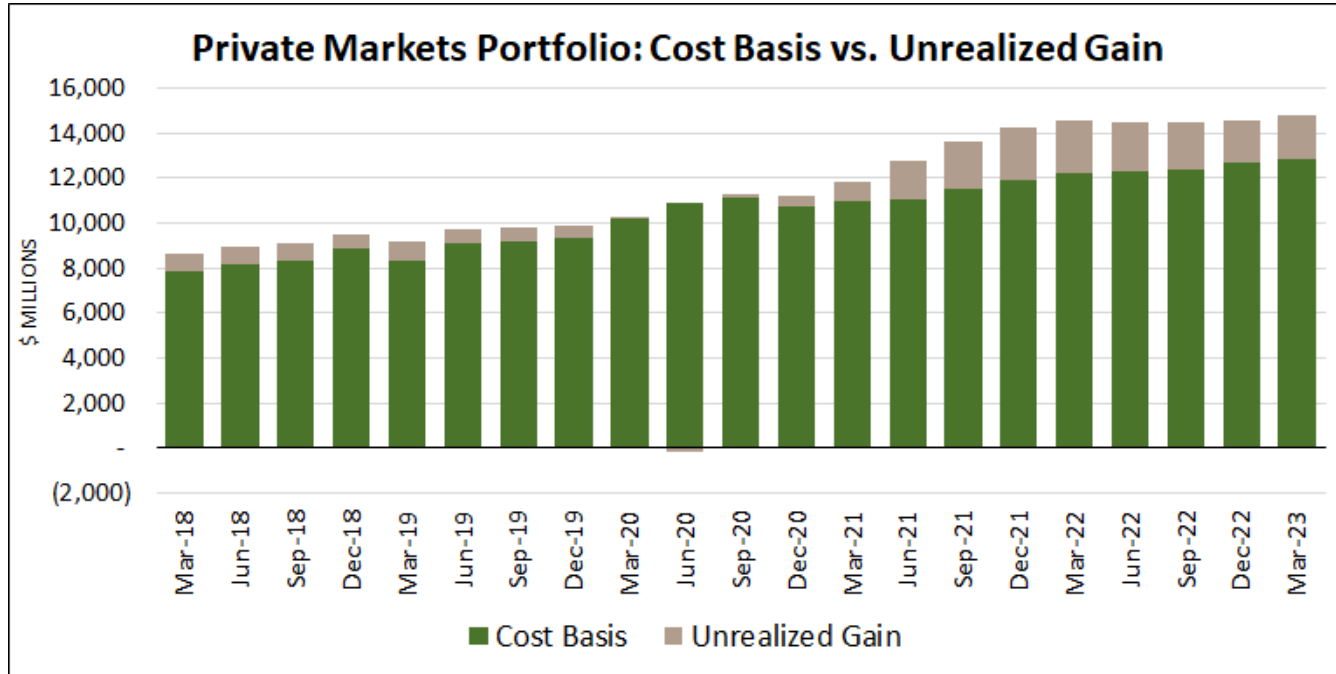
- Gains within private markets, losses in rate-sensitive liquid assets



# Valuation Analysis

## Net Asset Value vs. Gain/Loss for Private Markets

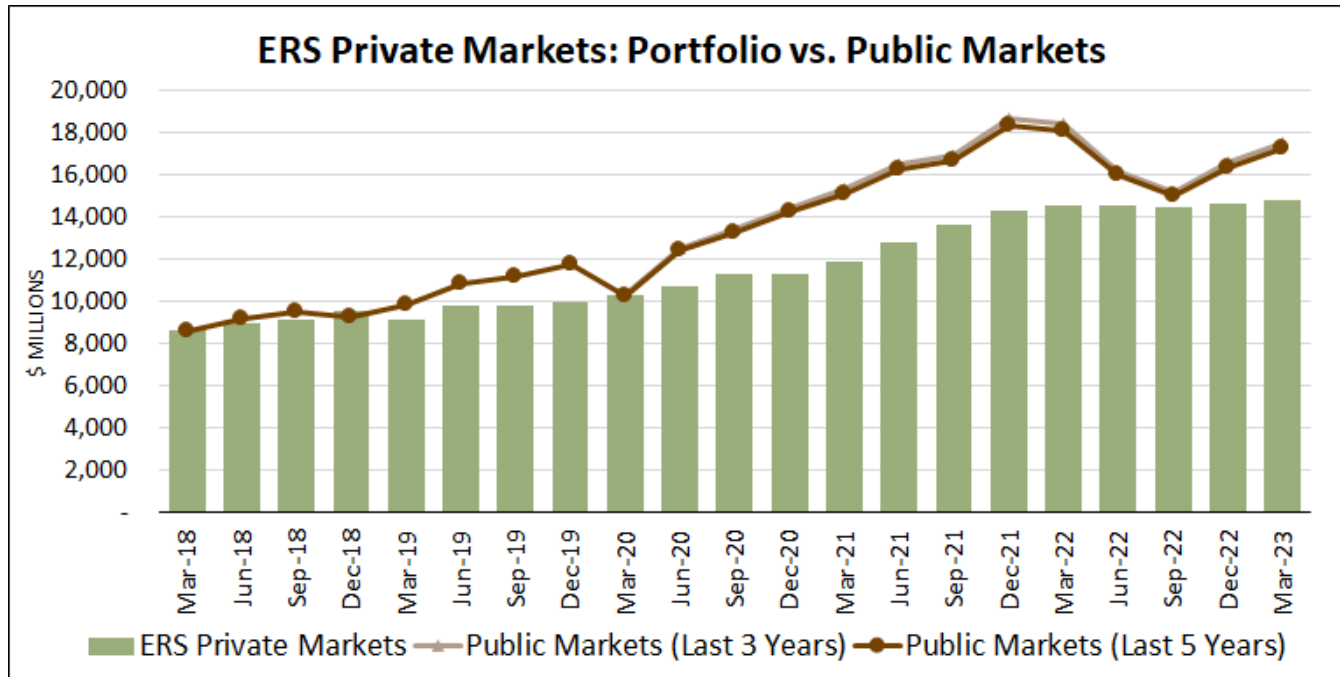
- Private markets portfolio saw unrealized gains peak in late 2021



# Valuation Analysis

## Comparison to Public Markets

- Private markets portfolio undervalued by 14-15% vs. public markets



# Valuation Analysis

## *Performance Measurement*



- Current ERS performance reporting akin to cash accounting
  - Supports daily cash movements associated with GBP
- Group 4 gain sharing calculations akin to accrual accounting
- Custodian calculations verified by ERS performance specialist
- Global Investment Performance Standards (GIPS) since 2011

# Discussion

## Public Agenda Item #13

*\* Education Item: Valuation Practices in Private Markets*

May 17, 2023

David T. Veal, Chief Investment Officer

Meagan Larson, Director of Operational and Financial Diligence

Tom Rashman, Portfolio Manager, Private Equity

# Private Markets Valuation

## *Agenda for Educational Item*



- Overview of the operating environment
- Operational and financial diligence reviews
- Private equity processes and procedures
- Flow through to performance and reporting

# Valuation Analysis

## Accounting Standards



- GASB Statement #72 adopted by ERS for Fiscal Year 2016
- Managers report Net Asset Value (NAV) of investment to ERS
- ERS required to verify the consistent application of these standards



Investments for which  
fair value is assigned by  
**ERS staff**



Investments for which  
fair value is assigned by  
**ERS managers**

### What is fair value?

"The price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date."



# Operating Environment

## *Timeline*



- 1964: First modern leveraged buyout transaction
- 1989: KKR buys RJR Nabisco (“Barbarians at the Gate”)
- 2008: Fair value accounting adopted in private equity
- 2016: ERS adopts GASB 72 for fair value accounting
- 2017: SEC sets valuation as an enforcement priority
- 2020: Standards raised for auditor independence

# Operating Environment

## Academic Insights



- Clear accounting standards result in more accurate valuations

### Fair Value Measurement and Private Equity Fund Interim Valuations

*Sefiloglu, University of London 2021*

The adoption of fair value accounting significantly increased the accuracy of interim valuations of buyout funds.

The improvement in valuation accuracy is persistent and not a temporary result depending on market-related factors.

Before adoption of ASC 820:

- average buyout investment was sold at **100%** over book value

After adoption of ASC 820:

- average buyout investment was sold at **16%** over book value

# Operating Environment

## *Valuation Ecosystem*



- Accounting Boards
- Industry Organizations
- Independent Auditors
- Government Regulators
- Fund Counsel

# Valuation Diligence

## Operational & Financial Diligence Team



### Director – Meagan Larson

- Joined ERS in August 2013
- >10 years Industry Experience
- Background in Internal Audit and Investment Operations
- MBA from Southeastern Louisiana University

### Analyst – Mallory Ligon

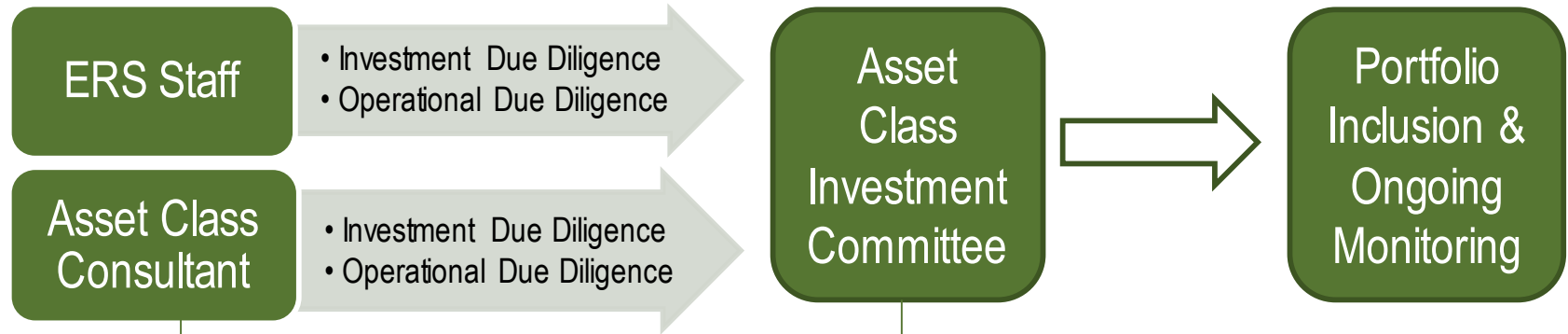
- Joined ERS in August 2021
- 13 years with State of Texas agencies
- Background in Investment Accounting
- BBA in Finance from Texas State

### Analyst – Brendi Romick

- Joined ERS in December 2022
- 12 years with State of Texas agencies
- Background in Tax, Audit, and Legal
- Dr. of Jurisprudence from St. Mary's Law School
- BBA in Finance from Texas State

# Valuation Diligence

## Due Diligence Framework



Asset Class Consultant roster includes:

- Aksia for private equity
- Meketa for real estate
- CBRE for infrastructure
- Albourne for hedge funds
- NEPC for other asset classes

Per IPS, each ACIC includes:

- ERS IAC Member
  - ERS Executive Director
  - ERS Chief Investment Officer
  - ERS Asset Class Director
- plus ERS Legal, Compliance

# Valuation Diligence

## *Process Review*



- Valuation Policy
  - Written document that defines the following:
    - Accounting standard
    - Valuation methodologies
    - Roles and responsibilities of the Valuation Committee
    - Use of external valuation reviews

# Valuation Diligence

## *Process Review*



- Valuation Committee
  - Governing body within a firm that is responsible for the review and approval of investment valuations
- Best practices for valuation committees include:
  - Mix of investment and non-investment members, with majority comprised of non-investment members
  - Meet formally on a quarterly basis
  - Defined approval process for each investment's valuation

# Valuation Diligence

## *Process Review*



- Manager quarter-end procedures
  - After valuations are finalized, procedures are performed in order to create investor quarter-end capital account statements
    - Who is responsible for review?
    - What teams are involved?
    - When are investor statements sent out?
    - How are statements received by investors?



# Private Equity Program

## *Current Portfolio*



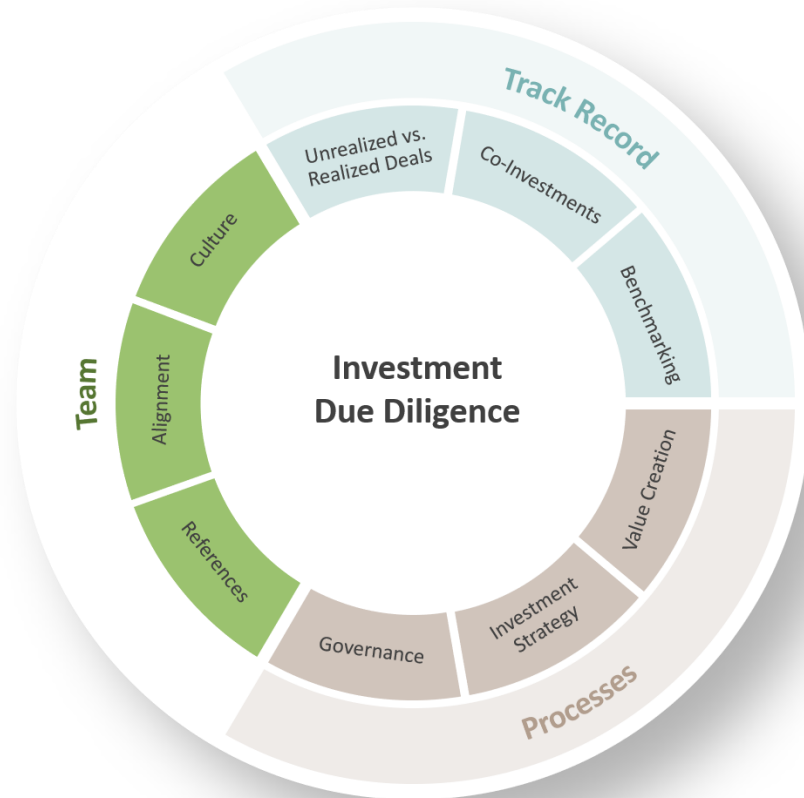
- ~58% of private equity portfolio is invested with key managers

	Top 10 Managers	Remaining Managers (33)
Total Economic Exposure	\$5.3 billion	\$3.9 billion
Funds	50	56
Co-investments	20	36
LPAC Seats	41	46

# Private Equity Program

## *Investment Due Diligence*

- Areas of focus include
  - Team and Firm Culture
  - Organizational Processes
  - Track Record



# Private Equity Program

## *Investment Due Diligence*



- Performance is evaluated at different levels using several metrics

### Individual investments

- Gross internal rate of return (IRR)
- Multiple of invested capital (MOIC)

### Fund overall

- Net internal rate of return (IRR)
- Total value to paid-in capital (TVPI)
- Distributed to paid-in capital (DPI)
- Public market equivalent (PME)

# Private Equity Program

## *Investment Due Diligence*



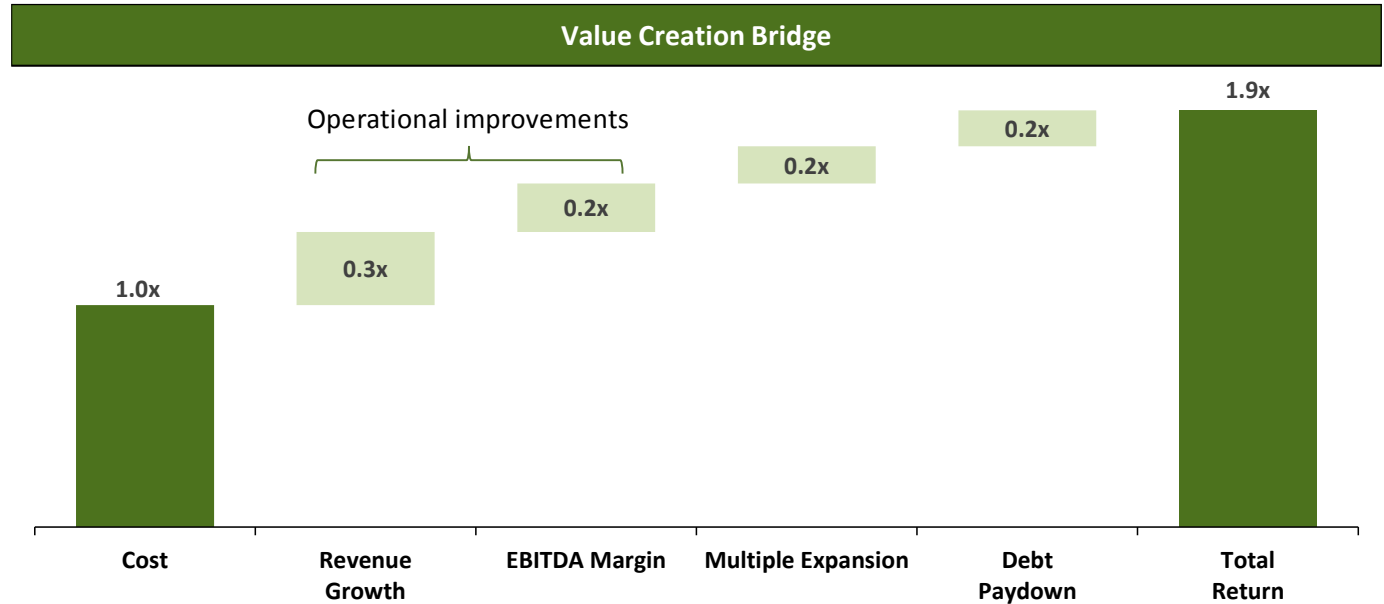
- Realized track record
  - Demonstrated results, valuations typically set by the market
  - Attributes of exits (sale, public offering, etc.)
  - Individual investment performance
    - Multiple of invested capital (MOIC), gross internal rate of return (IRR)
  - Value creation results

# Private Equity Program

## Investment Due Diligence



- Three elements of value creation
  - Operational improvements
  - Multiple expansion
  - Debt paydown



# Private Equity Program

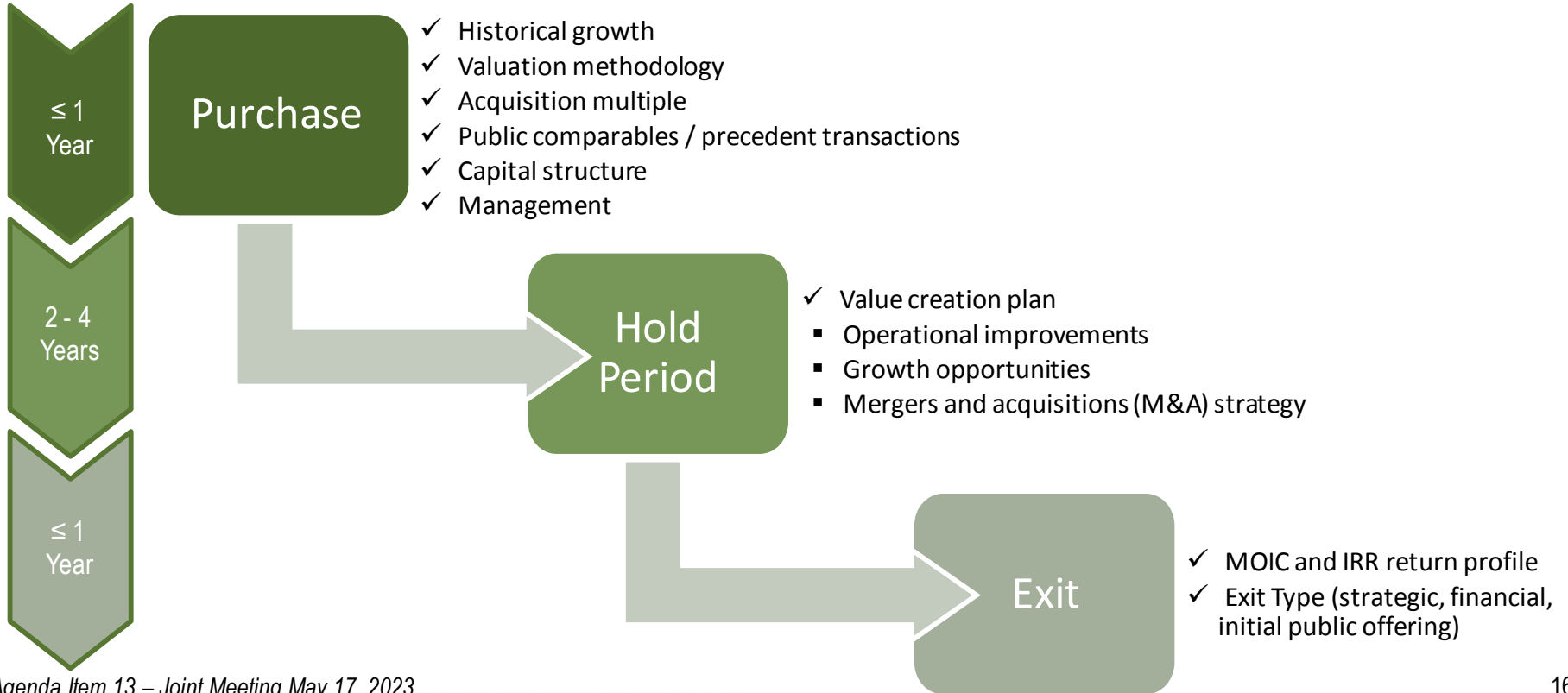
## *Investment Due Diligence*



- Unrealized track record
  - Purchase prices paid for acquired assets
  - Financial performance since acquisition
  - Current valuations from mark-to-model approaches
  - Valuation trajectories

