



City of Milwaukee
Employees' Retirement System

Bernard J. Allen
Executive Director

David M. Silber, CFA, CAIA
Chief Investment Officer

Melody Johnson
Deputy Director

February 2, 2024

Mr. Jim Owczarski
City Clerk
Room 205, City Hall

Dear Mr. Owczarski:

Please be advised that an Investment Committee Meeting of the Annuity and Pension Board has been scheduled for **Thursday, February 8, 2024 at 9:00 a.m.** This meeting will be conducted via teleconference.

Special Notice: Instructions for the public on how to observe the meeting will be available on the ERS's website (www.cmers.com) prior to the meeting.

The agenda is as follows:

- I. Approval of Loomis Sayles Contract Amendment.
- II. Approval of MFS Investment Management Guideline Waiver.

Please be advised that the Investment Committee may vote to convene in closed session on the following item (III.) as provided in Section 19.85(1)(e), Wisconsin State Statutes, to deliberate or negotiate the purchasing of public properties, the investing of public funds, or conducting other specified public business, whenever competitive or bargaining reasons require a closed session. The Investment Committee may then vote to reconvene in open session following the closed session.

- III. Approval of Recommendation regarding Public Equity Investment Manager.
- IV. Callan 2024 Capital Markets Assumptions and Asset Allocation Review Presentation.
- V. Due Diligence Reports.
 - a. Reams Asset Management.
 - b. Apogem Capital.
 - c. Principal Global Investors.
- VI. CMERS 4th Quarter 2023 Performance Update.
- VII. Value Add Analysis.

Sincerely,

Bernard J. Allen
Executive Director

BJA:jmw

**AMENDMENT TO THE AGREEMENT
BETWEEN
THE EMPLOYEES' RETIREMENT SYSTEM
OF THE CITY OF MILWAUKEE
AND
LOOMIS, SAYLES & COMPANY, L.P.**

This Amendment to the Agreement effective _____, 2023 (the "Amendment"), by and between the Employees' Retirement System of the City of Milwaukee ("ERS"), a body politic and corporate organized and existing under the laws of the State of Wisconsin and Chapter 36 of the charter ordinances of the City of Milwaukee, and Loomis, Sayles & Company, L.P. (the "Manager").

WHEREAS, on March 21, 2007, the ERS and the MANAGER entered into an agreement for the provision of investment management services to the ERS; and

WHEREAS, the parties desire to amend the Agreement to reflect changes to allow the Manager to purchase and sell such investments as are contemplated by the objectives and guidelines agreed by the parties;

NOW, THEREFORE, in consideration of the mutual covenants hereinafter stated, the parties do hereby agree to amend the Agreement dated March 21, 2007 as follows:

1. The following language shall be inserted as Section L. under III. Duties of the Manager:

The Manager is hereby appointed as ERS' attorney-in-fact to execute such documentation determined by the Manager, in its capacity as appointed investment manager and fiduciary, to be necessary to facilitate investment in investments for ERS' account, including ISDA Master Agreements, clearing agreements, and agreements and/or account applications with futures commission merchants and any other documentation deemed necessary by the Manager, in its capacity as appointed investment manager and fiduciary, to effect the investments to the extent permitted by this Agreement and any investment guidelines ("Trading Agreements"). The Manager is authorized to execute amendments to the Trading Agreements, including without limitation "protocols" or similar agreements entered into to reflect the adoption of industry-wide standard terms and terms deemed applicable for meeting any regulatory compliance requirements.

ERS acknowledges that the Trading Agreements and the "protocols" referred to in the previous paragraph typically contain provisions under which, for matters arising in connection with those agreements, ERS will agree to waive all immunities (including, sovereign immunity), and to submit to service of process and jurisdiction and to waive any claim based upon improper venue. The Manager is hereby appointed as ERS' attorney-in-fact to consent to these provisions.

2. The following language shall be inserted as Section M under XI. Miscellaneous:

In connection with the Manager's services hereunder related to ERS' account's use of futures contracts, ERS hereby expressly agrees and acknowledges that the risks of futures transactions have been separately disclosed to it and that the account will be treated by the Manager as an "exempt account" for purposes of its compliance with Rule 4.7 under the Commodity Exchange Act, as amended (the "Exchange Act") (which provides an exemption from certain recordkeeping and disclosure obligations under the Exchange Act and the rules thereunder to entities registered as commodity trading advisers with the Commodity Futures Trading Commission). In addition, ERS hereby expressly acknowledges and agrees as follows:

PURSUANT TO AN EXEMPTION FROM THE COMMODITY FUTURES TRADING COMMISSION IN CONNECTION WITH ACCOUNTS OF QUALIFIED ELIGIBLE PERSONS, A BROCHURE OR ACCOUNT DOCUMENT IS NOT REQUIRED TO BE, AND HAS NOT BEEN, FILED WITH THE COMMISSION. THE COMMODITY FUTURES TRADING COMMISSION DOES NOT PASS UPON THE MERITS OF PARTICIPATING IN A TRADING PROGRAM OR UPON THE ADEQUACY OR ACCURACY OF COMMODITY TRADING ADVISOR DISCLOSURE. CONSEQUENTLY, THE COMMODITY FUTURES TRADING COMMISSION HAS NOT REVIEWED OR APPROVED THIS TRADING PROGRAM OR ANY BROCHURE OR ACCOUNT DOCUMENT.

3. The existing guidelines attached to the Agreement as Exhibit A are hereby deleted and replaced in their entirety with the guidelines attached hereto.

4. This change constitutes the entire amendment to the Agreement between the parties dated March 21, 2007. All of the covenants, provisions, terms and conditions of the Agreement shall remain in force until further amended by mutual agreement of the parties.

* * * * The remainder of this page has been intentionally left blank.****

IN WITNESS WHEREOF, the Manager and ERS have caused this Amendment to be executed, effective as of the above date.

EMPLOYEES' RETIREMENT SYSTEM

By: _____

Name:

Date:

LOOMIS, SAYLES & COMPANY, L.P

By Loomis, Sayles & Company, Incorporated, its General Partner

By: _____

Name:

Date:

EXHIBIT A

Manager: Loomis, Sayles & Company
Role: Opportunistic Fixed Income

Objectives and Guidelines

Investment Objectives

Time Horizon	Performance Standard	
	<u>Universe</u>	<u>Index</u>
Less than one market cycle (rolling 3-year periods).	Rank in upper 50% of a Peer Group. ¹	
One market cycle (rolling 5-year periods).	Rank in the upper 40% of a Peer Group ¹	Exceed (after fees) the Benchmark Index + 1.0%. ²

Investment Guidelines

- The effective duration of the aggregate portfolio should be no less than 50% and no more than 250% of the Bloomberg Barclays US Aggregate Index.
- Up to 20% of the market value of the portfolio may be issues rated B- by Standard and Poor's and Fitch or B3 by Moody's. If the ratings assigned to an instrument by Standard & Poor's, Moody's, and/or Fitch are not the same, the highest rating of these ratings agencies will be used.
- If an instrument is not rated by Standard & Poor's, Moody's, and Fitch, the equivalent rating determined by the Loomis Sayles Research Department will be used.
- An additional 5% may be invested in issues not rated by Standard & Poor's, Moody's, and Fitch..
- Loomis must notify ERS of the downgrade of corporate, non-corporate and 144(a) securities below B- or B3 by Standard and Poor's, Moody's Investors Service and Fitch within three (3) business days. Loomis must provide quarterly credit updates so long as it retains the security(ies). Corporate, non-corporate and 144(a) securities rated below B- and B3 by Standard and Poor's, Moody's Investors Service and Fitch may not exceed 3% of the market value of the portfolio.
- Asset-backed securities that are downgraded below BBB- or Baa3 by Standard and Poor's, Moody's Investor Services and Fitch must be sold within 90 days following the downgrade. Loomis must notify ERS of the downgrade in writing within 3 business days and provide a written update to ERS on the downgraded security on a weekly basis.
- The average quality of the portfolio must be BBB-/Baa3 or better. U.S. Treasury and U.S. Federal Government Agency securities are permissible and will be treated as AAA/Aaa rated for purposes of average quality calculations.
- No security, except securities issued or guaranteed by the U.S. Government or its agencies or instrumentalities, or index derivatives will comprise more than 5% of the portfolio, at the time of purchase.

- Up to 20% of the market value of the portfolio may be invested in total equities (common and preferred) as determined at the time of purchase. Common stock shall be limited to 5% of the market value of the portfolio, as determined at the time of purchase.
- Sector limitations (as a percentage of the portfolio's market value) are limited to the following ranges:

Sector	Min	Max
US Treasuries	0%	100%
US Agencies	0%	50%
Corporates	0%	100%
Mortgage-Backed Securities	0%	50%
Asset-Backed Securities, including a 5% sub-limit in Collateralized Loan Obligations	0%	25%
Investment Grade Yankees and Non-Corporates ⁽³⁾	0%	25%
Non-Investment Grade Yankees and Non-Corporates ⁽³⁾	0%	20%
Non-US Dollar / Non-Canadian Dollar	0%	20%
144(a) Securities	0%	65%
Individual Bank Loans*	0%	15%
Canadian Dollar Issues	0%	20%
Eligible derivatives include currency forwards (deliverable and non-deliverable) ⁽⁴⁾ and US Treasury Futures ⁽⁵⁾	N/A	N/A
Long-only (sell protection) Index Credit Default Swaps	0%	30% ⁽⁶⁾

- Minimum credit ratings for individual holdings, specific to the sectors, are as follows:

Sector	Minimum Rating
Corporates & Non-Corporates	B-/B3
Asset-Backed Securities	BBB-/Baa3
Collateralized Loan Obligations	BB-/Ba3
144(a) Securities	B-/B3
Cash equivalents, commercial paper and repurchase agreements	A1/P1

¹ As measured by the Callan Core Opportunistic Fixed Income Peer Group

² As measured by the Bloomberg Aggregate Index

³ Canadian issued bonds do not count towards the Yankee limit.

⁴ Currency forwards may be used for hedging purposes only.

⁵ US Treasury Futures may be used for both hedging and non-hedging purposes. Derivatives used to manage duration, interest rate and yield curve strategies may require notional amounts in excess of the portfolio's market value. US Treasury Futures will be limited by the duration restriction of the portfolio.

⁶ Notional limit of 30%. Index credit default swaps shall not be used to create leverage or for speculative purposes and will be calculated at their notional value for guideline purposes. Liabilities resulting from CDX must be fully collateralized by cash, cash equivalents and U.S Treasuries.

* Investment in individual bank loans will generate a transaction cost associated with both the purchase and sale of these loans. The counterparty on these trades determines how they will settle and most choose ClearPar. ClearPar is the primary platform and supported by most banks. Bank loans that do not settle on this platform are prohibitively labor intensive and it is not likely many trades will occur away from the ClearPar platform.

Portfolios participating in a bank loan trade will be charged by ClearPar a pro-rata share of the trade (a "subtrade"). ClearPar will deliver the invoice to the Loomis and, in turn, Loomis will deliver this invoice to your custodian to pay from the assets of the portfolio. While you may elect to pay the invoice directly, directing the custodian to pay the invoices from the portfolio assets will facilitate proper performance calculations for your portfolio. As of the current date, the subtrade fee structure is as follows:

Subtrades per Master Trade	Subtrade Fee per Subtrade
1-5	\$19
6-21	\$110 divided by number of subtrades
22 or more	\$5

There is also a volume discount schedule that is applied once trades on the platform exceed 5,000.

Memorandum

To: CMERS Investment Committee
From: Erich Sauer, CFA, CAIA
Date: February 8, 2024
Re: MFS Guideline Waiver

MFS recently notified us that, due to Microsoft's recent strong performance compared to the other holdings in the portfolio they manage on our behalf, the position had appreciated above the limit specified in their investment guidelines of the greater of 7% or index weight + 3%. Attached is a memo from MFS requesting a waiver to the investment guidelines, which would allow Microsoft's position in the portfolio they manage for us to appreciate above the index + 3% guideline limit, to a maximum of index + 5%.

As MFS explains in their memo, Microsoft is one of the highest conviction ideas in their portfolio, and serves as an important offset to their underweight in other "Magnificent 7" stocks. To be clear, MFS will not be buying any additional Microsoft stock if this waiver is approved; they will just be allowing the position in Microsoft to continue to appreciate.

ERS Staff and Callan are supportive of giving MFS the flexibility to allow the position to appreciate to index weight + 5%. CMERS' Investment Committee has approved a similar approach for Polen in the past, with respect to Alphabet (Google) and later Microsoft, when they approached Polen's 10% limit, and it seemed to work well. If Microsoft continues to perform so much better than MFS's other holdings that it does appreciate all the way to index weight + 5%, we will ask them to update the committee with their rationale for continuing to hold it at that time. For now, the updated limit gives them the flexibility to continue to manage the portfolio in the way that they believe best fulfills their fiduciary duty.

MFS' guidelines are also attached so you can reference the guideline in question.



January 25, 2024

RE: Issuer limit on MFS Global Growth portfolio

Dear valued client-

For the Global Growth portfolio that we manage for you, Microsoft has become 7.26% of the portfolio's market value, versus its 4.20% weight in the MSCI All Country World Index. The current account guidelines limit investment in a single company to the greater of 7% or 3% above the index weighting. We are requesting an exception to the limit for Microsoft (just Microsoft, not other holdings) so that we may maintain the position above the limit.

Within the portfolio, the Microsoft weighting has increased mainly through outpacing the market as it was one of our top portfolio contributors to performance last year, up 58% for the year. Microsoft remains our top absolute and relative position and is among the highest conviction ideas in the portfolio. In addition, as the stock has outperformed, its weighting in the MSCI All Country World Index has expanded from 1.82% five years ago to 4.20% today. At the same time, the prominence of Microsoft and the other "Magnificent 7" stocks has also expanded to nearly 20% of the index today. As we have highlighted in the past, we remain underweight this group of seven stocks, largely due to valuation and/or growth durability concerns on several of the names, so our overweight to Microsoft (along with an overweight to Alphabet) serves as an important risk management offset to this group. We are requesting an exception to the Microsoft position that would allow us to maintain (but not add to) the position in the portfolio, with a new upper limit of "index weighting +5%" that only applies to Microsoft.

Issuer limit current wording: Holdings in any one company should not exceed the greater of 7% of the portfolio or 3% over the Index weighting, measured at market value.

Issuer limit proposed exception: Holding in Microsoft be allowed to be held with a limit of the greater of 7% of the portfolio or 5% over the Index weighting, measured at market value.

Please let us know at your earliest convenience.

Sincerely,

Stacey Haigh
Director, Relationship Management

Manager: MFS Institutional Advisors, Inc.
Role: Active Growth Global Equities

Objectives and Guidelines

Investment Objectives

Time Horizon	Performance Standard		
	<u>Universe</u>	<u>Index</u>	
Less than one market cycle (rolling 3-year periods).	Rank in the upper 50% of a Universe. ¹		
One market cycle (rolling 5-year periods).	Rank in the upper 40% of a Universe. ¹	Exceed (after fees) the MSCI All Country World Index	

All active weight restrictions set forth below will be measured relative to the MSCI All Country World Index.

Investment Guidelines

- If the portfolio deviates from these Guidelines for any reason, manager will notify the Board and its Investment Consultant in writing within three business days of *discovery* of the variance and take further action pursuant to Section III. 3. of the Statement of Investment Policy.
- Permissible Investments include the following:
 - Common Stock
 - Preferred Stock
 - Convertible Securities, including Convertible Preferred Stock and Convertible Bonds
 - Rights, Warrants, and Participatory Notes (P-Notes)
 - Exchange-traded Funds (“ETFs”)
 - Index Futures
 - ADRs, ADSs, GDRs, and GDSs (and other depository receipts and shares)
 - Real Estate Investment Trusts (“REITs”)
 - Publicly-traded Partnerships (“PTPs”)
 - Units
 - IPOs. The portfolio may participate in initial public offerings. For purposes of investment in U.S. IPOs, the Board represents that the portfolio is not restricted from participating in such offerings under FINRA Rule 5130 or FINRA Rule 5131.
 - Unlisted securities are allowed (including securities traded in the over the counter market, Regulation S securities, and Rule 144A securities as further described herein).

¹ As measured by the Callan Global Equity Peer Group (data to be provided to MFS on a quarterly basis)

- Holdings in any one company should not exceed the greater of 7% of the portfolio or 3% over the Index weighting, measured at market value.
- Adequate diversification by sector and country should be maintained, meaning that holdings in any one sector should not exceed the greater of 30% of the portfolio or 200% of the Index weighting (as

defined by GICS sector scheme), measured at market value. The portfolio will be invested in at least 10 countries at all times, one of which will be the United States.

- A maximum of 25% of the portfolio, measured at market value, may be invested in emerging markets as classified by MSCI.
- The manager is expected to maintain a fully invested position with no more than 10% of the portfolio in fixed income or cash equivalents. If a manager believes that a change in this guideline is in the best interest of the Fund, the manager should bring this recommendation immediately to the attention of the Board.
- Foreign currency forward contracts are permitted for defensive hedging purposes only. The total exposure of all hedges is limited to 100% of the total portfolio value, at market. Shorting currency exposure in countries without any underlying security exposure is prohibited. (Manager is not required to execute foreign currency trades through the custodian but may trade with those foreign exchange counterparties that manager believes will provide the best service in accordance with its fiduciary duty to seek best execution.)
- Rights, warrants, and P-Notes are not to exceed 10% of the portfolio value.
- 144A securities and Regulation S securities are not to exceed 10% of the portfolio value. 144A securities that are exchange traded do not count against the 10% limit.
- Settlement Practices/Lock-Ups. It is understood that certain foreign markets may require free or partial free delivery (e.g. initial partial escrow payments) regarding settlement of trades. It is further understood that certain securities, including pre IPOs, are subject to “lock-up” provisions in certain markets.
- For purposes of the restriction in Section VI of the IPS prohibiting investment in restricted (lettered) stock or private placements (other than Rule 144A securities with registration rights which are allowed), lettered stock shall be defined as private placements other than Rule 144A with registration rights.

Other:

For the avoidance of doubt, where the limitations above are affected by items out of the manager's control (e.g., cash inflows, cash outflows, market action), they will not be considered as a breach of the guidelines and the manager will take action to resolve the temporary non-compliance as soon as practicable. The time to bring the portfolio back into compliance could take several days (e.g., 5 days) to resolve.

Trading Currency:

The trading currency for the portfolio is US Dollars (USD) unless specifically instructed by the Board to the manager to the contrary.

Reporting Currency:

The reporting currency of the portfolio is US Dollars.

The manager shall comply with its Operational and Compliance Standards, a copy of which shall be provided to the Board.

February 2024



2024 Capital Markets Assumptions

Capital Markets Research Group

Important Disclosures regarding the use of this document are included at the end of this document. These disclosures are an integral part of this document and should be considered by the user.

Agenda

Process overview

Current market conditions

Special focus (again!) on inflation

Is the Fed finished with tightening?

2024 expectations

Fixed Income

Equity

Alternatives

Detailed 2024 projections and resulting portfolio returns

Callan

Process Overview

Why Make Capital Market Projections?

Guiding objectives and process

Cornerstone of a prudent process is a long-term strategic investment plan

- Capital market projections are key elements — set reasonable return and risk expectations for the appropriate time horizon
- Projections represent our best thinking regarding the long-term (10-year) outlook, recognizing our median projections represent the midpoint of a range, rather than a specific number
- Develop results that are readily defensible both for individual asset classes and for total portfolios
- Be conscious of the level of change suggested in strategic allocations for long-term investors: DB plan sponsors, foundations, endowments, trusts, DC participants, families and individuals
- Reflect common sense and recent market developments, within reason

Callan's forecasts are informed by current market conditions, but are not built directly from them

- Balance recent, immediate performance and valuation against long-term equilibrium expectations

How Are Capital Markets Projections Constructed?

Guiding objectives and process

Underlying beliefs guide the development of the projections:

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

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

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

The projection process is built around several key building blocks:

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

How are Capital Market Projections Constructed?

Projections are 10-year forward-looking, representing a medium to long-term planning horizon:

Differs from the actuarial assumptions, which tend to reflect longer-term horizons of 30-40 years

Projections consist of return and two measures that contribute to portfolio volatility: standard deviation and correlation

Cover most broad asset classes and inflation

Broad U.S. equity

- Large cap
- Small/mid cap

Global ex-U.S. equity

- Developed market
- Emerging market

U.S. fixed income

- Short duration
- Core U.S. fixed
- TIPS
- High yield
- Long duration (government, credit and G/C)

Global ex-U.S. fixed income

Real estate

Alternative investments: private equity, hedge funds, private debt

Cash

Inflation

2024 Risk and Returns Assumptions

Summary of Callan's Long-Term Capital Markets Assumptions (2024–2033)

		Projected Return			Projected Risk	
		1-Year Arithmetic	10-Year Geometric*		Standard Deviation	
Asset Class	Index			Real		
Equities						
Broad U.S. Equity	Russell 3000	8.85%	7.65%	5.15%	17.40%	1.95%
Large Cap U.S. Equity	S&P 500	8.70%	7.50%	5.00%	17.00%	2.00%
Smid Cap U.S. Equity	Russell 2500	9.80%	7.70%	5.20%	22.00%	1.75%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.65%	7.65%	5.15%	21.40%	3.70%
Developed ex-U.S. Equity	MSCI World ex USA	9.25%	7.50%	5.00%	20.15%	3.75%
Emerging Market Equity	MSCI Emerging Markets	10.65%	7.70%	5.20%	25.60%	3.55%
Fixed Income						
Short Duration Gov/Credit	Bloomberg 1-3 Year Gov/Credit	4.25%	4.25%	1.75%	2.40%	3.70%
Core U.S. Fixed	Bloomberg Aggregate	5.25%	5.25%	2.75%	4.25%	4.70%
Long Government	Bloomberg Long Gov	6.20%	5.40%	2.90%	13.75%	4.80%
Long Credit	Bloomberg Long Credit	6.85%	6.30%	3.80%	11.90%	6.20%
Long Government/Credit	Bloomberg Long Gov/Credit	6.55%	6.00%	3.50%	11.70%	5.55%
TIPS	Bloomberg TIPS	5.10%	5.05%	2.55%	5.40%	4.30%
High Yield	Bloomberg High Yield	7.30%	6.80%	4.30%	11.75%	8.45%
Global ex-U.S. Fixed	Bloomberg Global Agg ex US	3.60%	3.15%	0.65%	9.80%	2.70%
Emerging Market Sov Debt	EMBI Global Diversified	6.75%	6.35%	3.85%	10.65%	7.70%
Alternatives						
Core Real Estate	NCREIF ODCE	6.85%	6.00%	3.50%	14.00%	4.00%
Private Infrastructure	MSCI GI Infra/FTSE Dev Core 50/50	7.30%	6.35%	3.85%	15.20%	4.80%
Private Equity	Cambridge Private Equity	12.15%	8.75%	6.25%	27.60%	0.00%
Private Credit	Cambridge Senior Debt Index	8.40%	7.40%	4.90%	15.70%	7.40%
Hedge Funds	Callan Hedge FOF Database	6.25%	6.05%	3.55%	8.20%	0.00%
Commodities	Bloomberg Commodity	5.45%	3.90%	1.40%	18.05%	3.00%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.50%	0.90%	3.00%
Inflation	CPI-U		2.50%		1.60%	
* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).						
** Projected Yields represent the expected 10-year average yield						

Source: Callan

2024 vs. 2023 Risk and Returns Assumptions

Summary of Callan's Long-Term Capital Markets Assumptions (2024–2033)

		Projected Return			Projected Risk	Projected Yield**	2023–2032		
		1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation		1-Year Arithmetic	10-Year Geometric*	Standard Deviation
Asset Class	Index								
Equities									
Broad U.S. Equity	Russell 3000	8.85%	7.65%	5.15%	17.40%	1.95%	8.75%	7.35%	18.05%
Large Cap U.S. Equity	S&P 500	8.70%	7.50%	5.00%	17.00%	2.00%	8.60%	7.25%	17.75%
Smid Cap U.S. Equity	Russell 2500	9.80%	7.70%	5.20%	22.00%	1.75%	9.60%	7.45%	22.15%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.65%	7.65%	5.15%	21.40%	3.70%	9.45%	7.45%	21.25%
Developed ex-U.S. Equity	MSCI World ex USA	9.25%	7.50%	5.00%	20.15%	3.75%	9.00%	7.25%	20.15%
Emerging Markets Equity	MSCI Emerging Markets	10.65%	7.70%	5.20%	25.60%	3.55%	10.45%	7.45%	25.70%
Fixed Income									
Short Duration Gov/Credit	Bloomberg 1-3 Year Gov/Credit	4.25%	4.25%	1.75%	2.40%	3.70%	3.75%	3.80%	2.30%
Core U.S. Fixed	Bloomberg Aggregate	5.25%	5.25%	2.75%	4.25%	4.70%	4.25%	4.25%	4.10%
Long Government	Bloomberg Long Gov	6.20%	5.40%	2.90%	13.75%	4.80%	4.55%	3.70%	13.50%
Long Credit	Bloomberg Long Credit	6.85%	6.30%	3.80%	11.90%	6.20%	5.75%	5.20%	11.75%
Long Government/Credit	Bloomberg Long Gov/Credit	6.55%	6.00%	3.50%	11.70%	5.55%	5.20%	4.65%	11.40%
TIPS	Bloomberg TIPS	5.10%	5.05%	2.55%	5.40%	4.30%	4.10%	4.00%	5.30%
High Yield	Bloomberg High Yield	7.30%	6.80%	4.30%	11.75%	8.45%	6.75%	6.25%	11.75%
Global ex-U.S. Fixed	Bloomberg Global Agg ex US	3.60%	3.15%	0.65%	9.80%	2.70%	2.70%	2.25%	9.80%
Emerging Markets Sov Debt	EMBI Global Diversified	6.75%	6.35%	3.85%	10.65%	7.70%	6.25%	5.85%	10.65%
Alternatives									
Core Real Estate	NCREIF ODCE	6.85%	6.00%	3.50%	14.00%	4.00%	6.60%	5.75%	14.20%
Private Infrastructure	MSCI GI Infra/FTSE Dev Core 50/50	7.30%	6.35%	3.85%	15.20%	4.80%	7.15%	6.15%	15.45%
Private Equity	Cambridge Private Equity	12.15%	8.75%	6.25%	27.60%	0.00%	11.95%	8.50%	27.60%
Private Credit	Cambridge Senior Debt Index	8.40%	7.40%	4.90%	15.70%	7.40%	8.00%	7.00%	15.50%
Hedge Funds	Callan Hedge FOF Database	6.25%	6.05%	3.55%	8.20%	0.00%	5.80%	5.55%	8.45%
Commodities	Bloomberg Commodity	5.45%	3.90%	1.40%	18.05%	3.00%	5.05%	3.50%	18.00%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.50%	0.90%	3.00%	2.75%	2.75%	0.90%
Inflation	CPI-U		2.50%		1.60%			2.50%	1.60%

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

** Projected Yields represent the expected 10-year average yield

Source: Callan

CMERS

Comparative 10-Year Projected Results

Asset Classes	Less Risk	Target	More Risk
Global Equity	29.0	39.0	44.0
Private Equity	12.0	12.0	12.0
CMERS Fixed Income	38.0	28.0	23.0
Cash Equivalents	1.0	1.0	1.0
Core Real Estate	9.7	9.7	9.7
CMERS Real Assets	3.3	3.3	3.3
Hedge Funds	7.0	7.0	7.0
Total	100.0	100.0	100.0
Expected Return	7.4	7.6	7.7
Risk (Standard Deviation)	10.8	12.2	12.9

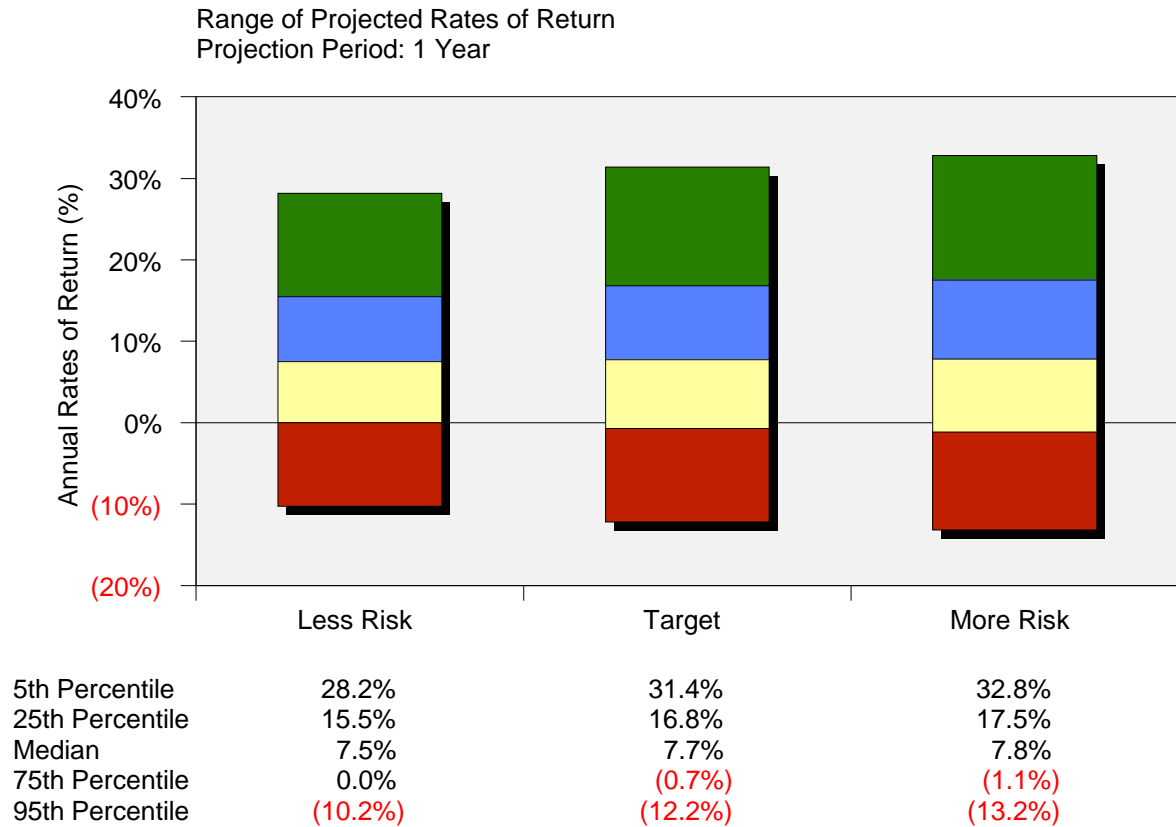
CMERS Target mix in center column

“Less Risk” mix increases fixed income by 10% at the expense of global equity

“More Risk” mix increases global equity by 5% at the expense of fixed income

CMERS Ranges of Projected Rates of Return

1 Year

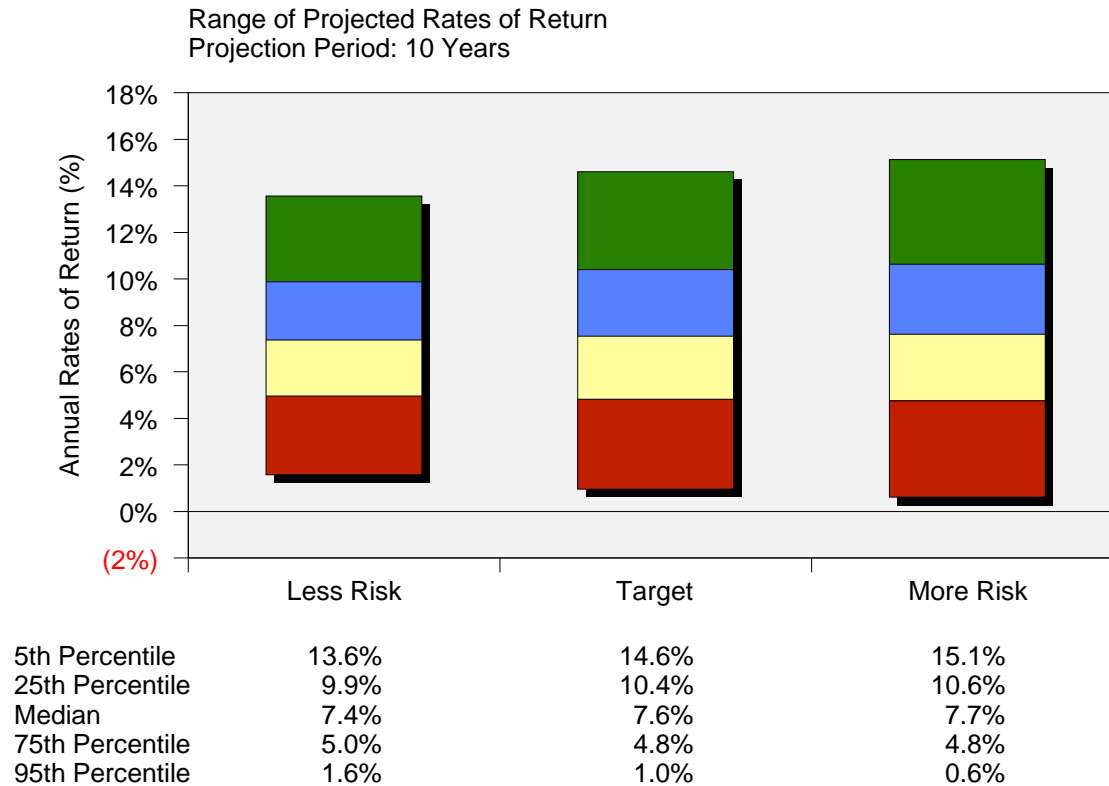


“Less Risk” has lowest expected return but best 95th percentile outcome

“More Risk” has highest expected return but poorest 95th percentile outcome

CMERS Ranges of Projected Rates of Returns

10 Years



Patterns over 10 years same as one year but ranges compressed

“Less Risk” has lowest expected return but best 95th percentile outcome

“More Risk” has highest expected return but poorest 95th percentile outcome

Callan

Current Market Conditions

Nobody Saw 2023 Coming

Recession was on everyone's radar for 2023, and the only disagreement was the quarter in which it would show up.

- 4Q GDP finished the year at a healthy 3.3% clip after clocking a stunning 4.9% gain in 3Q, mocking all those who try to predict economic growth (including us).
 - This despite the Federal Reserve's rate hikes, elevated inflation, and geopolitical turmoil
 - Wage growth boosted consumer incomes and spending
- 2.2% GDP growth in 1Q and another 2.1% in 2Q.
 - Thanks to the strong job market, generational low unemployment rate, rising wages, and the pressure from millions of unfilled jobs
 - Inflation down from the 9% spike in summer 2022 to 3.4% in December 2023
 - How are we defying economic gravity?

The Fed may be close to completing its mission to raise interest rates to fight inflation.

- 525 bps since March 2022, from 0.0%-0.25% to the current target range of 5.25%–5.5%
- Inverted yield curve since July 2022 (!)

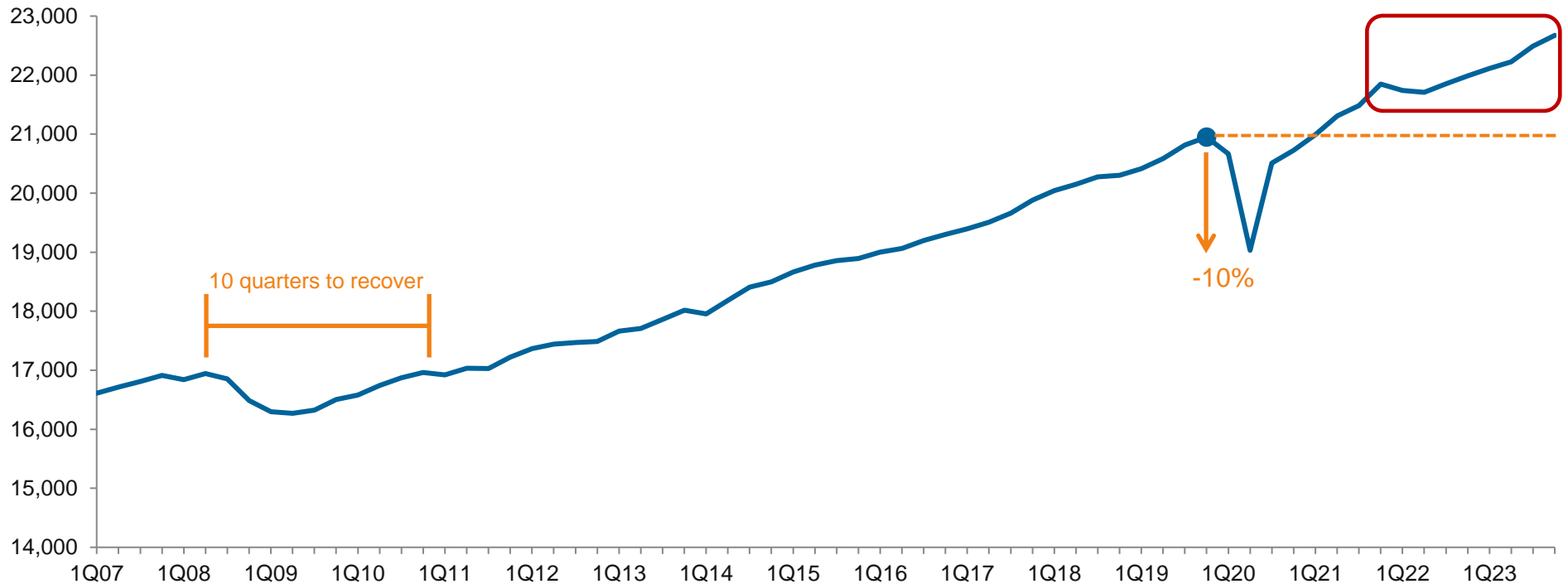
Is recession still inevitable, and if so, when?

- Strong GDP growth suggests no easing in tight labor markets for some time; the prospect for continued inflationary pressure from the labor market is high.
- Getting inflation down to the Fed's stated goal of 2% will take time, and some discomfort. Squeezing out the last of excess inflation will require a period of below trend growth, a loosening of the labor market, and the pain of a rise in unemployment.

GDP Rose a Very Healthy 3.3% in 4Q to Follow Stunning 4.9% in 3Q

Widespread expectations for a recession in 2023 were wrong

Seasonally Adjusted Real GDP in Billions of Dollars Through 12/31/23



3.3% gain in 4Q was on top of gains of 2.2%, 2.1%, and 4.9% in the first three quarters.

- The GDP drop widely anticipated for 2023 not only failed to materialize, but growth surged as the year progressed
- The strong job market continued to add new jobs, inflation came down from the 9% spike last summer, and wage growth boosted consumer incomes and spending.
- Consumption grew by 2.8% in 4Q, accounting for almost 60% of GDP growth. This surge in spending suggests that many U.S. consumers feel financially secure and are spending freely in a tight labor market.

Source: Federal Reserve Bank of St. Louis

Equity Markets Surge in 4Q, Following Decline in 3Q

Stocks have recovered losses of 2022, bonds still have ground to make up

S&P 500 surged 11.7% in 4Q23

- Loss through first three quarters of 2022 was 23.9%; the rebound in the following five quarters brought the index back to a positive return of 1.7% over the past two years.

Fixed income recovered in 4Q, surging 6.8% after suffering a sharp loss of -3.2% in 3Q

- The Bloomberg Aggregate was on track for another negative year through 3Q; softening Fed language on rates in 4Q turned the market around.
- CPI-U: declined in 4Q compared to 3Q, still up 3.4% year-over-year, and the index is 10% higher than it was at the start of 2022.

Economic data defied expectations of recession in 2023

- GDP growth came in at 2.1% in 1Q, 2.2% in 2Q, 4.9% in 3Q, and a very healthy 3.3% in 4Q.

Returns for Periods ended 12/31/23

	Quarter	1 Year	2 Years	5 Years	10 Years	25 Years
U.S. Equity						
Russell 3000	12.07	25.96	0.88	15.16	11.48	7.74
S&P 500	11.69	26.29	1.69	15.69	12.03	7.56
Russell 2000	14.03	16.93	-3.55	9.97	7.16	7.91
Global ex-U.S. Equity						
MSCI World ex USA	10.51	17.94	0.54	8.45	4.32	4.62
MSCI Emerging Markets	7.86	9.83	-6.32	3.69	2.66	--
MSCI ACWI ex USA Small Cap	10.12	15.66	-3.79	7.89	4.88	7.28
Fixed Income						
Bloomberg Aggregate	6.82	5.53	-4.19	1.10	1.81	3.85
90-day T-Bill	1.37	5.01	3.22	1.88	1.25	1.90
Bloomberg Long Gov/Credit	13.24	7.13	-11.62	1.12	3.22	5.21
Bloomberg Global Agg ex-US	9.21	5.72	-7.29	-1.56	-0.79	2.25
Real Estate						
NCREIF Property Index	-3.02	-7.94	-1.44	4.33	6.80	8.03
FTSE Nareit Equity	16.22	13.73	-7.25	7.39	7.65	9.27
Alternatives						
HFRI Fund Weighted	3.64	7.57	1.55	7.01	4.54	6.31
Cambridge Private Equity*	-0.42	4.17	0.19	14.59	14.27	13.87
Bloomberg Commodity	-4.63	-7.91	3.40	7.23	-1.11	2.83
Gold Spot Price	11.02	13.45	6.44	10.09	5.59	8.19
Inflation - CPI-U	-0.34	3.35	4.89	4.07	2.79	2.54

*Cambridge PE data as of 9/30/23.

Sources: Bloomberg, Callan, Cambridge, FTSE Russell, HFRI, MSCI, NCREIF, S&P Dow Jones Indices

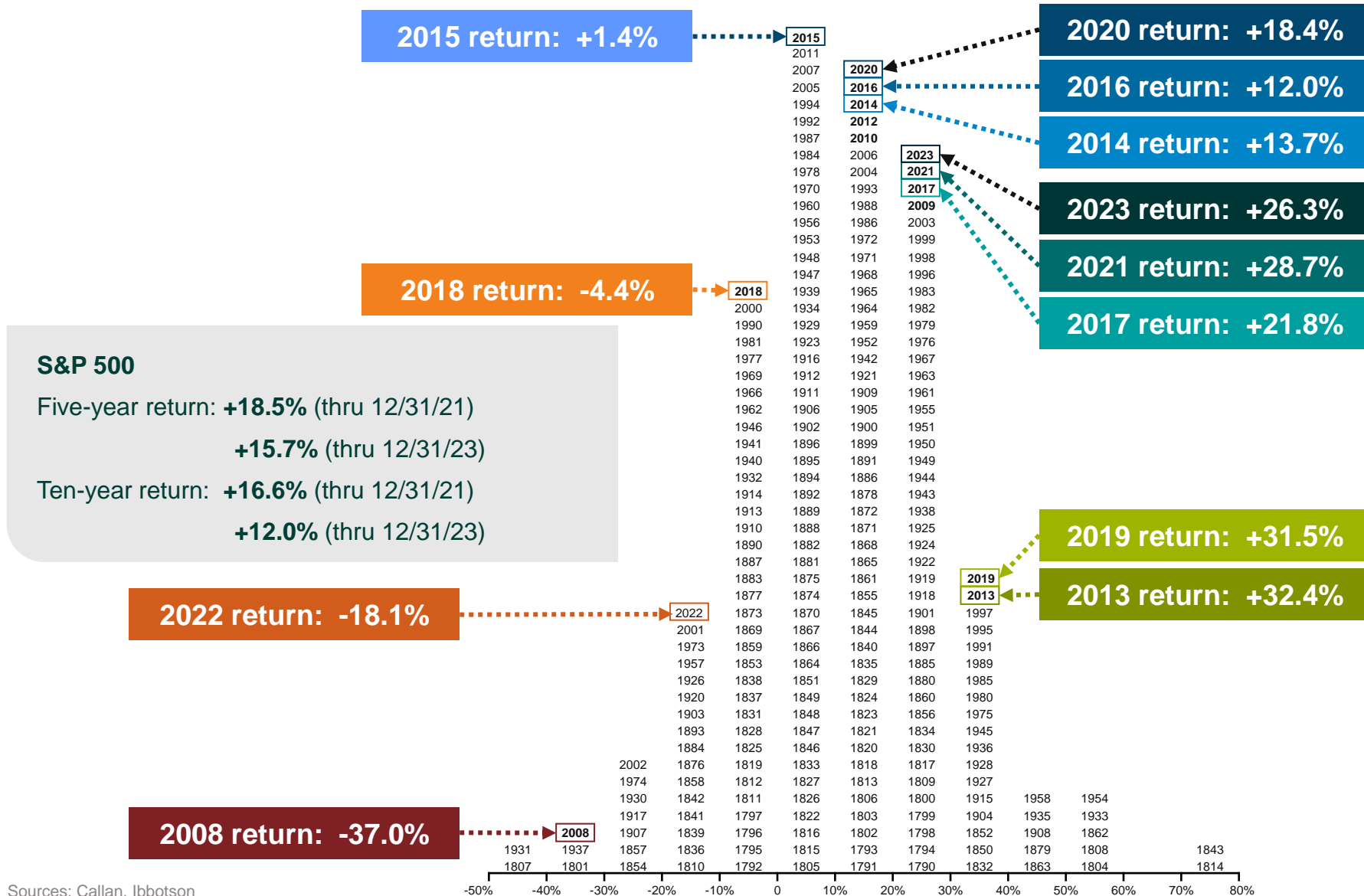
Callan Monthly Periodic Table of Investment Returns

Monthly Returns												
Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023	Jun 2023	Jul 2023	Aug 2023	Sep 2023	Oct 2023	Nov 2023	Dec 2023	YTD
Small Cap Equity	High Yield	Global ex-U.S. Fixed Income	Dev ex-U.S. Equity	Large Cap Equity	Small Cap Equity	Emerging Market Equity	High Yield	High Yield	Global ex-U.S. Fixed Income	Real Estate	Small Cap Equity	Large Cap Equity
9.75%	-1.29%	3.73%	2.84%	0.43%	8.13%	6.23%	0.28%	-1.18%	-0.92%	10.63%	12.22%	26.29%
Real Estate	Small Cap Equity	Large Cap Equity	Real Estate	High Yield	Large Cap Equity	Small Cap Equity	U.S. Fixed Income	U.S. Fixed Income	High Yield	Dev ex-U.S. Equity	Real Estate	Dev ex-U.S. Equity
8.98%	-1.69%	3.67%	1.89%	-0.92%	6.61%	6.12%	-0.64%	-2.54%	-1.16%	9.40%	9.46%	17.94%
Dev ex-U.S. Equity	Dev ex-U.S. Equity	Emerging Market Equity	Large Cap Equity	Small Cap Equity	Dev ex-U.S. Equity	Real Estate	Large Cap Equity	Emerging Market Equity	U.S. Fixed Income	Large Cap Equity	Dev ex-U.S. Equity	Small Cap Equity
8.20%	-2.33%	3.03%	1.56%	-0.92%	4.75%	3.74%	-1.59%	-2.62%	-1.58%	9.13%	5.47%	16.93%
Emerging Market Equity	Large Cap Equity	U.S. Fixed Income	High Yield	U.S. Fixed Income	Emerging Market Equity	Dev ex-U.S. Equity	Global ex-U.S. Fixed Income	Global ex-U.S. Fixed Income	Large Cap Equity	Small Cap Equity	Large Cap Equity	High Yield
7.90%	-2.44%	2.54%	1.00%	-1.09%	3.80%	3.24%	-1.97%	-3.30%	-2.10%	9.05%	4.54%	13.44%
Large Cap Equity	U.S. Fixed Income	Dev ex-U.S. Equity	U.S. Fixed Income	Emerging Market Equity	Real Estate	Large Cap Equity	Real Estate	Dev ex-U.S. Equity	Emerging Market Equity	Emerging Market Equity	Global ex-U.S. Fixed Income	Emerging Market Equity
6.28%	-2.59%	2.22%	0.61%	-1.68%	3.02%	3.21%	-3.35%	-3.37%	-3.89%	8.00%	4.46%	9.83%
High Yield	Global ex-U.S. Fixed Income	High Yield	Global ex-U.S. Fixed Income	Global ex-U.S. Fixed Income	High Yield	High Yield	Dev ex-U.S. Equity	Large Cap Equity	Dev ex-U.S. Equity	Global ex-U.S. Fixed Income	Emerging Market Equity	Real Estate
3.81%	-3.99%	1.07%	0.29%	-2.69%	1.67%	1.38%	-3.87%	-4.77%	-4.22%	5.52%	3.91%	9.67%
Global ex-U.S. Fixed Income	Real Estate	Real Estate	Emerging Market Equity	Dev ex-U.S. Equity	Global ex-U.S. Fixed Income	Global ex-U.S. Fixed Income	Small Cap Equity	Small Cap Equity	Real Estate	High Yield	U.S. Fixed Income	Global ex-U.S. Fixed Income
3.48%	-4.41%	-3.26%	-1.13%	-4.36%	0.26%	1.28%	-5.00%	-5.89%	-4.79%	4.53%	3.83%	5.72%
U.S. Fixed Income	Emerging Market Equity	Small Cap Equity	Small Cap Equity	Real Estate	U.S. Fixed Income	U.S. Fixed Income	Emerging Market Equity	Real Estate	Small Cap Equity	U.S. Fixed Income	High Yield	U.S. Fixed Income
3.08%	-6.48%	-4.78%	-1.80%	-4.48%	-0.36%	-0.07%	-6.16%	-6.11%	-6.82%	4.53%	3.73%	5.53%

Sources: ● Bloomberg Aggregate ● Bloomberg Corp High Yield ● Bloomberg Global Aggregate ex US ● FTSE EPRA Nareit Developed
 ● MSCI Emerging Markets ● MSCI World ex USA ● Russell 2000 ● S&P 500

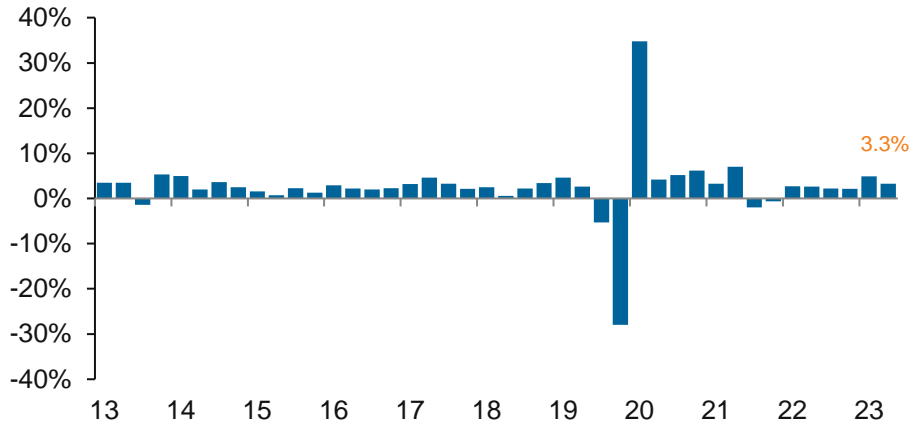
Stock Market Returns by Calendar Year

Performance in perspective: History of the U.S. stock market (233 years of returns)

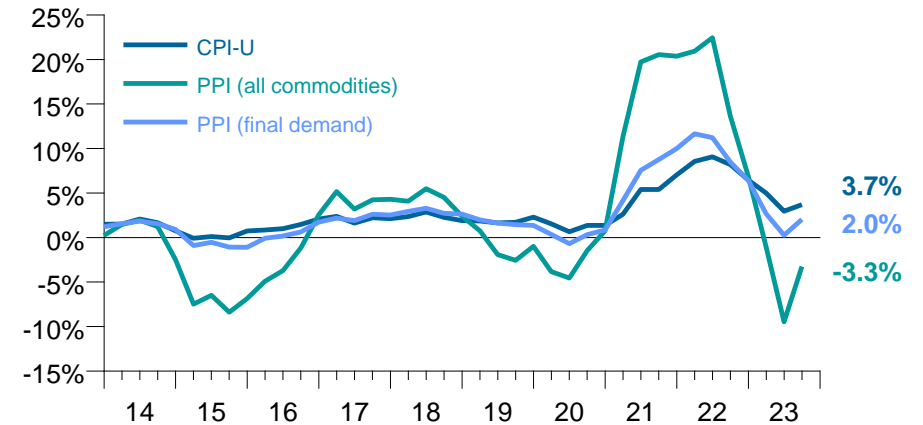


U.S. Economy—Summary

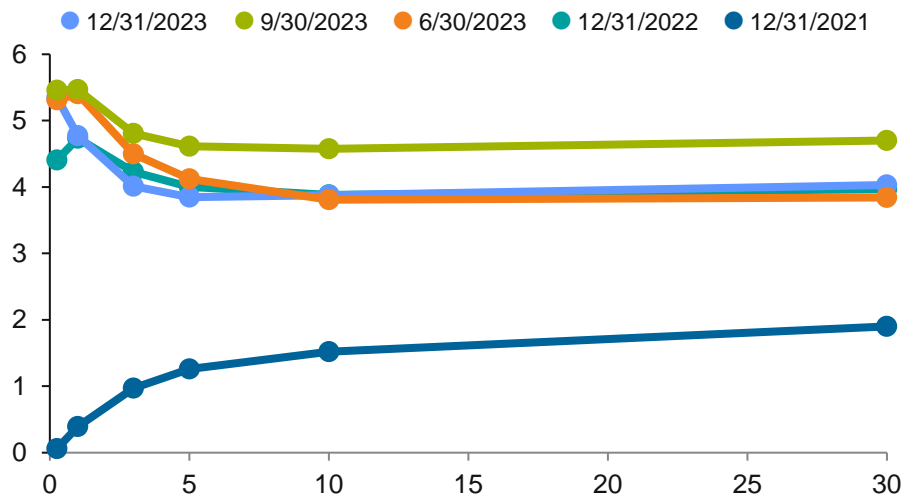
Quarterly Real GDP Growth



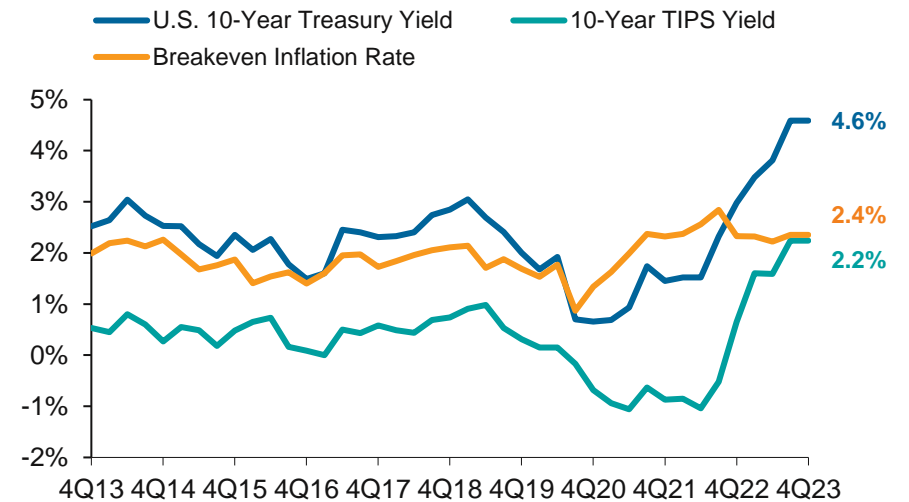
Inflation Year-Over-Year



U.S. Treasury Yield Curves

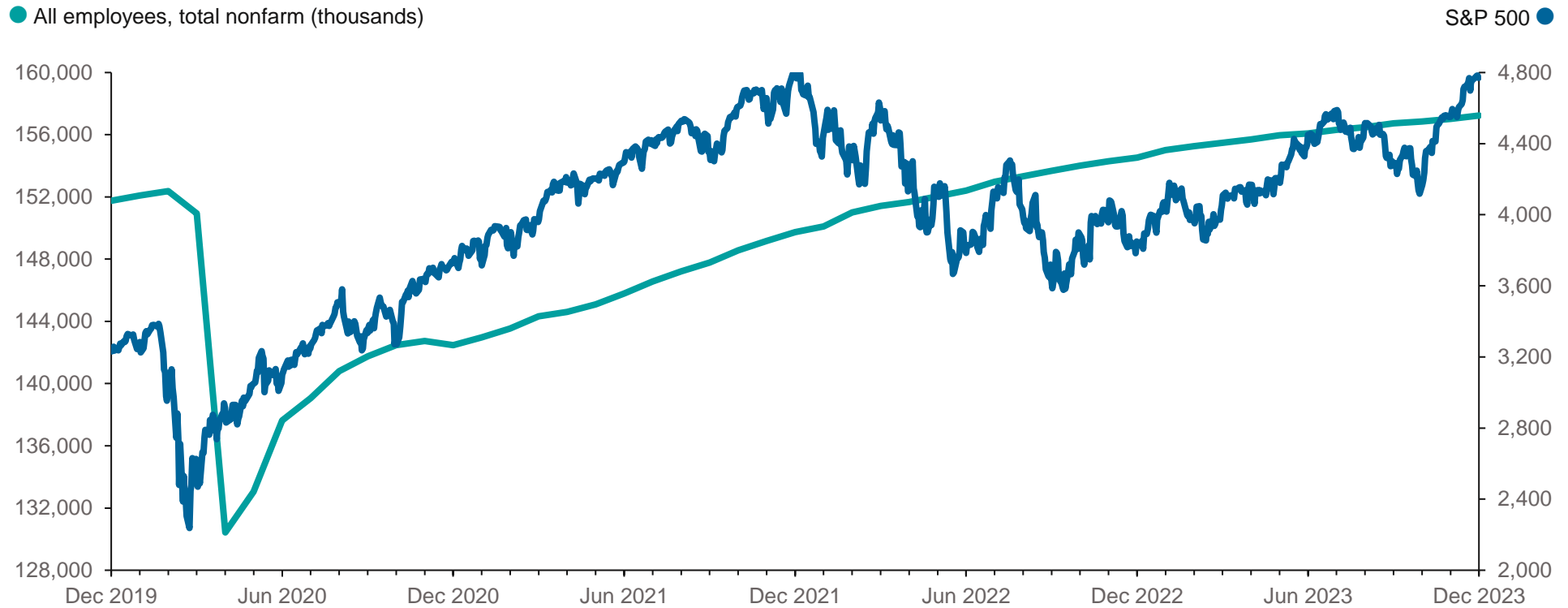


Historical 10-Year Yields Through 12/30/23



Sources: Bloomberg, Bureau of Labor Statistics, Callan

The Stock Market Is Not the Economy



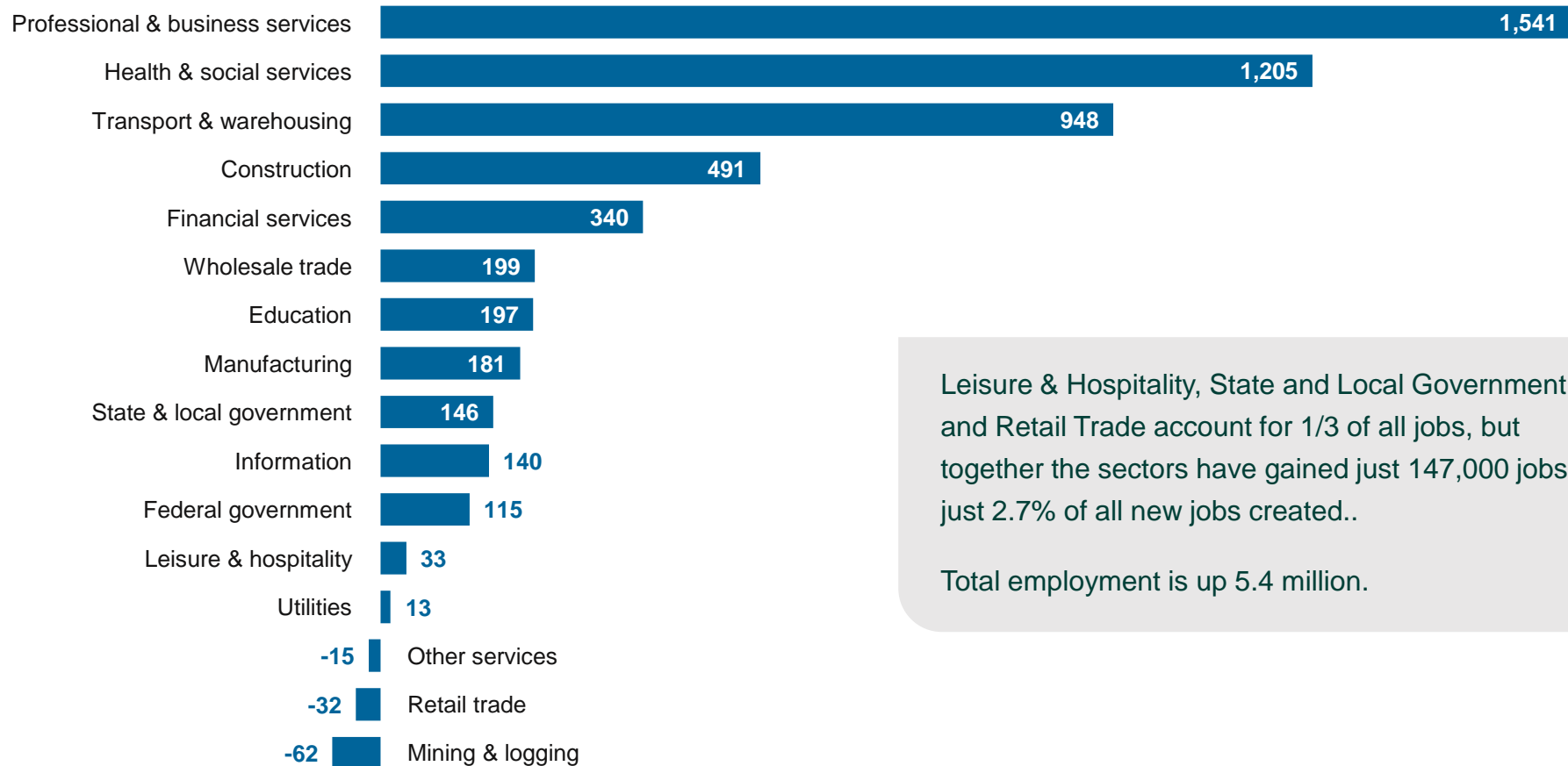
- The job market lost over 22 million jobs in the pandemic but regained the pre-pandemic high-water mark in the spring of 2022.
- Job growth remained robust through the market upheaval in 2022 and has held up through 2023. Headline reports of sizeable layoffs in technology are ultimately small relative to the size of the broad job market.

Sources: Federal Reserve Bank of St. Louis, S&P Dow Jones Indices

While the Recovery Continues, Employment Landscape Remains Uneven

Leisure / hospitality and state and local government remain below pre-pandemic levels

Change in Payroll Employment Since 12/31/19, through 12/31/23 (thousands)



Leisure & Hospitality, State and Local Government, and Retail Trade account for 1/3 of all jobs, but together the sectors have gained just 147,000 jobs, or just 2.7% of all new jobs created..

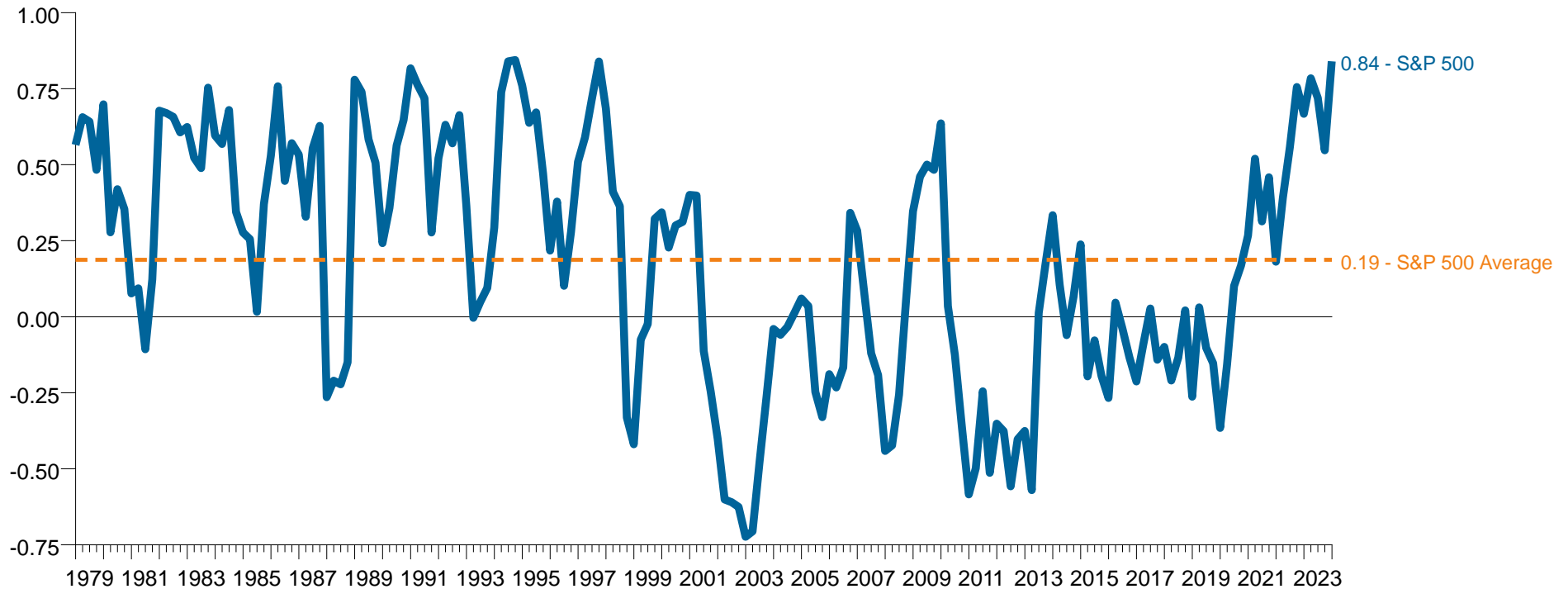
Total employment is up 5.4 million.

Sources: IHS Markit, Department of Labor

Is the Stock-bond Correlation Shifting to a Higher Level?

Stocks and bonds rebound strongly together in 4Q23

Rolling 1 Year Correlation of S&P 500 to Bloomberg Aggregate for 45 Years Ended 12/31/23



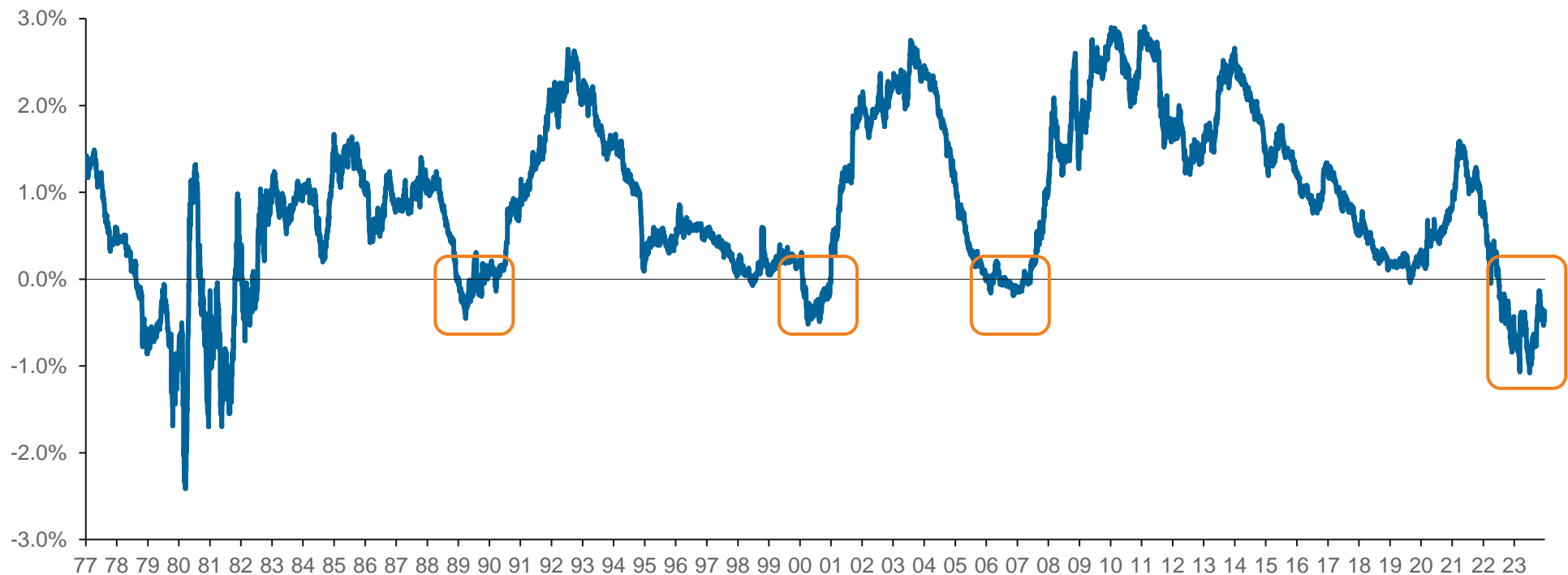
Forward-looking bond returns are now much higher thanks to the rise in interest rates and the resulting higher yields.

- However, the equity risk premium has likely narrowed, and we may be seeing a return to a regime of higher correlation between stocks and bonds, potentially lessening the diversification benefit of bonds to stocks.

Sources: Bloomberg, Callan, S&P Dow Jones Indices

The Bond Market Has Been Expecting a Recession Since July 2022

10-Year Treasury vs. 2-Year Treasury Spread



Inversion in the 10-year to 2-year Treasury yields does not always forecast a recession, but most recessions are preceded by a yield curve inversion.

- Yield curve inversion means investors expect a recession will occur and interest rates will be cut, and therefore increase their demand for securities with longer duration with higher potential for capital gain when rates fall.

Bond investors beginning to anticipate “higher for longer” rate regime?

- Inversion started in July 2022, bottomed at -1.08% in July 2023, and ended December 2023 at -0.35%.

