



City of Milwaukee  
Employees' Retirement System

Bernard J. Allen  
Executive Director

David M. Silber, CFA, CAIA  
Chief Investment Officer

Melody Johnson  
Deputy Director

November 1, 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, November 7, 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](http://www.cmers.com)) prior to the meeting.*

The agenda is as follows:

Please be advised that the Investment Committee may vote to convene in closed session on the following item (I.) 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.

- I. Callan Real Estate Presentation.
- II. Approval of Loomis Sayles Guideline Clarification.
- III. Brandes Investment Partners Presentation.
- IV. 2025 Tentative Due Diligence Schedule.
- V. CMERS 3<sup>rd</sup> Quarter Performance Update.
- VI. Due Diligence Reports.
  - a. Loomis Sayles.
  - b. MFS Investment Management.
  - c. AQR Capital Management.
  - d. Goldman Sachs Asset Management.

Sincerely,



Bernard J. Allen  
Executive Director

BJA:jmw

November [ ], 2024

Loomis, Sayles & Company, L.P.  
[Attn: Name of Contact]  
One Financial Center  
Boston, MA 02111

Dear [Mr./Ms. Name]:

We refer to the Investment Management Agreement, dated 21 March, 2007, by and between Loomis, Sayles & Company, L.P. ("Manager") and the Employees' Retirement System of the City of Milwaukee ("ERS"), as amended from time to time (the "Agreement").

The investment guidelines attached to the Agreement as Exhibit A, in effect as of the Amendment to the Agreement dated March 5, 2024, contain the following provision:

"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."

ERS wishes to clarify the provision above with the following:

***Outright purchases of dividend paying common stocks are NOT permitted. However, purchases of common stock deemed as "high conviction down the capital structure" by Loomis Sayles and common stock received as a result of restructure or conversion is permissible. The combined limit is 5% of the account market value at all times.***

Please let us know of any questions, and indicate your understanding and acceptance of this letter by signing where indicated below and returning to us.

Sincerely,

**EMPLOYEES' RETIREMENT SYSTEM OF  
THE CITY OF MILWAUKEE**

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

ACKNOWLEDGED AND AGREED TO BY:

**LOOMIS, SAYLES & COMPANY, L.P.**

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

By: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

# equity investing as an extension of credit

## IDENTIFYING BEST RISK/REWARD ACROSS THE CAPITAL STRUCTURE

There may be times when we utilize an equity allocation as a way to express of our credit view:

- **Superior Convexity:** In certain instances we may like the fundamentals of a company but view the debt as rich because it is trading close to call price or is otherwise capped. In such a case we may move down to the equity if we believe there is strong earnings growth potential and valuation looks compelling.
- **Capital Structure Views:** There may be specific situations where owning both the debt and equity portion of the capital structure could provide the most attractive potential outcomes.

# diversification

**DIVIDEND PAYING STOCKS, LIKE BROAD EQUITIES, ARE A SOURCE OF DIVERSIFICATION**

**CORRELATION BETWEEN VARIOUS ASSET CLASSES**

	US TREASURYS	US AGGREGATE	INVESTMENT GRADE BOND	HIGH YIELD BOND	DIVIDEND EQUITY	EQUITY
US TREASURYS	1	0.93	0.70	0.020	0.03	-0.05
US AGGREGATE	0.93	1	0.89	0.31	0.22	0.19
INVESTMENT GRADE BOND	0.70	0.89	1	0.58	0.36	0.39
HIGH YIELD BOND	0.02	0.31	0.58	1	0.55	0.67
DIVIDEND EQUITY	0.03	0.22	0.36	0.55	1	0.87
EQUITY	-0.05	0.19	0.39	0.67	0.87	1

Source: S&P Capital IQ, Bloomberg, Russell. Data is from 12/31/1989 through 12/31/2023

Dividend Equity is defined as an equal weighted universe of all dividend paying stocks in the Russell 1000 Index.

Equity refers to the Russell 3000 Index.

The following Bloomberg indices are used as proxies for fixed income (in order): US Treasury Index, US Aggregate Index, US Corporate Investment Grade Index, and US Corporate High Yield Index.



# Memorandum

**To:** Annuity and Pension Board  
**From:** Erich Sauer, CFA, CAIA  
**Date:** October 22, 2024  
**Re:** Loomis Sayles Guideline Requests

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This memo addresses agenda items II. B. and C. related to the guidelines for the portfolio Loomis Sayles manages on our behalf. The first is an additional guideline that gives Loomis the ability to participate in security exchanges as part of corporate reorganizations. This issue arose recently as Dish Network, whose securities Loomis owns in our portfolio, became the subject of a merger offer. As part of the merger, Dish bondholders are being offered the option to convert to bonds of the new, merged entity. Because it is likely these bonds will have better collateral, with a stronger parent, Loomis would like to convert and continue to hold the securities.

Loomis requires this conversion language because the Dish bonds, with current ratings ranging from CC to CCC, fall into the 3% “downgraded securities” bucket in our portfolio. Loomis is allowed to continue to hold securities downgraded below B-/B3, but may not purchase them. Their compliance department treats a conversion as a new purchase, so they need the specific conversion language in the guidelines to make the transaction permissible.

Staff discussed this with Callan, and we are both supportive of approving the conversion language in the guidelines. This is a scenario that is not contemplated by the current guidelines, so it makes sense to modify them to address it. Callan also made the point that these types of transactions are becoming more and more common in fixed income markets, and Loomis needs the tools to navigate them. In addition, while we appreciate Loomis being conservative in the way they apply the guidelines, one could also make the argument that converting a security in the downgrade bucket to another similar security, due to a corporate action, is not the same thing as a purchase.

Loomis’ second guideline request involves the downgraded securities bucket. This request is also related to the Dish merger offer, in a way. News of the merger caused the value of the Dish bonds in the portfolio to spike, which led to the value of the downgraded securities bucket exceeding the 3% limit. Our investment policy states that when a market movement causes a portfolio to move outside of guidelines, the manager is to notify us, and recommend a course of action. The board then makes a decision on the manager’s recommendation within 30 days.

Loomis’ recommendation is that the board grant them the ability to allow the portfolio to exceed the 3% limit to the downgrade bucket. This is a good outcome, and is the reason we allow Loomis to continue to hold securities that have been downgraded – so they can have time to recover value that Loomis believes the securities still have.

Staff discussed this matter with Callan, and we feel that the appropriate course of action is to approve Loomis' recommendation to allow the portfolio to exceed the 3% limit for a defined time period. This would allow Loomis to continue to hold the Dish bonds, and extract what they believe the greatest possible value to be, while still keeping them accountable to the Board for the downgraded securities in the portfolio.

In the past, the Board has granted either 90- or 180-day approvals for an item like this, and we've found it works best to make the number of days approximate, and specify a monthly board meeting where the item will need to be revisited. In this case, we would be looking at the January 2025 board meeting for a roughly 90-day time period, or the April 2025 board meeting for a roughly 180-day time period.

Finally, Staff has one additional item to report with respect to Loomis. In our recent due diligence visit and subsequent follow-up conversations with Loomis, we learned some additional information about the way they have been utilizing the up to 5% common stock allocation allowed by the guidelines. Essentially, they've been investing it in a basket of stocks where the returns are more likely expected to be driven by dividend growth/capital appreciation, as opposed to income. While not a guideline violation, Staff discussed this with Callan, and we agreed that it was not in the spirit of the mandate for a fixed income portfolio. We have instructed Loomis to discontinue investing in the basket of dividend growth stocks.

# International Equity

The Employees' Retirement System of the City of Milwaukee



# Firm Overview

# Value Investing – It's in our DNA

BENJAMIN GRAHAM  
LA JOLLA, CALIFORNIA 92037

March 1, 1974

Dear Mr. Brandes:

This is the day to wish all good future and success to Branco Investors Ltd.. Naturally I am complimented by your statement that the new firm will be operated along "Graham principles." Actually I believe that this is an excellent time to launch an enterprise of this sort and I'm confident that your partners will be well-pleased with the results. *accomplishments*

I'm sorry ~~to~~ to say that my health is on the poor side these days and I can't be sure that I'll make my engagement for April 3rd. But I'm hoping for the best.

Sincerely,

*Ben Graham*

# Brandes at a Glance

## Founded 1974



**\$29.9  
Billion**  
Total Assets

\$27.6 Billion AUM/  
\$2.4 Billion AUA<sup>1</sup>

**100%**  
Employee  
Owned

**197**  
Employees  
**34**  
Investment  
Professionals

**Offices**  
San Diego  
Dublin  
Milwaukee  
Singapore  
Toronto

## Investment Style

Graham & Dodd, Fundamental Research Driven

## Our Beliefs

**Price**  
Always  
Matters

**Teamwork**  
Is Really  
Important

**Long Term  
Thinking**  
Is Critical

**Independence**  
Helps  
a Lot

# Investment Process

# International Large-Cap Investment Committee



**Jeffrey Germain, CFA**

Director, Investments Group

Years of Industry Experience: 23

Years with Firm: 23

Years on Committee: 15



**Amelia Maccoun Morris, CFA**

Director, Investments Group

Years of Industry Experience: 38

Years with Firm: 26

Years on Committee: 26



**Shingo Omura, CFA**

Director, Investments Group

Years of Industry Experience: 23

Years with Firm: 19

Years on Committee: 11



**Luiz G. Sauerbronn**

Director, Investments Group

Years of Industry Experience: 29

Years with Firm: 23

Years on Committee: 11



**Brent V. Woods, CFA**

Executive Director

Years of Industry Experience: 28

Years with Firm: 28

Years on Committee: 28

## Features of our team-based approach

- Diversity of experience – cultural, regional, industry coverage, and cognitive
- Helps limit key-person risk
- Consistent application of our process through time
- Helps reduce the impact of personal biases

## Alignment of interests

- Co-investment policy for Investment Committee members
- Partnership



# Team of Experienced Research Analysts

INVESTMENT PROFESSIONALS	INDUSTRY COVERAGE	YEARS OF INDUSTRY EXPERIENCE	YEARS WITH FIRM
Mauricio Abadia	Basic Materials, Consumer Products, and Utilities	18	14
Madina Baikadamova	Health Care	13	6
Bryan Barrett, CFA	Industrials and Financial Institutions	16	16
Yingbin Chen, CFA	Technology	23	23
Mark Costa, CFA	Industrials	24	24
Christopher Duncan, CFA	Basic Materials and Consumer Products	23	18
Brent Fredberg*	Technology	30	25
Jeffrey Germain, CFA*	Basic Materials and Utilities	23	23
Michael Hutchens, CFA*	Financial Institutions	30	23
Ted Kim, CFA*	Industrials	24	24
Anita Krishnamoorthy, CFA	Financial Institutions	24	9
Louis Lau, CFA	Financial Institutions	26	20
Steven Leonard, CFA	Industrials	27	27
Kenneth Little, CFA	Managing Director, Investments	28	28
Brian Matthews, CFA	Communication Services	24	22
Jonathan Menor, CFA	Consumer Products	25	22
Amy Minning, CFA	Basic Materials	33	17
Amelia Maccoun Morris, CFA*	Consumer Products	38	26
Shingo Omura, CFA	Health Care	23	19
Derrek Oyama	Financial Institutions, Health Care, and Technology	13	7
Greg Rippel, CFA	Consumer Products	29	23
Luiz Sauerbronn	Industrials	29	23
Alex Yee	Communication Services and Technology	13	6
Gerardo Zamorano, CFA*	Communication Services	29	25
Amy Zhou	Financial Institutions	6	4

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**25**  
Total  
Analysts

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**Mean 19**  
**Median 22**  
Analyst Tenure

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**12**  
Languages  
Spoken

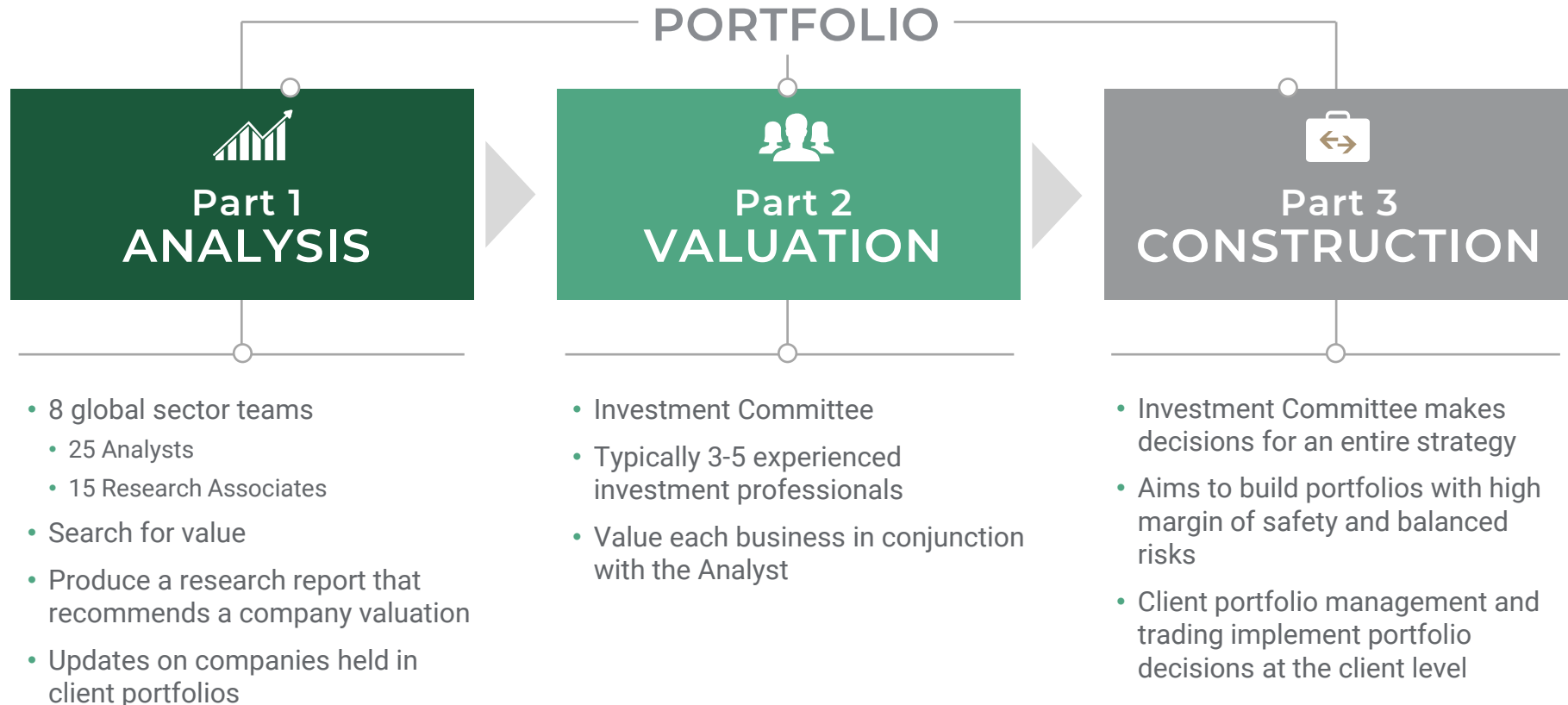
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# Margin of Safety Principle



This is a hypothetical illustration of value investing concepts. It does not represent the performance of any specific security. It assumes intrinsic value changes over time. Actual results will vary. No investment strategy can assure a profit or protect against loss. <sup>1</sup> The margin of safety for any security is defined as the discount of its market price to what the firm believes is the intrinsic value of that security.