# Private Equity Program

## Co-investments



# Private Equity Program

## Portfolio Monitoring





# Private Equity Program

## Sample Schedule of Investments



### Fund X Schedule of Investments

#### Q4 2022

(\$ in millions)

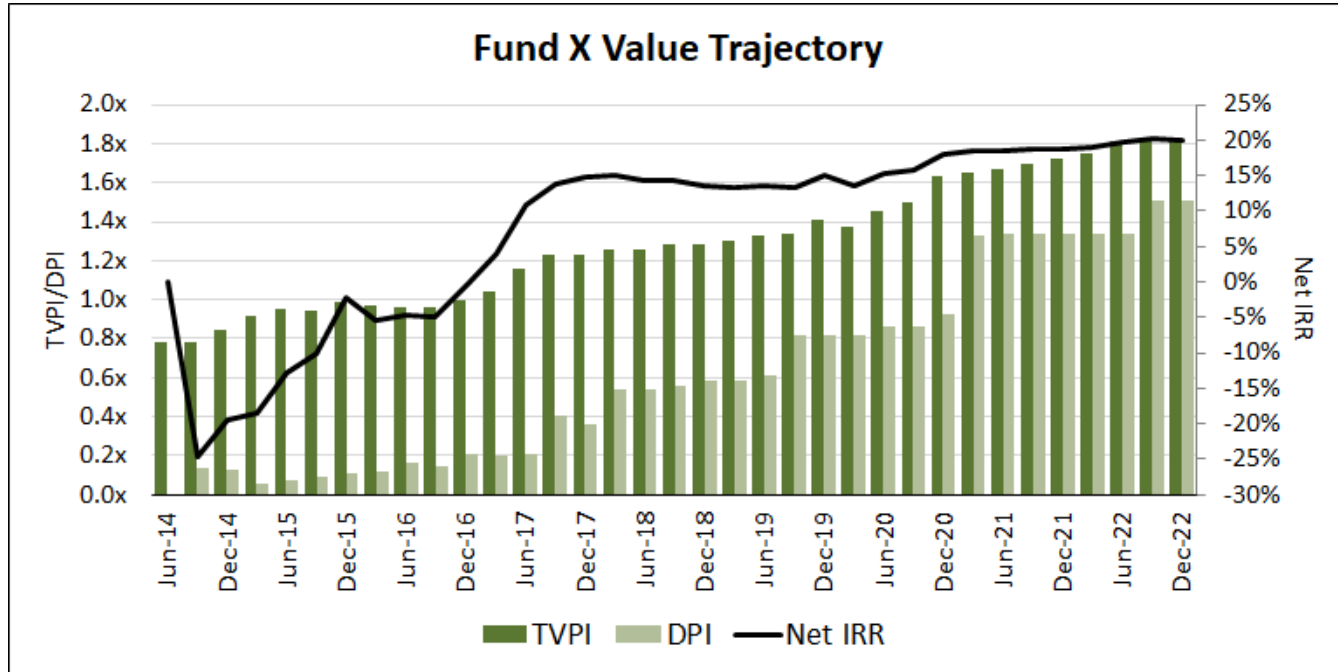
Investment	Status	Industry	Invested	Realized	NAV	Total Value	Multiple	Q3'22 Mult.	Q4'21 Mult.
Investment A	Realized	Industry A	\$60.7	\$78.9	\$0.0	\$78.9	1.3x	1.3x	1.3x
Investment B	Realized	Industry A	103.8	235.3	0.0	235.3	2.3x	2.3x	2.3x
Investment C	Realized	Industry A	24.9	88.0	0.0	88.0	3.5x	3.5x	3.5x
Investment D	Realized	Industry A	88.1	166.8	0.0	166.8	1.9x	1.9x	1.9x
Investment E	Realized	Industry A	33.5	24.2	0.0	24.2	0.7x	0.7x	0.7x
Investment F	Realized	Industry A	87.4	192.0	0.0	192.0	2.2x	2.2x	2.2x
Investment G	Realized	Industry A	39.0	112.7	0.0	112.7	2.9x	2.9x	2.9x
Investment H	Realized	Industry A	38.9	90.6	0.0	90.6	2.3x	2.3x	2.3x
Investment I	Realized	Industry A	121.0	369.1	0.0	369.1	3.0x	3.0x	3.0x
Investment J	Realized	Industry A	71.0	210.1	0.0	210.1	3.0x	3.0x	3.0x
Investment K	Realized	Industry A	117.5	345.3	2.0	347.2	3.0x	2.2x	1.6x
Investment L	Unrealized	Industry A	138.2	3.0	489.9	492.9	3.6x	3.6x	3.0x
<b>Total</b>			<b>\$923.9</b>	<b>\$1,915.9</b>	<b>\$491.9</b>	<b>\$2,407.8</b>	<b>2.6x</b>	<b>2.5x</b>	<b>2.4x</b>

Investments	Gross MOIC	Gross IRR
12	2.6x	26%

# Private Equity Program

## Sample Fund Valuation Trajectory

- Fund performance often subject to the “J curve” effect early on

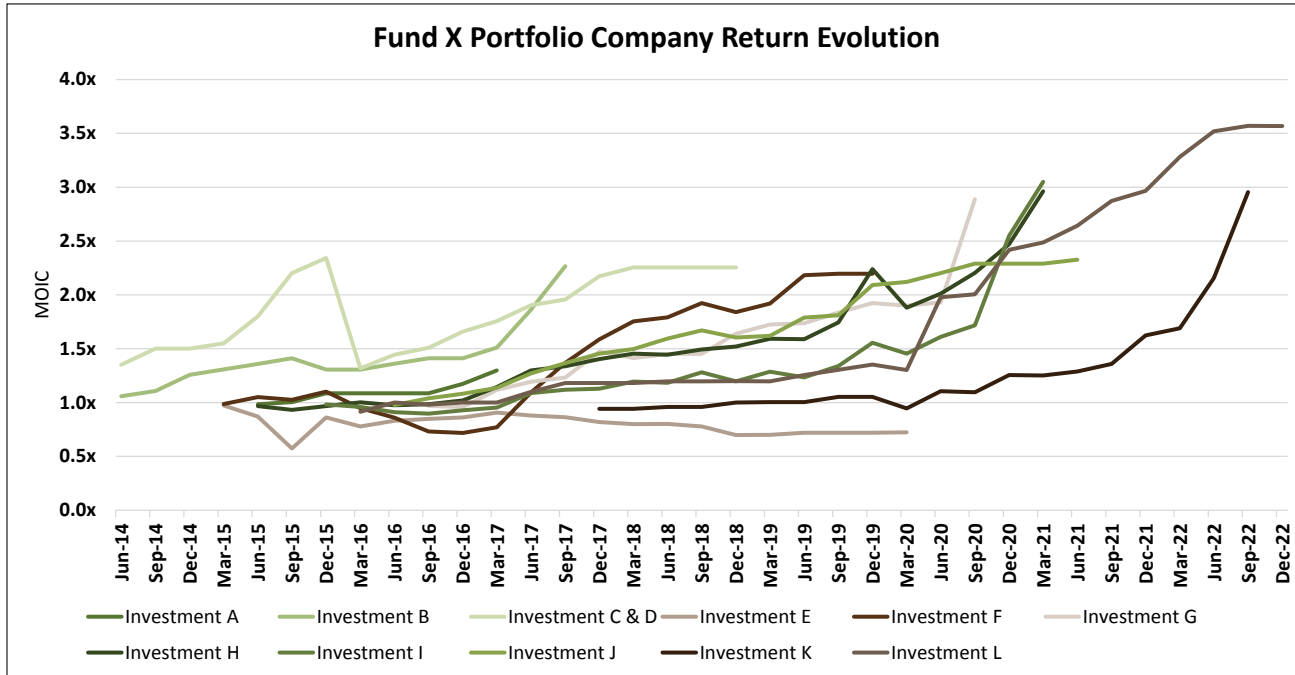


# Private Equity Program

## Sample Fund Valuation Trajectory



- Average 35% value uptick at exit versus 1 year prior



# Private Equity Program

## *Academic Insights*



- Stepstone is a global private markets investment and advisory firm
- Published research paper in April 2023 analyzing private equity valuations

General Partners	Exits	Premium 3QP	Premium 5QP
100	2,406	24%	42%

# Private Equity Program

## Academic Insights



- Better private equity firms = more conservative valuations

### Do Private Equity Funds Manipulate Reported Returns?

*Brown et al, University North Carolina 2017*

Some underperforming managers inflate reported returns during fundraising. However, those managers are less likely to raise a next fund, suggesting that investors can see through the manipulation.

In contrast, the authors find that top-performing funds likely understate their valuations. Such conservatism helps build a cushion against negative idiosyncratic returns in the future.

“...the behavior of GPs and investors is influenced by the acknowledgment of asymmetric information and the potential for gaming of reported performance.”

“...it appears that sophisticated investors are unlikely to systematically misallocate capital based on false signals from GPs.”

# Governance Framework

## *Investment Valuation Committee (IVC)*



- IPS updated require staff to review the valuations applied to all investments for reasonableness and reliability
- IVC meets quarterly and as needed to do so: reviews private market NAVs, valuations of public market assets, and special situations
- Composition: Director of OF&D (chair), CIO, DCIO, plus one representative each from public markets and private markets

# Governance Framework

## *Valuation Lags*



- Lag effects in private markets comes from several sources
  - Changes in public markets incorporated slowly
    - Four quarters for public market changes to flow through fully
  - Time needed to receive reporting
    - Preparation and distribution of account statements

# Valuation Analysis

## *Performance Measurement*



- Current ERS reporting approach akin to cash accounting
- Investment values are reported as known on a given date
- Reporting lag in private markets make quarter end numbers a mix



# Governance Framework

## *Other Controls at ERS*



- Finance including Investment Accounting
- Office of General Counsel including Investment Attorneys
- Internal Audit including Investment Compliance
- External Auditors

# Governance Framework

## *External Reporting*



- Annual Comprehensive Financial Report
- Annual asset class reviews with Board/IAC
- Quarterly performance reporting to Board/IAC
- Quarterly confidential reporting to Board via Portal

# Discussion

## Public Agenda Item #14

### *\* Consideration of Annual Review of Real Assets Program*

May 17, 2023

Robert Sessa, Managing Director of Real Assets

Annie Xiao, Director of Public Real Estate

Amy Cureton, Director of Private Real Estate

Pablo de la Sierra Perez, Director of Infrastructure

# Real Assets

## *Asset Class Overview*



### **Three Separate Programs**

- **Public Real Estate:** Return seeking allocation to provide long-term growth and liquidity
- **Private Real Estate:** Return seeking allocation to provide long-term growth and inflation hedge
- **Private Infrastructure:** Return seeking allocation to provide long-term growth and inflation hedge

### **Investment Objective**

- Outperform their respective benchmarks over rolling 5-year (public real estate) or 10-year periods (private real estate and infrastructure)
- Remain in compliance with risk budgets assigned by policy

# Public Real Estate

## Key Characteristics



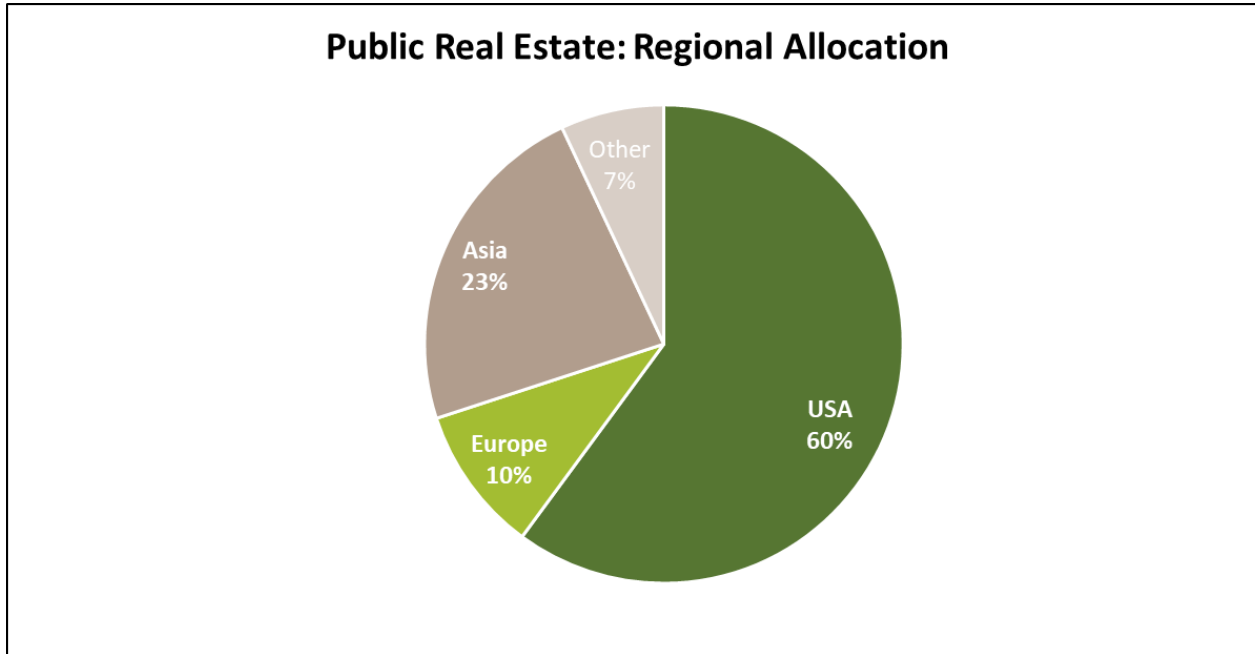
Attribute	Public Real Estate Portfolio
Type of Allocation	Return Seeking
Policy Allocation	Target weight of 3%, range from 0% to 13%
Management Style	Internally managed but can hire external managers
Performance Objective	Outperform FTSE EPRA/NAREIT Developed Total Return Index
Risk Budget	Tracking error target of 200 basis points
Information Ratio	$\geq 0.30$ expected
Investment Expenses	~22 bps total

# Public Real Estate

## Portfolio Structure



- \$805 million represents 2.4% of the Trust, diversified across major regions

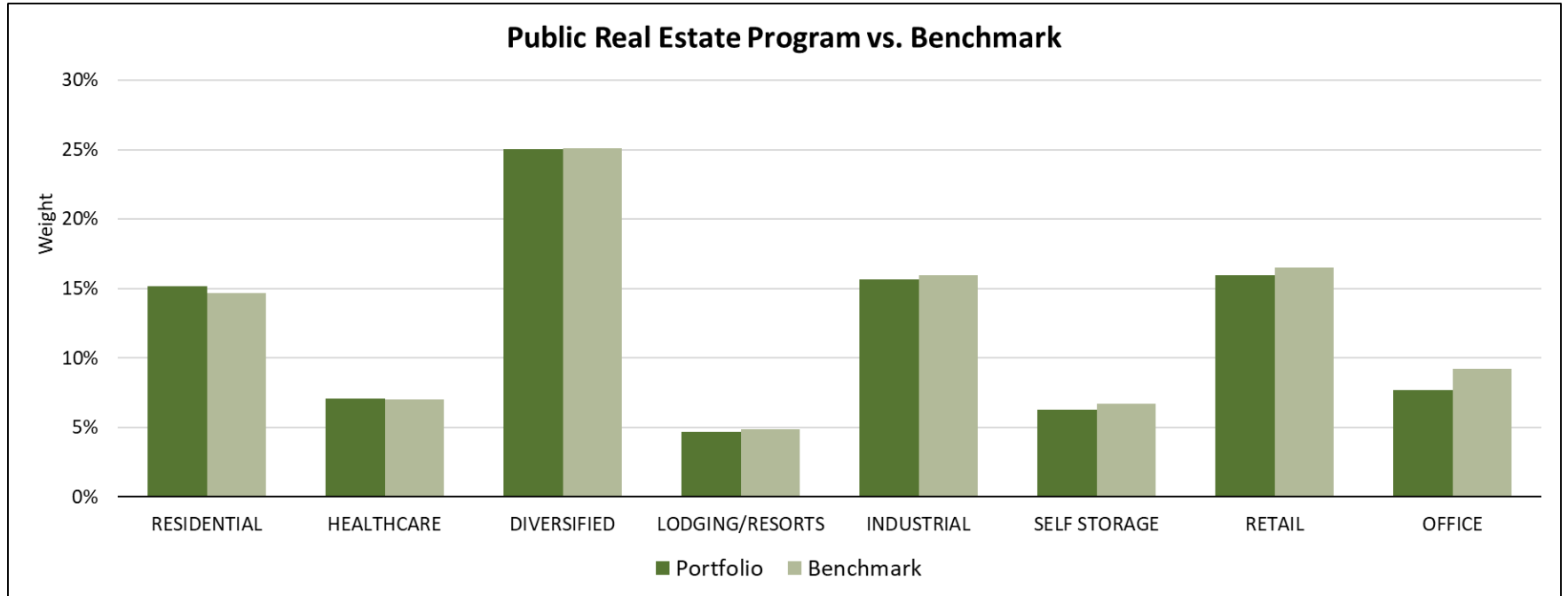


# Public Real Estate

## Portfolio Exposure by Property Type



- Office and retail were the largest underweight



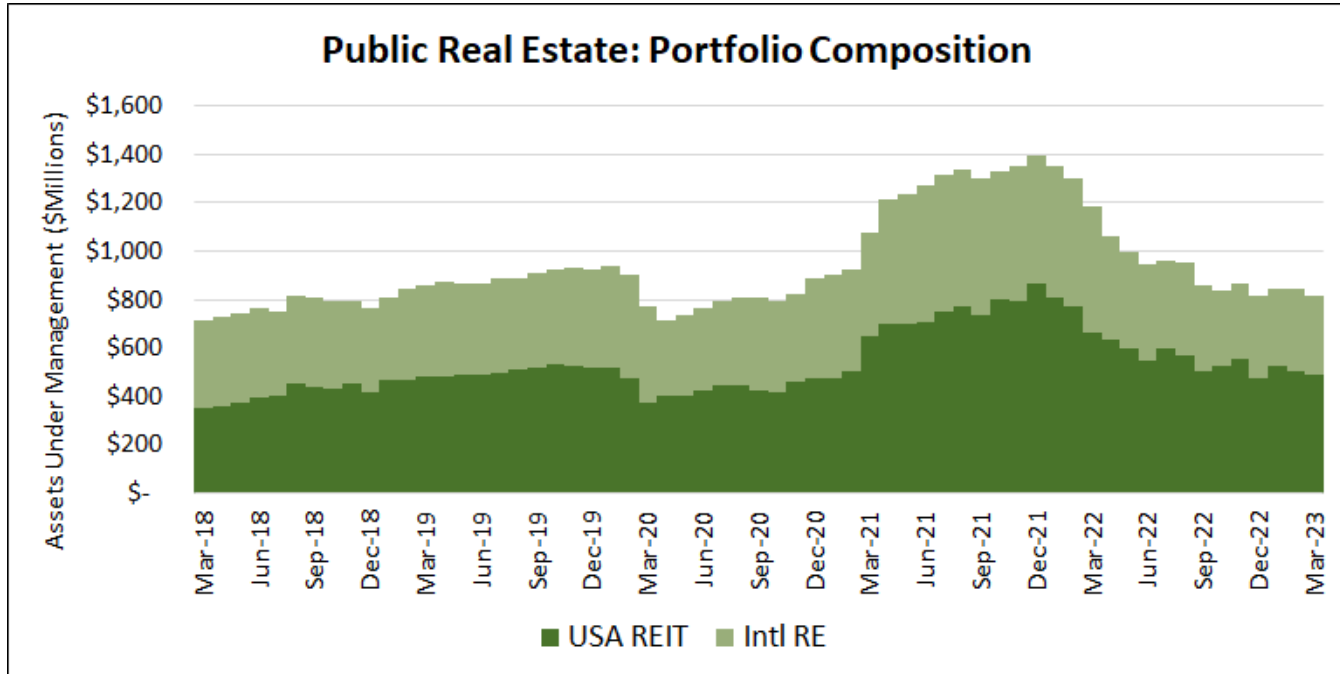


# Public Real Estate

## *Historical Composition*



- \$200 million tactically allocated in March 2021, \$325 million moved during 2022