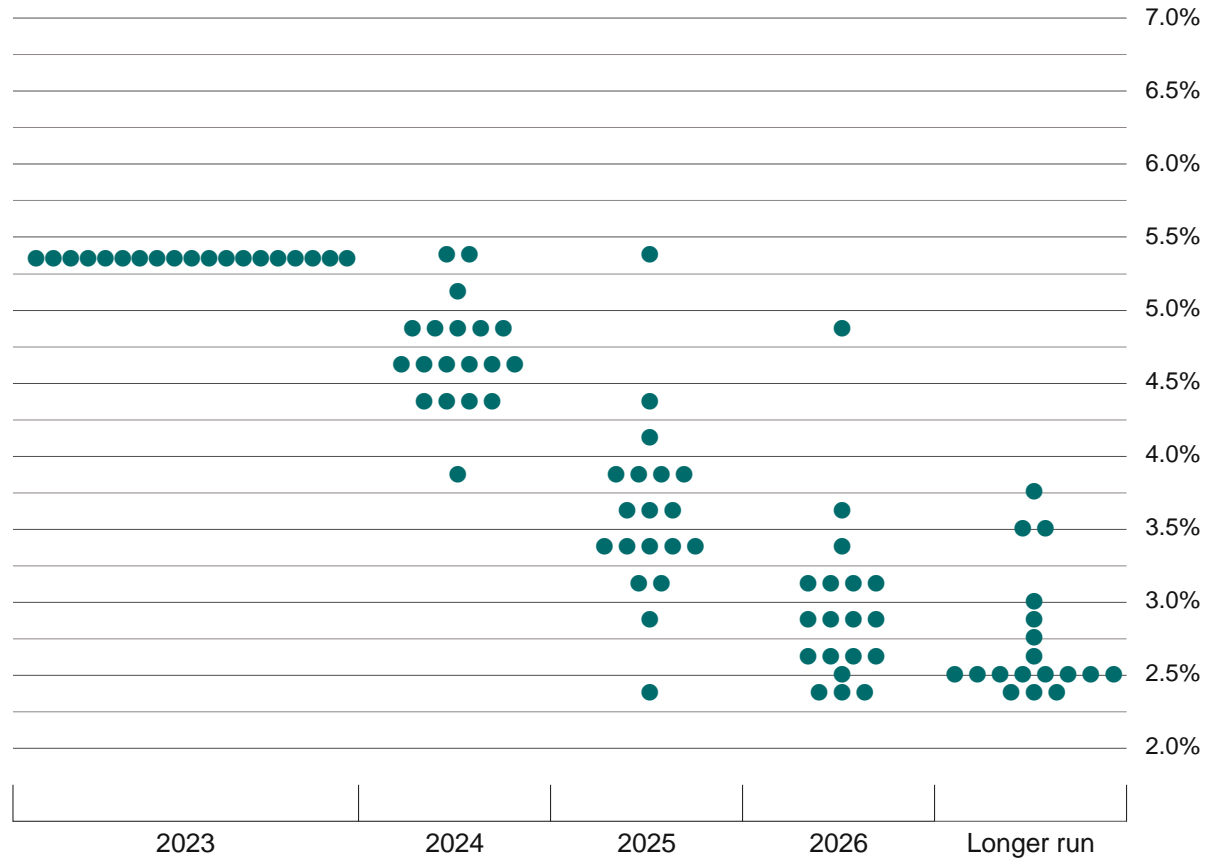
Source: Federal Reserve Bank of St. Louis

The Fed's 'Dot Plot'

December 13, 2023

Federal Open Market Committee (FOMC) participants' assessments of appropriate monetary policy

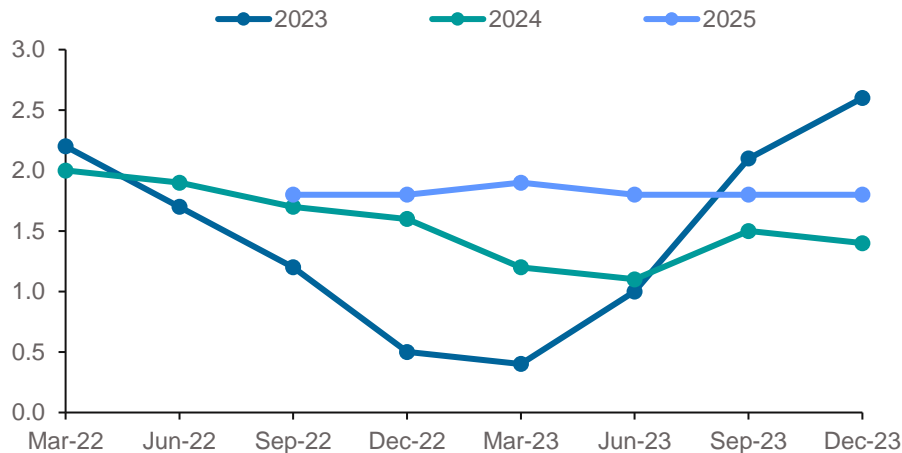
- Median year-end in 2024 = 4.6% (down from 5.1% projection at September meeting)
- Longer-run unchanged at 2.5%
- Dispersion of views wider in 2025 but narrower over “longer run”
- Market expects more cuts next year based on CME FedWatch as of December 2023. Fed Funds expectations:
 - 27% expect 4.00% to 4.25%
 - 37% expect 3.75% to 4.00%
 - 21% expect 3.50% to 3.75%



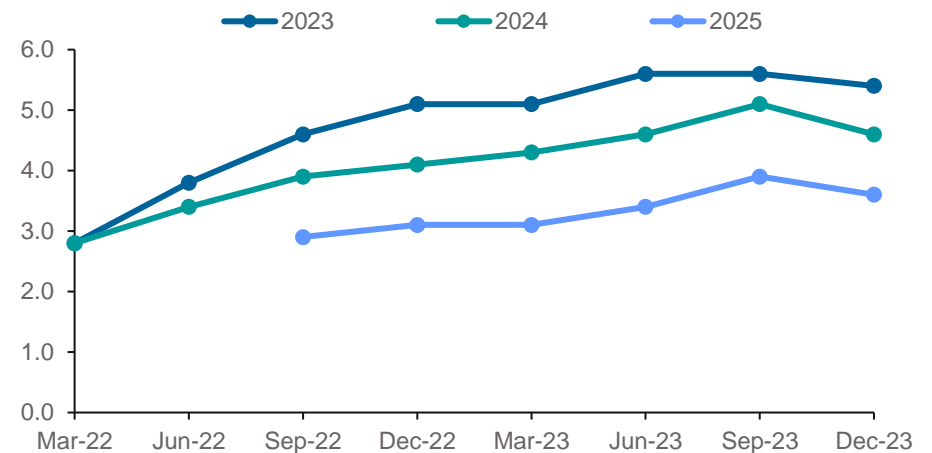
Source: Federal Reserve (One participant did not submit longer-run projections for the federal funds rate.)

The Shifting Mindset at the Fed

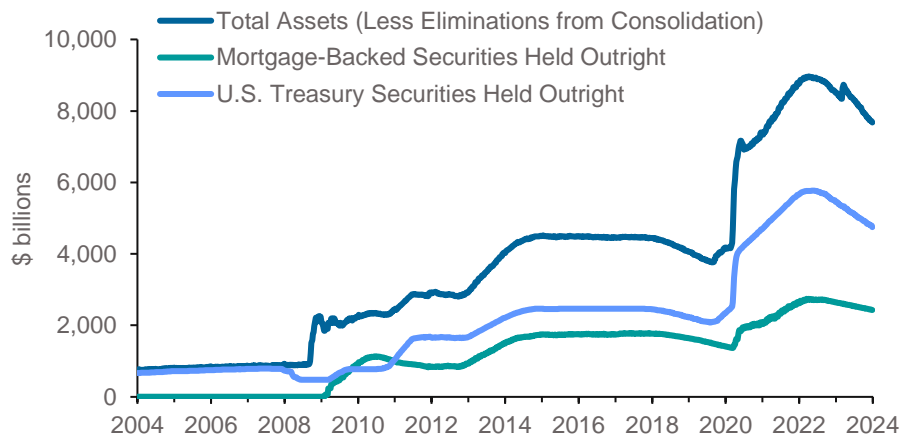
**Fed Projection of Change in Real GDP
By Fed Meeting Date and Projection Year**



**Fed Projection of Fed Funds Rate
By Fed Meeting Date and Projection Year**



Fed Balance Sheet



The big swing in the Fed's GDP projection reflects the surprising nature of economic resilience.

- The Fed steadily increased projections for the appropriate Fed Funds Rate in response to this economic strength.
 - Inflation down from recent highs but well above the Fed's long-term 2% target
- The Fed is also unwinding its balance sheet.
 - This has a more direct impact on longer-term rates than the Fed Funds Rate and could help to slow economic activity if it causes rates to rise.

Source: Federal Reserve, Financial Times

Recession Watch

Common definition of recession: two consecutive quarters of decline in GDP

Actual definition: The National Bureau of Economic Research (NBER) Business Cycle Dating Committee defines a recession as “a significant decline in economic activity that is spread across the economy and that lasts more than a few months.”

Indicators to watch

- Recession talk quietly disappeared from market analysis in 2023
 - Recession risk is not off the table, but the Fed’s success in lowering inflation without hampering economic growth pushes the risk out into 2024.
- GDP came in 3.3% in 4Q, on the heels of a hot at 4.9% in 3Q 2023, putting further pressure on the job market and wages
- Housing market has weakened with the doubling of mortgage rates; existing home sales fell sharply in 2Q and 3Q, while inventory is at a 40-year low in the second half of 2023. Higher rates prevent homeowners from selling and moving.
- Job market saw substantial job creation continuing through the year; job listings remain larger than the number of seekers.
 - Initial unemployment claims are creeping up: a leading indicator
 - Headline layoffs have been concentrated in technology. The number of jobs lost has been modest relative to the broad economy, but the jobs are high paying with the potential to spur multiplier effects on spending
 - Retail trade, leisure and hospitality, and state and local government are large key employers of lower paid workers, and each sector has struggled to regain pre-pandemic levels of employment, while total number of jobs is up 4.5 million.
- PMI flashed signs of recession in business activity and output in mid-2023 but turned positive in November and December; PMI is a leading indicator.
- Inflation is coming down, but it is still above the Fed’s target of 2%, and prices across the economy are now “permanently” higher.
- Fed’s resolve may be tested if economy slows sharply in the next 6–12 months. Thus far, concern about recession has not been discussed by the Fed in public. Strong job market and surprising GDP gains give the Fed headroom to execute policy on inflation.

Callan

**Current Market Conditions:
Special Focus on Inflation**

Contributors to Recent Inflation: Primary Categories

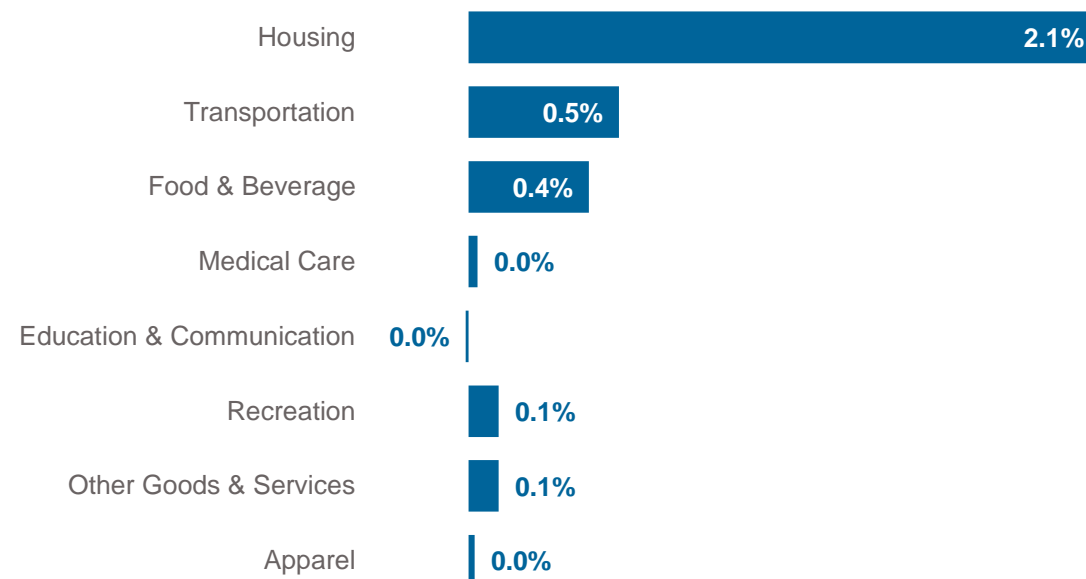
Housing is a broad category that includes Shelter, Fuels and Utilities, and Household Furnishings and Operations as sub-components.

- Shelter makes up 34.4% of the overall index and accounted for over half of September's increase in year-over-year headline CPI.

Energy is not shown in this view of CPI because it is a sub-component of other categories.

- Energy makes up 6.9% of the index and is split evenly between Housing (fuel for powering homes) and Transportation (motor fuel).

Contribution to December 2023 Year-Over-Year Inflation

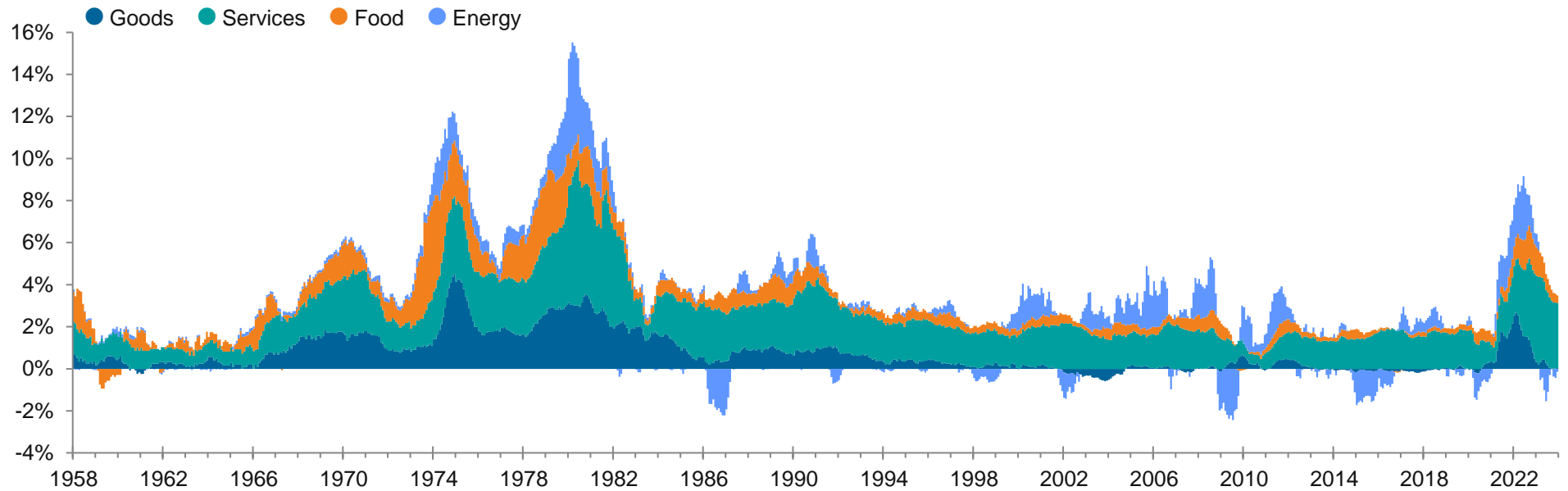


Primary Category	Primary Category Weight	Year-over-Year Change											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
All Items	100.0%	6.4%	6.0%	5.0%	4.9%	4.0%	3.0%	3.2%	3.7%	3.7%	3.2%	3.1%	3.4%
Housing	44.4%	8.2%	8.2%	7.8%	7.5%	6.8%	6.3%	6.2%	5.7%	5.6%	5.2%	5.2%	4.8%
Transportation	16.7%	3.8%	2.6%	-1.0%	0.2%	-2.0%	-5.1%	-3.0%	1.4%	2.4%	0.8%	0.9%	2.9%
Food & Bev	14.4%	9.9%	9.2%	8.3%	7.5%	6.6%	5.7%	4.8%	4.2%	3.7%	3.3%	2.9%	2.7%
Medical Care	8.1%	3.1%	2.3%	1.5%	1.1%	0.7%	0.1%	-0.5%	-1.0%	-1.4%	-0.8%	0.2%	0.5%
Education & Communication	5.8%	1.0%	1.0%	1.4%	1.6%	1.5%	1.1%	1.2%	1.0%	1.0%	0.9%	-0.1%	-0.1%
Recreation	5.4%	4.8%	5.0%	4.8%	5.0%	4.5%	4.3%	4.1%	3.5%	3.9%	3.2%	2.5%	2.7%
Other Goods & Svcs	2.7%	6.2%	6.1%	6.1%	6.6%	6.7%	6.3%	6.1%	5.8%	6.0%	6.2%	5.6%	5.5%
Apparel	2.5%	3.1%	3.3%	3.3%	3.6%	3.5%	3.1%	3.2%	3.1%	2.3%	2.6%	1.1%	1.0%

Source: U.S. Bureau of Labor Statistics

Broad Components of Inflation

Contribution to Inflation by Broad Component

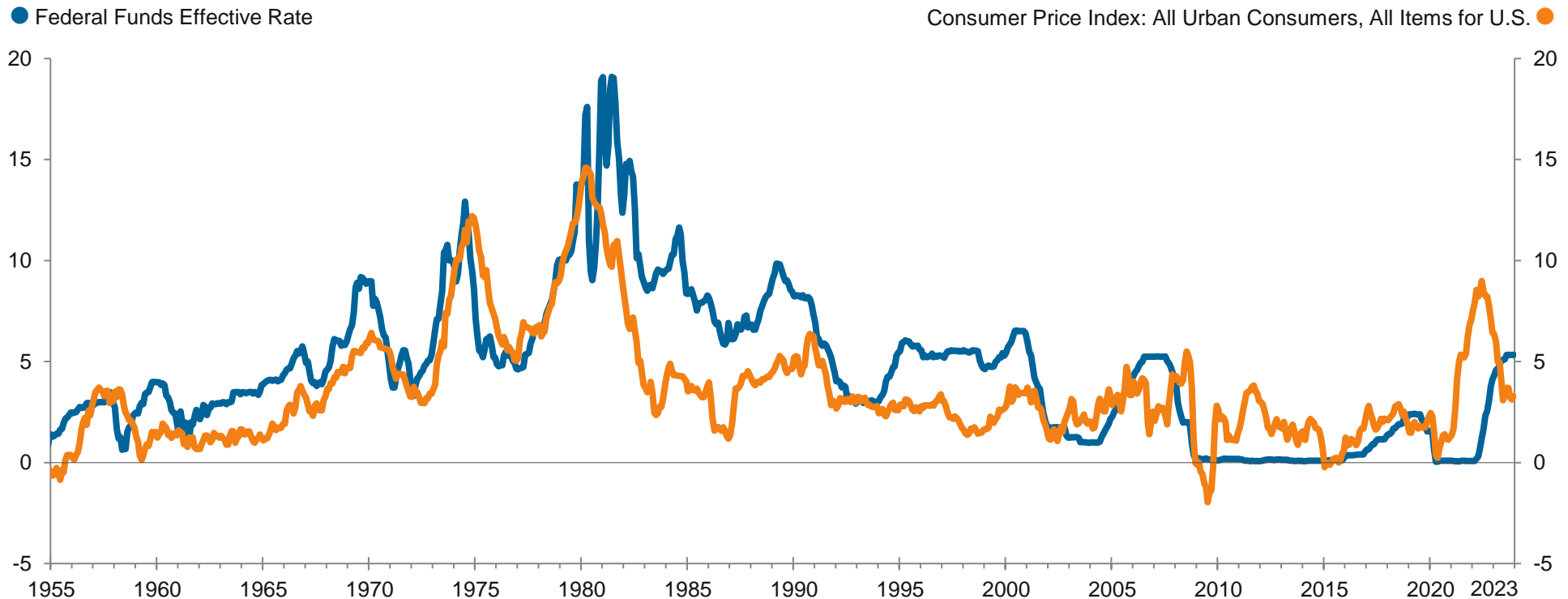


Category	Category Weight	Year-over-Year Change											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Headline CPI	100.0%	6.4%	6.0%	5.0%	4.9%	4.0%	3.0%	3.2%	3.7%	3.7%	3.2%	3.1%	3.4%
Food	13.5%	10.1%	9.5%	8.5%	7.7%	6.7%	5.7%	4.9%	4.3%	3.7%	3.3%	2.9%	2.7%
Energy	6.9%	8.7%	5.2%	-6.4%	-5.1%	-11.7%	-16.7%	-12.5%	-3.6%	-0.5%	-4.5%	-5.4%	-2.0%
Core CPI	79.5%	5.6%	5.5%	5.6%	5.5%	5.3%	4.8%	4.7%	4.3%	4.1%	4.0%	4.0%	3.9%
Goods Less Food and Energy	21.4%	1.4%	1.0%	1.5%	2.0%	2.0%	1.3%	0.8%	0.2%	0.0%	0.1%	0.0%	0.2%
Services Less Energy	58.2%	7.2%	7.3%	7.1%	6.8%	6.6%	6.2%	6.1%	5.9%	5.7%	5.5%	5.5%	5.3%

Source: U.S. Bureau of Labor Statistics. Note Goods excludes food and energy goods while Services excludes energy services.

Inflation vs. Interest Rates Over the Long Term

Federal Funds vs. Consumer Price Index



The recent inflation spike capped out at 9% in June 2022, well above the last inflation peak from 2005–08.

- The gap between inflation and the Fed Funds rate reached an unprecedented level going back to 1955 but has closed quickly, as the Fed acted on rates and inflation has come down.
- Yield history suggests that the Fed Funds rate is typically above inflation, not below it.
 - This relationship was restored in May after 42 months of inversion starting in November 2019.

Source: Federal Reserve Bank of St. Louis

Inflation: What Key Variables Should We Track?

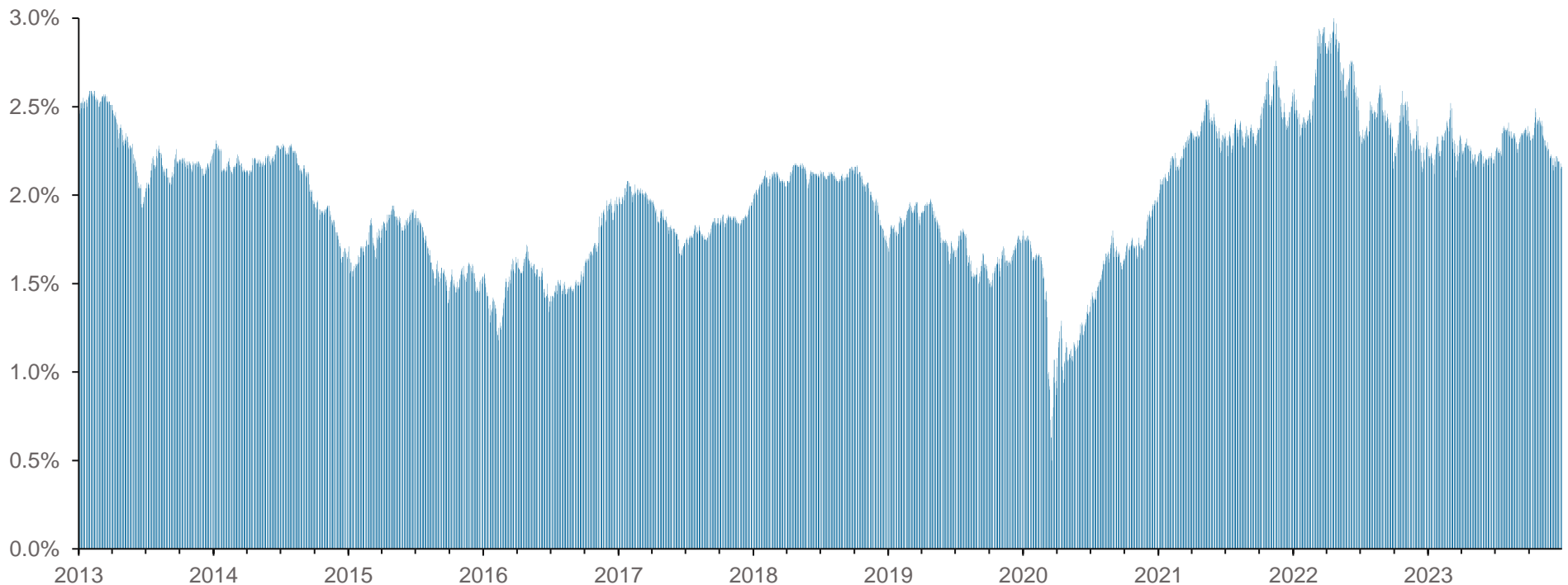
The majority of the working-age and younger population has no experience with sustained inflation

Key variables to track

- Personal Consumption Expenditures Index—the Fed’s preferred measure of inflation
 - Typically lower and less volatile than CPI-U
- Spread between inflation and the Fed Funds rate—at an extreme, suggesting some adjustment is coming in both variables
- Five-year, five-year forward rate, and 10-year breakeven rate
 - Bond market expectations
 - Long enough horizon to minimize short-term emotion and reaction to immediate events
- Philadelphia Fed survey of professional forecasters
- Growth in Average Hourly Earnings – tracks labor in many industries, particularly manufacturing
- Growth in Real Disposable Income – tracks salary and wages, plus interest, dividends and rental income, plus transfer payments
 - Net of inflation and taxes
 - Real incomes rose in 2.5% in 4Q, and growth has been positive in each of the last three quarters of 2023 for the first time in a couple of years as inflation subsided and wages rose

10-Year Breakeven Rate: Bond Market Forecast of Inflation

10-Year Breakeven Inflation Rate

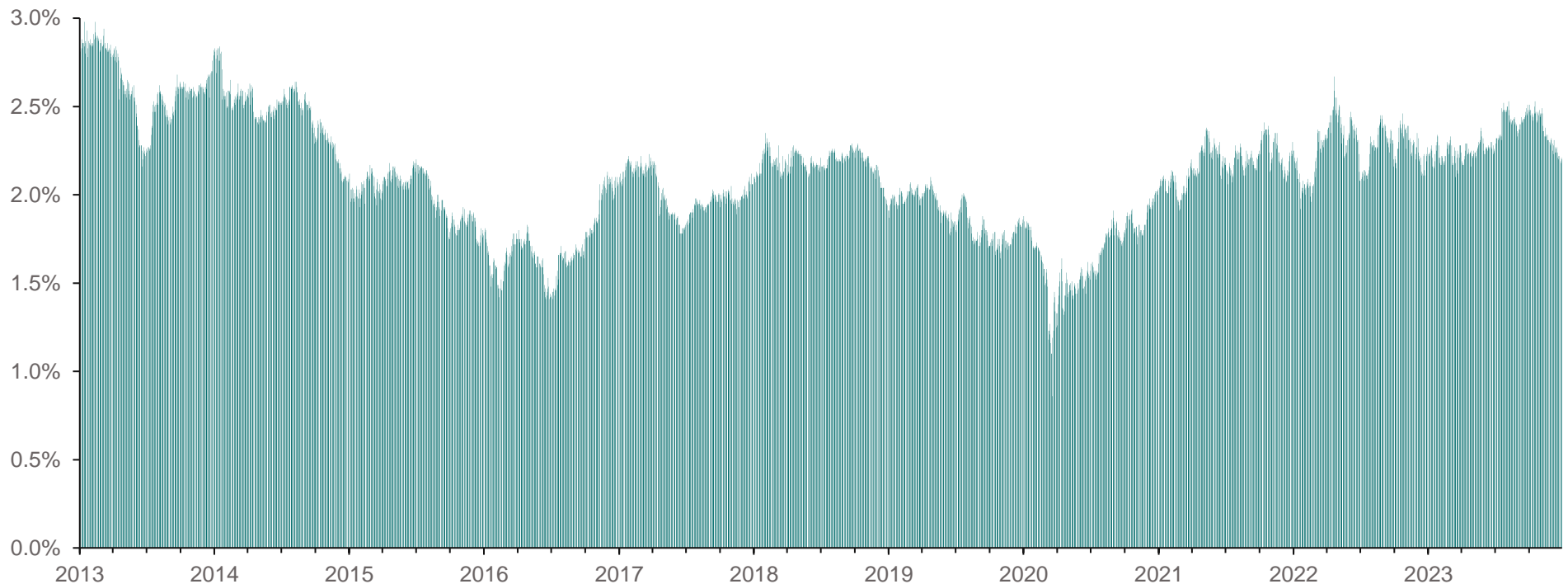


- 10-year breakeven inflation rate is the difference in yield between the nominal 10-year Treasury and the 10-year Treasury Inflation-Protected Security (TIPS).
 - Includes current higher levels of inflation
 - Extra yield nominal Treasury would have to earn to maintain the same purchasing power as a TIPS investment.
- Values of implied inflation reached 3% in April 2022 but have since declined to around 2.25%.

Source: Federal Reserve Bank of St. Louis

5-Year, 5-Year Forward Rate: Bond Market Forecast of Inflation

5-Year, 5-Year Forward Inflation Expectation Rate



- The 5-year, 5-year forward rate is the bond market's estimate of the 5-year inflation rate 5 years from now.
 - Excludes current high levels of inflation
- The market inflation expectation for the years 2029 through 2033 is around 2.25% after peaking at 2.7% in April 2022.

Source: Federal Reserve Bank of St. Louis

Final Thoughts on the Macro Economy

U.S. economy remained strong through the rate hikes in 2022 and 2023. Why?

- Stimulus and lots of it = pent up demand
- Very tight labor market
- Housing market has taken a big hit but has NOT dragged down the economy as in rate hike episodes of yore.
- We do NOT have a mortgage crisis similar to the one that struck in 2008-09 and nearly took down the banking system.
- We do have a commercial real estate tsunami working through office in CBDs and retail trade, which will reshape the physical as well as business landscape of many communities in the U.S.
- And we do have a housing shortage that may have long-term generational problems that will upset income and wealth disparity.

It may take longer than many believe to unravel the current growth momentum in the U.S. economy.

Always expect a recession in our 10-year projections; *when* it will occur is the more difficult question than *if*

Risks are plentiful:

- Recession
 - Jobs and income
 - Sales and earnings growth
 - Fed reverses course sooner than expected
- Inflation
- Housing market
- Geopolitical strife

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Fixed Income

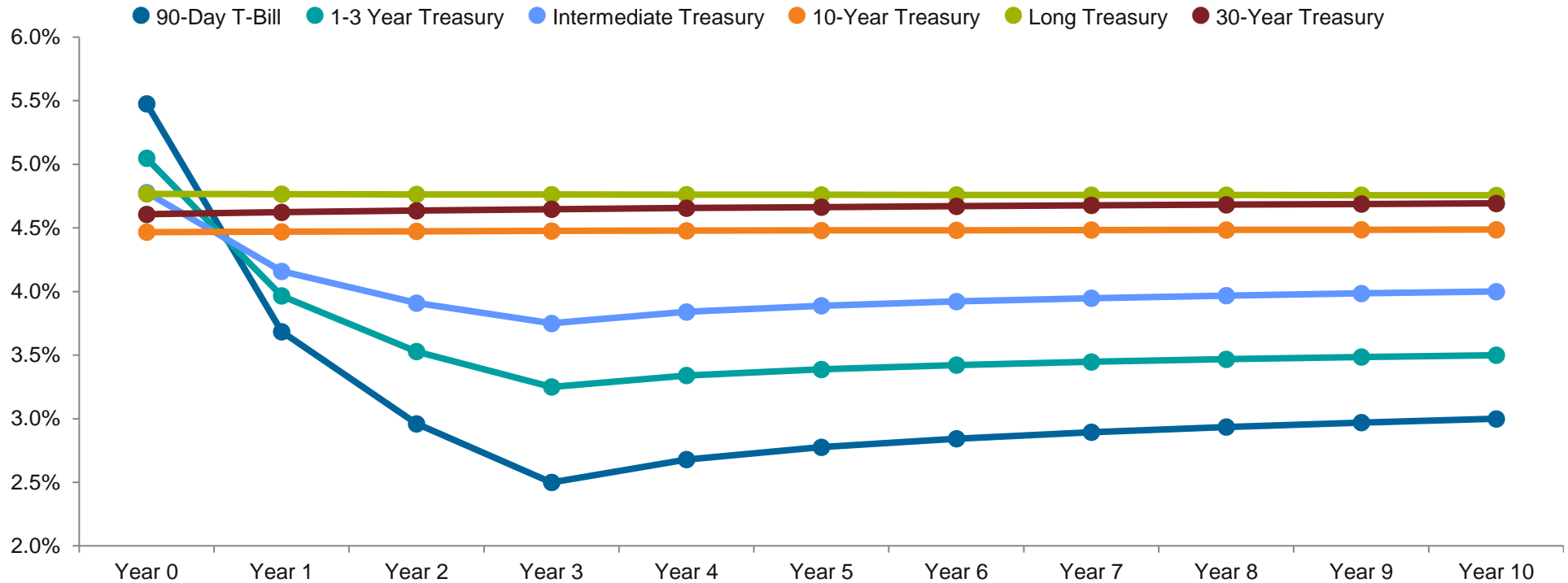
Projected Fixed Income Returns

10-year projections

	Income Return	+ Capital Gain/Loss	+ Credit Default	+ Roll Return	= 2024 Expected Return	2023 Expected Return	Change vs. 2023	2022 Expected Return	Change vs. 2022
Cash	3.00%	0.00%	0.00%	0.00%	3.00%	2.75%	0.25%	1.20%	1.80%
1-3 Year Gov/Credit	3.70%	0.40%	-0.10%	0.25%	4.25%	3.80%	0.45%	1.50%	2.75%
1-3 Year Government	3.50%	0.40%	0.00%	0.25%	4.15%	3.60%			
1-3 Year Credit	4.20%	0.40%	-0.20%	0.25%	4.65%	4.00%			
Intermediate Gov/Credit	4.30%	0.30%	-0.10%	0.25%	4.75%	4.10%	0.65%	1.70%	3.05%
Intermediate Gov	3.90%	0.30%	0.00%	0.25%	4.45%	4.00%			
Intermediate Credit	4.90%	0.40%	-0.30%	0.25%	5.25%	4.25%			
Aggregate	4.70%	0.40%	-0.10%	0.25%	5.25%	4.25%	1.00%	1.75%	3.50%
Government	4.20%	0.40%	0.00%	0.25%	4.85%	3.95%			
Securitized	4.50%	0.60%	0.00%	0.25%	5.35%	4.25%			
Credit	5.55%	0.20%	-0.40%	0.25%	5.60%	4.70%			
Long Duration Gov/Credit	5.70%	-0.10%	-0.20%	0.60%	6.00%	4.65%	1.35%	1.80%	4.20%
Long Government	4.80%	0.00%	0.00%	0.60%	5.40%	3.70%			
Long Credit	6.20%	-0.20%	-0.30%	0.60%	6.30%	5.20%			
TIPS	4.30%	0.50%	0.00%	0.25%	5.05%	4.00%	1.05%	1.25%	3.80%
Global ex-U.S. Fixed	2.70%	0.30%	-0.10%	0.25%	3.15%	2.25%	0.90%	0.80%	2.35%
High Yield	8.45%	0.20%	-2.10%	0.25%	6.80%	6.25%	0.55%	3.90%	2.90%
Emerging Markets Debt	7.70%	0.30%	-1.90%	0.25%	6.35%	5.85%	0.50%	3.60%	2.75%
Bank Loans	8.15%	0.00%	-1.60%	0.00%	6.55%	6.10%	0.45%	4.60%	1.95%

Yield Curve Path Assumes Rate Cuts Necessary in Next Few Years

Treasury Yield Curve

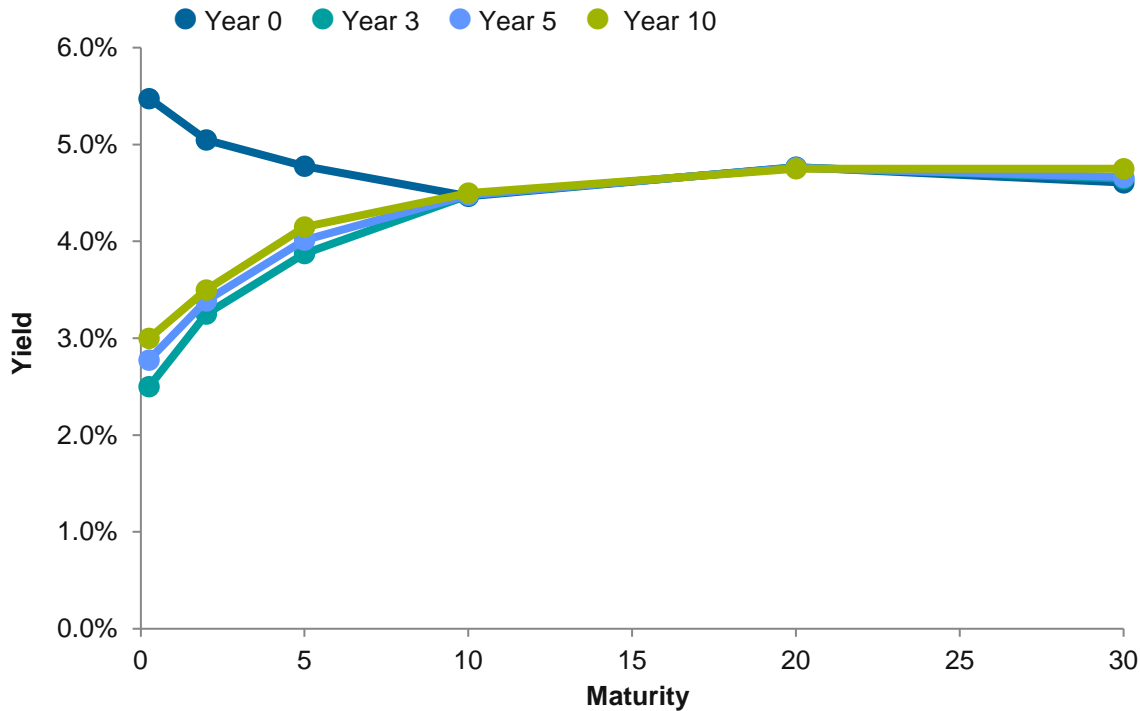


Level of the yield curve is a key driver of fixed income return expectation, but the path of rates is also important

- We expect a large and swift decline for intermediate- and short-term rates. This drop leads to capital appreciation for sectors with exposure to these areas of the curve
- A flat path of rates on longer-term bonds means little to no capital losses priced in

Shape of Yield Curve at Different Points in Forecast Horizon

Yield Curve Forecast



Our fixed income projections assume the yield curve returns to upward-sloping pattern within the next few years

- Short rates fall below Callan's equilibrium during an assumed overcorrection in Fed policy.
- Short rates are then projected to return to long-term equilibrium by year 10 of our forecast.

	3 Month	2 Year	5 Year	10 Year	20 Year	30 Year
Forecast Year 0	5.48	5.05	4.78	4.47	4.77	4.61
Forecast Year 3	2.50	3.25	3.88	4.48	4.76	4.65
Forecast Year 5	2.78	3.39	4.01	4.48	4.76	4.66
Forecast Year 10 (Equilibrium Reached)	3.00	3.50	4.15	4.50	4.75	4.75

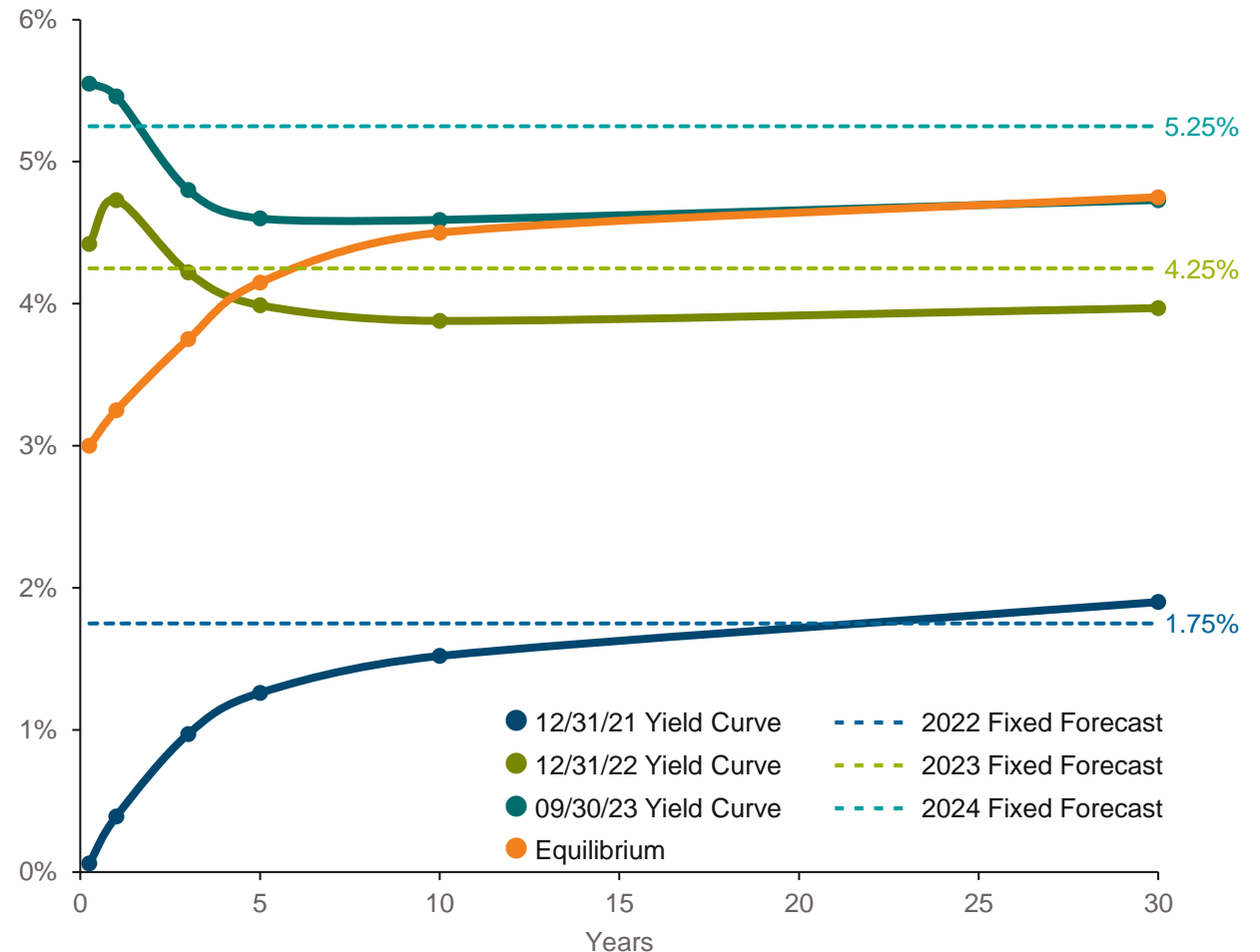
Core Fixed Income Assumptions Follow Yields

Our fixed income assumptions have risen meaningfully in the last few years along with an equally large upward move for the yield curve

2024 projection benefits further from expectation for capital gains

- Capital gains boost the return expectation above what would be expected from income alone

Fixed Income Yields and Forecasts



Source: Bloomberg

Callan

Equity

Equity Forecasts

Overview

Fundamental Relationship

$$\text{Equity Return} = \text{Capital Appreciation} + \text{Income} \pm \text{Valuation Adjustment}$$

The diagram illustrates the components of Equity Return. It shows the equation: Equity Return = Capital Appreciation + Income +/- Valuation Adjustment. Below 'Capital Appreciation', a bracket groups 'Real Earnings Growth + Inflation'. Below 'Income', a bracket groups 'Dividend Yield + Net Share Buybacks'.

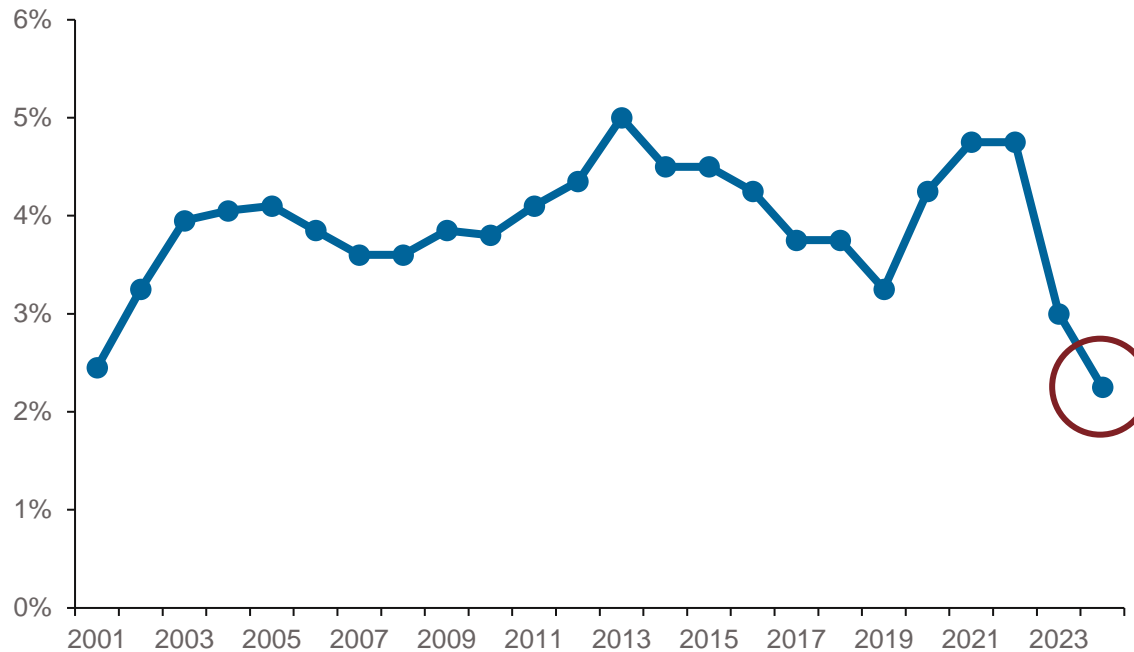
Building up U.S. equity (S&P 500) returns from long-term fundamentals, we arrive at 7.50%

- Real earnings growth is linked to real GDP growth over long horizons; we forecast **2.50%** over the next decade
- Inflation(CPI-U) forecasted at **2.50%** over the next ten years
 - Slightly above the Fed's inflation target of 2%
 - Realized inflation over past quarter century has been 2.5%
 - In line with the market-based forecast of breakeven inflation (yield difference between Treasuries and TIPS)
- Income return of **2.50%** from dividend yield and share buybacks
- Equity valuations are in line with historical norms so no valuation adjustment
- Small premium for Global ex-U.S. over U.S. stems from emerging market growth potential

Callan's Equity Risk Premia Forecasts Over Time

S&P 500 forecast minus Bloomberg Aggregate forecast

Forecasted Equity Risk Premium vs. Bonds

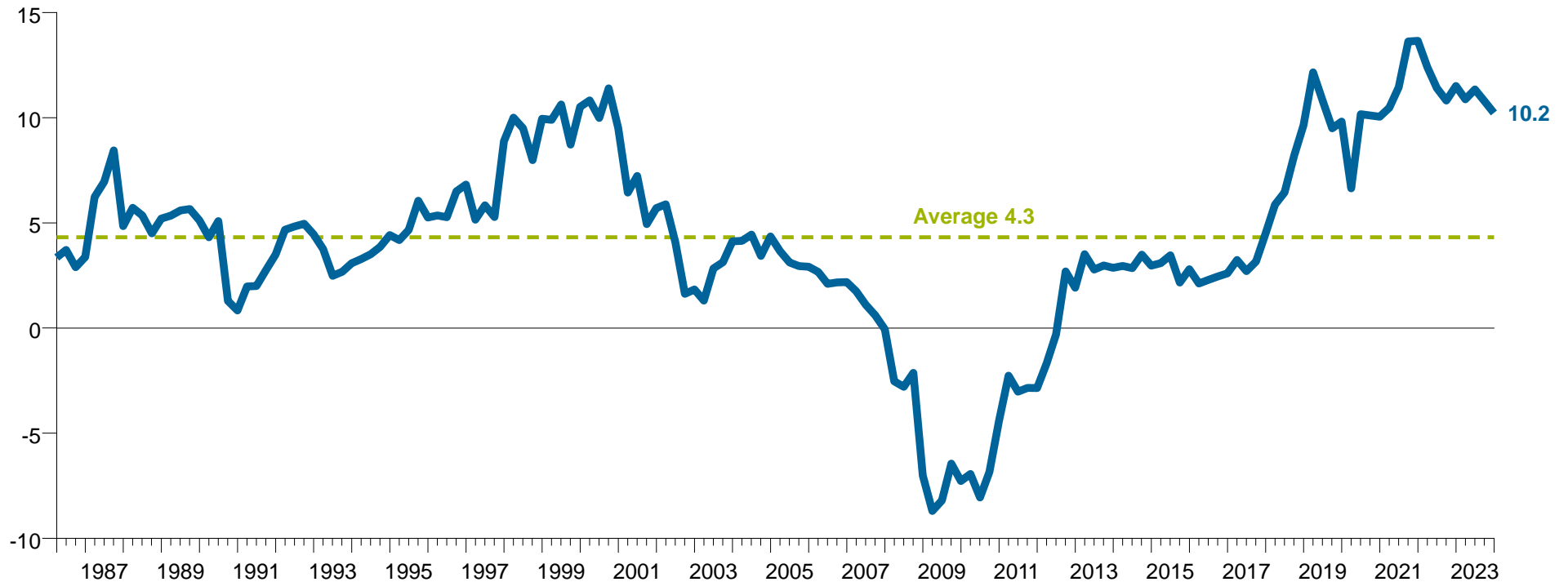


Callan's forecasted return spread between the S&P 500 and the Bloomberg Aggregate (2.25%) is the narrowest since 2001.

Forecasts are annualized over 10 years.

Historical Equity Risk Premium Over Bonds

S&P 500 Rolling 40 Quarter Excess Return Relative to Bloomberg Aggregate



Our 2.25% equity risk premium over core bonds is low relative to the historical average of 4.3%, but the premium has been volatile and 2.25 is within the historical range

Sources: Bloomberg, S&P Dow Jones Indices

U.S. Equity Market: Key Metrics

S&P 500 valuation measures

S&P 500 Index: Forward P/E Ratio

Valuation Measure	Latest	30-year Average*	Std Dev Over- / Under-valued
Forward P/E	19.51x	16.59x	0.90
Shiller's P/E	32.43x	27.55x	0.79
Dividend yield	1.54%	2.00%	1.33
Price to book	3.97x	3.11x	1.10
Price to cash flow	14.82x	11.13x	1.64
EY minus Baa yield	-0.33%	0.04%	0.20



Forward P/E (19.5) is about one standard deviation above its long-term average (16.6).

Source: FactSet, FRB, Refinitiv Datastream, Robert Shiller, S&P Dow Jones Indices, Thomson Reuters, J.P. Morgan Asset Management.

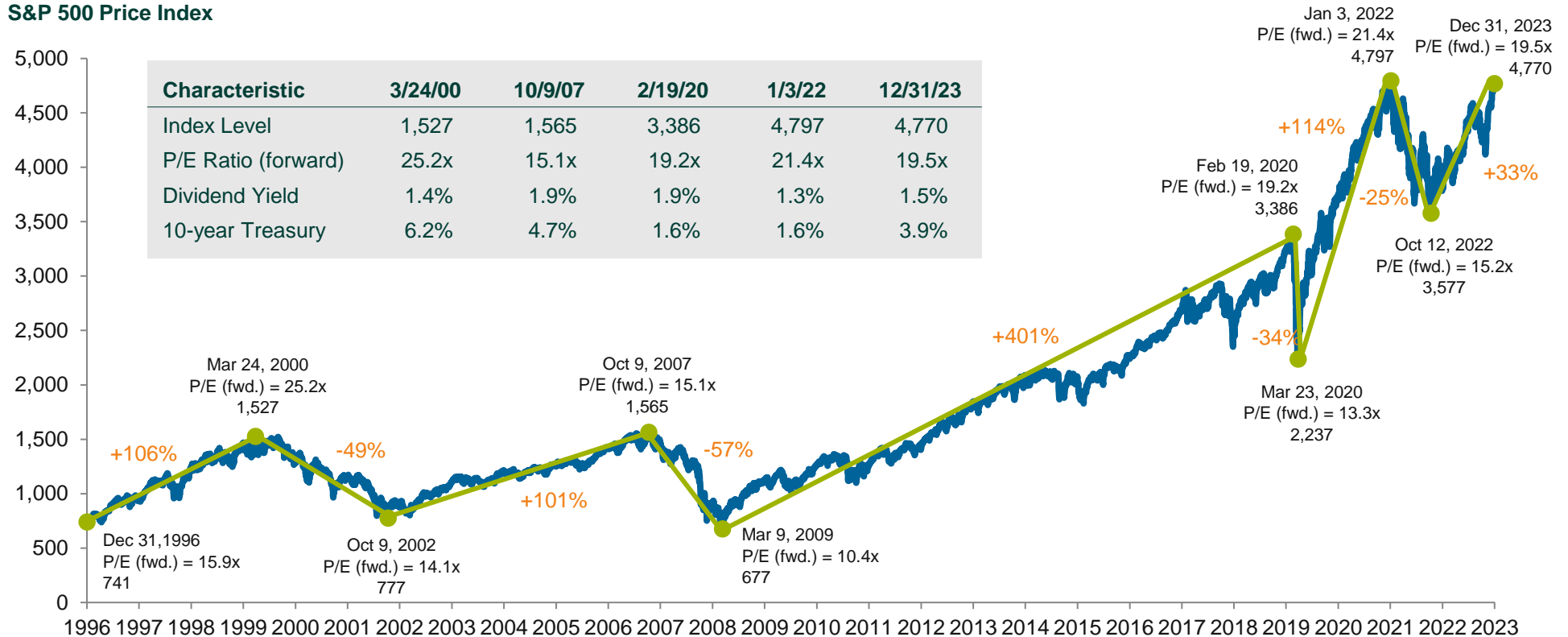
Price-to-earnings is price divided by consensus analyst estimates of earnings per share for the next 12 months as provided by IBES since December 1998 and by FactSet since January 2022. Current next 12-months consensus earnings estimates are \$245. Average P/E and standard deviations are calculated using 30 years of history. Shiller's P/E uses trailing 10-years of inflation-adjusted earnings as reported by companies. Dividend yield is calculated as the next 12-months consensus dividend divided by most recent price. Price-to-book ratio is the price divided by book value per share. Price-to-cash flow is price divided by NTM cash flow. EY minus Baa yield is the forward earnings yield (consensus analyst estimates of EPS over the next 12 months divided by price) minus the Moody's Baa seasoned corporate bond yield. Std. dev. over-/under-valued is calculated using the average and standard deviation over 30 years for each measure.

*Averages and standard deviations for dividend yield and P/CF are since November 1995 due to data availability. Guide to the Markets – U.S. Data are as of December 31, 2023.

U.S. Equity Market: Price Relative to History

S&P 500 Index at inflection points

S&P 500 Price Index

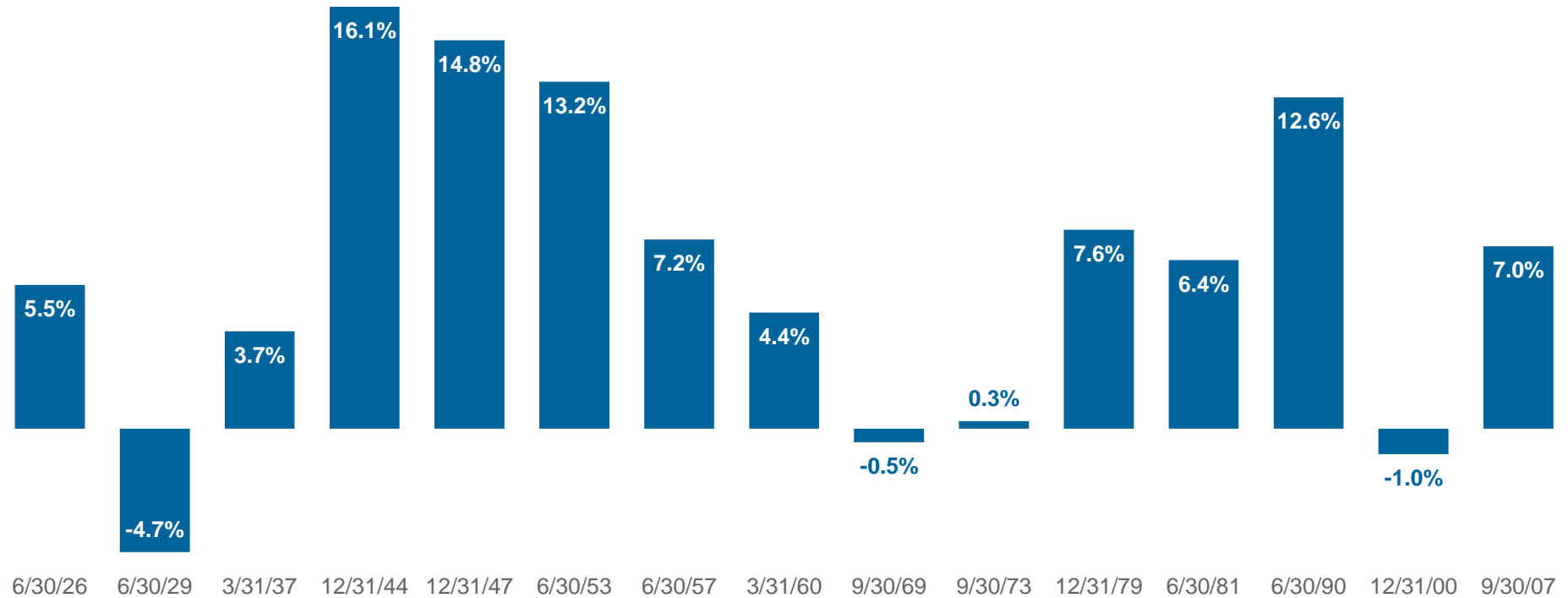


The S&P is still below its January 2022 peak

Source: Compustat, FactSet, Federal Reserve, Refinitiv Datastream, Standard & Poor's, J.P. Morgan Asset Management. Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat. Forward price-to-earnings ratio is a bottom-up calculation based on IBES estimates and FactSet estimates since January 2022. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns. Guide to the Markets – U.S. Data are as of December 31, 2023.

Strategic Asset Allocation Through Recessions

Large Cap U.S. Stocks Minus T-Bills (one quarter preceding recession)



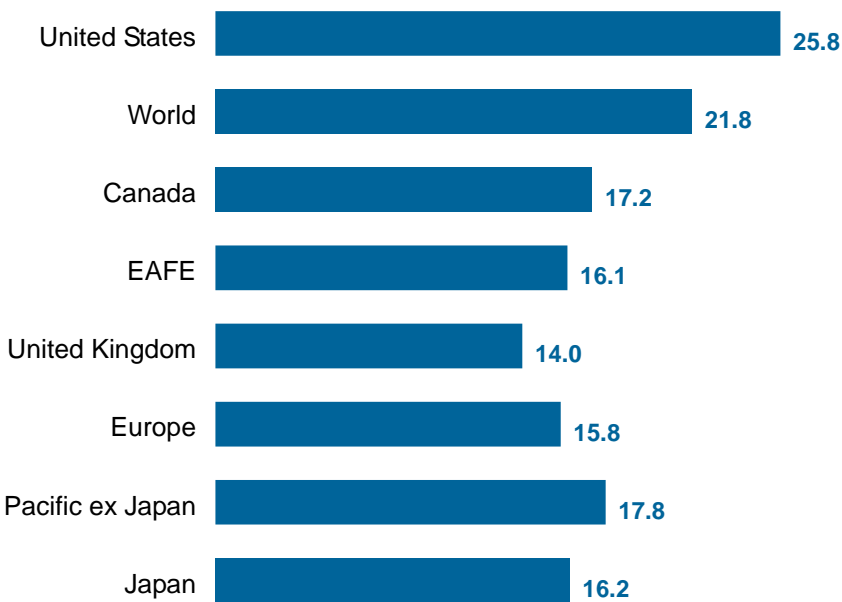
- The above chart examines what returns could have looked like if an investor had perfect foresight of an incoming economic recession
- Over 15 historical recessions, would foresight of recessions be helpful for investors with long-term 10-year time horizons?
 - No, moving out of stocks (and into cash) would have underperformed through 12 out of 15 recessions
- A reasonable approach to strategic asset allocation assumes that recessions occur from time-to-time, even if they are unpredictable

Sources: Ibbotson, Callan LLC, National Bureau of Economic Research

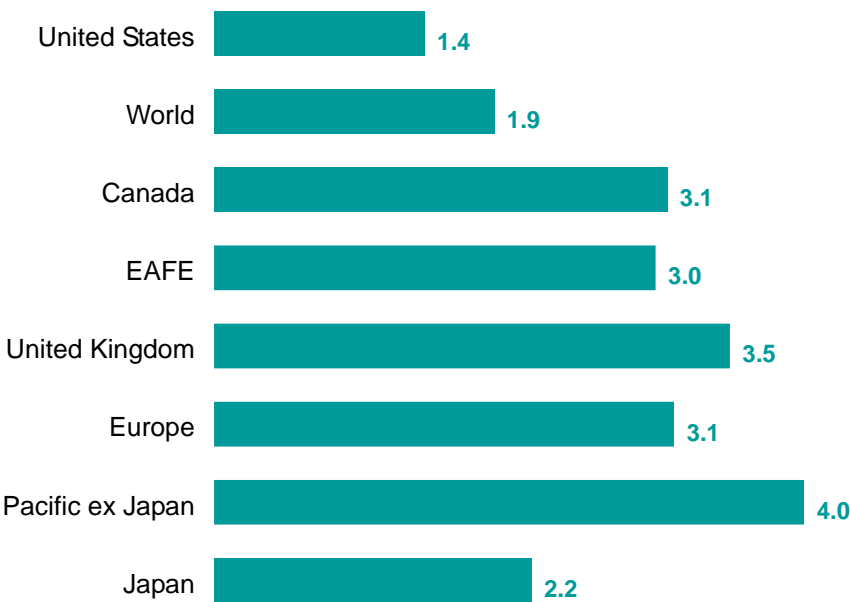
Global ex-U.S. Equity Assumptions

Developed market valuations and dividend yield

Price Earnings Ratio



Dividend Yield



Valuations have increased over most developed markets, especially the United States.

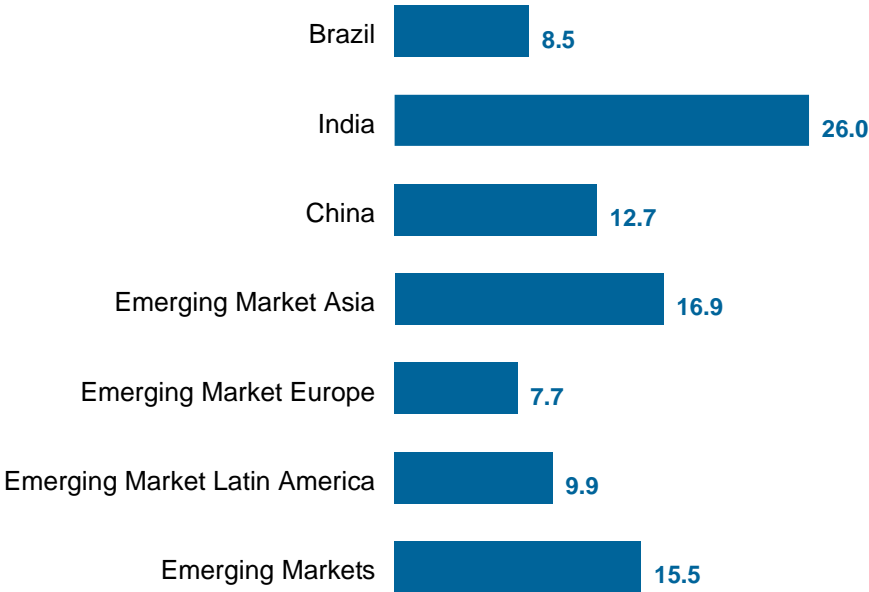
Dividend yields notably declined in the United States

Source: MSCI (Dec. 31, 2023)

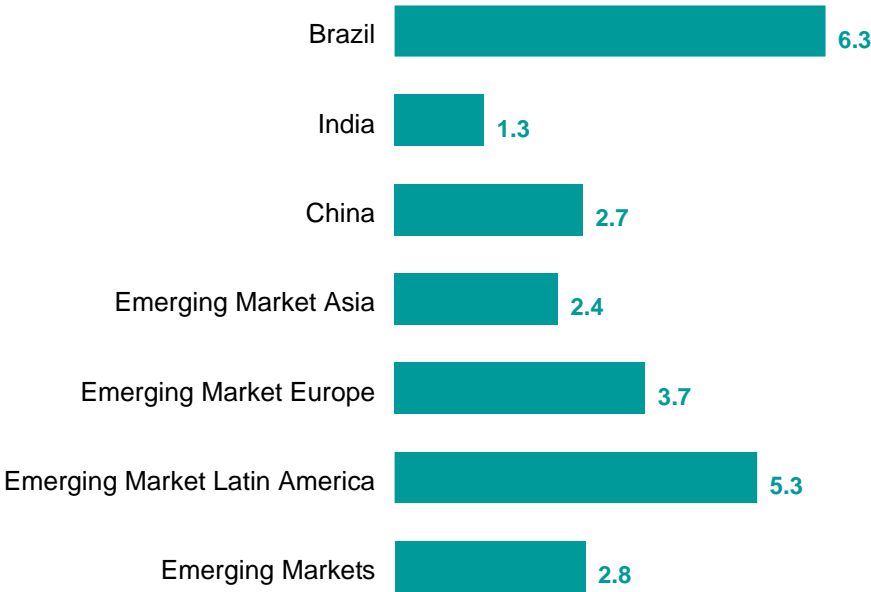
Global ex-U.S. Equity Assumptions

Emerging market valuations and dividend yield

Price Earnings Ratio



Dividend Yield



Emerging market valuations were mixed over the past year with China experiencing a notable decline

Asia continues to have the highest regional valuations, Emerging Europe the lowest.

Dividend yields have declined across most emerging market indices.

Significant dilution is realized as growing companies issue more shares.

Source: MSCI (Dec. 31, 2023)

Equity Forecasts

Building block model

Index	Forecasted Dividend Yield	Net Buyback Yield	Inflation	Real Earnings Growth	Valuation Adjustment	Total Expected Return
S&P 500	2.00%	0.50%	2.50%	2.50%	0.00%	7.50%
Russell 2500	1.75%	0.00%	2.50%	3.45%	0.00%	7.70%
MSCI World ex USA	3.75%	0.00%	2.00%	1.75%	0.00%	7.50%
MSCI Emerging Markets	3.55%	-2.90%	3.25%	3.80%	0.00%	7.70%

Our return expectations for US large cap (S&P 500) and non-US Developed markets (MSCI World ex-US) are the same, but the paths to those returns are different

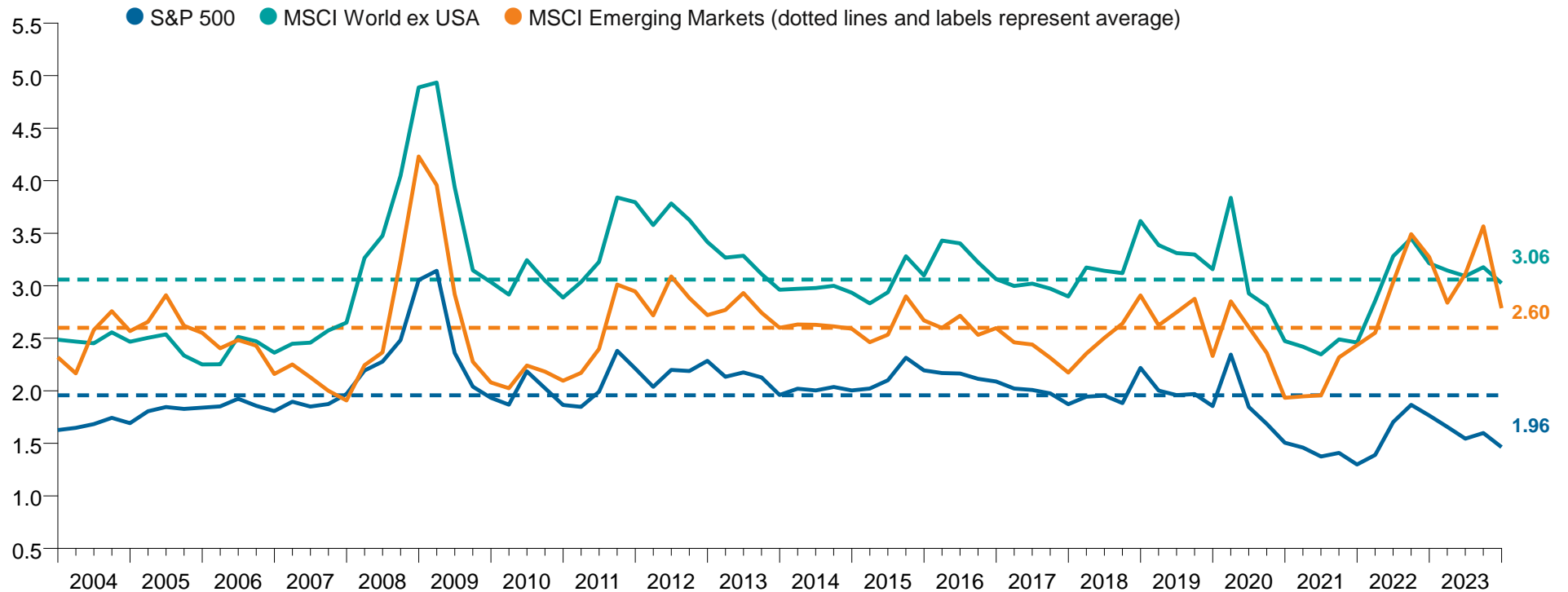
U.S. companies tend to deliver more return from earnings growth than from return of capital via dividends or buybacks

- Non-U.S. developed companies have the opposite relationship
- Emerging market companies tend to deliver strong earnings growth, which is somewhat offset by net issuance of shares as these companies issue stock to support growth

Equity Forecasts

Dividend Yields (past 20 years)

Dividend Yield for 20 Years Ended December 31, 2023



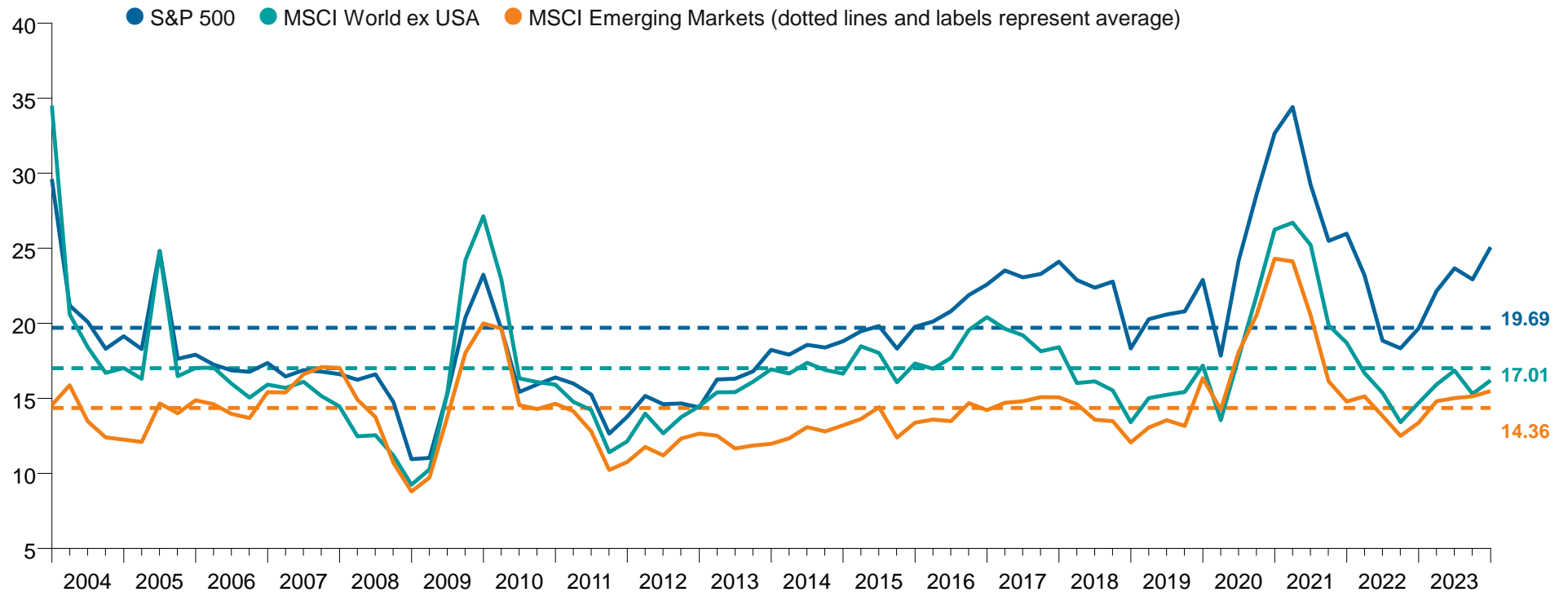
International equity has consistently provided higher dividend yields than U.S. equity

Dividend yield measure is one year trailing

Equity Forecasts

Price / Earnings Ratio

Price/Earnings Ratio (inc neg) for 20 Years Ended December 31, 2023



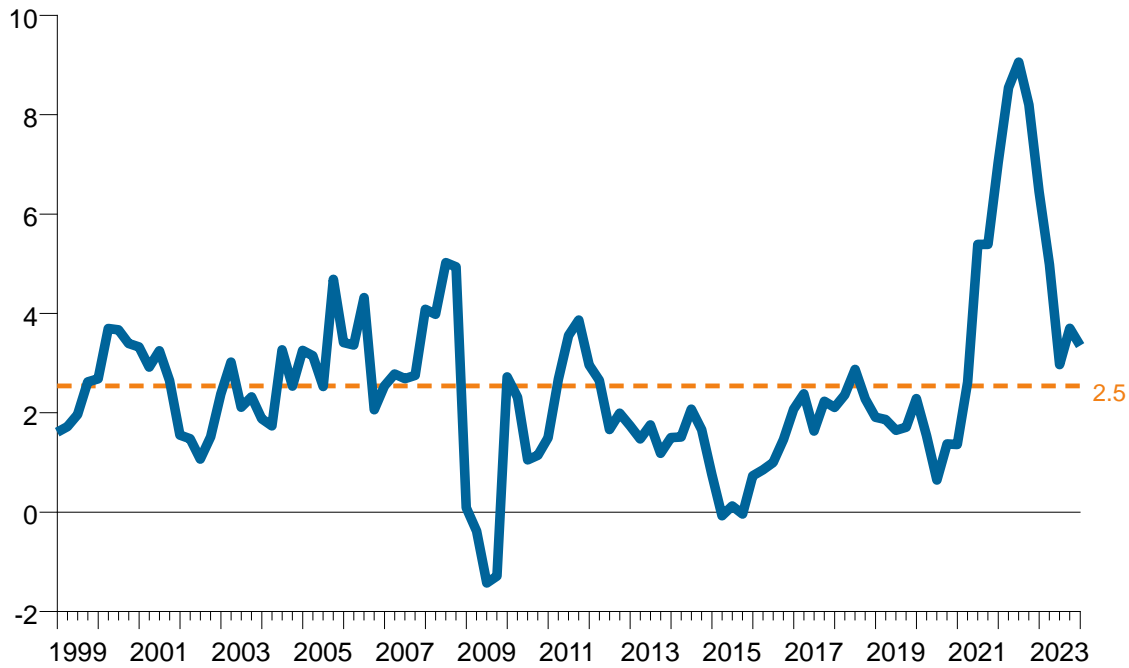
U.S., developed, and emerging price/earnings are broadly consistent with historical averages

P/E measure is one year trailing.