# How Brandes Works



# Analysis — Understanding a Business

Companies Operate in Context

## Industry Factors

- Threat of New Entrants
- Threat of New Substitutes
- Buyer Power
- Supplier Power
- Rivalry

## Macro Factors

- Business Cycle
- Currencies
- Demographics



## Country Factors

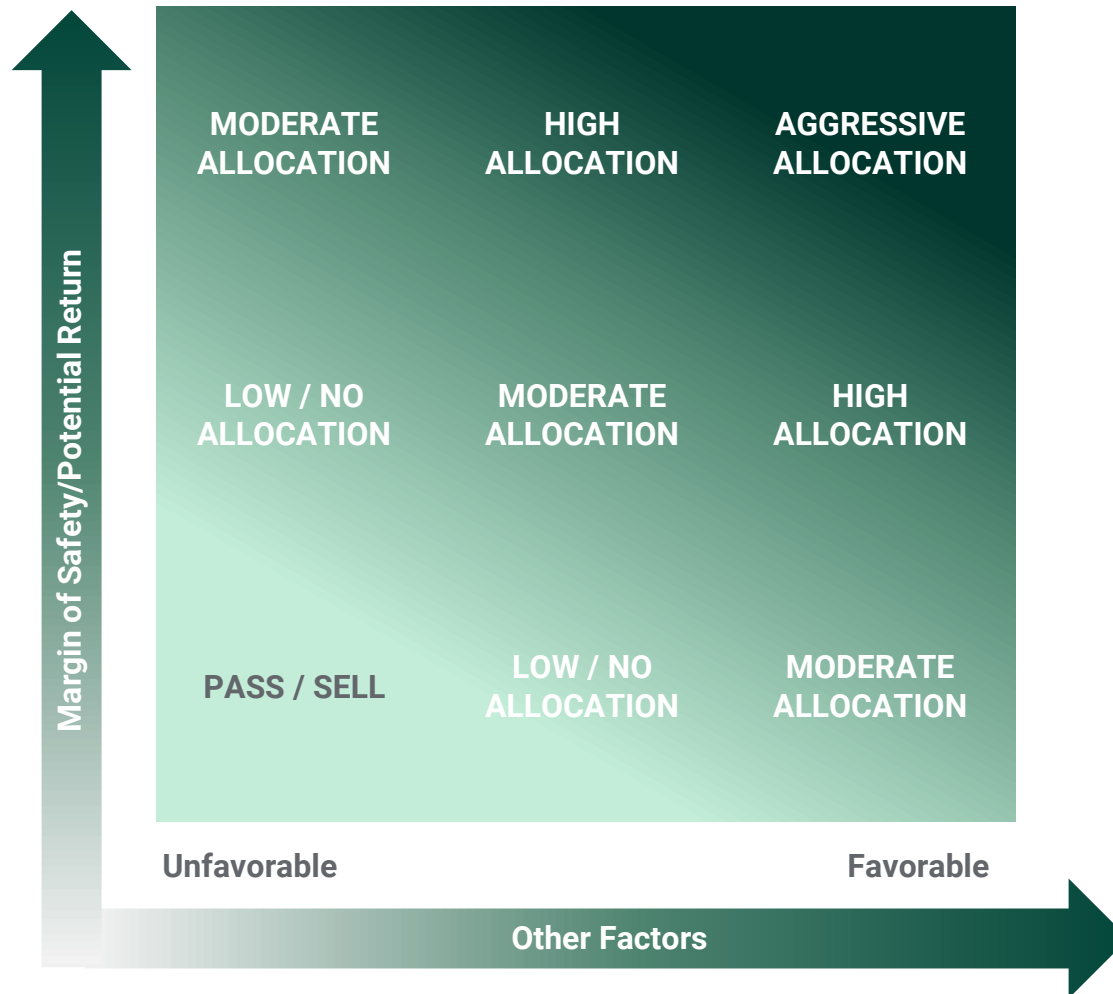
- Regulation
- Politics
- Fiscal Stability

## Other Factors

- Environmental
- Social
- Governance

Fundamental, Company-Focused

# Construction — Allocation Factors



## Other Factors

- Correlated risks
- Liquidity
- Diversification guidelines
- Range of intrinsic value estimates

The margin of safety for any security is defined as the discount of its market price to what the firm believes is the intrinsic value of that security. Intrinsic value estimates can change over time.

# Active, Fundamental Risk Management

## 3 Part Process



Intrinsic value estimates can change over time. The margin of safety for any security is defined as the discount of its market price to what the firm believes is the intrinsic value of that security. Diversification does not assure a profit or protect against loss in a declining market.

# International Equity

# Value Stocks Trading Near Lowest Relative Valuations to Growth in History

Percentile Rank (100th Is Least Expensive)



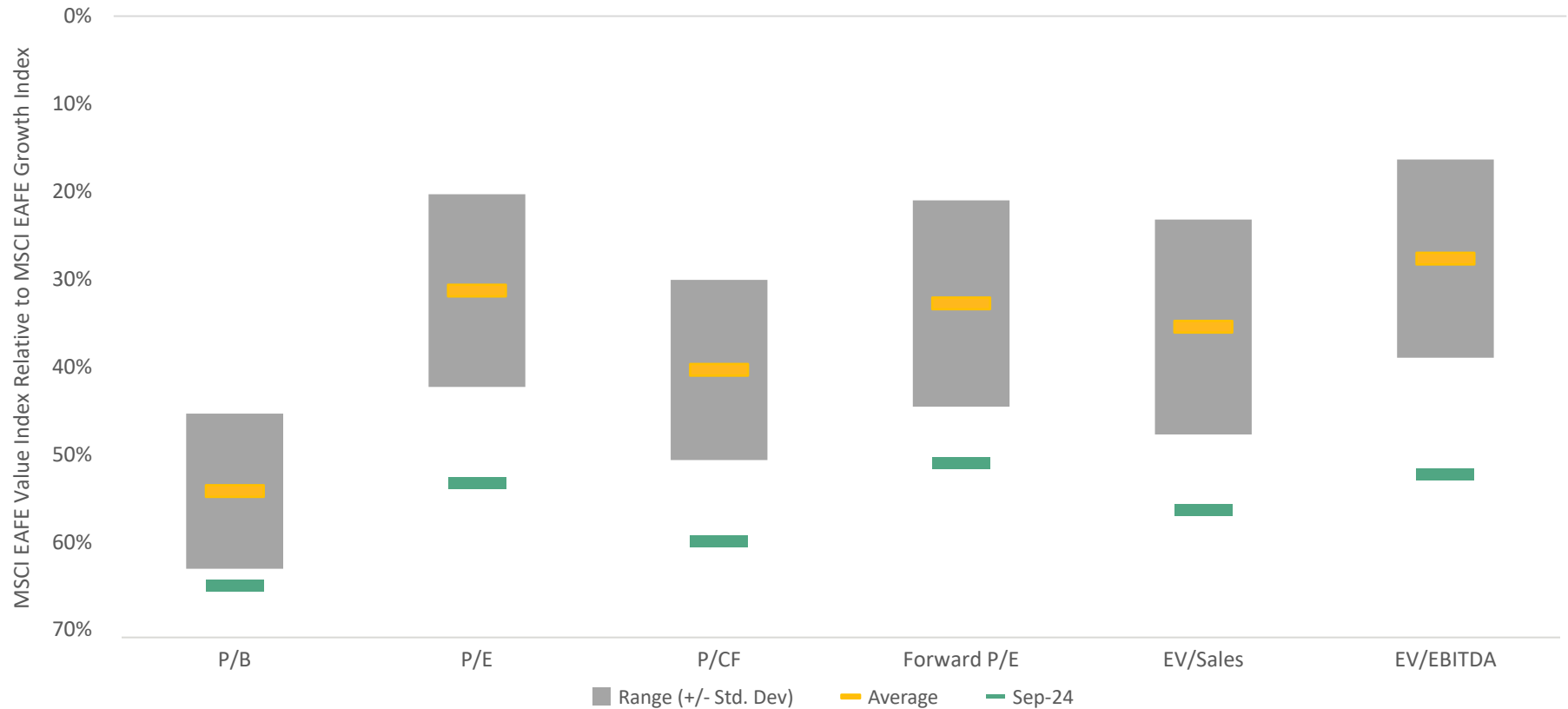
	Global	International	US	Emerging Markets	Europe	Japan	International Small Cap
Price to Book	94%	89%	96%	79%	90%	75%	82%
Price to Earnings (P/E)	91%	95%	86%	87%	95%	72%	46%
Dividend Yield	96%	96%	95%	84%	98%	81%	50%
Price to Cash Flow	90%	93%	83%	83%	95%	84%	73%
Forward P/E	83%	84%	82%	74%	89%	79%	75%
EV/Sales	93%	91%	88%	77%	94%	86%	72%
EV/EBITDA	91%	96%	85%	78%	93%	94%	N/A

**RELATIVE VALUE BASED ON VARIOUS FUNDAMENTAL RATIOS, DECEMBER 31, 1974 TO SEPTEMBER 30, 2024** | Source: MSCI via FactSet. Global: MSCI World Value Index and MSCI World Growth Index. International: MSCI EAFE Value Index and MSCI EAFE Growth Index. US: MSCI USA Value Index and MSCI USA Growth Index. Emerging Markets: MSCI EM Value Index and MSCI EM Growth Index. Europe: MSCI Europe Value Index and MSCI Europe Growth Index. Japan: MSCI Japan Value Index and MSCI Japan Growth Index. International Small Cap: MSCI EAFE Small Cap Value Index and MSCI EAFE Small Cap Growth Index. Past performance is not a guarantee of future results. For each fundamental ratio, we calculate the average ratio of the value index and divide it by the average ratio of the growth index to determine the relative valuation. We then compare the current relative valuations with the averages for the whole period to determine the percentile ranks (100% means that the value discount vs. growth has never been this high based on the respective metric; 99% means that the value discount vs. growth is higher than it has been for 99% of the time during the period, etc.). EV: Enterprise Value. EBITDA: Earnings before interest, taxes, depreciation and amortization.



# International Value Stocks Trading Near Lowest Relative Valuations to Growth in History

## Valuation Relative to Growth Stocks vs. History



The gray columns in the chart show the range in which the MSCI EAFE Value Index has traded relative to the MSCI EAFE Growth Index. The yellow line shows the average relative valuation, while the green line shows the current relative valuation. When the green line is below the yellow line, the valuation of the value portion of the market is lower (compared to the EAFE Growth Index) than it historically has been.

**RELATIVE VALUE BASED ON VARIOUS FUNDAMENTAL RATIOS, DECEMBER 31, 1974 TO SEPTEMBER 30, 2024** | Source: MSCI via FactSet. It is not possible to invest directly in an index. For each fundamental ratio (P/B-Price/Book, P/E-Price/Earnings, P/CF-Price/Cash Flow, Forward P/E-Forward Price/Earnings, EV/Sales-Enterprise Value/Sales, EV/EBITDA-Enterprise Value/Earnings Before Interest, Taxes, Depreciation, and Amortization), we calculate the average ratio of the MSCI EAFE Value Index and divide it by the average ratio of the MSCI EAFE Growth Index to determine the relative valuation.