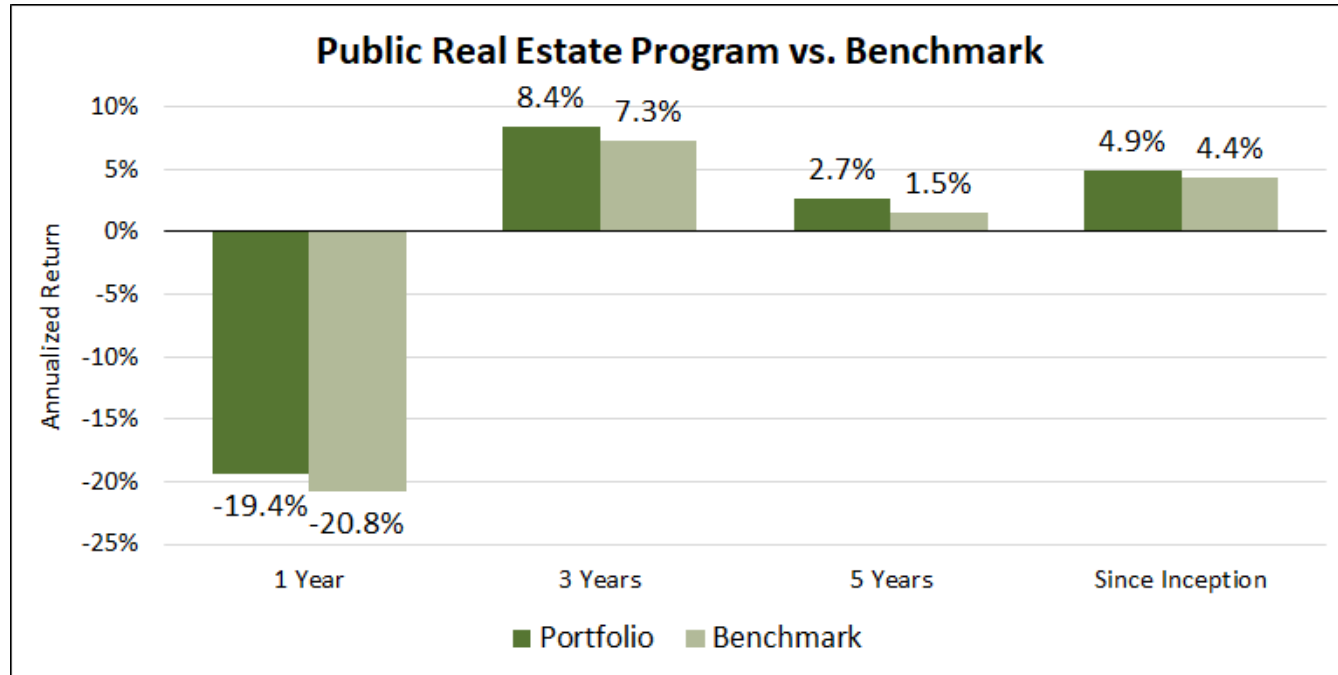


# Public Real Estate

## Periodic Performance



- Outperformed benchmark for all time horizons, +116 bps of value add last 5 years

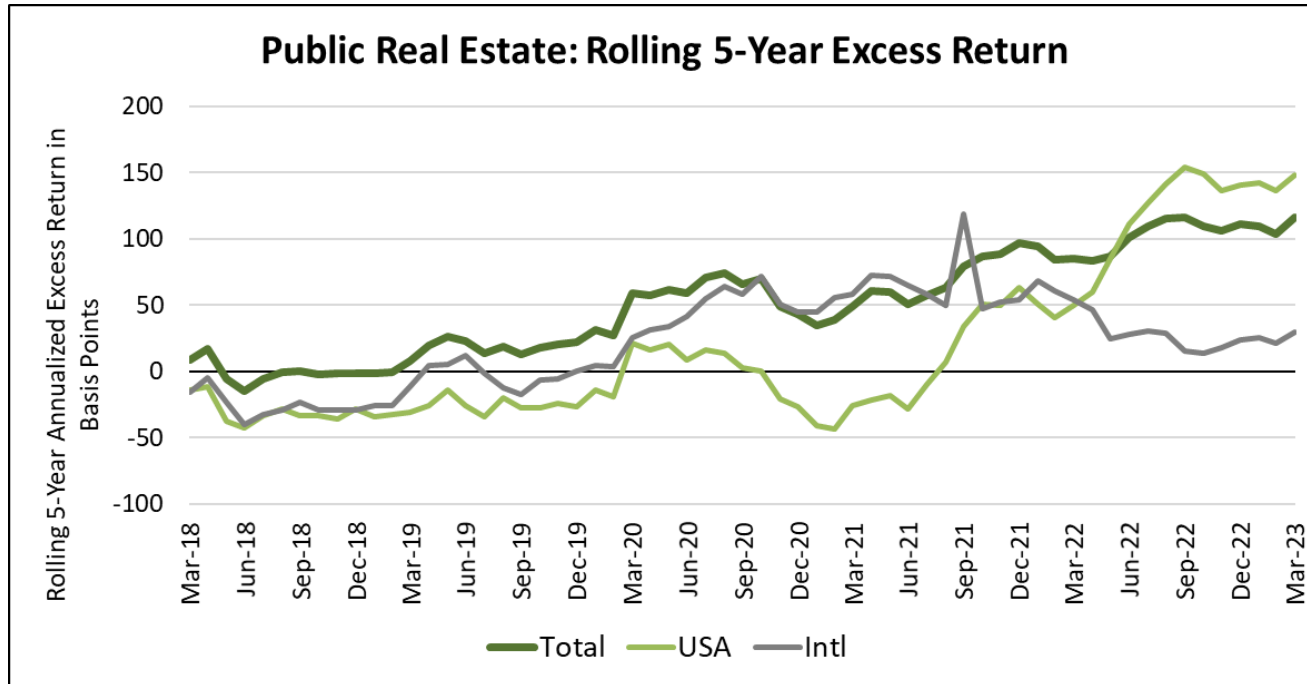


# Public Real Estate

## Relative Returns



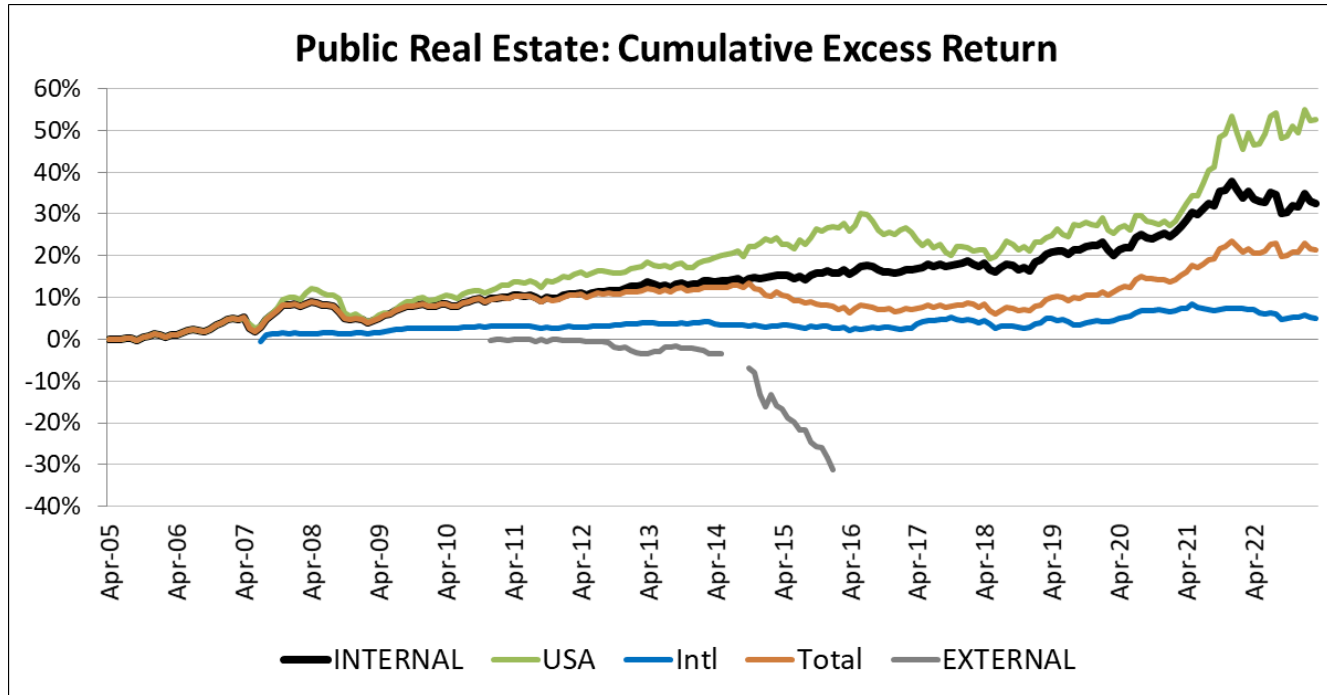
- Total portfolio +116 bps, including domestic +148 bps and international +29 bps



# Public Real Estate

## *Cumulative Excess Return*

- Added value over time despite some periods of underperformance

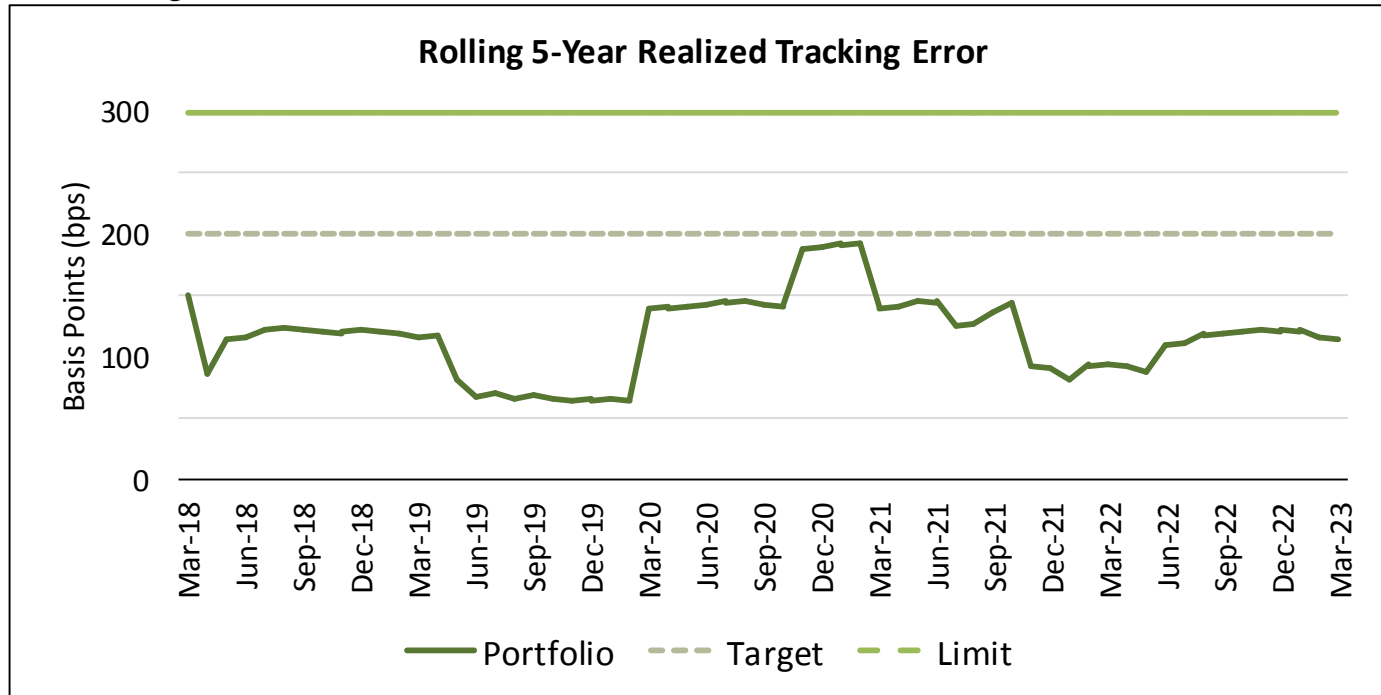


# Public Real Estate

## Risk Parameters



- Realized tracking error below allocated risk metric



# Public Real Estate

## Goals and Objectives for Fiscal Years 2023 & 2024



### FY23

- Outperform respective benchmarks – Ongoing
- Continue to Improve Investment Process
- Remain in compliance with IPS and IIP
- Hired Jim Gassman as Domestic REIT PM
- Posted REIT analyst position

### FY24

- Outperform respective benchmarks
- Continue to Improve Investment Process
- Remain in compliance with IPS and IIP
- Hire a REITs analyst

# Discussion

# Private Real Estate

## Key Characteristics



Attribute	Private Real Estate Portfolio
Type of Allocation	Return Seeking
Policy Allocation	Target weight of 9%, range from 4% to 14%
Management Style	Externally managed commingled funds Also fund of funds, separate accounts, and co-investments
Performance Objective	Outperform the NCREIF-ODCE Net Total Return Index
Risk Mitigation	Diversify across vintages, geographies, strategies, sectors and managers
Investment Expenses	~194 basis points external, ~10 bps internal

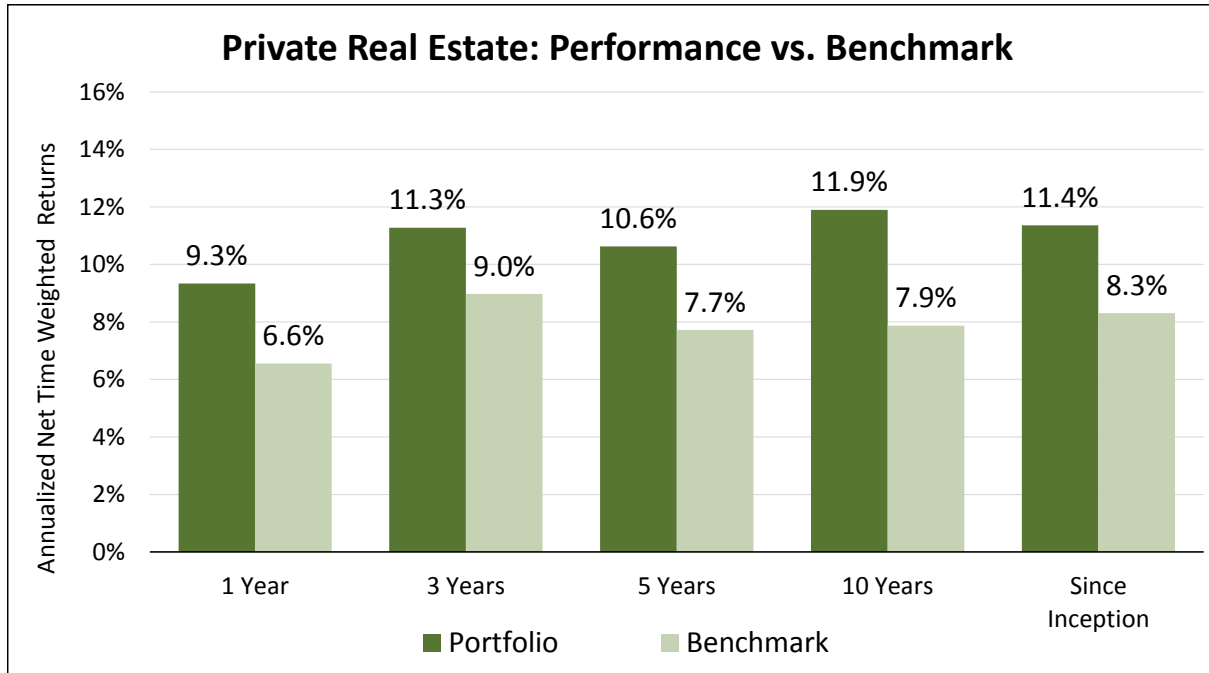


# Private Real Estate

## Performance Snapshot



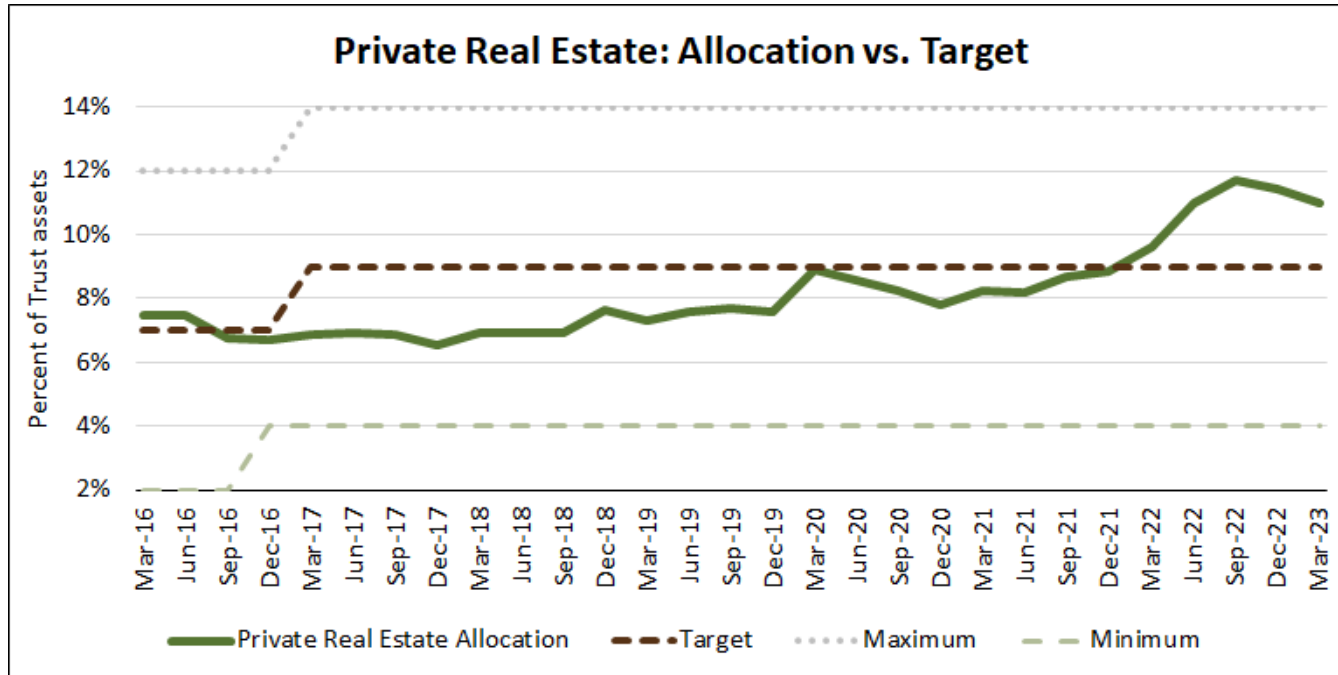
- Strong performance across all time horizons, including +290 bps of value add last 5 years