Inflation

CPI-U (past 25 years)

Inflation (CPI-U) for 25 Years Ended December 31, 2023



Inflation has averaged 2.5% over the past quarter century.

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Alternatives

Core Real Estate

Background

Real estate has characteristics of equity (ownership and appreciation) and bonds (income from rents). Real estate returned - 8.4% for the year ended September 30, 2023, on an unlevered property basis

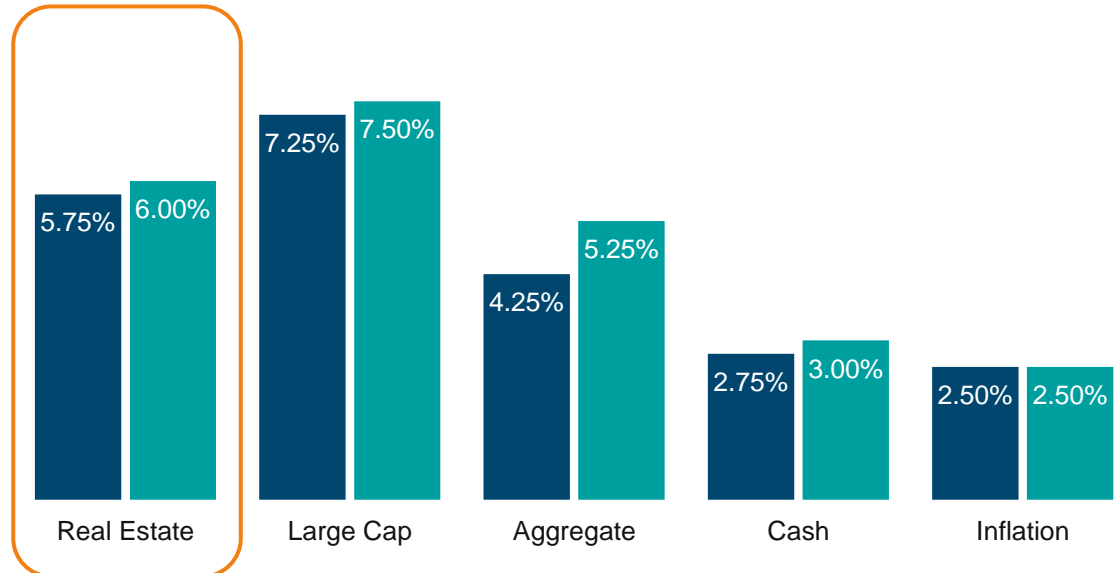
While real estate, especially within offices, is expected to continue facing headwinds in the short-term, recent price declines could make more attractive entry points available for long-term investors

Slight increase in real estate returns compared to last year.

2024 real estate return projection: 6% (up 25 bps)

Return Projections

● 2023 ● 2024



Source: Callan, NCREIF NPI index

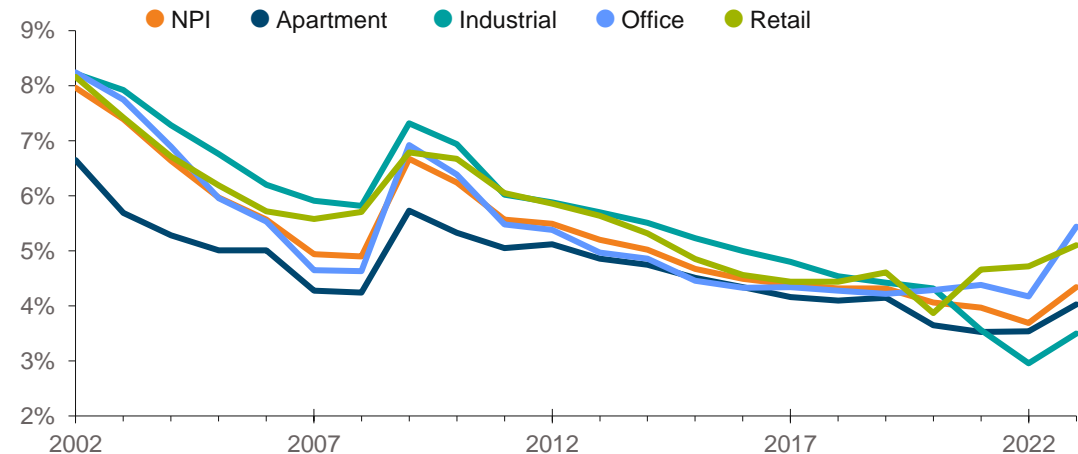
Core Real Estate

6% core real estate compound return (net of fees)

Return calculations assume 5.4% cost of leverage and 0.5x debt-to-equity (33% loan-to-value)

Income Return (unlevered property)	5.1%
Appreciation (unlevered property)	1.0%
Total Return (before leverage)	6.1%

Annual Cap Rates (through September 30, 2023)



Callan Return Assumptions (unlevered property returns)

	Office	Retail	Industrial	Apartments	Other	NPI Index
Income	5.7%	5.6%	4.3%	5.1%	5.8%	5.1%
Appreciation	0.0%	0.4%	2.3%	0.6%	0.9%	1.0%
Total Return	5.7%	6.0%	6.6%	5.7%	6.7%	6.1%

Source: NCREIF Property Index (NPI) cap rates correspond to unlevered property valuations

Hedge Funds

Background

Hedge funds can be evaluated in a multi-factor context using the following relationship:

Expected Return = Cash + Equity Beta x (Equity-Cash) + Exotic Beta + Net Alpha

Callan's 10-year cash forecast is 3.00%.

Diversified hedge fund portfolios have historically exhibited equity beta relative to the S&P 500 of about 0.4.

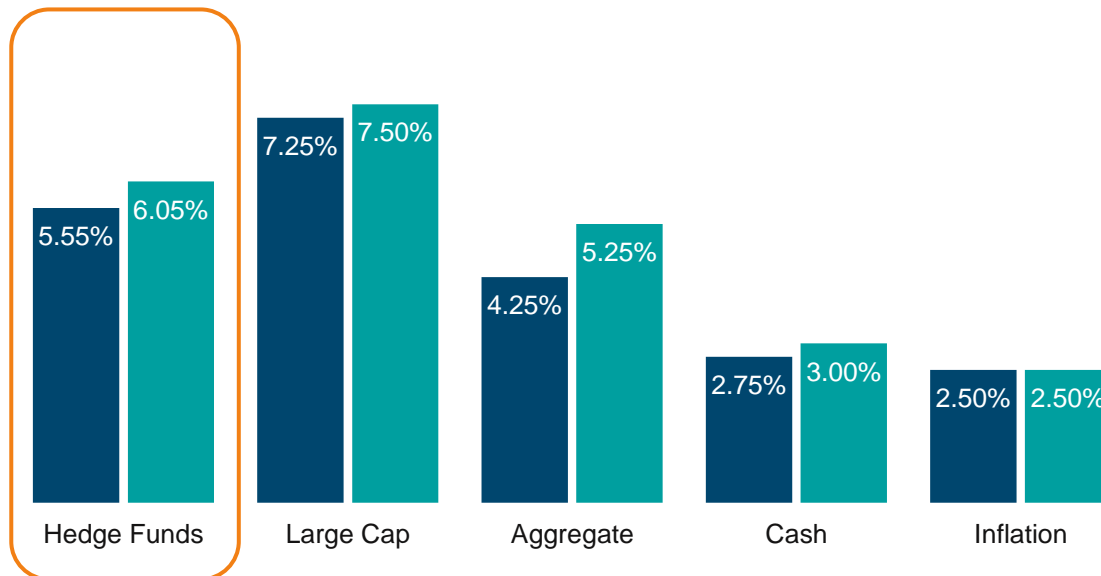
Combined with our equity risk premium forecast, this results in an excess return from equity beta of 1.8%.

Return from hedge fund exotic beta and illiquidity premia is forecast to be 0.5% to 1.5%, to arrive at an overall expected return of 6.05%.

2024 hedge fund return projection: 6.05% (up 50 bps)

Return Projections

● 2023 ● 2024



Source: Callan

Private Equity

Background

The private equity market in aggregate is driven by many of the same economic factors as public equity markets. However, we expect private equity to experience some write-downs that have not yet been reflected in performance.

Private equity performance expectations rose in line with public equity expectations.

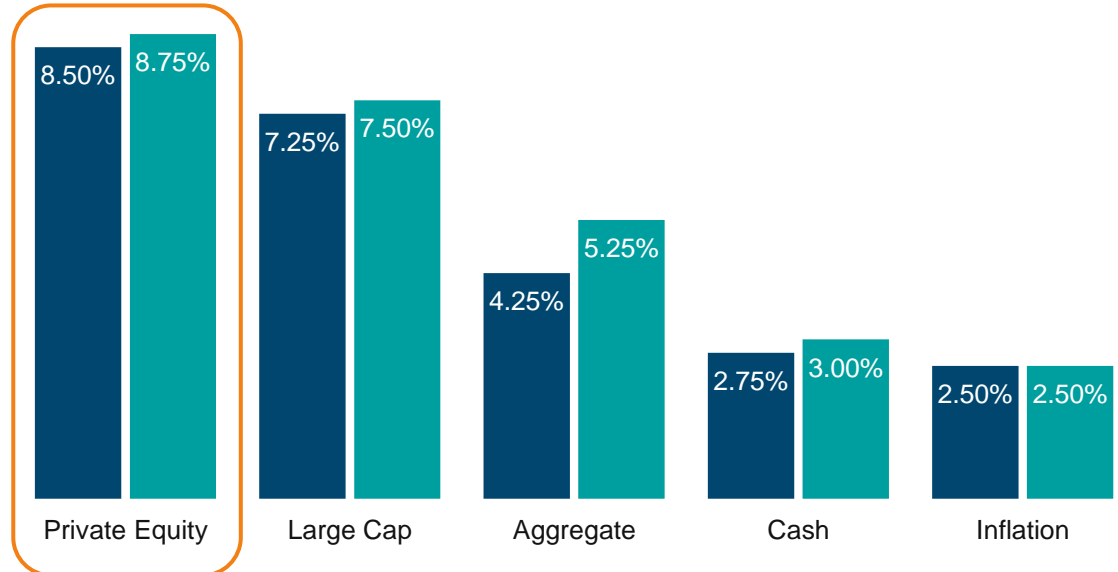
We see tremendous disparity between the best- and worst-performing private equity managers.

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

2024 private equity return projection: 8.75% (up 25 bps)

Return Projections

● 2023 ● 2024



Source: Callan

Private Credit

Background

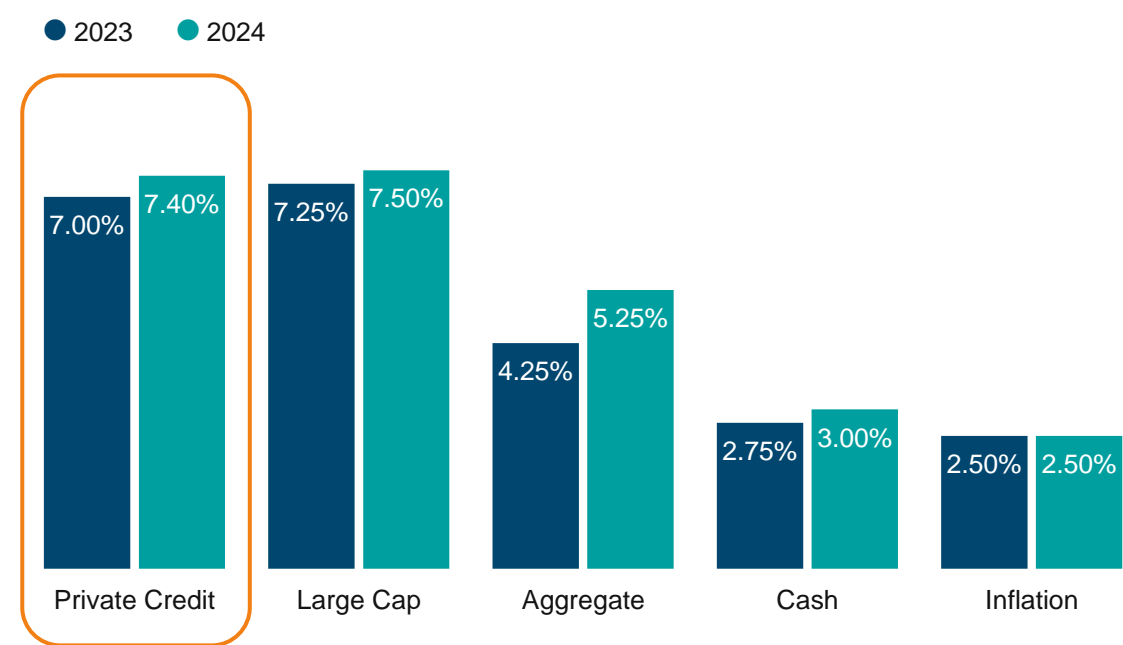
Return projection is anchored on middle market direct lending where yields have risen along with public fixed income yields.

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

2024 private credit return projection: 7.4% (up 40 bps)

Unlevered Yield	9.5%
Leverage	0.85x
Levered Yield	12.9%
Loss Ratio	2.4%
Net Arithmetic	8.5%
Net Compound Return	7.4%

Return Projections



Source: Callan
Return calculation assumes 5.5% cost of leverage and 1.3% unlevered loss ratio

Callan

**Detailed 2024 Expectations and
Resulting Portfolio Returns and Risks**

2024 Risk and Returns Assumptions

Summary of Callan's Long-Term Capital Markets Assumptions (2024–2033)

		Projected Return			Projected Risk	
		1-Year Arithmetic	10-Year Geometric*		Standard Deviation	
Asset Class	Index			Real		
Equities						
Broad U.S. Equity	Russell 3000	8.85%	7.65%	5.15%	17.40%	1.95%
Large Cap U.S. Equity	S&P 500	8.70%	7.50%	5.00%	17.00%	2.00%
Smid Cap U.S. Equity	Russell 2500	9.80%	7.70%	5.20%	22.00%	1.75%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.65%	7.65%	5.15%	21.40%	3.70%
Developed ex-U.S. Equity	MSCI World ex USA	9.25%	7.50%	5.00%	20.15%	3.75%
Emerging Market Equity	MSCI Emerging Markets	10.65%	7.70%	5.20%	25.60%	3.55%
Fixed Income						
Short Duration Gov/Credit	Bloomberg 1-3 Year Gov/Credit	4.25%	4.25%	1.75%	2.40%	3.70%
Core U.S. Fixed	Bloomberg Aggregate	5.25%	5.25%	2.75%	4.25%	4.70%
Long Government	Bloomberg Long Gov	6.20%	5.40%	2.90%	13.75%	4.80%
Long Credit	Bloomberg Long Credit	6.85%	6.30%	3.80%	11.90%	6.20%
Long Government/Credit	Bloomberg Long Gov/Credit	6.55%	6.00%	3.50%	11.70%	5.55%
TIPS	Bloomberg TIPS	5.10%	5.05%	2.55%	5.40%	4.30%
High Yield	Bloomberg High Yield	7.30%	6.80%	4.30%	11.75%	8.45%
Global ex-U.S. Fixed	Bloomberg Global Agg ex US	3.60%	3.15%	0.65%	9.80%	2.70%
Emerging Market Sov Debt	EMBI Global Diversified	6.75%	6.35%	3.85%	10.65%	7.70%
Alternatives						
Core Real Estate	NCREIF ODCE	6.85%	6.00%	3.50%	14.00%	4.00%
Private Infrastructure	MSCI GI Infra/FTSE Dev Core 50/50	7.30%	6.35%	3.85%	15.20%	4.80%
Private Equity	Cambridge Private Equity	12.15%	8.75%	6.25%	27.60%	0.00%
Private Credit	Cambridge Senior Debt Index	8.40%	7.40%	4.90%	15.70%	7.40%
Hedge Funds	Callan Hedge FOF Database	6.25%	6.05%	3.55%	8.20%	0.00%
Commodities	Bloomberg Commodity	5.45%	3.90%	1.40%	18.05%	3.00%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.50%	0.90%	3.00%
Inflation	CPI-U		2.50%		1.60%	
* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).						
** Projected Yields represent the expected 10-year average yield						

Source: Callan

2024 vs. 2023 Risk and Returns Assumptions

Summary of Callan's Long-Term Capital Markets Assumptions (2024–2033)

		Projected Return			Projected Risk	Projected Yield**	2023–2032		
		1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation		1-Year Arithmetic	10-Year Geometric*	Standard Deviation
Asset Class	Index								
Equities									
Broad U.S. Equity	Russell 3000	8.85%	7.65%	5.15%	17.40%	1.95%	8.75%	7.35%	18.05%
Large Cap U.S. Equity	S&P 500	8.70%	7.50%	5.00%	17.00%	2.00%	8.60%	7.25%	17.75%
Smid Cap U.S. Equity	Russell 2500	9.80%	7.70%	5.20%	22.00%	1.75%	9.60%	7.45%	22.15%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.65%	7.65%	5.15%	21.40%	3.70%	9.45%	7.45%	21.25%
Developed ex-U.S. Equity	MSCI World ex USA	9.25%	7.50%	5.00%	20.15%	3.75%	9.00%	7.25%	20.15%
Emerging Markets Equity	MSCI Emerging Markets	10.65%	7.70%	5.20%	25.60%	3.55%	10.45%	7.45%	25.70%
Fixed Income									
Short Duration Gov/Credit	Bloomberg 1-3 Year Gov/Credit	4.25%	4.25%	1.75%	2.40%	3.70%	3.75%	3.80%	2.30%
Core U.S. Fixed	Bloomberg Aggregate	5.25%	5.25%	2.75%	4.25%	4.70%	4.25%	4.25%	4.10%
Long Government	Bloomberg Long Gov	6.20%	5.40%	2.90%	13.75%	4.80%	4.55%	3.70%	13.50%
Long Credit	Bloomberg Long Credit	6.85%	6.30%	3.80%	11.90%	6.20%	5.75%	5.20%	11.75%
Long Government/Credit	Bloomberg Long Gov/Credit	6.55%	6.00%	3.50%	11.70%	5.55%	5.20%	4.65%	11.40%
TIPS	Bloomberg TIPS	5.10%	5.05%	2.55%	5.40%	4.30%	4.10%	4.00%	5.30%
High Yield	Bloomberg High Yield	7.30%	6.80%	4.30%	11.75%	8.45%	6.75%	6.25%	11.75%
Global ex-U.S. Fixed	Bloomberg Global Agg ex US	3.60%	3.15%	0.65%	9.80%	2.70%	2.70%	2.25%	9.80%
Emerging Markets Sov Debt	EMBI Global Diversified	6.75%	6.35%	3.85%	10.65%	7.70%	6.25%	5.85%	10.65%
Alternatives									
Core Real Estate	NCREIF ODCE	6.85%	6.00%	3.50%	14.00%	4.00%	6.60%	5.75%	14.20%
Private Infrastructure	MSCI GI Infra/FTSE Dev Core 50/50	7.30%	6.35%	3.85%	15.20%	4.80%	7.15%	6.15%	15.45%
Private Equity	Cambridge Private Equity	12.15%	8.75%	6.25%	27.60%	0.00%	11.95%	8.50%	27.60%
Private Credit	Cambridge Senior Debt Index	8.40%	7.40%	4.90%	15.70%	7.40%	8.00%	7.00%	15.50%
Hedge Funds	Callan Hedge FOF Database	6.25%	6.05%	3.55%	8.20%	0.00%	5.80%	5.55%	8.45%
Commodities	Bloomberg Commodity	5.45%	3.90%	1.40%	18.05%	3.00%	5.05%	3.50%	18.00%
Cash Equivalents	90-Day T-Bill	3.00%	3.00%	0.50%	0.90%	3.00%	2.75%	2.75%	0.90%
Inflation	CPI-U		2.50%		1.60%			2.50%	1.60%

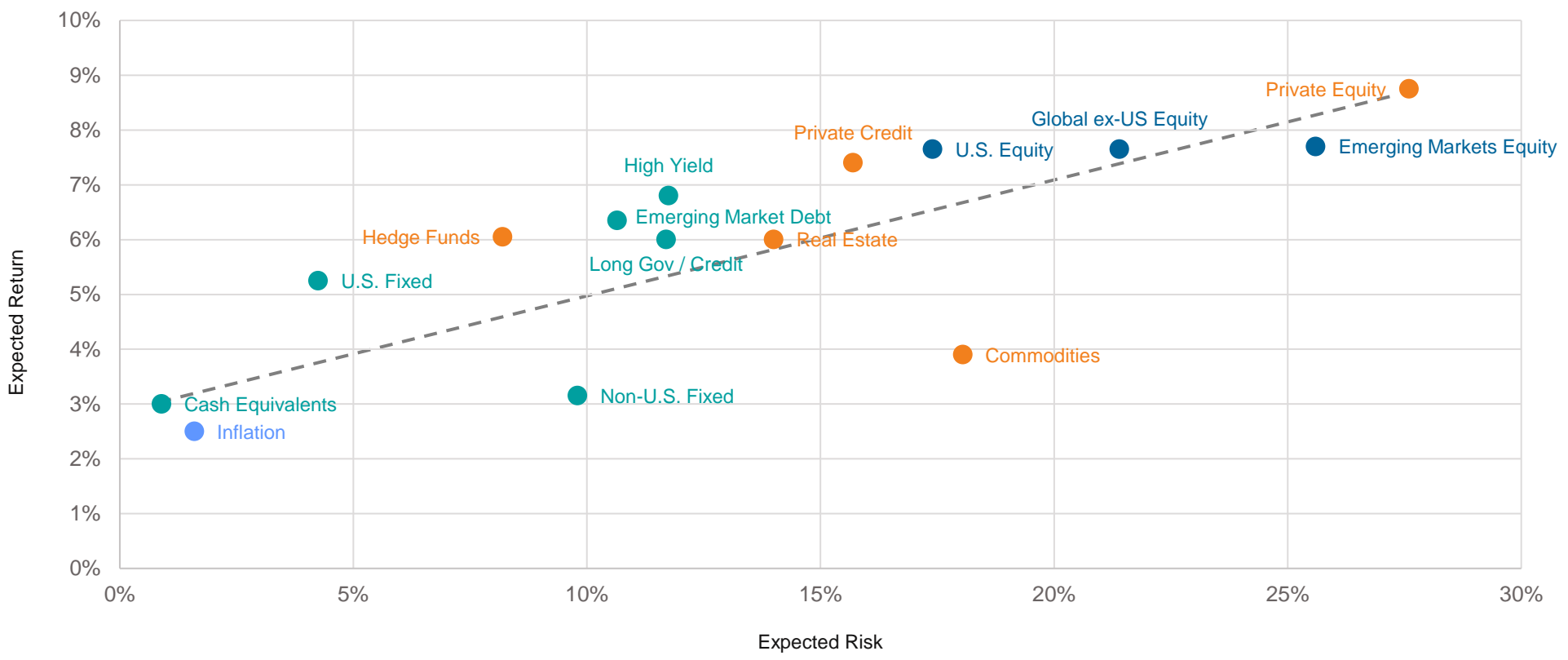
* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation).

** Projected Yields represent the expected 10-year average yield

Source: Callan

Risk Aversion

Visualizing Callan’s 2024–2033 Capital Market Assumptions



Source: Callan 2024–2033 return-risk capital markets assumptions

2024–2033 Callan Capital Markets Assumptions Correlations

Large Cap U.S. Equity	1.00																				
Smid Cap U.S. Equity	0.87	1.00																			
Dev ex-U.S. Equity	0.70	0.81	1.00																		
Em Market Equity	0.81	0.88	0.92	1.00																	
Short Dur Gov/Credit	0.05	0.01	0.04	-0.01	1.00																
Core U.S. Fixed	0.09	0.03	0.06	0.00	0.78	1.00															
Long Government	0.01	0.00	0.03	0.00	0.65	0.82	1.00														
Long Credit	0.40	0.35	0.35	0.35	0.62	0.80	0.69	1.00													
TIPS	-0.02	-0.05	-0.04	-0.07	0.55	0.70	0.54	0.52	1.00												
High Yield	0.74	0.74	0.71	0.74	0.13	0.15	0.02	0.45	0.06	1.00											
Global ex-U.S. Fixed	0.12	0.11	0.14	0.10	0.50	0.50	0.42	0.53	0.40	0.16	1.00										
EM Sovereign Debt	0.59	0.60	0.61	0.65	0.17	0.23	0.11	0.47	0.11	0.62	0.17	1.00									
Core Real Estate	0.33	0.33	0.33	0.33	0.17	0.22	0.08	0.31	0.12	0.30	0.14	0.22	1.00								
Private Infrastructure	0.47	0.47	0.45	0.47	0.14	0.18	0.10	0.33	0.08	0.34	0.18	0.32	0.65	1.00							
Private Equity	0.79	0.77	0.76	0.76	-0.04	-0.04	-0.08	0.27	-0.12	0.55	0.07	0.44	0.46	0.52	1.00						
Private Credit	0.67	0.67	0.64	0.68	0.04	0.06	-0.02	0.32	-0.05	0.55	0.11	0.47	0.26	0.27	0.65	1.00					
Hedge Funds	0.60	0.50	0.50	0.50	0.28	0.39	0.25	0.52	0.23	0.50	0.24	0.47	0.24	0.31	0.34	0.47	1.00				
Commodities	0.20	0.20	0.20	0.20	-0.04	-0.05	-0.10	0.04	0.00	0.18	0.05	0.15	0.16	0.15	0.16	0.14	0.17	1.00			
Cash Equivalents	-0.02	-0.07	-0.08	-0.08	0.27	0.16	0.12	0.04	0.14	-0.03	0.10	-0.02	0.02	-0.04	-0.04	-0.04	0.00	-0.02	1.00		
Inflation	0.00	0.02	0.00	0.02	-0.20	-0.22	-0.30	-0.20	0.25	-0.03	-0.12	-0.04	0.20	0.10	0.04	-0.04	-0.01	0.35	0.02	1.00	
	Large Cap	Smid Cap	Dev	Em Mkts	Short Dur	Core Fixed	Long Gov	Long Credit	TIPS	High Yield	Global ex-US Fixed	EM	Core Real Estate	Private Infra	Private Equity	Private Credit	Hedge Funds	Comm	Cash Equiv	Inflation	

Source: Callan

Callan's Capital Markets Assumptions: 10 Years (2024–2033)

Key changes from 2023

Summary of important changes for 2024 Capital Markets Assumptions

- Cash return raised to 3.0% from 2.75% (+25 bps)
- Core fixed income return up 100 bps, from 4.25% to 5.25%
- Public equity returns up 20–30 bps; equity risk premium over both cash and fixed income narrowed substantially
- Inflation held at 2.5%
- Private markets returns raised commensurate with public equity, including real estate; hedge funds reflect higher starting cash return

Allocations within equity reflect neutral weights to the broad markets

- Efficient SMID cap weight set to 15% of broad U.S. equity
- Efficient emerging markets equity weight set to 30% of global ex-U.S. equity
- Efficient U.S. / global ex-U.S. equity split to 60/40 neutral weight (not a change, but the market has now caught up to us!)

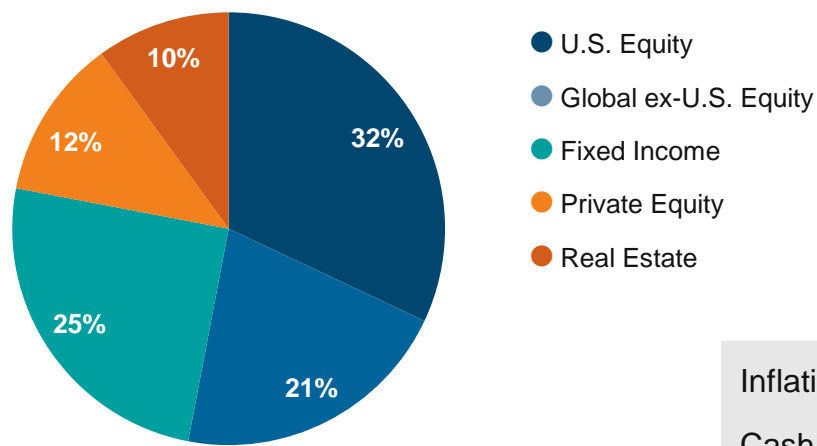
Broadened set of diversifying asset classes to consider

- Private credit
- Private infrastructure
- Inflation-sensitive equity – REITs, natural resources, global listed infrastructure

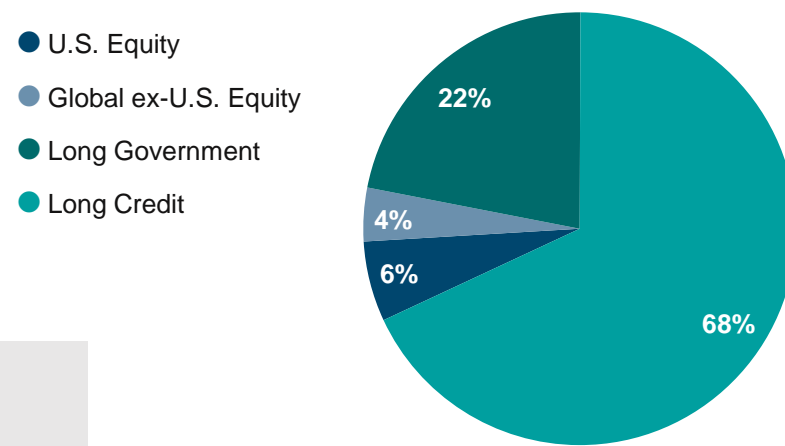
2024 vs. 2023

Total return and LDI

Total Return Typical Public Defined Benefit



LDI Corporate Defined Benefit



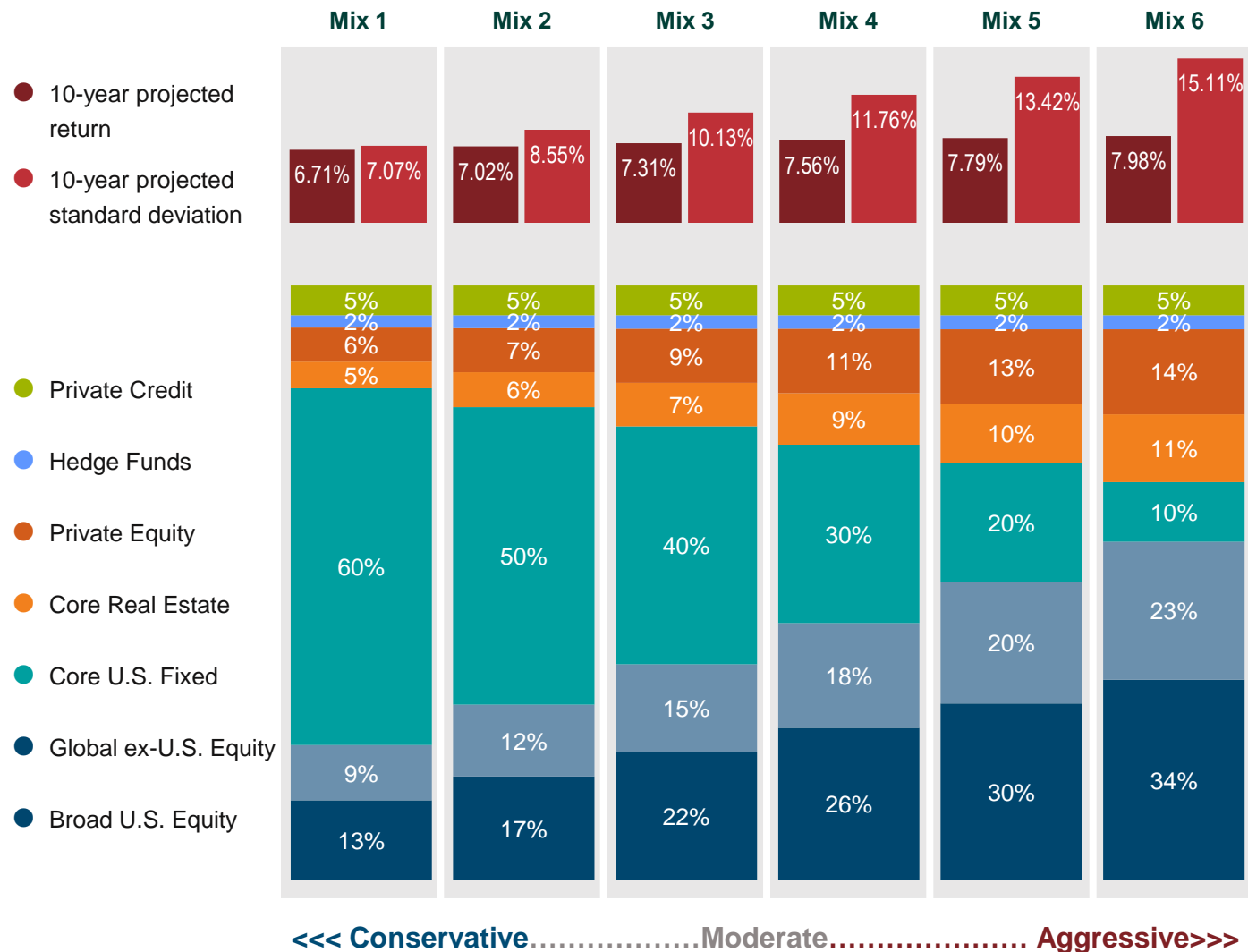
Inflation: no change
Cash: +25bps
Equities / Alts: +20–50bps
Fixed Income: +45–135bps

Mix Characteristics	2024	2023	Difference
Expected Return (nominal)	7.71%	7.26%	0.45%
Expected Return (Real)	5.21%	4.76%	0.45%
Standard Deviation	13.13%	13.42%	-0.29%
Sharpe Ratio	0.36	0.34	0.02

Mix Characteristics	2024	2023	Difference
Expected Return (nominal)	6.49%	5.34%	1.15%
Expected Return (Real)	3.99%	2.84%	1.15%
Standard Deviation	11.10%	10.94%	0.16%
Sharpe Ratio	0.31	0.24	0.08

Optimization Set – Public Stocks and Bonds Plus Alternatives

Asset mix alternatives



Private Credit:

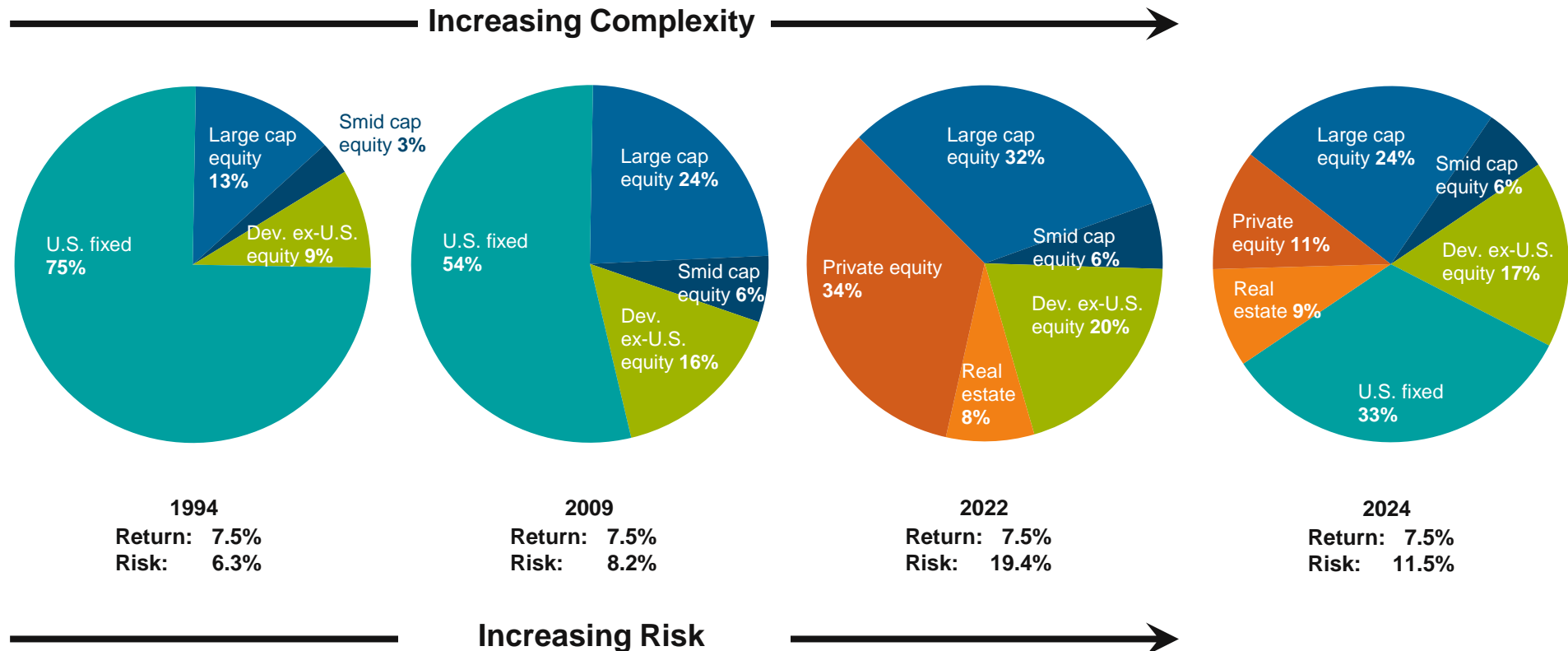
Absolute constraint: <5%

Note on public equity:

We tune large cap, small cap, developed ex-U.S. and emerging separately.

Prefer to optimize portfolios with broad U.S. and broad global ex-U.S. equity

7.5% Expected Returns Over Past 30 Years



In 1994, our return expectation for broad U.S. fixed income was 6.2%.

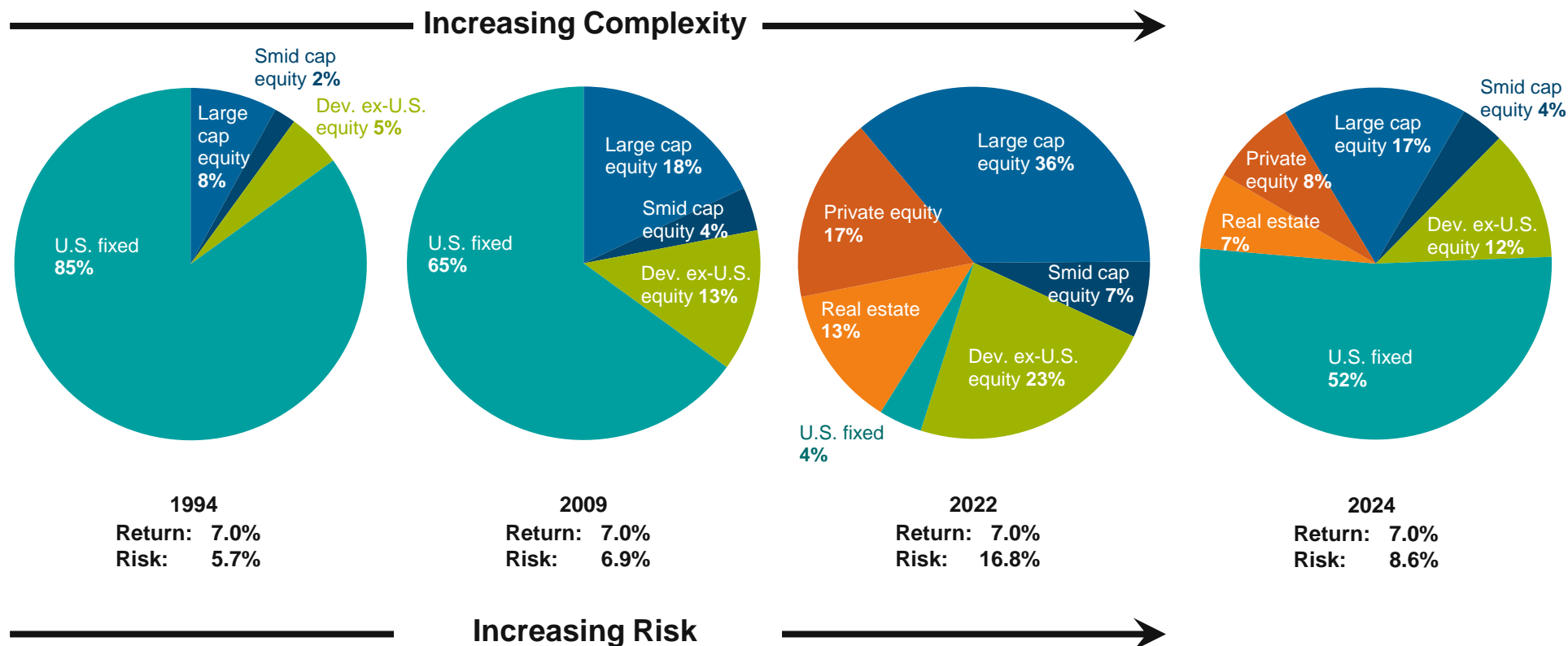
Just 25% in return-seeking assets was required to earn a 7.5% projected return.

15 years later, an investor would have needed almost half of the portfolio in public equities to achieve a 7.5% projected return.

In 2022 an investor was required to hold 100% in return-seeking assets (with over 40% in private markets investments) to earn a 7.5% projected return at over 3x the volatility compared to 1994.

Today's 7.5% expected return portfolio is much more reasonable than it was just two years ago, with a third of the portfolio in fixed income and a correspondingly lower level of risk.

7% Expected Returns Over Past 30 Years



In 1994, our return expectation for broad U.S. fixed income was 6.2%.

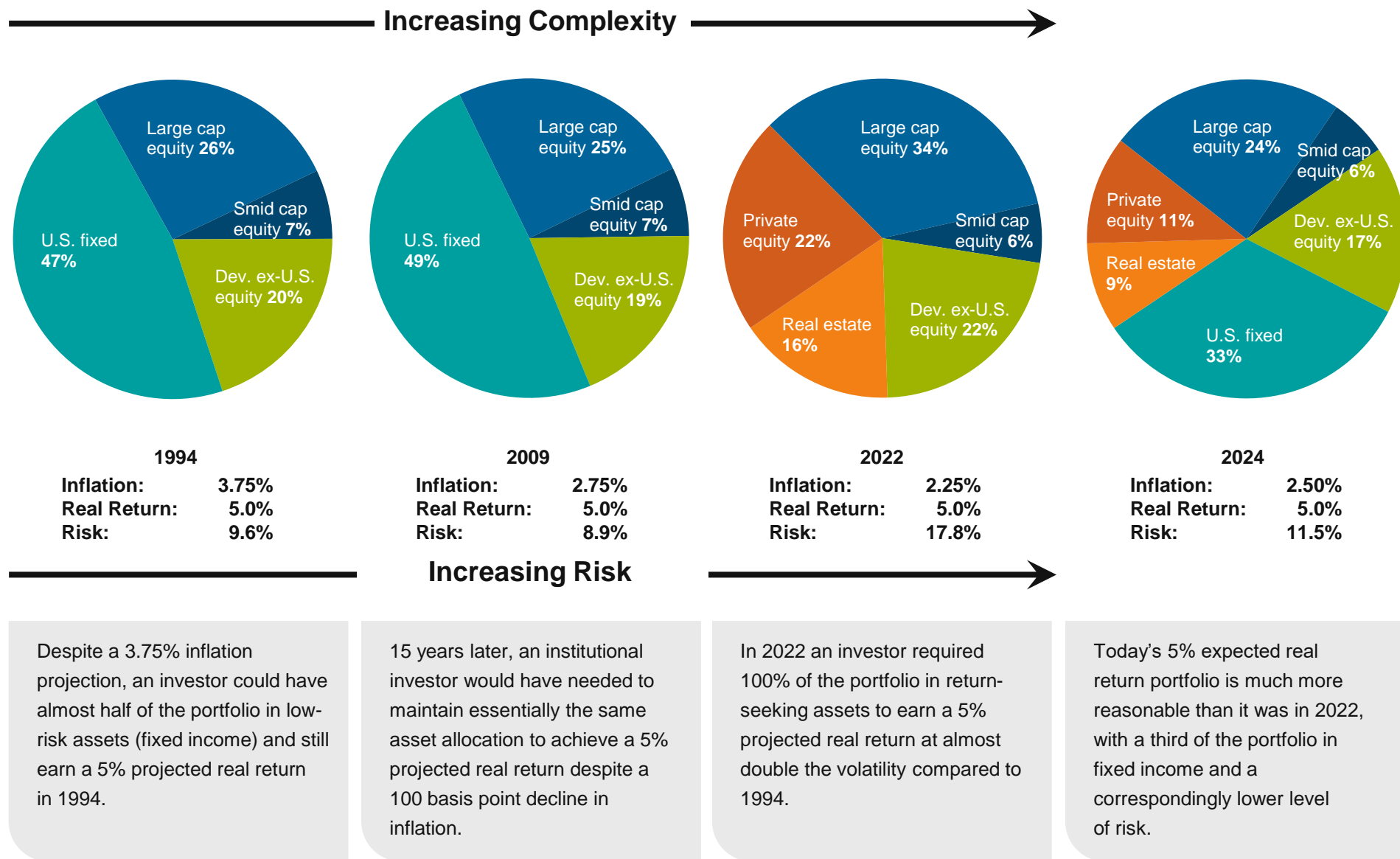
Just 15% in return-seeking assets was required to earn a 7% projected return.

15 years later, an institutional investor would have needed an additional 20% of the portfolio in public equities for a total of 35% to achieve a 7% projected return.

In 2022 an investor was required to include 96% in return-seeking assets (including 30% in private markets investments) to earn a 7% projected return at almost 3x the volatility compared to 1994.

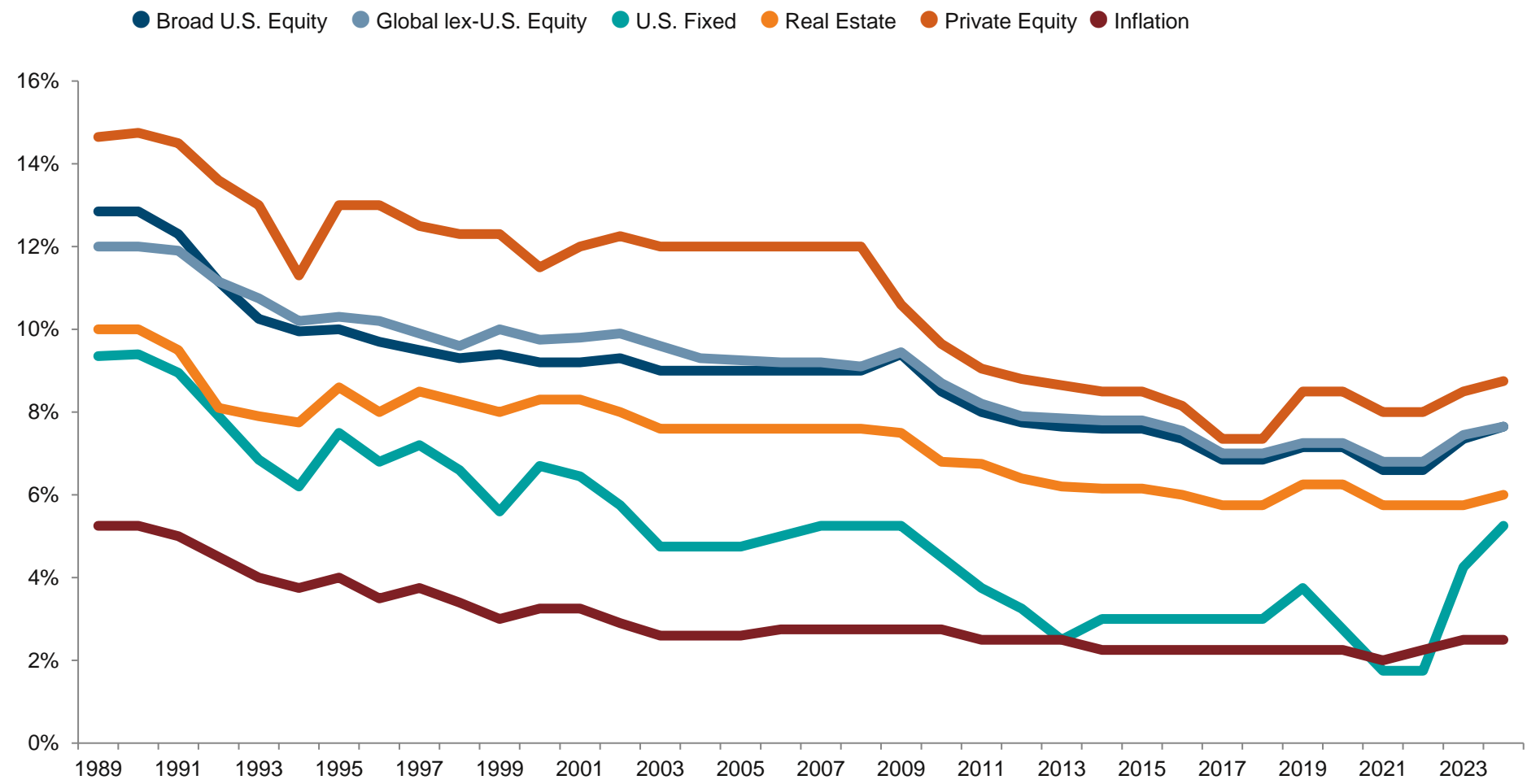
Today's 7% expected return portfolio is much more reasonable than it was just two years ago. The allocation to fixed income jumps to 52%, while risk is essentially cut in half. Private markets investments are also cut in half.

5% Expected Real Returns Over Past 30 Years



Return Projections: Major Asset Classes

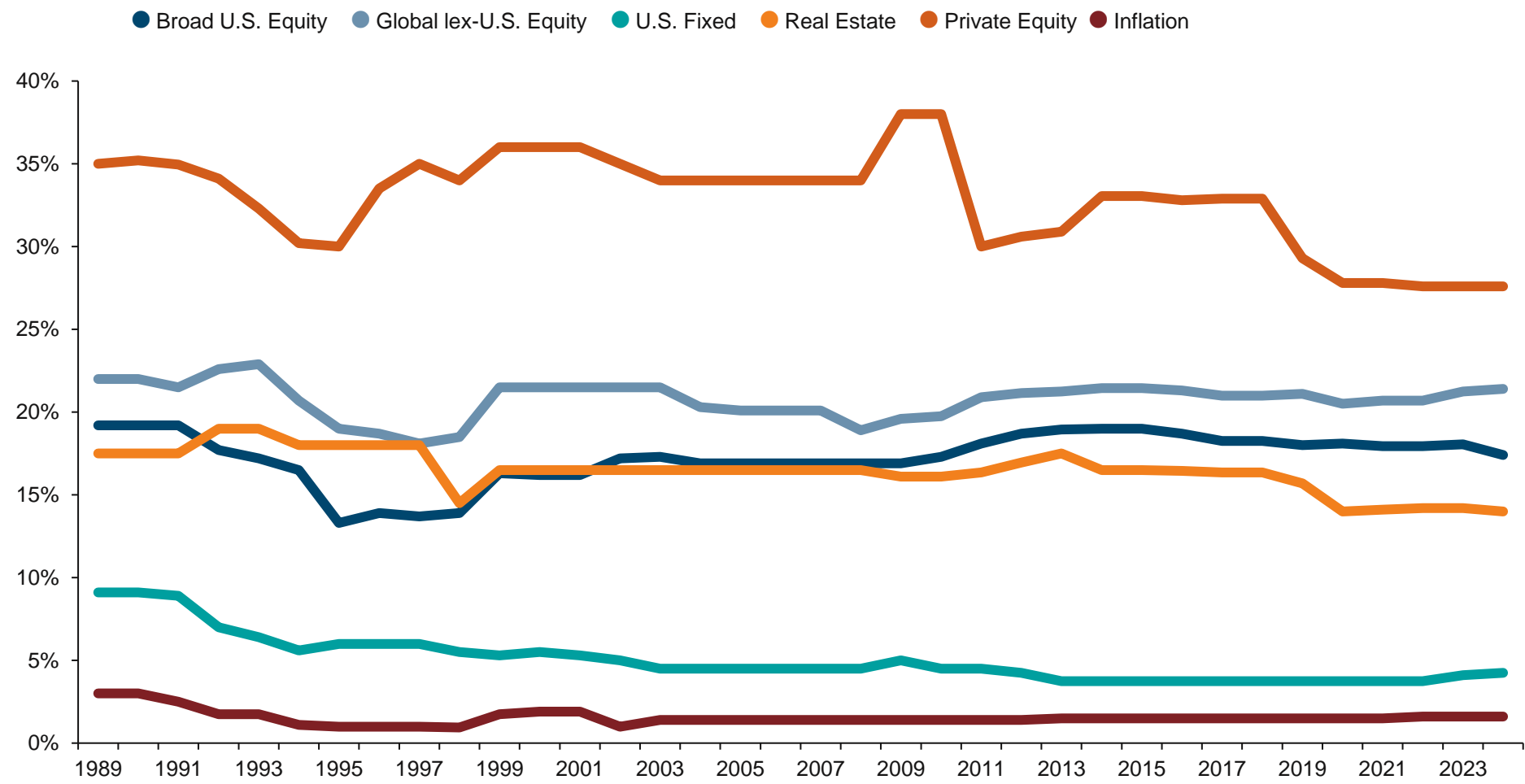
1989–2024



Source: Callan

Risk Projections: Major Asset Classes

1989–2024



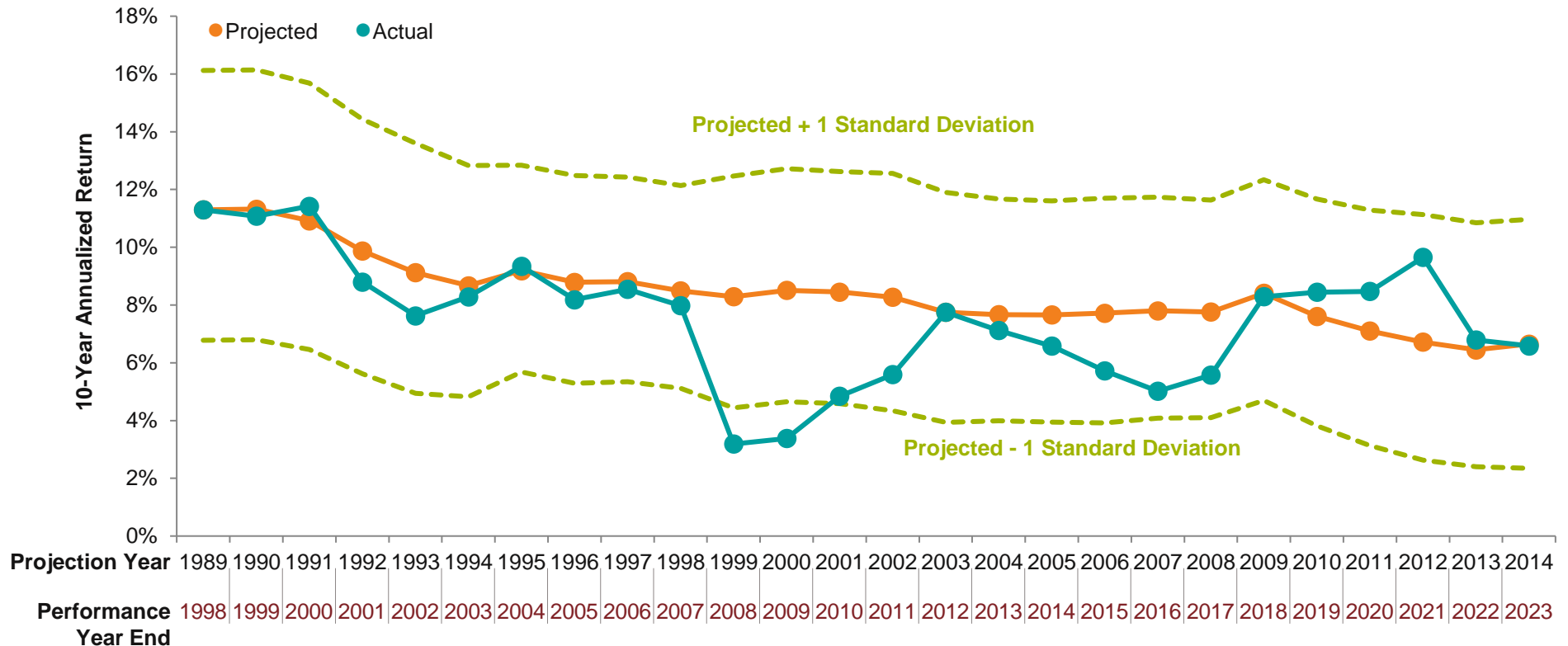
Source: Callan

Actual Returns vs. Callan Projections

Projection Years 1989–2014

Historical Comparison: Actual Returns vs. Callan Capital Markets Projections

Portfolio (60% Equity, 30% Fixed, 10% Real Estate)



- Our projections are generally within one standard deviation of the actual return experienced
- The glaring exceptions are the 10-year periods ended in 2008 and 2009 which contained not one but two major collapses in the equity market: the Dot-Com Bubble in 2001-02 and the Global Financial Crisis in 2008

Source: Callan

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Memorandum

To: CMERS Investment Committee

From: Erich Sauer, CFA, CAIA

Date: February 8, 2024

Re: Reams Asset Management Due Diligence Meeting September 13, 2023

Team: Erich Sauer and David Walters

Background

The Milwaukee Employees' Retirement System (ERS) hired Reams Asset Management (Reams) at the end of 2000 to manage a core-plus fixed income mandate. As of December 31, 2023, Reams managed \$728.2 million, or 12.7% of the Fund's assets. The firm's allocation grew notably in 2023 as part of the increased allocation to fixed income within the Fund.

Key Takeaways from the Recent Meeting

- Reams announced several personnel changes effective September 30, 2023. Bob Crider, a managing director and co-founder of the firm transitioned to a senior advisor role, formally rotating off the investment committee. Dimitri Silva, head of the newly formed global rates and currencies research team, was promoted to managing director and joined the investment committee. Todd Thompson was given the newly created title of deputy CIO to recognize his broad contributions and leadership.
- Dan Spurgeon, president of Reams, departed the firm as of October 2, 2023. His role was eliminated to reflect the long-term shift of operational functions to Reams' parent company, Raymond James Investment Management (RJIM). Mr. Spurgeon's responsibilities were assumed by Ed Rick, head of investment insights and development at RJIM, who also serves in the president role for other RJIM subsidiary boutiques.
- Chang Shin, chief compliance officer for Reams and Scout, departed the firm in October 2023. Reams' compliance function is now fully integrated into RJIM, which ERS staff views as a positive change.
- Neil Aggarwal was hired to lead the securitized products team upon the retirement of Stephen Vincent in April 2023. Mr. Aggarwal brings 20 years of experience trading and managing portfolios of asset-backed securities. The securitized team also includes two analysts with more than 20 years of experience to provide continuity for the team.
- Reams believes its recent office move from Columbus, IN to Indianapolis, IN has been successful, helping with recruitment as well as improving travel logistics for visitors.
- Reams expressed that they continue to maintain autonomy and independence for managing the business under the ownership of RJIM.

Firm Summary

During the fourth quarter of 2010, Reams was purchased by Scout Investments (Scout), which had been a wholly-owned subsidiary of UMB, a financial services company based in Kansas City, Missouri. Previously, Reams had been an independent, employee-owned investment management firm since its inception in 1981. UMB is better known for servicing retail investors and only offered equity products prior to its acquisition of Reams. Reams' fixed income strategies, track record, and presence in the institutional space led UMB to make the \$42 million acquisition.

In November of 2017, UMB sold its Scout and Reams subsidiaries to CTA, a multi-boutique asset manager and subsidiary of Raymond James Financial, Inc. Staff noted at the time that the multi-boutique manager model meant that Reams should be free to continue to operate its business just as it has in the past. Non-compete covenants apply to any key individuals who may decide to leave the firm, thereby incentivizing retention. The operating agreement Reams had with Scout, which kept Reams' operations independent, carried over as well. In October 2022, CTA rebranded as Raymond James Investment Management (RJIM).

In the first half of 2022, Reams relocated its main office to Indianapolis, IN and closed the Columbus, IN location. Leadership's rationale for the move included efficient commute times for the 75% of the investment team that resides in or near Indianapolis, improved access to talent when recruiting, and improved proximity to the Indianapolis airport. Reams reported that the move has been successful with no observed increase in employee turnover to-date.

Total firm assets under management have remained fairly stable since our last meeting, with \$23.5 billion as of June 30, 2021 and \$23.8 billion as of June 30, 2023. The Core Plus strategy the ERS is invested in is Reams' largest strategy, with \$7.3 billion in assets across 38 accounts, an increase in assets from the ERS' last visit, when the product had \$6.8 billion across the same number of accounts. The AUM increase can be attributed to inflows in other types of institutional accounts including endowments & foundations, hospitals, not-for-profit, mutual fund, and commingled funds.

The fixed income team has 16 members, an increase of three since our last visit. Mark Egan, managing director, remains the lead portfolio manager on the Core Plus strategy. Mr. Egan has been with firm since 1990. In 2021, Todd Thompson was promoted to managing director and assumed Tom Fink's investment committee and portfolio management responsibilities upon Mr. Fink's retirement. Mr. Thompson joined Reams in 2001 and leads the credit research team. He was recently given the title of deputy chief investment officer to recognize his contributions across strategies and leadership of the entire investment team.

In September 2023, Bob Crider, a managing director who co-founded Reams in 1981, transitioned off the investment committee and now serves as a senior advisor. In conjunction with Mr. Crider's transition, Reams promoted Dimitri Silva to managing director and added him to the investment committee. Mr. Silva joined Reams as a portfolio manager in 2021 to provide a background in global interest rates and currencies that the firm felt it was lacking. Reams established a formalized team to research global rates and currencies with Mr. Silva as its head to complement its existing credit and securitized research teams. Antonina Tarassiouk, with nine years of experience in currency management, was added to the global rates and currencies team in 2022 to further expand their capabilities.

Head of the structured products research team, Stephen Vincent, retired in April 2023. Reams hired Neal Aggarwal in 2022 to take leadership of the securitized team upon Mr. Vincent's retirement. Mr. Aggarwal comes to Reams with 20 years of experience managing portfolios and trading in mortgage and other asset-backed securities. The securitized team also has two very experienced analysts with a combined 37 years of experience at the firm. Callan and ERS staff will continue to monitor the evolution of this team, however, we believe Reams is well situated to navigate this transition.

During the low-rate environment, Reams consistently noted that they viewed Unconstrained and Low Duration as the strategies most likely to drive asset growth, however, given the rise

in yields, they have seen renewed interest in Core and Core Plus. As noted above, Core Plus remains the largest strategy. The Raymond James transaction brought in a larger distribution network than provided by UMB which is expected to fuel future growth. Reams did note that any personnel changes and compensation decisions are still addressed by Reams rather than RJIM. Reams has had no problems filling roles when needed and plans to build out its bench of younger talent with additional new hires over the coming years.

Investment Portfolio Construction Process

Reams' investment philosophy is based on its belief that volatility is an important driver of performance in the fixed income market, since future volatility is often greater than the market anticipates, and can lead to attractive investment opportunities. The portfolio team adopts a long-term macroeconomic outlook and then builds a trading strategy around the opportunities created by the short-term volatility in interest rates and security prices.

Reams' approach to investing has not changed since ERS' last visit. Reams combines a macroeconomic and bottom-up research-oriented process when it constructs the portfolio. The first step is the duration decision. To do this, Reams uses a proprietary model that estimates the inflation-adjusted return on Treasury bonds. After the duration decision, Reams determines its sector allocation by comparing the valuations of each sector and the opportunities uncovered by its research team. The final step in the portfolio construction process is individual security selection, which depends on the sector and industry being researched. In general, Reams approaches individual securities from a total return view and focuses on securities that may benefit from a dynamic interest rate and credit environment.

Reams has recently begun leveraging its currency team to add foreign currency exposure to Core Plus portfolios through currency forward contracts as another tool to generate alpha. After consultation with Callan, the Board did not approve a guideline revision request at its September 2023 meeting that would have allowed Reams to use non-hedging currency forwards in the ERS portfolio. The rationale for not approving the request was that Reams serves as a liquidity source during turbulent markets and the use of currency forwards may increase portfolio volatility and diminish the ability to protect against downside risks. Callan felt that it was prudent for Reams to focus on its core strengths and maintain its current role within CMERS' fixed income portfolio.

Research Process

Potential investments are separated between sectors: those with credit risk (i.e., corporate bonds), those that Reams views as not having credit risk (i.e., mortgage and asset backed securities, CMO's), and global (i.e., foreign currency, non-US debt). Reams relies primarily on internal research. The professionals involved in the investment process are centrally located to help foster open communication. Mr. Thompson leads the investment team in brief credit meetings daily and in-depth reviews weekly. The senior investment professionals meet weekly to review portfolios, cash flows, economic releases, and securities. As a complement to the daily and weekly meetings, Reams also has an investment committee, comprised of Mr. Egan, Mr. Thompson, and Mr. Silva, with advisement from Mr. Crider, that meets on a monthly basis to review the portfolio strategy and structure. Mr. Thompson indicated that Reams feels good about the Core opportunity set and is confident in the firm's ability to generate alpha and strong returns without use of the "plus" sectors (i.e., high yield, foreign currencies).

Reams places a substantial emphasis on scenario analysis. The primary inputs for the scenario analysis are interest rates, credit spreads, and option-adjusted spreads. Scenario

analysis allows Reams to identify bonds that will perform the best under likely scenarios. At the same time, many securities are rejected as candidates for the portfolio based on the downside risk the analysis uncovers. The result of the scenario analysis allows Reams to rank each security based on its risk-adjusted return and select the bonds with the most attractive risk and return trade-offs for the portfolio. As a result, Reams' portfolio will often have a bias towards bonds that are securitized and at the top of the credit structure. Reams has been refining an ESG-related tail risk scenario in its analysis to quantify the potential impact of these risks on the financial performance of the security or borrower.

Credit analysts rotate sectors every two to three years, with the goal of gaining a deeper understanding of the overall market and allowing analysts to make relative value calls, instead of just recommendations from a certain sector. The only exception to this rule relates to the transportation sector, in which Mr. Egan covers continuously without rotation to other analysts. An additional item to note is that Reams does not utilize the standard sector naming convention and relies on their own categorization system on the credit side. Specifically, Reams consolidates cyclicals with non-cyclicals, but breaks out autos and retail sub-sectors.

Mr. Thompson likes the analysts to think of themselves as "credit managers" as opposed to just analysts. Reams' view is that other firms' personnel structures are often organized with distinct sector or regional specialists and coordination of ideas are not as fluid. "Max uniformity" is a concept stressed by Reams, meaning the same investment idea is implemented across all strategies, while only tweaking the maturity depending on the objective.

Portfolio Risk Controls

Reams monitors the majority of the portfolio's risk characteristics daily. Reams has internal portfolio diversification risk controls that limit the amount it may invest in a single issuer to the greater of 1% or 1.5 times the issuer's weight in the index. Reams also limits the amount that can be invested in any one industry to 15%. In volatile credit markets, such as those experienced during the last financial crisis, the investment committee has selectively made exceptions to these limits when it has a strong conviction for an issuer or industry. Reams is always bound by, and has not breached, the ERS' client guidelines that limit issuer concentration to 2% at the time of purchase. Finally, Reams has indicated in the past that the portfolio allocation to corporate bonds will never exceed 60% and the allocation to commercial mortgage-backed securities (CMBS) will never exceed 20%.

When Reams utilizes index credit default swaps to add high yield exposure, they must also keep a corresponding reserve of cash in CMERS' portfolio to avoid the creation of leverage. This cash collateral is required by CMERS' guidelines to be in the form of cash, cash equivalents, or U.S. Treasury securities, and Reams has specialized internal reporting to monitor the required amount of collateral on a daily basis.

Reams takes a total return view for the portfolio and is largely benchmark agnostic with respect to sector and security allocations. Thus, the risk controls Reams employs focus more on downside protection from losses than tracking error. This is why Reams' tracking error often increases when volatility in the fixed income markets increases.

Portfolio Compliance and Personnel Transactions

Reams implements a pre- and post-trade compliance monitoring system through Bloomberg that notifies the personnel of a potential violation before the trade is completed. In addition, a compliance monitor check runs overnight for the post-trade state of compliance and is

reviewed daily by the compliance/risk analyst, who works with the investment team to decide on a course of action to address violations. Although Reams does not put a single individual in charge of monitoring the ERS' guideline compliance, it has a series of checks and balances in place to identify possible issues. There are three separate areas that share this responsibility, including administration, portfolio management, and portfolio accounting.

In October 2023, Reams eliminated the position of Dan Spurgeon as president at Reams. This move reflects the long-term plan for Raymond James to provide increased support across non-investment functions. Mr. Spurgeon's duties will be absorbed by Ed Rick, the head of investment insights and development at RJIM. Mr. Rick also serves as president for two other boutique firms owned by RJIM, Eagle Asset Management and Scout Investments.

At the same time, Chang Shin, the CCO at Scout, departed the firm. This gave Reams the opportunity to restructure their compliance function. They brought in an individual, Mark Samardzija, who is based in Reams' Indianapolis office and is solely dedicated to investment portfolio compliance. Mr. Samardzija is an RJIM employee who reports directly to Damian Sousa, CCO of RJIM. Reams indicated that Mr. Samardzija will eventually be named CCO of Reams. All other compliance functions such as personal trading, advertising/marketing review, and social media monitoring will be handled by centralized teams at RJIM. ERS Staff views this compliance structure as a significant upgrade over the old structure, where Mr. Shin was responsible for all aspects of compliance and was based in Kansas City, MO.

Trading

Reams does not have a dedicated trading team and acknowledges that this may be unique compared to other fixed income managers. While all trades require the approval of one of the managing directors, each investment team member acts as both an analyst and a trader and is expected to use his or her experience to seek best execution. Scott Rosener, a member of the credit research team with 18 years of experience at Reams, was made head of trading at Reams in the second half of 2023. This position was created to recognize Mr. Rosener's leadership with respect to Reams' trading and enable a consistent approach across sectors.

Global Trading Analytics, the ERS' transaction cost measurement provider, reports that Reams' trading costs have been lower on average than its institutional peer universe over the eight quarters ending in December 31, 2023. Reams feels that their typical position as a buyer when the market is looking to sell, and a seller when the market is looking to buy, allows them trade at advantageous prices.

Excluding Treasury and Agency securities, turnover during the three years ending December 31, 2022 was 147%, higher than observed during our last visit. The period from 2020 through 2022 was extremely volatile and Reams undertook numerous sector rotations, which resulted in increased portfolio turnover. Reams noted that much of their trading is "cut and paste", meaning it can be executed efficiently with the majority conducted electronically through the Bloomberg Trading System. Because of the rationale for increased turnover, and straightforward nature of the trade process, Staff is not concerned by the continued increase in portfolio turnover at this time but will continue to monitor this trend.