# Europe Valuation Relative to United States

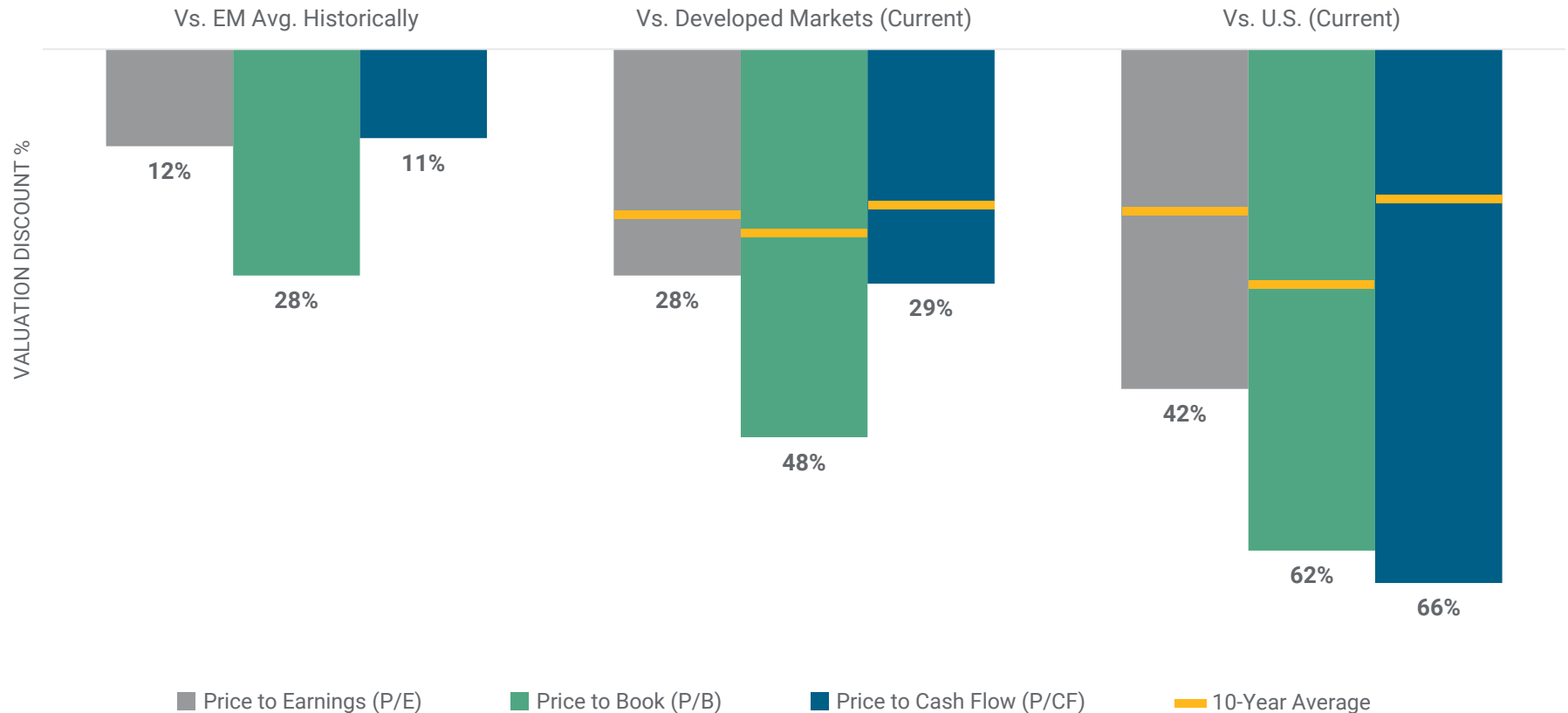
MSCI Europe Index CAPE Divided by S&P 500 Index CAPE



**JUNE 30, 1980 TO DECEMBER 31, 2023** | Source: Morgan Stanley, MSCI, S&P, various national sources. CAPE (cyclically adjusted price/earnings) attempts to show the relationship between price and multi-year average company earnings in order to better estimate long-term earnings power. This valuation measure seeks to smooth out earnings fluctuations caused by business cycles while also reflecting the long-term effects of inflation. In this chart, a reading above 1.0 indicates that prices for Europe stocks are more expensive than U.S. stocks in relation to their underlying long-term company earnings. A reading below 1.0 indicates U.S. stocks are more expensive on a long-term price/earnings basis. Past performance is not a guarantee of future results. The MSCI Europe Index was launched on March 31, 1986.

# Emerging Markets Relative Valuations

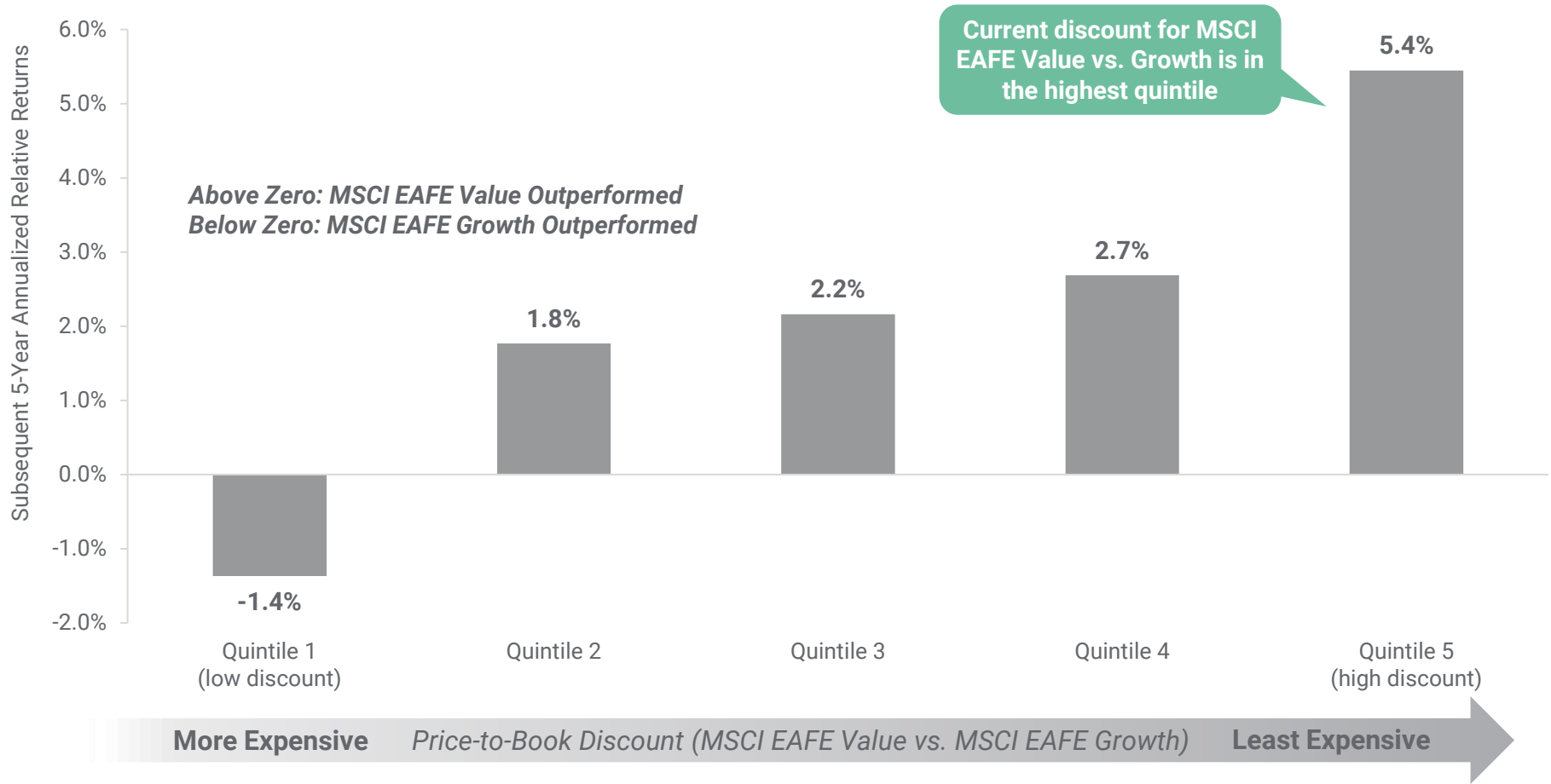
MSCI EM Index Valuations vs. History, Developed Markets and the United States



**AS OF SEPTEMBER 30, 2024** | Source: MSCI; "Vs. EM Avg. Historically" is based on the monthly average of the MSCI Emerging Markets Index from December 31, 1995 to March 31, 2024; Developed Markets represented by the MSCI World Index; U.S. represented by the S&P 500 Index. It is not possible to invest directly in an index. Price/Earnings average is an asset-weighted harmonic average. Price/Book average is an asset-weighted harmonic average. Price/Cash Flow average is an asset-weighted harmonic average. Price/Cash Flow is suppressed for the commercial banking, insurance, and thrift and mortgage finance industries to be consistent with MSCI's practices.

# Stronger Relative Returns When International Value Was Less Expensive

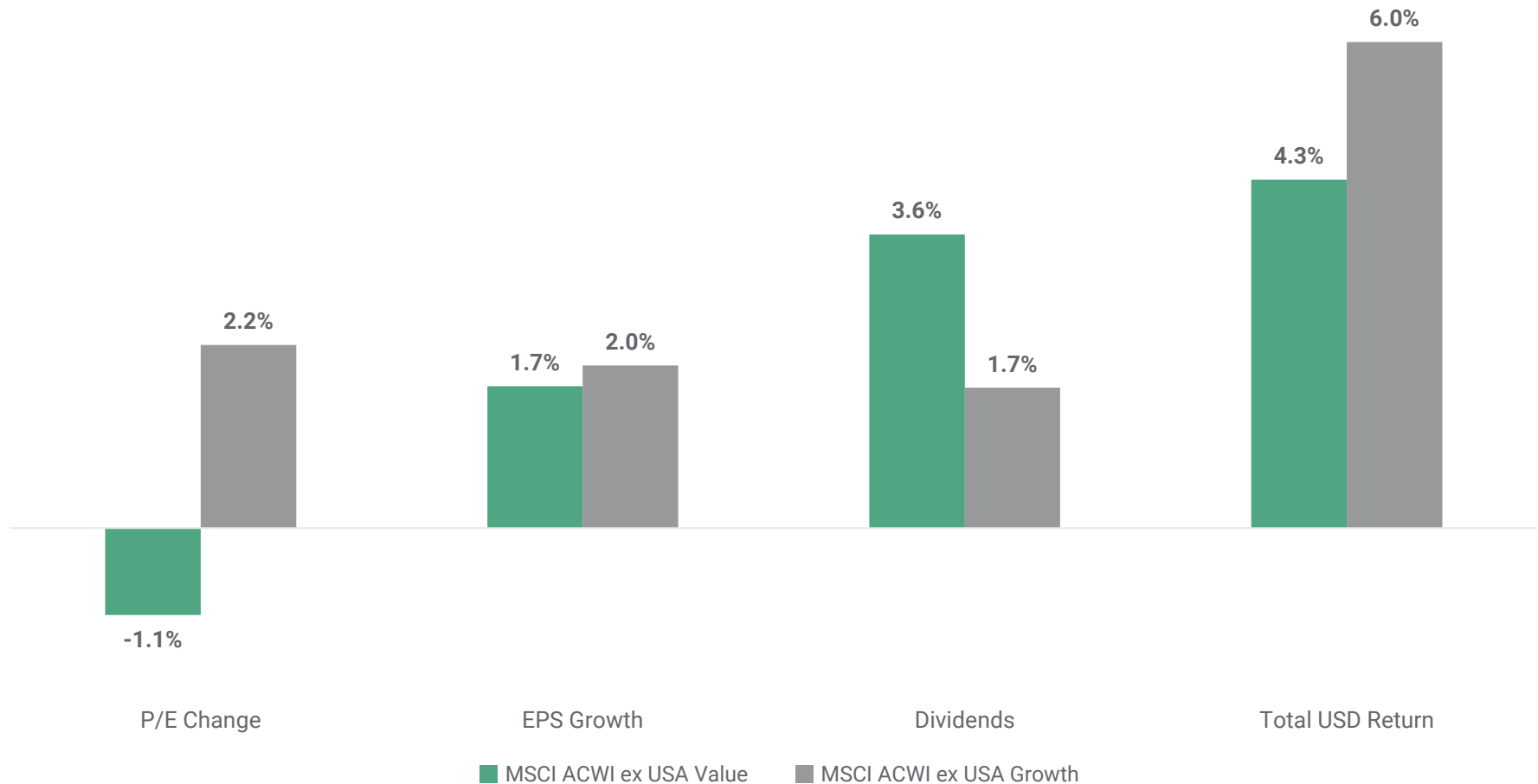
5-Year Average Relative Annualized Return (MSCI EAFE Value relative to MSCI EAFE Growth) by Starting Valuation Quintile



**DECEMBER 31, 1974 TO SEPTEMBER 30, 2024** | Source: MSCI via FactSet. The inception date for the MSCI EAFE Value Index and Growth Index is December 8, 1997. Performance prior to this date is the result of back-testing performed by MSCI. There may be frequent material differences between back-tested performance and actual results. Annualized returns (12/31/1974-6/30/2024): MSCI EAFE Value 10.9%; MSCI EAFE Growth 8.7%. The quintiles are based on the P/B discount of MSCI EAFE Value vs MSCI EAFE Growth by quarter since 1974. P/B discount = 1 - (MSCI EAFE Value's Price to Book/ MSCI EAFE Growth's Price to Book). Higher discounts indicate lower P/B for MSCI EAFE Value compared to MSCI EAFE Growth. Past performance is not a guarantee of future results. It is not possible to invest directly in an index.