# Private Real Estate

## Historical Allocation

- Strong performance has led to increased allocation to Private Real Estate

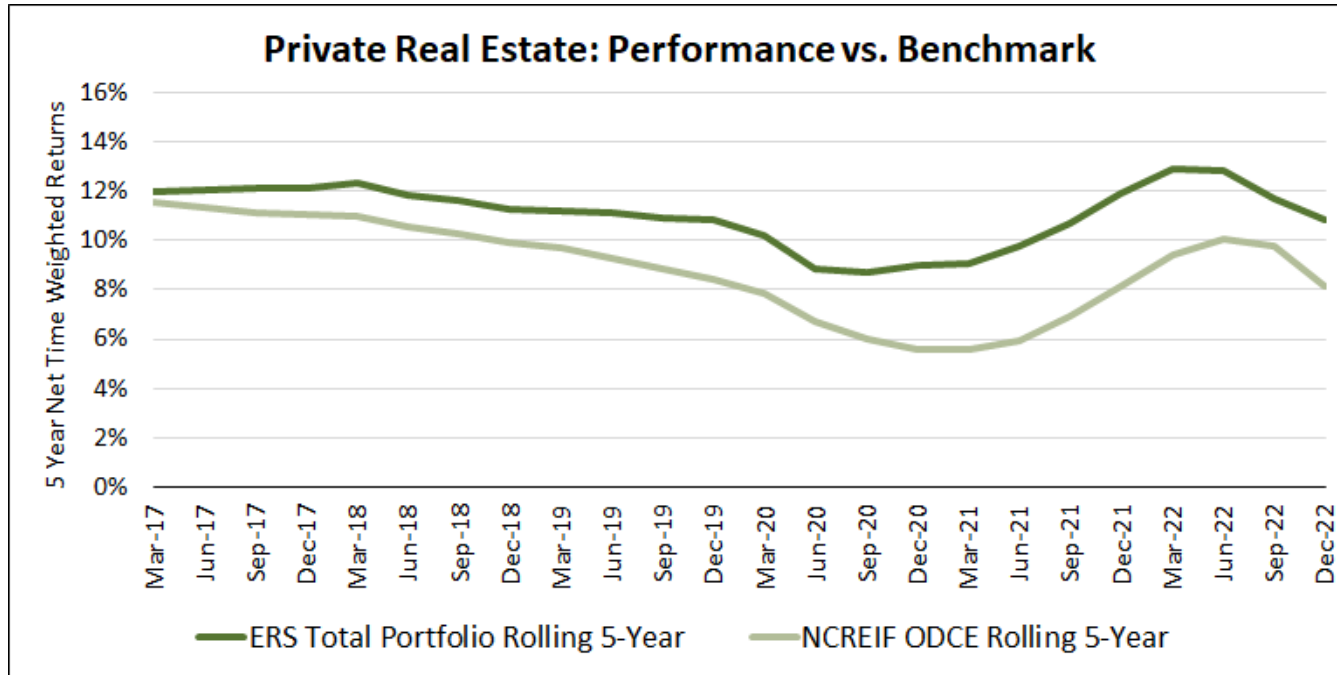


# Private Real Estate

## Historical Performance



- Strong and improving performance vs. benchmark across recent horizons

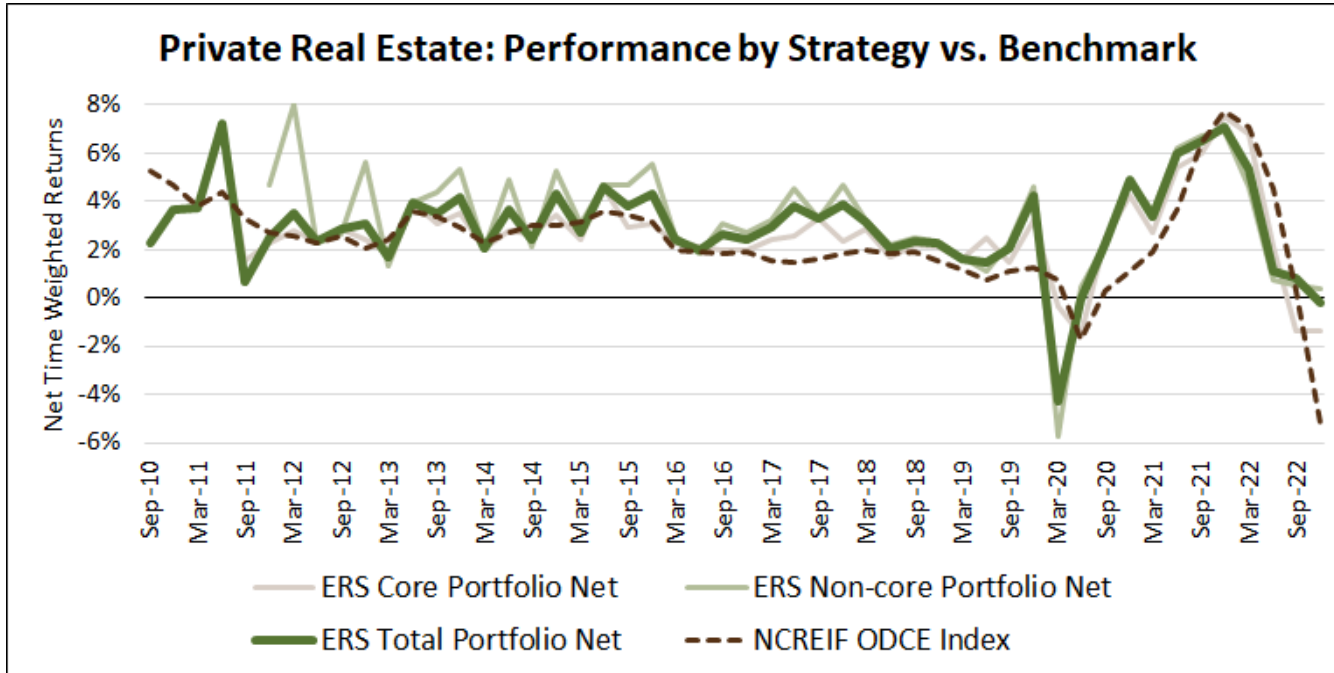


# Private Real Estate

## *Historical Performance*



- Strong performance by both core and non-core across recent horizons

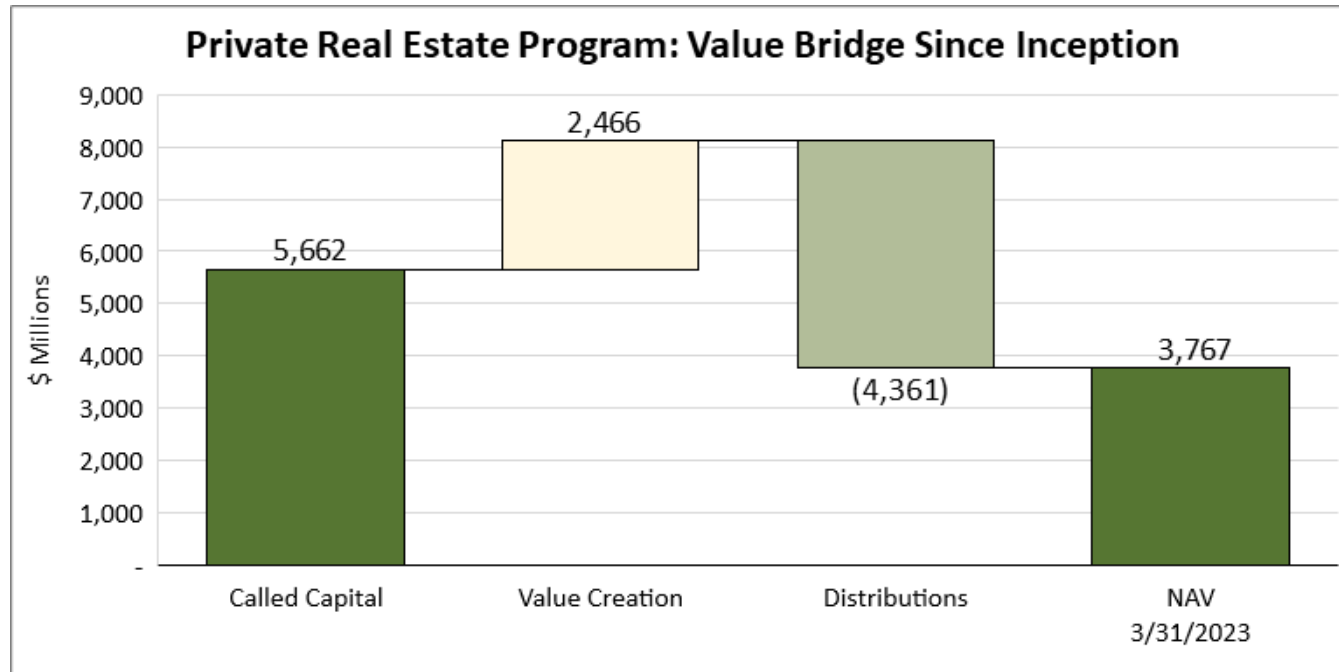


# Private Real Estate

## Historical Performance: Value Bridge



- Significant value creation for the Trust with meaningful distributions over time

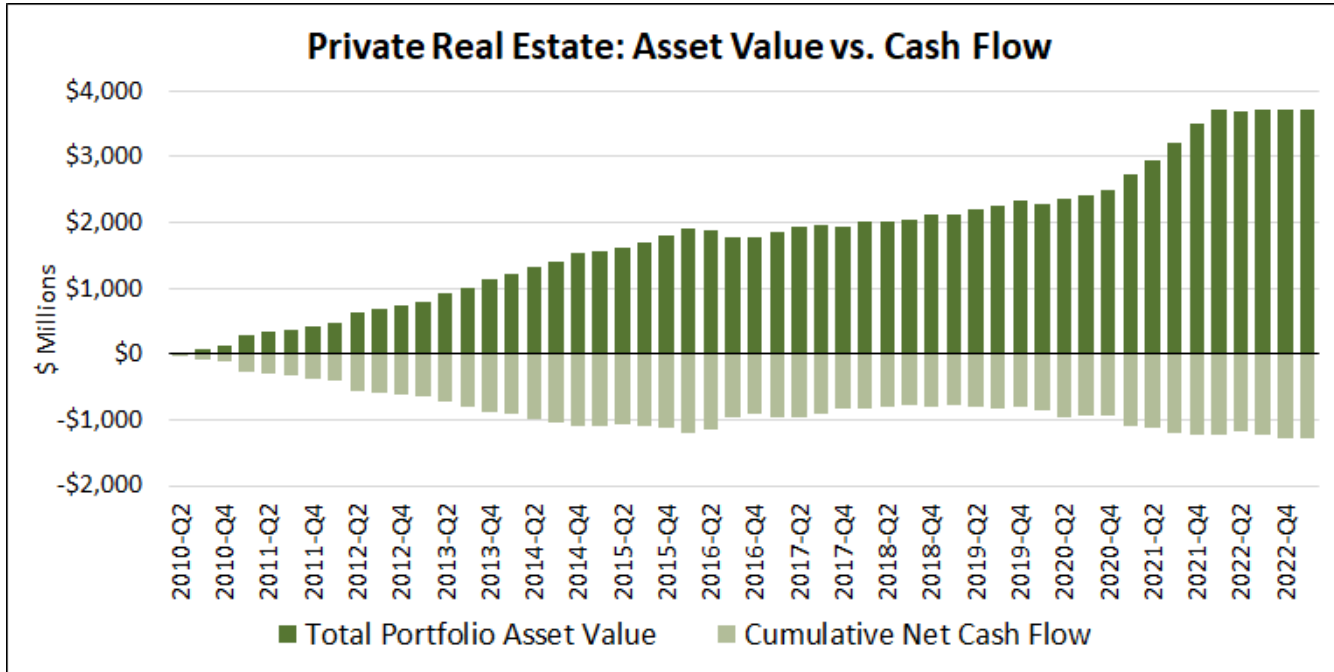


# Private Real Estate

## Historical Performance



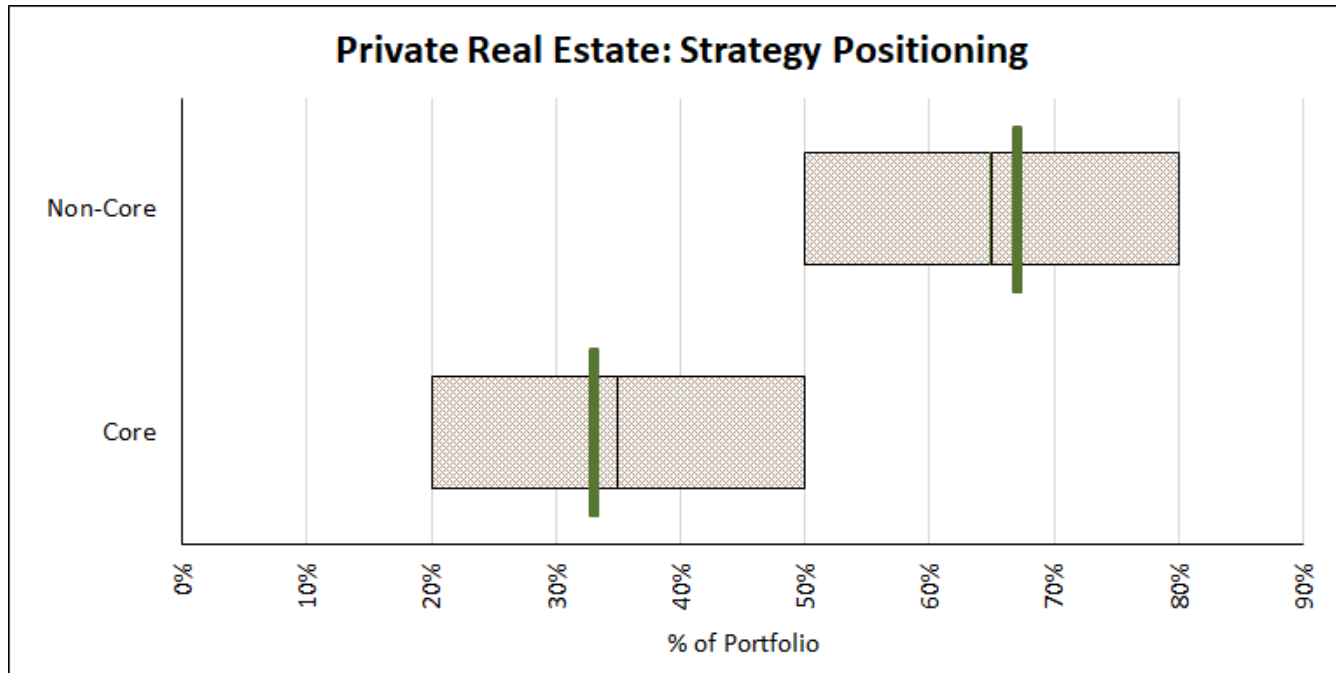
- Portfolio asset value and cash flow continue to rise as the portfolio matures



# Private Real Estate

## *Risk Diversification*

- Portfolio remains diversified and slightly overweight non-core property types

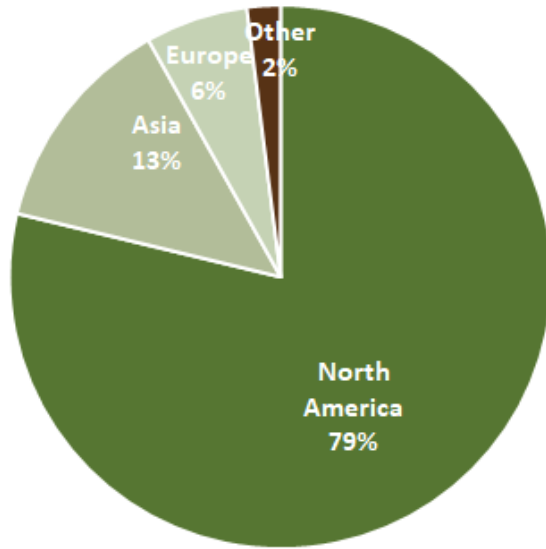


# Private Real Estate

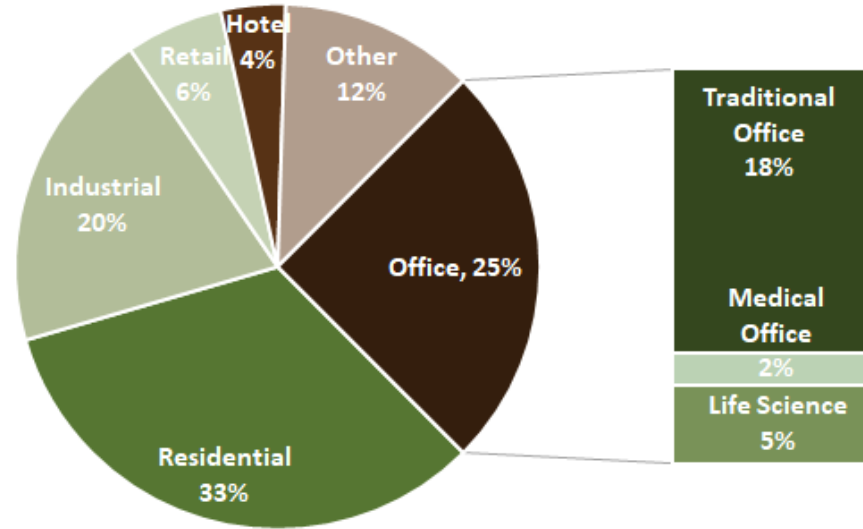
## *Risk Diversification*

- Portfolio remains properly diversified across regions and property types

Private Real Estate NAV by Geography



Private Real Estate NAV by Property Type

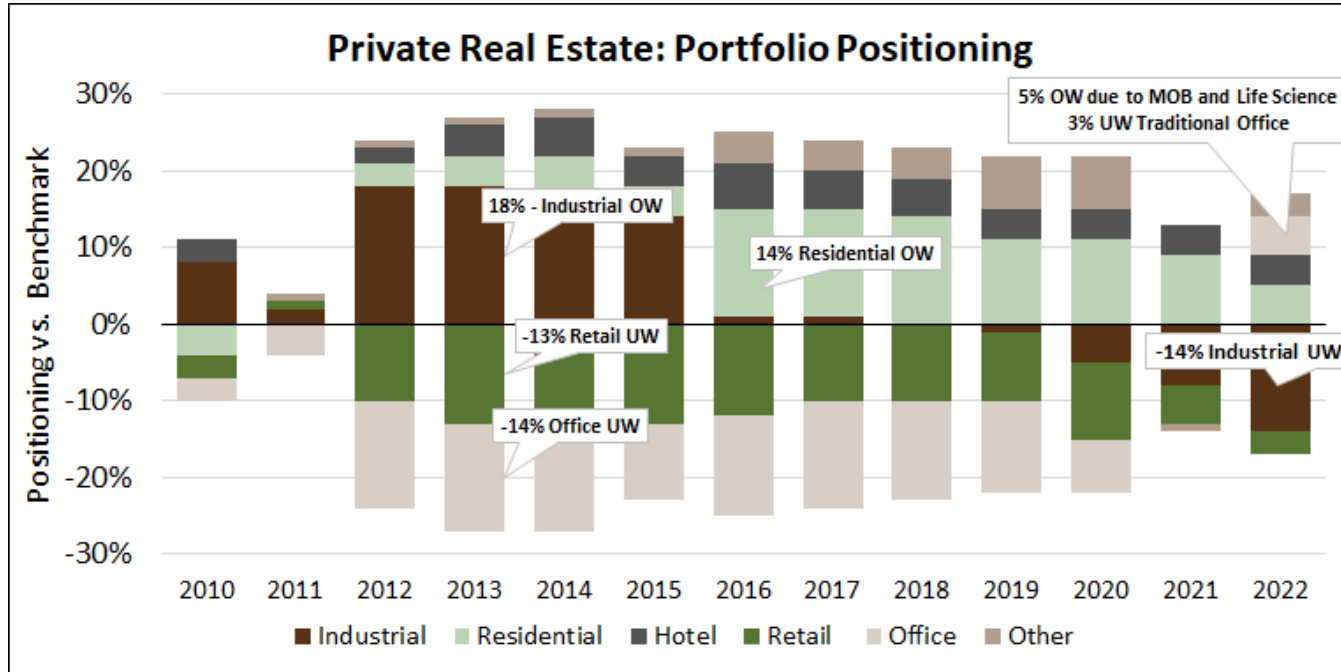




# Private Real Estate

## Historical Composition

- Highly diversified with current tilts toward residential and away from industrial

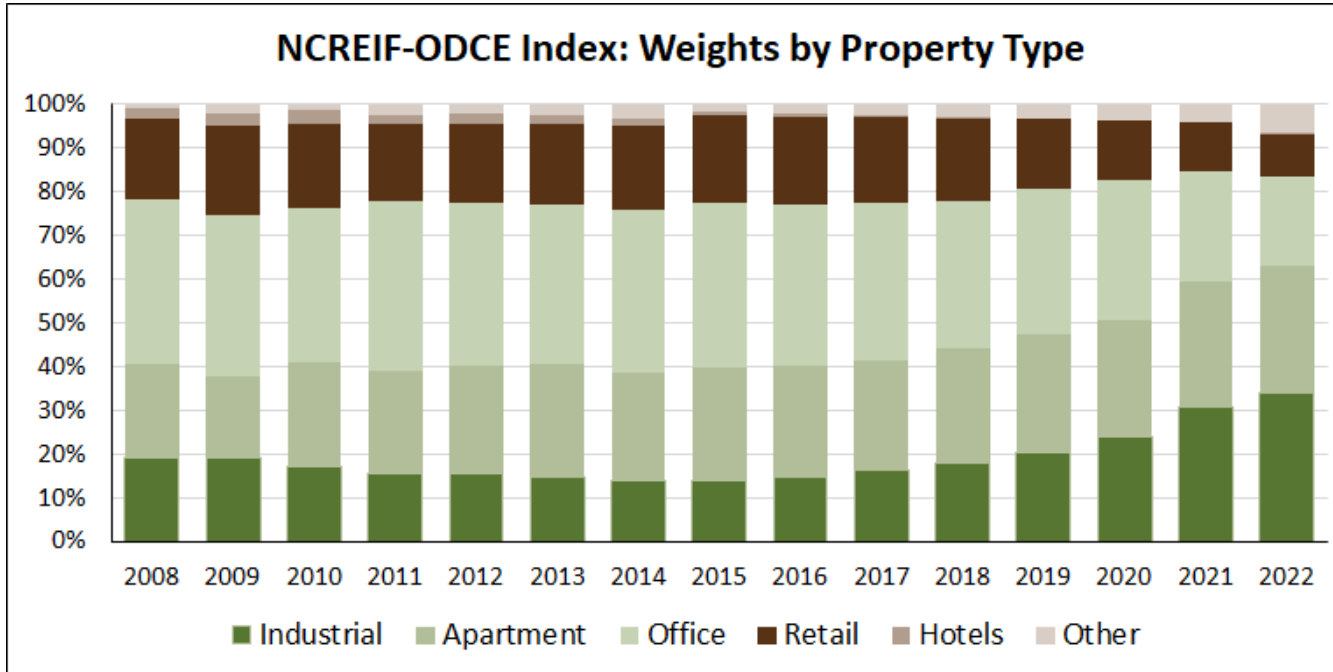


# Private Real Estate

## Historical Composition of Benchmark



- Benchmark weightings have tilted towards industrial and away from retail and office