Disaster Recovery and Information Technology

Greg VanDuesen is the VP of Operations and Technology. Reams has a disaster recovery program in place and tests its plan twice a year. The most recent test took place in September 2023 and the test confirmed the reliability of the plan. Mr. VanDuesen noted that

Raymond James currently guarantees that any downtime due to system outages will be one day at a maximum. This is longer than industry standard for asset management so RJIM is working towards a maximum downtime of four hours. Staff will monitor the firm's progress on improving expected recovery time.

Raymond James provides, administers, and supports the IT infrastructure, including the cybersecurity program. Accordingly, Reams no longer has IT hardware or servers on-site and Reams abides by all of Raymond James' related policies. Proprietary software development for investment tools will continue to be performed by Reams' in-house staff.

Since the closing of the CTA acquisition in 2017, Reams has made significant adjustments to their disaster recovery plan mentioned above. Reams' accounting system, PORTIA, is now backed-up via a cloud-based system. Raymond James' primary data centers are located in Denver, CO and Southfield, MI. The RJIM information technology team also helps support Reams' IT team.

All Reams employees use laptops exclusively. This allows for work to be done remotely as needed. The firm views this as a critical pillar of its disaster recovery program and views routine remote working situations as test runs for remote work in the event of an office closure.

Performance

As of December 31, 2023, Reams has outperformed its benchmark in all time periods shown. While the sharp increase in the level of interest rates negatively impacted returns in recent years, Reams navigated the shift well, and the current market environment should allow them to capture attractive total returns in the fixed income market going forward. Net of fee returns compared to the benchmark are provided in the following table.

	1-Year	3-Year	5-Year	10-Year	Since Inception (1/1/2001)
Reams (Net)	6.6%	-2.4%	3.4%	3.0%	4.9%
<i>Bloomberg Agg Index</i>	5.5%	-3.3%	1.1%	1.8%	3.7%

Conclusion

Overall, Reams has applied its approach consistently over time and appears capable of continuing to provide ERS with a very good core plus fixed income mandate that is a nice complement to ERS' other fixed income managers. Reams has undergone a number of organizational changes recently, but they see to have navigated them well. ERS Staff is particularly encouraged by the improved structure of the compliance department. Still, we will continue to monitor these organizational changes closely.

Memorandum

To: CMERS Investment Committee
From: Erich Sauer, CFA, CAIA
Date: February 8, 2024
Re: Apogem Capital Due Diligence August 23, 2023
Team: Erich Sauer and Tom Courtright

Background

Apogem Capital (Apogem) is a private equity fund of funds manager in the Small Company Buyout space, defined as partnerships with a fund size below \$1 billion (typically below \$750 million and a special emphasis on funds below \$500 million), targeting companies with enterprise values below \$150 million. CMERS' commitments with Apogem are listed below:

- \$30 million to Fund VI in 2015
- \$15 million to Fund VIII in 2018
- \$15 million to Fund X in 2022
- \$15 million to Fund VII in 2016
- \$35 million to Fund IX in 2020
- \$30 million to Fund XI approved in 2023
pacing study

Key Takeaways from the Recent Meeting

- Apogem Capital was formed through the combination of three New York Life subsidiaries (PA Capital, GoldPoint, and Madison Capital).
- Key professionals for our strategy remain in place, with additional team resources as a result of the larger combined firm.
- The combined firm also has allowed for increased resources in areas such as operations, information technology, and legal.
- While Chris Stringer, Head of Private Equity, served as interim CEO of the newly combined business, a permanent CEO was recently appointed. This will allow Mr. Stringer to shift more focus back to the Private Equity side of the business.
- While the changes to the overall business are significant, they are largely positive, and ERS Staff remains supportive of continued commitments with Apogem.

Firm Summary

Apogem Capital (Apogem) was formed in April 2022 through the combination of three boutiques owned by New York Life Investment Management (NYLIM), PA Capital, GoldPoint Partners, and Madison Capital. PA Capital, the firm that established the small buyout strategy ERS invests in, was founded in 1997 by Lou Moelchert, who began making investments in alternatives for the University of Richmond endowment in the early 1980s, to provide investment management of both hedge fund and private equity strategies.

PA Capital began investing in the small company market with the inception of the firm in 1997, and over the years added capabilities in secondaries, co-investments, private real assets, and GP stakes. The business combination that created Apogem added additional capabilities in middle-market private equity from GoldPoint, and private credit from Madison Capital. This has created a firm that Apogem believes can be more valuable to the managers they partner with, as they now have the capability to invest across the capital structure, and follow GPs as they grow their funds and move upmarket.

As part of the business combination, NYLIM purchased the minority interest in PA Capital that was held by employees. Apogem is 100% owned by NYLIM.

Chris Stringer, former PA Capital President, served as interim CEO after the business combination, while also remaining Head of Private Equity for Apogem. In January 2024, Apogem announced that Josh Niedner, a former Madison Capital employee who rejoined the business as Head of Private Credit in late 2023, would become the permanent CEO of Apogem. Mr. Stringer will move to a newly created President role. Both Mr. Stringer and Mr. Niedner will continue as heads of Private Equity and Private Credit, respectively.

In addition, the senior professionals responsible for the funds we have invested in, Kee Rabb and Louise Smith, remain in place. PA Capital was extremely open with CMERS Staff and Callan, allowing us to closely follow the transition, and believe that the private equity team is ultimately benefitting from the enhanced resources that are available as part of a larger firm.

GP Stakes was launched as a partnership between PA Capital and Ottawa Avenue Private Capital (OAPC) in 2020. Mr. Stringer commented at the time that the launch of GP Stakes gave PA Capital another tool within Private Equity that allowed them to move closer to their goal of becoming a capital solutions firm to other GP's. Mr. Stringer noted that their information advantage in lower-mid markets would be helpful in identifying GPs to partner with, and the potential for a future GP stake investment would make PA a more attractive LP when attempting to access capacity constrained funds.

Apogem had 34 private equity investment professionals as of August 1, 2023. This compares to 18 at our last meeting, before the firms combined. The team responsible for managing our portfolio has benefitted from the increased headcount, growing from 9 individuals to 19. One senior addition to the team is a legacy Goldpoint employee whose focus will be on managing legacy Goldpoint investments and legacy clients, but the rest are primarily junior employees that increase the bandwidth of our team to monitor both new and existing investments. The team is led by Ms. Rabb and Ms. Smith, who have 22 and 17 years of private equity experience, respectively.

Apogem typically launches a new small buyout fund every two to three years. Funds VI and VII each raised \$350 million, while fund VIII increased in size to \$420 million. Fund IX raised \$473 million, while fund X has a target of \$500 million. ERS staff believes this increase in fund size over time is manageable, particularly given the increase in co-investment allocation and manager diversification discussed below.

Investment Philosophy and Process

Apogem's investment objective is to create a portfolio of approximately 15-20 best of breed Small Company Market fund managers. This is an increase from the 12-15 target in prior funds, which Ms. Smith explained to us was with the explicit goal of being slightly more diversified. The increased diversification should serve to mitigate risk in the fund, while still keeping the manager count small enough that standout managers can have a genuine impact on performance. ERS Staff is supportive of the increased diversification.

The fund targets an equal weight for each underlying manager, but this can vary slightly if some managers are oversubscribed and cut back allocations. Allocations to managers typically fall between 5-8%, but staff has been told in the past that 10% is within the realm of possibility. Allocation targets take co-investments into account, so the fund may make smaller commitments to certain managers if that manager is expected to be a good source of co-investments.

The majority of underlying funds will be highly sought-after managers to which Apogem has access due to longstanding relationships, but a handful of funds will be emerging managers that Apogem views as having the prospect of developing into a brand name. Beginning with Fund VII,

our funds include an allocation to secondaries and co-investments with the goal of mitigating the “J-Curve” and increasing fund diversification. The target to co-investments has grown over time, reaching 30% for Fund IX, and has stayed at that level for Fund X.

Apogem is a bit unique among our primary funds managers in that typically only half of the investments in a given fund will be re-ups with existing managers (Abbott and Mesirow tend to have a higher percentage) and it is rare to see the same partnership in consecutive Apogem funds. This means that as we have built our program with Apogem, we have gained additional diversification as new underlying managers were added to subsequent funds. It also means that, should we ever have to skip an Apogem fund, we will miss a set of managers and may not get exposure to them in the next fund.

Apogem’s due diligence process is broken out into three stages. The first stage is screening. Apogem maintains a comprehensive database through eFront that tracks over 3,500 GPs in the lower middle market. The investment team evaluates these managers using a quick screen that tracks pertinent categories: experience and accomplishments at both the firm and individual level, investment strategy, team overview, process, deal flow, post-investment value creation, track record, and risks.

The next stage in the investment process is preliminary due diligence, which consists of a formal, in-person meeting with a prospective fund manager. The investment team generally meets with over 50% of the fund managers that are officially fundraising in a given year. In addition, the team is also familiar with many of these managers due to previous interactions outside the formal fundraising process. After a meeting, the team discusses how the manager rates on the previously mentioned scorecard. This rating is both on an absolute basis, as well as relative to other managers currently in the market. If a manager is viewed as a potential candidate, the team will run a preliminary quant analysis, and make targeted reference calls with the Apogem network.

The third stage in the process is full due diligence. Full due diligence involves members of the investment team visiting the manager’s home office. This visit allows the investment team to confirm track record and deal attribution in the underlying fund, discuss each investment and the decision making process in detail, and put the prospective manager’s team through a Human Capital Assessment process.

The Human Capital Assessment is what really differentiates Apogem’s investment process. It is a data-driven approach to evaluating an investment team’s ability to effectively execute their strategy and meet their objectives. The analysis allows Apogem to look for specific skill sets that they believe are necessary for success in a given fund size and strategy. It consists of one-on-one interviews, with the goal of understanding each team member’s role, patterns of success, patterns of failure, and views on other team members’ roles, strengths, and weaknesses (a 360 degree review process).

Once they have identified a manager with the desired skill set, the Human Capital Assessment helps establish themes for the remainder of the due diligence, including identifying which members of the team are critical to the success of the firm going forward, and if they still have an appropriate level of engagement; identifying which team members should be the focus of background checks; and identifying which team members should be included in the key person provision.

The Human Capital Assessment process is also used for internal evaluations of Apogem’s staff. This helps foster successful teamwork among the investment staff, and also allows the firm to invest in coaching to improve any potential weaknesses identified for individual employees.

Apogem's operational due diligence (ODD) team consists of three members, and is led by Ryan Plante, who reports to John Grady, the firm's Chief Financial Officer. Each member of the operational due diligence team speaks with key individuals on the operations, accounting, and business side of the underlying manager to understand and assess the operational infrastructure and control environment. The ODD team has veto power over all investments, although the veto is used infrequently, due to the collaborative nature of the investment process.

The final piece of the investment process involves continuous monitoring of the underlying managers. The investment team is in contact with managers in the fund at least quarterly, and seeks to monitor each manager's specific portfolio company investments. Apogem believes that this continuous involvement helps identify potential problems and provides opportunities to be helpful to fund managers, as well as allows the team to make better re-up decisions.

Compliance and Internal Controls

Compliance is overseen by Kevin Bopp, Chief Compliance Officer for NYLIM. He is supported by Kevin Medina, Deputy CCO, Sean O'Donnell, Corporate Vice President, and Katie Duffy, Corporate Vice President. In addition, Apogem regularly consults with ACA Compliance Group, as well as the firm's outside counsel, accountants, and auditors.

There is a firm-wide compliance policy that private equity employees must follow that includes: Pre-clearance of personal trades; monitoring of broker statements; filling out an annual compliance questionnaire, attendance of ethics training, and maintenance of required securities licenses. New employees undergo compliance training with the firm's independent compliance service provider, ACA. On an annual basis, employees must certify that they have read and understand the compliance manual. In addition, all employees must abide by the firm's Code of Ethics which conforms to SEC Rule 204A-1.

Apogem is an SEC Registered Investment Adviser. The last SEC examination began in Q2 of 2020 with Apogem's predecessor entity (New York Life Investment Alternatives and its Relying Advisers PA Capital, GoldPoint and Madison Capital). The exam concluded in December 2020, and produced no material findings.

As a result of the merger, Apogem now has a robust internal legal team. Because of the nature of Private Equity contracts, the firm still makes extensive use of third-party expert attorneys, but the in-house legal team manages this process, making it more efficient.

The business combination also brought with it a 29-person Fund Administration team from Goldpoint. The team is led by Henry Lehmann, Managing Director. Mr. Lehmann has over 25 years experience in the accounting industry, and had been with Goldpoint for 16 years prior to the creation of Apogem.

The administration group brings another level of expertise that PA Capital did not have as a standalone entity. For fund X, they are able to do the administration in-house. For our prior funds that have outsourced administrators, Apogem's administration group simultaneously calculates fund values with data received from the underlying managers, providing an additional crosscheck. Regardless of the administration model, all funds are audited annually by PWC, and all received clean opinions in 2022. The fund administration team is also audited at least annually by New York Life's audit department.

Apogem has an eight person valuation committee that meets (in-person or virtually) at least quarterly to ensure that the valuation processes are being applied in a manner that is fair to both

Apogem's funds and investors, and are consistent with stated valuation procedures in the funds' governing documents.

Information Systems and Disaster Recovery

The increased resources made available through the larger firm also extend to the IT department. While PA Capital did not have a Chief Technology Officer (CTO), Apogem was able to bring in Steve Scolnik as CTO in October of 2022. Mr. Scolnik has four dedicated employees in his department, and also makes extensive use of the shared services that New York Life provides, such as 24x7 help desk, and the overall technology infrastructure.

Mr. Scolnik discussed his priority projects since joining the firm. The majority centered around unifying the three legacy businesses under an integrated IT and systems platform. He is also working on an AI application that would be used by the investment team. The hope is that the application will be able to scrape pdf files to create a dataset, which the investment team can then use to look at characteristics of businesses they either invested in or passed on, to help inform future investment decisions.

Apogem follows the business continuity plan of New York Life. NYL's model environment provides a carbon copy of critical systems. Because this is a cloud-based model, they are able to continually test it virtually, but they also do a full fail-over test at least annually. The last test was conducted successfully in November of 2023.

Conclusion

The business combination that created Apogem was a significant change. However, the team at Apogem did a fantastic job communicating with both ERS Staff and Callan to enable us to monitor the change. The key professionals for our strategy remain in place, and we believe the private equity team will benefit from the increased staffing and enhanced resources.

As was discussed in prior memos, performance got off to a slow start, which was largely attributed to underlying GPs' conservative valuation policies. The expectation was valuations would increase as investments were realized, and this has in fact played out as the early funds have matured. The small company nature of Apogem's funds has allowed them to hold up better than our larger fund-of-funds in the recent rising interest rate environment, which has seen many funds take write-downs. In fact, our Fund VI investment has had the highest return out of all of ERS' private equity funds over the last 3, 5, and 7 years based on 9/30/2023 data. Overall, ERS Staff feels comfortable with Apogem fulfilling the role of small buyout fund of funds manager.

Memorandum

To: CMERS Investment Committee
From: Thomas Courtright, CAIA
Date: February 9, 2024
Re: Principal Due Diligence Meetings September 12, 2023 & October 21, 2023
Team: David Silber and Thomas Courtright

Background

The City of Milwaukee Employees' Retirement System (ERS) hired Principal Global Investors (PGI) in January 2016 to manage the real assets portion of the Fund's portfolio. ERS is invested in the Diversified Real Assets (DRA) strategy, a fund of underlying sub-advisors selected by Principal. As of December 31, 2023, Principal managed \$175.6 million, or 3.1% of the Fund's assets.

Key Takeaways from Most Recent Meeting

- Several changes that were made to the DRA PM team in 2022 appear to be going according to plan.
- Some additional changes to the manager selection research team and the global macro research group were made in 2023 and are detailed below.
- Staff discussed the above changes with Callan, ultimately feels comfortable with the team, and believes they have the capability to construct a successful real assets strategy going forward, but will continue to monitor.

Firm Summary

PGI is a wholly-owned, indirect subsidiary of Principal Financial Group (PFG), with assets under management totaling \$525 billion as of June 30, 2023. PGI is an SEC-registered investment adviser that provides investment advisory services to institutional investors and individuals. PGI's investment operations are divided into several boutiques (equities, fixed income, currency, asset allocation). Principal Asset Allocation (PAA) is a specialized boutique within PGI that focuses solely on asset allocation solutions. The DRA strategy is part of PAA and was launched in 2008 alongside other outcome-based strategies to address specific investor needs. DRA is a beneficiary of utilizing shared services within PFG, as both economists and marketing professionals are shared among the organization.

DRA Team

There have been a number of changes to the strategy in the past few years that have impacted various aspects of the team or the research process. In March of 2022, Principal announced several updates to the team that manages the DRA strategy. May Tong, a PM who joined the strategy in May of 2021, shortly after the departure of PM Jake Anonson, was named the lead PM. Marc Dummer, who had been the *de facto* lead PM, took a role as lead of a newly created client portfolio management team. Kelly Grossman, who was a named PM on the DRA strategy, departed the DRA team to become head of investment analytics on Principal's OCIO platform. Jessica Bush and Ben Rotenberg remain as PMs on the strategy alongside Ms. Tong.

Since joining the team, Ms. Tong has been focused on integrating the resources of the broader PGI platform into the DRA strategy, by more fully utilizing the firm's Global Insights, Manager Research, and Risk and Analytics departments. This allows the PMs to focus more on asset allocation, and also allows the strategy's dedicated analysts to focus more on monitoring existing managers or conducting manager searches.

In addition, Ms. Tong has expanded the access of global macro research experts that are available to the DRA team, which allows the PM team to receive insights from specialized experts. These experts can be internal or external to PGI and can therefore be more targeted toward team research projects versus only using PGI internal economists.

Finally, Ms. Tong split the manager selection research team into two distinct groups, the Investment Platform Oversight (IPO) group, and the Manager Alpha Research and Selection (MARS) group. The IPO group is the incumbent team that previously handled all aspects of manager monitoring and search activity. Going forward the IPO group will focus solely on manager monitoring and will not be directly involved in manager search activity. The MARS group will be led by a recent hire, Ryan Kincade, to focus primarily on manager searches. This allows the two groups to become more specialized and focused in their research scope. MARS also outsourced some alternative investments research to a third party, Aksia LLC. Since Ms. Tong is the architect of these enhancements, it is logical that she will lead the team going forward. Mr. Dummer's new role also helps alleviate a concern noted in past memos, which is that the PM team had been spending 30-40% of their time on marketing. Having someone with Mr. Dummer's experience in a role that is focused on the client side will remove that burden.

Strategy

Principal's investment objective is to construct a broad based fund of funds that invests across a number of inflation-hedging asset classes in order to generate annual returns that are 3%-5% above inflation over a full market cycle, which they define as three to five years. The DRA team currently allocates to strategies within eight categories. The current sub-advisors, and the respective allocation percentages for the DRA sleeves, as of September 30, 2023, are listed below:

Infrastructure (Clearbridge, MacQuarie)	34%	TIPS (BlackRock)	15%
Natural Resources (Impax, Newton)	12%	Commodities (CoreCommodity, Wellington)	16%
Global REITs (Principal Real Estate)	16%	Floating Rate Debt (Nuveen)	3%
Equitized Cash (PAA)	2%	Global Timber (Pictet)	2%

The allocation can vary with the economic or credit cycles as new asset classes or strategies are identified and determined to be appropriate for inclusion in the DRA strategy. The investment team conducts simulations of underlying asset class combinations in order to identify the weighting schemes that would allow the total portfolio to provide returns of 3%-5% above inflation while simultaneously minimizing risk. The underlying sub-advisors are not allowed to employ any borrowing in the implementation of their investment strategies. Although DRA legal documents do not prohibit the use of leverage, PAA has indicated it has never employed leverage in the management of the CIT and it does not intend to.

The DRA strategy has 85 clients in the CIT vehicle. The investment team manages a total of \$5.3 billion of client assets in the DRA strategy as of June 30, 2023, which includes \$2.6 billion in mutual fund assets and \$1.7 billion in CIT assets. The portfolio management team also advises the Principal Global Diversified Income, Global Multi-Strategy, and Real Asset strategies.

The DRA team estimates capacity for the strategy to be \$25 billion. This estimate has increased from \$12 billion since the inception of ERS' mandate primarily due to capacity agreements of the existing sub-advisors along with expectations of increased market liquidity.

Early in 2022, Principal changed the DRA's blended benchmark, reducing the allocations to TIPS from 35% to 15%, Natural Resources from 20% to 15%, increasing REITs from 10% to 25%, and Infrastructure from 20% to 30%. Commodities remained unchanged at 15%. Around the same

time, CoreCommodity and Wellington replaced Credit Suisse in the commodities allocation, and the Global Water and MLP allocations were removed from the portfolio. Global Water and MLP each had small allocations, and Principal felt they could achieve better inflation protection by redeploying those assets to other areas of the portfolio. CMBS was also removed from the portfolio at this time. Lastly, an allocation to a liquidity sleeve was added in 2022, which can be used to equitize cash. Accordingly, the liquidity sleeve will invest cash balances in equity or fixed income ETFs or futures, or in cash equivalents, while maintaining representative asset class exposures as outlined in the preceding paragraphs. The allocation to the liquidity sleeve can range from 0-5%.

Staff discussed these changes with Callan, and they were comfortable that the portfolio still fits its intended objectives of providing a diversification benefit, inflation mitigation, and enhancing total returns. Callan also noted that the strategy is the most diversified real asset portfolio under their coverage universe.

Investment Philosophy and Process

The DRA strategy is based upon the premise that stocks and bonds exhibit low correlations to inflation over short and long time horizons, and real assets have been excellent inflation hedges over long time periods. The DRA team believes there is an opportunity to capture an attractive long-term return by investing in real asset classes while also improving portfolio diversification.

Given the difficulty in predicting inflation, the DRA investment team believes that it is both imprudent and impractical to attempt to rotate among different inflation hedges. Rather, the team believes that the most effective method is to continually maintain a prudently balanced and diverse portfolio of real asset classes. The investment team follows a five-step process, which includes a combination of both bottom-up and top-down analyses:

1. Identify and select the asset classes and strategies that exhibit a persistent high sensitivity (beta) to inflation, generate a reliable return, and provide diversification benefits.
2. Utilize capital market forecasts, generated from economists dedicated to the DRA strategy in collaboration with the investment team, which provide macroeconomic and risk outlooks for inflation, interest rates, and equity markets. Develop forward-looking return forecasts by analyzing historical returns, volatility, and correlations.
3. Use a multi-strategy and multi-manager approach that covers a broad array of inflation-sensitive asset class portfolios that are actively managed to a tactical allocation target. (Active and passive sub-advisors are considered as well as single or multiple sub-advisors per sleeve). Using the capital market forecasts derived above, target weights are established for each strategy in order to optimize portfolio return per unit of risk, while keeping risk within a target standard deviation of 12-15% over a market cycle. Manager weightings reflect the team's outlook for opportunities within the respective asset classes, while remaining cognizant of sub-advisor proliferation.
4. Conduct extensive searches to hire specialist managers for each investment strategy. A key part of the process is determining whether active management has historically been successful in the asset class, which will inform the choice between active and passive. If the DRA team determines active management is appropriate, they outline specific search criteria, and conduct a comprehensive due diligence process to select the appropriate manager. The due diligence process is both quantitative and qualitative, focusing on the investment philosophy and process, to ensure it aligns with the intended outcome in the DRA portfolio. Managers are hired to manage customized separate accounts, with investment guidelines that outline the expectations and risk-management framework for the strategy.

5. Employ rules-based-rebalancing methodology such that a sub-advisor's allocation will be adjusted half-way back to target as the sleeve allocation approaches the upper or lower band of the target allocation range, while also utilizing portfolio cash flows wherever possible in order to lessen transaction costs.

Risk control is conducted throughout the process by monitoring strategy positioning and performance on a daily basis. Risk reports were historically run through FactSet and MSCI BarraOne monthly, but Principal's risk team recently built a tool in-house, PRIME, that also allows the DRA team to run risk reports daily. The IPO group performs monthly monitoring calls with each manager, as well as reviews the managers' monthly performance and risk attribution. The team also performs an annual re-underwriting of the investment and operations due diligence.

The DRA investment team communicates throughout the day in an informal fashion and also meets at least weekly to formally discuss market conditions, economic data, and research ideas. The team also conducts a quarterly asset allocation meeting at which target weights are discussed in the context of the current market, the economic outlook, and feedback from sub-advisors.

Compliance and Internal Controls

ERS staff met with Brad Hanus, Compliance Director, who reports directly to Justin Lang, Global Head of Compliance for Principal Asset Management (PAM). Mr. Lang reports directly to the Chief Compliance Officer for PFG, Noreen Fierro. Mr. Hanus' team is responsible for ongoing education on compliance and the Code of Ethics (Code), which is a firm wide compliance policy that PGI and PAA employees must adhere to. The Code includes: disclosure of personal holdings of securities; prohibited securities, disclosure of gifts, and monitoring of broker statements. Mr. Hanus' team also is responsible for overseeing pre/post trade compliance via Charles River, and all regulatory filings.

ERS staff also met with Traci Knox, Director of Subadvisor Compliance. While Mr. Hanus' team is responsible for firm compliance, Ms. Knox' team is responsible for compliance of hired and potential future sub-advisors. Ms. Knox orchestrates compliance assessments during the sub-advisor hiring process, including information regarding sub-advisor compliance monitoring, insurance coverage, the firm's CCO, SEC exams, litigation, and soft dollar policies. Her team conducts quarterly and annual questionnaires as well as on-site visits. On-site meetings are typically held every two years, but managers deemed to be higher risk are visited on a more frequent basis.

State Street is the custodian for all CIT assets. Principal's Trust Operations, based in Portland Oregon, is primarily responsible for oversight of State Street as the Administrator, Custodian, Transfer Agent and Accountant for the DRA CIT. The investment team has decided to not participate in any securities lending programs with the custodian and therefore none of the securities are ever loaned out to counterparties.

PGI is evaluated by the United States Securities and Exchange Commission. The last routine examination of PGI was conducted during the period beginning August 2016 and concluding September 2017. There were no material deficiencies noted in the examination.

Information Systems and Disaster Recovery

PAM has an in-house IT department that manages IT resources for PAA. In addition, PAM's parent, PFG, provides infrastructure services and support. PAM has IT development and support staff dedicated to their operations as well, which includes PAA.

PFG maintains Business Continuity (BC) and Disaster Recovery (DR) Programs. The design of the programs follow professional practices established by the Disaster Recovery Institute International (DRII) as well as PFG's standards, which include a formal Business Impact Analysis (BIA). The BIA identifies the business processes that are considered critical within the first 72 hours of an incident, which are then prioritized. An emphasis and objective of the Program is to protect customer financial assets and data. As part of the DRA Program, PFG has a workspace and data recovery location that is based in West Des Moines, IA and a data recovery facility in Chicago, IL. The workspace facilities have high speed access to the off-site data center as well as all documented office requirements. In addition, a mobile recovery unit and a work from home capability are available as alternate workspace recovery solutions.

DR and BC tests are conducted annually in Q4 of each year. Business continuity exercises include calling trees and testing functionality of alternate worksites. There were no significant issues identified as a result of the most recent test.

Performance Summary and Conclusion

Principal's DRA strategy takes a benchmark-agnostic approach, with the goal of achieving annual returns that are 3%-5% above inflation over a full market cycle, which Principal defines as three to five years. Real assets have historically been excellent inflation hedges over longer time periods, but less effective over time horizons shorter than one year, since short-term security pricing can be influenced by many strategy-specific and macroeconomic factors.

The table below shows returns as of December 31, 2023. While significant inflation was evident during the recent 3-year period, the strategy has not otherwise experienced high bouts of inflation since inception. The strategy's exposure to inflation sensitive assets during the last 3 years has resulted in resilient returns relative to either stocks (ACWI IMI 5.5%) or bonds (Bloomberg Barclays Aggregate -3.3%). This time period has been our first experience with the strategy in an inflationary environment, and it is nice to see an indication of the strategy providing inflation protection.

Overall, Principal has been a stable real assets manager and provides a nice diversification benefit to the rest of CMERS' portfolio. Staff will continue to monitor the changes to the PM team, process changes, and performance in what could potentially be a higher inflation environment going forward. Net of fee returns, along with benchmark returns, are provided in the table below.

	1-Year	3-Year	5-Year	Since Inception (2/1/2016)
Principal (Net)	3.3%	4.6%	6.4%	5.6%
<i>Principal Custom Index*</i>	4.3%	4.7%	6.1%	5.3%

4th Quarter 2023 Performance Report

February 8, 2024

Employees' Retirement System

Presentation Agenda

- Fund Overview
- Public Equity
- Fixed Income
- Absolute Return
- Private Equity
- Recent Performance Update
- Appendix: Manager Charts & Statistics

Market Environment

Asset Class	Benchmark	Target Weight	Benchmark Return Q4 2023
Public Equity	MSCI ACWI IMI	39%	11.1%
Fixed Income	Bloomberg U.S. Agg.	29%	6.8%
Real Assets ⁽¹⁾	Blended Benchmark	13%	0.3%
Private Equity ⁽¹⁾	Russell 3000 + 2%	12%	-2.7%
Absolute Return	90-Day T-Bill + 3%	7%	2.1%

	Q4 2023
CMERS Benchmark	6.2%

⁽¹⁾Real Estate and Private Equity benchmark returns are reported on a 1-quarter lag.

Relative Performance Expectations

		Q4 2023		Q4 2023	Q4 2023
Value Equity Bias	Russell 3000 Value	9.8%	Russell 3000 Growth	14.1%	↓↓
Small Cap Equity Bias	Russell 2000	14.0%	Russell 1000	12.0%	↑
Fixed Income Credit	Loomis Sayles (net)	7.7%	Bloomberg US Agg.	6.8%	↑
Private Equity⁽¹⁾⁽²⁾	CMERS PE (net)	-1.9%	PE Benchmark	-2.7%	↑

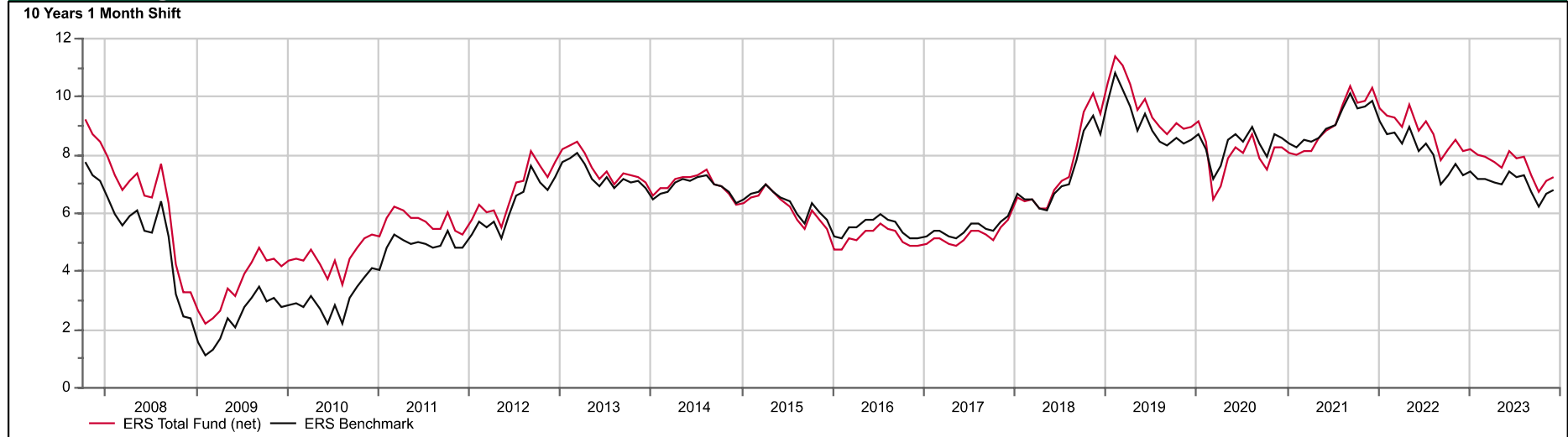
	Q4 2023
CMERS Total Fund (net)	6.0%
CMERS Benchmark	6.2%

⁽¹⁾Private Equity benchmark return is reported on a 1-quarter lag.

⁽²⁾ All of the Fund's Q3 2023 Private Equity returns are reflected in the October-December time period.

Total Fund Performance

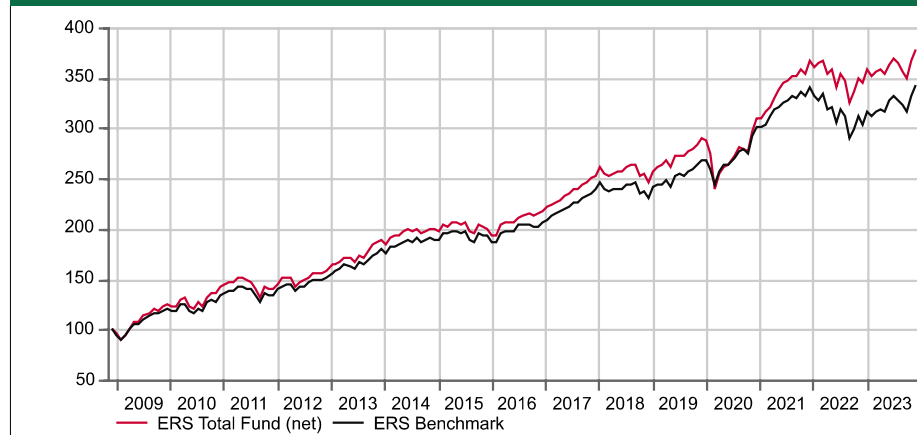
10 Year Rolling Returns – 11/1/1997 to 12/31/2023



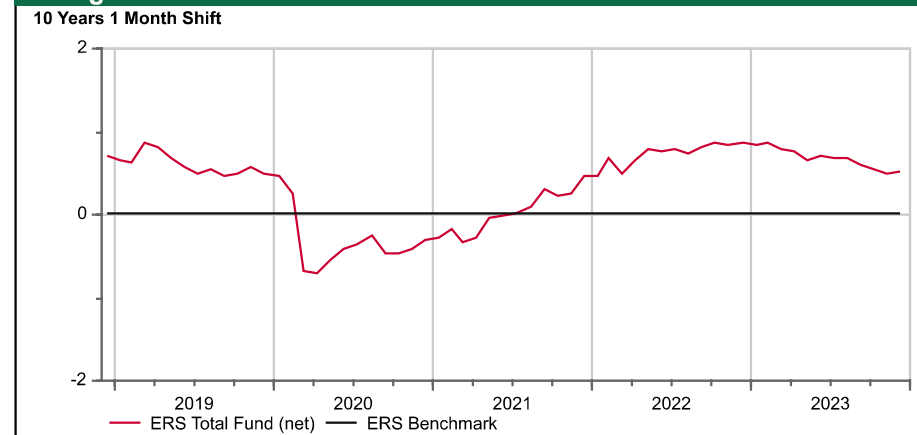
Trailing Returns

		Annualized Return					
	QTR	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
ERS Total Fund (net)	6.0	10.0	6.9	9.1	8.3	7.2	9.3
ERS Benchmark	6.2	12.4	4.3	8.2	7.5	6.7	8.5

Investment Growth – 1/1/2009 to 12/31/2023



Rolling Excess Returns – 1/1/2009 to 12/31/2023



ERS Fund Attribution – 4th Quarter 2023

Asset Class	Benchmark	Average Weight %	Policy Weight %	+/-	Portfolio Return	Benchmark Return	+/-	Attribution Effect(%)			
								Broad Category Group Allocation	Manager Selection	Style Bias	Total Active Return
Public Equity	MSCI ACWI IMI NR USD	37.7	39.0	-1.3	11.4	11.1	0.2	-0.1	0.1	0.0	0.0
Fixed Income	Bbg US Agg Bond TR USD	28.1	29.0	-0.9	6.9	6.8	0.1	0.0	0.1	-0.1	0.0
Private Equity⁽²⁾	Russell 3000 (Qtr Lag) + 200bps ⁽¹⁾	14.1	12.0	2.1	-1.9	-2.7	0.8	-0.2	0.1	0.0	-0.1
Real Assets⁽²⁾	Real Assets Benchmark ⁽¹⁾	12.0	13.0	-1.0	-1.0	0.3	-1.3	0.1	-0.2	0.0	-0.1
Absolute Return	90 Day T-Bill +3%	8.2	7.0	1.2	2.4	2.1	0.3	0.0	0.0	0.0	0.0
Total		100.0	100.0	0.0	6.0	6.2	-0.2	-0.2	0.2	-0.1	-0.2

Main Drivers of Q4 2023 Relative Performance

Overall Allocation

Overweight Private Equity; Underweight Public Equity

Impact %

-0.25%

Attribution Category

Overall Allocation

Manager Performance

Loomis & Reams, William Blair, Private Equity outperformed

JP Morgan underperformed

0.35%

-0.14%

Manager Performance

Manager Performance

Style Bias

US Government Fixed Income

-0.09%

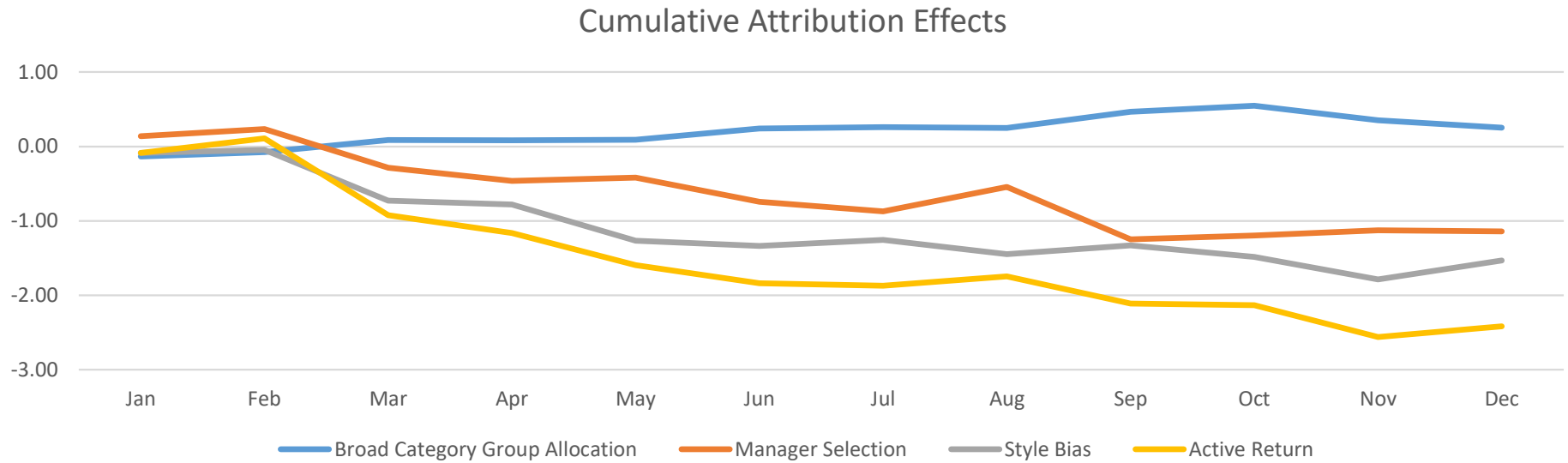
Style Bias

⁽¹⁾Real Estate and Private Equity benchmark returns are reported on a 1-quarter lag.

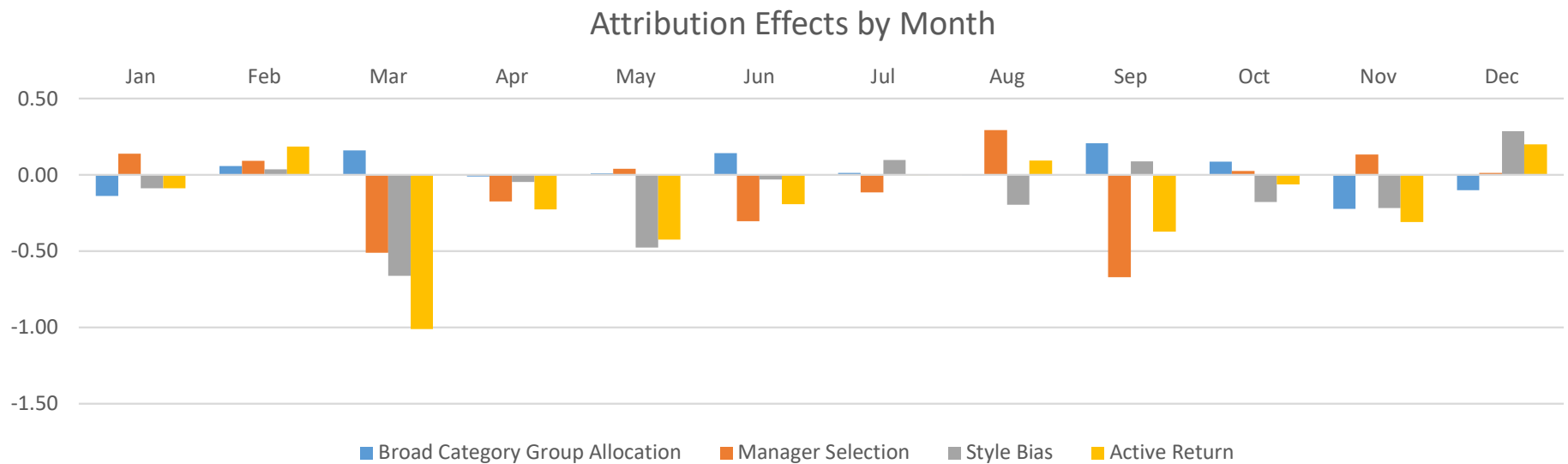
⁽²⁾ All of the Fund's Q3 2023 Private Equity returns are reflected in the October-December time period. Some Real Estate returns are reported on a 1-quarter lag.

2023 Attribution

Cumulative Attribution Effects



Monthly Attribution Effects



ERS Fund Attribution – 2023

Asset Class	Benchmark	Average Weight %	Policy Weight %	+/-	Portfolio Return	Benchmark Return	+/-	Attribution Effect(%)			
								Broad Category Group Allocation	Manager Selection	Style Bias	Total Active Return
Public Equity	MSCI ACWI IMI NR USD	41.1	41.5	-0.4	21.1	21.6	-0.5	-0.1	1.2	-1.5	-0.4
Fixed Income	Bbg US Agg Bond TR USD	24.6	26.0	-1.4	6.5	5.5	0.9	0.0	0.3	-0.1	0.3
Private Equity⁽²⁾	Russell 3000 (Qtr Lag) + 200bps ⁽¹⁾	13.2	11.0	2.2	2.9	22.5	-19.5	0.2	-2.6	0.0	-2.4
Real Assets⁽²⁾	Real Assets Benchmark ⁽¹⁾	12.2	13.0	-0.8	-7.2	-8.6	1.4	0.2	0.2	0.0	0.3
Absolute Return	90 Day T-Bill +3%	8.9	8.5	0.4	6.3	8.3	-2.1	0.0	-0.3	0.1	-0.2
Total		100.0	100.0	0.0	10.0	12.4	-2.4	0.3	-1.1	-1.5	-2.4

Main Drivers of 2023 Relative Performance

Private Equity

Impact %

-2.62%

Attribution Category

Manager Selection

Public Equity Style Bias

-1.47%

Style Bias

Primarily U.S. Value and Small Cap

Manager Performance

Brandes

0.67%

Manager Selection

DFA Strategies

0.33%

Manager Selection

Morgan Stanley

0.24%

Manager Selection

Polen

0.22%

Manager Selection

Loomis Sayles

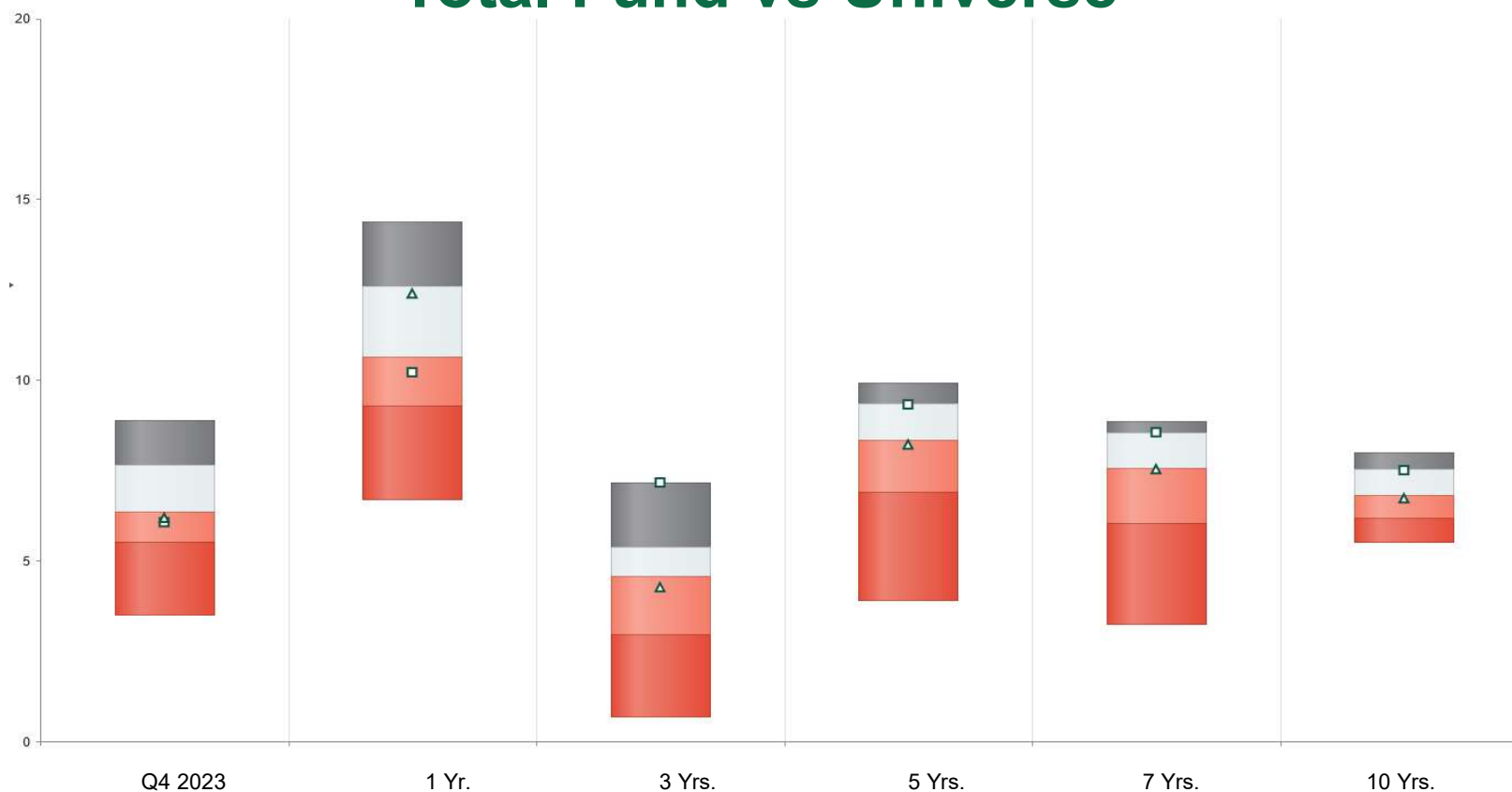
0.21%

Manager Selection

⁽¹⁾Real Estate and Private Equity benchmark returns are reported on a 1-quarter lag.

⁽²⁾ All of the Fund's Q3 2023 Private Equity returns are reflected in the October-December time period. Some Real Estate returns are reported on a 1-quarter lag.

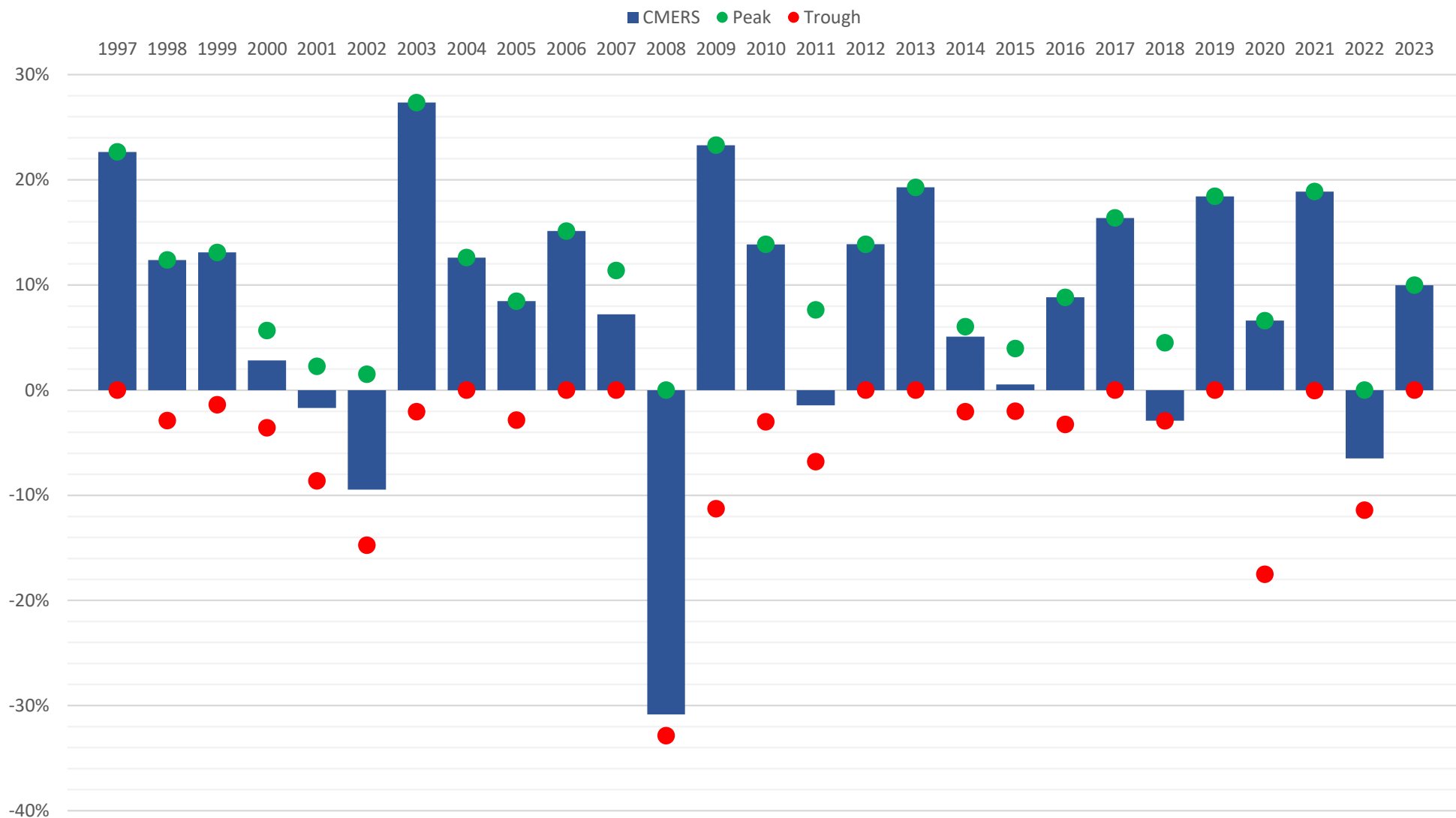
Total Fund vs Universe



■ Account
 ▲ Index

	Q4 2023	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	6.1	10.2	7.2	9.3	8.6	7.5
Percentile Rank	56	58	11	27	22	27
Index Return	6.2	12.4	4.3	8.2	7.5	6.7
Percentile Rank	54	27	57	58	51	59
1st Quartile	7.7	12.6	5.4	9.4	8.5	7.5
Median	6.3	10.6	4.6	8.3	7.6	6.8
3rd Quartile	5.5	9.3	3.0	6.9	6.0	6.2
Observations	52	50	49	44	42	27

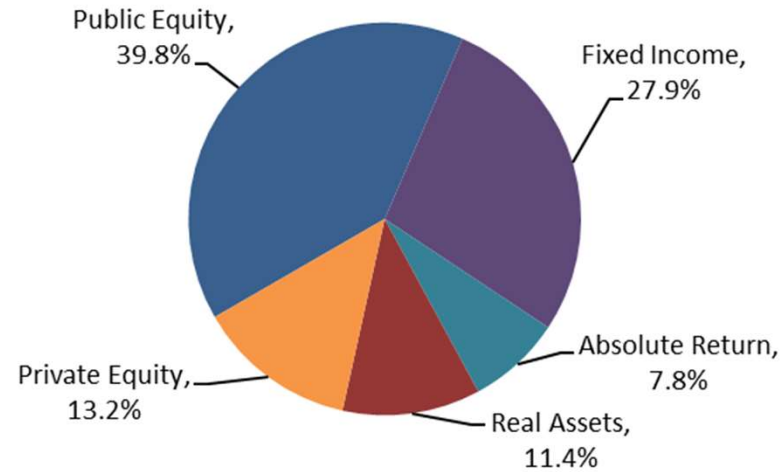
Annual Returns, Peaks, and Troughs



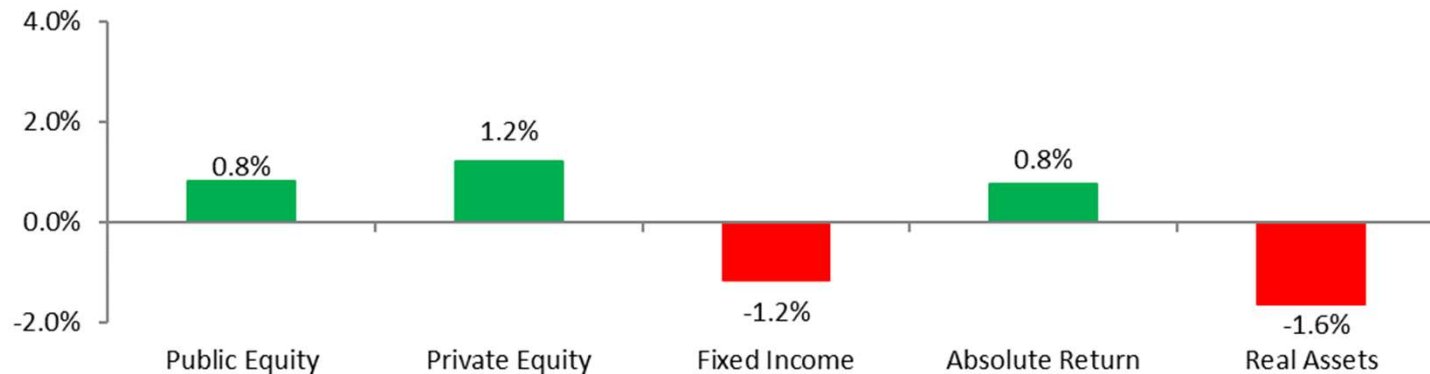
*Net of Fees

Asset Allocation as of December 31, 2023

Actual Asset Allocation*



Actual Asset Allocation vs. Policy Target



2023 Market Value Change

December 31, 2022 Market Value including City Reserve & PABF Accounts			\$ 5,550,112,010
Monthly Cash Outflows thru	<u>December 31, 2023</u>		
Retiree Payroll Expense		\$ (462,021,047)	
PABF Payroll Expense		\$ (24,232)	
Expenses Paid		\$ (18,044,055)	
GPS Benefit Payments		\$ (8,570,323)	
Sub-Total Monthly Cash Outflows			\$ (488,659,657)
Monthly Cash Inflows thru	<u>December 31, 2023</u>		
Contributions		\$ 189,739,295	
PABF Contribution		\$ 25,725	
Sub-Total Monthly Contributions			\$ 189,765,020
Capital Market Gain/(Loss)			\$ 546,055,639
Value including City Reserve & PABF Accounts as of	<u>December 31, 2023</u>		<u>\$ 5,797,273,012</u>
Less City Reserve Account ¹			\$ 85,109,460
Less PABF Fund ²			\$ 2,651
Net Projected ERS Fund Value as of	<u>December 31, 2023</u>		<u>\$ 5,712,160,901</u>

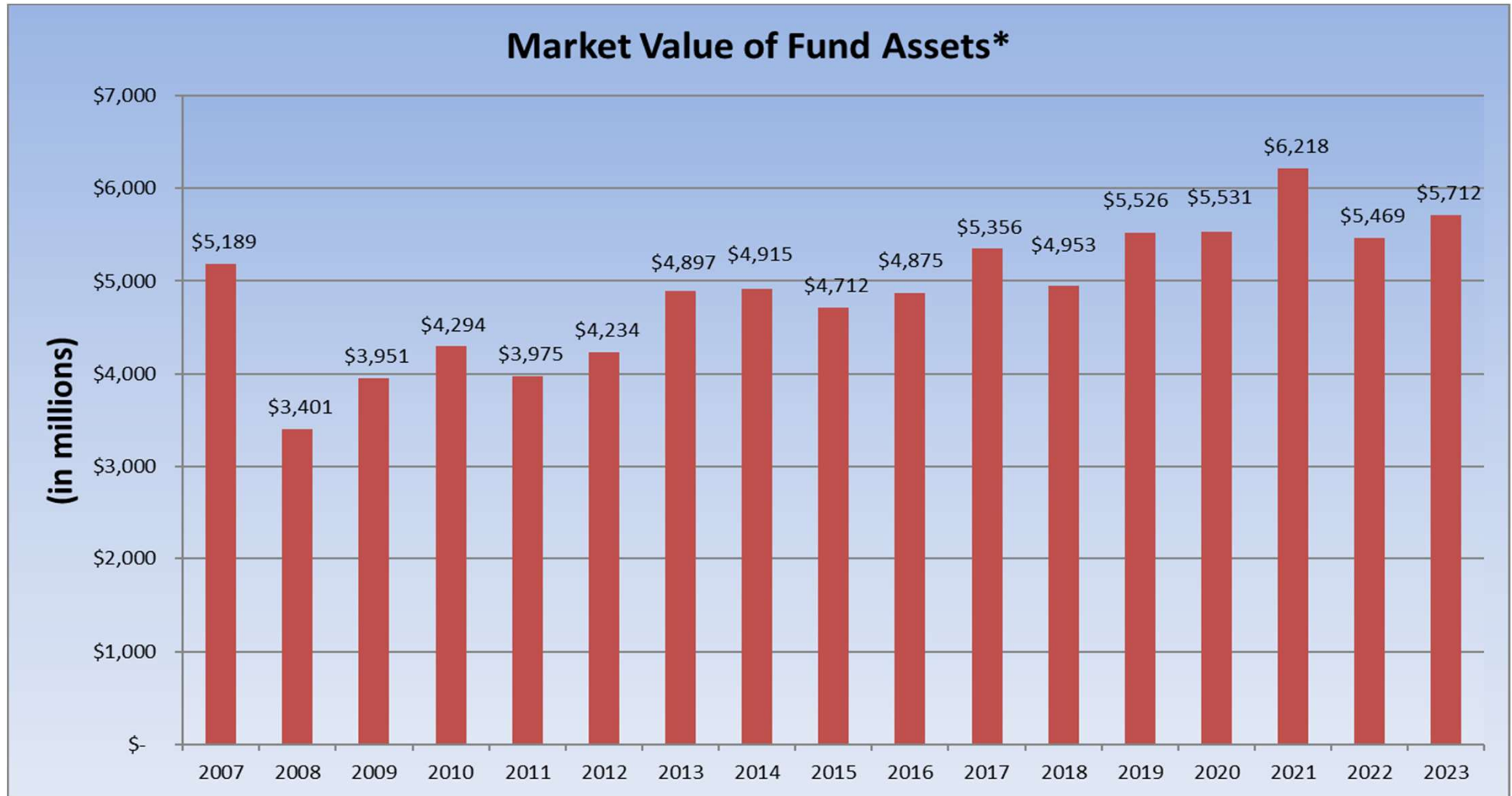
1 The City Reserve Account balance equals the market value currently held in the Baird account.

2 PABF Fund balance equals the market value currently held in the PABF account.

Monthly Cash Outflows, Monthly Cash Inflows, and Capital Market Gain/(Loss) amounts are calculated using estimates of cash flows into and out of the Fund. These amounts are not audited and may not tie to CMERS Financial Statements.

Fund Value of Assets: 2007 – 2023

(Reflects 12/31 Fund Values)



Most recent Actuarial valuation projects benefit payments to total \$5.4 billion in next 10 years.

Benefit Payments	\$5.7 billion
Expenses	\$281 million
Contributions	\$1.6 billion
Investment Gain	\$4.9 billion

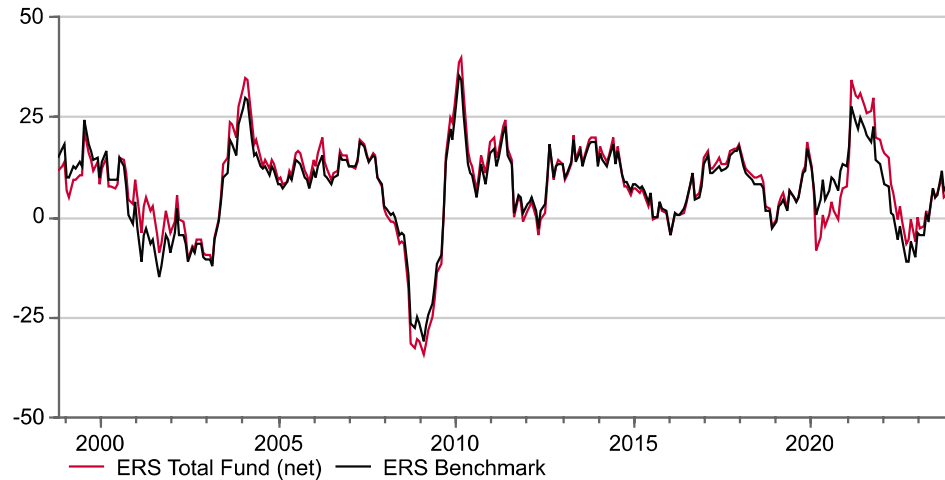
16 Year Estimates (1/1/2008 - 12/31/2023)

Benefit Payments, Expenses, Contributions, and Investment Gain amounts are calculated using estimates of cash flows into and out of the Fund. These amounts are not audited and may not tie to CMERS Financial Statements.