# 10-Year Annualized Return Decomposition

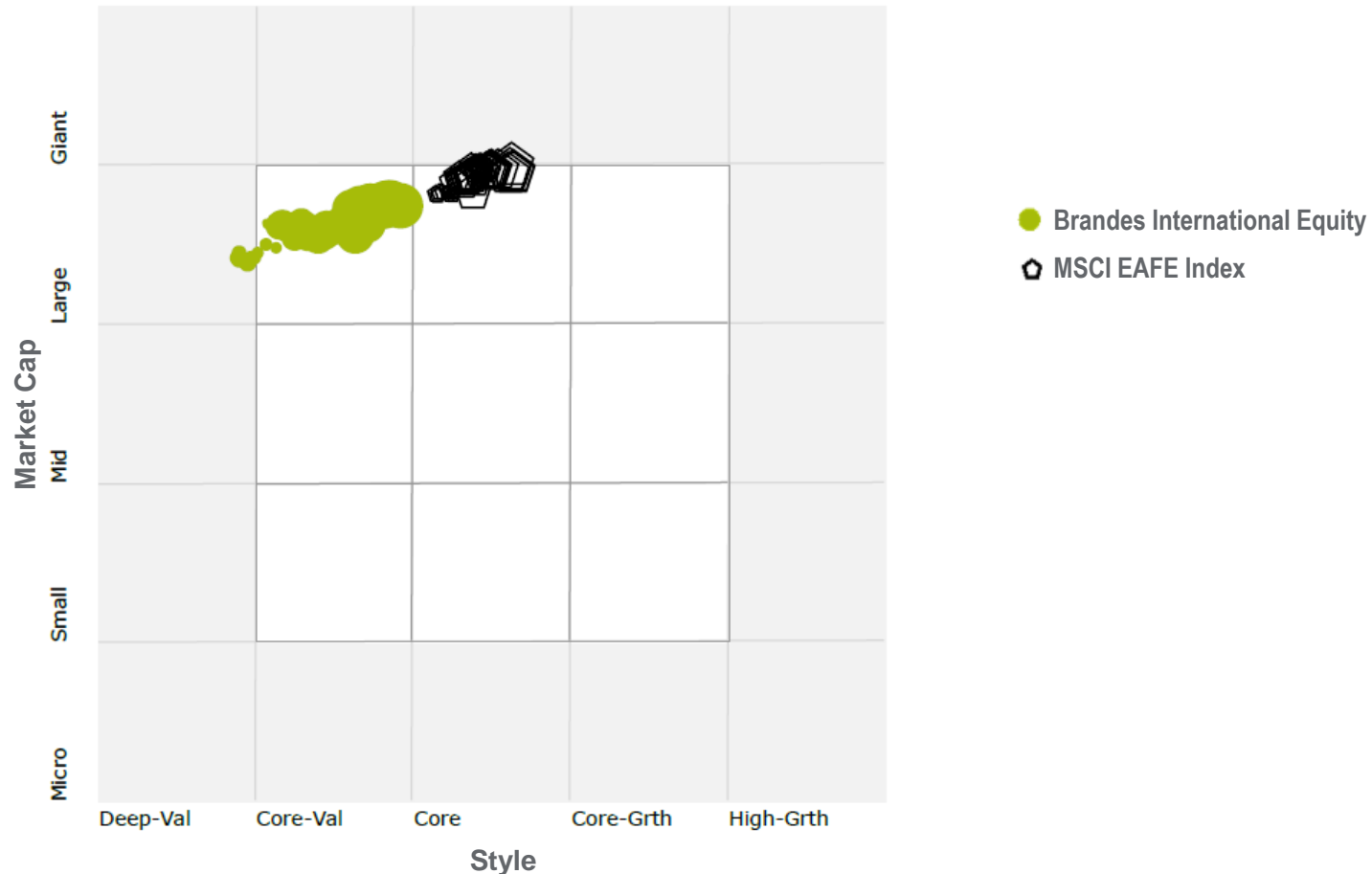
MSCI ACWIXUSA Value vs. MSCI ACWIXUSA Growth



**FOR THE 10 YEARS ENDING SEPTEMBER 30, 2024** | Source: MSCI via FactSet. EPS: Earnings per share. P/E: Price/Earnings. Past performance is not a guarantee of future results. It is not possible to invest directly in an index. The declaration and payment of shareholder dividends are solely at the discretion of the issuer and are subject to change at any time.

# Value Consistency

## Morningstar Holdings-Based Style Quarterly Time Series



**JUNE 30, 2019 TO JUNE 30, 2024** | Source: Morningstar Direct. Data icons reflect aggregate portfolio holdings at a specific quarter-end point with the more recent the holding period, the larger the icon. The portfolio characteristics shown relate to a single account as of date noted, deemed by Brandes to be generally representative of the strategy. Not every account will have these exact characteristics. The actual characteristics with respect to any particular account will vary based on a number of factors including but not limited to: (i) the size of the account; (ii) investment restrictions applicable to the account, if any; and (iii) market exigencies at the time of investment. Data is updated on a quarterly basis.

# Brandes International Equity

## Portfolio Characteristics

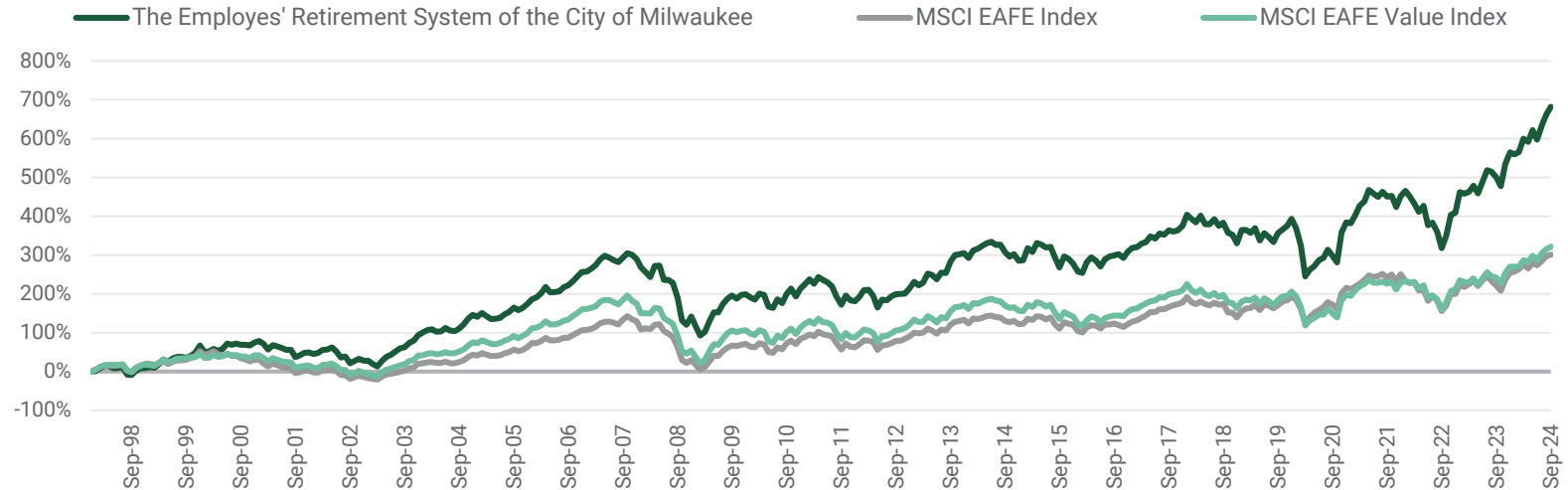
	Brandes International Equity	MSCI EAFE	MSCI ACWI ex USA Value
# of Securities	69	732	1,202
Forward Price/Earnings FY1	11.7x	14.8x	10.8x
Price/Earnings	14.8x	16.4x	12.0x
Price/Cash Flow	5.8x	9.1x	6.3x
Price/Book	1.2x	1.9x	1.3x
Dividend Yield	3.7%	3.0%	4.1%
Net Debt to Equity (ex Financials)	49%	44%	52%
Net Debt to EBITDA (ex Financials)	1.3x	1.4x	1.7x
1 Year Forward Earnings Growth	10.7%	10.5%	9.5%
Consensus 3-5 Yr EPS Growth	8.9%	8.7%	7.6%

**AS OF SEPTEMBER 30, 2024** | Source: Brandes, Bloomberg, MSCI, FactSet. Consensus 3-5 Yr EPS Growth based on long term company growth estimates aggregated from Factset. The portfolio characteristics shown relate to a single account deemed by Brandes to be generally representative of the strategy as of date noted. Not every account will have these exact characteristics. The actual characteristics with respect to any particular account will vary based on a number of factors including but not limited to: (i) the size of the account; (ii) investment restrictions applicable to the account, if any; and (iii) market exigencies at the time of investment. Data is updated on a quarterly basis. Price/Book, Price/Earnings, Price/Cash Flow and Dividend Yield for each security provided by Bloomberg, L.P. Please note that Bloomberg does not provide negative numbers in the data feed. Index fundamentals are calculated from holdings data as provided by the relevant index or by FactSet Fundamentals, excluding negative numbers for consistency. Thus, index fundamentals calculated by Brandes may differ from those computed and published by index providers. The declaration and payment of shareholder dividends are solely at the discretion of the issuer and are subject to change at any time. EBITDA: Earnings before interest, taxes, depreciation, and amortization.

# Portfolio



# Portfolio Performance<sup>1</sup> vs. Index (%)



	Account	MSCI EAFE Index	MSCI EAFE Value Index
<b>Latest 3 Months</b>	12.12	7.26	8.89
<b>YTD</b>	17.60	12.99	13.79
<b>1 Year</b>	30.43	24.77	23.14
<b>3 Year</b>	12.39	5.48	8.93
<b>5 Year</b>	11.37	8.19	8.26
<b>7 Year</b>	7.74	5.99	5.02
<b>10 Year</b>	6.74	5.70	4.56
<b>Since Inception</b>	7.99	5.33	5.52

**Account Value**  
\$323,747,646

**Net Capital Contributed**  
\$-405,854,645

**Performance Inception Date**  
1/6/1998

**AS OF SEPTEMBER 30, 2024** | Source: Brandes, MSCI. <sup>1</sup>Cumulative total return since inception – net of management fees. Returns include reinvestment of all dividends and are reduced by any applicable foreign withholding taxes, without provisions for income taxes, if any. Periods of greater than one year have been annualized. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Please see the GIPS® Report attached to the end of the presentation.

# Composite Performance vs. Benchmark (USD, %)

	1 Year	5 Years	10 Years
Brandes International Equity Composite (gross)	30.80	11.87	7.22
Brandes International Equity Composite (net)	30.25	11.39	6.72
MSCI EAFE Index	24.77	8.19	5.70
MSCI EAFE Value Index	23.14	8.26	4.56

**AS OF SEPTEMBER 30, 2024** | Source: Brandes, MSCI. Total return – gross and net of management fees. Returns include reinvestment of all dividends and are reduced by any applicable foreign withholding taxes, without provisions for income taxes, if any. Periods of greater than one year have been annualized. It is not possible to invest directly in an index. Past performance is not a guarantee of future results. Please see the GIPS® Report attached to the end of the presentation.

# Key Performance Factors – Third Quarter 2024

## International Equity

### Positive Factors

- Holdings in the following industries:
  - Pharmaceuticals
  - Broadline Retail
  - Consumer Staples Distribution & Retail
  
- Holdings in the following countries:
  - United Kingdom
  - China
  - France

### Negative Factors

- Holdings in the following industries:
  - Technology Hardware, Storage & Peripherals
  - Textiles, Apparel & Luxury Goods
  - Construction Materials
  
- Holdings in the following countries:
  - Mexico
  - South Korea
  - Switzerland

**THIRD QUARTER 2024** | Key performance factors are relative to the benchmark. The portfolio characteristics shown relate to a single account as of date noted, deemed by Brandes to be generally representative of the strategy. Not every account will have these exact characteristics. The actual characteristics with respect to any particular account will vary based on a number of factors including but not limited to: (i) the size of the account; (ii) investment restrictions applicable to the account, if any; and (iii) market exigencies at the time of investment. Data is updated on a quarterly basis. The MSCI EAFE Index with net dividends captures large and mid cap representation of developed market countries excluding the U.S. and Canada. The information provided in this material should not be considered a recommendation to purchase or sell any particular security. It should not be assumed that any security transactions, holdings, or sectors discussed were or will be profitable, or that the investment recommendations or decisions we make in the future will be profitable or will equal the investment performance discussed herein. Strategies discussed herein are subject to change at any time by the investment manager in its discretion due to market conditions or opportunities.

# Key Performance Factors – YTD Ended September 30, 2024

## International Equity

### Positive Factors

- Holdings in the following industries:
  - Aerospace & Defense
  - Banks
  - Semiconductors & Semiconductor Equipment
- Holdings in the following countries:
  - United Kingdom
  - Germany
  - China

### Negative Factors

- Holdings in the following industries:
  - Textiles, Apparel & Luxury Goods
  - Biotechnology
  - Diversified REITs
- Holdings in the following countries:
  - Mexico
  - Spain
  - Switzerland

**YEAR TO DATE ENDED SEPTEMBER 30, 2024** | Key performance factors are relative to the benchmark. The portfolio characteristics shown relate to a single account as of date noted, deemed by Brandes to be generally representative of the strategy. Not every account will have these exact characteristics. The actual characteristics with respect to any particular account will vary based on a number of factors including but not limited to: (i) the size of the account; (ii) investment restrictions applicable to the account, if any; and (iii) market exigencies at the time of investment. Data is updated on a quarterly basis. The MSCI EAFE Index with net dividends captures large and mid cap representation of developed market countries excluding the U.S. and Canada. The information provided in this material should not be considered a recommendation to purchase or sell any particular security. It should not be assumed that any security transactions, holdings, or sectors discussed were or will be profitable, or that the investment recommendations or decisions we make in the future will be profitable or will equal the investment performance discussed herein. Strategies discussed herein are subject to change at any time by the investment manager in its discretion due to market conditions or opportunities.