Change (%)  
2019 to Present

**Industrial +15%**  
Other +4%  
Apartment +3%

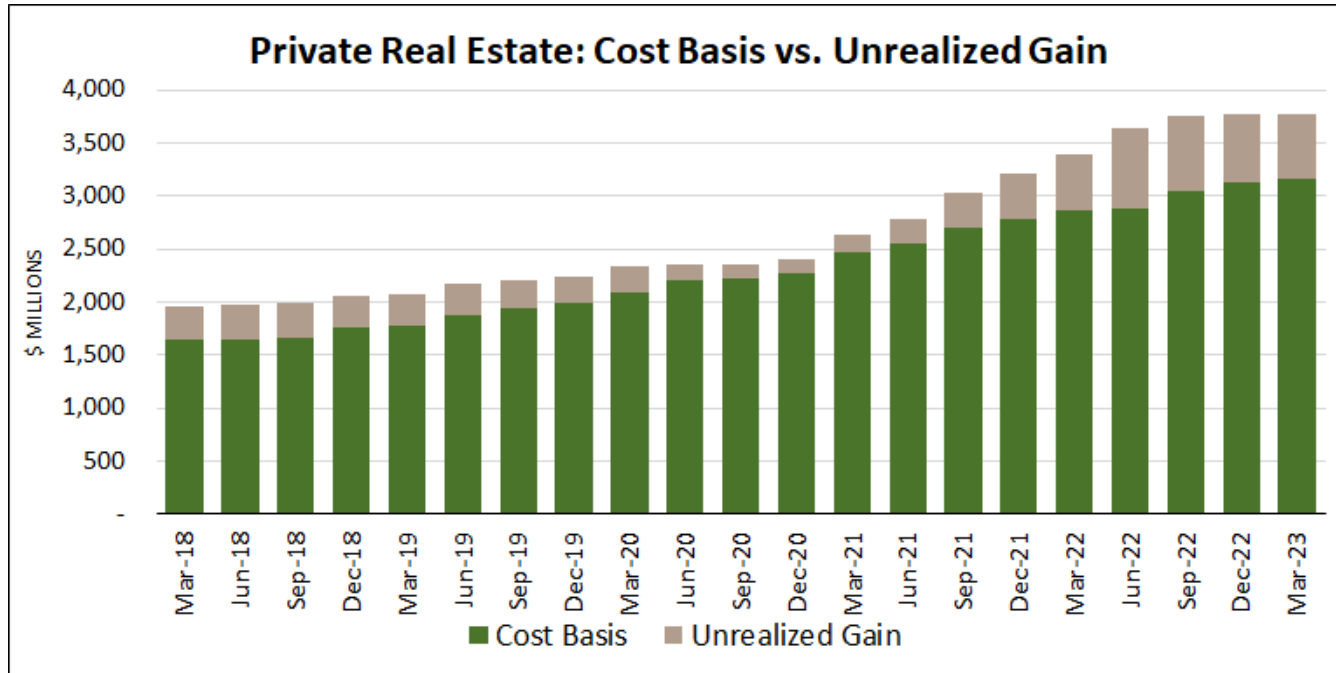
**Office -13%**  
Retail -8%  
Hotels 0%

# Private Real Estate

## Cost Basis vs. Unrealized Gain/Loss



- Private Real Estate sees meaningful increase in unrealized gains

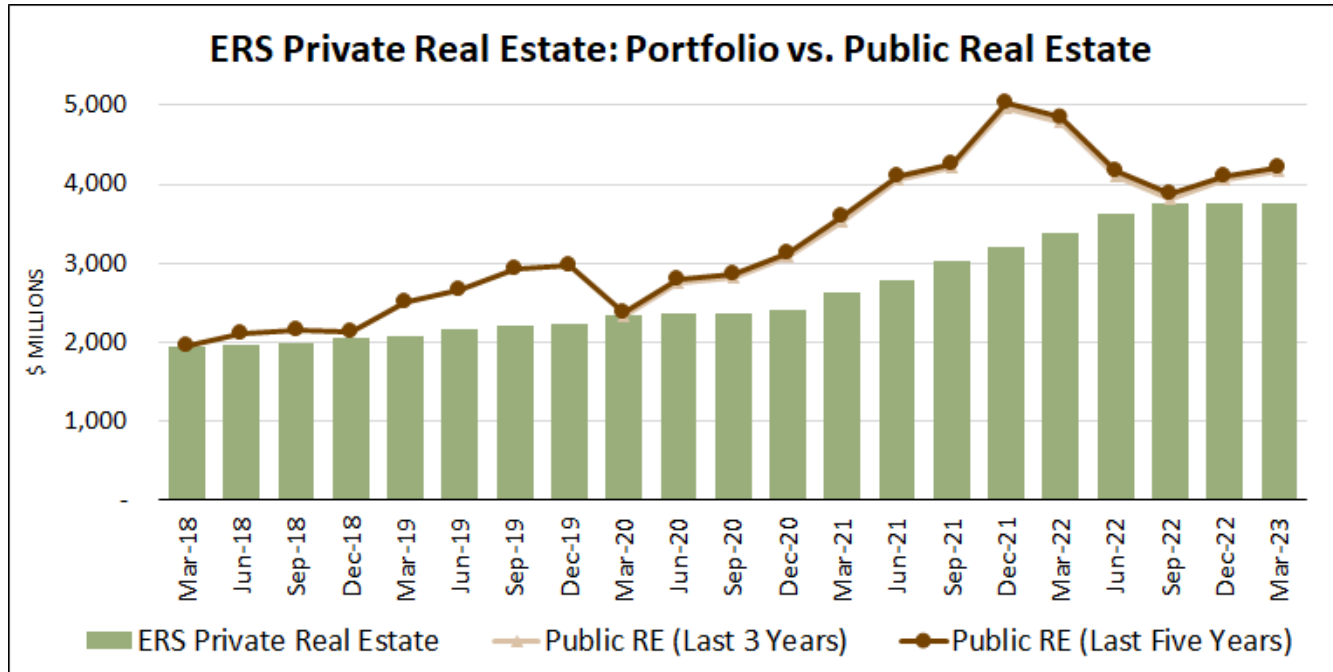


# Private Real Estate

## Comparison to Public Market Proxies



- Private Real Estate portfolio undervalued by ~10% versus public real estate

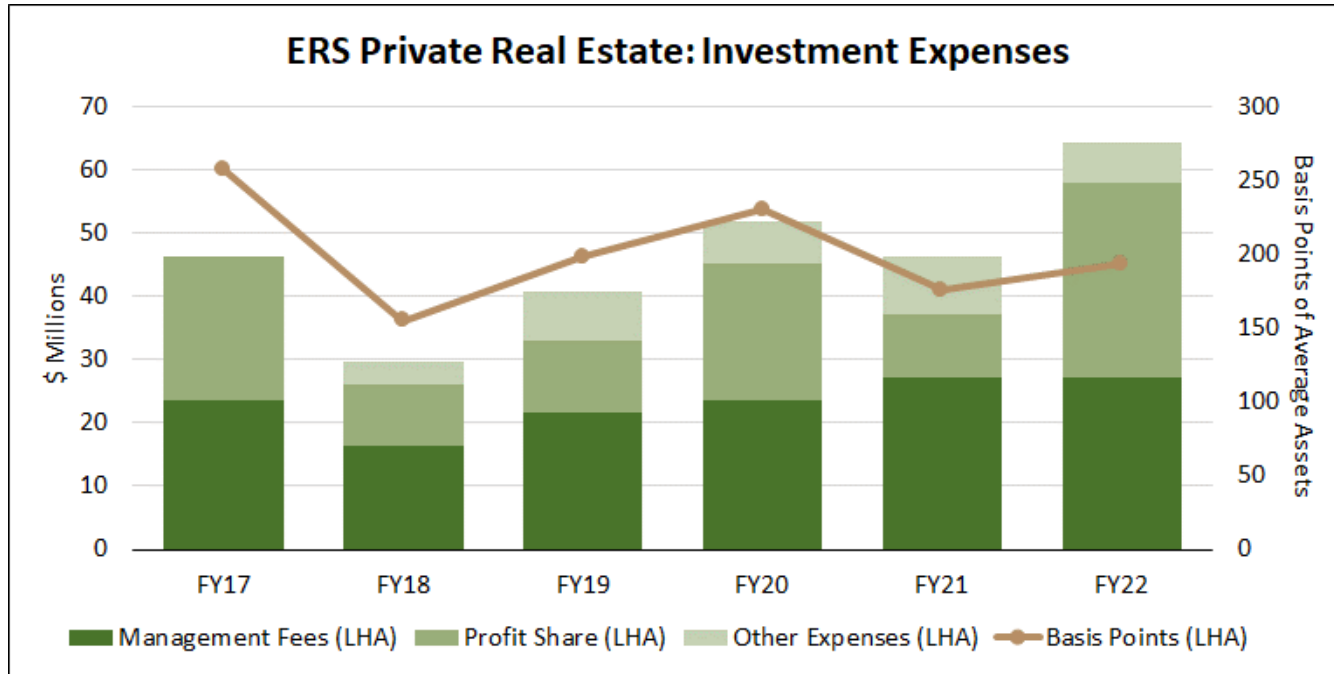


# Private Real Estate

## Investment Expenses



- Strong performance and realizations in FY22 translated into above average profit share



# Private Real Estate

## Goals and Objectives for Fiscal Years 2023 & 2024



### FY23

- Outperform respective benchmarks – Ongoing
- Execute on Tactical Plan – Ongoing
- Target Allocation Strategy Adjustments – Ongoing
- Continue to Improve Investment Process
- IPS Compliant

### FY24

- Outperform respective benchmarks
- Execute on Tactical Plan
- Target Allocation Strategy Adjustments
- Continue to Improve Investment Process
- IPS Compliant
- Co-Host Real Estate Emerging Managers Conference (REEM) January 2024

# Discussion

# Private Infrastructure

## Key Characteristics



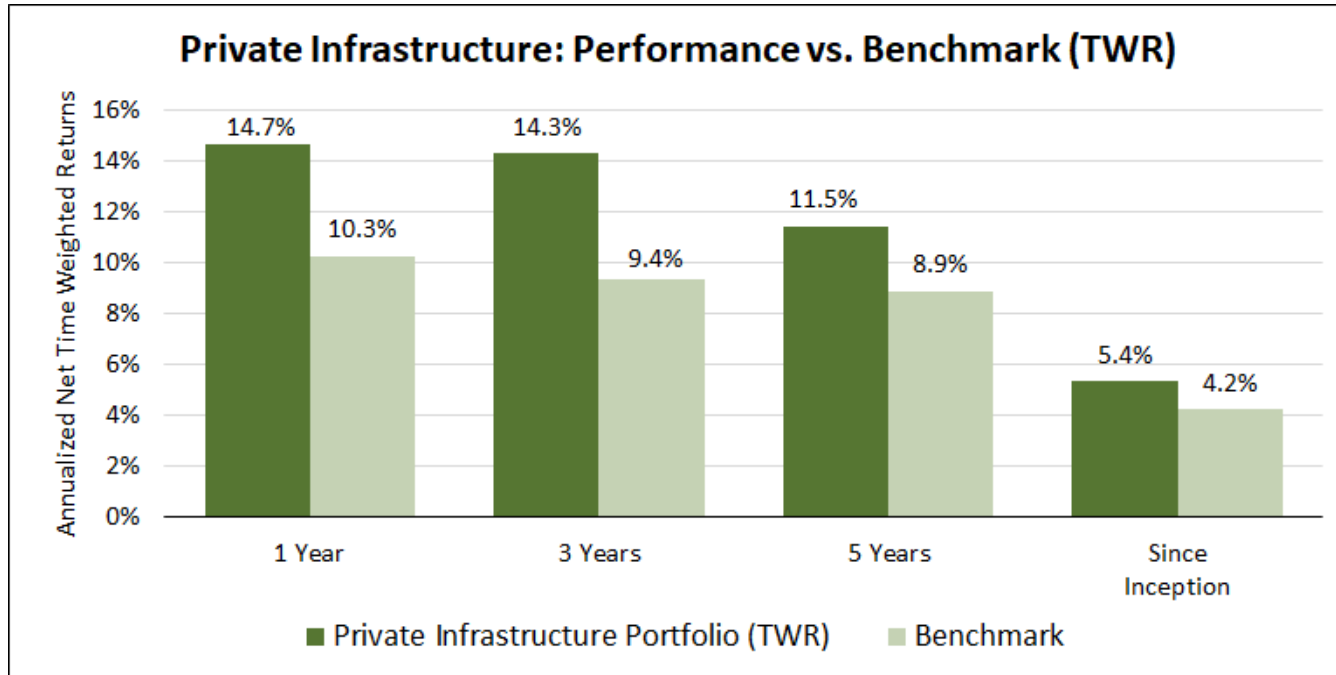
Attribute	Private Infrastructure Portfolio
Type of Allocation	Return Seeking
Policy Allocation	Target weight of 5%, range from 0% to 10%
Management Style	Externally managed open- and closed-end funds, Also include co-investments and direct investments
Performance Objective	Exceed US Consumer Price Index + 400 basis points annually
Risk Mitigation	Diversification across vintages, geographies, strategies, sectors and managers
Investment Expenses	~167 bps external, ~15 bps internal for FY22



# Private Infrastructure

## Performance Snapshot

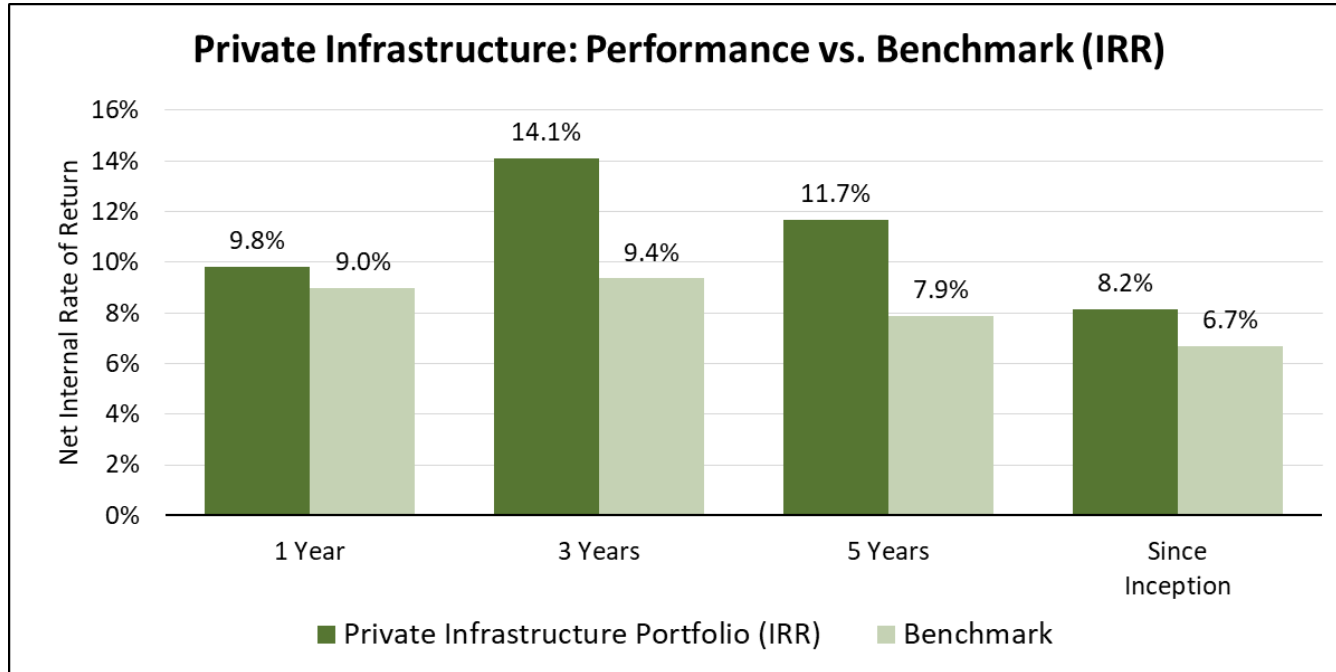
- Strong performance across time horizons, including +256 bps of value add last 5 years



# Private Infrastructure

## Performance Snapshot

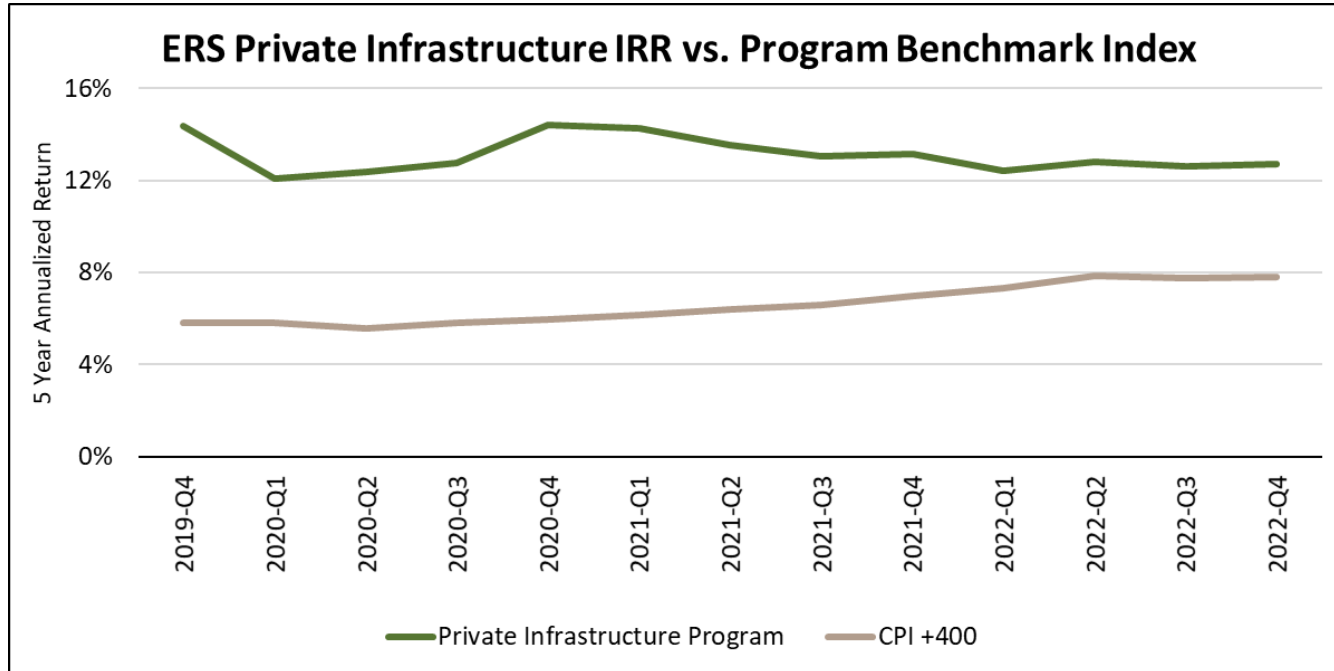
- Strong performance across time horizons, including +350 bps of value add last 5 years