Total Fund Rolling Returns as of December 31, 2023

1 Year Rolling Returns – 12/1/1997 to 12/31/2023

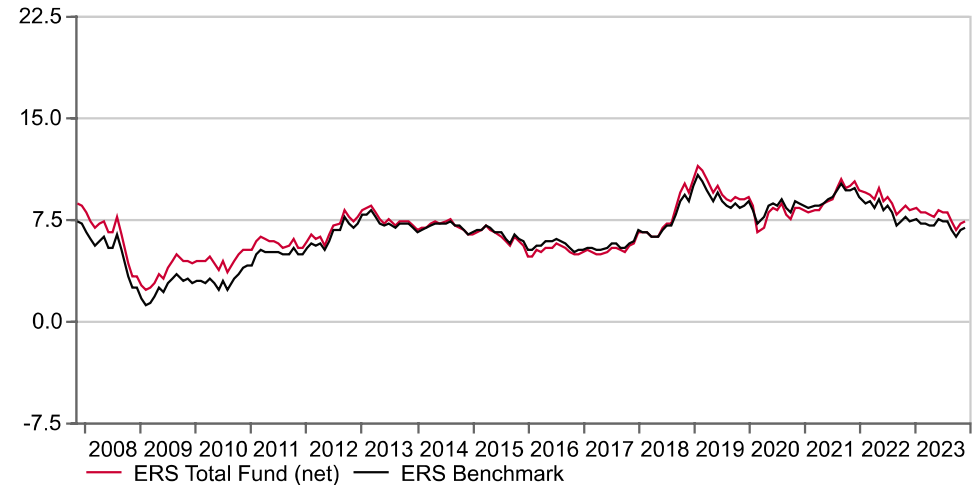
1 Year 1 Month Shift



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10 Year Rolling Returns – 12/1/1997 to 12/31/2023

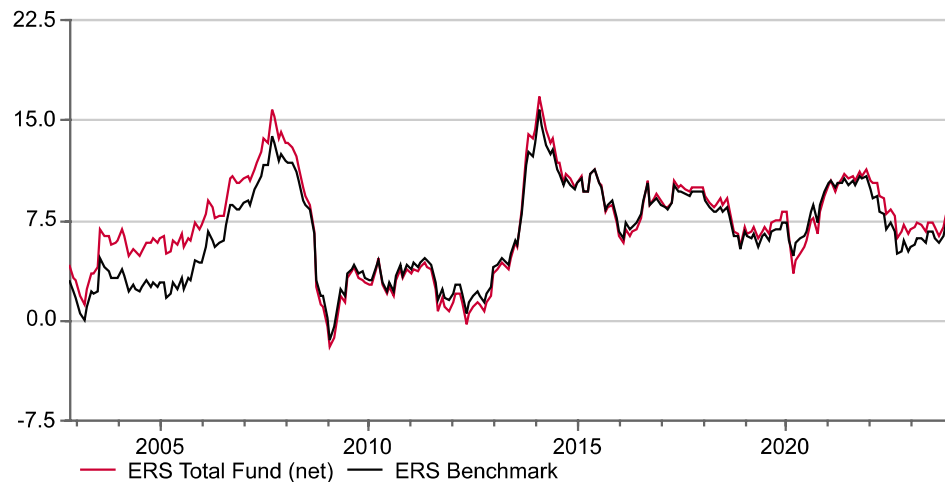
10 Years 1 Month Shift



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5 Year Rolling Returns – 12/1/1997 to 12/31/2023

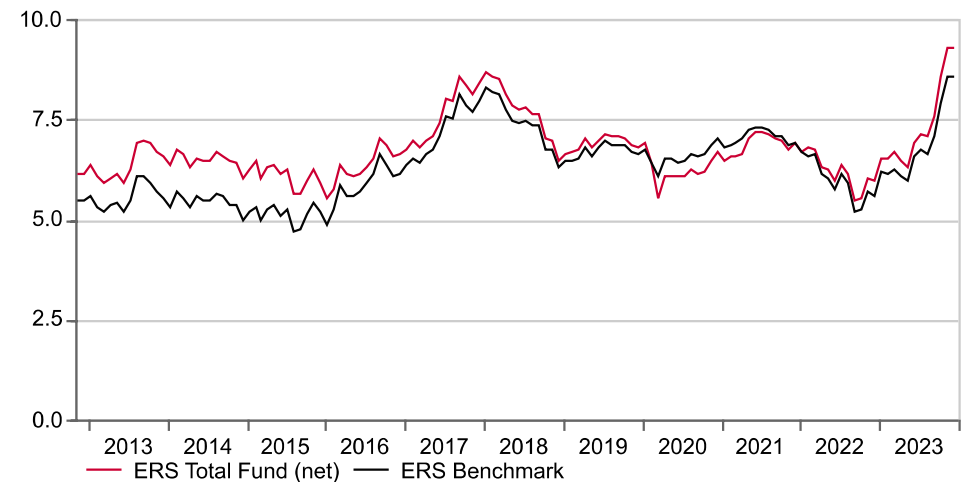
5 Years 1 Month Shift



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15 Year Rolling Returns – 12/1/1997 to 12/31/2023

15 Years 1 Month Shift

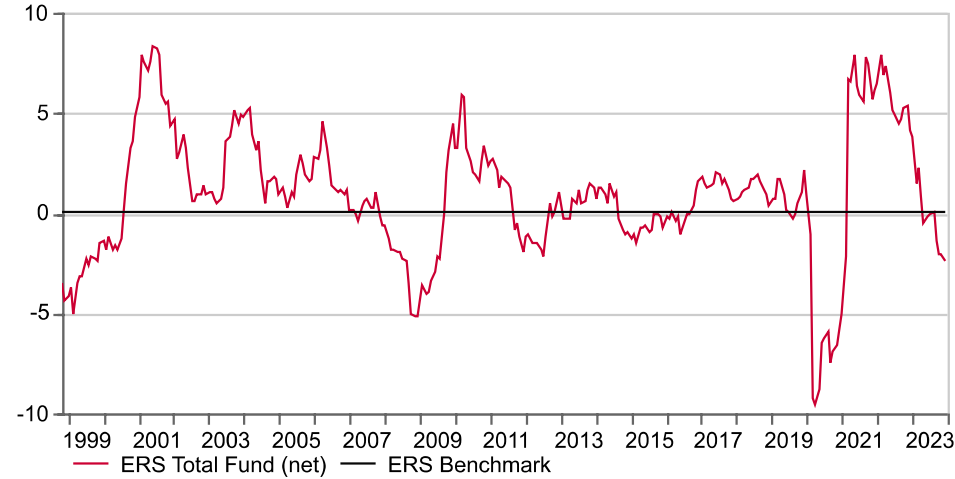


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Total Fund Rolling Excess Returns as of December 31, 2023

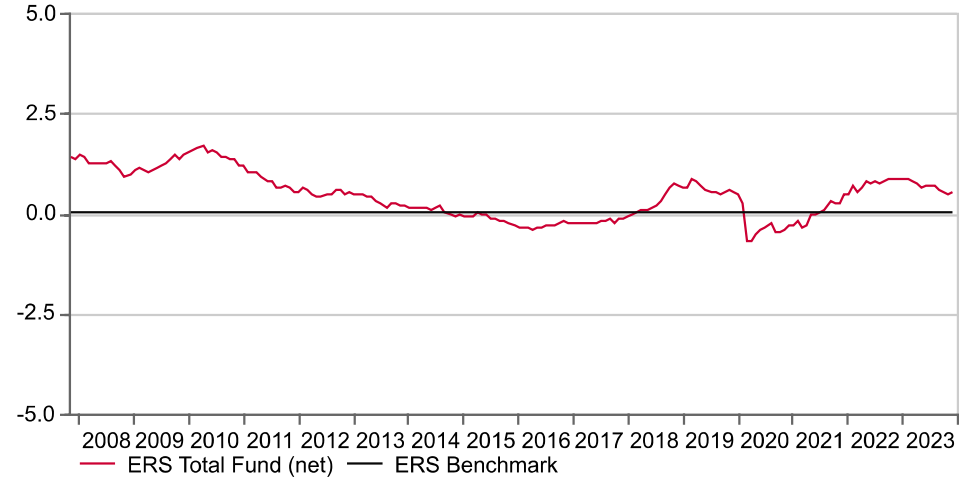
1 Year Rolling Excess Returns – 12/1/1997 to 12/31/2023

1 Year 1 Month Shift



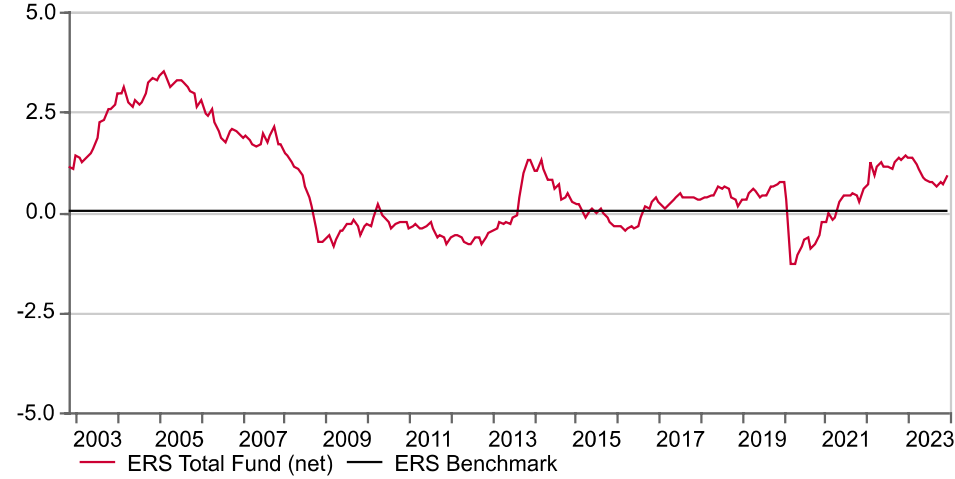
10 Year Rolling Excess Returns – 12/1/1997 to 12/31/2023

10 Years 1 Month Shift



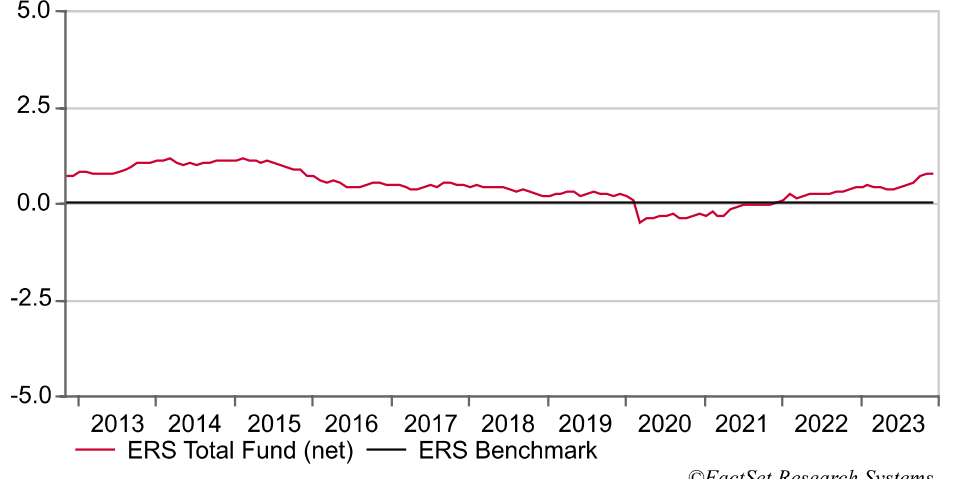
5 Year Rolling Excess Returns – 12/1/1997 to 12/31/2023

5 Years 1 Month Shift



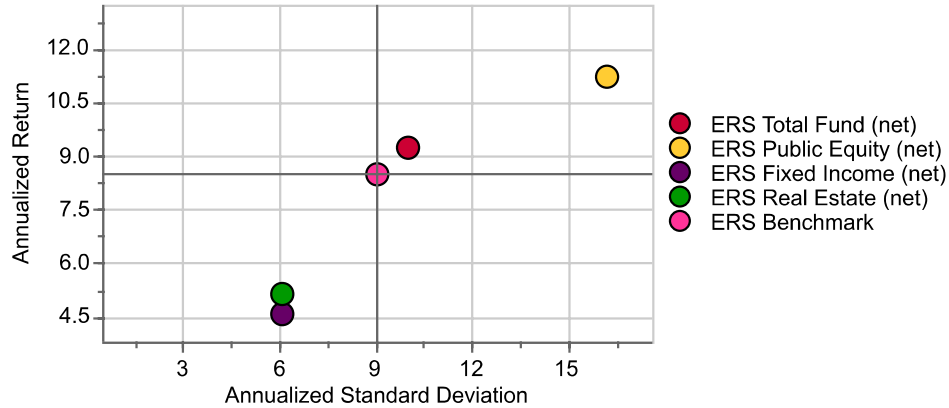
15 Year Rolling Excess Returns – 12/1/1997 to 12/31/2023

15 Years 1 Month Shift



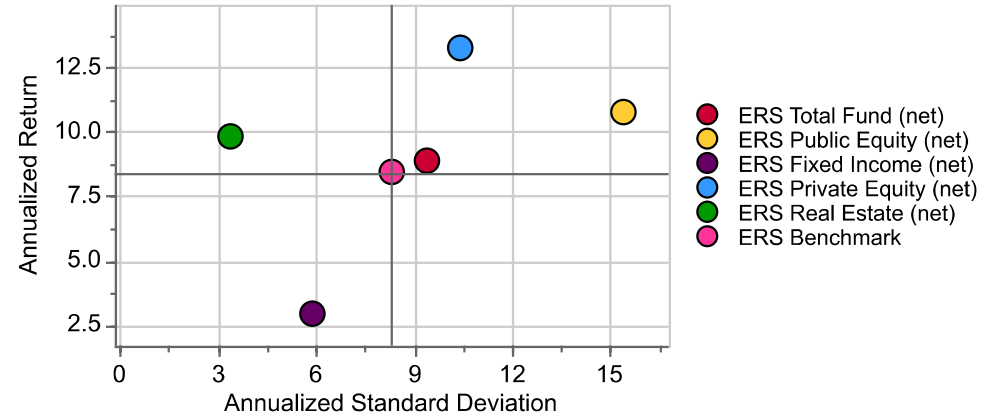
Total Fund Statistics

15 Year Risk-Reward –1/1/2009 to 12/31/2023



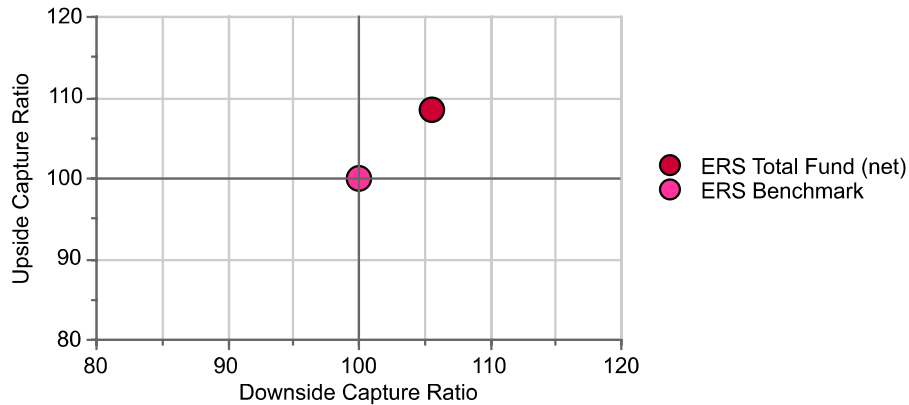
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Risk-Reward Since Private Equity Inception – 7/1/2010 to 12/31/2023



©FactSet Research Systems

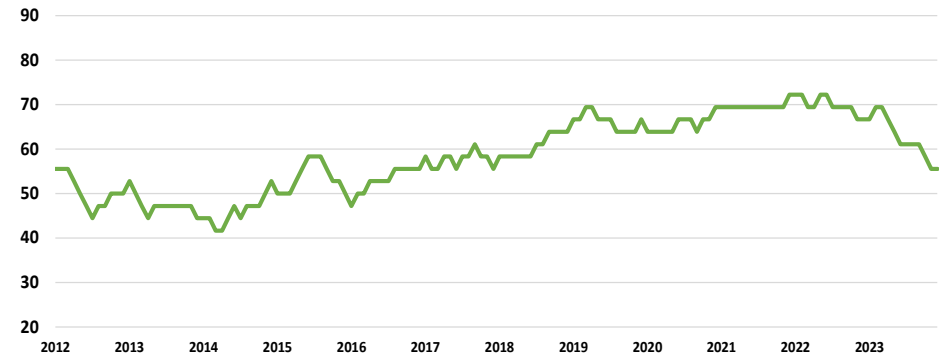
15 Year Upside-Downside –1/1/2009 to 12/31/2023



©FactSet Research Systems

Batting Average

Rolling Window: 3 years
Time Period: 1/1/2009 to 12/31/2023



15 Year Risk –1/1/2009 to 12/31/2023

	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Total Fund (net)	9.3	10.0	0.0	0.8	0.1	2.7
ERS Benchmark	8.5	9.1	0.0	0.8	--	1.0

Risk – 7/1/2013 to 12/31/2023

	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Total Fund (net)	8.1	9.0	0.0	0.8	0.1	3.0
ERS Benchmark	7.5	7.9	0.0	0.8	--	1.0

Notable CMERS Manager Events

Manager	Event	Date
Polen	Polen announced that PM Damon Ficklin was re-joining the Focus Growth strategy that Polen manages for us. Mr. Ficklin is the current head of Polen's large company growth team, and served as a PM on the Focus Growth strategy from 2012-2019, before moving to Polen's Global Growth strategy. Brandon Ladoff, PM and Head of Sustainable Investing, will be joining the Global Growth strategy as a PM, as sustainability is a more significant focus for Polen's non-US clients. These moves are not expected to impact the investment philosophy or process for our portfolio.	January 2024

Public Equity

Public Equity Performance

10 Year Rolling Returns – 7/1/2000 to 12/31/2023



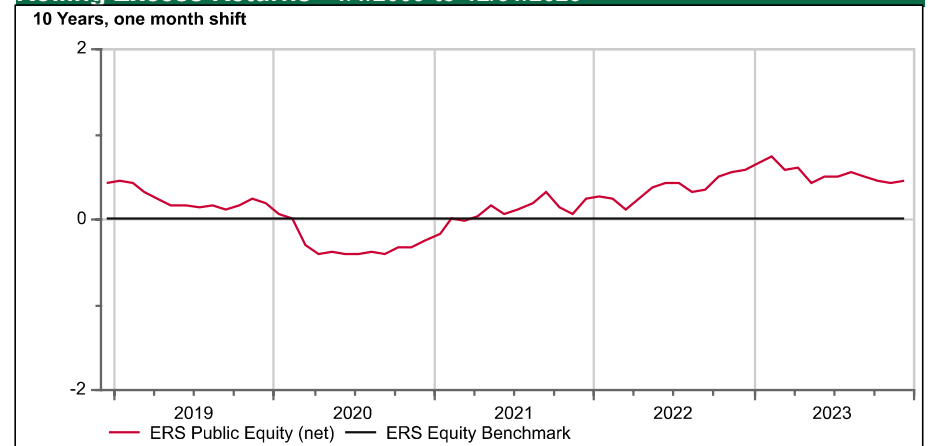
Trailing Returns

		Annualized Return					
	QTR	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
ERS Public Equity (Gross)	11.5	21.5	7.5	12.6	10.7	8.9	11.6
ERS Public Equity (Net)	11.4	21.0	7.1	12.2	10.3	8.5	11.2
ERS Public Equity Benchmark	11.1	21.6	5.5	11.5	9.8	8.1	10.7
MSCI AC World IMI	11.1	21.6	5.5	11.5	9.8	7.8	10.3

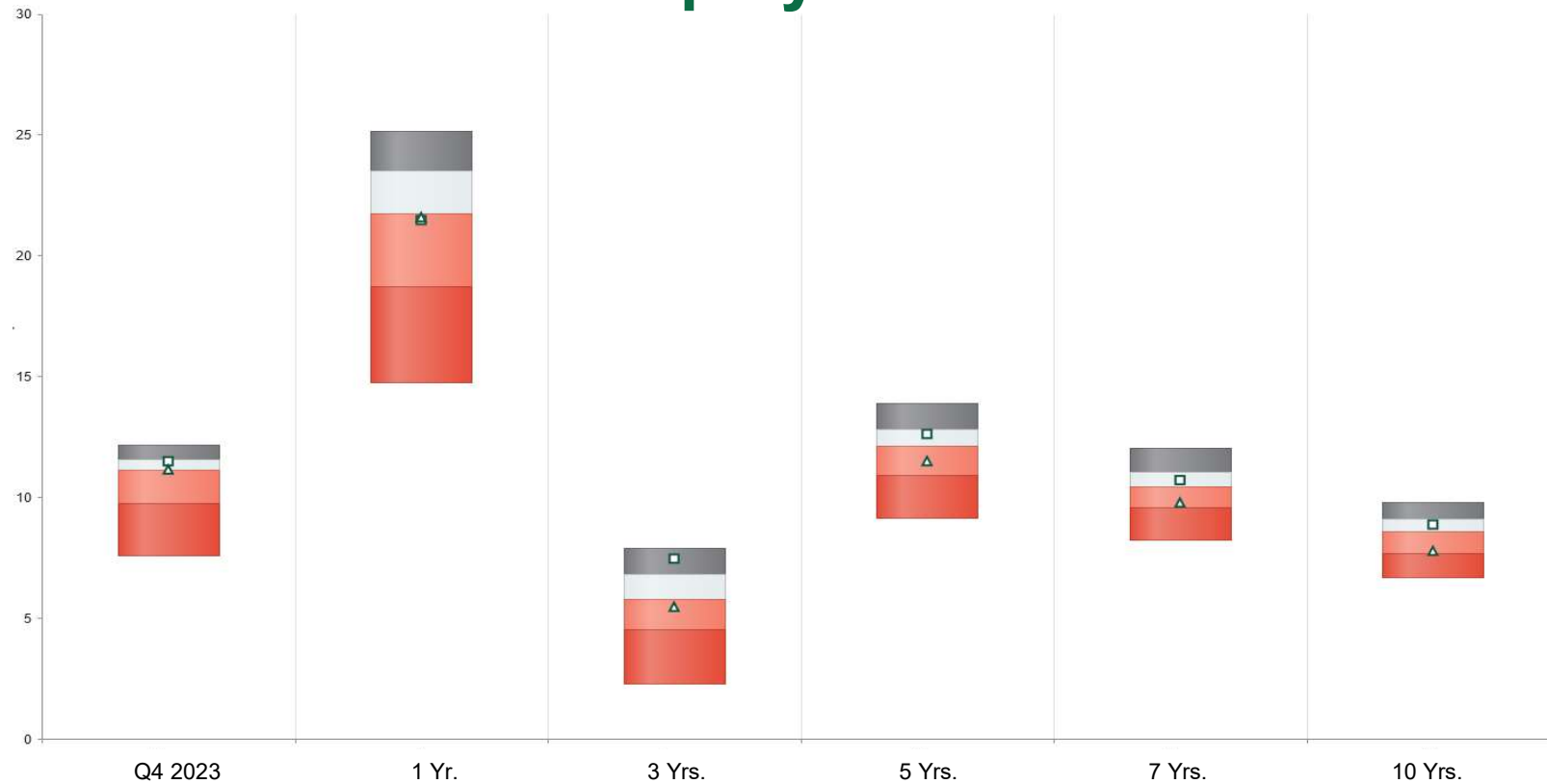
Investment Growth – 1/1/2009 to 12/31/2023



Rolling Excess Returns – 1/1/2009 to 12/31/2023



Public Equity vs Universe

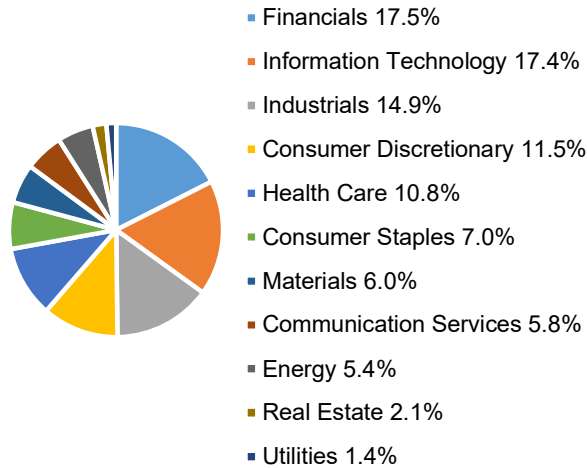


□ Account ▲ Index

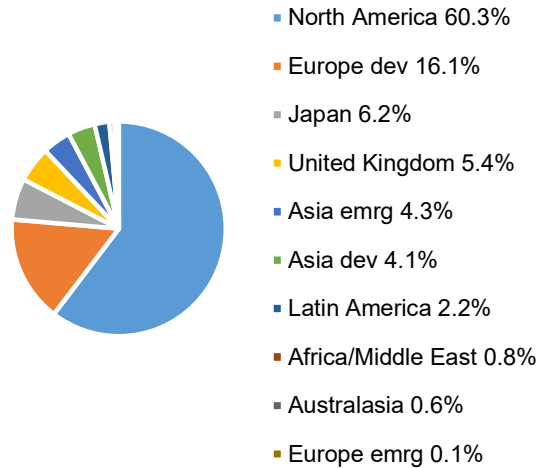
	Q4 2023	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	11.5	21.5	7.5	12.6	10.7	8.9
Percentile Rank	27	54	18	32	33	35
Index Return	11.1	21.6	5.5	11.5	9.8	8.1
Percentile Rank	48	52	61	67	73	3rd Quartile
1st Quartile	11.6	23.5	6.8	12.8	11.1	9.1
Median	11.1	21.7	5.8	12.1	10.4	8.6
3rd Quartile	9.7	18.7	4.5	10.9	9.6	7.7
Observations	130	127	129	126	127	111

Public Equity Portfolio Snapshot

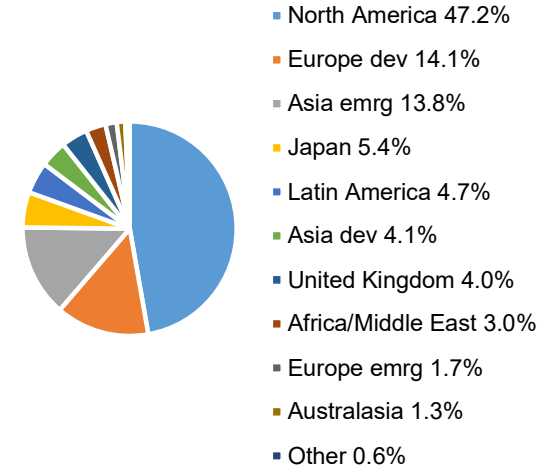
Equity Sector Exposure (GICS)



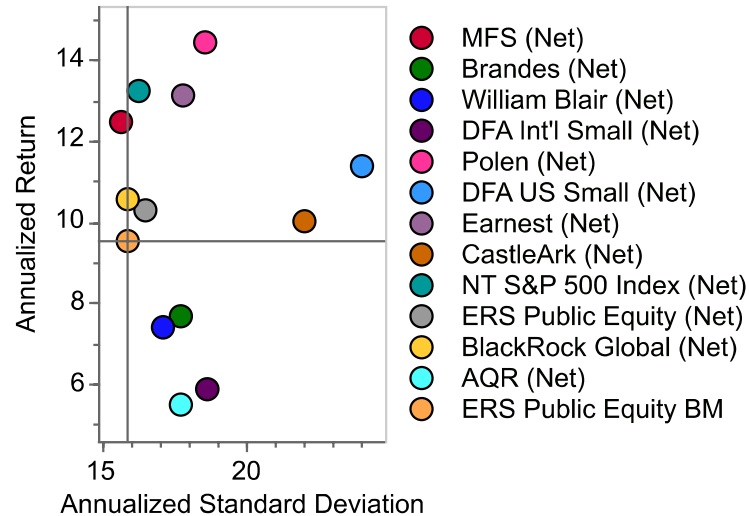
Regional Exposure by Domicile



Regional Exposure by Source of Revenue



Risk – Reward – 8/1/2016 to 12/31/2023



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Top 10 Holdings

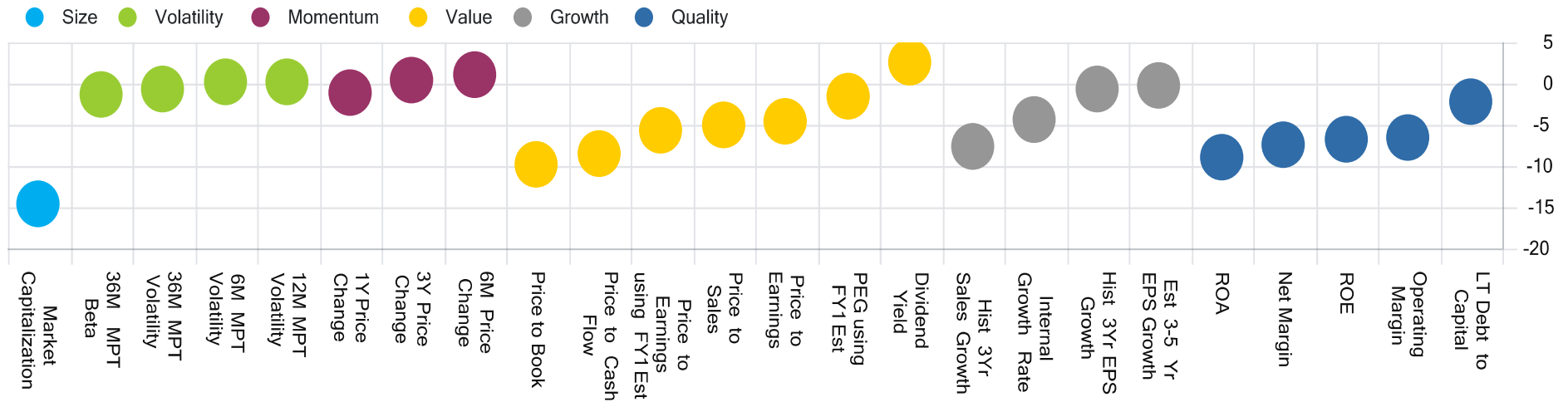
Portfolio Date 12/31/23	Weight %	Return %
Microsoft Corporation	2.2	19.3
Apple Inc.	1.3	12.6
Alphabet Inc.	1.2	6.8
Amazon.com, Inc.	1.1	19.5
Taiwan Semi Mfg. Co.	1.0	-12.9
Visa Inc.	0.7	13.4
NVIDIA Corporation	0.6	13.9
JPMorgan Chase & Co.	0.6	17.8
Adobe Inc.	0.6	17.0
Berkshire Hathaway Inc.	0.6	1.8

Top 10 Managers

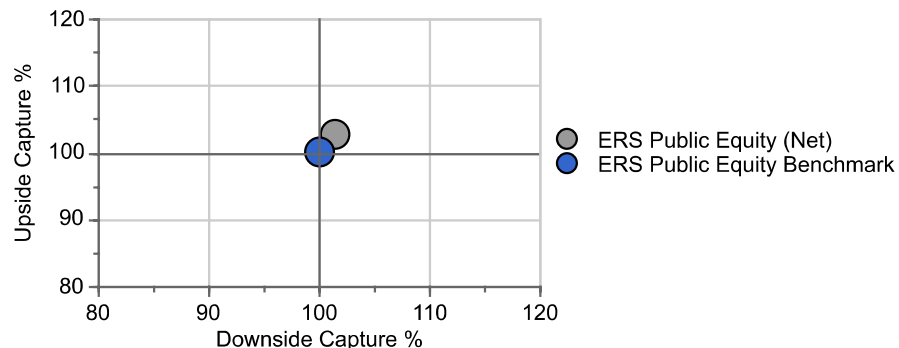
Portfolio Date 12/31/23	Weight %
Brandes Int'l Value	14.2
BlackRock Global Core	11.0
William Blair Int'l Growth	9.8
MFS Global Growth	8.7
NTQA S&P 500 Index Core	8.6
BlackRock R1000 Value Index	8.5
DFA US Small Cap Value	8.1
DFA Int'l Small Cap Value	7.1
DFA US Large Cap Value	6.1
Polen US Large Cap Growth	5.3

Public Equity Statistics

Characteristics Tilt vs MSCI ACWI IMI 12/31/2023



15 Year Upside-Downside –1/1/2009 to 12/31/2023



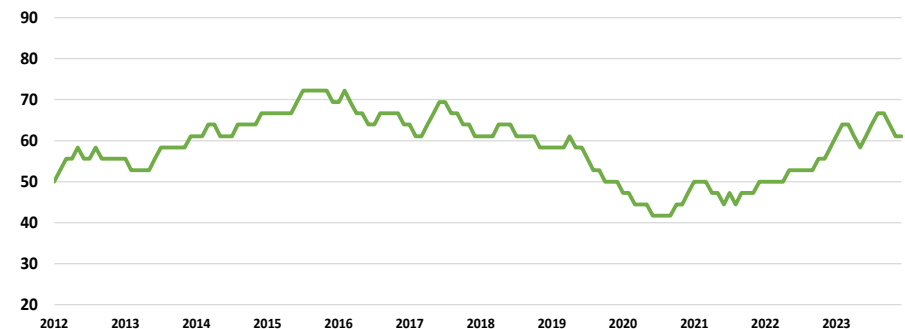
©FactSet Research Systems

15 Year Risk –1/1/2009 to 12/31/2023

	Annualized Return	Standard Deviation	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Public Equity (Net)	11.2	16.2	0.0	0.6	0.1	1.8	1.0
ERS Public Equity Benchmark	10.7	15.7	0.0	0.6	--	--	1.0

Batting Average

Rolling Window: 3 years
Time Period: 1/1/2009 to 12/31/2023



Risk – 7/1/2013 to 12/31/2023

	Annualized Return	Standard Deviation	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Public Equity (Net)	9.9	15.3	0.0	0.6	0.1	1.8	1.0
ERS Public Equity Benchmark	9.3	14.8	0.0	0.5	--	--	1.0

Public Equity Valuation Characteristics

As of December 31, 2023

	Price/ Earnings	P/E using FY2 Est	Price/ Book	Price/ CF	Dividend Yield
ERS Public Equity	14.5	13.4	1.6	7.8	2.20
MSCI AC World IMI	16.5	15.9	2.6	10.2	2.03

Domestic Managers	Price/ Earnings	P/E using FY2 Est	Price/ Book	Price/ CF	Dividend Yield	Global & International Managers	Price/ Earnings	P/E using FY2 Est	Price/ Book	Price/ CF	Dividend Yield
BlackRock R1000 Value Index	17.1	14.8	2.3	10.2	2.27	AQR Emerging Markets Core	7.4	7.7	1.1	3.7	5.53
CastleArk Small Growth	28.1	20.8	4.0	14.4	0.31	BlackRock Global Core	16.5	14.5	2.4	9.8	2.24
DFA Large Value	14.5	12.4	2.0	8.3	2.25	Brandes Int'l Value	10.5	9.7	1.1	4.7	3.73
DFA Small Value	10.3	10.7	1.1	5.4	1.69	DFA Int'l Small Value	9.2	8.9	0.8	4.5	3.71
Earnest Mid Core	18.1	15.9	2.7	11.3	1.47	MFS Global Growth	26.8	22.1	4.7	18.4	1.14
NT S&P 500 Index	23.9	19.2	4.2	15.3	1.46	William Blair Int'l Growth	23.5	19.3	3.7	17.1	1.61
Polen Large Growth	37.5	27.8	9.1	25.2	0.38						

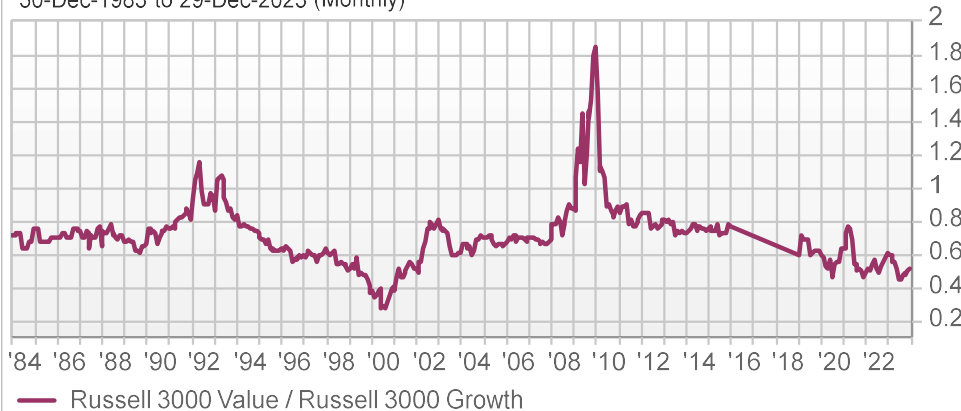
*"Price/Earnings" and "P/E using FY2 Est" values exclude companies with negative earnings from calculations.

P/E Ratio Comparisons in the U.S. Since 1980 - As of December 31, 2023

Value vs. Growth

Relative Price to Earnings

30-Dec-1983 to 29-Dec-2023 (Monthly)



© FactSet Research Systems

Large vs. Small

Relative Price to Earnings

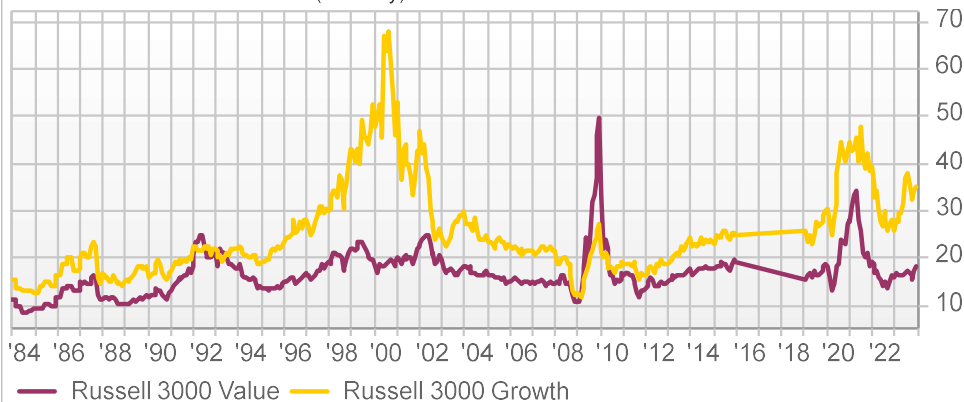
30-Dec-1983 to 29-Dec-2023 (Monthly)



© FactSet Research Systems

Price to Earnings - Russell 3000 Value vs Russell 3000 Growth

30-Dec-1983 to 29-Dec-2023 (Monthly)



© FactSet Research Systems

Relative Price to Earnings

30-Dec-1983 to 29-Dec-2023 (Monthly)



© FactSet Research Systems

Price to Earnings ratios for Value vs. Growth charts include companies with negative earnings in calculations.

Price to Earnings ratios for Large vs Small: Top chart includes companies with negative earnings in calculations; bottom chart excludes companies with negative earnings from calculation.

Relative Investment Performance – Active Equity Managers

As of December 31, 2023

Outperforming Equity Managers

	4th Qtr	1 Year	3 Year	5 Year	7 Year	10 Year
William Blair <i>MSCI ACWI ex US</i>	13.0% 3.2%	15.9% 0.3%	-2.5% 4.5%	9.7% 2.1%	8.1% 1.3%	5.2% 0.9%
Polen <i>S&P 500</i>	14.2% 2.6%	38.1% 11.8%	2.2% 7.8%	14.7% 0.9%	15.5% 2.1%	14.1% 2.1%
AQR <i>MSCI EM</i>	10.2% 2.3%	17.9% 8.1%	-2.2% 2.9%	5.7% 2.0%	5.5% 0.6%	N/A
BlackRock Global Alpha Tilts <i>MSCI ACWI</i>	11.4% 0.3%	23.0% 0.8%	6.6% 0.9%	12.3% 0.5%	10.7% 0.7%	N/A
Brandes <i>MSCI EAFE</i>	10.6% 0.2%	31.0% 12.8%	11.5% 7.4%	9.3% 1.2%	7.4% 0.4%	5.2% 0.9%
MFS <i>MSCI ACWI</i>	11.2% 0.1%	20.8% 1.4%	5.4% 0.3%	14.3% 2.6%	13.8% 3.8%	10.5% 2.6%
DFA U.S. Small Value <i>Russell 2000 Value</i>	15.3% 0.0%	21.0% 6.4%	18.4% 10.5%	15.4% 5.4%	9.4% 3.3%	8.9% 2.2%
ERS Public Equity <i>ERS Equity Benchmark</i>	11.4% 0.2%	21.0% 0.6%	7.1% 1.6%	12.2% 0.7%	10.3% 0.5%	8.5% 0.4%

Relative outperformance in blue

Relative underperformance in red

*Returns net of fees

Relative Investment Performance – Active Equity Managers

As of December 31, 2023

Underperforming Equity Managers

	4th Qtr	1 Year	3 Year	5 Year	7 Year	10 Year
CastleArk	9.4%	9.9%	-4.3%	9.1%	10.1%	7.4%
<i>Russell 2000 Growth</i>	3.3%	8.7%	0.8%	0.1%	2.0%	0.3%
DFA International	9.3%	17.6%	7.1%	8.4%	5.7%	4.6%
<i>MSCI EAFE Small Cap</i>	1.8%	4.4%	7.8%	1.9%	0.3%	0.2%
DFA U.S. Large Value	9.1%	12.3%	10.7%	11.0%	N/A	N/A
<i>Russell 1000 Value</i>	0.4%	0.8%	1.8%	0.1%		
Earnest	12.8%	17.1%	7.4%	15.6%	12.8%	11.5%
<i>Russell MidCap</i>	0.0%	0.1%	1.5%	2.9%	2.7%	2.1%
ERS Public Equity	11.4%	21.0%	7.1%	12.2%	10.3%	8.5%
<i>ERS Equity Benchmark</i>	0.2%	0.6%	1.6%	0.7%	0.5%	0.4%

Relative outperformance in blue

Relative underperformance in red

*Returns net of fees

Relative Investment Performance – Passive Equity Managers & Other

As of December 31, 2023

Passive Equity Managers

	4th Qtr	1 Year	3 Year	5 Year	7 Year	10 Year
Northern Trust S&P 500 Index <i>S&P 500</i>	11.7% 0.0%	26.3% 0.0%	10.0% 0.0%	15.7% 0.0%	13.4% 0.0%	12.1% 0.0%
BlackRock Russell 1000 Value Index <i>Russell 1000 Value</i>	9.5% 0.0%	11.5% 0.0%	8.9% 0.0%	11.0% 0.1%	N/A	N/A

Real Assets Manager

	4th Qtr	1 Year	3 Year	5 Year	7 Year	10 Year
Principal Diversified Real Assets <i>Blended Benchmark</i>	7.1% 0.4%	3.3% 1.0%	4.6% 0.1%	6.4% 0.3%	4.8% 0.2%	N/A

Relative outperformance in blue

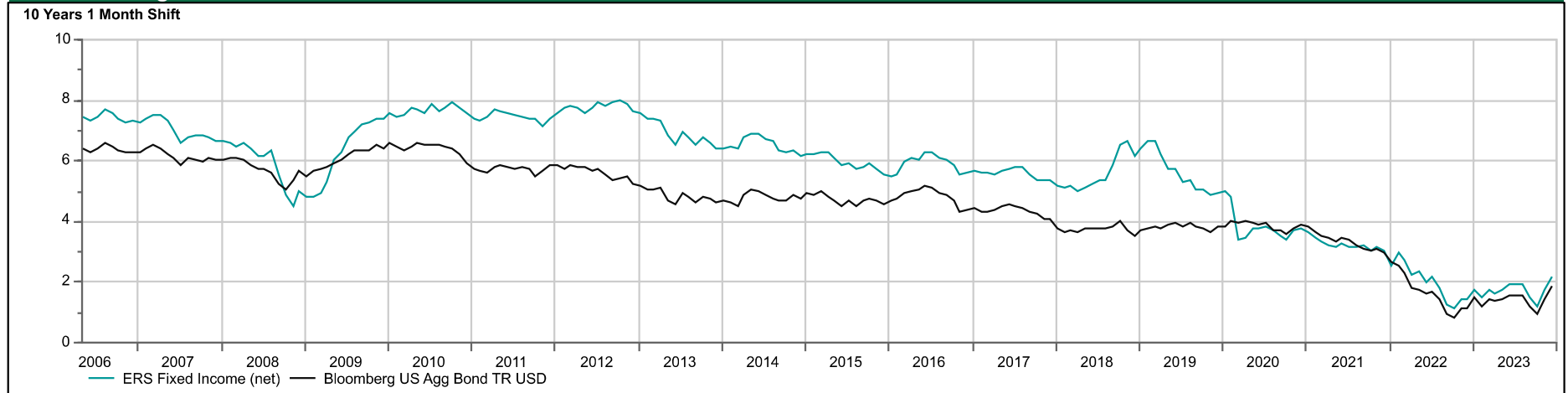
Relative underperformance in red

*Returns net of fees

Fixed Income

Fixed Income Performance

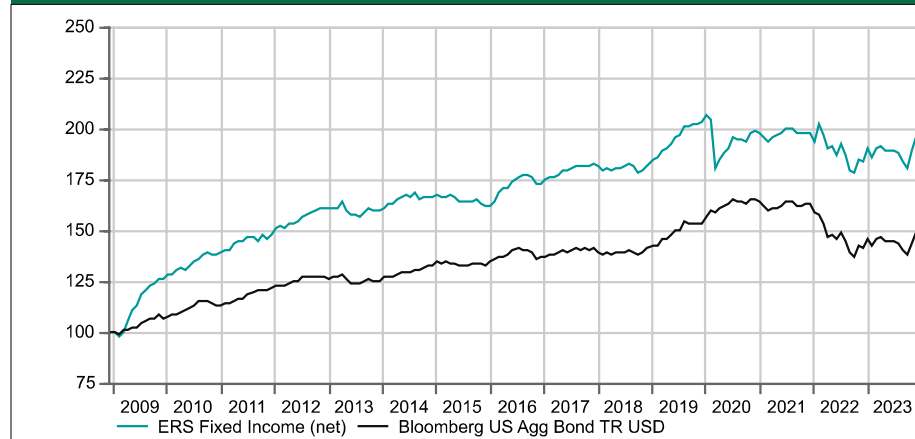
10 Year Rolling Returns – 6/1/1996 to 12/31/2023



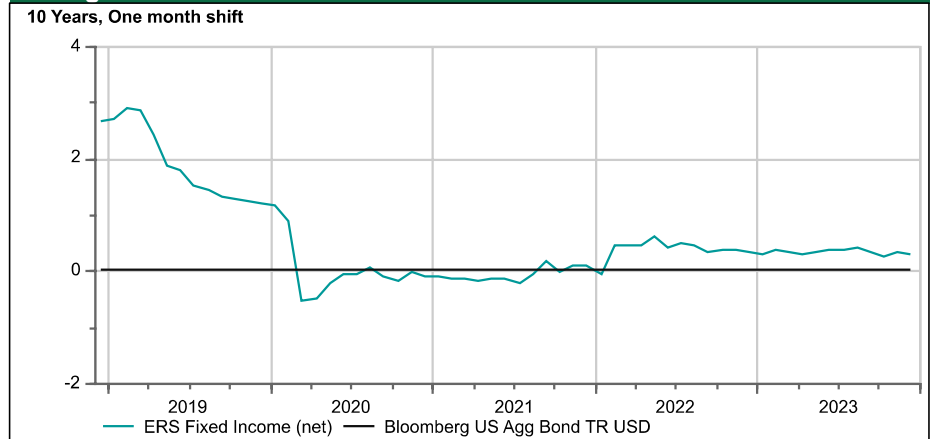
Trailing Returns

		Annualized Return					
	QTR	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
Total Fixed Income (Gross)	7.0	6.8	-0.3	1.7	1.9	2.2	4.7
Total Fixed Income (Net)	6.9	6.7	-0.4	1.6	1.8	2.1	4.6
Bloomberg US Aggregate	6.8	5.5	-3.3	1.1	1.3	1.8	2.7

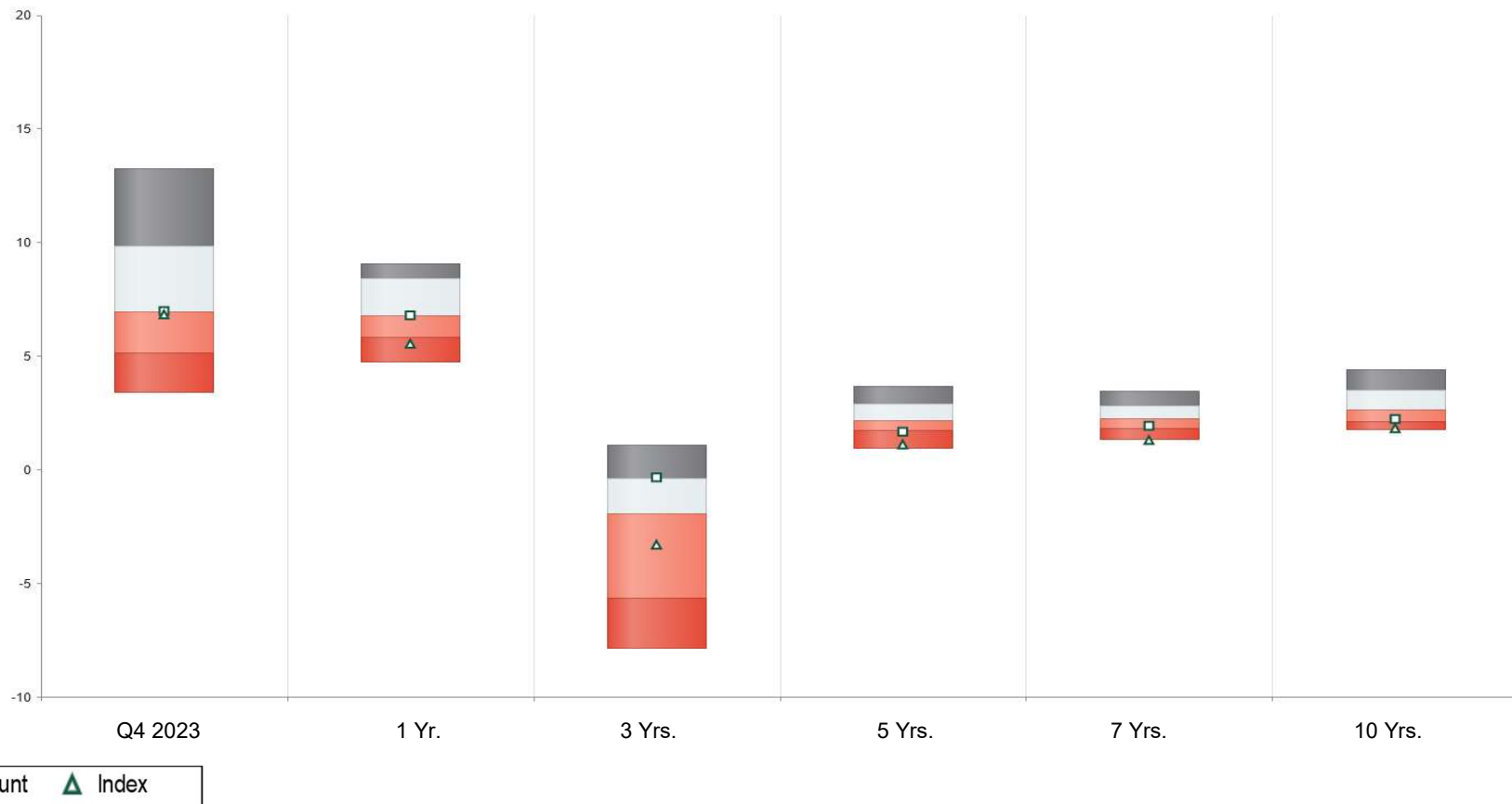
Investment Growth –1/1/2009 to 12/31/2023



Rolling Excess Return –1/1/2009 to 12/31/2023



Fixed Income vs Universe



	Q4 2023	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	7.0	6.8	-0.3	1.7	1.9	2.2
Percentile Rank	51	51	24	81	67	69
Index Return	6.8	5.5	-3.3	1.1	1.3	1.8
Percentile Rank	54	81	69	89	92	88
1st Quartile	9.8	8.4	-0.4	2.9	2.8	3.5
Median	7.0	6.8	-1.9	2.2	2.2	2.6
3rd Quartile	5.1	5.8	-5.6	1.7	1.8	2.1
Observations	94	94	94	94	94	90

Relative Investment Performance – Fixed Income Managers

As of December 31, 2023

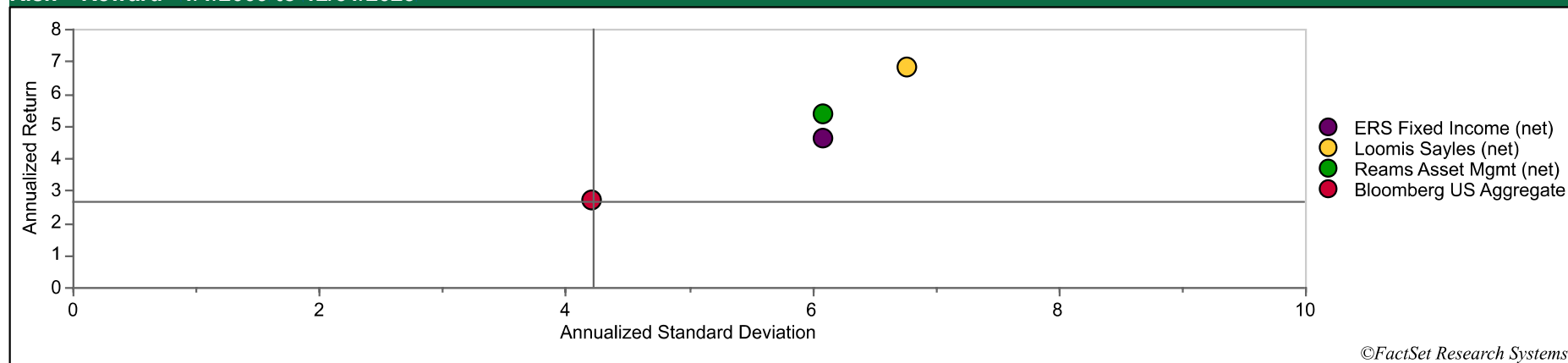
	4th Qtr	1 Year	3 Year	5 Year	7 Year	10 Year
Reams	7.3%	6.6%	-2.4%	3.4%	3.2%	3.0%
<i>Bloomberg U.S. Agg.</i>	0.5%	1.1%	1.0%	2.3%	1.9%	1.2%
Loomis Sayles	7.7%	8.4%	-1.0%	3.5%	3.3%	3.5%
<i>Bloomberg U.S. Agg.</i>	0.8%	2.9%	2.3%	2.4%	2.0%	1.7%
BlackRock Index	5.5%	4.2%	N/A	N/A	N/A	N/A
<i>Bloomberg U.S. Government</i>	0.1%	0.2%				
ERS Fixed Income	6.9%	6.7%	-0.4%	1.6%	1.8%	2.1%
<i>Bloomberg U.S. Agg.</i>	0.1%	1.1%	2.9%	0.5%	0.5%	0.3%

Relative outperformance in blue
Relative underperformance in red

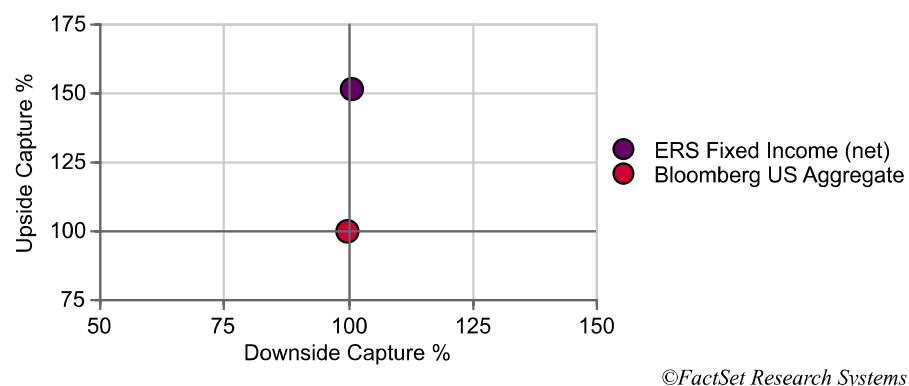
*Returns net of fees

Fixed Income Statistics

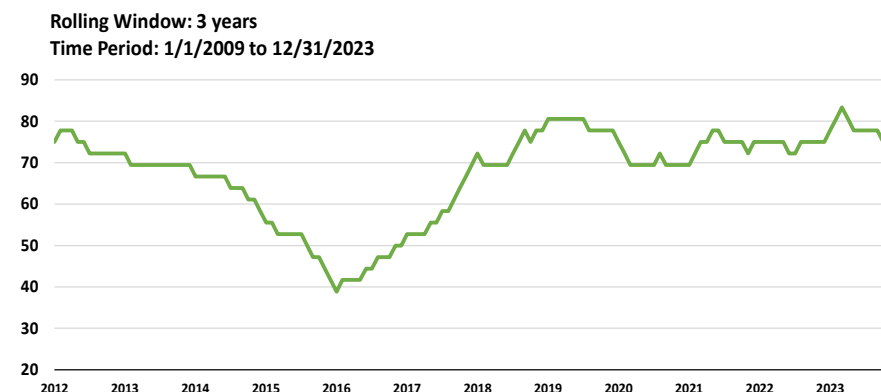
Risk – Reward –1/1/2009 to 12/31/2023



15 Year Upside-Downside –1/1/2009 to 12/31/2023



Batting Average



15 Year Risk –1/1/2009 to 12/31/2023

	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Total Fixed Income (Net)	4.6	6.1	0.2	0.6	0.1	4.4
Bloomberg US Aggregate	2.7	4.2	0.0	0.4	--	1.0

Risk – 7/1/2013 to 12/31/2023

	Annualized Return	Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Total Fixed Income (Net)	2.1	6.3	0.0	0.1	0.0	4.4
Bloomberg US Aggregate	1.8	4.7	0.0	0.1	--	1.0

Absolute Return

Relative Investment Performance – Absolute Return Managers

As of December 31, 2023

	4th Qtr	1 Year	3 Year	5 Year	7 Year
UBS A&Q <i>1 Year Libor / SOFR + 4%</i>	2.6% 0.3%	6.8% 2.2%	7.9% 1.9%	9.1% 2.7%	7.5% 1.1%
Aptitude <i>SOFR + 4%</i>	2.1% 0.2%	5.2% 3.8%	N/A	N/A	N/A
ERS Absolute Return <i>3 Month T-Bill + 3%</i>	2.4% 0.3%	6.3% 2.1%	12.7% 7.2%	6.6% 1.7%	5.8% 0.9%

Relative outperformance in blue

Relative underperformance in red

Risk Adjusted Returns (6/30/14 - 12/31/23)

	Return	Std Dev	Sharpe Ratio	Max Drawdown
ERS Public Equity (net)	8.3%	15.7%	0.4	-25.3%
ERS Fixed Income (net)	1.7%	6.6%	0.1	-13.6%
ERS Absolute Return (net)	5.6%	9.5%	0.5	-27.1%

*Returns net of fees

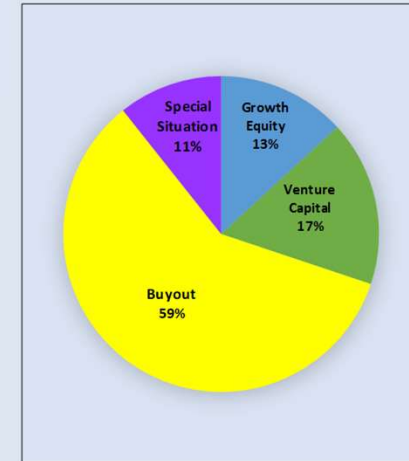
Private Equity

Milwaukee ERS Private Equity Portfolio as of September 30, 2023

PE Summary - Portfolio Capital Calls, Distributions & NAV

Partnership	Vintage Year mitted	Invested Capital*	Uncalled Commitments*	Distributions*	NAV	TVPI*	
Abbott 2010	2010	35,000,000	34,650,405	349,595	52,022,942	19,042,119	2.05
Abbott 2011	2011	55,000,000	54,730,191	269,809	81,504,752	37,634,043	2.18
Abbott 2012	2012	40,000,000	39,600,000	400,000	53,509,417	34,515,915	2.22
Abbott 2013	2013	35,000,000	34,650,000	350,000	46,229,311	33,280,167	2.29
Abbott 2014	2014	35,000,000	34,300,000	700,000	42,370,486	37,491,881	2.33
Abbott 2015	2015	25,000,000	25,050,000	-	21,150,000	31,537,649	2.10
Abbott 2016	2016	20,000,000	19,717,500	282,500	10,480,000	28,026,252	1.95
Abbott 2018	2018	20,000,000	18,275,000	1,725,000	4,325,000	22,712,292	1.48
Abbott 2019	2019	20,000,000	16,570,000	3,430,000	3,140,000	19,644,935	1.38
Abbott 2020	2020	40,000,000	24,940,000	15,060,000	2,360,000	25,792,058	1.13
Abbott 2021	2021	20,000,000	7,467,249	12,532,751	-	8,010,930	1.07
Abbott 2022	2022	35,000,000	8,897,233	26,102,767	-	8,941,007	1.00
Abbott 2023	2023	30,000,000	1,950,000	28,050,000	-	1,944,500	1.00
Mesirow V	2008	75,000,000	71,096,194	3,903,806	131,173,045	38,874,073	2.39
Mesirow VI	2013	60,000,000	53,400,000	6,600,000	71,976,748	65,534,295	2.58
Mesirow VII	2017	100,000,000	81,514,499	18,485,501	11,498,942	125,847,995	1.68
Mesirow VIII	2020	120,000,000	55,800,000	64,200,000	-	57,393,859	1.03
Neuberger Berman III	2013	30,000,000	31,903,099	-	40,315,644	8,064,859	1.52
Neuberger Berman IV	2017	25,000,000	24,373,659	626,341	18,891,353	17,743,523	1.50
Neuberger Berman V	2021	100,000,000	29,025,000	70,975,000	4,408,639	35,031,541	1.36
Private Advisors VI	2014	30,000,000	34,707,965	-	42,098,617	20,787,369	1.81
Private Advisors VII	2016	15,000,000	18,794,968	-	17,013,068	14,347,613	1.67
Private Advisors VIII	2018	15,000,000	16,097,257	-	7,194,928	19,464,400	1.66
Private Advisors IX	2019	35,000,000	34,471,766	528,234	13,457,552	34,916,616	1.40
Private Advisors X	2022	30,000,000	7,536,799	22,463,201	931,629	8,599,961	1.26
Total ERS		1,045,000,000	779,518,785	277,034,505	676,052,072	755,179,852	1.84
% of ERS Fund				5.1%		13.8%	

Sub-Asset Class Breakdown



NAV by Vintage Year



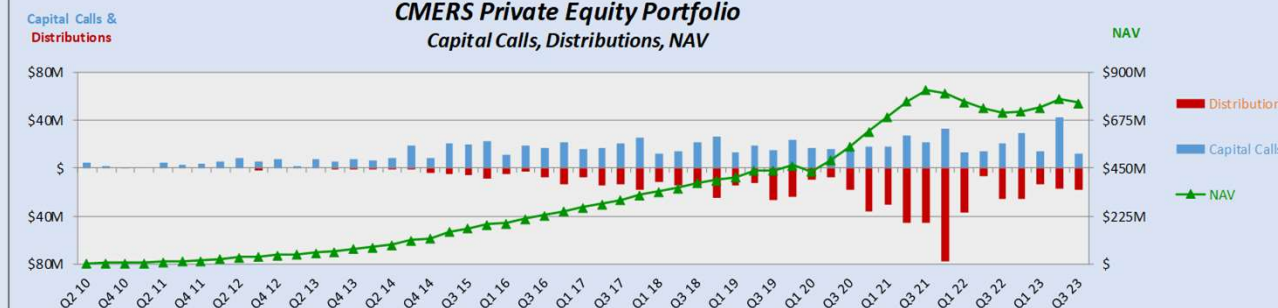
Vintage Year**



Age of Investment***



CMERS Private Equity Portfolio Capital Calls, Distributions, NAV



* Invested capital, uncalled commitments, and distributions will not necessarily match partnership statement. Estimates reflect best efforts to incorporate actual ERS experience. TVPI stands for "Total Value to Paid in Capital."

** Vintage Year Investments Prior to 2005 are deemed to not be material figures and are not illustrated in above graph. Excludes Neuberger Berman.

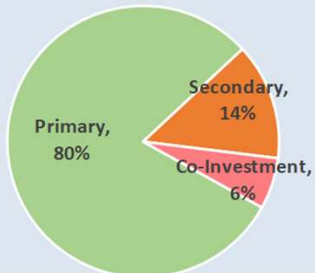
*** Portfolio Companies by Age of Investment figures have not been fully adjusted for overlapping investments. Excludes Neuberger Berman.

Private Equity Continued

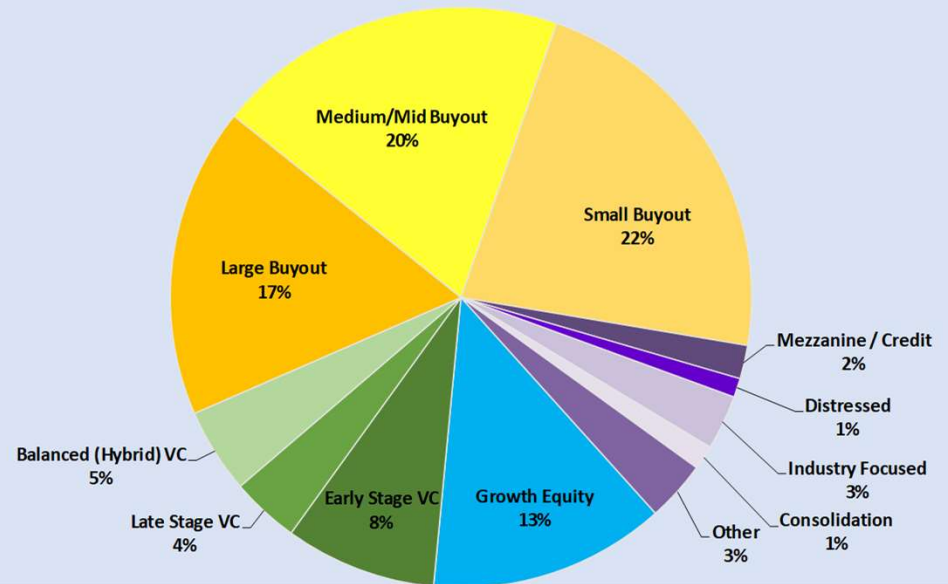
Total Managers	215*
Number of Partnerships	624*
Number of Portfolio Companies	6,070*

*Data in the above table is estimated. Actual data may be slightly different.

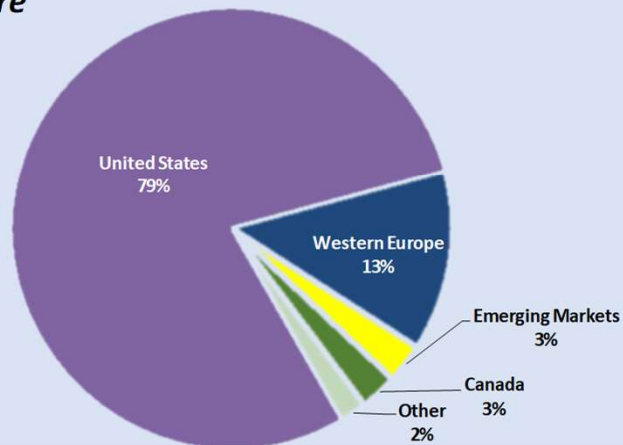
Transaction Type



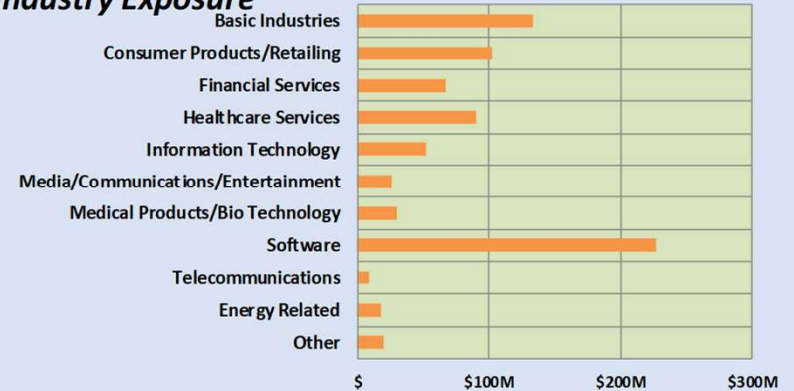
Strategy Exposure



Geographic Exposure



Industry Exposure



Performance Update

Performance Update

Estimated ERS Total Fund Market Value is \$5.88 billion as of February 7, 2024

Period	ERS Fund*	Benchmark
January (Estimate)	-0.3%	0.0%
February MTD (Estimate)	0.2%	0.4%
YTD Through February 7, 2024 (Estimate)	-0.1%	0.4%

*Returns Net of Fees

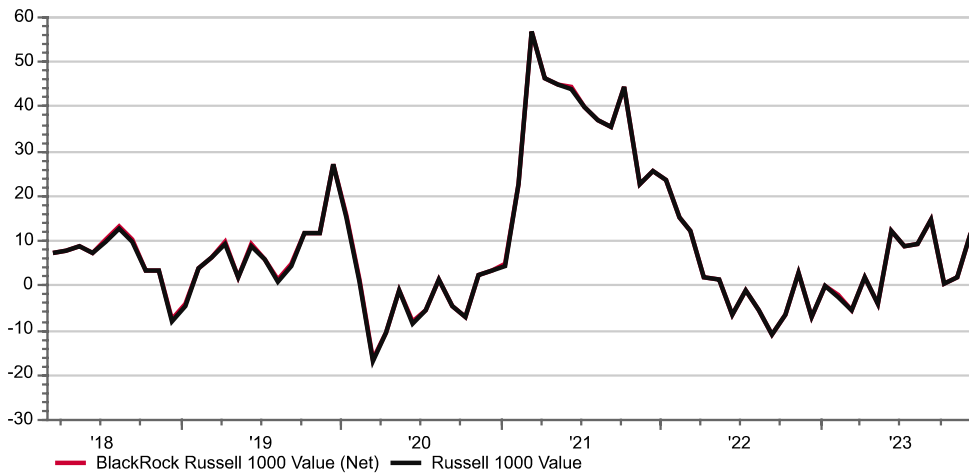
Appendix

Appendix – Table of Contents

<u>Domestic Equity</u>	<u>Page</u>
BlackRock Russell 1000 Value.....	42
CastleArk.....	44
DFA (Large Cap Value).....	48
DFA (U.S. Small Value).....	52
Earnest.....	56
Northern Trust S&P 500.....	60
Polen.....	62
<u>International Equity</u>	
AQR.....	66
Brandes.....	70
DFA (International).....	74
William Blair.....	78
<u>Global Equity</u>	
BlackRock Global Alpha Tilts.....	82
MFS.....	86
<u>Fixed Income</u>	
Loomis Sayles.....	90
Reams.....	92

BlackRock Russell 1000 Value Portfolio Snapshot – December 31, 2023

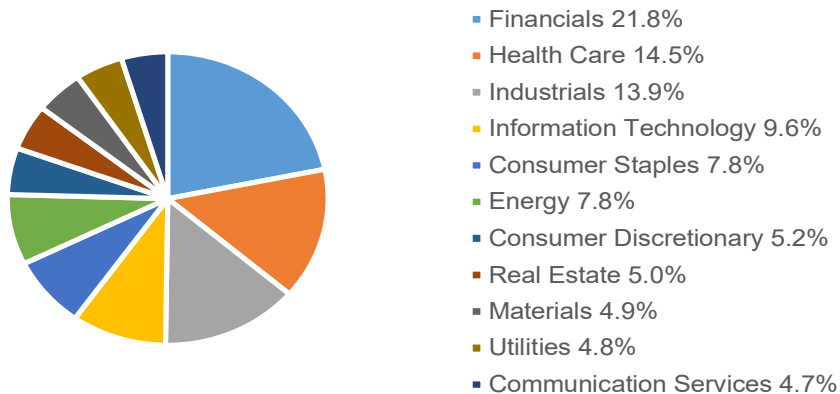
Rolling Returns Since Inception 4/1/2017 (One Year, One Month Shift)



Trailing Returns

	QTR	1 Year	3 Year	5 Year	Inception 4/1/2017
BlackRock R1000 Value (Net)	9.5	11.5	8.9	11.0	8.2
Russell 1000 Value	9.5	11.5	8.9	10.9	8.1

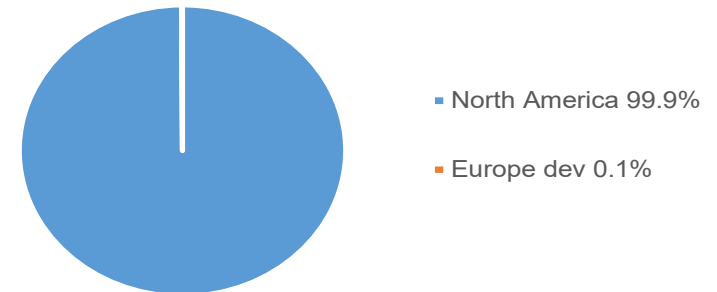
Equity Sector Exposure (GICS)



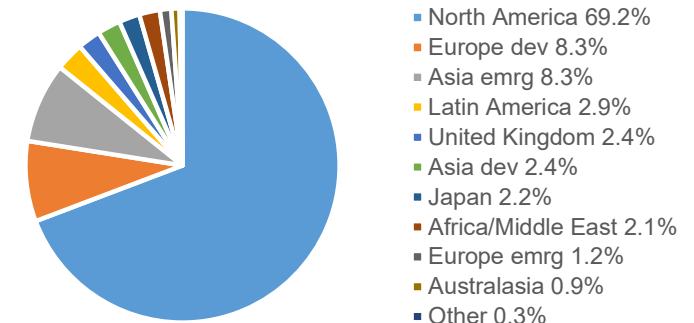
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Berkshire Hathaway Inc.	3.23	1.82
JPMorgan Chase & Co.	2.43	18.18
Exxon Mobil Corporation	2.00	-14.18
Johnson & Johnson	1.87	1.41
Procter & Gamble Company	1.39	1.10
Chevron Corporation	1.27	-10.61
Bank of America Corporation	1.15	23.94
Merck & Co., Inc.	1.12	6.64
Walmart Inc.	1.11	-1.07
Intel Corporation	1.05	41.75

Regional Exposure by Domicile



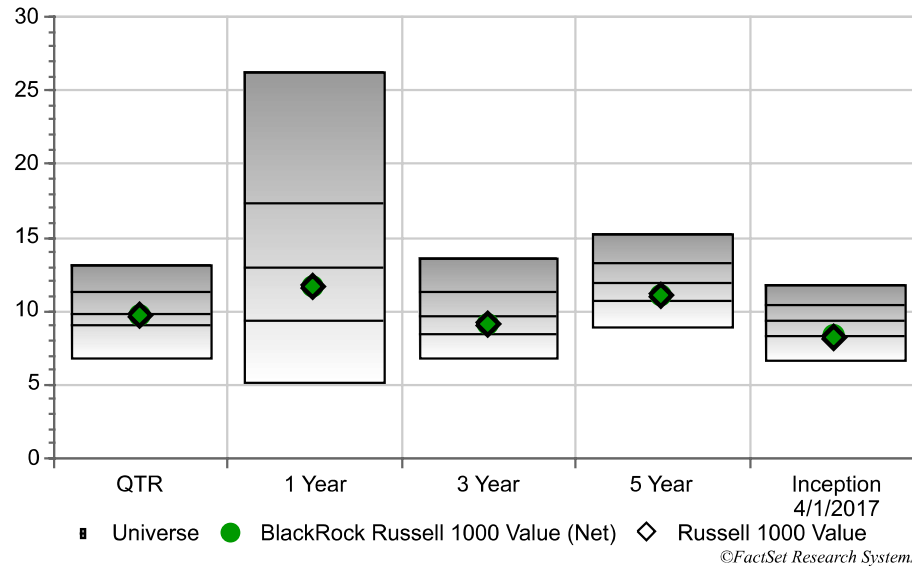
Regional Exposure by Source of Revenue



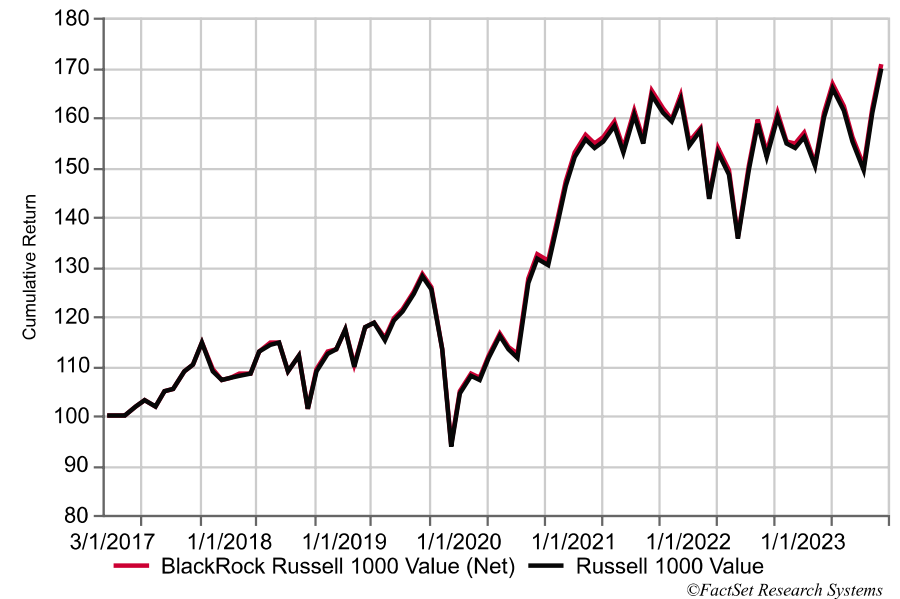
BlackRock Russell 1000 Value vs Universe & Benchmark

Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US:Large-Cap Value

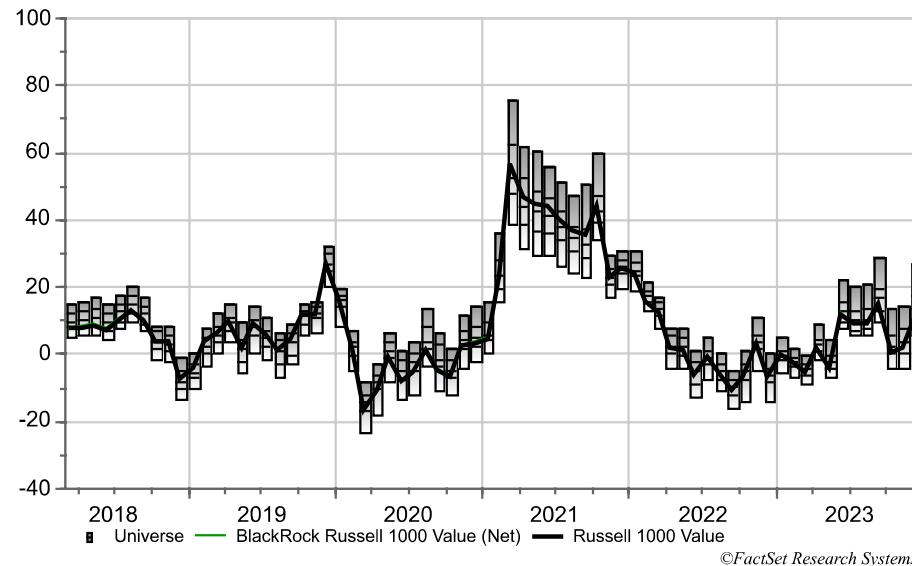


Investment Growth Since Inception 4/1/2017



Rolling Returns 4/1/2017 – 12/31/2023 (1 Year, 1 Month Shift)

Universe: Lipper US:Large-Cap Value

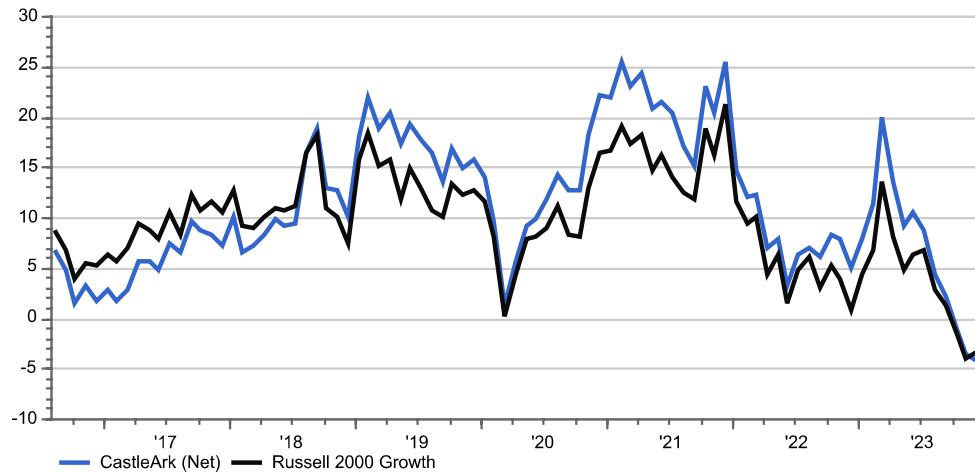


Risk Since Inception 4/1/2017

	Return	Std Dev	Sharpe Ratio	Tracking Error
BlackRock R1000 Value (Net)	8.2	17.2	0.4	0.1
Russell 1000 Value	8.1	17.2	0.4	--

CastleArk Portfolio Snapshot – December 31, 2023

Rolling Returns Since Inception 9/1/2013 (Three Year, One Month Shift)