# Summary of Portfolio Changes

## The Employees' Retirement System of the City of Milwaukee

### New Positions

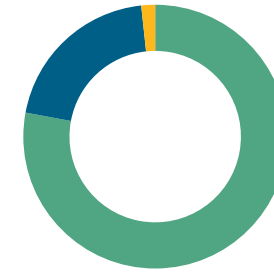
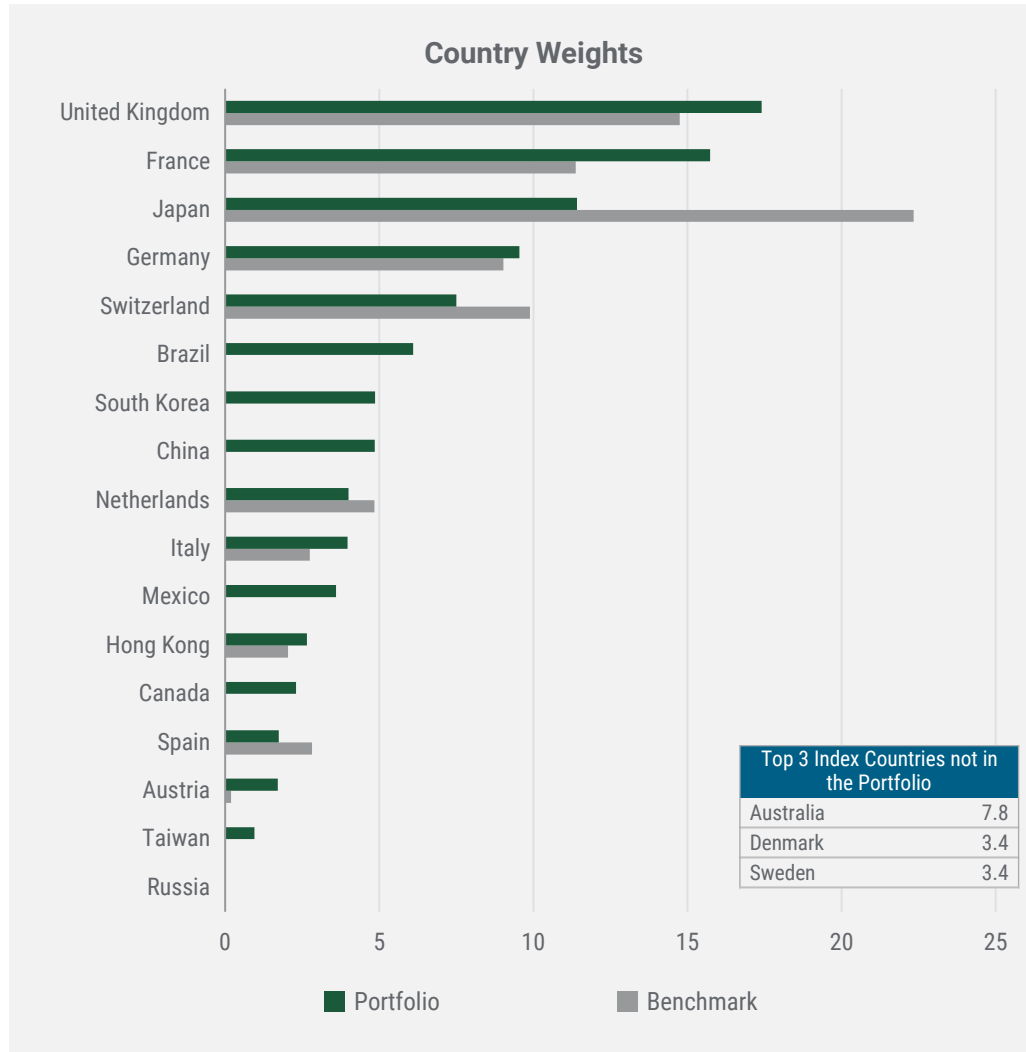
Quarter	Company	Country	Industry
Q3 2024	No New Buys		
Q2 2024	Budweiser Brewing Co APAC Ltd	Hong Kong	Beverages
	CAE Inc	Canada	Aerospace & Defense
	Deutsche Post AG	Germany	Air Freight & Logistics
	Infineon Technologies AG	Germany	Semiconductors & Equipment
	Kubota Corp	Japan	Machinery
	Open Text Corp	Canada	Software
Q1 2024	Reckitt Benckiser Group PLC	United Kingdom	Household Products
	America Movil SAB de CV	Mexico	Wireless Telecom Services
	Contemporary Amperex Technology Co Ltd	China	Electrical Equipment

### Complete Sale of Positions

Quarter	Company	Country	Industry
Q3 2024	Renault SA	France	Automobiles
	Willis Towers Watson PLC	Ireland	Insurance
Q2 2024	Anheuser-Busch InBev SA/NV	Belgium	Beverages
	Telecom Italia SpA/Milano	Italy	Diversified Telecom Services
	Unilever PLC	United Kingdom	Personal Care Products
Q1 2024	Aegon Ltd	Netherlands	Insurance
	MS&AD Insurance Group Holdings Inc	Japan	Insurance
	SoftBank Group Corp	Japan	Wireless Telecom Services

# Geographic Weights (%)

The Employees' Retirement System of the City of Milwaukee vs. MSCI EAFE Index



## Developed vs. Emerging Markets

Developed 78.0  
Emerging 20.4  
Cash 1.7

## Regional Weight Changes

Region	09/30/2023	09/30/2024	Change
North America	--	2.3	+2.3
Latin America	8.7	9.7	+1.0
Asia	24.3	24.7	+0.4
Europe	64.9	61.6	-3.3

## Country Weight Changes

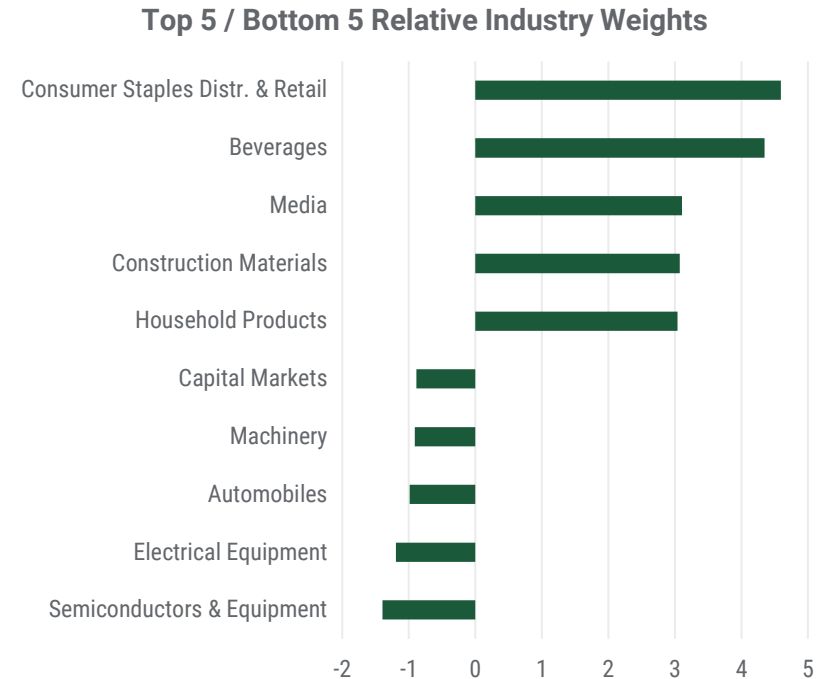
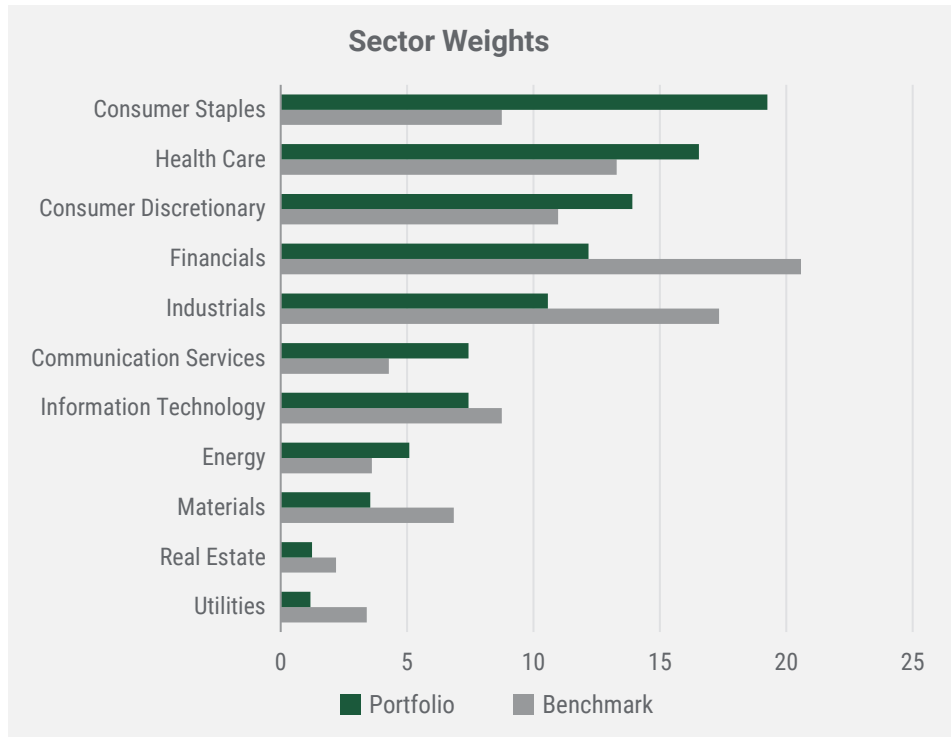
Largest Increases	09/30/2023	09/30/2024	Change
Canada	--	2.3	+2.3
China	2.6	4.9	+2.3

Largest Decreases	09/30/2023	09/30/2024	Change
Japan	14.3	11.4	-2.9
Italy	5.9	4.0	-1.9

- Total number of countries in the portfolio: 17
- No exposure to countries that represent 20.0% of the index

# Sector Weights (%)

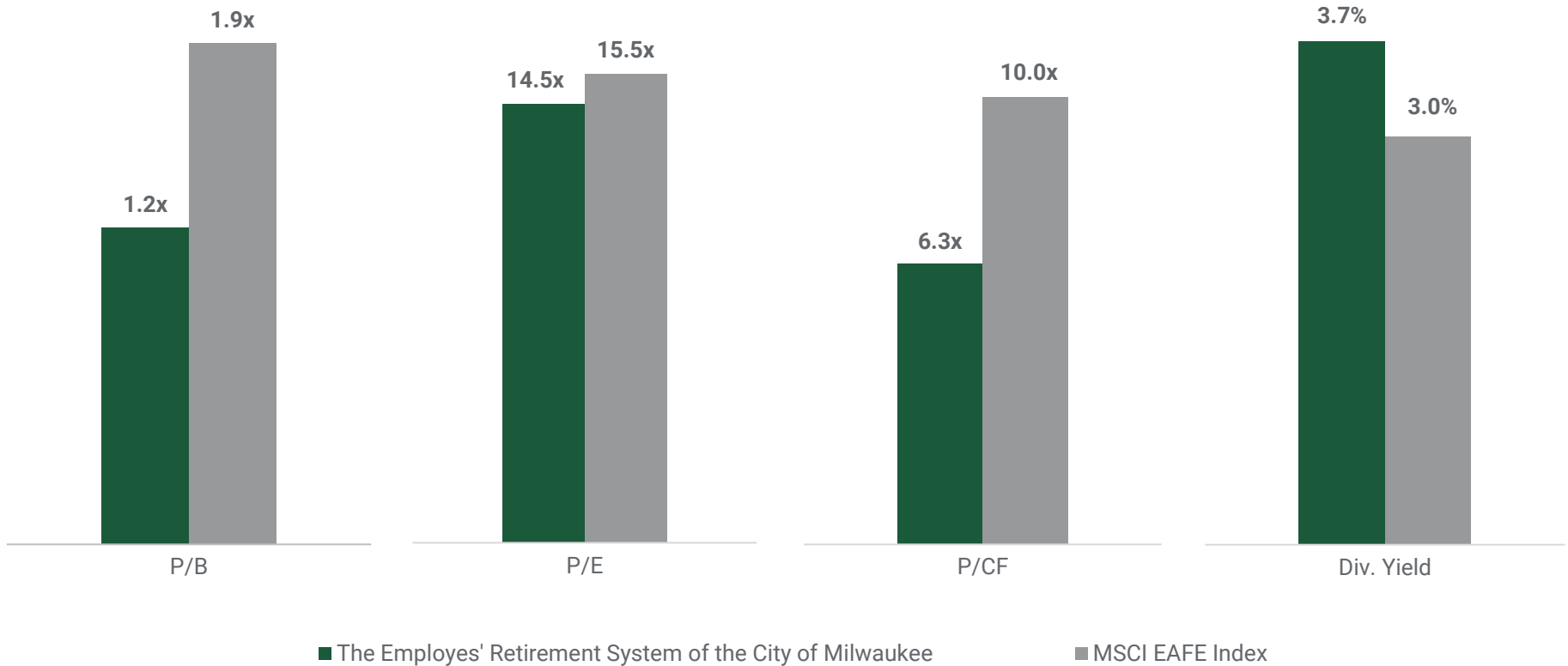
The Employees' Retirement System of the City of Milwaukee vs. MSCI EAFE Index



Largest Sector Weight Increases	09/30/2023	09/30/2024	Change
Industrials	6.6	10.6	+4.0
Consumer Staples	15.8	19.3	+3.5
Largest Sector Weight Decreases	09/30/2023	09/30/2024	Change
Financials	17.3	12.2	-5.1
Energy	7.7	5.1	-2.6

Largest Industry Weight Increases	09/30/2023	09/30/2024	Change
Beverages	3.5	6.0	+2.5
Textiles, Apparel & Luxury Goods	3.5	5.5	+2.0
Largest Industry Weight Decreases	09/30/2023	09/30/2024	Change
Insurance	4.5	--	-4.5
Oil, Gas & Consumable Fuels	7.7	5.1	-2.6