# Private Infrastructure

## Historical Performance

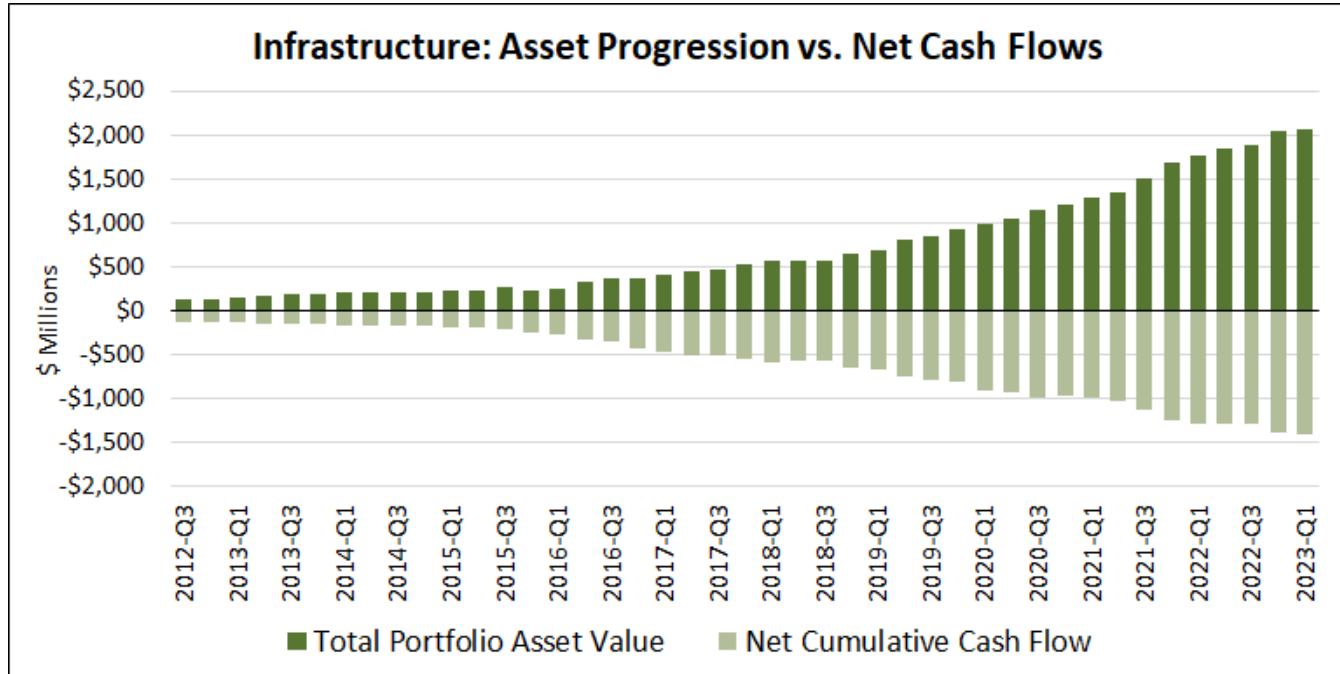
- Strong performance vs. benchmark index on IRR basis



# Private Infrastructure

## Historical Performance

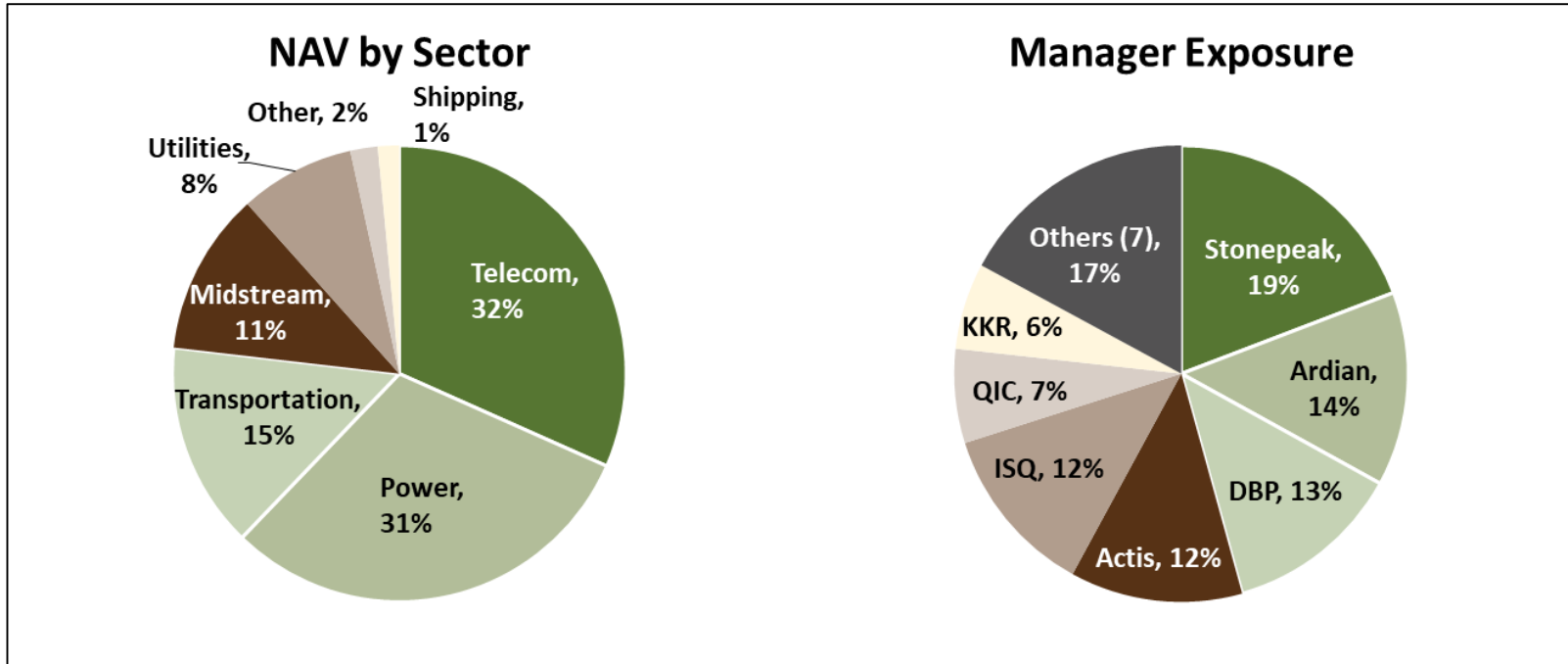
- Portfolio asset value and cash flow continue to rise as the portfolio matures



# Private Infrastructure

## *Risk Diversification*

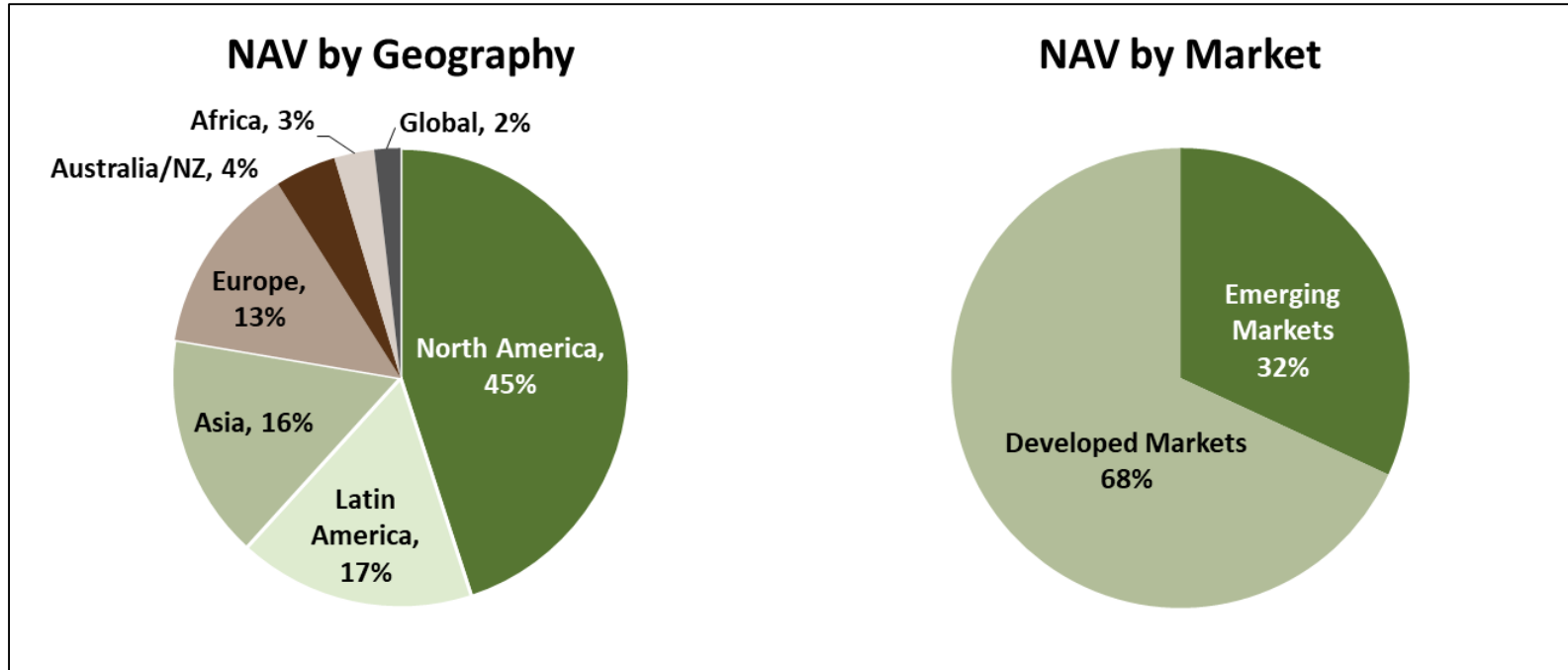
- Portfolio remains properly-diversified across sectors and manager exposure



# Private Infrastructure

## *Risk Diversification*

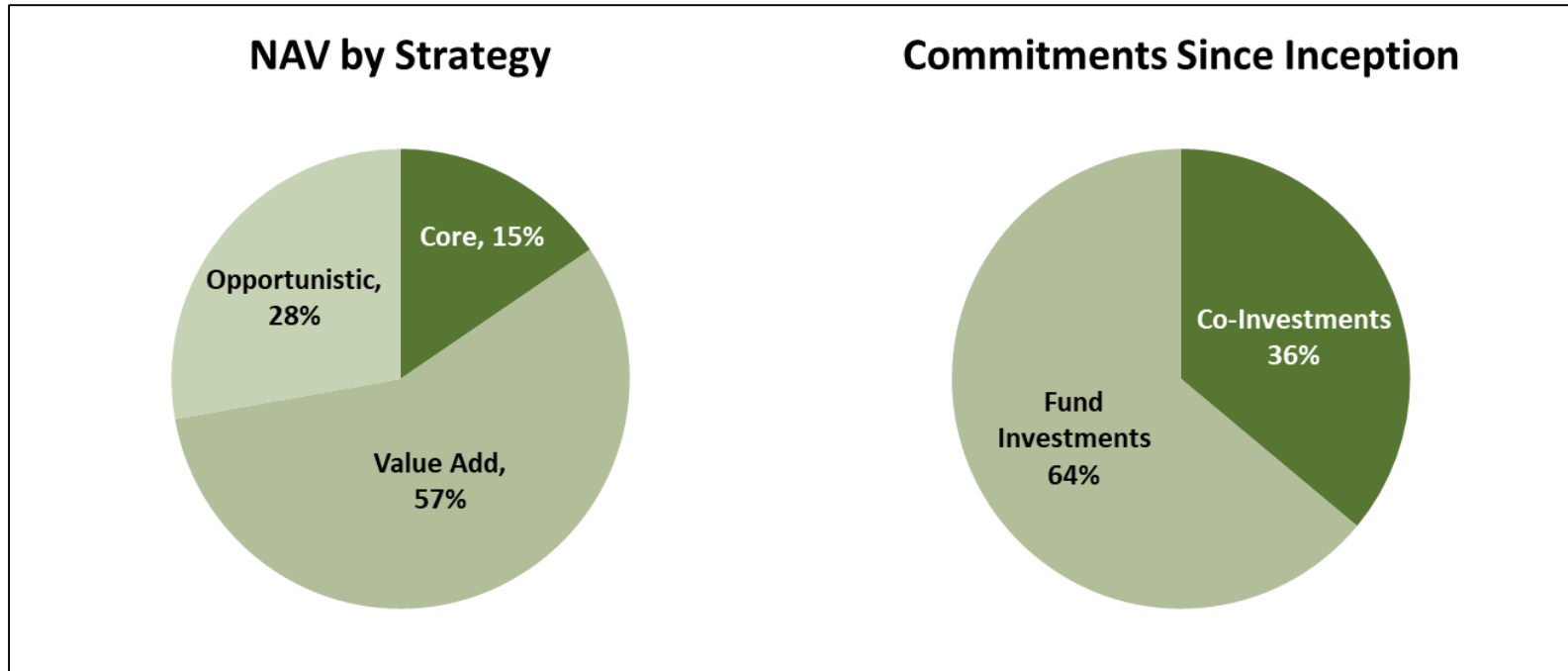
- Portfolio remains properly-diversified across geographies and markets



# Private Infrastructure

## *Risk Diversification*

- Portfolio remains well-diversified across strategies

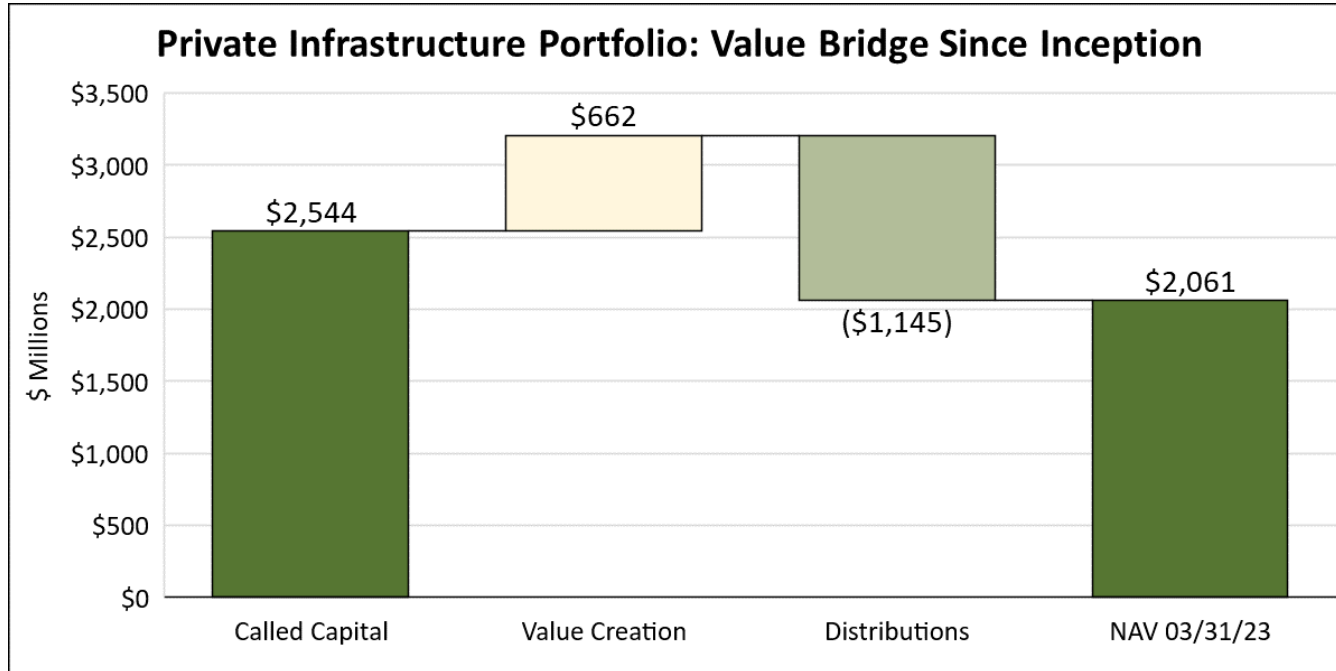


# Private Infrastructure

## *Historical Performance: Value Bridge*



- Significant value creation for the Trust with contributions from income and appreciation

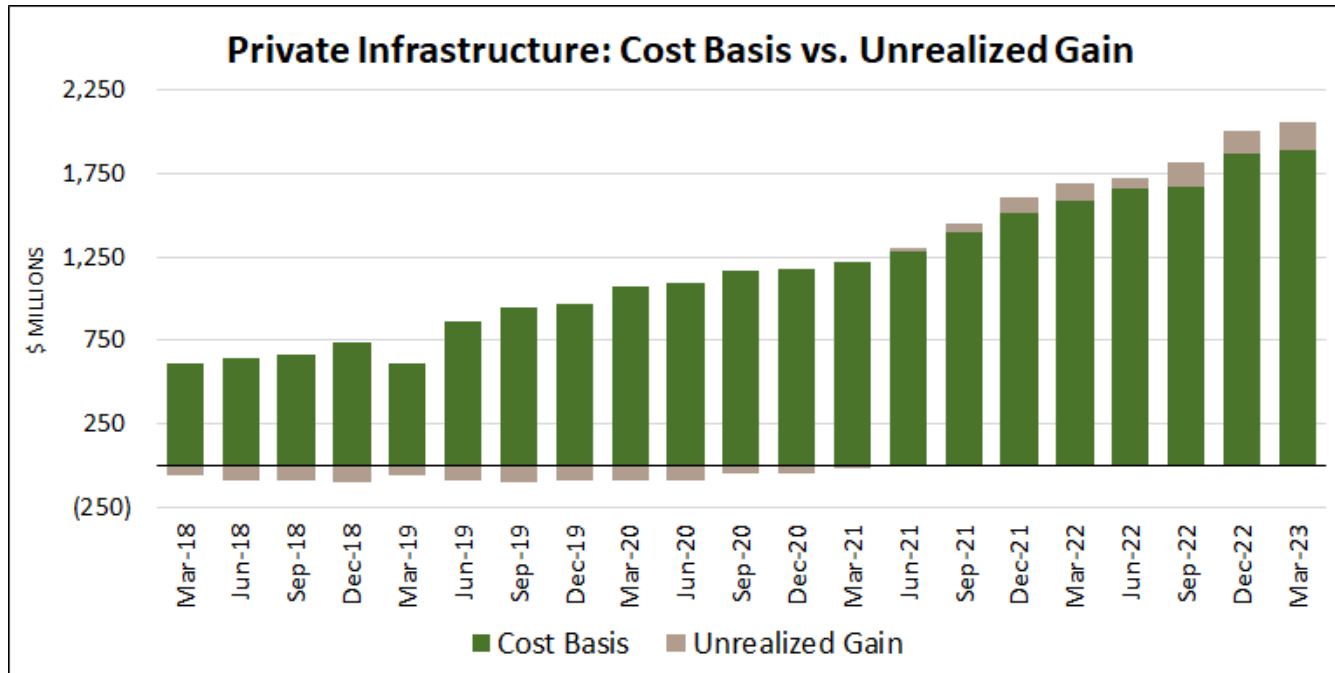




# Private Infrastructure

## Cost Basis vs. Unrealized Gains

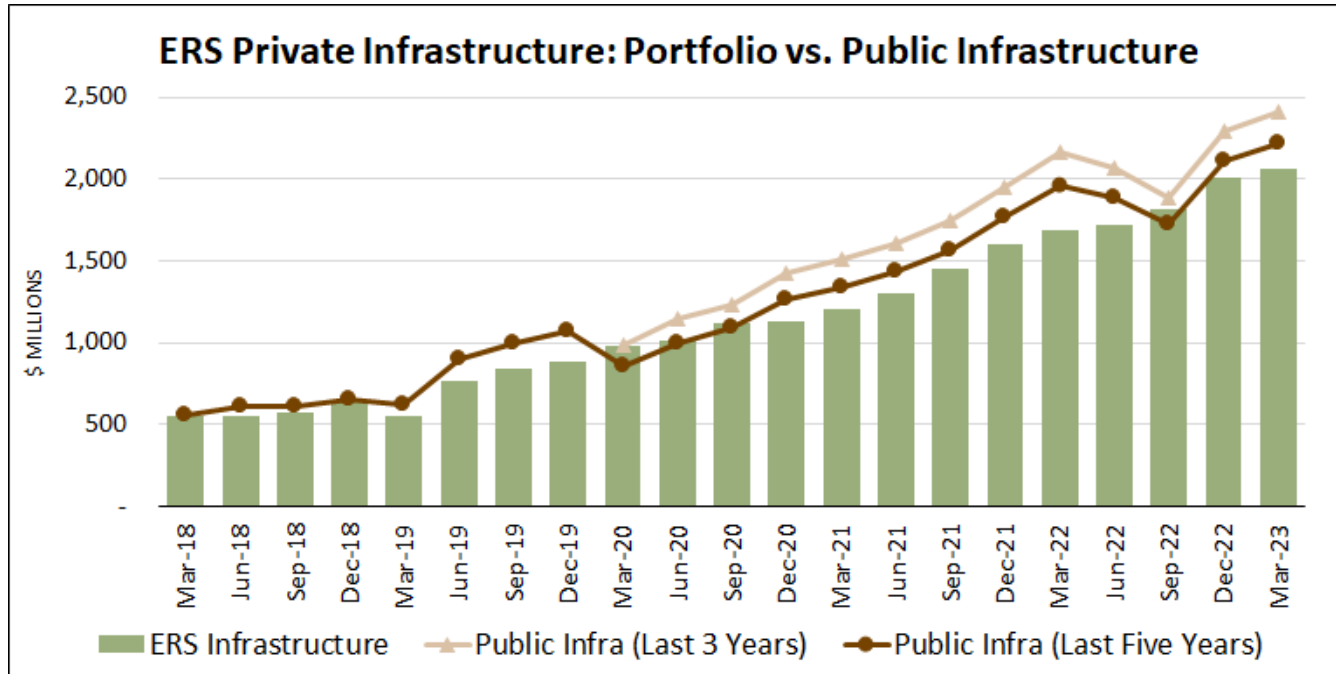
- Private Infrastructure moves from unrealized losses to gains as program matures