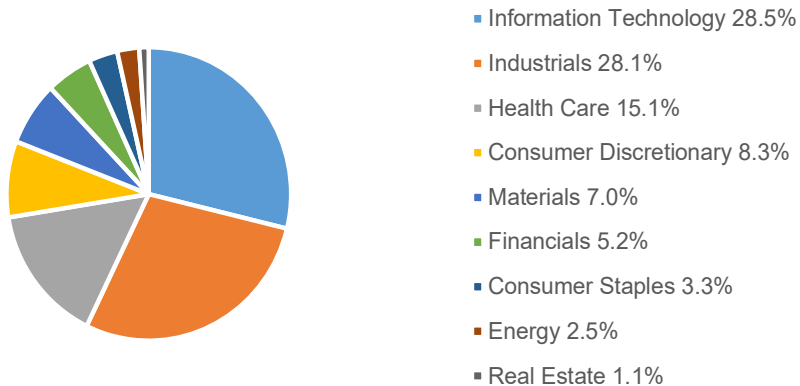
Top 10 Holdings

	Portfolio Weight	Quarterly Return
API Group Corporation	1.98	33.44
Parsons Corporation	1.65	15.38
Varonis Systems, Inc.	1.61	48.26
Pentair plc	1.57	12.69
Brink's Company	1.56	21.45
Evercore Inc.	1.52	24.70
TechnipFMC plc	1.50	-0.75
Saia, Inc.	1.46	9.93
Medpace Holdings, Inc.	1.44	26.60
Celestica Inc.	1.43	19.41

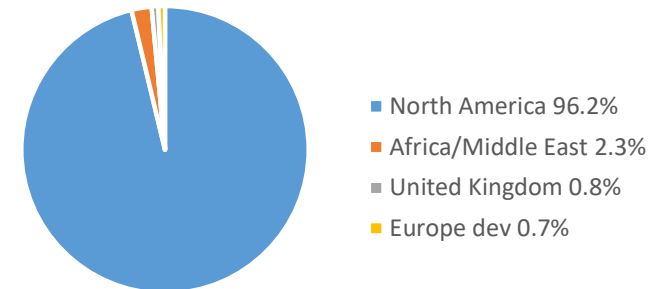
Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	Inception 9/1/2013
CastleArk (Net)	9.4	9.9	-4.3	9.1	7.4	9.0
Russell 2000 Growth	12.7	18.7	-3.5	9.2	7.2	8.4

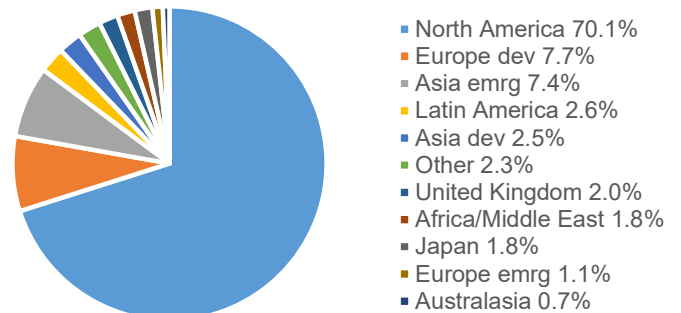
Equity Sector Exposure (GICS)



Regional Exposure by Domicile



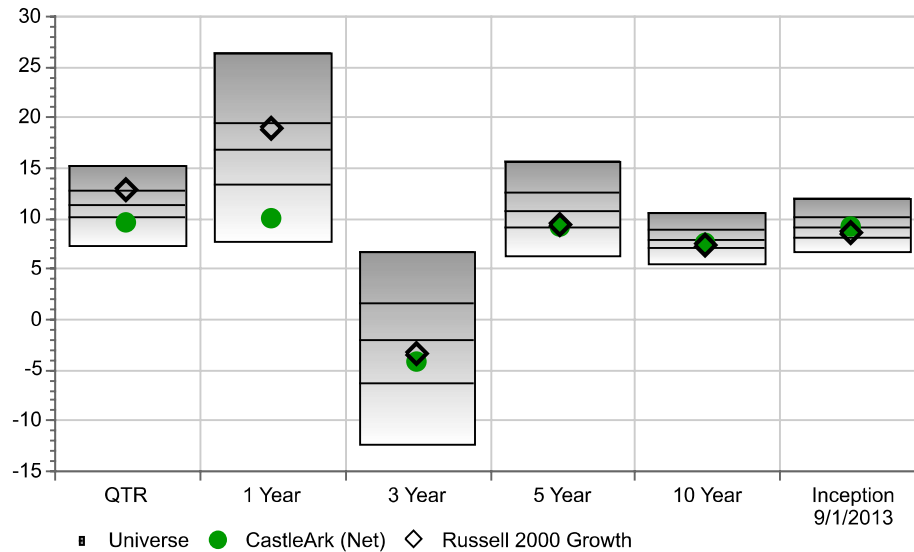
Regional Exposure by Source of Revenue



CastleArk vs Universe & Benchmark

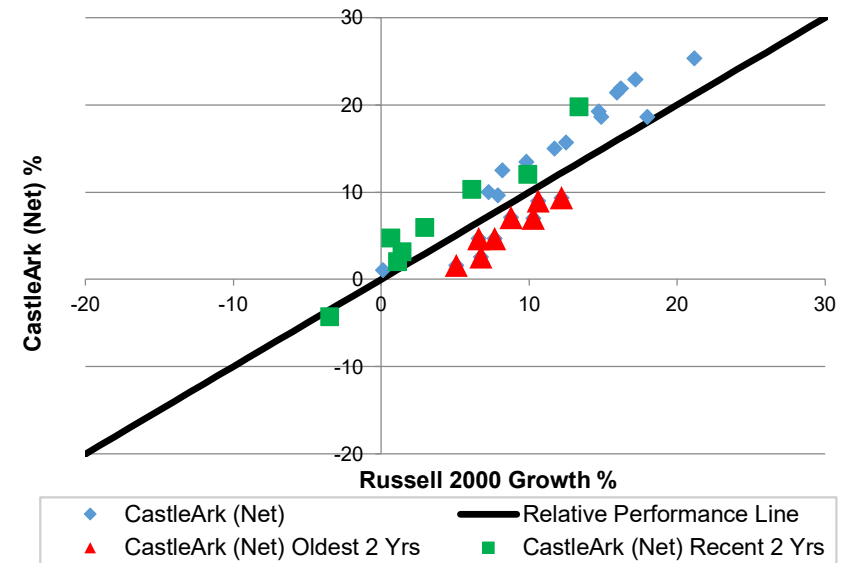
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Small-Cap Growth



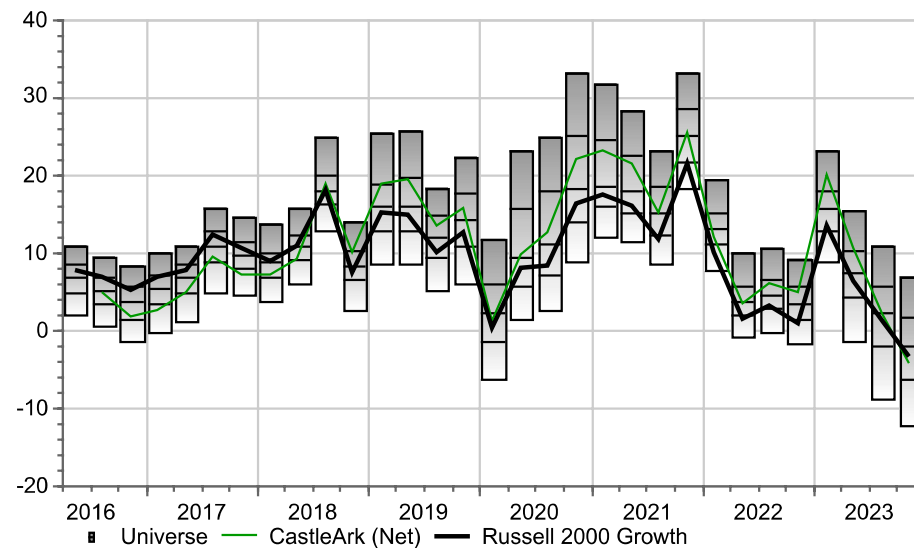
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 9/1/2013 – 12/31/2023 (3 Year, 3 Month Shift)

Universe: Lipper US:Small-Cap Growth



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Over/Under Benchmark Analysis

21	Outperform
9	Underperform
30	# Observations
70%	% Outperform

CastleArk Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
APi Group Corporation	1.88	1.52	0.49
Varonis Systems, Inc.	1.41	1.05	0.48
Medpace Holdings, Inc.	1.29	1.29	0.35
Evercore Inc.	1.33	1.33	0.35
Nutanix, Inc.	0.74	0.74	0.34
Trex Company, Inc.	1.02	1.02	0.32
Wix.Com LTD.	0.91	0.91	0.32
BellRing Brands, Inc.	0.97	0.82	0.29
Celestica Inc.	1.34	1.34	0.28
Jones Lang LaSalle Inc.	0.78	0.78	0.27

Top 10 Leading Detractors

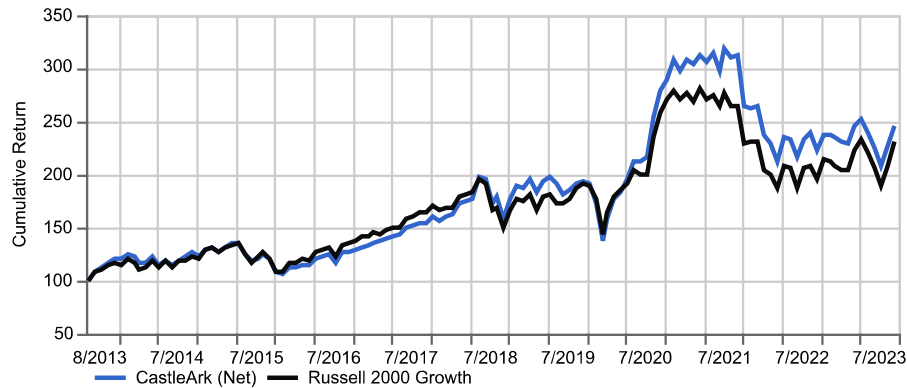
	Avg. Weights	Relative Weights	Active Return
SMART Global Holdings, Inc.	0.32	0.30	-0.49
Cytokinetics, Incorporated	0.00	-0.26	-0.43
MicroStrategy Incorporated	0.00	-0.43	-0.34
Flywire Corporation	1.00	0.76	-0.32
Hasbro, Inc.	0.69	0.69	-0.31
Blueprint Medicines Corporation	0.00	-0.34	-0.26
Marathon Digital Holdings, Inc.	0.00	-0.16	-0.25
Chart Industries, Inc.	1.16	0.82	-0.23
Simpson Manufacturing Co., Inc.	0.00	-0.60	-0.20
Duolingo, Inc.	0.00	-0.47	-0.19

Sector Attribution

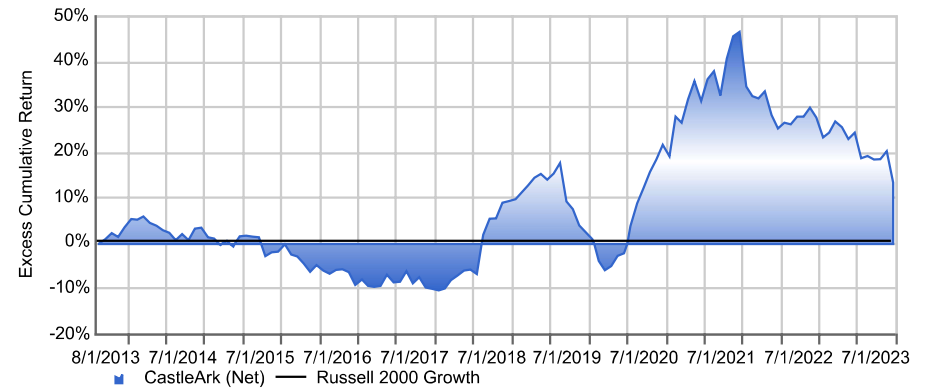
	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-0.9	8.6	14.4	0.0	-0.1	-0.1
Consumer Discretionary	-2.6	15.0	14.2	-0.1	0.0	0.0
Consumer Staples	-0.4	7.7	13.5	0.0	-0.2	-0.2
Energy	-0.7	-10.4	-7.3	0.2	0.1	0.3
Financials	0.7	-1.0	10.1	-0.1	-0.9	-1.0
Health Care	-6.5	6.9	15.7	-0.2	-1.3	-1.5
Industrials	6.5	10.6	12.6	0.0	-0.6	-0.6
Information Technology	4.1	12.9	14.2	0.1	-0.4	-0.3
Materials	0.9	15.3	12.7	0.0	0.1	0.1
Real Estate	-0.8	33.8	21.1	-0.1	0.1	0.0
Utilities	-1.6	0.0	8.5	0.1	0.0	0.1
Cash	1.3	1.3	0.0	-0.1	0.0	-0.1
Total	0.0	9.4	12.7	-0.2	-3.1	-3.3

CastleArk Inception Performance & Statistics

Investment Growth Since Inception 9/1/2013



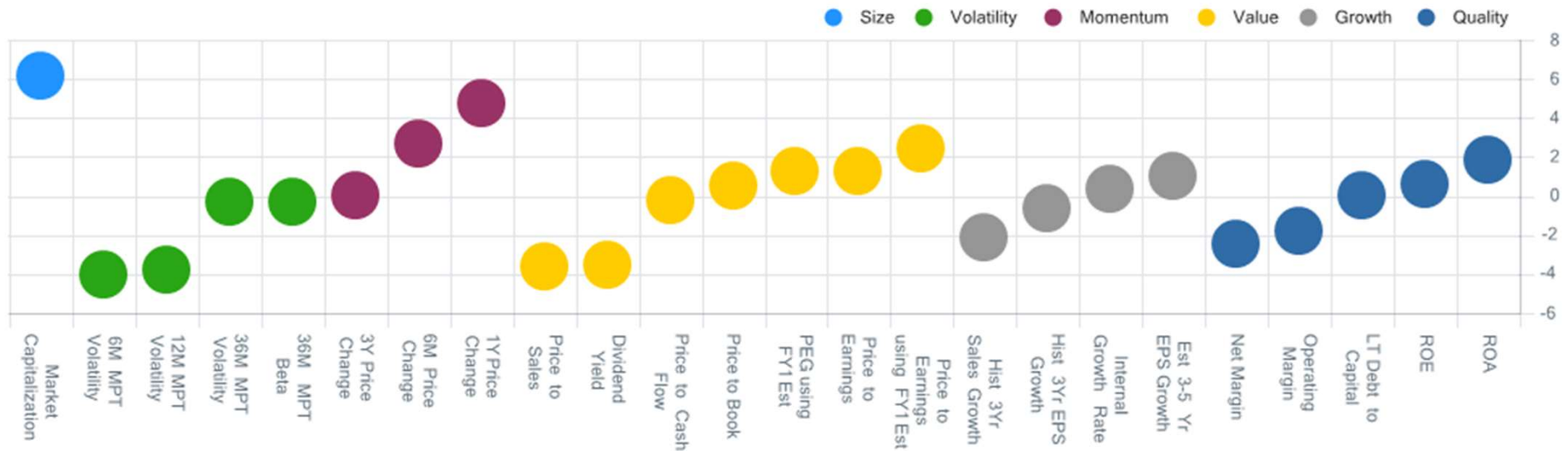
Relative Cumulative Performance Since Inception 9/1/2013



Risk Since Inception 9/1/2013

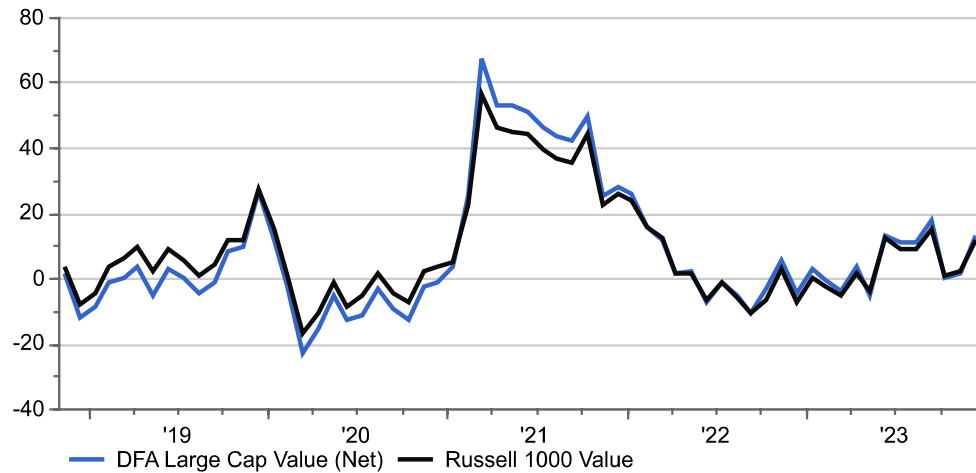
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
CastleArk (Net)	9.0	20.4	0.8	0.4	0.1	5.2	1.0
Russell 2000 Growth	8.4	20.4	--	0.4	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



DFA LCV Portfolio Snapshot – December 31, 2023

Rolling Returns Since Inception 12/1/2017 (One Year, One Month Shift)



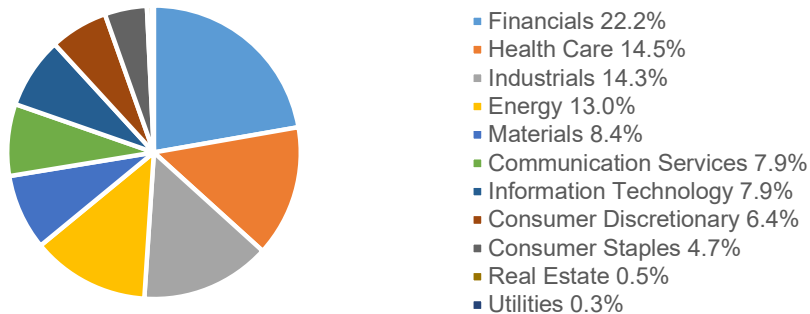
Top 10 Holdings

	Portfolio Weight	Quarterly Return
JPMorgan Chase & Co.	4.48	18.18
Exxon Mobil Corporation	3.76	-14.18
Chevron Corporation	2.39	-10.61
Berkshire Hathaway Inc.	2.17	1.82
Comcast Corporation	1.80	-0.41
Verizon Communications Inc.	1.44	18.52
Pfizer Inc.	1.39	-12.04
ConocoPhillips Company	1.23	-2.63
D.R. Horton, Inc.	1.12	41.75
Meta Platforms, Inc.	1.10	17.90

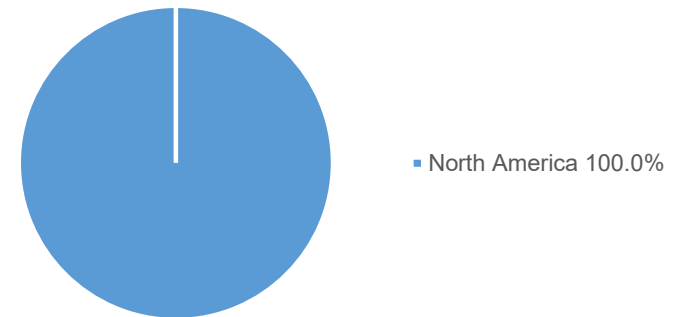
Trailing Returns

	QTR	1 Year	3 Year	5 Year	Inception 12/1/2017
DFA US Large Value	9.1	12.3	10.7	11.0	7.1
Russell 1000 Value	9.5	11.5	8.9	10.9	7.6

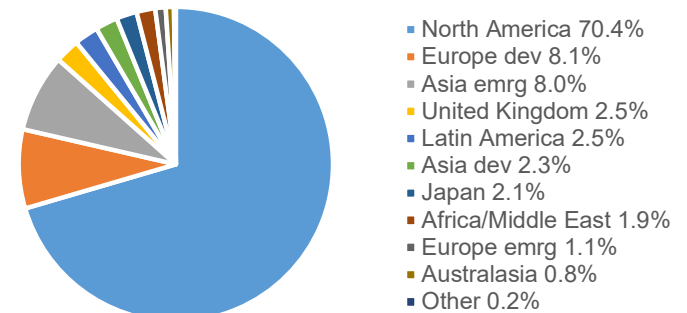
Equity Sector Exposure (GICS)



Regional Exposure by Domicile



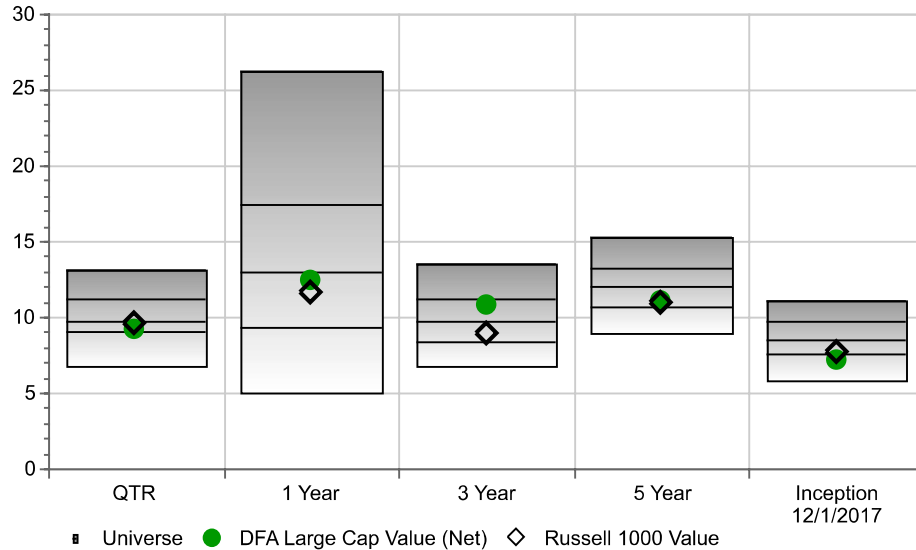
Regional Exposure by Source of Revenue



DFA LCV vs Universe & Benchmark

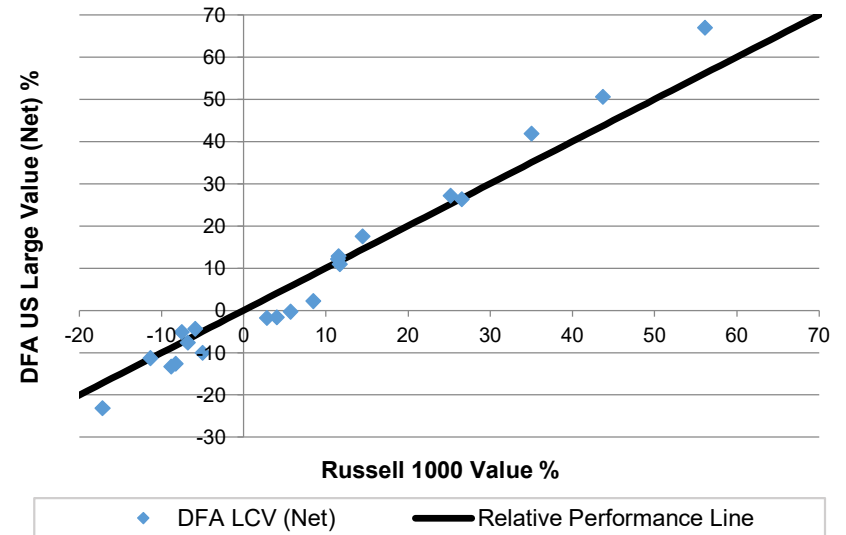
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Large Cap Value



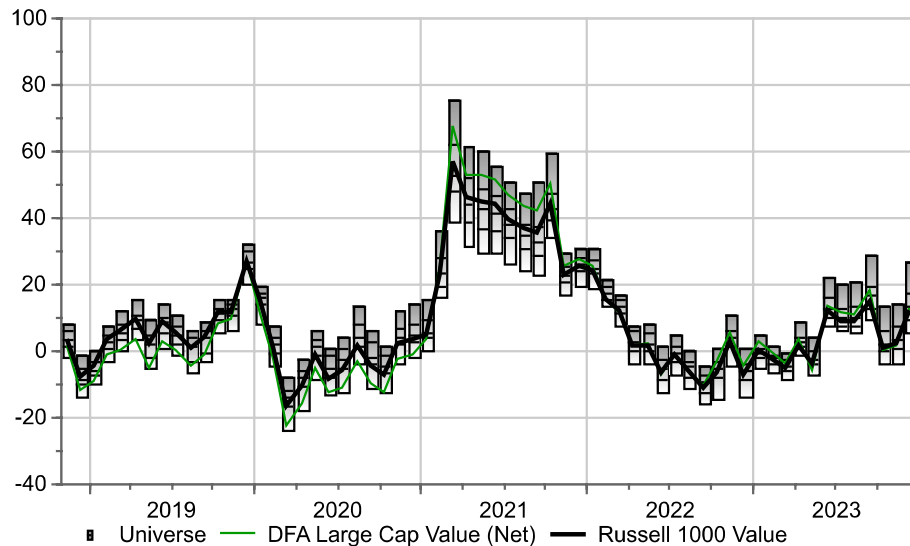
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One-Year Rolling Return Versus Benchmark



Rolling Returns 12/1/2017 – 12/31/2023 (1 Year, 1 Month Shift)

Universe: Lipper US Large Cap Value



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Over/Under Benchmark Analysis

10	Outperform
11	Underperform
21	# Observations
48%	% Outperform

DFA LCV Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Meta Platforms, Inc.	1.93	1.93	0.35
JPMorgan Chase & Co.	4.23	1.95	0.35
D.R. Horton, Inc.	1.01	0.82	0.31
PulteGroup, Inc.	0.64	0.55	0.20
Lennar Corporation	0.56	0.40	0.13
United Rentals, Inc.	0.54	0.41	0.12
Verizon Communications Inc.	1.47	0.67	0.12
Salesforce, Inc.	0.63	0.36	0.12
Capital One Financial Corporation	0.58	0.37	0.11
Fifth Third Bancorp	0.35	0.25	0.09

Top 10 Leading Detractors

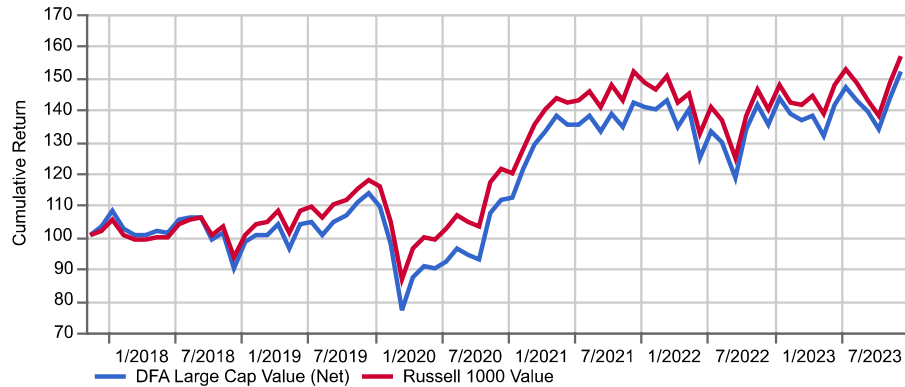
	Avg. Weights	Relative Weights	Active Return
Exxon Mobil Corporation	4.48	2.12	-0.37
Boeing Company	0.00	-0.53	-0.19
Chevron Corporation	2.69	1.23	-0.18
Int'l Business Machines Corp.	0.01	-0.71	-0.13
S&P Global, Inc.	0.00	-0.60	-0.13
Pfizer Inc.	1.79	0.84	-0.12
Charles Schwab Corporation	0.00	-0.45	-0.12
Prologis, Inc.	0.00	-0.54	-0.11
BlackRock, Inc.	0.10	-0.44	-0.10
Intel Corporation	0.65	-0.23	-0.09

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	4.2	11.1	10.5	0.1	0.1	0.1
Consumer Discretionary	1.0	19.2	13.6	0.0	0.3	0.4
Consumer Staples	-4.0	5.0	2.5	0.3	0.1	0.4
Energy	5.6	-7.2	-7.2	-1.0	0.0	-1.0
Financials	0.3	16.7	15.2	0.0	0.3	0.3
Health Care	-0.1	3.0	4.3	0.0	-0.2	-0.2
Industrials	0.4	14.0	13.9	0.0	0.0	0.0
Information Technology	-2.2	18.2	14.3	-0.1	0.3	0.2
Materials	3.5	8.3	9.0	0.0	-0.1	-0.1
Real Estate	-4.3	28.1	16.8	-0.3	0.0	-0.3
Utilities	-4.8	23.6	8.2	0.0	0.0	0.1
Cash	0.4	1.3	0.0	0.0	0.0	0.0
Total	0.0	9.2	9.3	-1.0	0.9	-0.1

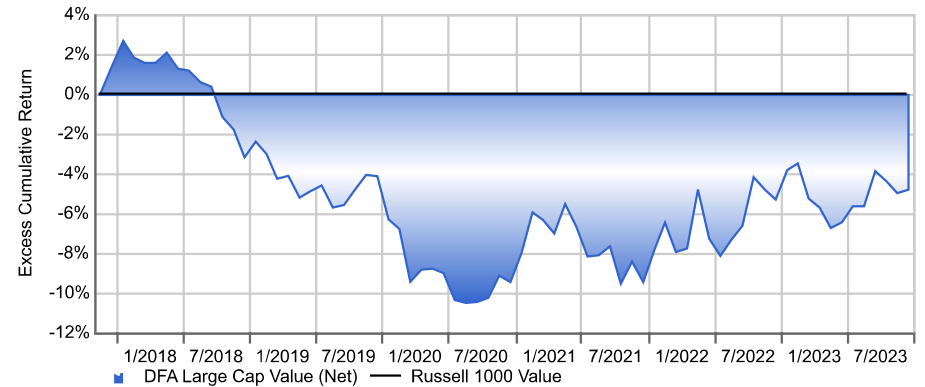
DFA LCV Inception Performance & Statistics

Investment Growth Since Inception 12/1/2017



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Relative Cumulative Performance Since Inception 12/1/2017

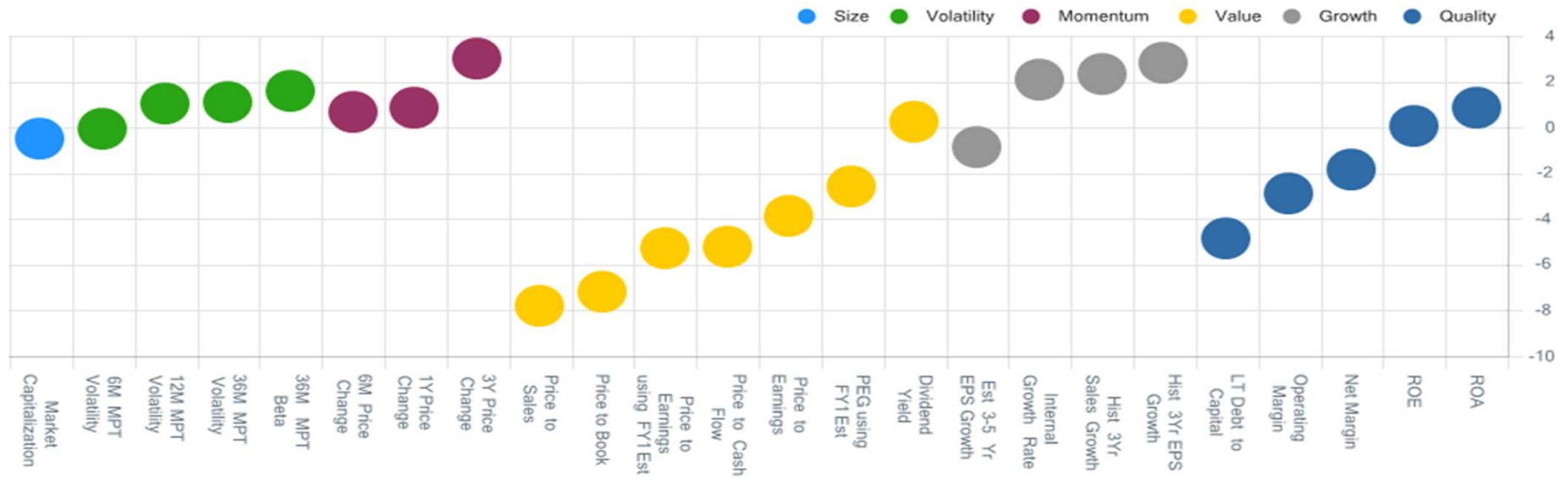


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Risk Since Inception 12/1/2017

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA US Large Value	7.1	20.6	-0.9	0.3	-0.1	3.9	1.1
Russell 1000 Value	7.6	18.0	--	0.3	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



DFA US SCV Portfolio Snapshot – December 31, 2023

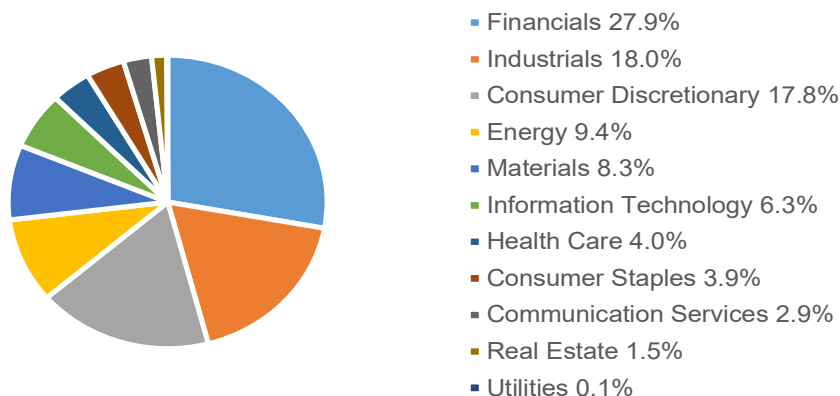
Rolling Returns Since Inception 10/1/1996 (Ten Year, One Month Shift)



Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
DFA Small Cap Value (Net)	15.3	21.0	18.4	15.4	8.9	13.8
Russell 2000 Value	15.3	14.6	7.9	10.0	6.8	10.3

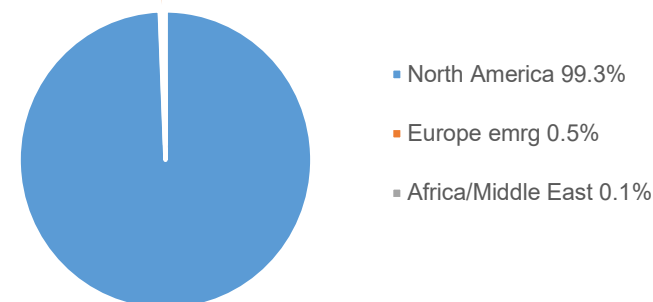
Equity Sector Exposure (GICS)



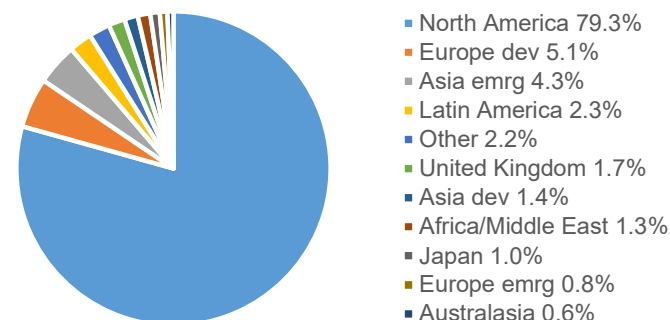
Top 10 Holdings

	Portfolio Weight	Quarterly Return
United States Steel Corporation	1.16	10.68
Amkor Technology, Inc.	0.83	24.99
Taylor Morrison Home Corporation	0.80	5.84
PVH Corp.	0.79	27.85
Thor Industries, Inc.	0.67	5.22
F.N.B. Corporation	0.64	12.23
Assured Guaranty Ltd.	0.63	12.67
Murphy Oil Corporation	0.63	-5.08
Avnet, Inc.	0.62	-2.32
Commercial Metals Company	0.61	-7.91

Regional Exposure by Domicile



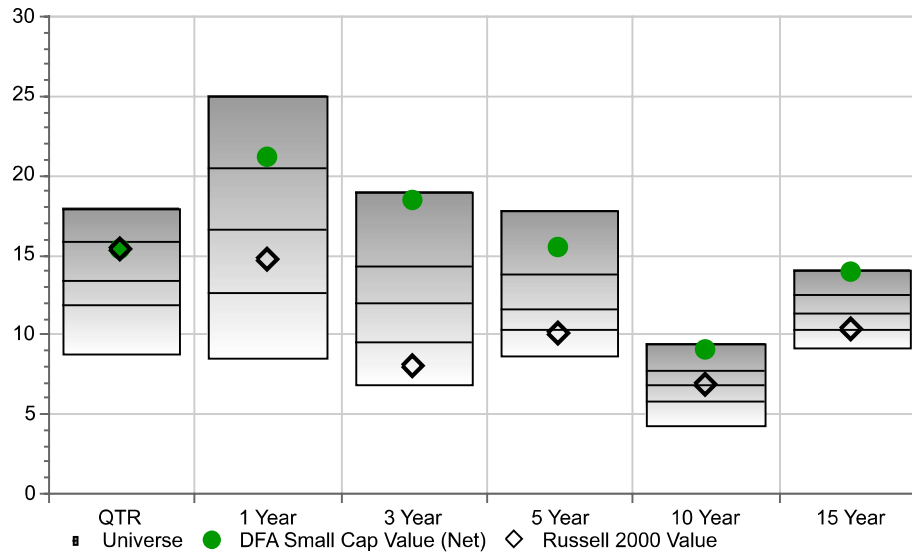
Regional Exposure by Source of Revenue



DFA US SCV vs Universe & Benchmark

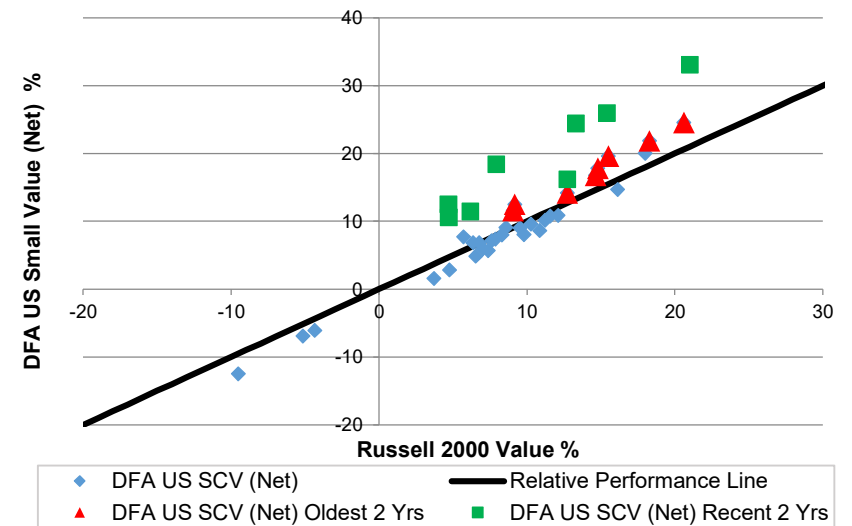
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Small Cap Value



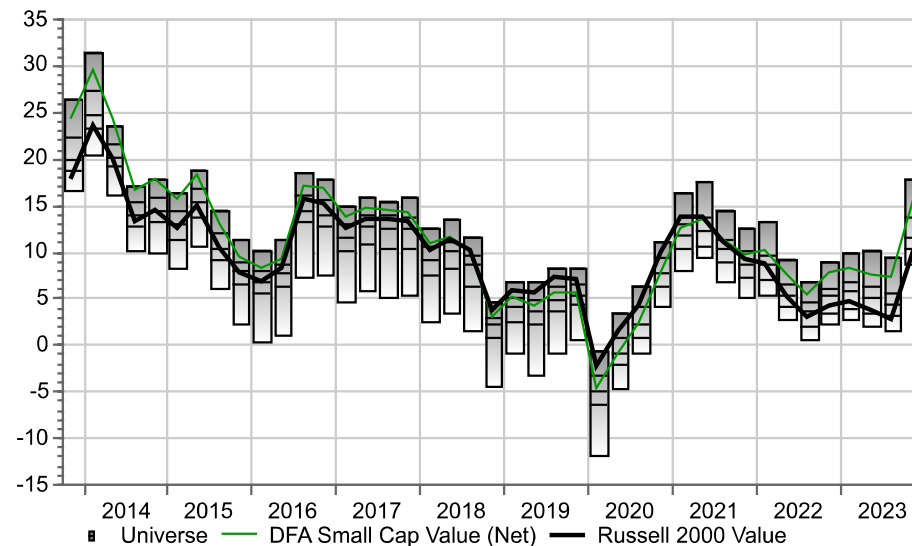
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US Small Cap Value



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Over/Under Benchmark Analysis

21	Outperform
19	Underperform
40	# Observations
53%	% Outperform

DFA US SCV Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
United States Steel Corporation	0.97	0.97	0.47
PVH Corp.	0.64	0.64	0.37
Gap, Inc.	0.39	0.39	0.32
Amkor Technology, Inc.	0.67	0.46	0.22
Macy's, Inc.	0.31	0.31	0.22
Bank OZK	0.51	0.51	0.18
Toll Brothers, Inc.	0.46	0.46	0.18
Popular, Inc.	0.53	0.53	0.17
F.N.B. Corporation	0.57	0.57	0.17
Thor Industries, Inc.	0.61	0.61	0.15

Top 10 Leading Detractors

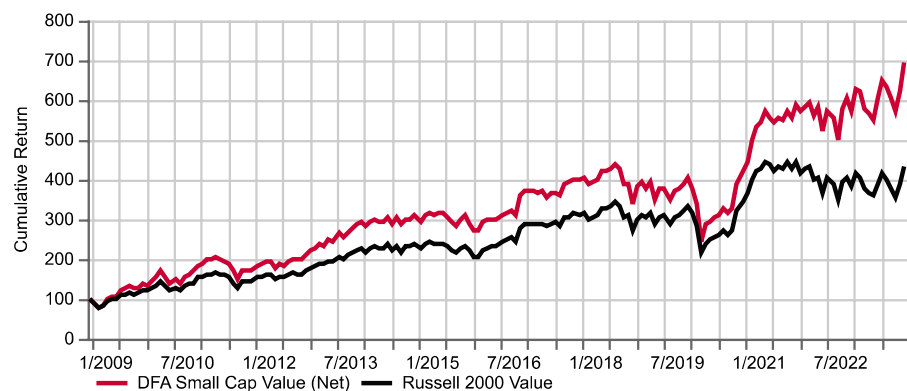
	Avg. Weights	Relative Weights	Active Return
Transocean Ltd.	0.69	0.69	-0.22
ImmunoGen, Inc.	0.00	-0.18	-0.14
BellRing Brands, Inc.	0.00	-0.40	-0.14
Glacier Bancorp, Inc.	0.00	-0.30	-0.14
New York Community Bancorp, Inc.	0.77	0.77	-0.13
UFP Industries, Inc.	0.00	-0.46	-0.11
Walker & Dunlop, Inc.	0.00	-0.21	-0.11
Signet Jewelers Limited	0.09	-0.21	-0.10
Biohaven Ltd.	0.00	-0.15	-0.09
UMB Financial Corporation	0.00	-0.25	-0.09

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	0.4	6.4	5.9	0.0	0.0	0.0
Consumer Discretionary	6.6	26.1	20.2	0.3	1.0	1.3
Consumer Staples	1.6	7.7	11.7	-0.1	-0.2	-0.2
Energy	1.1	-6.3	-6.2	-0.2	0.0	-0.2
Financials	0.1	22.3	23.6	0.0	-0.3	-0.3
Health Care	-4.5	9.0	17.8	-0.1	-0.4	-0.5
Industrials	3.9	12.4	14.7	0.0	-0.4	-0.5
Information Technology	0.5	15.2	14.8	0.0	0.0	0.0
Materials	3.4	15.9	13.6	-0.1	0.2	0.1
Real Estate	-9.0	19.0	16.2	-0.1	0.0	0.0
Utilities	-4.1	47.5	7.5	0.3	0.0	0.3
Total	0.0	15.2	15.2	0.0	-0.1	0.0

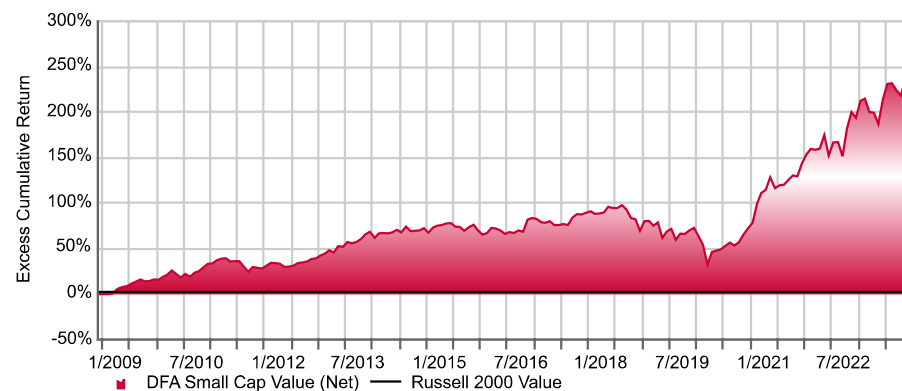
DFA US SCV 15 Year Performance & Statistics

Investment Growth – 15 Years



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Relative Cumulative Performance – 15 Years

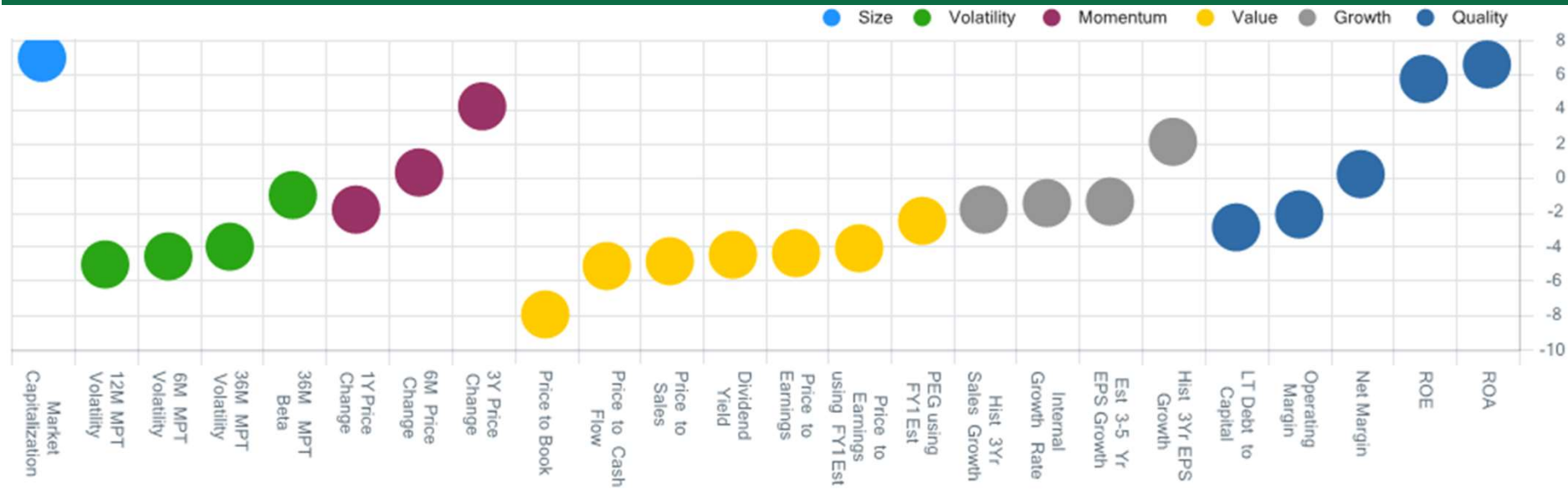


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Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA Small Cap Value (Net)	13.8	22.8	2.7	0.6	0.9	3.9	1.1
Russell 2000 Value	10.3	21.0	--	0.4	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



Earnest Portfolio Snapshot – December 31, 2023

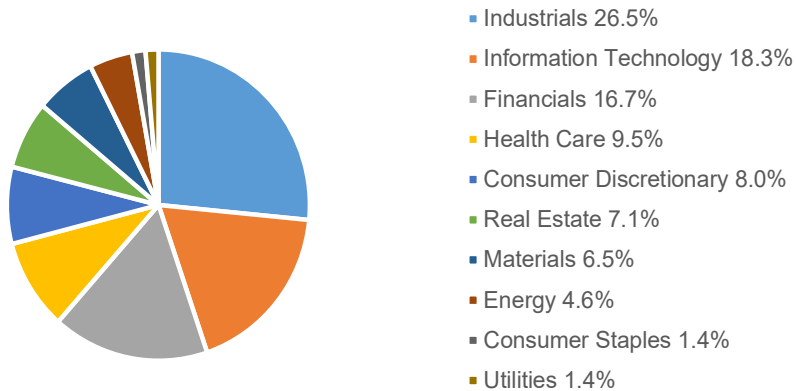
Rolling Returns Since Inception 5/1/2005 (Ten Year, One Month Shift)



Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
Earnest (Net)	12.8	17.1	7.4	15.6	11.5	14.9
Russell Midcap	12.8	17.2	5.9	12.7	9.4	13.6

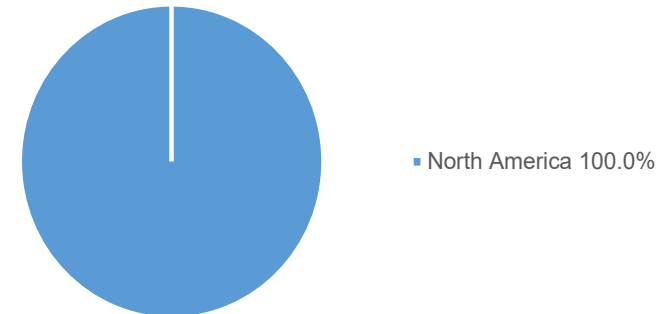
Equity Sector Exposure (GICS)



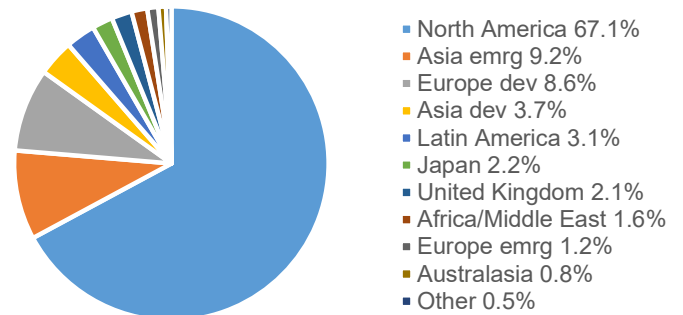
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Republic Services, Inc.	2.97	16.09
Synopsys, Inc.	2.69	12.19
Entegris, Inc.	2.57	27.74
CBRE Group, Inc.	2.50	26.04
Masco Corporation	2.46	25.90
D.R. Horton, Inc.	2.45	41.75
Akamai Technologies, Inc.	2.36	11.09
ANSYS, Inc.	2.29	21.96
Darden Restaurants, Inc.	2.27	15.75
Keysight Technologies, Inc.	2.14	20.24

Regional Exposure by Domicile



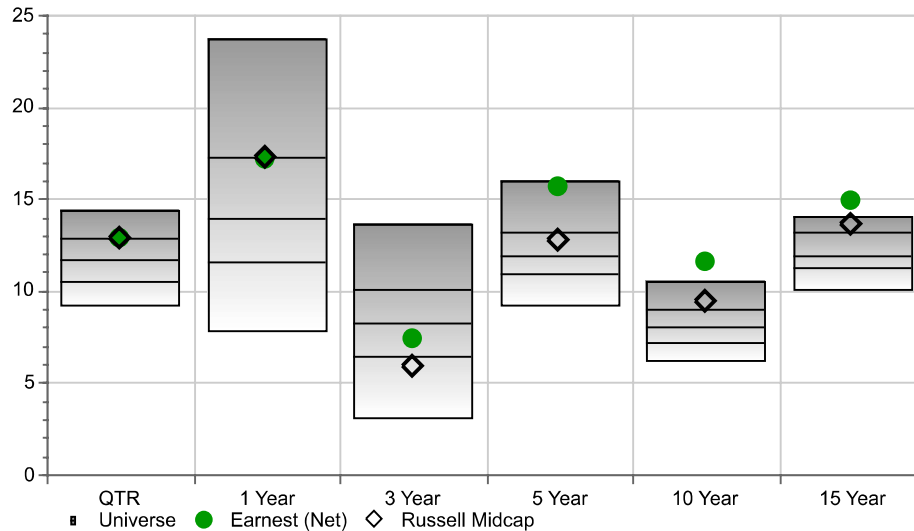
Regional Exposure by Source of Revenue



Earnest vs Universe & Benchmark

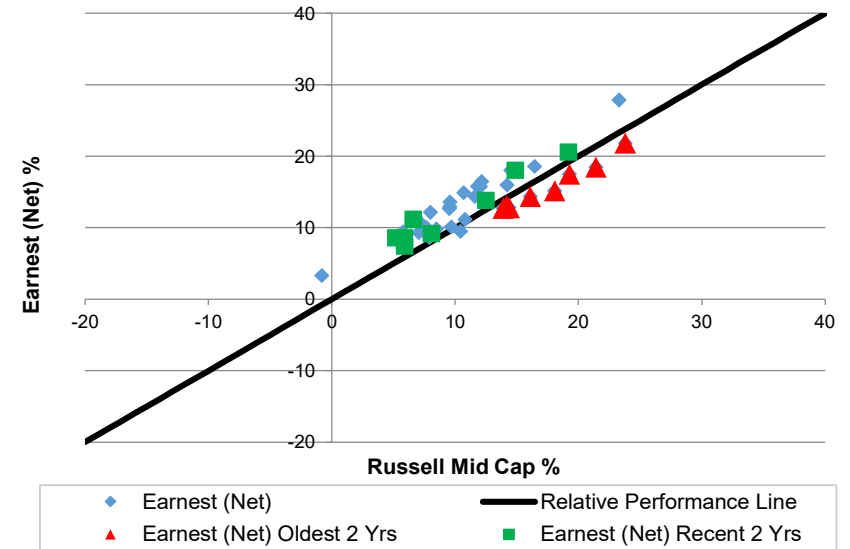
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US: Mid Cap Core



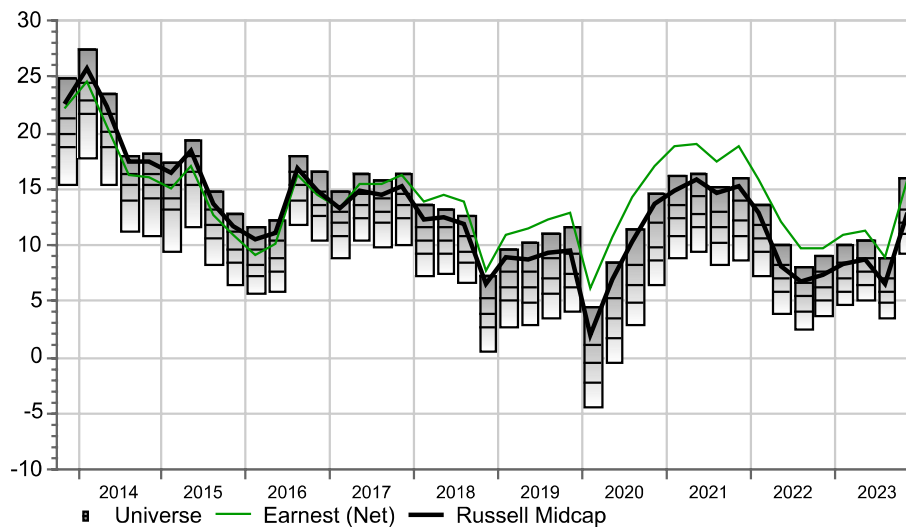
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US: Mid Cap Core



©FactSet Research Systems

Over/Under Benchmark Analysis

31	Outperform
9	Underperform
40	# Observations
78%	% Outperform

Earnest Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Spirit AeroSystems Holdings, Inc.	1.52	1.50	1.17
D.R. Horton, Inc.	2.04	1.67	0.68
Entegris, Inc.	2.30	2.15	0.59
Masco Corporation	2.29	2.16	0.56
CBRE Group, Inc.	2.24	2.00	0.51
Republic Services, Inc.	3.05	2.72	0.46
Synopsys, Inc.	3.07	3.07	0.43
KeyCorp	1.22	1.11	0.39
ANSYS, Inc.	2.06	1.79	0.38
Progressive Corporation	2.34	2.34	0.37

Top 10 Leading Detractors

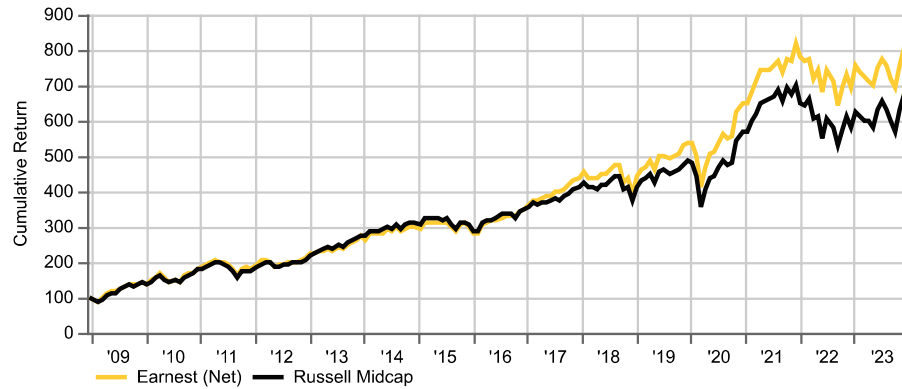
	Avg. Weights	Relative Weights	Active Return
ChampionX Corporation	1.23	1.23	-0.28
Albemarle Corporation	1.17	1.00	-0.25
CrowdStrike Holdings, Inc.	0.00	-0.43	-0.22
Bio-Rad Laboratories, Inc.	1.45	1.38	-0.21
Block, Inc.	0.00	-0.28	-0.20
Helmerich & Payne, Inc.	1.19	1.19	-0.20
Coinbase Global, Inc.	0.00	-0.16	-0.18
KKR & Co. Inc.	0.00	-0.44	-0.16
DexCom, Inc.	0.00	-0.40	-0.14
Simon Property Group, Inc.	0.00	-0.39	-0.13

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-3.3	0.0	11.4	0.0	0.0	0.0
Consumer Discretionary	-3.8	22.8	16.7	-0.1	0.3	0.2
Consumer Staples	-2.2	11.3	5.3	0.2	0.1	0.3
Energy	0.0	-10.1	-0.5	0.0	-0.6	-0.6
Financials	1.8	13.0	16.1	0.1	-0.5	-0.4
Health Care	-1.0	7.9	10.9	0.0	-0.3	-0.3
Industrials	6.5	16.4	13.5	0.0	0.7	0.8
Information Technology	3.9	15.6	15.3	0.1	0.0	0.1
Materials	0.5	8.7	9.3	0.0	0.0	-0.1
Real Estate	-1.1	18.1	16.8	0.0	0.1	0.0
Utilities	-4.0	5.2	9.6	0.1	-0.1	0.1
Cash	2.6	1.3	0.0	-0.3	0.0	-0.3
Total	0.0	12.8	12.8	0.2	-0.2	0.0

Earnest 15 Year Performance & Statistics

Investment Growth – 15 Years



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Relative Cumulative Performance – 15 Years

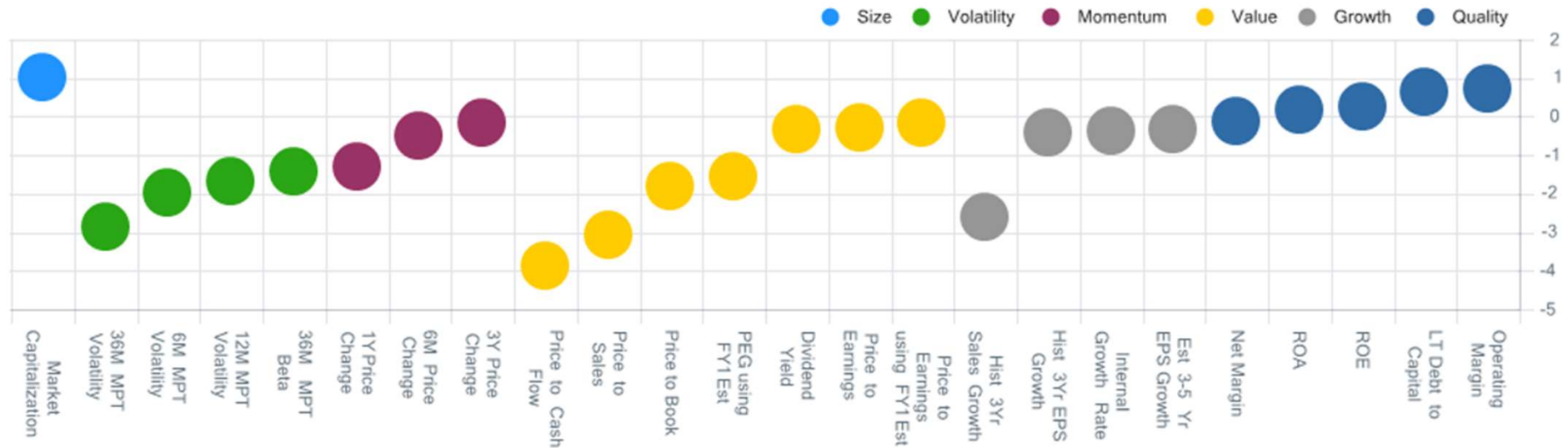


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Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Earnest (Net)	14.9	17.3	1.6	0.8	0.4	3.6	1.0
Russell Midcap	13.6	17.5	--	0.7	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



Northern Trust S&P 500 Portfolio Snapshot – December 31, 2023

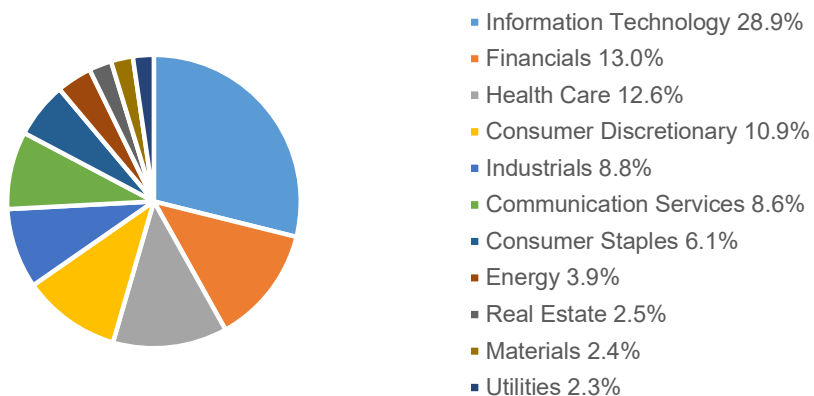
Rolling Returns Since 10/1/1999 (Ten Year, One Month Shift)



Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
NT S&P 500 Index (Net)	11.7	26.3	10.0	15.7	12.1	14.0
S&P 500	11.7	26.3	10.0	15.7	12.0	14.0

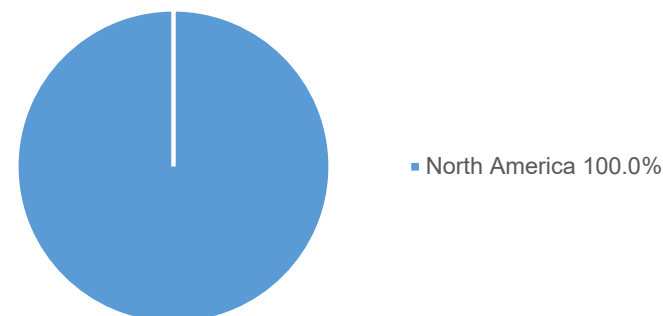
Equity Sector Exposure (GICS)



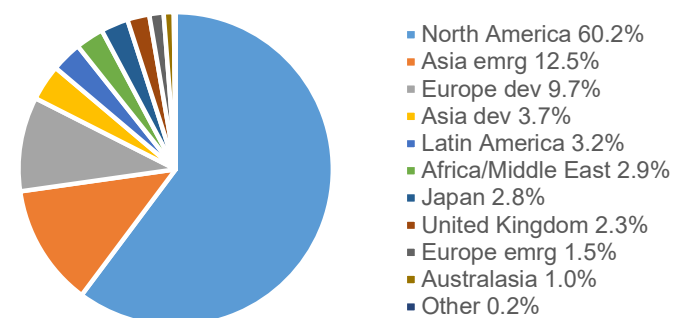
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Apple Inc.	6.93	12.59
Microsoft Corporation	6.88	19.14
Alphabet Inc.	3.76	6.81
Amazon.com, Inc.	3.40	19.52
NVIDIA Corporation	3.01	13.86
Meta Platforms, Inc.	1.93	17.90
Tesla, Inc.	1.69	-0.70
Berkshire Hathaway Inc.	1.59	1.82
JPMorgan Chase & Co.	1.21	18.18
Broadcom Inc.	1.10	35.03

Regional Exposure by Domicile



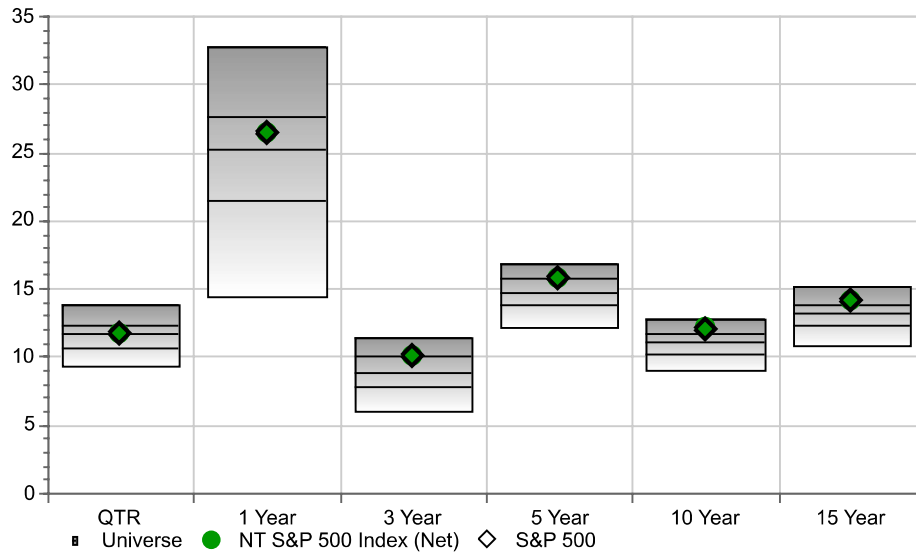
Regional Exposure by Source of Revenue



Northern Trust S&P 500 vs Universe & Benchmark

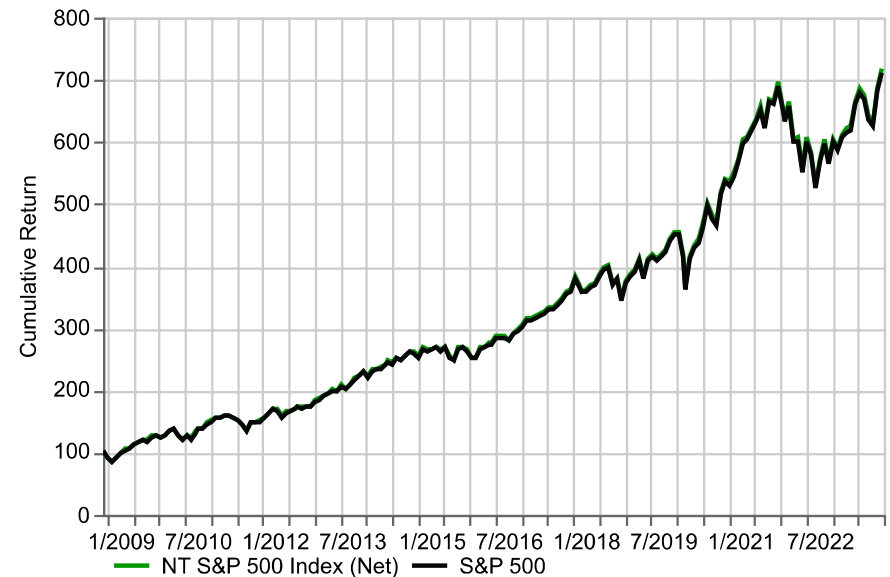
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US: Large Cap Core



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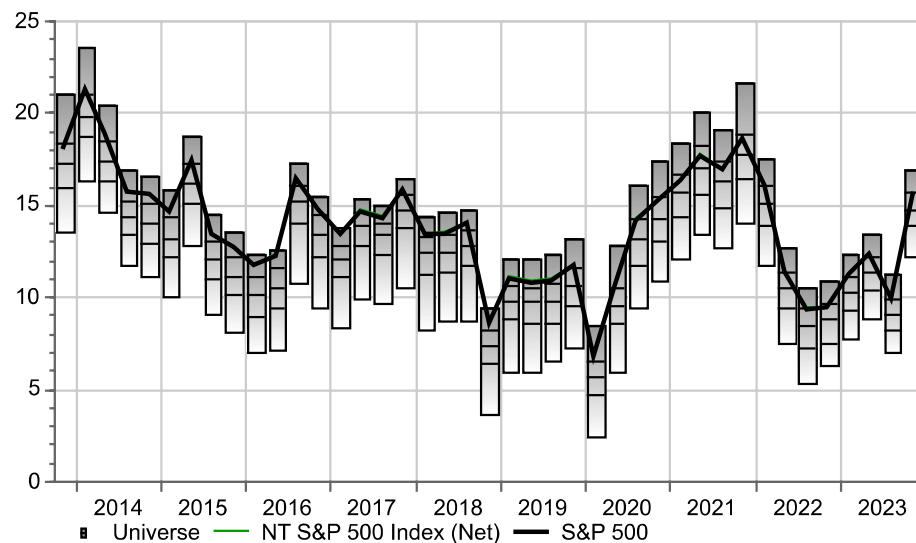
Investment Growth – 15 Years



©FactSet Research Systems

Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US: Large Cap Core



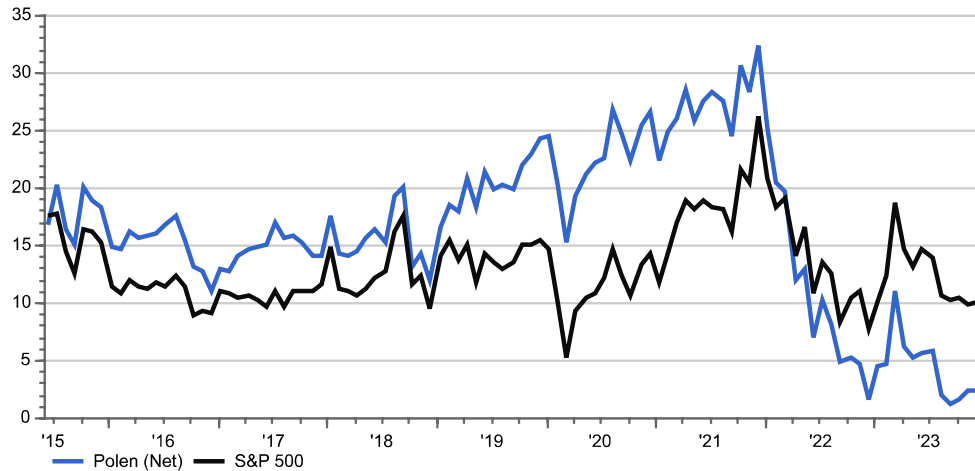
©FactSet Research Systems

Risk – 15 Years

	Return	Std Dev	Sharpe Ratio	Tracking Error
NT S&P 500 Index (Net)	14.0	15.3	0.9	0.1
S&P 500	14.0	15.3	0.9	--

Polen Portfolio Snapshot – December 31, 2023

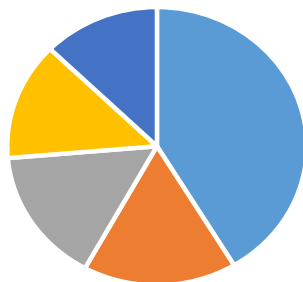
Rolling Returns Since Inception 7/1/2012 (Three Year, One Month Shift)



Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	Inception 7/1/2012
Polen (Net)	14.2	38.1	2.2	14.7	14.1	14.6
S&P 500	11.7	26.3	10.0	15.7	12.0	13.7
S&P 500 Growth	10.1	30.0	6.6	16.2	13.4	14.7

Equity Sector Exposure (GICS)