# Fundamental Characteristics



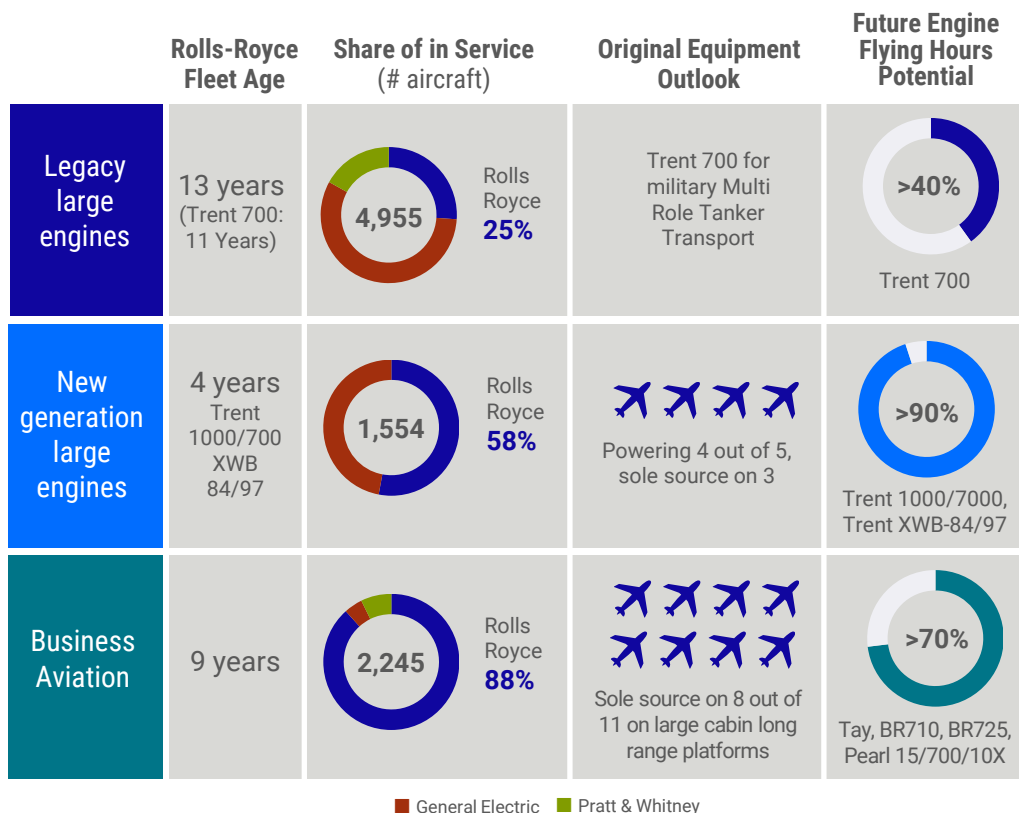
**AS OF SEPTEMBER 30, 2024** | Source: Bloomberg, MSCI. Price/Book, Price/Earnings, Price/Cash Flow and Dividend Yield for each security provided by Bloomberg, L.P. Please note that Bloomberg does not provide negative numbers in the data feed. Index fundamentals are calculated from holdings data as provided by the relevant index or by FactSet Fundamentals, excluding negative numbers for consistency. Thus, index fundamentals calculated by Brandes may differ from those computed and published by index providers. The declaration and payment of shareholder dividends are solely at the discretion of the issuer and are subject to change at any time. Portfolio holdings are subject to change at any time at the discretion of the investment manager.



# Rolls-Royce



- **Company Description:** Global industrial technology company that operates in the aerospace, defense and industrial markets
- **Initial Brandes Analyst Coverage:** 1999
- **Based in:** United Kingdom



Source: Rolls-Royce, Civil Aerospace Investor Day Presentation dated May 13, 2022.

## BRANDES' VIEW:

### Diversified business with a strong competitive position in growing markets:

- Strong market position across several defense and civil end markets with high barriers to entry, including aircraft and ship engines, generators, and power systems
- Duopoly position in aircraft engines
- Attractive after-sale service and maintenance business

### Opportunity:

- A recovery in long-haul air travel would help free-cash-flow generation and improve margins
- Improving balance sheet should the company recover from aerospace down cycle and divest non-core assets to pay down debt

### Valuation summary:

- Double-digit consensus earnings per share and free-cash-flow growth for the next several years
- 2.3x enterprise value/sales
- 13.5x enterprise value/ forward EBITDA (earnings before interest, taxes, depreciation and amortization)

# Grifols

- **Company Description:** Global leader in the development of plasma-derived medicines and transfusion medicine solutions

## GRIFOLS

### BRANDES' VIEW:

#### Consolidated industry with attractive long-term growth prospects:

- Capital intensive and highly regulated industry led by three main vertically integrated companies, including Grifols
- Long-term structural demand for blood plasma for a variety of medical uses
- An underpenetrated market; one of the primary uses of blood plasma is in treating primary immunodeficiency and given supply constraints this therapy is significantly underutilized

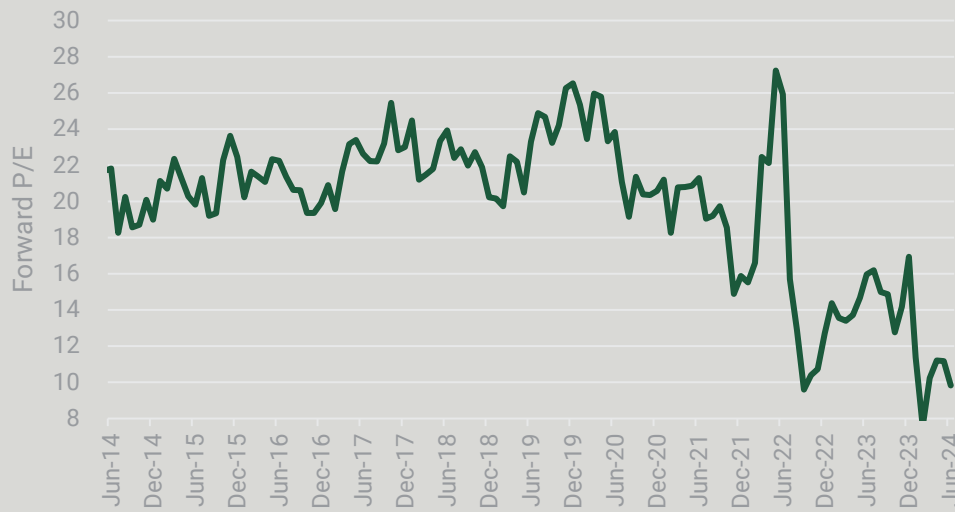
#### Opportunity:

- Potential recovery from reduced plasma donations due to COVID-19 shutdowns and stimulus
- Given the significant fixed costs, margins should recover when supply recovers
- Margins have also been depressed by the company's investment in building out additional collection centers to help meet the growth in long-term demand
- Integration of recent Biotest acquisition

#### Valuation summary:

- 7.8x forward price/cash flow
- Double-digit consensus earnings per share and free cash flow growth for the next several years

### Grifols Forward P/E



JUNE 30, 2014 TO JUNE 30, 2024 | Source: FactSet.

#### Primary Immunodeficiency (PI) Underdiagnosis

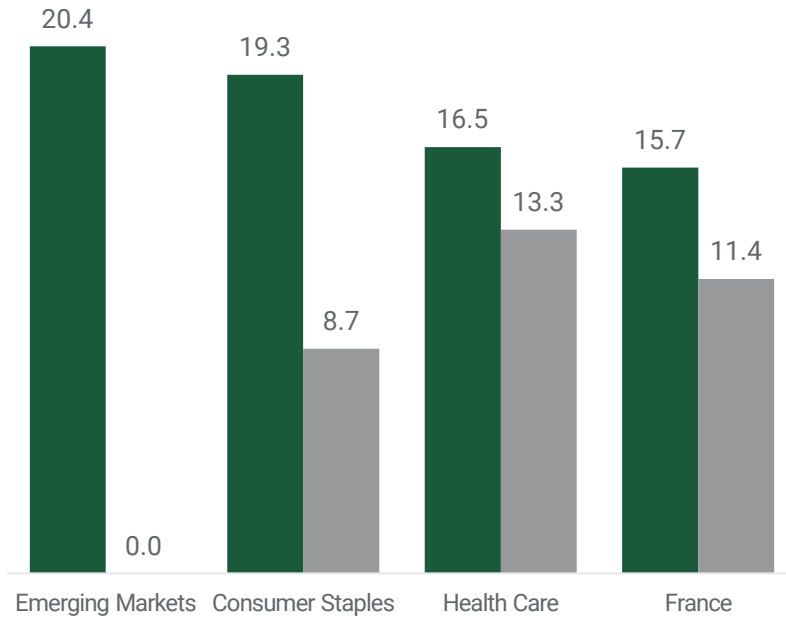
- Average diagnosis: **12.4 years**
- **70-90%** undiagnosed rate (estimated 500,000 patients)
- Ratio of PI patients treated with immune globulin therapy (IG) to those who are not treated with IG: **1 to 12**

Source: Grifols 2022 Investor & Analyst Day Presentation dated June 30, 2022.

# Select Differentials vs. Benchmark

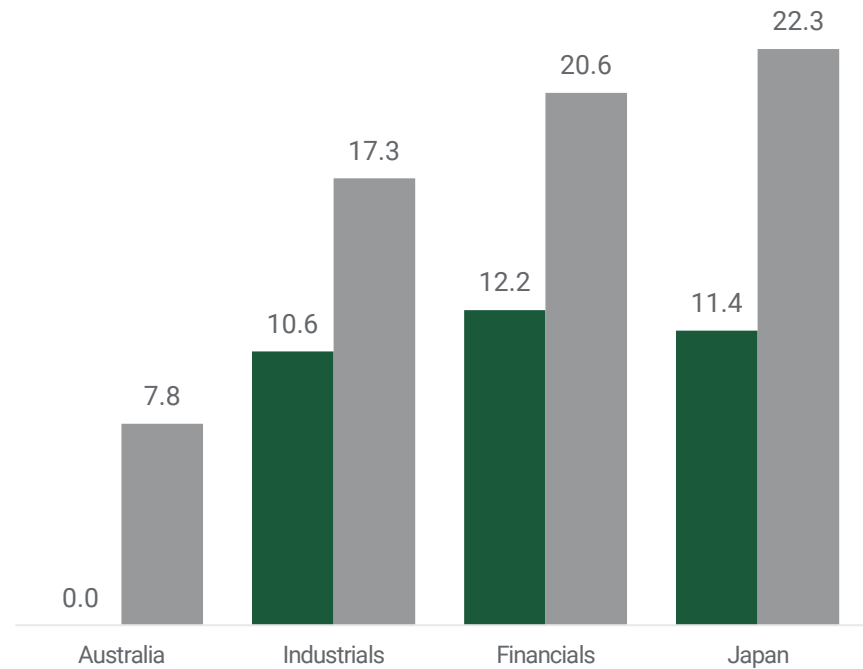
## Key Overweights

% of Portfolio



## Key Underweights

% of Portfolio



■ The Employees' Retirement System of the City of Milwaukee

■ MSCI EAFE Index

# Top Ten Holdings

## The Employees' Retirement System of the City of Milwaukee

Company	%	Country	Industry
Alibaba Group Holding Ltd	3.84	China	Broadline Retail
Takeda Pharmaceutical Co Ltd	2.99	Japan	Pharmaceuticals
Sanofi SA	2.66	France	Pharmaceuticals
Heineken Holding NV	2.47	Netherlands	Beverages
Swatch Group AG	2.28	Switzerland	Textiles, Apparel & Luxury Goods
UBS Group AG	2.22	Switzerland	Capital Markets
Henkel AG & Co KGaA	2.10	Germany	Household Products
Carrefour SA	2.09	France	Consumer Staples Distr. & Retail
Rolls-Royce Holdings PLC	2.06	United Kingdom	Aerospace & Defense
SAP SE	2.00	Germany	Software
<b>Top 10 as % of Portfolio</b>	<b>24.71</b>		
Total Number of Companies: <b>67</b>			

# Holdings

## The Employees' Retirement System of the City of Milwaukee

Communication Services (7.43%)			Energy (5.09%)			Industrials (10.57%)		
	Country	Wgt %		Country	Wgt %		Country	Wgt %
WPP PLC	GB	1.99	Petroleo Brasileiro SA	BR	1.69	Rolls-Royce Holdings PLC	GB	2.06
Orange SA	FR	1.71	Eni SpA	IT	1.23	Embraer SA	BR	1.96
Publicis Groupe SA	FR	1.49	TotalEnergies SE	FR	1.08	Deutsche Post AG	DE	1.60
America Movil SAB de CV	MX	1.40	Shell PLC	GB	1.08	Kubota Corp	JP	1.20
Telefonica Brasil SA	BR	0.83	Surgutneftegas PJSC	RU	0.00	CAE Inc	CA	1.04
Mobile TeleSystems PJSC	RU	0.00				Contemporary Amperex Technology Co Ltd	CN	1.02
Consumer Discretionary (13.91%)			Financials (12.17%)			Information Technology (7.42%)		
	Country	Wgt %		Country	Wgt %		Country	Wgt %
Alibaba Group Holding Ltd	CN	3.84	UBS Group AG	CH	2.22	SAP SE	DE	2.00
Swatch Group AG	CH	2.28	BNP Paribas SA	FR	1.97	Samsung Electronics Co Ltd	KR	1.95
Kering SA	FR	1.64	Intesa Sanpaolo SpA	IT	1.75	Infineon Technologies AG	DE	1.27
Cie Financiere Richemont SA	CH	1.58	Erste Group Bank AG	AT	1.71	Open Text Corp	CA	1.26
Kingfisher PLC	GB	1.41	Sumitomo Mitsui Trust Group Inc	JP	1.71	Taiwan Semiconductor Manufacturing Co Ltd	TW	0.95
Hyundai Mobis Co Ltd	KR	1.28	Barclays PLC	GB	1.25			
Honda Motor Co Ltd	JP	0.96	Mitsubishi UFJ Financial Group Inc	JP	0.91			
Nissan Motor Co Ltd	JP	0.92	Hana Financial Group Inc	KR	0.66			
Consumer Staples (19.25%)			Health Care (16.54%)			Materials (3.54%)		
	Country	Wgt %		Country	Wgt %		Country	Wgt %
Heineken Holding NV	NL	2.47	Takeda Pharmaceutical Co Ltd	JP	2.99	Heidelberg Materials AG	DE	1.60
Henkel AG & Co KGaA	DE	2.10	Sanofi SA	FR	2.66	Buzzi SpA	IT	0.99
Carrefour SA	FR	2.09	GSK PLC	GB	1.81	Cemex SAB de CV	MX	0.96
Budweiser Brewing Co APAC Ltd	HK	1.90	Astellas Pharma Inc	JP	1.75			
Ambev SA	BR	1.62	Grifols SA	ES	1.74			
Reckitt Benckiser Group PLC	GB	1.52	Smith & Nephew PLC	GB	1.66			
J Sainsbury PLC	GB	1.46	Koninklijke Philips NV	NL	1.54			
Tesco PLC	GB	1.43	Novartis AG	CH	1.41			
Danone SA	FR	1.20	Fresenius SE & Co KGaA	DE	0.99			
KT&G Corp	KR	0.98						
Imperial Brands PLC	GB	0.95						
Marks & Spencer Group PLC	GB	0.78						
First Pacific Co Ltd	HK	0.76						
						Real Estate (1.24%)		
	Country	Wgt %		Country	Wgt %		Country	Wgt %
						Fibra Uno Administracion SA de CV	MX	1.24
						Utilities (1.18%)		
	Country	Wgt %		Country	Wgt %		Country	Wgt %
						Engie SA	FR	1.18