# Private Infrastructure

## Comparison to Public Proxies

- Private Infrastructure portfolio undervalued by ~10% versus public markets

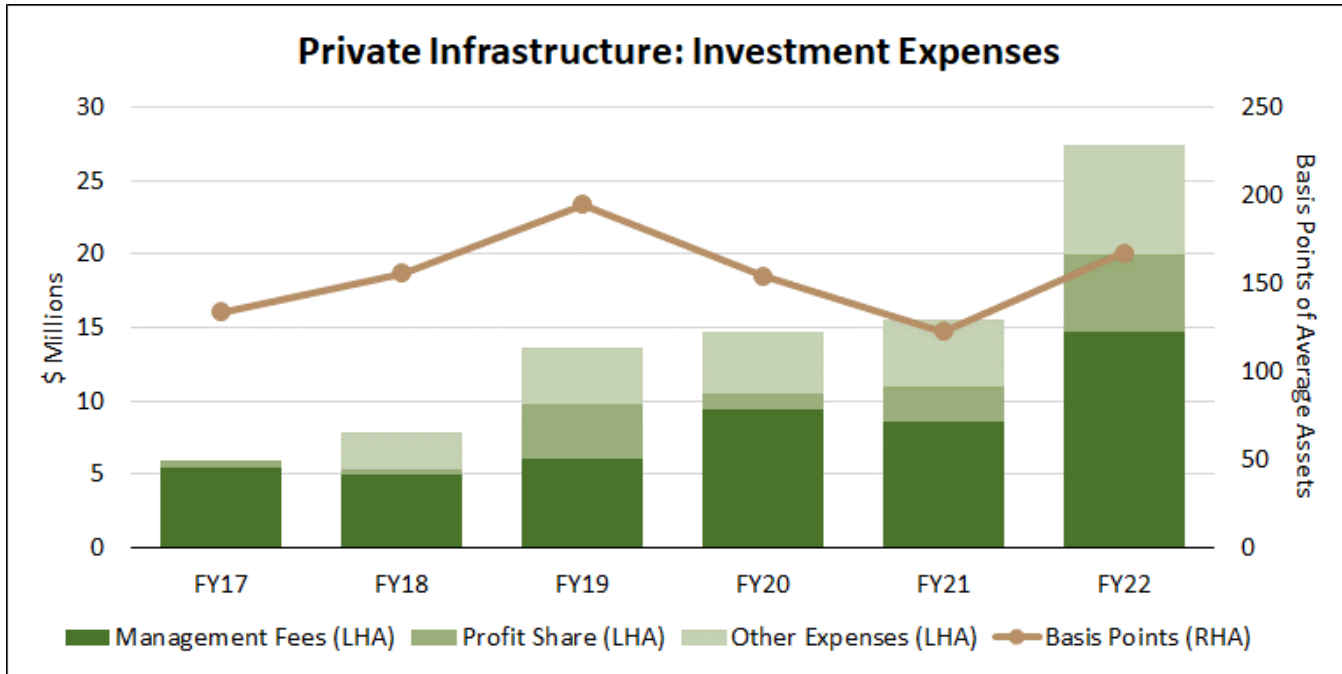


# Private Infrastructure

## Investment Expenses



- Profit share continues to increase as portfolio has matured in recent years



# Private Infrastructure

## *Achievements and Objectives*



### Achievements

- ✓ Deployed within target range in FY22
- ✓ Exceeding benchmark performance
- ✓ On-track for execution of FY23 Tactical Plan – ongoing

### Forward Looking / Objectives

- ❑ Continued focus on co-investments/directs
- ❑ Seek paths to deploy in emerging markets
- ❑ Selectively explore new relationships
- ❑ Steer deployment to meet diversification guidelines and liquidity needs of the Trust
- ❑ Execute on FY24 Tactical Plan – to be presented in August

# Discussion

## Public Agenda Item #15

### *\* Consideration of Annual Review of Private Equity Program*

May 17, 2023

Ricardo Lyra, Managing Director of Private Equity

# Private Equity

## *Program Overview*



### **Private Equity Program**

- Program inception in 2008
- Cumulative commitments totaling \$12.0 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 16%, range from 11% to 21%
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	163 bps external, 9 bps internal for FY22

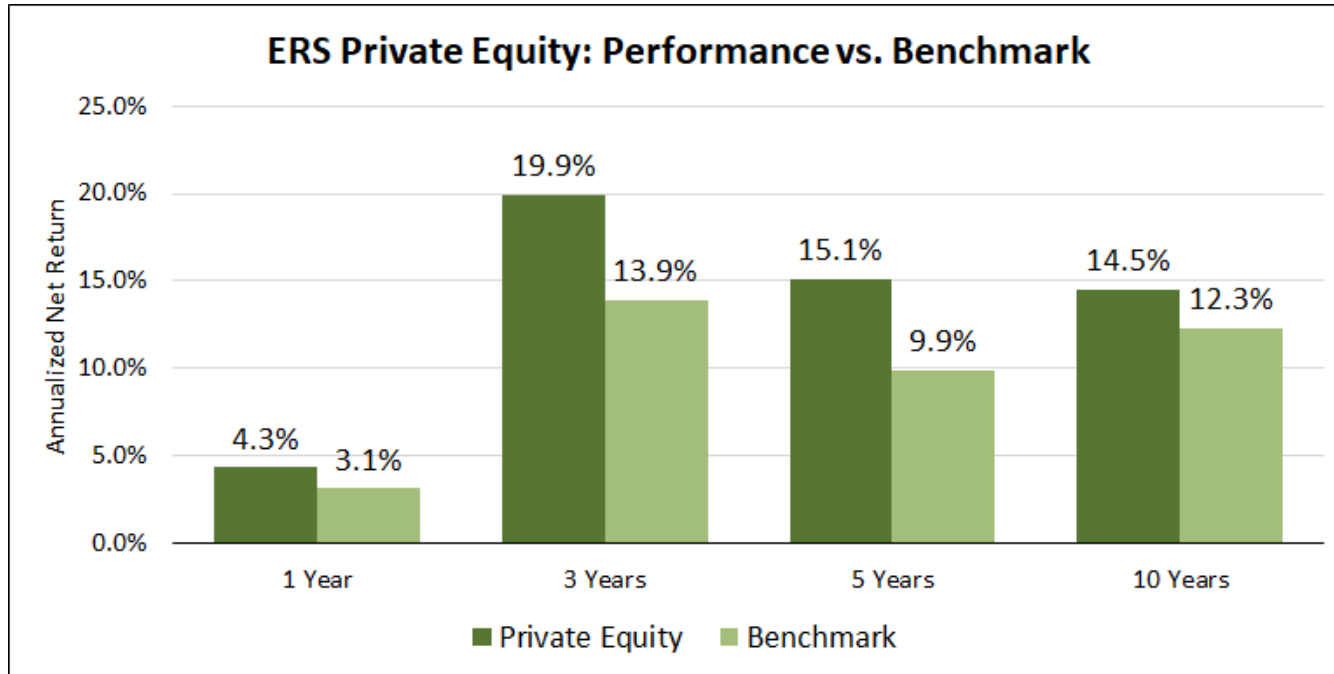


# Private Equity

## Performance Snapshot



- Strong performance across all time horizons, including +220 bps over 10 years

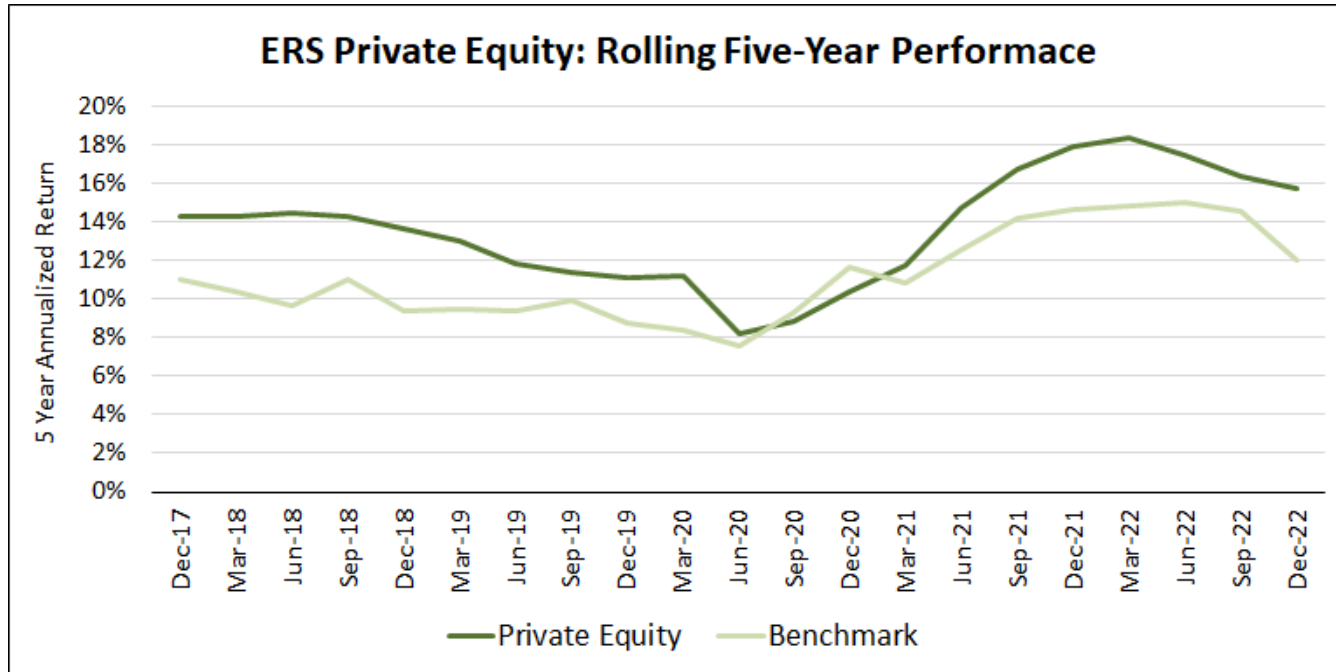


# Private Equity

## Historical Performance



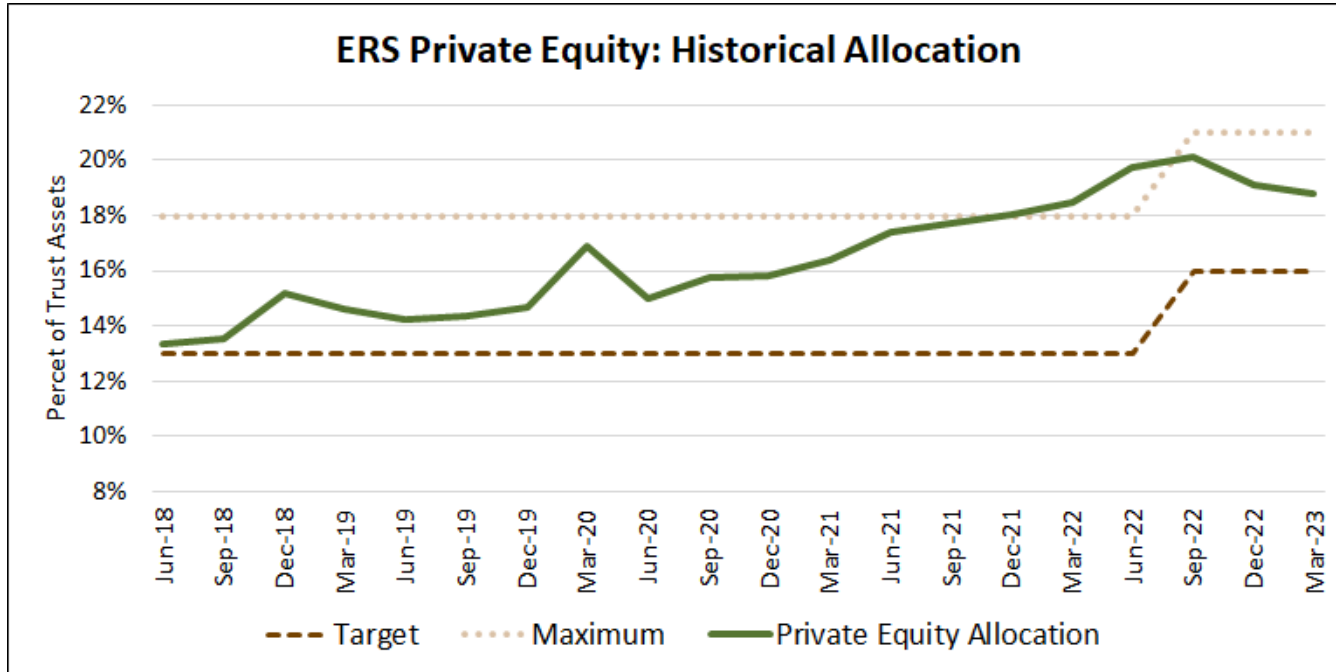
- Strong performance against peer universe across recent horizons



# Private Equity

## Historical Allocation

- Strong positive cash flow has led to decreased allocation to Private Equity

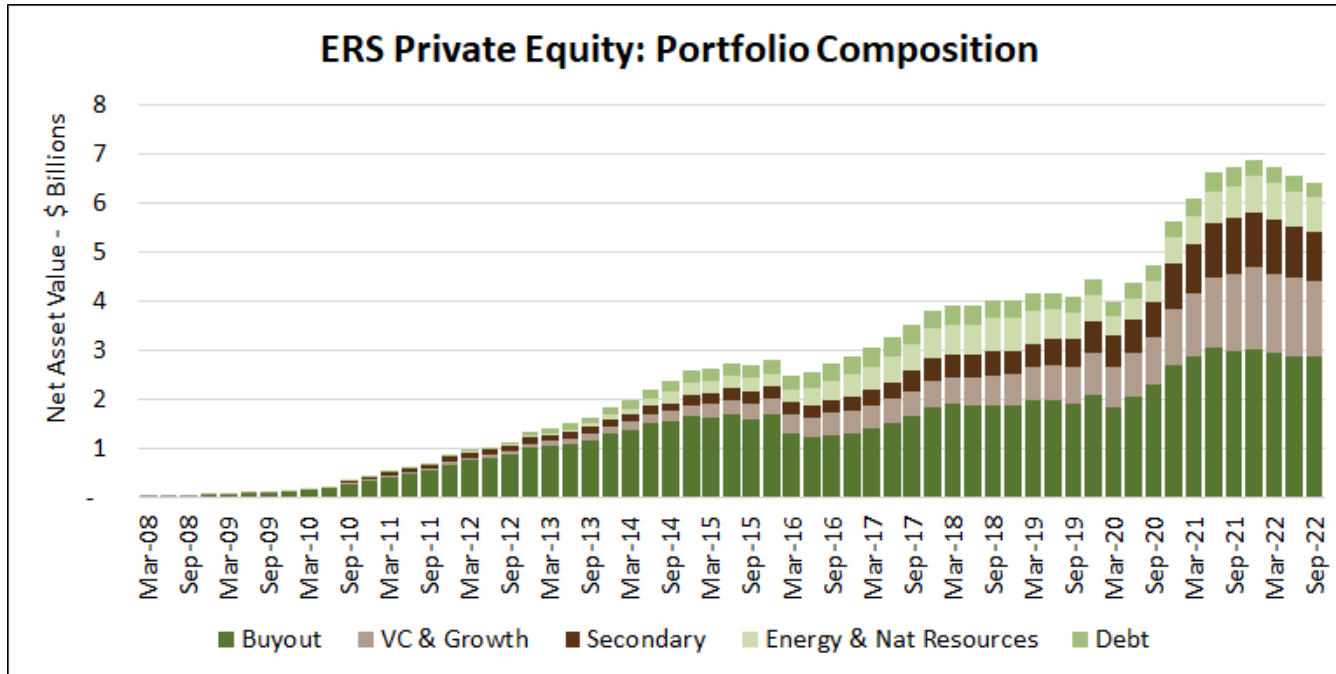


# Private Equity

## Historical Composition



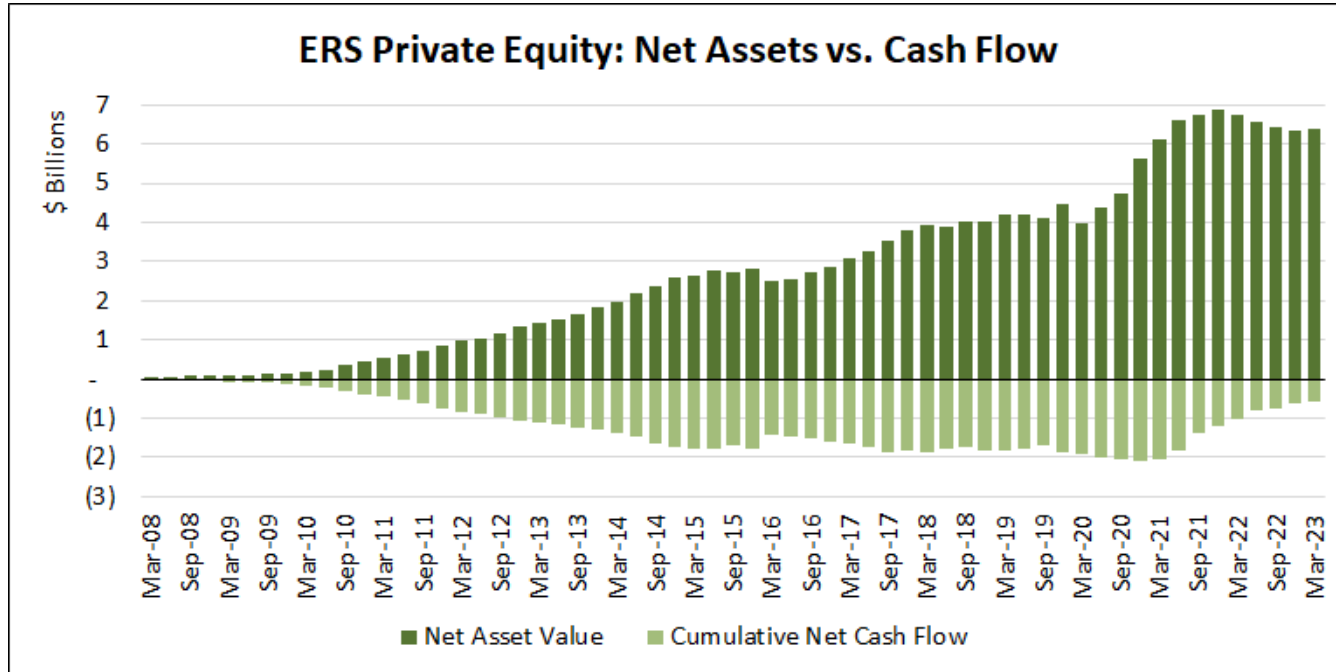
- Portfolio has remained properly-diversified as assets have grown over time



# Private Equity

## Historical Performance

- Strong positive cash flow has continued to reduce the allocation to Private Equity