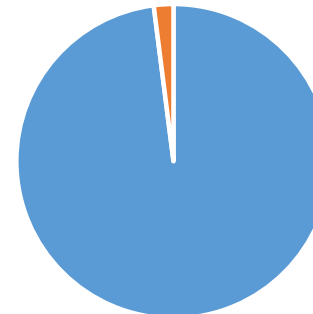


- Information Technology 41.4%
- Health Care 16.6%
- Consumer Discretionary 15.7%
- Financials 13.7%
- Communication Services 12.7%

Top 10 Holdings

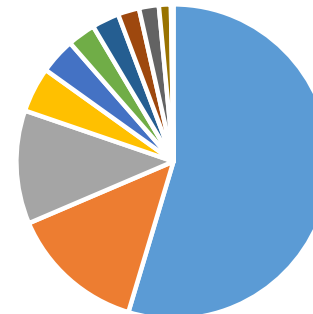
	Portfolio Weight	Quarterly Return
Amazon.com, Inc.	9.55	19.52
Microsoft Corporation	9.22	19.33
Alphabet Inc.	7.27	6.89
ServiceNow, Inc.	7.23	26.39
Adobe Inc.	6.35	17.00
Salesforce, Inc.	5.32	29.77
Netflix, Inc.	5.03	28.94
Mastercard Incorporated	4.98	7.89
Visa Inc.	4.73	13.42
Accenture plc	4.07	14.76

Regional Exposure by Domicile



- North America 98.0%
- Europe dev 2.0%

Regional Exposure by Source of Revenue

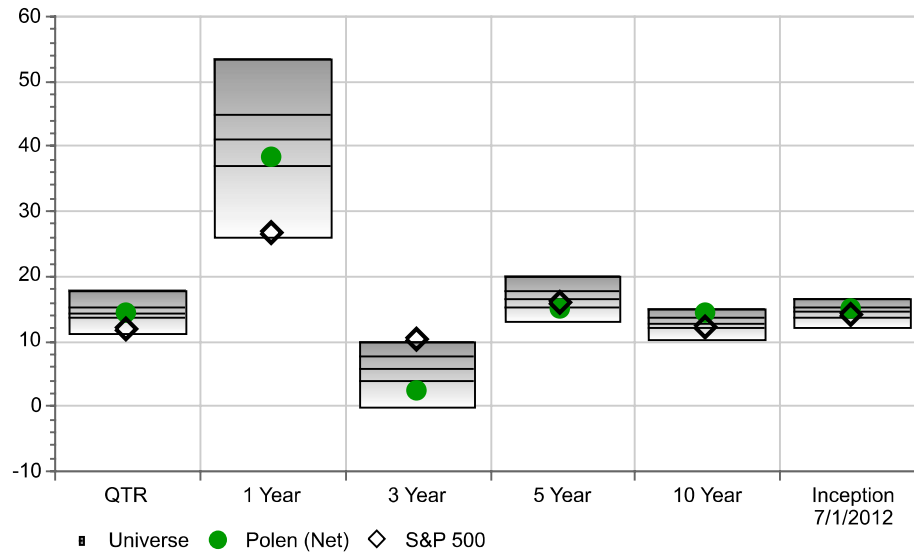


- North America 54.6%
- Europe dev 14.0%
- Asia emrg 11.7%
- Africa/Middle East 4.6%
- Latin America 3.7%
- United Kingdom 2.9%
- Japan 2.8%
- Europe emrg 2.2%
- Asia dev 2.0%
- Australasia 1.2%
- Other 0.3%

Polen vs Universe & Benchmark

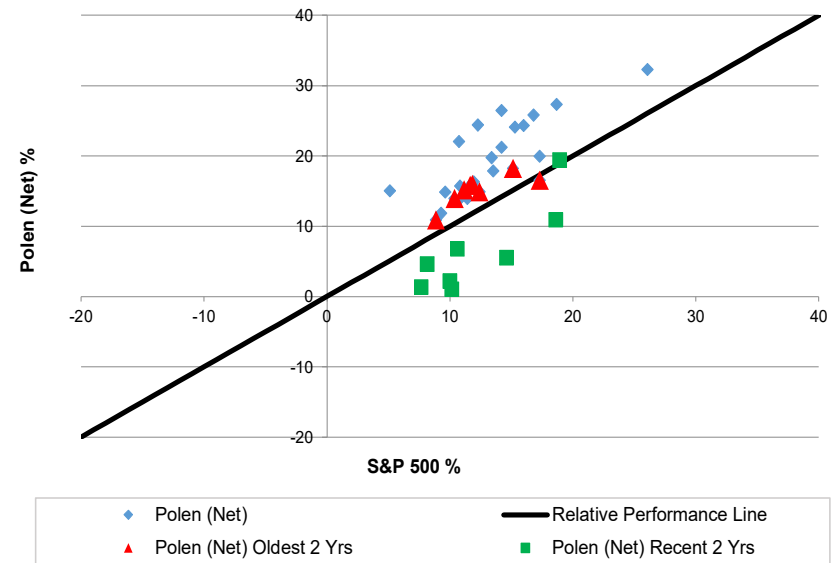
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Large Cap Growth



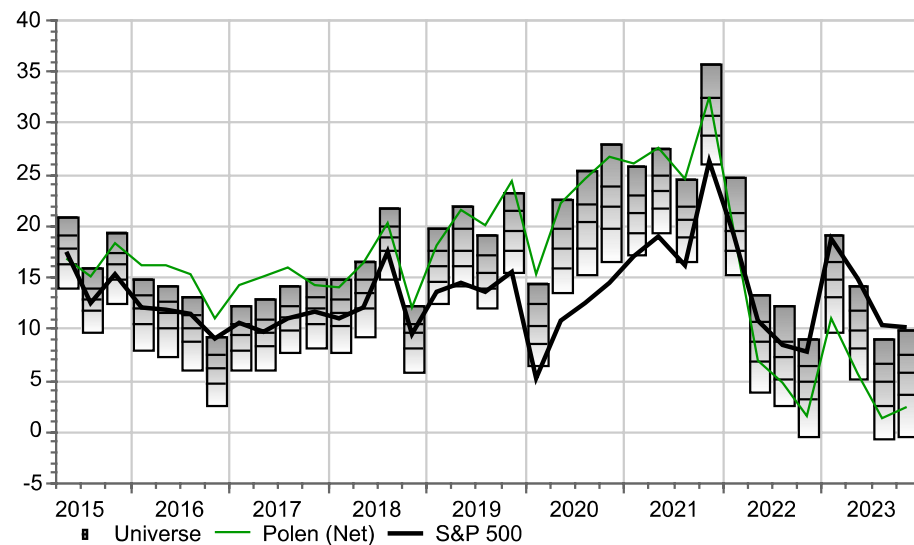
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2012 – 12/31/2023 (3 Year, 3 Month Shift)

Universe: Lipper US Large Cap Growth



©FactSet Research Systems

Over/Under Benchmark Analysis

27	Outperform
8	Underperform
35	# Observations
77%	% Outperform

Polen Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Netflix, Inc.	7.96	7.45	2.13
ServiceNow, Inc.	6.88	6.55	1.71
Salesforce, Inc.	4.88	4.30	1.25
Amazon.com, Inc.	9.57	6.20	1.22
Adobe Inc.	6.49	5.80	1.04
Gartner, Inc.	2.17	2.09	0.63
Workday, Inc.	2.21	2.21	0.62
Visa Inc.	4.84	3.78	0.52
Accenture plc	4.01	3.47	0.49
Autodesk, Inc.	3.03	2.91	0.49

Top 10 Leading Detractors

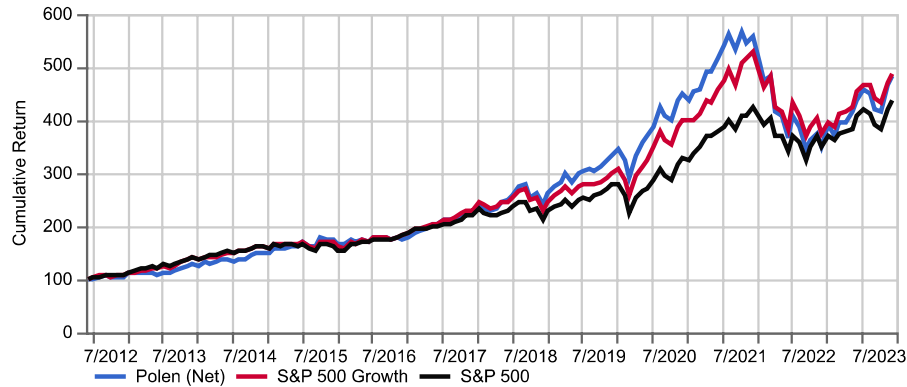
	Avg. Weights	Relative Weights	Active Return
Apple Inc.	0.00	-7.13	-0.93
Illumina, Inc.	1.18	1.13	-0.57
NVIDIA Corporation	0.00	-2.95	-0.40
Broadcom Inc.	0.00	-1.00	-0.34
Meta Platforms, Inc.	0.00	-1.88	-0.33
JPMorgan Chase & Co.	0.00	-1.17	-0.21
Align Technology, Inc.	0.89	0.84	-0.20
Advanced Micro Devices, Inc.	0.00	-0.47	-0.20
Intel Corporation	0.00	-0.45	-0.18
Airbnb, Inc.	4.08	3.93	-0.15

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	6.8	17.6	11.1	0.0	1.0	1.0
Consumer Discretionary	4.8	13.0	12.4	0.0	0.1	0.1
Consumer Staples	-6.5	0.0	5.5	0.4	0.0	0.4
Energy	-4.4	0.0	-6.9	0.9	0.0	0.9
Financials	0.9	9.0	13.8	0.0	-0.7	-0.7
Health Care	4.6	5.1	6.4	-0.3	-0.4	-0.5
Industrials	-8.3	0.0	13.3	-0.1	0.0	-0.1
Information Technology	7.9	22.2	17.2	0.4	1.7	2.2
Materials	-2.4	0.0	9.6	0.0	0.0	0.0
Real Estate	-2.4	0.0	18.9	-0.2	0.0	-0.2
Utilities	-2.4	0.0	8.6	0.1	0.0	0.1
[Cash]	1.5	1.3	1.3	-0.2	0.0	-0.2
Total	0.0	14.6	11.7	1.1	1.8	3.0

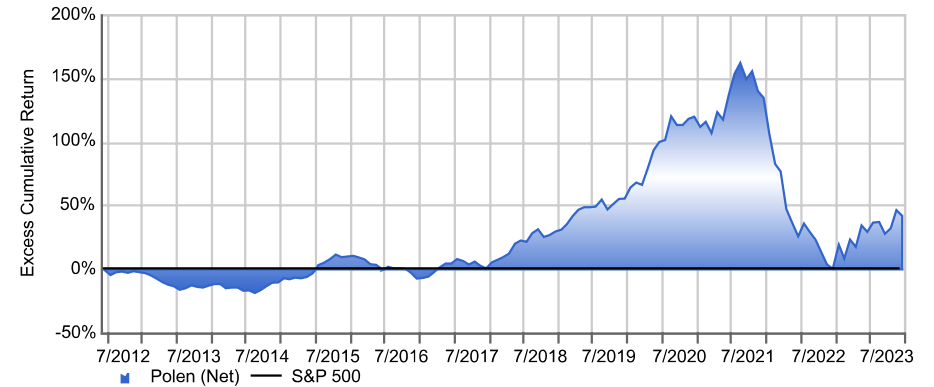
Polen Inception Performance & Statistics

Investment Growth Since Inception 7/1/2012



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Relative Cumulative Performance Since Inception 7/1/2012

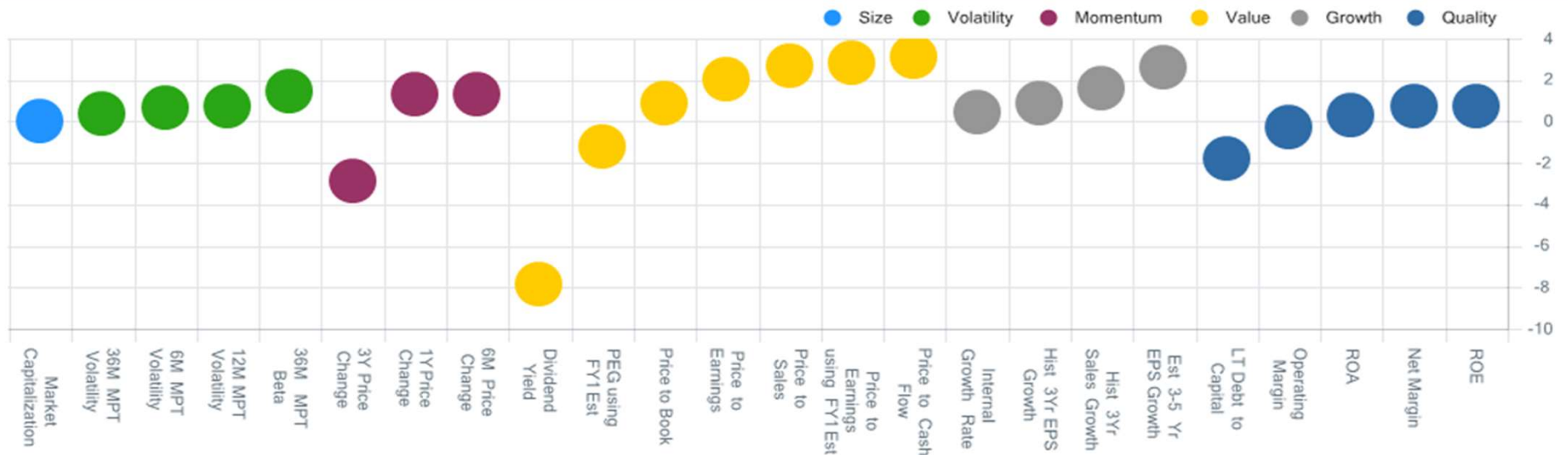


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Risk Since Inception 7/1/2012

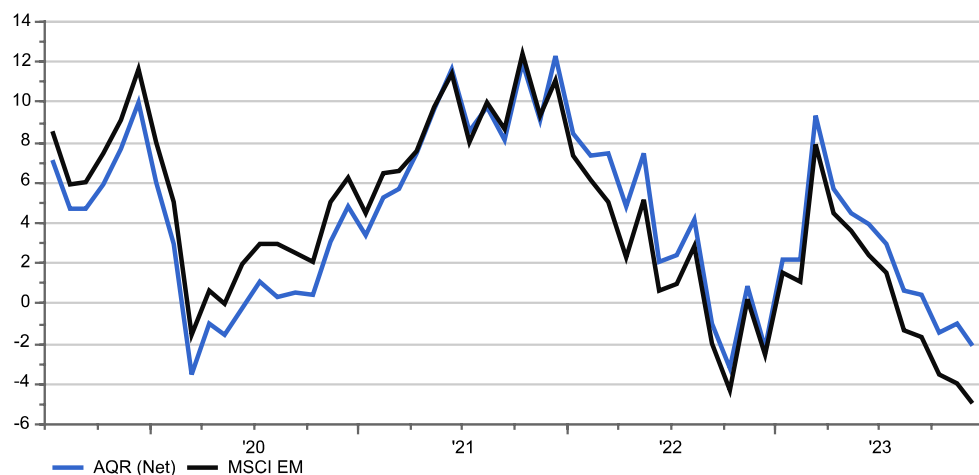
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Polen (Net)	14.6	16.3	0.7	0.8	0.1	6.6	1.0
S&P 500	13.7	14.4	--	0.9	--	--	1.0
S&P 500 Growth	14.7	15.5	--	0.9	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



AQR Portfolio Snapshot – December 31, 2023

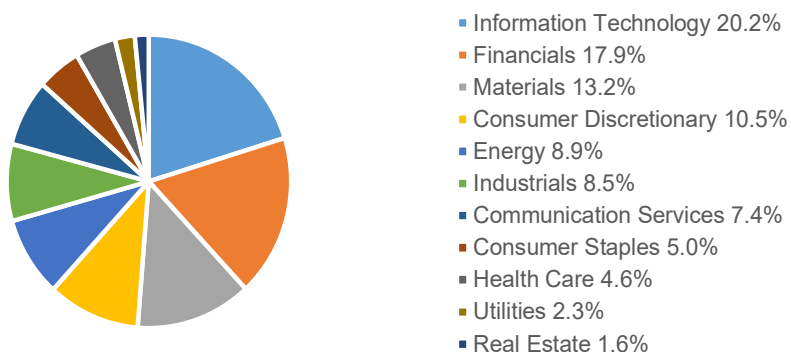
Rolling Returns Since Inception 8/1/2016 (Three Year, One Month Shift)



Trailing Returns

					Inception
	QTR	1 Year	3 Year	5 Year	8/1/16
AQR (Net)	10.2	17.9	-2.2	5.7	5.5
MSCI EM	7.9	9.8	-5.1	3.7	4.6

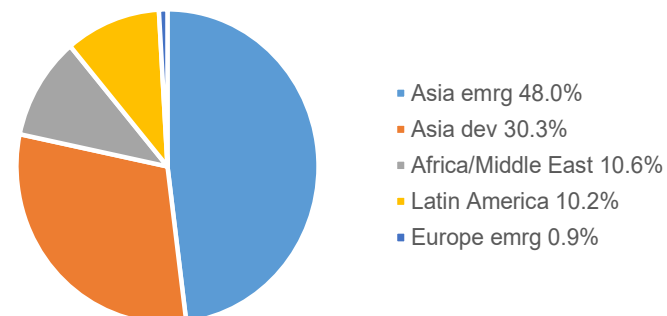
Equity Sector Exposure (GICS)



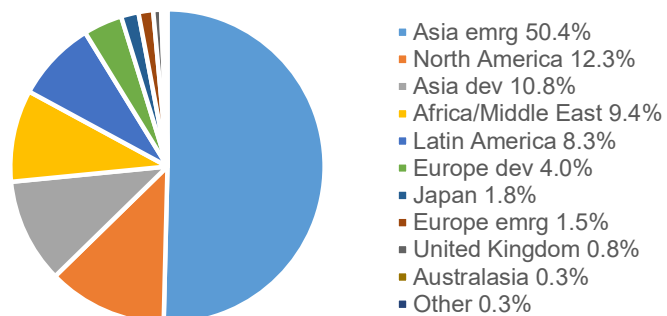
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Taiwan Semiconductor Mfg. Co. Ltd.	6.87	19.86
Samsung Electronics Co., Ltd.	2.81	20.80
Tencent Holdings Limited	2.56	-3.83
China Construction Bank Corporation	1.77	5.52
Petroleo Brasileiro S.A	1.66	15.01
Larsen & Toubro Limited	1.42	16.38
MediaTek Inc.	1.37	45.25
Kia Corp.	1.33	28.72
NTPC Limited	1.23	27.54
ASE Technology Holding Co., Ltd.	1.22	29.67

Regional Exposure by Domicile



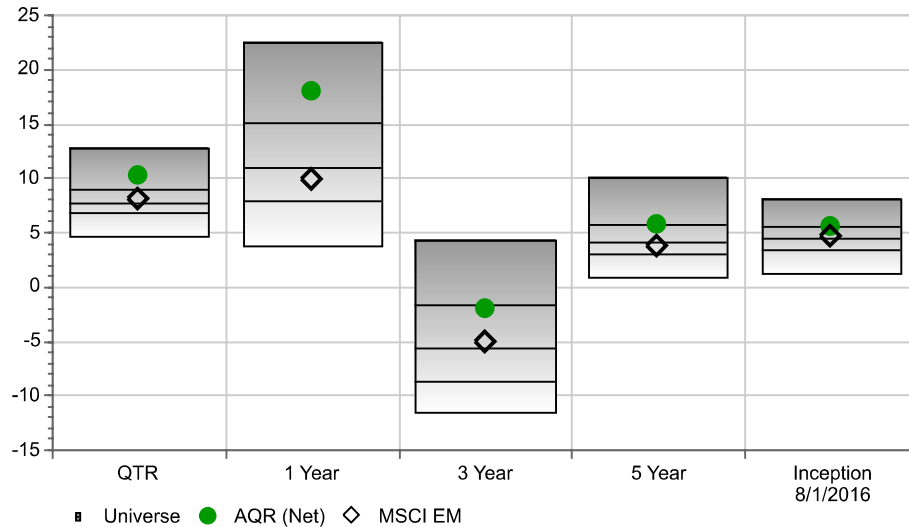
Regional Exposure by Source of Revenue



AQR vs Universe & Benchmark

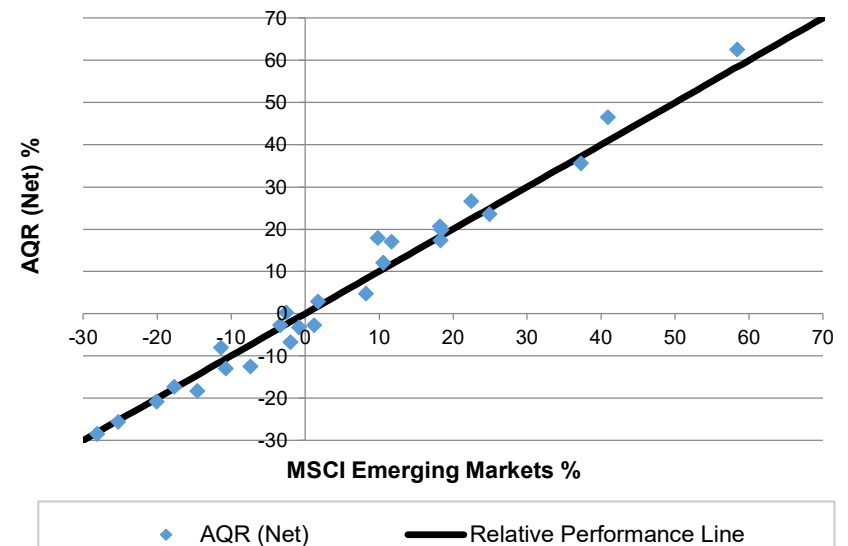
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Emerging Markets



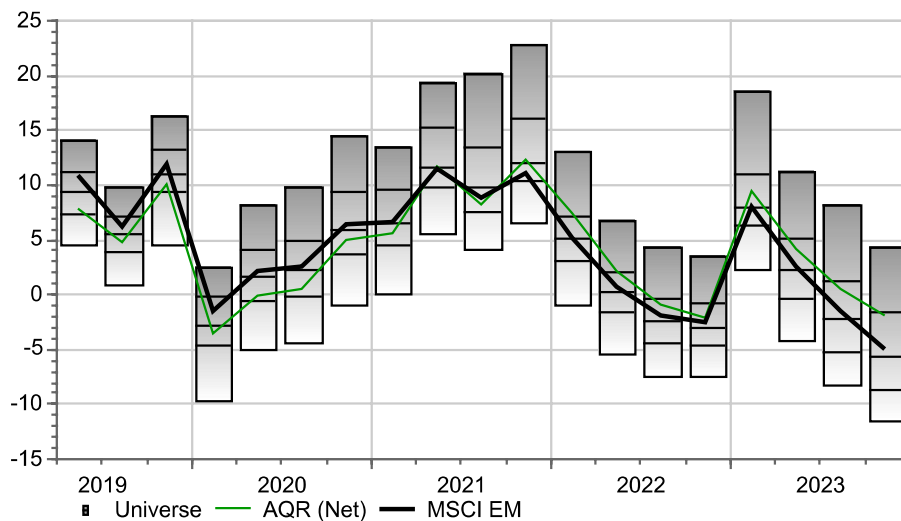
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One-Year Rolling Return Versus Benchmark



Rolling Returns 8/1/2016 – 12/31/2023 (3 Year, 3 Month Shift)

Universe: Lipper US Emerging Markets



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Over/Under Benchmark Analysis

13	Outperform
13	Underperform
26	# Observations
50%	% Outperform

AQR Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Indian Oil Corp. Ltd.	0.87	0.82	0.42
Coal India Ltd.	1.24	1.15	0.36
ASE Technology Holding Co., Ltd.	1.24	1.06	0.31
NTPC Limited	1.32	1.12	0.30
Kia Corp.	1.17	0.93	0.25
Banco do Brasil S.A.	1.11	0.98	0.22
Power Grid Corporation of India Limited	1.19	1.02	0.22
CEMEX, S.A.B. de C.V.	1.00	0.85	0.21
Volcan Investments Ltd.	1.07	1.04	0.20
MediaTek Inc.	1.08	0.47	0.19

Top 10 Leading Detractors

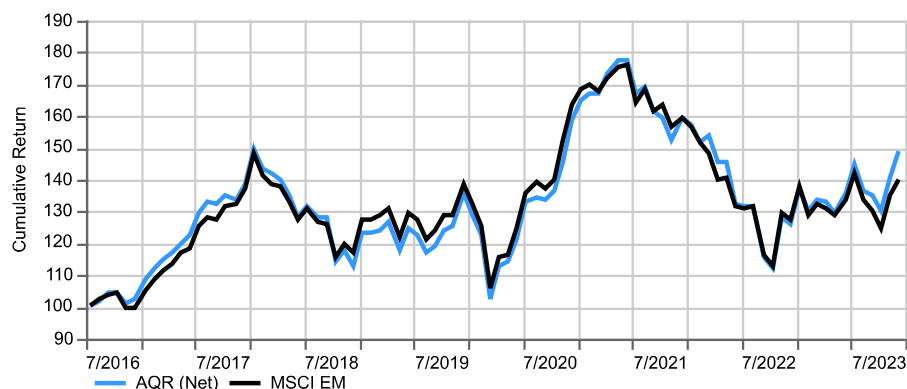
	Avg. Weights	Relative Weights	Active Return
Samsung Electronics Co., Ltd.	2.67	-1.68	-0.35
Jardine Matheson Holdings Limited	1.27	1.12	-0.22
SK hynix Inc.	0.00	-0.77	-0.22
PT Adaro Energy Indonesia Tbk	0.97	0.94	-0.18
Taiwan Semiconductor Mfg. Co. Ltd.	5.52	-0.90	-0.17
Haidilao International Holding Ltd.	0.48	0.42	-0.16
Al Rajhi Bank	0.00	-0.56	-0.16
Itau Unibanco Holding S.A.	0.00	-0.42	-0.12
GCL Technology Holdings Limited	0.40	0.35	-0.12
Reliance Industries Limited	0.11	-1.21	-0.12

Sector Attribution

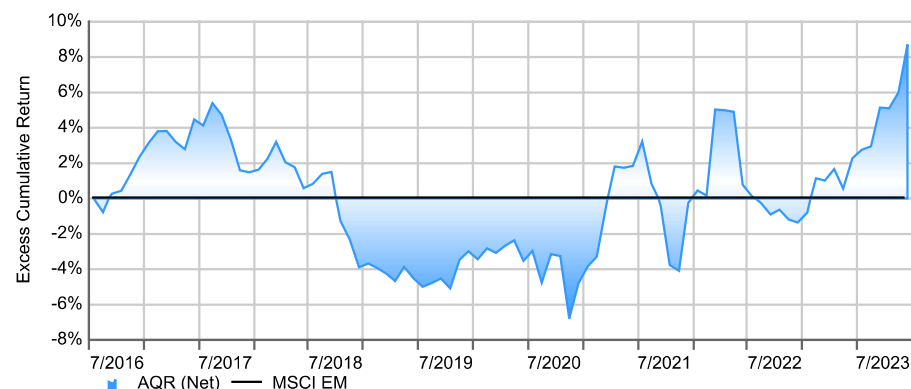
	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-3.9	-6.8	0.0	0.2	-0.4	-0.2
Consumer Discretionary	-3.1	0.8	0.8	0.2	0.0	0.2
Consumer Staples	-5.1	-2.7	6.1	0.1	-0.1	0.0
Energy	6.6	11.9	6.7	0.0	0.7	0.5
Financials	3.0	6.4	8.3	0.0	-0.5	-0.5
Health Care	-3.0	0.1	6.9	0.0	-0.1	0.0
Industrials	4.8	12.4	5.4	-0.2	0.8	0.6
Information Technology	-2.1	20.0	17.8	-0.2	0.3	0.2
Materials	2.5	6.6	7.9	0.0	-0.1	-0.2
Real Estate	-0.4	-4.7	-0.6	0.0	0.0	0.0
Utilities	0.7	21.6	12.7	0.0	0.4	0.3
Total	0.0	8.9	7.9	0.2	0.9	1.1

AQR Inception Performance & Statistics

Investment Growth Since Inception 8/1/2016



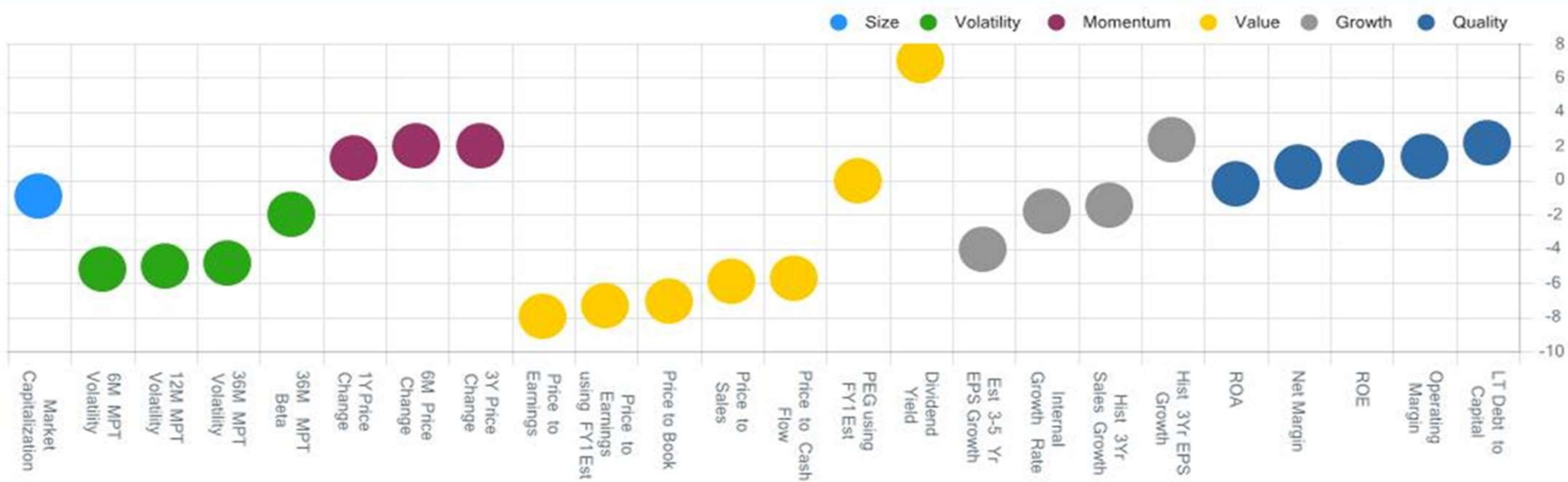
Relative Cumulative Performance Since Inception 8/1/2016



Risk Since Inception 8/1/2016

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
AQR (Net)	5.5	17.7	0.9	0.2	0.3	3.4	1.0
MSCI EM	4.6	17.2	--	0.2	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



Brandes Portfolio Snapshot – December 31, 2023

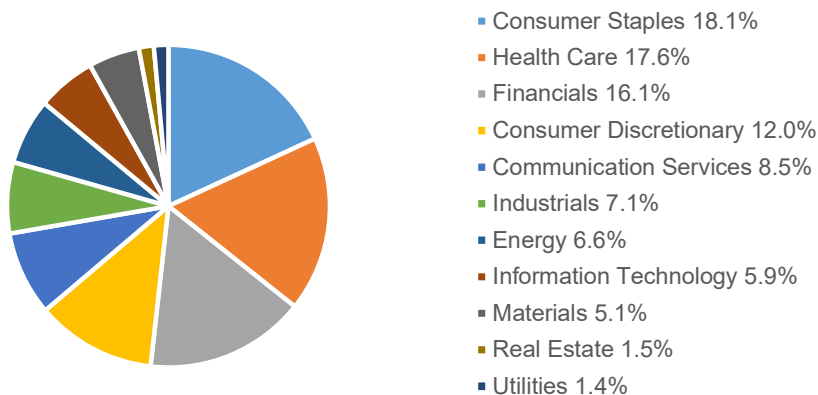
Rolling Returns Since Inception 2/1/1998 (Ten Year, One Month Shift)



Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
Brandes (Net)	10.6	31.0	11.5	9.3	5.2	7.1
MSCI EAFE	10.4	18.2	4.0	8.2	4.3	6.9
MSCI EAFE Value	8.2	19.0	7.6	7.1	3.2	6.0

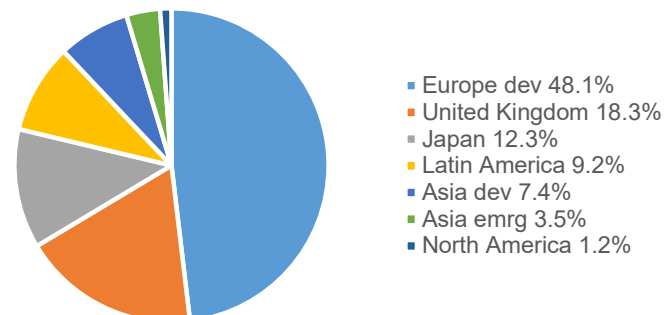
Equity Sector Exposure (GICS)



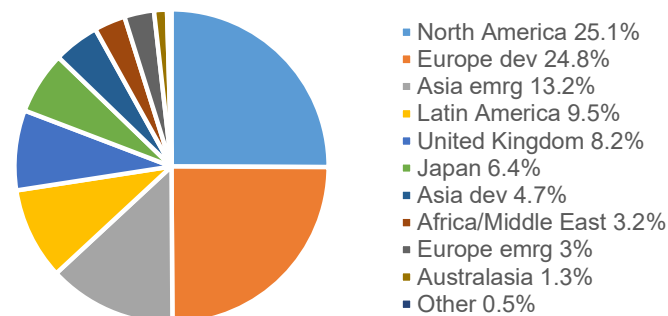
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Takeda Pharmaceutical Co. Ltd.	3.05	-7.54
Rolls-Royce Holdings plc	3.02	41.70
Heineken Holding N.V.	2.57	11.93
Alibaba Group Holding Limited	2.55	-10.28
Sanofi	2.53	-7.71
UBS Group AG	2.40	25.03
Heidelberg Materials AG	2.32	14.87
SAP SE	2.30	18.49
Embraer S.A.	2.29	33.97
GSK plc	2.14	2.52

Regional Exposure by Domicile



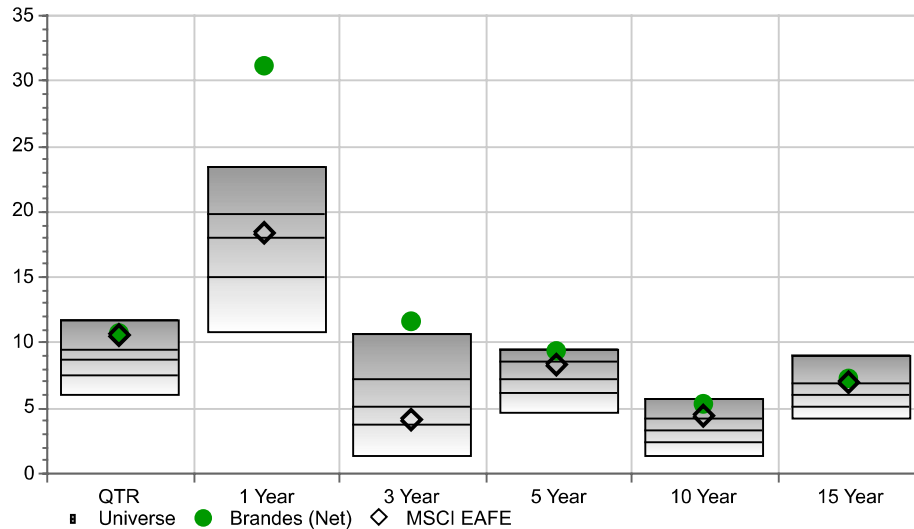
Regional Exposure by Source of Revenue



Brades vs Universe & Benchmark

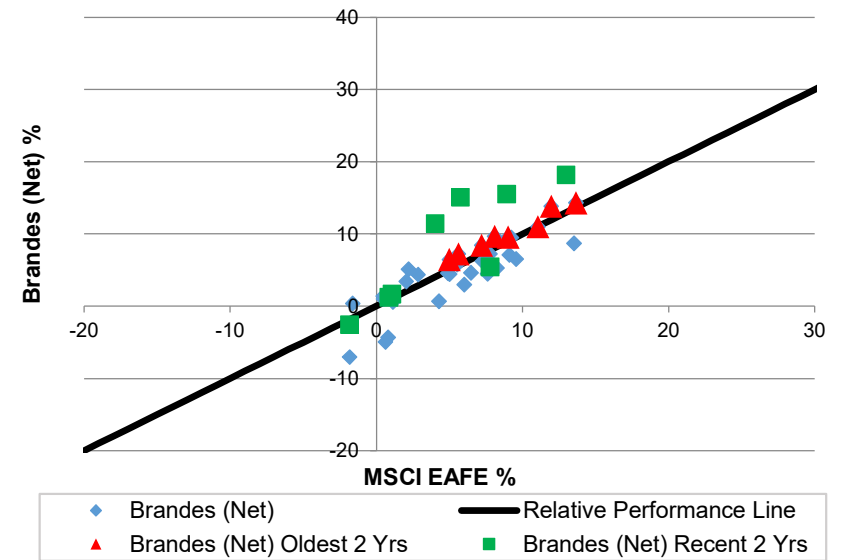
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Int'l Multi-Cap Value



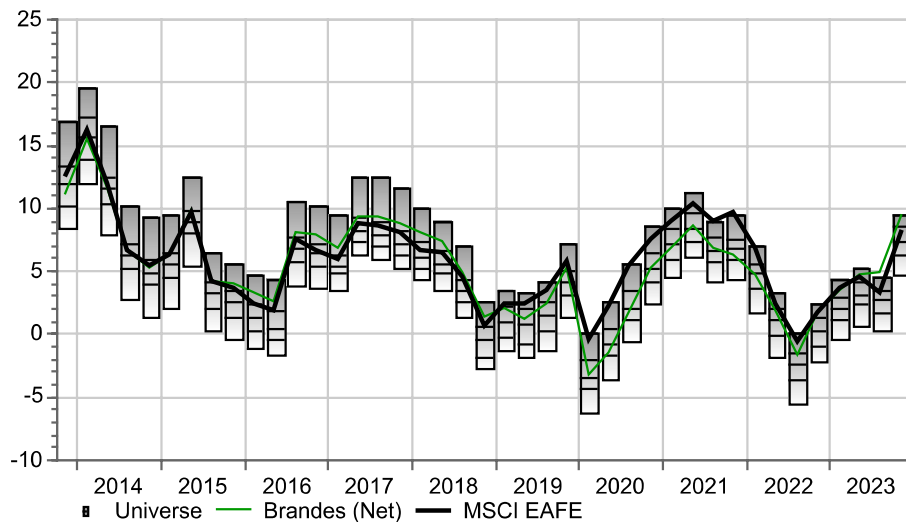
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US Int'l Multi Cap Value



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Over/Under Benchmark Analysis

21	Outperform
19	Underperform
40	# Observations
53%	% Outperform

Brandes Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Rolls-Royce Holdings plc	3.03	2.86	1.15
Embraer S.A.	2.07	2.07	0.69
Taisho Pharmaceutical Holdings Co., Ltd.	1.43	1.43	0.66
Grifols, S.A.	1.76	1.74	0.46
UBS Group AG	2.20	1.63	0.40
J Sainsbury plc	1.48	1.45	0.39
Publicis Groupe SA	1.85	1.72	0.38
Taiwan Semiconductor Mfg. Co. Ltd.	1.79	1.79	0.36
Intesa Sanpaolo S.p.A.	2.12	1.84	0.34
Samsung Electronics Co., Ltd.	1.59	1.59	0.33

Top 10 Leading Detractors

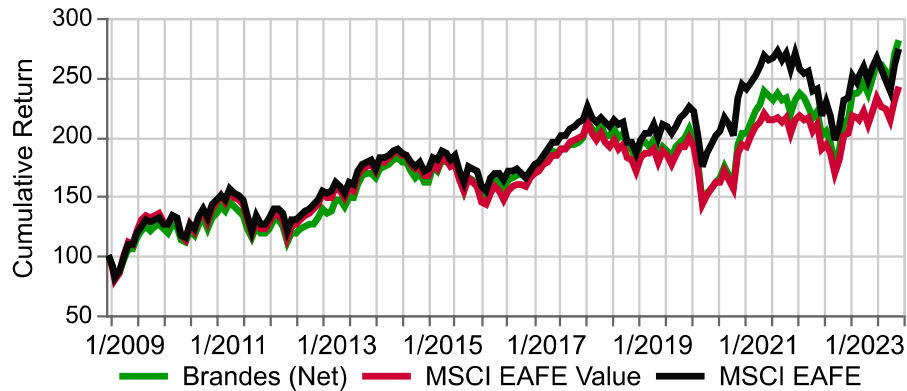
	Avg. Weights	Relative Weights	Active Return
ASML Holding NV	0.00	-1.70	-0.46
Takeda Pharmaceutical Company Limited	3.39	3.08	-0.32
Alibaba Group Holding Limited	2.54	2.54	-0.31
Novo Nordisk A/S	0.00	-2.13	-0.29
Siemens Aktiengesellschaft	0.00	-0.86	-0.25
BHP Group Limited	0.00	-1.00	-0.20
Shin-Etsu Chemical Co., Ltd.	0.00	-0.38	-0.16
Sanofi	2.15	1.40	-0.14
L'Oreal S.A.	0.00	-0.71	-0.14
Tokyo Electron Ltd.	0.00	-0.46	-0.14

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	3.7	11.6	8.8	-0.1	0.3	0.2
Consumer Discretionary	-0.3	-0.6	8.0	0.0	-1.0	-1.0
Consumer Staples	7.0	13.9	5.2	-0.4	1.7	1.1
Energy	2.6	7.5	0.3	-0.2	0.6	0.3
Financials	-2.4	12.4	9.8	0.0	0.4	0.5
Health Care	4.6	5.7	4.9	-0.3	0.2	-0.1
Industrials	-9.0	30.1	14.2	-0.3	1.1	0.7
Information Technology	-2.2	19.5	21.2	-0.2	-0.1	-0.3
Materials	-2.6	15.0	17.0	-0.2	0.0	-0.3
Real Estate	-0.8	9.5	14.8	0.0	0.0	-0.1
Utilities	-1.9	14.3	14.0	-0.1	0.0	0.0
Cash	1.2	-3.0	0.0	0.1	0.0	0.0
Total	0.0	11.2	10.4	-1.7	3.2	0.8

Brandes 15 Year Performance & Statistics

Investment Growth – 15 Years



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Relative Cumulative Performance – 15 Years

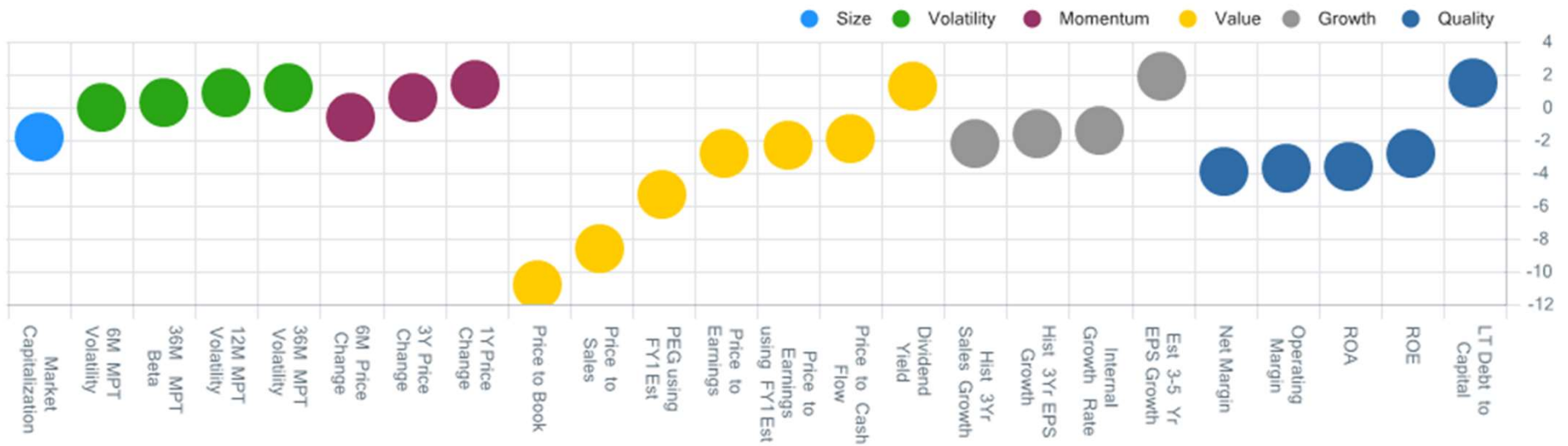


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Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Brandes (Net)	7.1	17.6	0.3	0.4	0.0	5.3	1.0
MSCI EAFE	6.9	16.8	--	0.4	--	--	1.0
MSCI EAFE Value	6.0	18.2	--	0.3	--	--	1.1

Characteristics Tilt vs Benchmark 12/31/2023



DFA International Portfolio Snapshot – December 31, 2023

Rolling Returns Since Inception 5/1/2006 (Ten Year, One Month Shift)



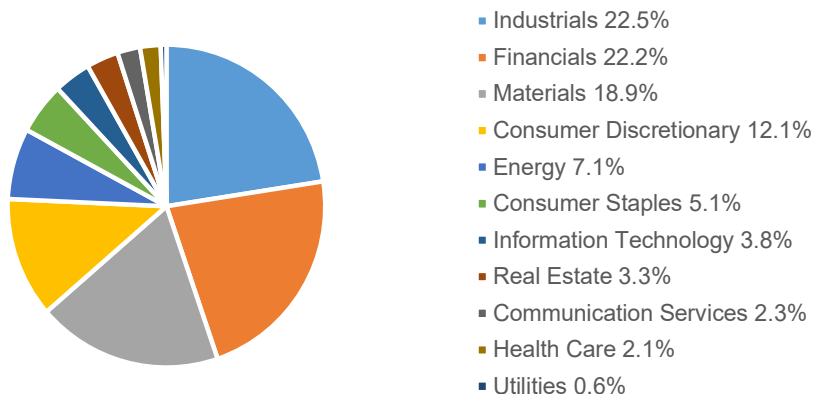
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Banco de Sabadell, S.A.	1.06	28.18
Banco BPM S.p.A.	1.03	16.39
Alamos Gold Inc	0.87	31.61
Leonardo SpA	0.84	6.60
Helvetia Holding AG	0.79	-2.08
Jyske Bank A/S	0.74	-3.49
Adecco Group AG	0.72	17.43
Rexel SA	0.69	7.68
ASR Nederland N.V.	0.68	23.20
Crescent Point Energy Corp.	0.67	-14.04

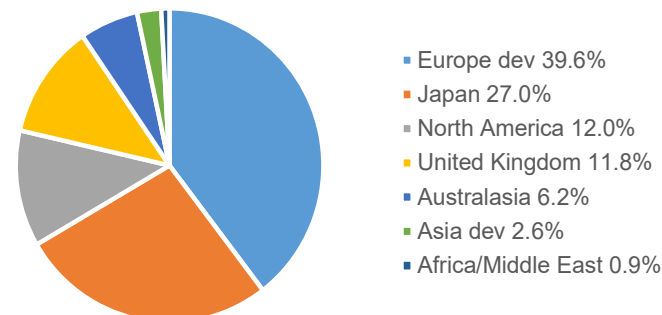
Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
DFA Int'l Small Cap (Net)	9.3	17.6	7.1	8.4	4.6	8.6
MSCI EAFE Small Cap	11.1	13.2	-0.7	6.6	4.8	8.8
MSCI World ex US Small Cap Value	10.0	14.7	3.8	7.1	4.2	9.2

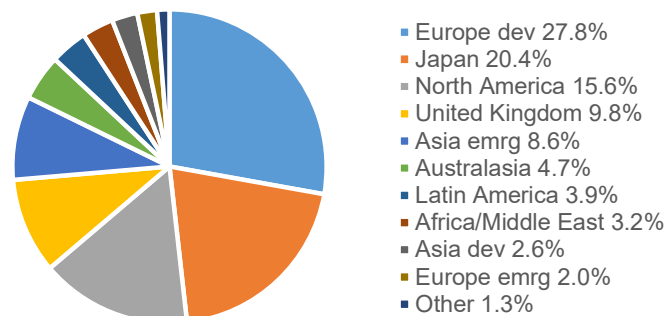
Equity Sector Exposure (GICS)



Regional Exposure by Domicile



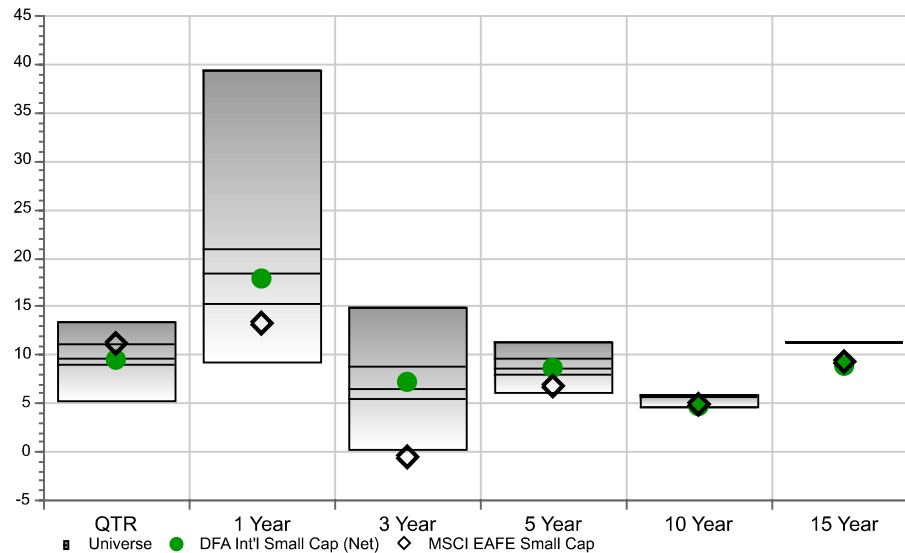
Regional Exposure by Source of Revenue



DFA International vs Universe & Benchmark

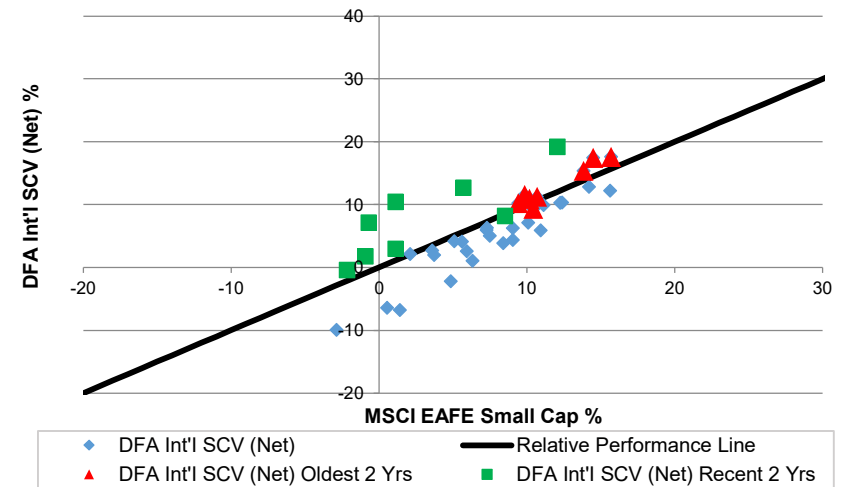
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US: Int'l Sm/Mid Cap Value



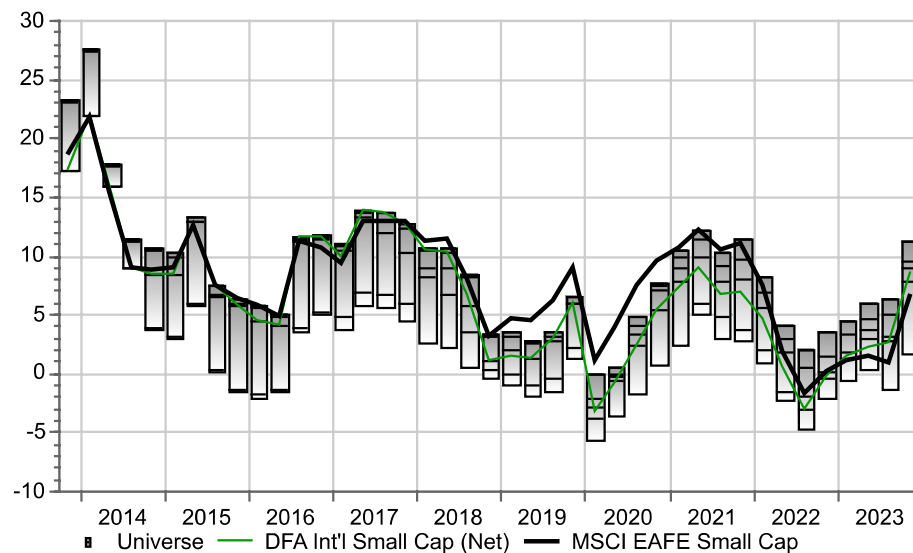
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US: Int'l Sm/Mid Cap Value



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Over/Under Benchmark Analysis

15	Outperform
25	Underperform
40	# Observations
38%	% Outperform

DFA International Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Alamos Gold Inc	0.91	0.91	0.19
ASR Nederland N.V.	0.62	0.62	0.16
Paragon Banking Group Plc	0.37	0.32	0.15
Eldorado Gold Corporation	0.34	0.34	0.14
Adecco Group AG	0.67	0.67	0.13
Cargotec Oyj	0.39	0.32	0.12
Celestica Inc.	0.56	0.56	0.11
Swiss Prime Site AG	0.63	0.63	0.10
Banca Popolare di Sondrio SPA	0.47	0.38	0.10
Redrow plc	0.40	0.33	0.09

Top 10 Leading Detractors

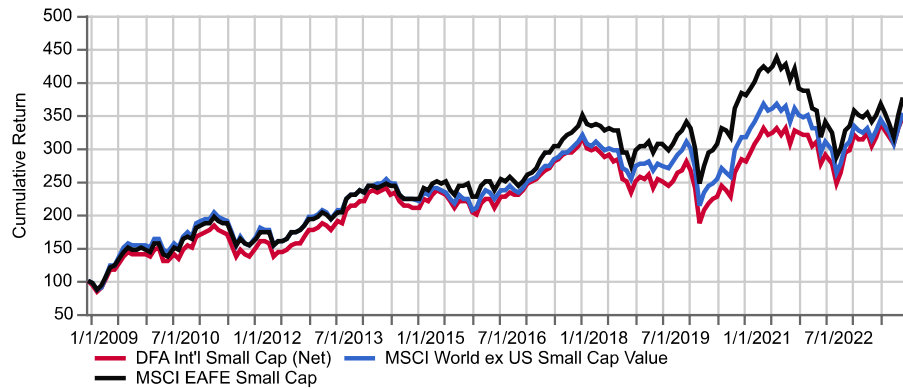
	Avg. Weights	Relative Weights	Active Return
Crescent Point Energy Corp.	0.83	0.83	-0.21
SCREEN Holdings Co., Ltd.	0.00	-0.19	-0.13
Whitecap Resources Inc.	0.36	0.36	-0.12
K+S Aktiengesellschaft	0.50	0.36	-0.11
SSR Mining Inc.	0.40	0.40	-0.10
Birchcliff Energy Ltd.	0.29	0.29	-0.09
Trelleborg AB	0.00	-0.26	-0.09
SSAB AB	0.00	-0.24	-0.09
MEG Energy Corp.	0.85	0.85	-0.08
Sydbank A/S	0.65	0.54	-0.08

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-2.0	7.1	11.4	0.0	-0.1	-0.1
Consumer Discretionary	-1.2	9.0	8.8	0.0	0.1	0.1
Consumer Staples	-1.5	9.9	7.3	0.1	0.2	0.2
Energy	4.9	-3.8	3.8	-0.3	-0.5	-1.0
Financials	10.4	8.2	10.1	-0.1	-0.4	-0.5
Health Care	-4.4	6.6	11.0	0.0	-0.1	-0.1
Industrials	-0.7	11.7	11.5	0.0	0.1	0.0
Information Technology	-5.9	9.6	13.9	-0.1	-0.1	-0.3
Materials	9.1	12.4	11.4	0.0	0.4	0.2
Real Estate	-7.0	9.6	15.7	-0.3	-0.2	-0.5
Utilities	-1.9	11.7	13.0	0.0	0.0	0.0
Total	0.0	9.0	11.1	-0.8	-0.6	-2.1

DFA International Inception Performance & Statistics

Investment Growth – 15 Years



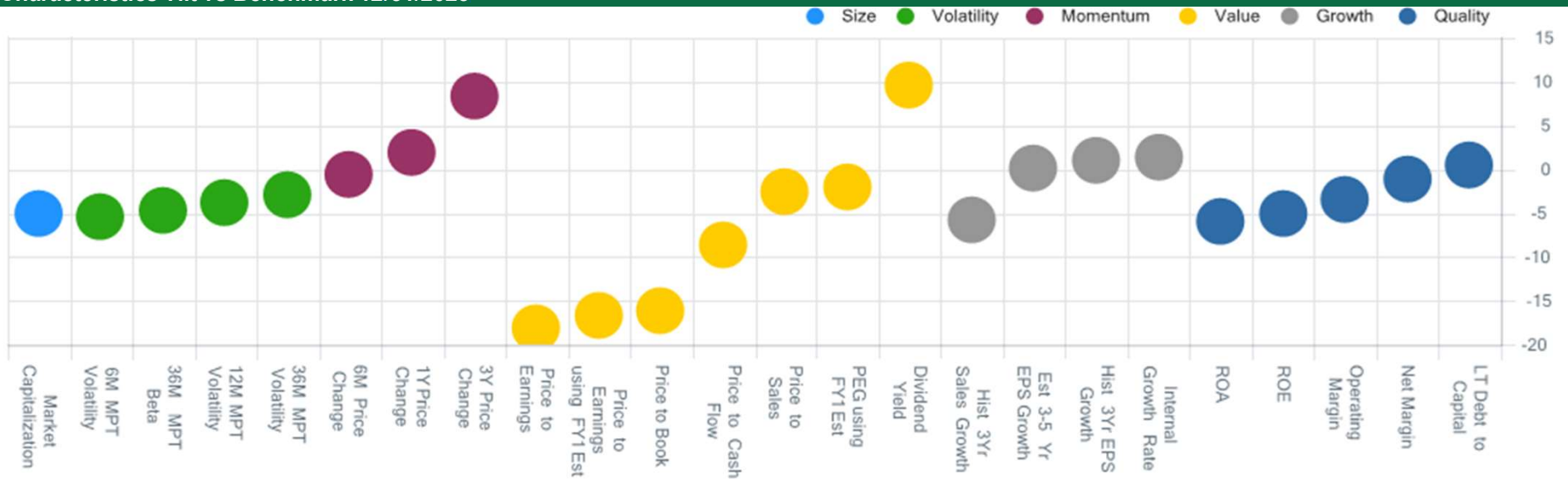
Relative Cumulative Performance – 15 Years



Risk – 15 Years

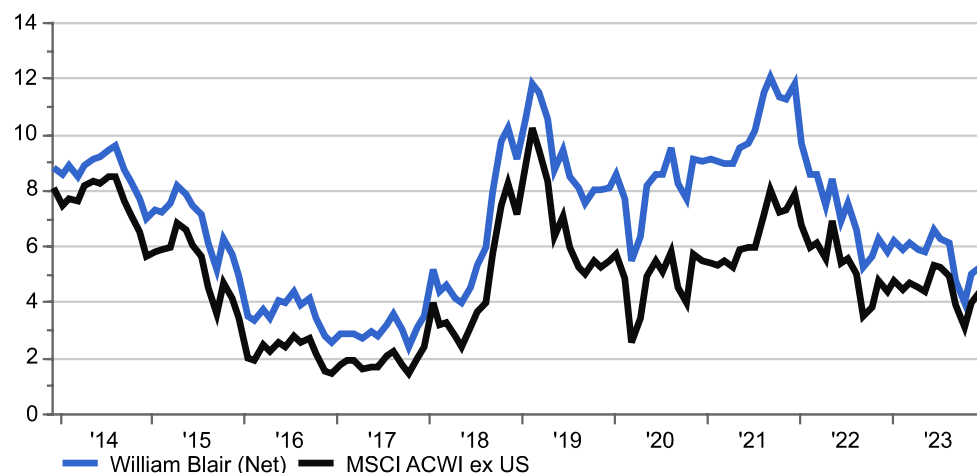
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA Int'l Small Cap (Net)	8.6	19.1	-0.7	0.4	-0.1	4.5	1.0
MSCI EAFE Small Cap	8.8	17.8	--	0.5	--	--	1.0
MSCI World ex US Small Cap Value	9.2	18.5	--	0.4	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



William Blair Portfolio Snapshot – December 31, 2023

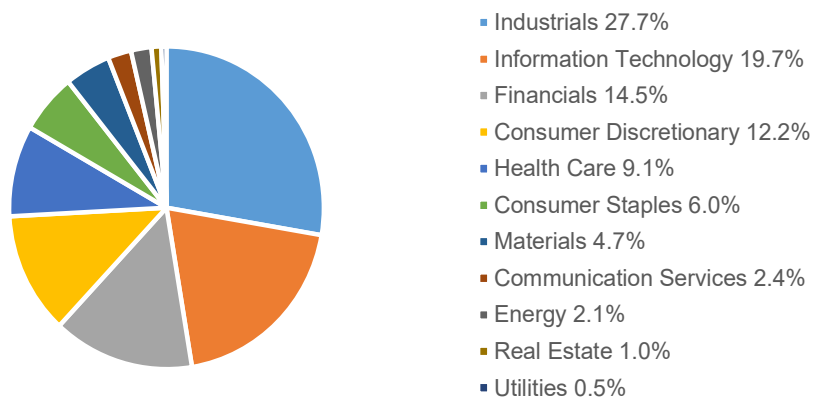
Rolling Returns Since Inception 1/1/2004 (Ten Year, One Month Shift)



Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
William Blair (Net)	13.0	15.9	-2.5	9.7	5.2	9.2
MSCI ACWI ex US	9.8	16.2	2.0	7.6	4.3	7.2
MSCI ACWI ex US Growth	11.2	14.4	-2.4	7.8	4.9	7.6

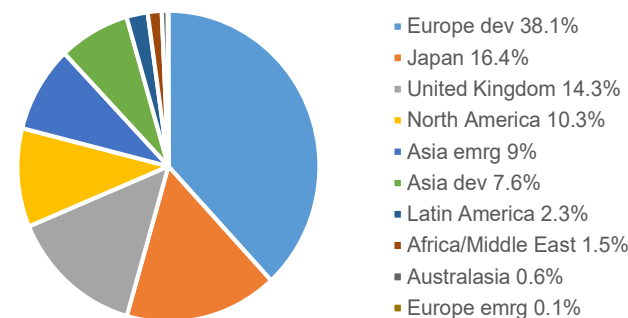
Equity Sector Exposure (GICS)



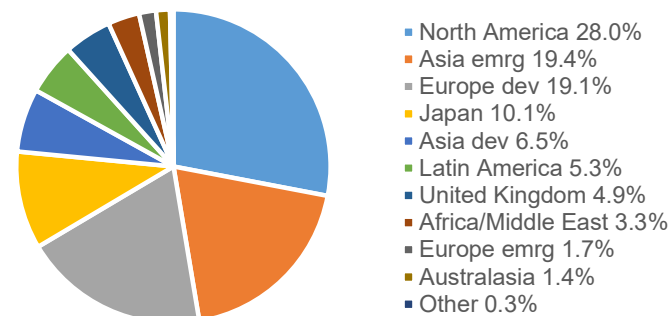
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Novo Nordisk A/S	1.99	13.15
ASML Holding NV	1.96	27.51
Taiwan Semiconductor Mfg. Co. Ltd.	1.60	19.86
London Stock Exchange Group plc	1.49	17.64
Keyence Corporation	1.43	18.47
Airbus SE	1.42	14.85
AstraZeneca	1.41	-0.28
Dassault Systemes S.A.	1.40	30.76
Safran SA	1.22	11.93
Compass Group PLC	1.19	12.07

Regional Exposure by Domicile



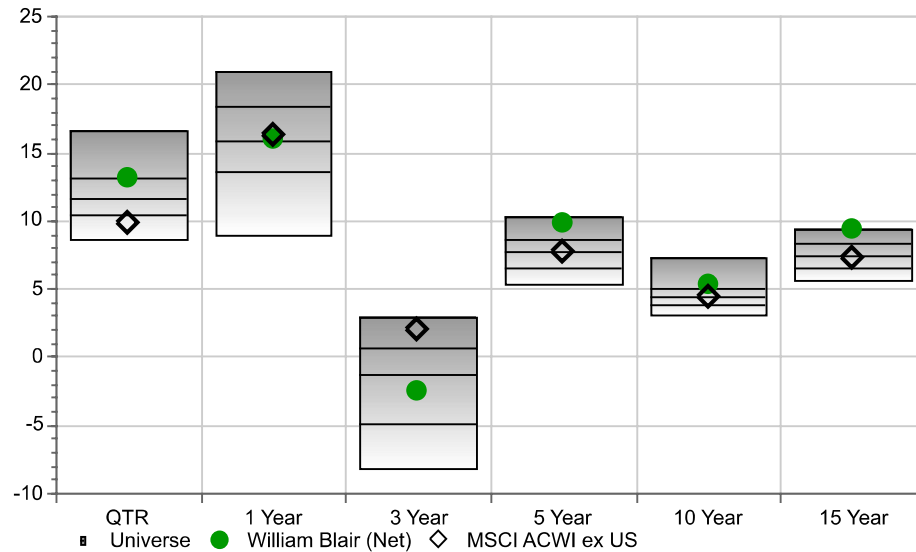
Regional Exposure by Source of Revenue



William Blair vs Universe & Benchmark

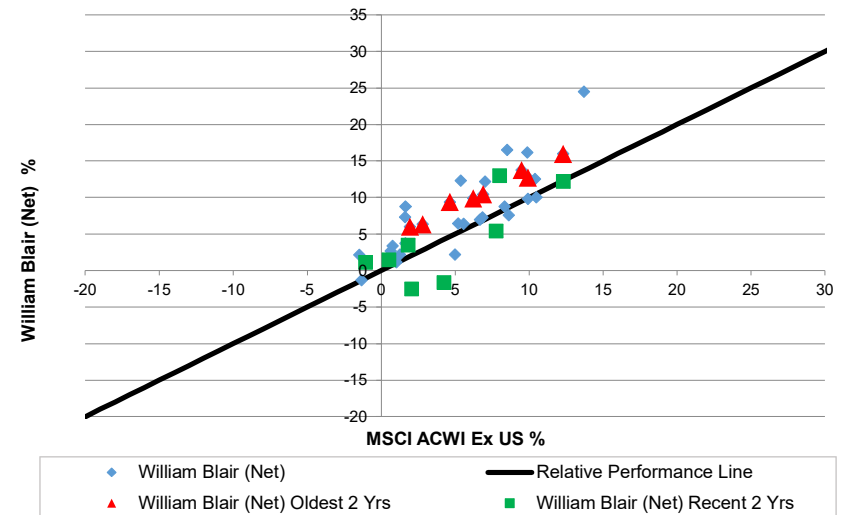
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US:International Multi-Cap Growth



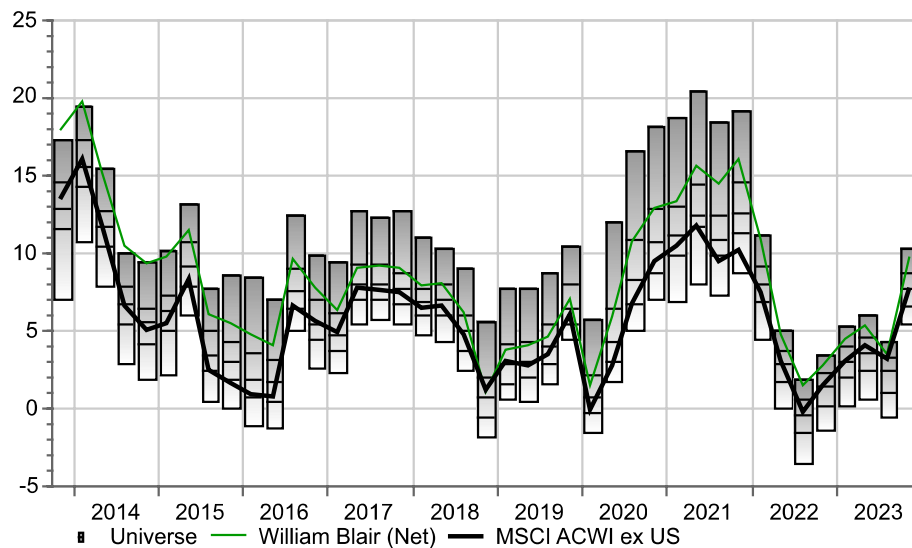
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US:International Multi-Cap Growth



©FactSet Research Systems

Over/Under Benchmark Analysis

32	Outperform
8	Underperform
40	# Observations
80%	% Outperform

William Blair Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Shin-Etsu Chemical Co., Ltd.	1.17	0.92	0.39
Dassault Systemes S.A.	1.34	1.22	0.38
lululemon athletica inc.	0.88	0.88	0.28
Lasertec Corporation	0.36	0.30	0.25
BE Semiconductor Industries N.V.	0.52	0.48	0.24
London Stock Exchange Group plc	1.48	1.29	0.23
3i Group plc	1.06	0.95	0.22
Ryanair Holdings plc	0.74	0.74	0.21
ASML Holding NV	1.82	0.73	0.20
Linde Plc	1.51	1.51	0.19

Top 10 Leading Detractors

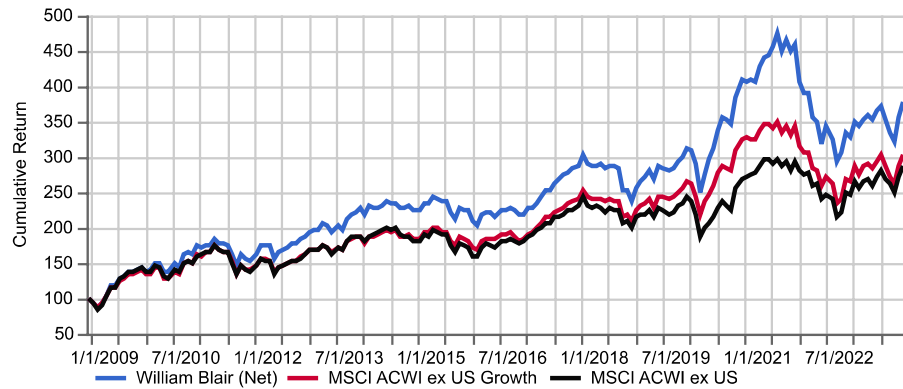
	Avg. Weights	Relative Weights	Active Return
Rentokil Initial plc	0.92	0.86	-0.32
DSV A/S	1.11	0.97	-0.20
Siemens Aktiengesellschaft	0.00	-0.57	-0.16
Lonza Group AG	0.20	0.07	-0.16
PDD Holdings Inc.	0.00	-0.30	-0.14
BHP Group Limited	0.00	-0.64	-0.13
Shopify Inc.	0.00	-0.30	-0.13
SAP SE	0.00	-0.64	-0.12
Genmab A/S	0.52	0.43	-0.12
InMode Ltd.	0.07	0.07	-0.10