# Appendix

# Brandes at a Glance

**YEAR FIRM FOUNDED:**

**1974**

**TOTAL ASSETS:**

**\$29.9 Billion**

( $\$27.6$  Billion AUM /  $\$2.4$  Billion AUA<sup>1</sup>)

**INVESTMENT STYLE:**

**Graham & Dodd, bottom-up value**

**HEADQUARTERS LOCATED:**

**San Diego, California**

**OTHER OFFICES:**

**Dublin, Ireland  
Milwaukee, Wisconsin  
Singapore  
Toronto, Canada**

**TOTAL EMPLOYEES WORLDWIDE:**

**197**

**INVESTMENT PROFESSIONALS:**

**34, including 25 security analysts**

**OWNERSHIP:**

**100% employee owned**

GLOBAL EQUITY	INTERNATIONAL (NON-U.S.)	U.S. EQUITY	FIXED INCOME
Global Balanced	Asia Pacific (ex-Japan) Equity	U.S. Small Cap Value Equity	Core Plus Fixed Income
Global Equity	Canadian Equity	U.S. Small-Mid Cap Value Equity	Corporate Focus Fixed Income
Global Equity Income	Emerging Markets Equity	U.S. Value Equity	Enhanced Income
Global Opportunities Value	Emerging Markets (ex-China) Equity		
Global Small Cap Equity	Emerging Markets Value Equity		
Global Small-Mid Cap Equity	European Equity		
	International Equity		
	International Small Cap Equity		
	International Small-Mid Cap Equity		
	Japan Equity		

# Profile & Guidelines

## The Employees' Retirement System of the City of Milwaukee

### INVESTABLE UNIVERSE

Primarily in equity securities of non-U.S. companies whose equity market capitalizations exceed **\$5 billion** at time of purchase

### NUMBER OF HOLDINGS

**50 - 75**

### ANNUAL PORTFOLIO TURNOVER

**20 - 40%**

### INDIVIDUAL ISSUER MAXIMUM

Maximum: **7%** perf issuer at market or **5%** over EAFE

### INDIVIDUAL SECURITY MAXIMUM

Maximum: **7%** perf issuer at market or **5%** over EAFE

### COUNTRY GUIDELINES

Maximum: **30%** NON EAFE EX CAD/MAX JPN AND UK WGHT=TOTAL COMBO OF JPN AND UK EAFE WGHT+15%/ALL OTHER CNTYS MAX>OF EAFE WGHT+10% OR 200% OF EAFE WGHT

### CASH

Maximum: **10%**



# International Large-Cap Investment Committee



## Jeffrey Germain, CFA

Director, Investments Group  
Limited partner of the firm's parent company



## Amelia Maccoun Morris, CFA

Director, Investments Group  
Limited partner of the firm's parent company



## Shingo Omura, CFA

Director, Investments Group  
Limited partner of the firm's parent company

### EXPERIENCE

#### Current Responsibilities:

- Analyst and Team Leader responsibilities on the Basic Materials and Utilities Research Teams
- Member of the International Large-Cap Investment Committee
- Experience began in 2001
- Joined Brandes Investment Partners in 2001

#### Prior Career Highlights

- Financial Analyst with Harcourt
- CFO of Golf Destinations

### EDUCATION

- BS in business administration with a concentration in finance from the University of North Carolina at Chapel Hill

### EXPERIENCE

#### Current Responsibilities:

- Analyst and Team Leader responsibilities on the Consumer Products Research Team
- Member of the International Large-Cap Investment Committee
- Experience began in 1986
- Joined Brandes Investment Partners in 1998

#### Prior Career Highlights

- Member of the Emerging Markets Investment Committee with Brandes Investment Partners
- Member of the Investment Oversight Committee with Brandes Investment Partners
- Member of the Brandes Institute Advisory Board

### EDUCATION

- MBA from the University of Chicago Booth School of Business
- AB in economics (Phi Beta Kappa and cum laude) from the University of California, Davis
- CFA Institute Certification in ESG Investing

### EXPERIENCE

#### Current Responsibilities:

- Analyst and Team Leader responsibilities on the Health Care Research Team
- Member of the International Large-Cap Investment Committee
- Primary Product Coordinator for the Japan Equity strategy
- Member of the ESG Oversight Committee
- Experience began in 2001
- Joined Brandes Investment Partners in 2005

#### Prior Career Highlights

- Sell-Side Research Analyst (as a member of both the Basic Materials and Utilities Teams) in Japan

### EDUCATION

- MBA from the Haas School of Business at the University of California, Berkeley
- BA in economics from Keio University in Tokyo, Japan

# International Large-Cap Investment Committee



**Luiz G. Sauerbronn**

Director, Investments Group  
Limited partner of the firm's parent company

## EXPERIENCE

### Current Responsibilities:

- Analyst responsibilities on the Industrials Research Team
- Member of the International Large-Cap and Small-Cap Investment Committees
- Member of the ESG Oversight Committee
- Experience began in 1995
- Joined Brandes Investment Partners in 2001

### Prior Career Highlights

- Summer Associate with J.P. Morgan
- Manager of Mergers and Acquisitions Advisory Team with Banco Brascan (part of Brookfield Asset Management) in Brazil
- Trainee with Royal Dutch Shell

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## EDUCATION

- MBA from the Haas School of Business at the University of California, Berkeley
- BS in economics from the Federal University of Rio de Janeiro



**Brent V. Woods, CFA**

Executive Director  
Limited partner of the firm's parent company

## EXPERIENCE

### Current Responsibilities:

- Member of the International Large-Cap Investment Committee
- Member of the Investment Oversight Committee, which monitors the processes and activities of the firm's investment committees
- Officer of the firm's general partner
- Experience began in 1995
- Joined Brandes Investment Partners in 1995

### Prior Career Highlights

- Chief Executive Officer
- Managing Director, Investments Group with Brandes Investment Partners, responsible for the firm's securities research efforts and oversight of the product investment committees

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## EDUCATION

- JD (cum laude) from Harvard Law School
- Master's in international studies from St. John's College at Cambridge University, England
- AB (Phi Beta Kappa) from Princeton University

# Your Portfolio Management Team



**Lawrence Taylor**  
Director, Institutional Client Portfolio Management

## EXPERIENCE

### Current Responsibilities:

- Work with institutional clients and their consultants to provide insights and interpretation of the firm's portfolio strategies and investment philosophy, and coordinate with Investment Committees to ensure that we accommodate client-specific guidelines and consider existing portfolio allocations when implementing investment decisions
- Experience began in 1993
- Joined Brandes Investment Partners in 1995

### Prior Career Highlights

- Associate Portfolio Manager / Analyst with Brandes Investment Partners
- Investment Analyst with San Diego City Employees' Retirement System

## EDUCATION

- BA from the University of California, San Diego

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## Institutional Portfolio Management Members

**Kole Anderson, CFA** - Manager, Client Services Execution

**Rhonda Berger** - Director, Institutional Portfolio Management

**Conor Bourke** - Manager, Operations and Client Portfolio Manager

**Christopher J. Garrett, CFA** - Director, Institutional Group

**Michael Israel, CFA** - Director, Institutional Group and Global Financial Institutions

**Bouramey Ko** - Associate Client Portfolio Manager

**Anita Krishnamoorthy, CFA** - Chief Executive Officer, Brandes Asia

**Adam Mac Nulty, CFA** - President, Brandes Investment Partners (Europe) Limited, Institutional Client Portfolio Manager

**Shingo Omura, CFA** - Director, Investments Group

**Marsha Otto, CFA** - Director, Commingled Funds

**Jennifer Roman** - Associate Client Portfolio Manager

**Lawrence Taylor** - Director, Institutional Client Portfolio Management

# Return Attribution by Sector (Third Quarter 2024)

	Portfolio			MSCI EAFE Index			Attribution Analysis			
Sector	Weight	Total Return	Contribution to Return	Weight	Total Return	Contribution to Return	Allocation Effect (local)	Selection + Interaction (local)	Total Currency Effect	Total Effect
Health Care	16.49	19.60	3.45	13.29	4.61	0.67	0.00	2.47	0.13	2.59
Consumer Staples	19.19	16.63	3.13	8.74	10.58	0.88	0.39	1.58	-0.42	1.55
Industrials	10.54	20.55	1.97	17.34	9.37	1.60	-0.12	1.29	-0.27	0.91
Consumer Discretionary	13.87	11.40	1.48	10.98	4.84	0.52	0.01	1.17	-0.23	0.95
Financials	12.13	8.61	1.21	20.59	10.38	2.04	-0.28	-0.20	0.06	-0.42
Communication Services	7.40	9.83	0.73	4.28	11.50	0.48	0.10	0.26	-0.36	-0.00
Utilities	1.17	20.93	0.26	3.40	14.93	0.47	-0.18	0.08	0.02	-0.09
Information Technology	7.40	0.04	0.11	8.74	-2.43	-0.20	0.29	0.41	-0.29	0.41
Materials	3.53	0.46	0.02	6.85	10.69	0.67	-0.10	-0.28	-0.09	-0.47
Real Estate	1.24	-3.26	-0.00	2.19	17.39	0.35	-0.12	-0.06	-0.14	-0.32
Energy	5.07	-2.17	-0.09	3.60	-5.77	-0.23	-0.19	0.30	-0.09	0.02

**THIRD QUARTER 2024** | Source: Brandes, Factset, MSCI. Past performance is not a guarantee of future results. Please note that all indices are unmanaged and are not available for direct investment. Performance shown is gross of investment management fees.

# Return Attribution by Country (Third Quarter 2024)

Country	Portfolio			MSCI EAFE Index			Attribution Analysis			
	Weight	Total Return	Contribution to Return	Weight	Total Return	Contribution to Return	Allocation Effect (local)	Selection + Interaction (local)	Total Currency Effect	Total Effect
United Kingdom	17.35	17.63	3.11	14.75	7.94	1.20	0.07	1.76	-0.08	1.75
France	15.68	10.32	1.70	10.77	8.23	0.88	0.20	0.35	-0.14	0.40
Germany	9.51	10.10	0.99	9.02	10.73	0.92	0.05	-0.04	-0.04	-0.03
Japan	11.38	7.30	0.86	22.34	5.72	1.30	0.79	0.21	-0.67	0.33
Spain	1.74	46.99	0.65	2.81	13.66	0.36	-0.08	0.43	0.02	0.37
Netherlands	3.99	9.39	0.40	5.45	-4.17	-0.23	0.18	0.59	0.04	0.81
Switzerland	7.47	5.14	0.40	9.89	8.51	0.81	-0.02	-0.20	-0.03	-0.25
Hong Kong	2.65	14.39	0.34	1.98	24.96	0.41	0.10	-0.16	-0.00	-0.06
Italy	3.96	6.66	0.29	2.74	8.58	0.23	0.05	-0.07	-0.04	-0.06
Austria	1.70	15.71	0.27	0.19	8.74	0.02	0.06	0.12	-0.04	0.14
Canada	2.29	5.41	0.10	--	--	--	0.10	--	-0.13	-0.03
Ireland	--	8.77	0.08	0.30	13.93	0.04	0.06	0.02	-0.05	0.04
Australia	--	--	--	7.75	11.52	0.82	-0.52	--	0.19	-0.33
Belgium	--	--	--	1.01	15.25	0.15	-0.10	--	0.02	-0.08
Denmark	--	--	--	3.36	-10.30	-0.38	0.63	--	0.09	0.72
Finland	--	--	--	1.04	8.09	0.08	-0.03	--	0.02	-0.01
Israel	--	--	--	0.78	12.40	0.09	-0.09	--	0.05	-0.04
New Zealand	--	--	--	0.18	5.60	0.01	-0.00	--	0.00	0.00
Norway	--	--	--	0.57	2.13	0.01	-0.00	--	0.03	0.03
Portugal	--	--	--	0.19	8.72	0.02	-0.01	--	0.00	-0.00
Singapore	--	--	--	1.47	17.58	0.23	-0.16	--	0.02	-0.14
Sweden	--	--	--	3.35	8.40	0.27	-0.10	--	0.06	-0.04
China	4.84	54.18	1.78	0.06	9.55	0.00	0.57	1.27	-0.19	1.65
Brazil	6.08	19.28	1.21	--	--	--	1.02	--	-0.29	0.73
Taiwan	0.94	1.90	0.14	--	--	--	0.07	--	-0.07	-0.01
Russia	0.00	--	--	--	--	--	-0.00	--	-0.00	-0.00
South Korea	4.85	-0.87	-0.04	--	--	--	-0.37	--	-0.05	-0.42
Mexico	3.59	-2.98	-0.05	--	--	--	0.04	--	-0.40	-0.36

**THIRD QUARTER 2024** | Source: Brandes, Factset, MSCI. Past performance is not a guarantee of future results. Please note that all indices are unmanaged and are not available for direct investment. Performance shown is gross of investment management fees.