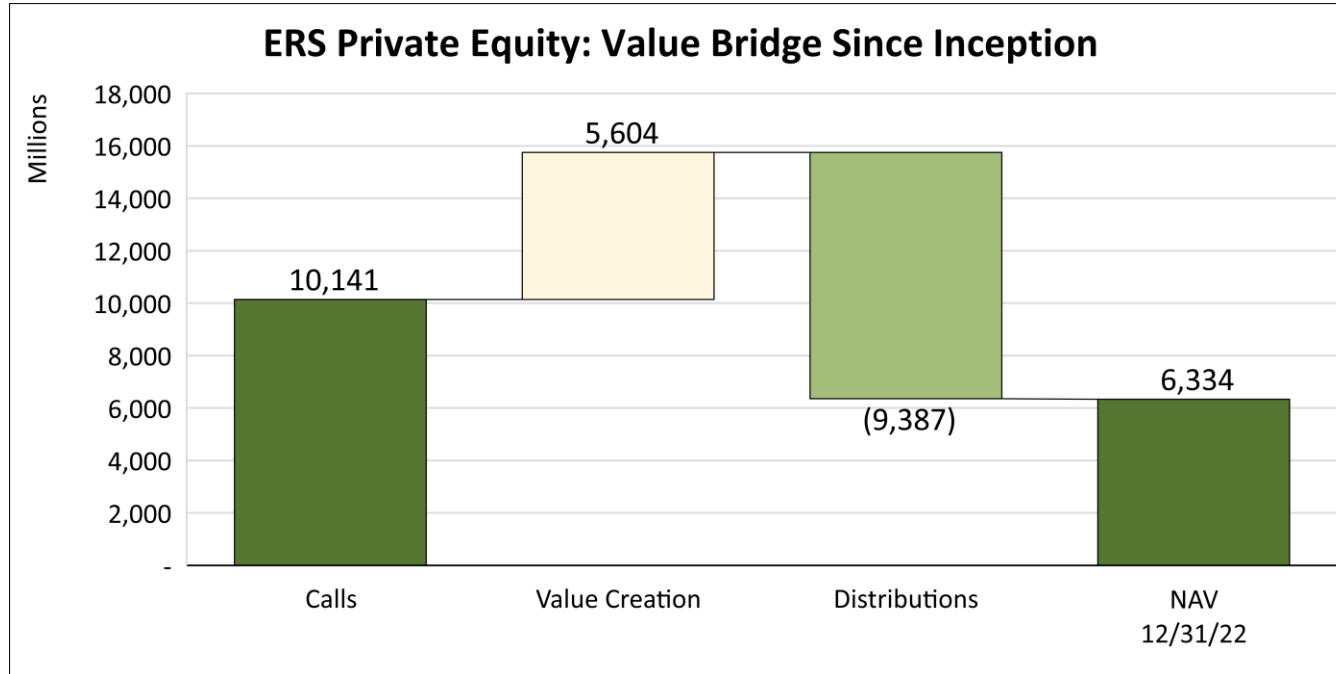


# Private Equity

## Value Bridge



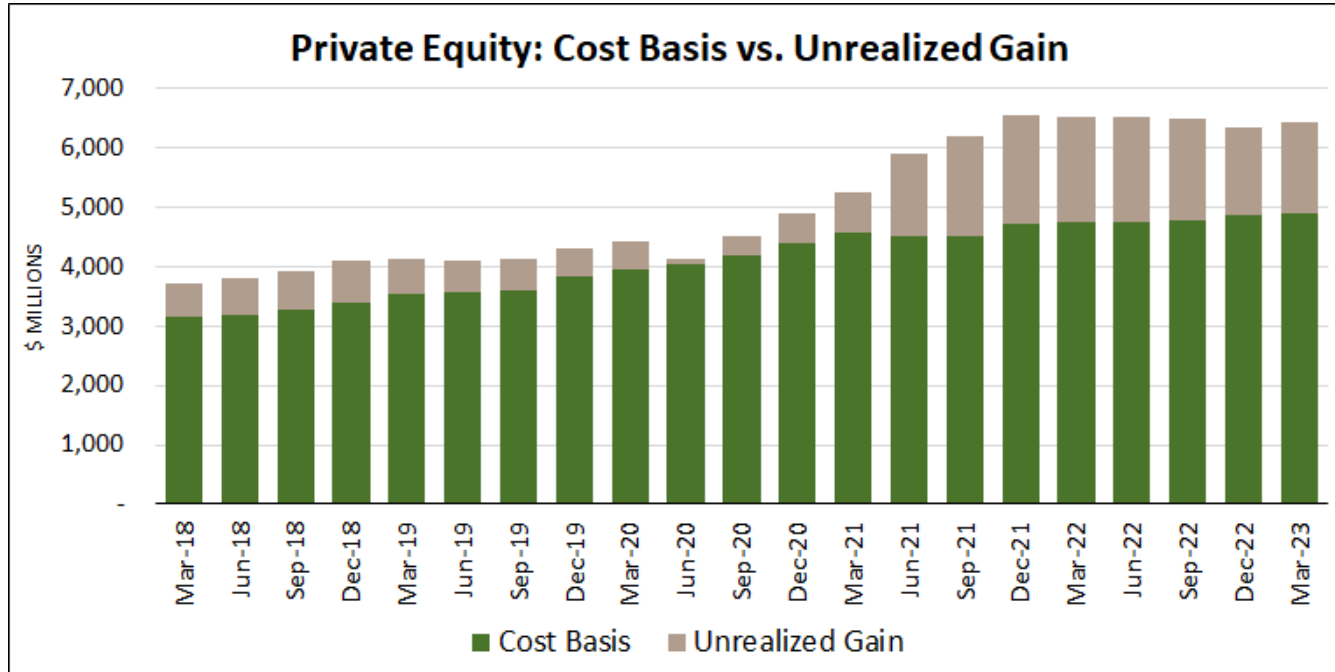
- The portfolio has distributed 93% of called capital since inception in 2008



# Private Equity

## Cost Basis vs. Unrealized Gains

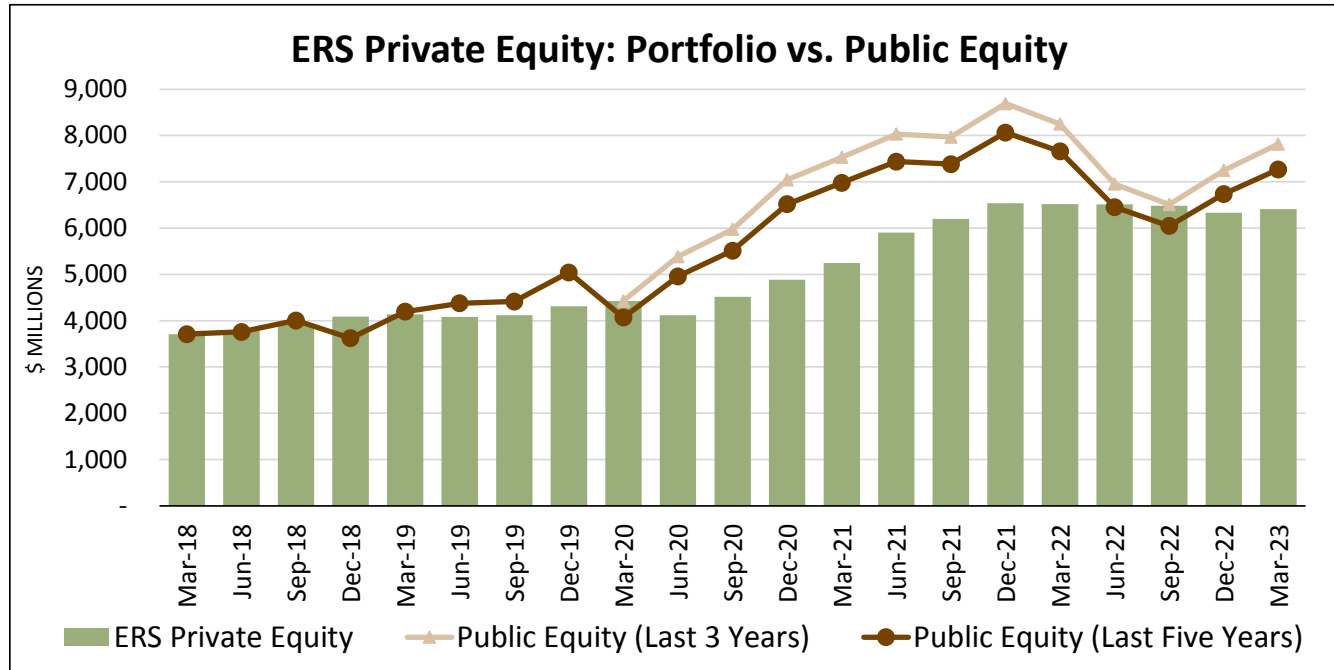
- Private Equity portfolio gains have been declining since 2021



# Private Equity

## Comparison to Public Proxies

- Private Equity portfolio undervalued by 12-18% versus public equity markets

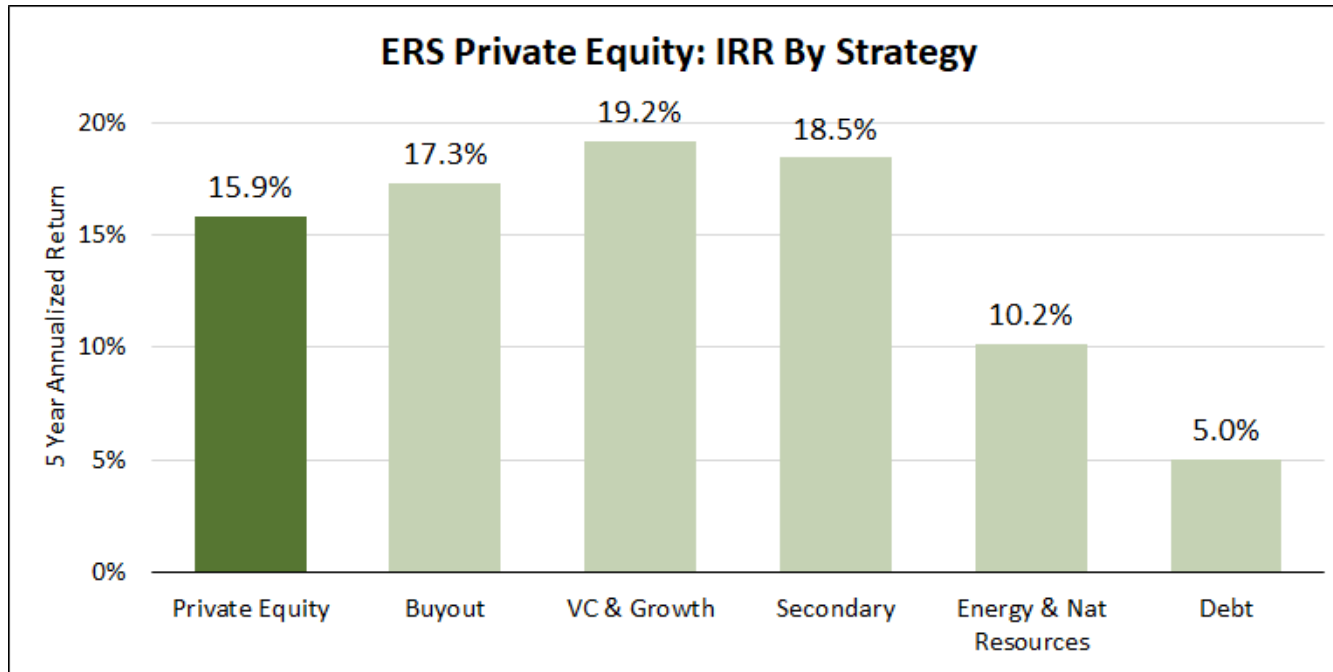




# Private Equity

## *Performance Drivers*

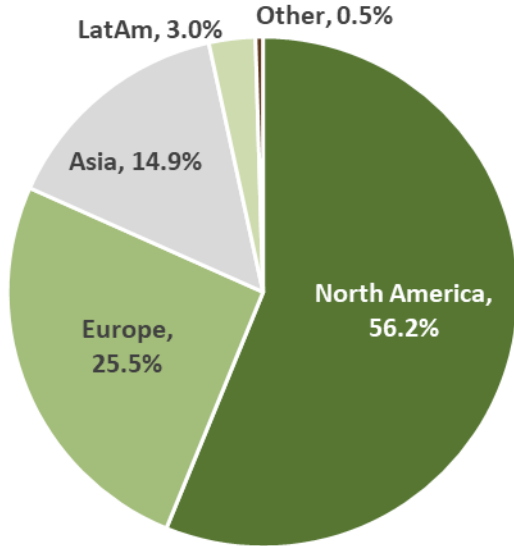
- Venture Capital/Growth continue to lead returns in spite of flat returns for the year



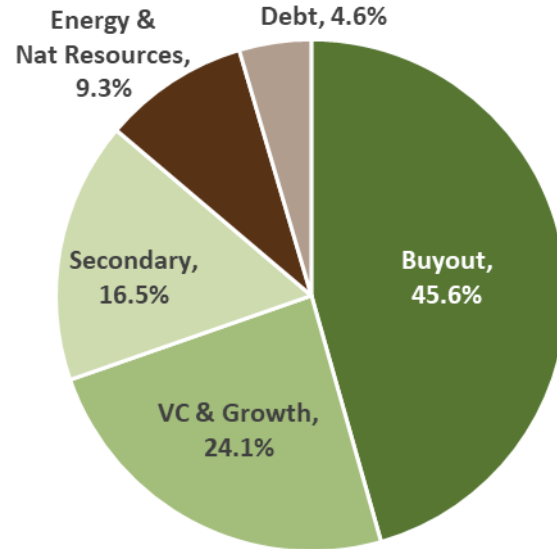
# Private Equity

## Risk Diversification

### Portfolio Value by Geography



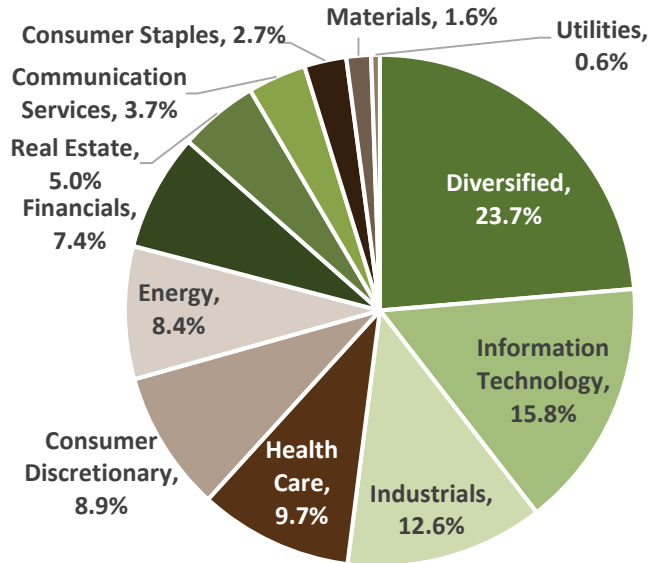
### Portfolio Value by Strategy



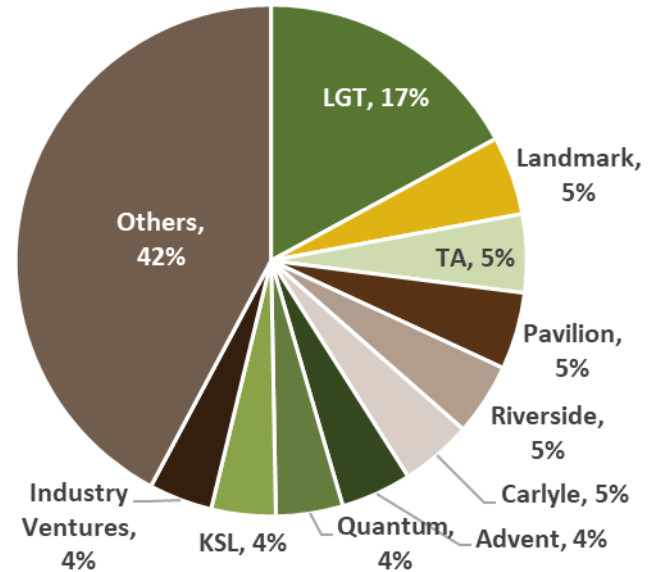
# Private Equity

## Risk Diversification

Portfolio Value by Sector



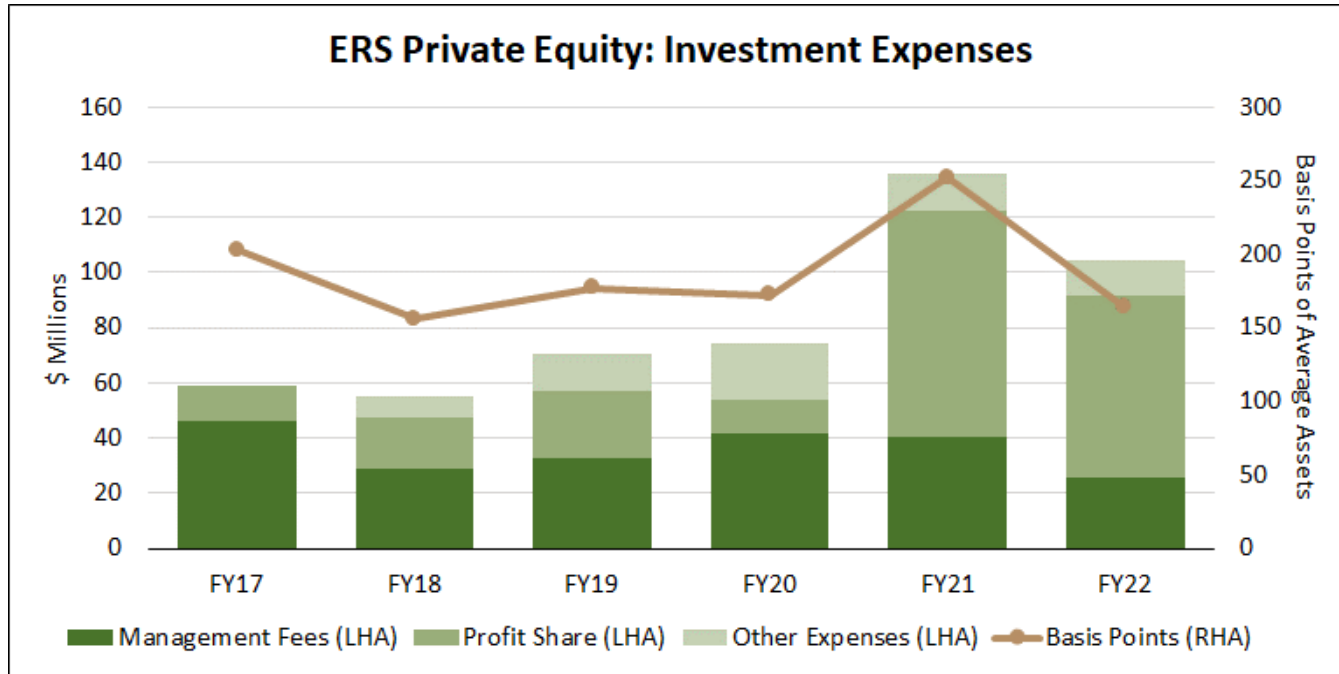
Economic Exposure by Manager



# Private Equity

## Investment Expenses

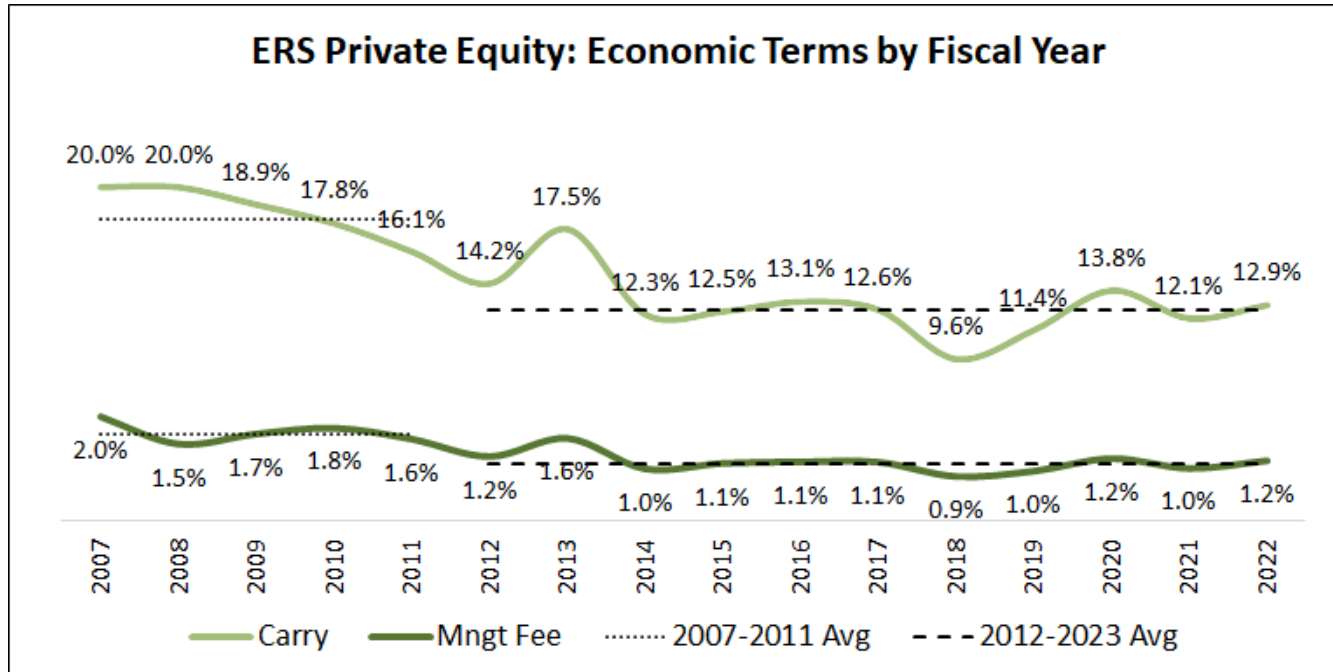
- Strong exits continued in FY22, translated into above-average profit share



# Private Equity

## Investment Expenses

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



# Private Equity

## *Goals and Objectives for Fiscal Years 2023 & 2024*



### FY23

- Execute on Tactical Plan – Ongoing
- Target Allocation Strategy Adjustments

### FY24

- Execute on Tactical Plan
- Continued Monitoring/Reporting Improvements
- Co-Investment Sourcing

# Discussion

## Public Agenda Item #16

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

May 17, 2023



# Next Meeting Dates



## Fiscal Year 2023 Meeting Dates

2-day Workshop:

Tuesday, December 6, 2022

Wednesday, December 7, 2022

Wednesday, March 1, 2023

Wednesday, May 17, 2023

**Wednesday, August 23, 2023**

## Public Agenda Item #17

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

May 17, 2023