Sector Attribution

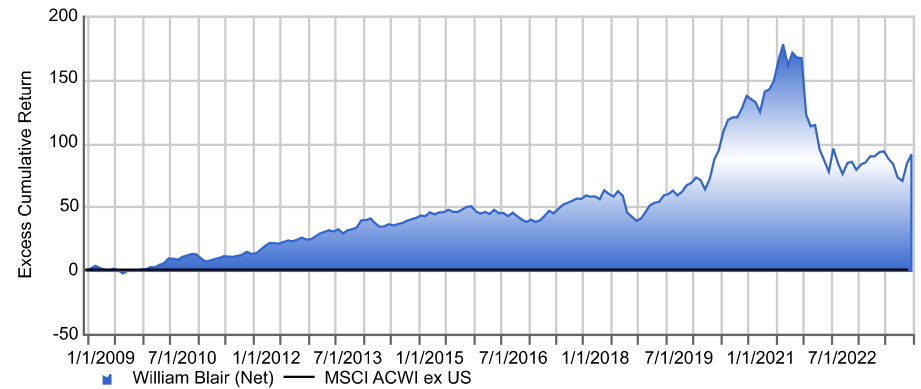
	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-3.7	4.2	4.6	0.1	0.0	0.2
Consumer Discretionary	0.6	13.0	5.7	0.0	1.0	0.9
Consumer Staples	-1.5	7.6	5.6	0.1	0.2	0.2
Energy	-3.6	6.1	2.4	0.2	0.1	0.4
Financials	-6.2	10.5	10.1	-0.1	0.1	0.0
Health Care	0.0	7.1	5.1	0.0	0.1	0.2
Industrials	13.0	12.3	12.6	0.3	0.0	0.3
Information Technology	5.6	24.2	19.9	0.5	0.6	1.2
Materials	-2.9	19.4	12.9	-0.1	0.3	0.2
Real Estate	-0.9	23.4	11.0	0.0	0.1	0.1
Utilities	-2.7	19.4	13.5	-0.1	0.0	-0.1
Cash	2.4	1.3	0.0	-0.1	0.0	-0.2
Total	0.0	13.1	9.7	0.8	2.6	3.4

William Blair 15 Year Performance & Statistics

Investment Growth – 15 Years



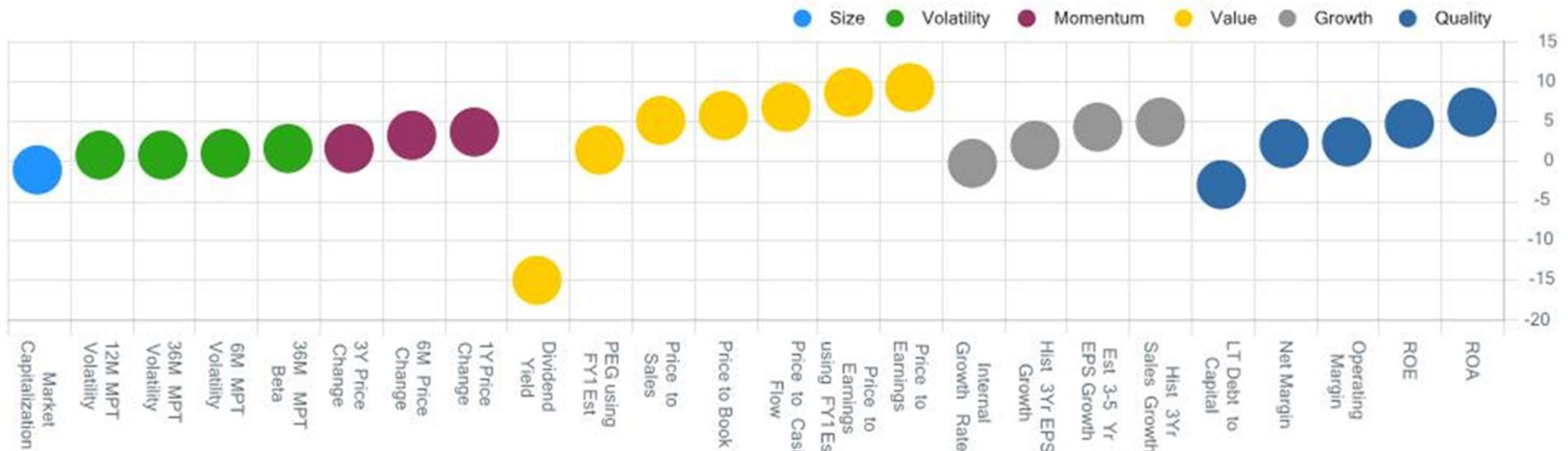
Relative Cumulative Performance – 15 Years



Risk – 15 Years

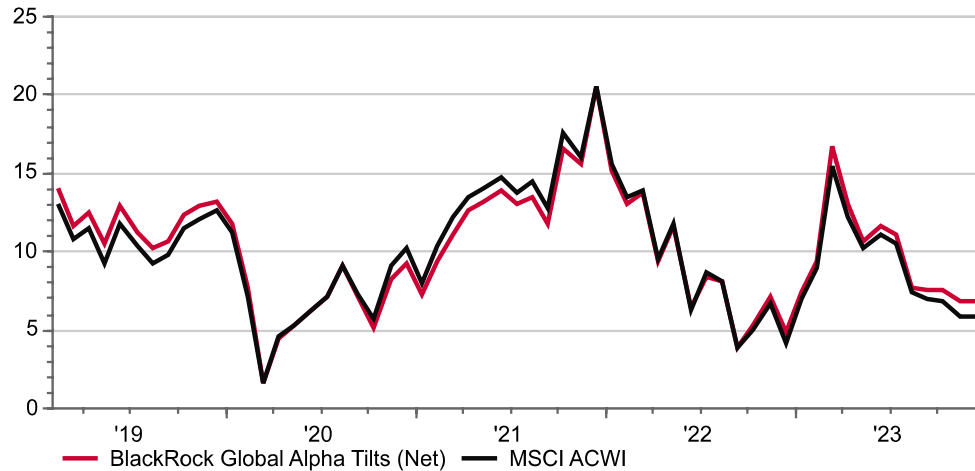
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
William Blair (Net)	9.2	16.6	2.3	0.5	0.4	5.4	0.9
MSCI ACWI ex US	7.2	16.8	--	0.4	--	--	1.0
MSCI ACWI ex US Growth	7.6	16.4	--	0.4	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



BlackRock Global Portfolio Snapshot – December 31, 2023

Rolling Returns Since Inception 3/1/2016 (Three Year, One Month Shift)



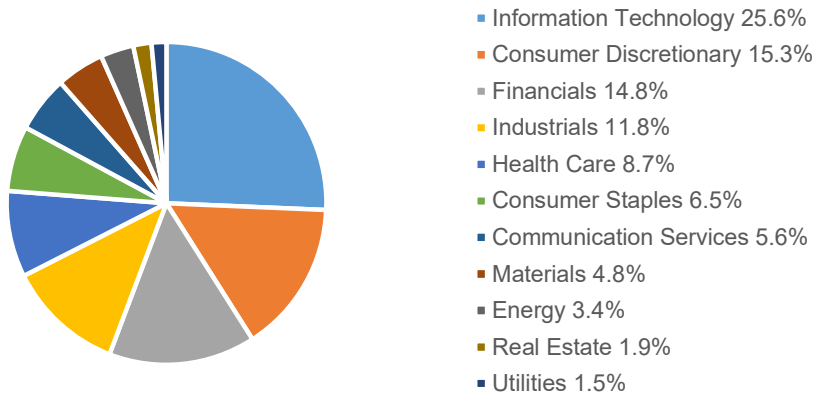
Top 10 Holdings

	Portfolio Weight	Quarterly Return
Microsoft Corporation	4.66	19.33
Apple Inc.	4.59	12.59
Amazon.com, Inc.	2.83	19.52
NVIDIA Corporation	2.55	13.86
Alphabet Inc.	2.06	6.82
Nestle S.A.	1.56	2.16
Mastercard Incorporated	1.44	7.89
Citigroup Inc.	1.33	26.50
Johnson & Johnson	1.32	1.41
Siemens Aktiengesellschaft	1.29	30.68

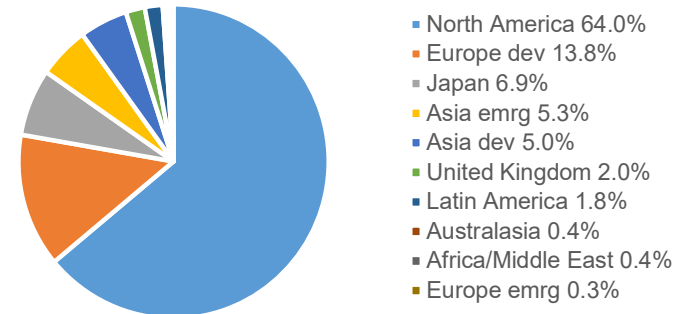
Trailing Returns

	QTR	1 Year	3 Year	5 Year	Inception 3/1/2016
BlackRock Global Alpha Tilts (Net)	11.4	23.0	6.6	12.3	11.6
MSCI ACWI	11.0	22.2	5.7	11.7	11.0

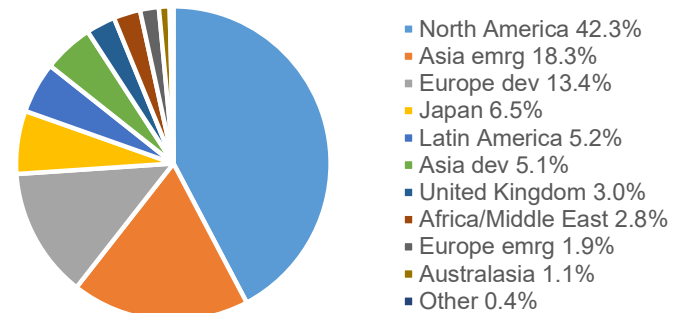
Equity Sector Exposure (GICS)



Regional Exposure by Domicile



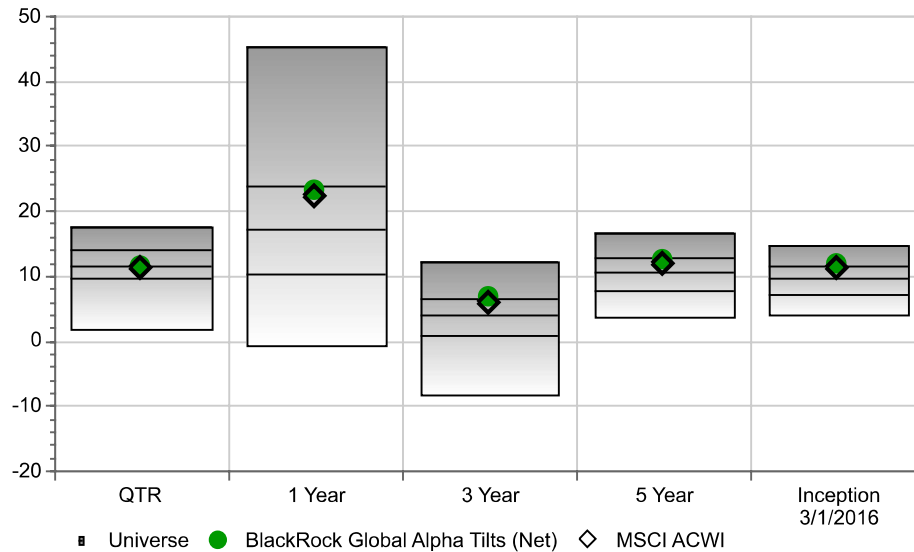
Regional Exposure by Source of Revenue



BlackRock Global vs Universe & Benchmark

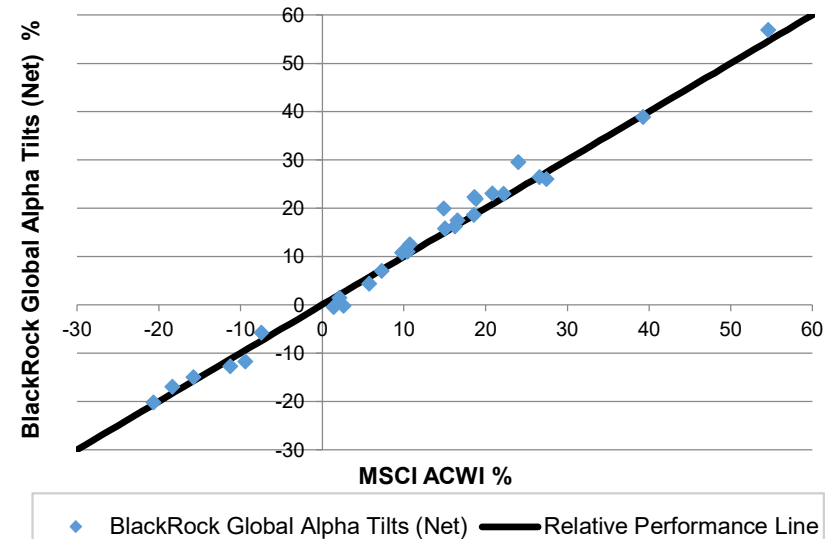
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US:Global



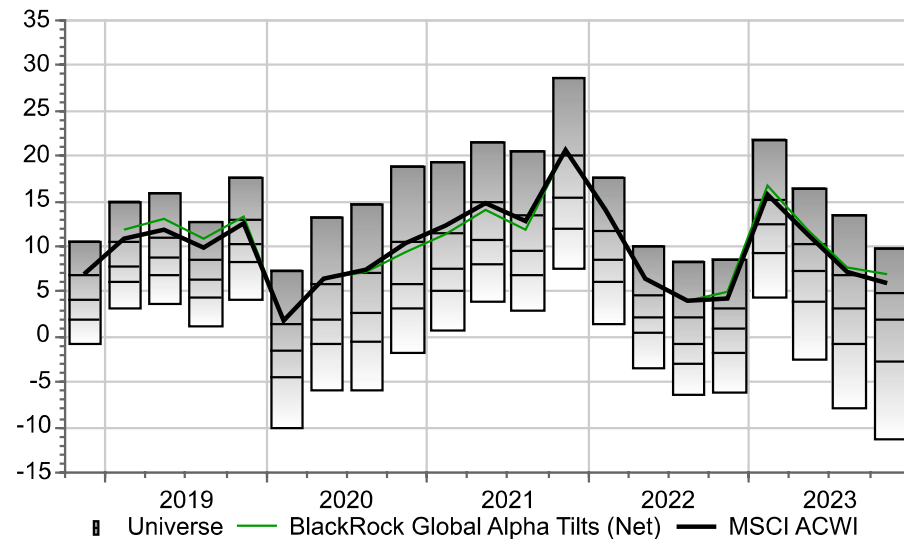
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One-Year Rolling Return Versus Benchmark



Rolling Returns 3/1/2016 – 12/31/2023 (3 Year, 3 Month Shift)

Universe: Lipper US Global Equity



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Over/Under Benchmark Analysis

18	Outperform
10	Underperform
28	# Observations
64%	% Outperform

BlackRock Global Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Block, Inc.	0.50	0.46	0.31
MediaTek Inc.	0.74	0.68	0.27
D.R. Horton, Inc.	0.64	0.58	0.24
Amazon.com, Inc.	3.15	1.11	0.22
lululemon athletica inc.	0.74	0.66	0.21
Microsoft Corporation	4.99	1.04	0.20
Citigroup Inc.	0.69	0.56	0.20
Siemens Aktiengesellschaft	0.74	0.56	0.18
Bank of America Corporation	1.06	0.74	0.18
Holcim Ltd.	0.73	0.67	0.16

Top 10 Leading Detractors

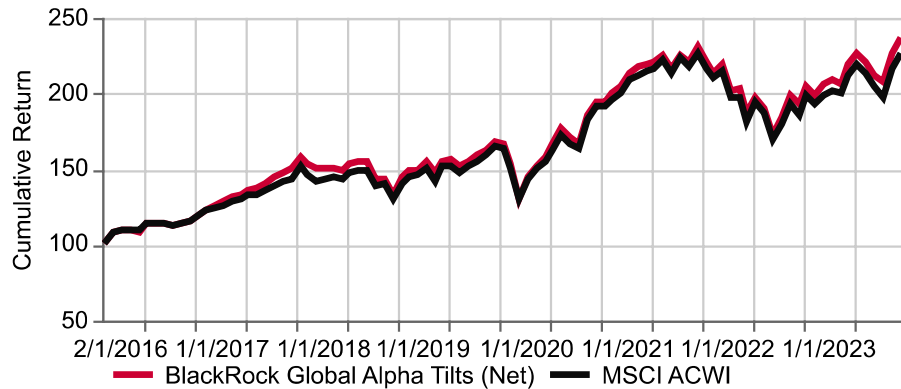
	Avg. Weights	Relative Weights	Active Return
Broadcom Inc.	0.00	-0.64	-0.19
Chevron Corporation	1.35	0.90	-0.14
JPMorgan Chase & Co.	0.00	-0.70	-0.12
BYD Company Limited	0.85	0.79	-0.12
Advanced Micro Devices, Inc.	0.00	-0.28	-0.12
ASML Holding NV	0.00	-0.41	-0.11
Tesla, Inc.	0.32	-0.74	-0.11
Netflix, Inc.	0.01	-0.30	-0.08
Apple Inc.	4.02	-0.51	-0.08
Costco Wholesale Corporation	0.03	-0.38	-0.08

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-0.8	8.4	9.4	0.0	-0.1	0.0
Consumer Discretionary	4.4	12.2	9.9	0.0	0.4	0.3
Consumer Staples	0.9	3.8	5.5	0.0	-0.2	-0.1
Energy	0.2	-5.0	-2.8	0.0	-0.1	-0.2
Financials	-2.3	15.6	12.6	0.0	0.5	0.4
Health Care	-2.1	3.7	6.0	0.1	-0.3	-0.1
Industrials	0.4	13.0	13.3	0.0	-0.1	0.0
Information Technology	0.8	17.6	17.6	0.0	0.0	0.0
Materials	1.2	12.4	11.8	0.0	0.0	0.1
Real Estate	-1.4	9.6	16.0	-0.1	-0.1	-0.1
Utilities	-1.4	13.2	10.9	0.0	0.0	0.0
Total	0.0	11.3	11.1	0.0	0.1	0.2

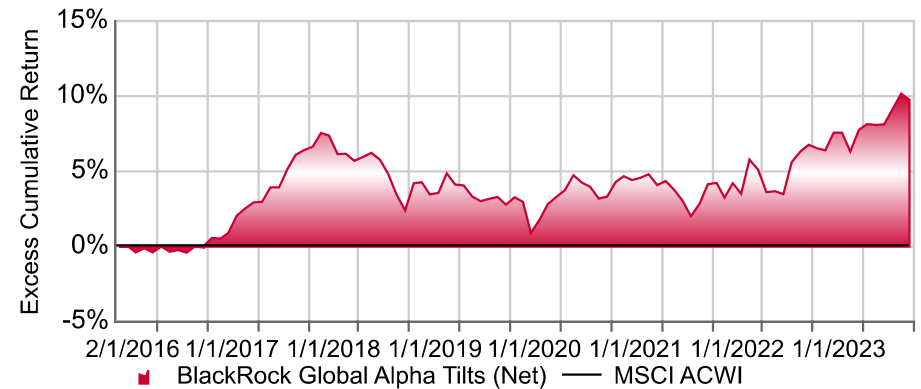
BlackRock Global Inception Performance & Statistics

Investment Growth Since Inception 3/1/2016



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Relative Cumulative Performance Since Inception 3/1/2016

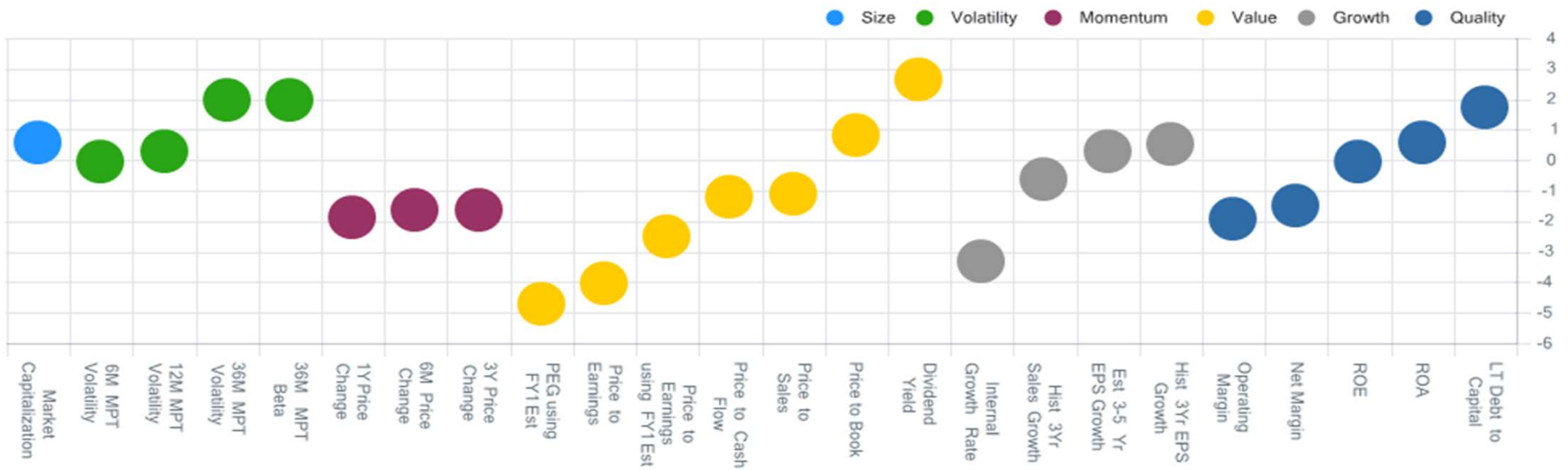


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Risk Since Inception 3/1/2016

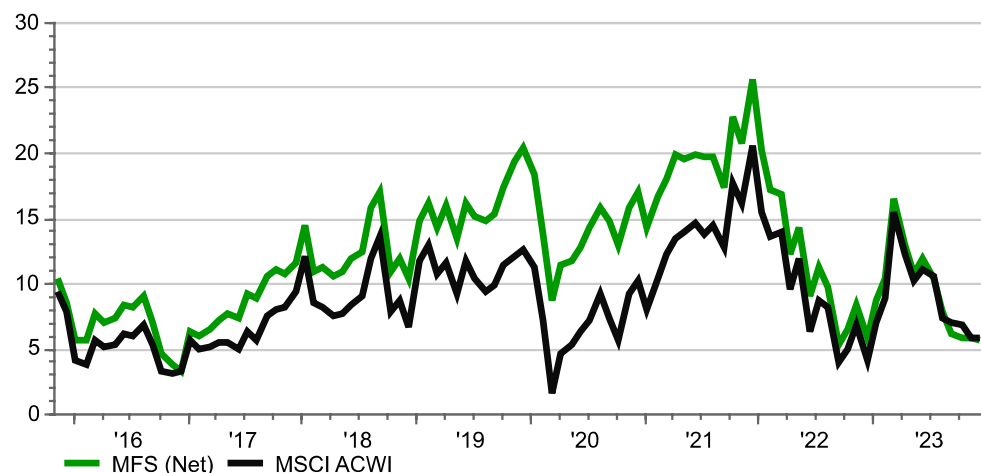
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
BlackRock Global Alpha Tilts (Net)	11.6	15.7	0.5	0.6	0.4	1.6	1.0
MSCI ACWI	11.0	15.4	--	0.6	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



MFS Portfolio Snapshot – December 31, 2023

Rolling Returns Since Inception 12/1/2012 (Three Year, One Month Shift)

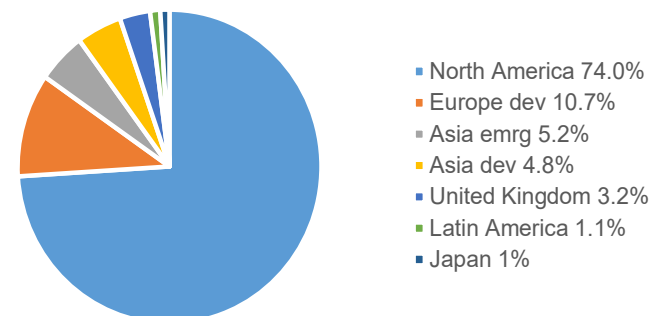


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Top 10 Holdings

	Portfolio Weight	Quarterly Return
Microsoft Corporation	6.77	19.33
Visa Inc.	3.38	13.42
Accenture plc	3.10	14.76
Alphabet Inc.	3.02	6.75
Apple Inc.	2.44	12.59
Canadian Pacific Kansas City Limited	2.40	6.44
Taiwan Semi Mfg. Co. Ltd.	2.39	19.86
Agilent Technologies, Inc.	2.25	24.82
Amphenol Corporation	2.14	18.29
Tencent Holdings Limited	2.11	-3.83

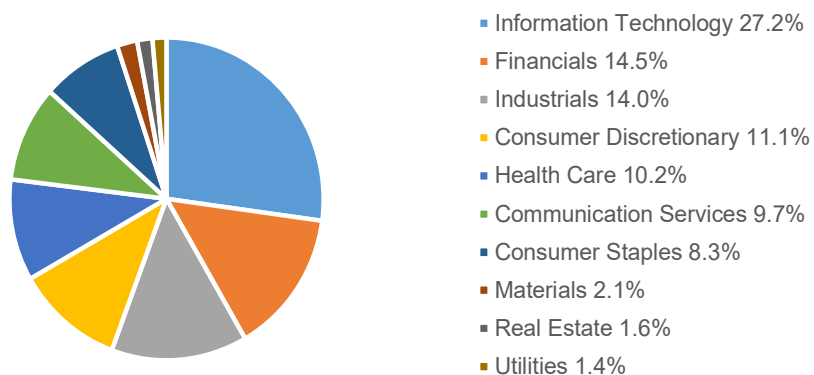
Regional Exposure by Domicile



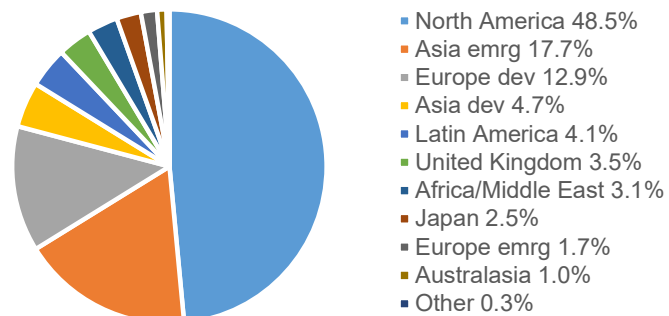
Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	Inception 12/1/2012
MFS (Net)	11.2	20.8	5.4	14.3	10.5	11.7
MSCI ACWI	11.0	22.2	5.7	11.7	7.9	9.3
MSCI ACWI Growth	12.7	33.2	3.7	14.6	10.1	11.2

Equity Sector Exposure (GICS)



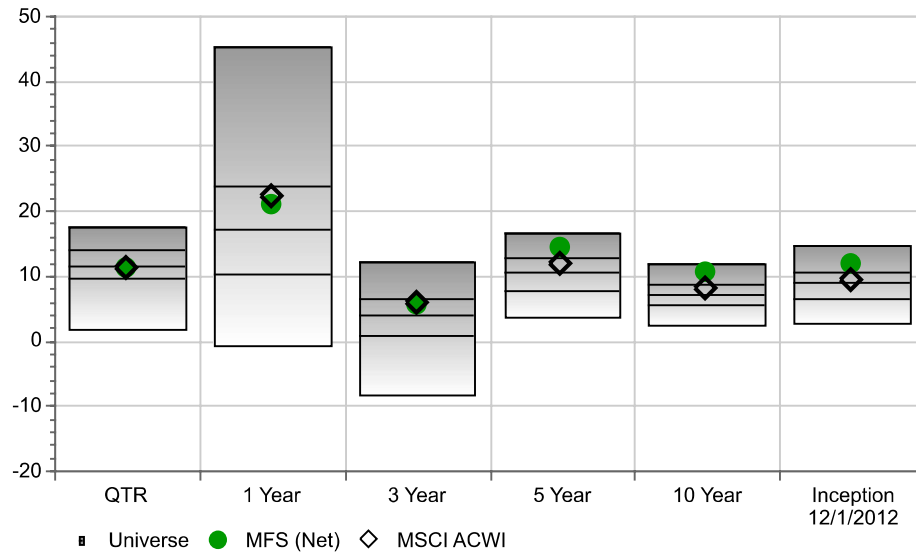
Regional Exposure by Source of Revenue



MFS vs Universe & Benchmark

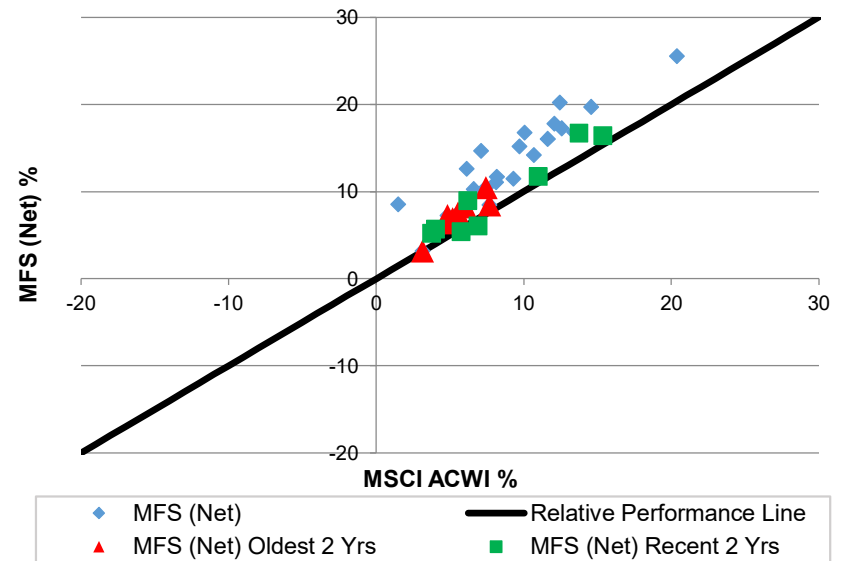
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US:Global



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Three-Year Rolling Return Versus Benchmark



MFS Attribution Analysis – December 31, 2023

Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Microsoft Corporation	6.79	2.79	0.56
Agilent Technologies, Inc.	1.89	1.83	0.51
Gartner, Inc.	1.69	1.65	0.51
American Tower Corporation	1.47	1.33	0.42
Accenture plc	3.02	2.70	0.39
Visa Inc.	3.43	2.79	0.38
Amphenol Corporation	2.01	1.93	0.34
Ross Stores, Inc.	1.45	1.38	0.31
Taiwan Semiconductor Mfg. Co. Ltd.	2.27	1.59	0.31
ICON plc	2.12	2.12	0.30

Top 10 Leading Detractors

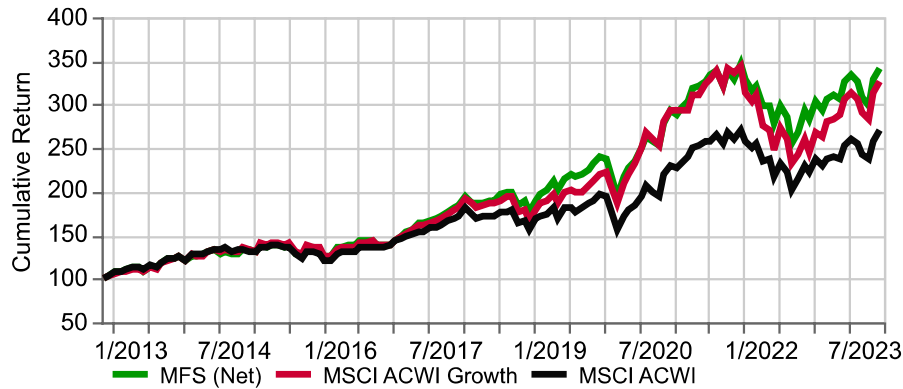
	Avg. Weights	Relative Weights	Active Return
Amazon.com, Inc.	0.00	-2.03	-0.40
Apple Inc.	2.46	-2.07	-0.27
Meta Platforms, Inc.	0.00	-1.11	-0.20
Broadcom Inc.	0.00	-0.64	-0.19
Burberry Group plc	0.71	0.70	-0.19
Aon plc	1.75	1.64	-0.16
Aptiv PLC	1.20	1.16	-0.15
JPMorgan Chase & Co.	0.00	-0.70	-0.12
Advanced Micro Devices, Inc.	0.00	-0.28	-0.12
McCormick & Company, Incorporated	1.55	1.52	-0.11

Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	2.6	7.8	9.4	0.0	-0.3	-0.2
Consumer Discretionary	0.5	6.0	9.9	0.0	-0.5	-0.5
Consumer Staples	0.9	-0.3	5.5	-0.1	-0.5	-0.6
Energy	-5.0	0.0	-2.8	0.7	0.0	0.7
Financials	-1.7	10.4	12.6	0.0	-0.1	-0.3
Health Care	-1.8	8.5	6.0	0.1	0.4	0.3
Industrials	3.5	12.6	13.3	0.0	0.0	-0.1
Information Technology	4.4	17.3	17.6	0.3	-0.1	0.2
Materials	-2.4	24.4	11.8	0.0	0.2	0.2
Real Estate	-0.8	32.9	16.0	0.0	0.2	0.2
Utilities	-1.3	8.8	10.9	0.0	0.0	-0.1
Cash	1.1	1.3	0.0	-0.1	0.0	-0.1
Total	0.0	11.0	11.1	0.9	-0.5	-0.1

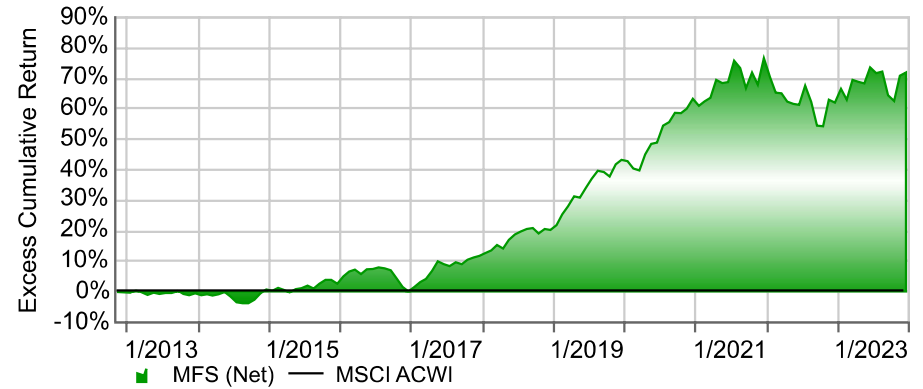
MFS Inception Performance & Statistics

Investment Growth Since Inception 12/1/2012



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Relative Cumulative Performance Since Inception 12/1/2012

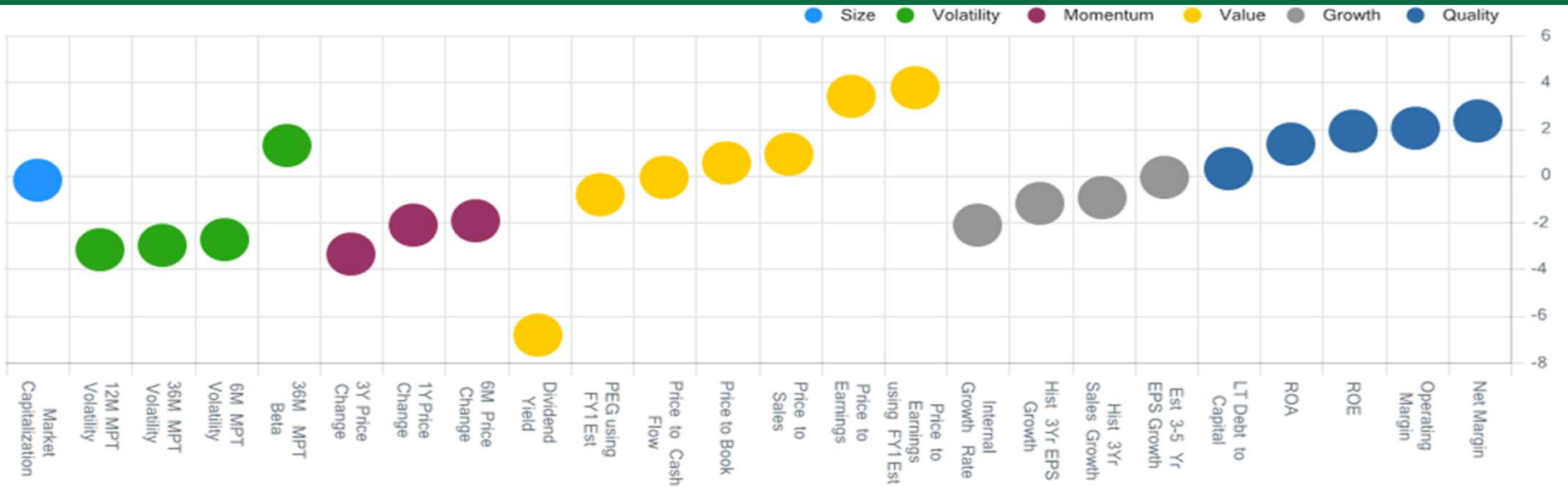


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Risk Since Inception 12/1/2012

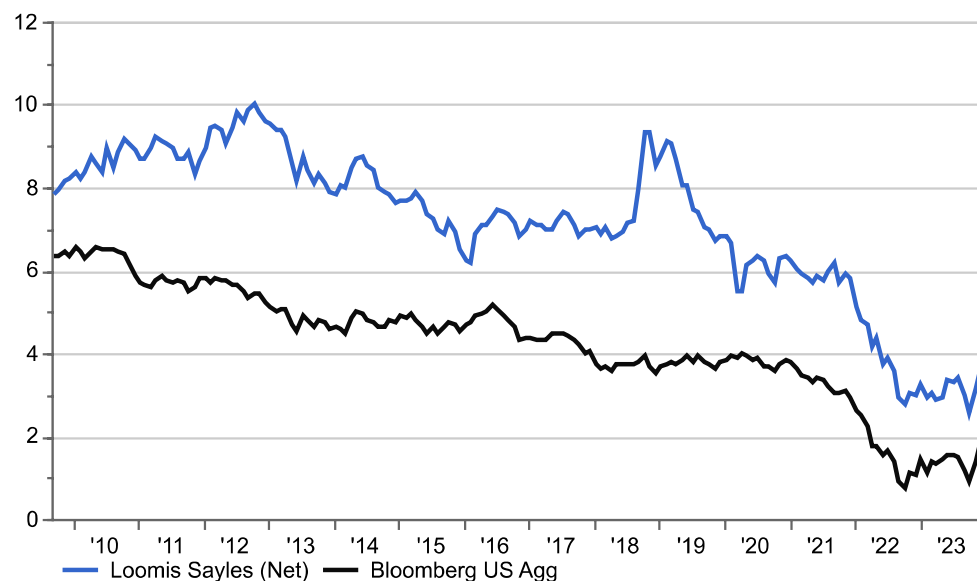
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
MFS (Net)	11.7	14.4	2.3	0.7	0.7	3.2	1.0
MSCI ACWI	9.3	14.3	--	0.6	--	--	1.0
MSCI ACWI Growth	11.2	15.4	--	0.7	--	--	1.0

Characteristics Tilt vs Benchmark 12/31/2023



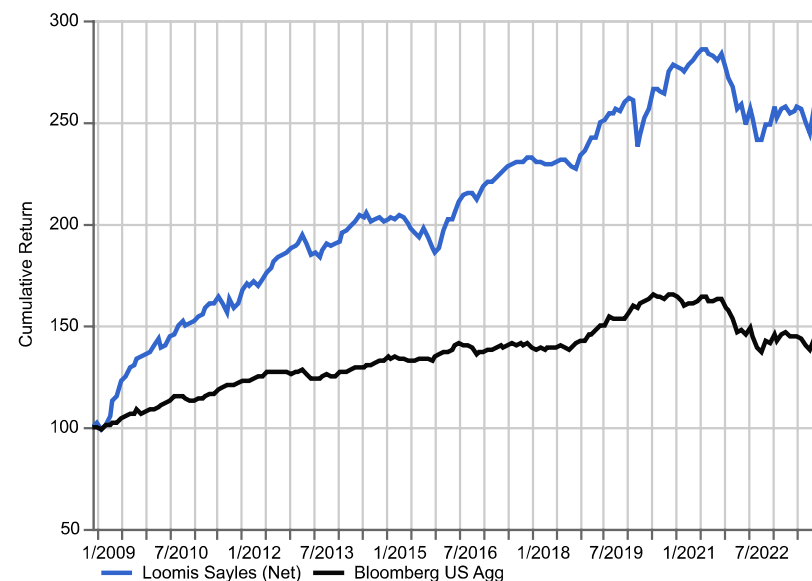
Loomis Sayles Portfolio Snapshot – December 31, 2023

Rolling Returns Since 10/1/1999 (Ten Year, One Month Shift)



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Investment Growth – 15 Years



©FactSet Research Systems

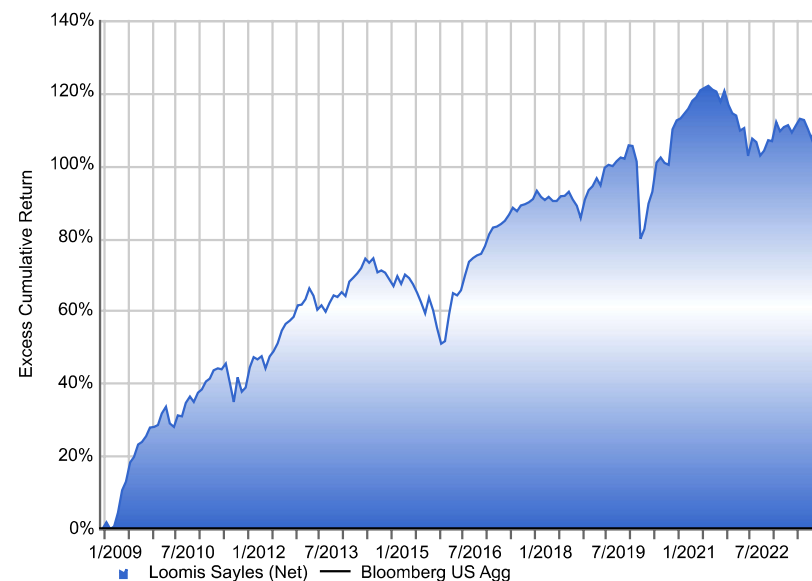
Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
Loomis Sayles (Net)	7.7	8.4	-1.0	3.5	3.5	6.8
Bloomberg US Aggregate	6.8	5.5	-3.3	1.1	1.8	2.7

Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Loomis Sayles (Net)	6.8	6.8	4.1	0.9	0.8	5.4	1.0
Bloomberg US Aggregate	2.7	4.2	--	0.4	--	--	1.0

Relative Cumulative Performance – 15 Years

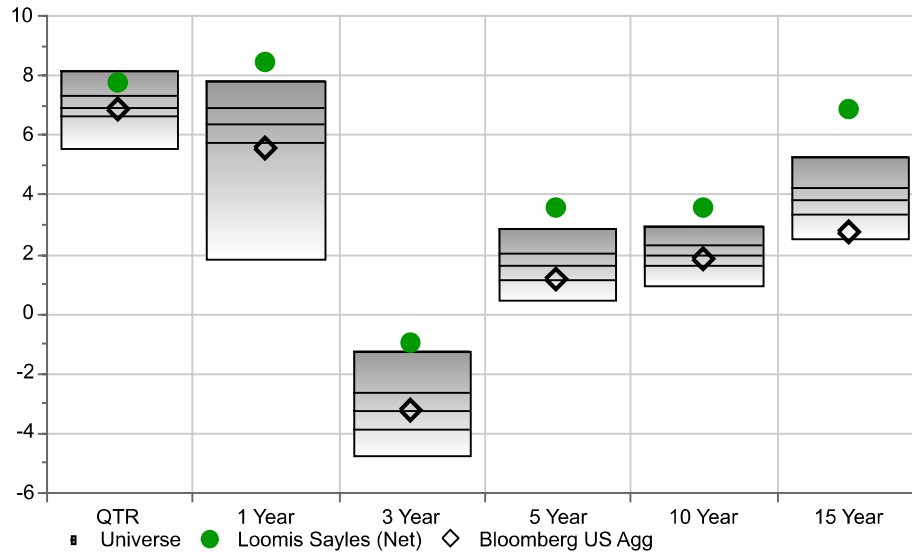


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Loomis Sayles vs Universe & Benchmark

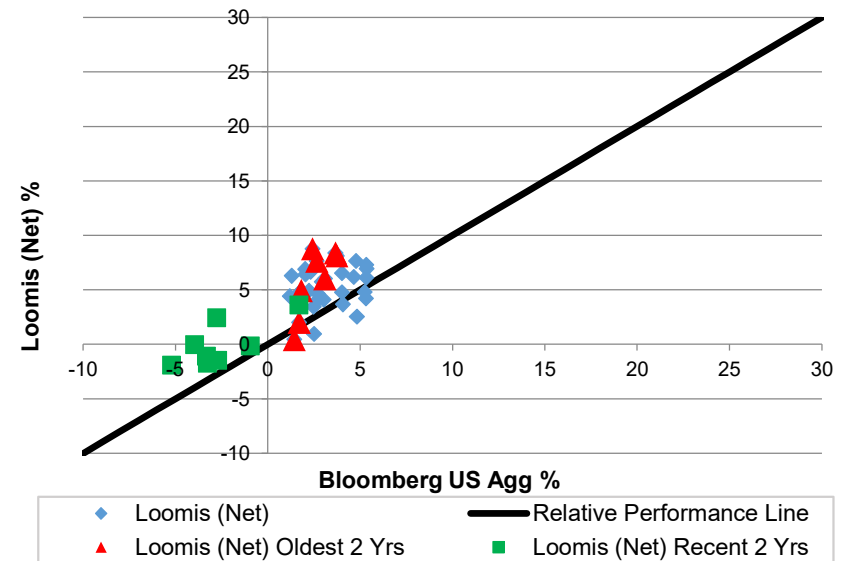
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Core Plus Bond



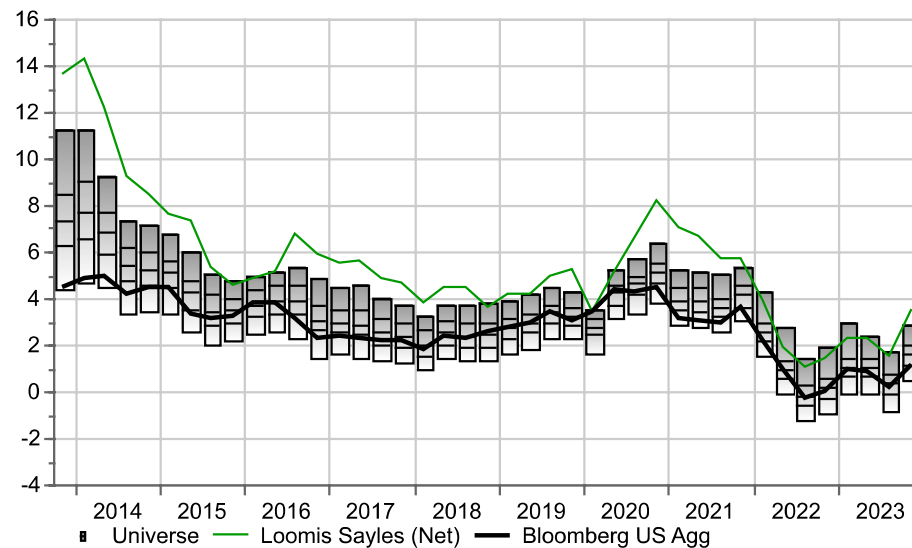
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US:Core Plus Bond



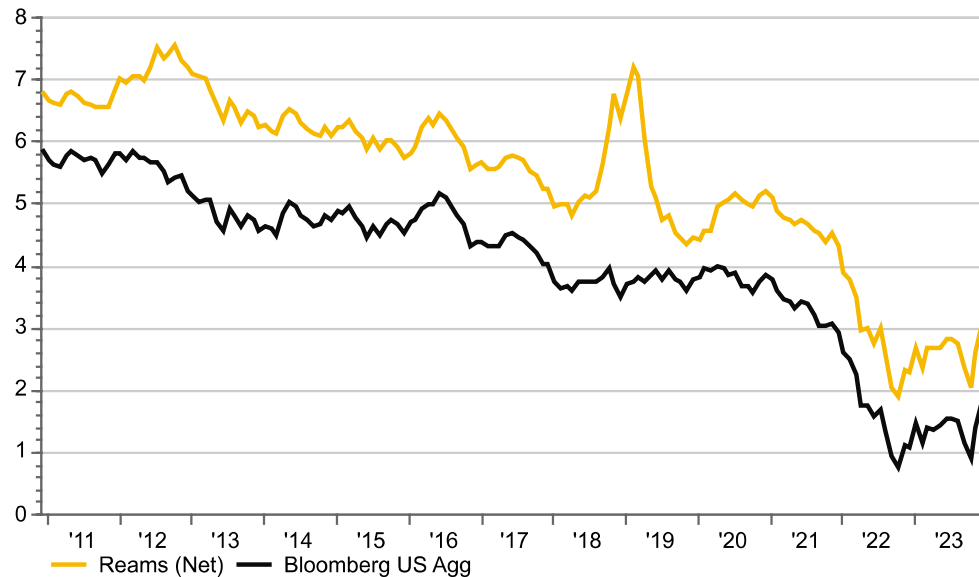
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Over/Under Benchmark Analysis

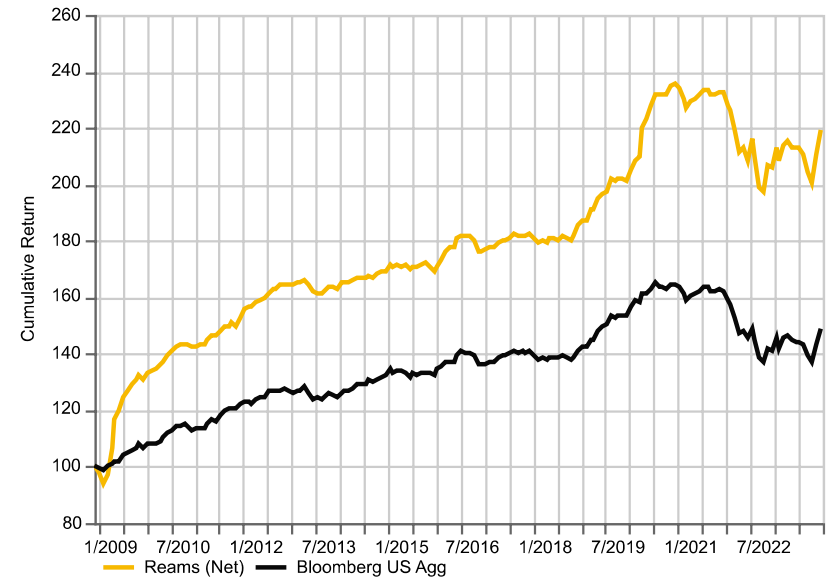
34	Outperform
6	Underperform
40	# Observations
85%	% Outperform

Reams Portfolio Snapshot – December 31, 2023

Rolling Returns Since Inception 1/1/2001 (Ten Year, One Month Shift)



Investment Growth – 15 Years



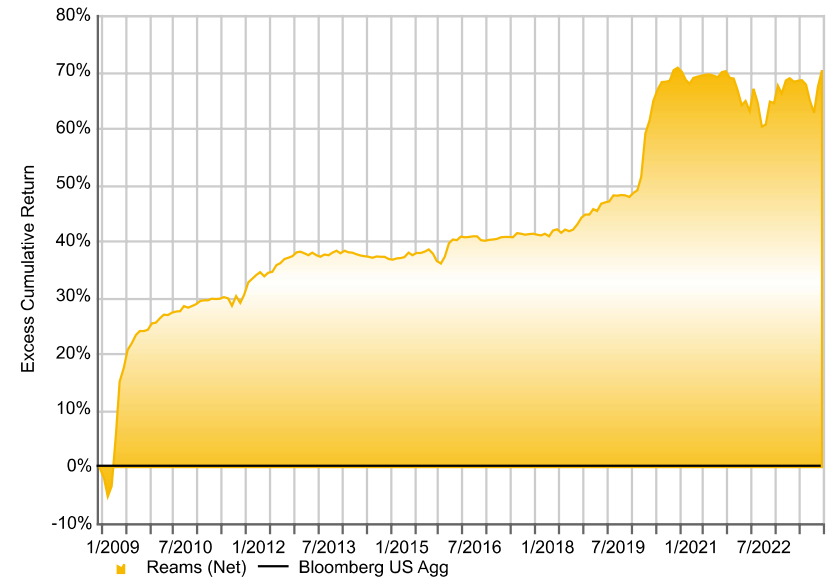
Trailing Returns

	QTR	1 Year	3 Year	5 Year	10 Year	15 Year
Reams (Net)	7.3	6.6	-2.4	3.4	3.0	5.4
Bloomberg US Aggregate	6.8	5.5	-3.3	1.1	1.8	2.7

Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Reams (Net)	5.4	6.1	2.5	0.7	0.7	3.9	1.1
Bloomberg US Aggregate	2.7	4.2	--	0.4	--	--	1.0

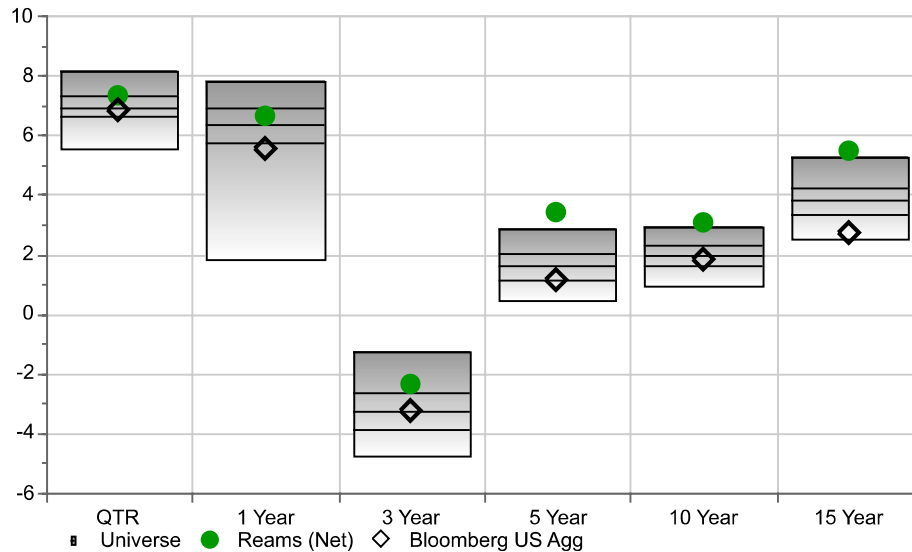
Relative Cumulative Performance – 15 Years



Reams vs Universe & Benchmark

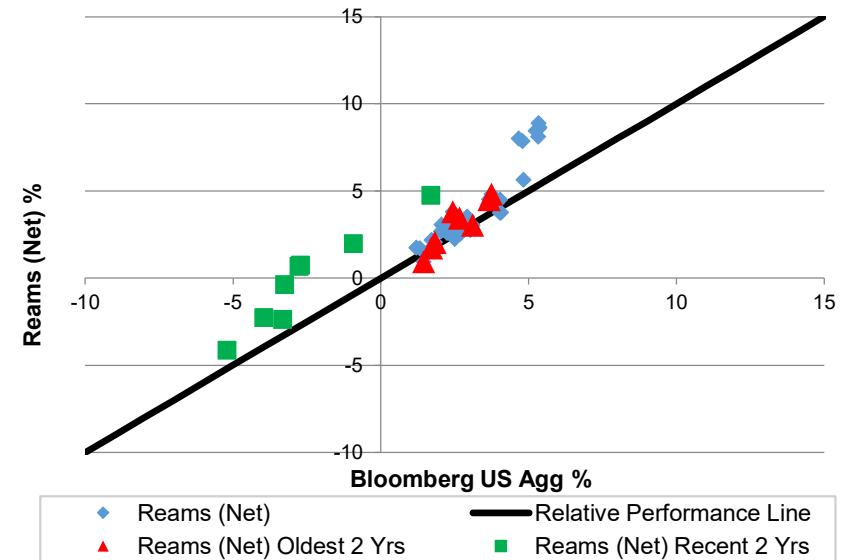
Performance Relative to Peer Group as of 12/31/2023

Universe: Lipper US Core Plus Bond



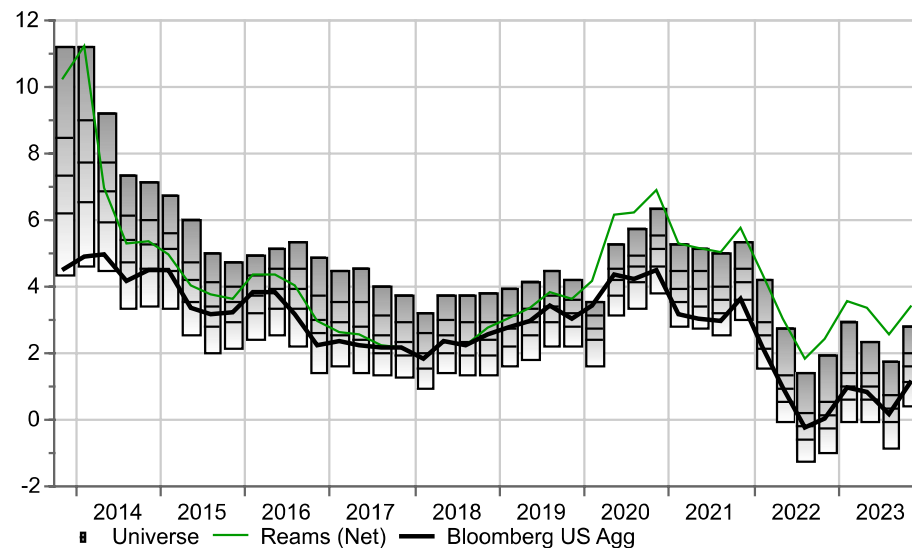
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Three-Year Rolling Return Versus Benchmark



Rolling Returns 7/1/2008 – 12/31/2023 (5 Year, 3 Month Shift)

Universe: Lipper US Core Plus Bond

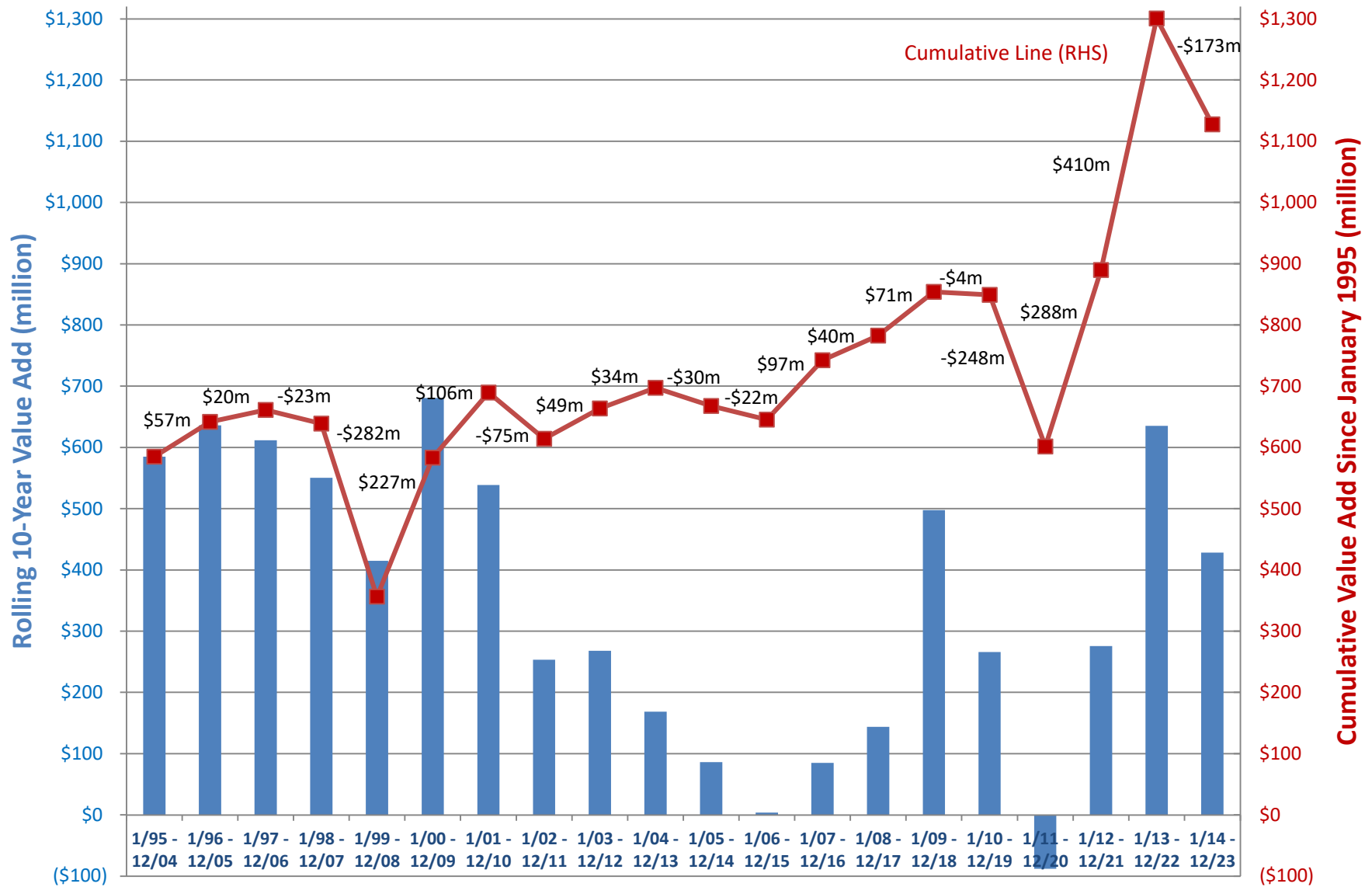


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Over/Under Benchmark Analysis

33	Outperform
7	Underperform
40	# Observations
83%	% Outperform

Historical Value Add - January 1, 1995 - December 31, 2023 CMERS Total Fund (everything except Real Assets)



Historical Value Add - January 1, 1995 - December 31, 2023

CMERS Total Fund (everything except Real Assets)

MERS' decision to hire some active managers versus hiring only passive managers							
		Time Weighted Returns			Dollar Weighted Estimates (Net of fees)		
		Annualized MERS Asset Class		Annualized Index	Value of a Dollar Invested in		Active Management Impact^(c)
		Gross	Net of fees		MERS Asset Class	Index	
MERS Asset Class	Index			Net of fees^(a)			\$Millions
Domestic Equity	Russell 3000	10.53%	10.27%	10.37%	\$ 17.01	\$ 17.48	\$ 80.1
International Equity^(b)	MSCI EAFE	7.14%	6.71%	4.71%	\$ 6.03	\$ 3.57	\$ 408.2
Global Equity^(b)	MSCI World / ACWI	9.59%	9.22%	8.81%	\$ 3.36	\$ 3.19	\$ 31.5
Fixed Income	Bloomberg US Aggregate	5.83%	5.72%	4.66%	\$ 5.02	\$ 3.74	\$ 287.9
Private Equity^(b)	Russell 3000	N/A	13.24%	13.88%	\$ 5.36	\$ 5.78	\$ 160.6
Absolute Return^(b)	Bloomberg US Aggregate	N/A	5.65%	1.47%	\$ 1.69	\$ 1.15	\$ 159.0
Estimate of Fund's benefit from its decision to hire active managers over past 29 years							\$ 1,127.4

^(a) Manager Fees for indices are assumed to be:

Russell 3000 Index - 2 basis points
 MSCI EAFE Index - 5 basis points
 MSCI World / ACWI Index - 5 basis points
 Bloomberg US Aggregate Index - 2 basis points

^(b) Inception Dates if less than 29 years:

International Equity Composite is May 1, 1996
 Global Equity Composite is April 1, 2010
 Private Equity Composite is July 1, 2010
 Absolute Return Composite is July 1, 2014

^(c) Active Management Impact \$Millions Estimate is based on monthly ERS asset class balances.

Historical Value Add - January 1, 2014 - December 31, 2023

CMERS Total Fund (everything except Real Assets)

MERS' decision to hire some active managers versus hiring only passive managers							
		Time Weighted Returns			Dollar Weighted Estimates (Net of fees)		
MERS Asset Class	Index	Annualized MERS Asset Class		Annualized Index Net of fees^(a)	Value of a Dollar Invested in		Active Management Impact^(c)
		Gross	Net of fees		MERS Asset Class	Index	\$Millions
Domestic Equity	Russell 3000	10.99%	10.72%	11.46%	\$ 2.77	\$ 2.96	\$ (71.8)
International Equity	MSCI EAFE	5.63%	5.14%	4.23%	\$ 1.65	\$ 1.51	\$ 89.8
Global Equity	MSCI World / ACWI	9.53%	9.17%	7.87%	\$ 2.41	\$ 2.13	\$ 55.6
Fixed Income	Bloomberg US Aggregate	2.22%	2.09%	1.79%	\$ 1.23	\$ 1.19	\$ 20.0
Private Equity	Russell 3000	N/A	16.76%	11.46%	\$ 4.71	\$ 2.96	\$ 175.6
Absolute Return^(b)	Bloomberg US Aggregate	N/A	5.65%	1.47%	\$ 1.69	\$ 1.15	\$ 159.0
Estimate of Fund's benefit from its decision to hire active managers over past 10 years							\$ 428.3

^(a) Manager Fees for indices are assumed to be:

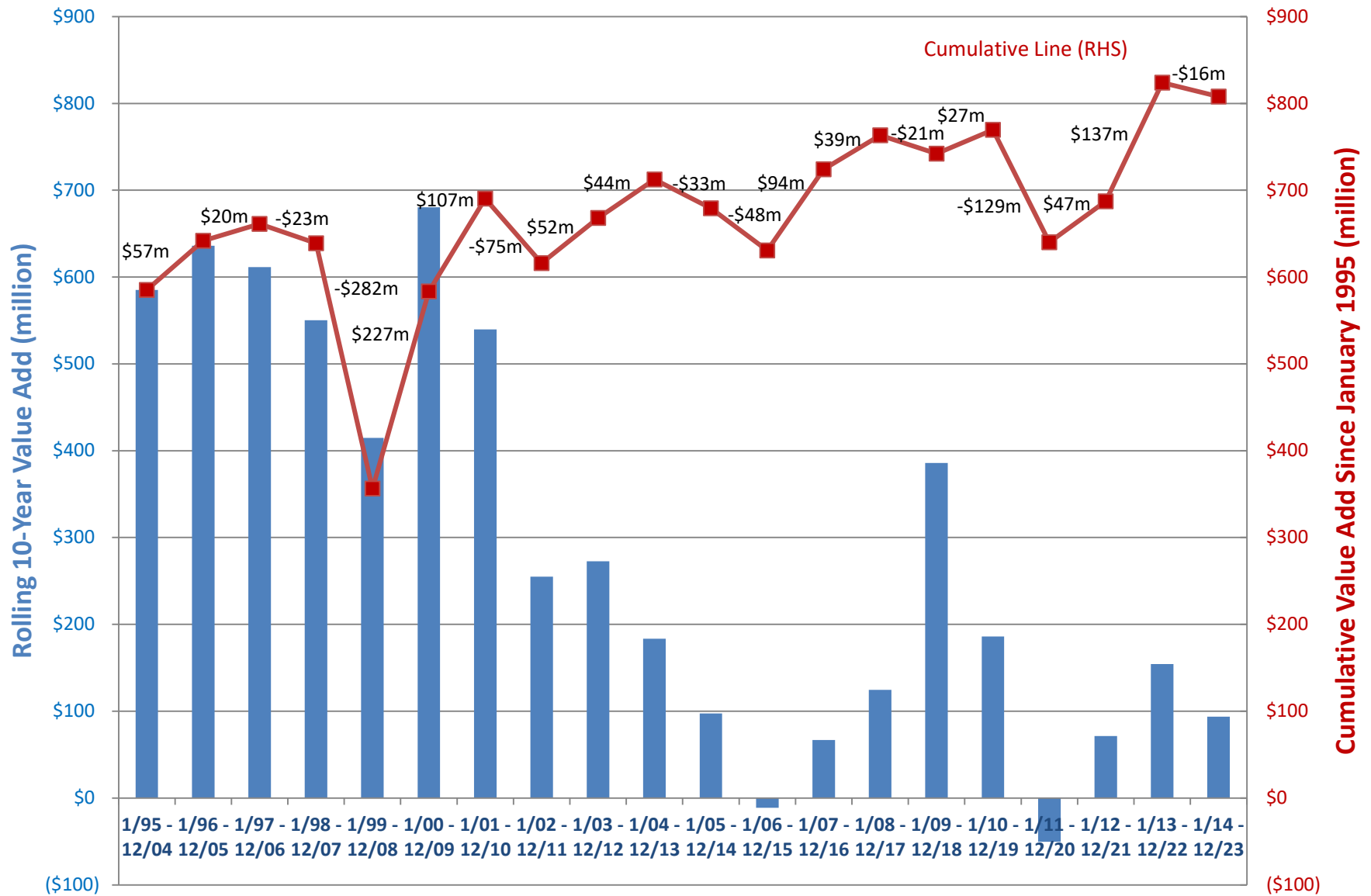
Russell 3000 Index - 2 basis points
 MSCI EAFE Index - 5 basis points
 MSCI World / ACWI Index - 5 basis points
 Bloomberg US Aggregate Index - 2 basis points

^(b) Inception Dates if less than 10 years:

Absolute Return Composite is July 1, 2014

^(c) Active Management Impact \$Millions Estimate is based on monthly ERS asset class balances.

Historical Value Add - January 1, 1995 - December 31, 2023 CMERS Public Equity and Fixed Income only



Historical Value Add - January 1, 1995 - December 31, 2023

CMERS Public Equity and Fixed Income only

<u>MERS' decision to hire some active managers versus hiring only passive managers</u>							
MERS Asset Class	Index	Time Weighted Returns			Dollar Weighted Estimates (Net of fees)		
		Annualized MERS Asset Class		Annualized Index	Value of a Dollar Invested in		Active Management Impact^(c)
		Gross	Net of fees	Net of fees^(a)	MERS Asset Class	Index	\$Millions
Domestic Equity	Russell 3000	10.53%	10.27%	10.37%	\$ 17.01	\$ 17.48	\$ 80.1
International Equity^(b)	MSCI EAFE	7.14%	6.71%	4.71%	\$ 6.03	\$ 3.57	\$ 408.2
Global Equity^(b)	MSCI World / ACWI	9.59%	9.22%	8.81%	\$ 3.36	\$ 3.19	\$ 31.5
Fixed Income	Bloomberg US Aggregate	5.83%	5.72%	4.66%	\$ 5.02	\$ 3.74	\$ 287.9
Estimate of Fund's benefit from its decision to hire active managers over past 29 years							\$ 807.8

^(a) Manager Fees for indices are assumed to be:

Russell 3000 Index - 2 basis points
 MSCI EAFE Index - 5 basis points
 MSCI World / ACWI Index - 5 basis points
 Bloomberg US Aggregate Index - 2 basis points

^(b) Inception Dates if less than 29 years:

International Equity Composite is May 1, 1996
 Global Equity Composite is April 1, 2010

^(c) Active Management Impact \$Millions Estimate is based on monthly ERS asset class balances.

Historical Value Add - January 1, 2014 - December 31, 2023

CMERS Public Equity and Fixed Income only

<u>MERS' decision to hire some active managers versus hiring only passive managers</u>							
MERS Asset Class	Index	Time Weighted Returns			Dollar Weighted Estimates (Net of fees)		
		Annualized MERS Asset Class		Annualized Index	Value of a Dollar Invested in		Active Management Impact^(b)
		Gross	Net of fees	Net of fees^(a)	MERS Asset Class	Index	\$Millions
Domestic Equity	Russell 3000	10.99%	10.72%	11.46%	\$ 2.77	\$ 2.96	\$ (71.8)
International Equity	MSCI EAFE	5.63%	5.14%	4.23%	\$ 1.65	\$ 1.51	\$ 89.8
Global Equity	MSCI World / ACWI	9.53%	9.17%	7.87%	\$ 2.41	\$ 2.13	\$ 55.6
Fixed Income	Bloomberg US Aggregate	2.22%	2.09%	1.79%	\$ 1.23	\$ 1.19	\$ 20.0
Estimate of Fund's benefit from its decision to hire active managers over past 10 years							\$ 93.7

^(a) Manager Fees for indices are assumed to be:

Russell 3000 Index - 2 basis points

MSCI EAFE Index - 5 basis points

MSCI World / ACWI Index - 5 basis points

Bloomberg US Aggregate Index - 2 basis points

^(b) Active Management Impact \$Millions
Estimate is based on monthly ERS asset class balances.