# Performance Table

## 3 Year Rolling Annualized Returns

	MSCI EAFE Index	MSCI EAFE Value Index	MSCI EAFE Growth Index
1981	4.14%	6.39%	1.21%
1982	-1.16%	-0.31%	-2.75%
1983	4.47%	8.28%	0.69%
1984	11.48%	12.15%	10.65%
1985	27.67%	29.14%	26.63%
1986	42.72%	41.87%	43.56%
1987	57.02%	57.82%	56.20%
1988	39.67%	43.37%	36.85%
1989	20.65%	24.92%	17.17%
1990	-4.24%	0.18%	-7.73%
1991	2.58%	4.64%	0.67%
1992	-6.41%	-5.79%	-6.86%
1993	12.66%	12.87%	12.58%
1994	8.82%	11.52%	6.09%
1995	13.65%	16.59%	10.67%
1996	8.06%	10.44%	5.70%
1997	8.82%	9.21%	8.53%
1998	3.75%	4.52%	3.03%
1999	10.43%	11.80%	8.91%
2000	7.38%	8.80%	5.64%
2001	-1.16%	3.84%	-6.45%
2002	-14.59%	-12.16%	-17.29%
2003	-8.71%	-5.00%	-12.51%
2004	9.11%	11.09%	7.11%
2005	24.59%	28.29%	20.89%
2006	22.29%	25.20%	19.36%
2007	23.24%	23.36%	23.06%
2008	1.12%	0.00%	2.15%
2009	-3.60%	-4.08%	-3.21%
2010	-9.50%	-10.71%	-8.36%

	MSCI EAFE Index	MSCI EAFE Value Index	MSCI EAFE Growth Index
2011	-1.13%	-1.69%	-0.63%
2012	2.11%	-0.11%	4.32%
2013	8.46%	7.98%	8.88%
2014	13.64%	13.90%	13.32%
2015	5.63%	4.69%	6.53%
2016	0.48%	-1.49%	2.39%
2017	5.03%	3.50%	6.48%
2018	9.23%	8.11%	10.25%
2019	6.48%	5.10%	7.77%
2020	0.62%	-5.86%	7.06%
2021	7.62%	3.04%	11.90%
2022	-1.83%	-2.78%	-1.49%
2023	5.75%	11.11%	0.37%
2024	5.48%	8.93%	1.92%

# Disclosures

Active share describes the percentage of a portfolio that is different than its benchmark index.

**Book to Price Ratio:** Compares a company's market value to its book value. The market value of a company is its share price multiplied by the number of outstanding shares.

**Book Value:** Assets minus liabilities. Also known as shareholders' equity.

**Book Value Per Share:** The ratio of equity available to common shareholders divided by the number of outstanding shares. This figure represents the minimum value of a company's equity and measures the book value of a firm on a per-share basis.

**Cash Flow Yield:** Annual cash flow per share divided by the share price.

**Debt/Equity:** A financial ratio indicating the relative proportion of shareholders' equity and debt used to finance a company's assets.

**Dividend Growth:** An increase in the value of dividends paid by a company.

**Dividend Yield:** Dividends per share divided by price per share.

**Dividends Per Share:** The sum of declared dividends issued by a company for every ordinary share outstanding. The figure is calculated by dividing the total dividends paid out by a business, including interim dividends, over a period of time, usually a year, by the number of outstanding ordinary shares issued.

**Earnings Growth:** The average annual growth rate of earnings (adjusted for amortizations of intangibles, extraordinary charges and credits) over a trailing three years.

**Earnings Growth Stability:** This quality factor is calculated as the negative of the standard deviation of earnings growth over the most recent 3 years of growth data.

**Earnings Per Share (EPS):** The portion of a company's profit allocated to each share of common stock. EPS serves as an indicator of a company's profitability.

**Earnings Yield:** Annual earnings (adjusted for amortizations of intangibles, extraordinary charges and credits) per share divided by the share price.

**EBITDA to Price:** EBITDA (earnings before interests, taxes, depreciation and amortization) per share divided by price per share.

**Enterprise Value:** Market capitalization plus net debt.

**EV/Sales:** Enterprise value divided by sales.

**EV/EBITDA:** Enterprise value divided by earnings before interest, taxes, depreciation and amortization.

**Forecast Growth 12M:** IBES consensus forecast growth of earnings over the next 12 months.

**Forward Price/Earnings:** Price per share divided by earnings per share expected over the next 12 months or next fiscal year.

**Free Cash Flow (FCF):** Operating cash flow less capital expenditures.

**IBES 12 m E Gr:** IBES consensus forecast growth of earnings over the next 12 months. IBES stands for the institutional brokers' estimate system.

**IBES 1 Yr Rev:** IBES balance of earnings forecast revisions for the next annual reporting period. IBES stands for the institutional brokers' estimate system.

**Income/Sales:** Income divided by sales; also called profit margin.

**Low Gearing measured by debt to equity:** Total debt as a percentage of total common equity.

**Market Beta:** The "slope coefficient", ( $\beta$ ), from the simple regression: Security monthly return =  $\alpha + \beta * \text{market monthly return} + \text{random error}$ . The regression is carried out over 36 month periods.

**Market Capitalization:** The number of common shares outstanding multiplied by the current market price per common share.

**Momentum MT:** The 12 month total return of the stock.

**Momentum ST:** Calculated using a 6 month "memory" of monthly total returns. This weighted historic return factor measures the degree of performance trend following.

**Net Debt to Equity:** A measure of a company's financial leverage calculated by dividing its net liabilities by stockholders' equity.

**Net Debt to EBITDA:** A measurement of leverage, calculated as a company's interest-bearing liabilities minus cash or cash equivalents, divided by its EBITDA.

**Net Profit Margin:** Measures how much net income or profit is generated as a percentage of revenue. It is the ratio of net profits to revenues for a company or business segment.

**Price/Book:** Price per share divided by book value per share.

**Price/Cash Flow:** Price per share divided by cash flow per share.

**Price/Earnings:** Price per share divided by earnings per share.

**Return on Equity:** Net income divided by shareholder's equity.

**Return on Invested Capital:** Net income minus dividends divided by total capital; used to assess a company's efficiency at allocating the capital under its control to profitable investments.

**Sales Growth:** A metric that measures the ability of your sales team to increase revenue over a fixed period of time.

**Sales Growth Stability:** This quality factor is calculated as the negative of the standard deviation of sales growth over the most recent 3 years of growth data.

**Sales to Price:** Net sales per share divided by price per share.

**Shareholder Yield:** How much money shareholders receive from a company that is in the form of cash dividends, net stock repurchases, and debt reduction.

**Standard Deviation:** The measure of a data set's dispersion from its mean.

**Trailing price-to-earnings (P/E):** A relative valuation multiple that is based on the last 12 months of actual earnings. It is calculated by taking the current stock price and dividing it by the trailing earnings per share (EPS) for the past 12 months.

**Yield:** Annual income from the investment (dividend, interest, etc.) divided by the current market price of the investment.

The MSCI ACWI ex USA Index captures large and mid cap representation across developed and emerging market countries, excluding the United States.

The MSCI ACWI ex USA Value Index captures large and mid cap securities across developed and emerging market countries (excluding the United States), exhibiting value style characteristics defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI ACWI ex USA Growth Index captures large and mid cap securities across developed and emerging market countries (excluding the United States), exhibiting growth style characteristics defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The MSCI EAFE Growth Index with gross dividends captures large and mid cap securities across developed market countries, excluding the United States and Canada, exhibiting growth style characteristics, defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The MSCI EAFE Index with net dividends captures large and mid cap representation of developed market countries excluding the U.S. and Canada.

The MSCI EAFE Value Index with net dividends captures large and mid cap securities across developed market countries, excluding the United States and Canada, exhibiting value style characteristics, defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI EAFE Small Cap Growth Index with net dividends measures small cap performance across developed market countries, excluding the U.S. and Canada exhibiting growth style characteristics, defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The MSCI EAFE Small Cap Value Index with net dividends measures small cap performance across developed market countries, excluding the U.S. and Canada exhibiting value style characteristics, defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI Emerging Markets Index with net dividends captures large and mid cap representation of emerging market countries.

The MSCI Emerging Markets Growth Index with gross dividends captures large and mid cap securities exhibiting growth style characteristics, defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The MSCI Emerging Markets Value Index with gross dividends captures large and mid cap securities exhibiting value style characteristics, defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI Europe Index with net dividends captures large and mid cap representation of developed market countries in Europe.

The MSCI Europe Growth Index captures large and mid cap securities across developed Europe exhibiting growth style characteristics, defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The MSCI Europe Value Index captures large and mid cap securities across developed Europe exhibiting value style characteristics, defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI Japan Index with net dividends is designed to measure the performance of large and mid cap segments of the Japan market.

The MSCI Japan Value Index captures large and mid cap Japanese securities exhibiting overall value style characteristics, defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI Japan Growth Index captures large and mid cap securities exhibiting overall growth style characteristics in Japan, defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The MSCI World Index with net dividends captures large and mid cap representation of developed markets.

The MSCI World Value Index captures large and mid cap securities across developed market countries exhibiting value style characteristics, defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI World Growth Index captures large and mid cap securities across developed market countries exhibiting growth style characteristics, defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The MSCI World Ex USA Index with net dividends captures large and mid cap representation of developed markets, excluding the United States.

The MSCI USA Index is designed to measure performance of the large and mid cap segments of the US market.

The MSCI USA Value Index captures large and mid cap US securities exhibiting overall value style characteristics, defined using book value to price, 12-month forward earnings to price, and dividend yield.

The MSCI USA Growth Index captures large and mid cap US securities exhibiting overall growth style characteristics, defined using long-term forward earnings per share (EPS) growth rate, short-term forward EPS growth rate, current internal growth rate, long-term historical EPS growth trend, and long-term historical sales per share growth trend.

The Russell 1000 Value Index with gross dividends measures performance of the large cap segment of the U.S. equity universe. Securities are categorized as growth or value based on their relative book-to-price ratios, historical sales growth, and expected earnings growth.

The Russell 1000 Growth Index with gross dividends measures performance of the large cap growth segment of the U.S. equity universe. Securities are categorized as growth or value based on their relative book-to-price ratios, historical sales growth, and expected earnings growth.

The S&P 500 Index measures equity performance of 500 of the top companies in leading industries of the U.S. economy.

The U.S. Consumer Price Index is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services.

The consumer price index used by World Bank reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.

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# Disclosures

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**Investments in the Great Gray Funds are not bank deposits or obligations of and are not insured or guaranteed by Great Gray Trust Company, LLC, any bank, the FDIC, the Federal Reserve, or any other governmental agency. The Great Gray Funds are commingled investment vehicles, and as such, the values of the underlying investments will rise and fall according to market activity; it is possible to lose money by investing in the Great Gray Funds.**

Participation in Collective Investment Trust Funds is limited primarily to qualified retirement plans and certain state or local government plans and is not available to IRAs, health and welfare plans and, in certain cases, Keogh (H.R. 10) plans. Collective Investment Trust Funds may be suitable investments for plan fiduciaries seeking to construct a well-diversified retirement savings program. Investors should consider the investment objectives, risks, charges, and expenses of any pooled investment fund carefully before investing. The Additional Fund Information and Principal Risk Definitions (PRD) contains this and other information about a Collective Investment Trust Fund and is available at [www.greatgray.com/principalriskdefinitions](http://www.greatgray.com/principalriskdefinitions) or ask for a copy free of charge by contacting Great Gray Trust Company, LLC at (866) 427-6885.

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Brandes Investment Partners, L.P.  
**International Equity Annual Performance Presentation**  
As of December 31 Period End  
Reporting Currency: USD

Period	Annual Performance %			Composite Characteristics			Total Firm Assets \$ Millions	Annualized 3 Year Standard Deviation % (2)	
	Composite Gross*	Composite Net*	Benchmark (a)	Assets \$Millions	Number of Accounts	Internal Dispersion (1)		Composite Gross	Benchmark (a)
2023	31.32	30.76	18.24	6,048	168	0.39	21,705	17.20	16.61
2022	-7.48	-7.89	-14.45	4,713	177	0.30	17,604	23.14	19.96
2021	14.17	13.68	11.26	4,906	187	0.39	20,179	21.08	16.92
2020	-1.34	-1.79	7.82	4,461	181	0.52	18,595	21.32	17.89
2019	15.43	14.88	22.01	5,590	245	0.75	21,451	11.44	10.81
2018	-8.98	-9.43	-13.79	5,236	319	0.31	22,106	10.94	11.24
2017	16.60	16.02	25.03	6,331	386	0.52	25,578	12.33	11.83
2016	8.20	7.65	1.00	5,599	406	0.75	22,971	13.06	12.46
2015	-1.17	-1.70	-0.81	5,121	461	0.46	20,666	13.46	12.46
2014	-4.03	-4.59	-4.90	5,458	543	0.56	20,722	13.48	13.03

Annualized Performance %		1 Year	5 Years	10 Years
International Equity Composite (gross)		31.32	9.57	5.57
International Equity Composite (net)		30.76	9.08	5.06
Benchmark (a)		18.24	8.16	4.28

(1) The measure of dispersion is the asset-weighted standard deviation for annual period gross returns in USD of all portfolios in the composite for the full reporting period. Beginning in 2017, dispersion is not presented for periods with less than 2 accounts in the composite. Prior to 2017, dispersion is not presented for periods with less than 6 accounts in the composite.

(2) The three-year annualized ex-post standard deviation measures the variability of the monthly gross composite returns and the benchmark returns over the preceding 36-month period.

\* The net and gross annual returns, calculated in USD, presented for the Brandes International Equity Composite were calculated on a time-weighted and asset-weighted, total return basis, including reinvestment of all dividends, interest and income, realized and unrealized gains or losses and are net of brokerage commissions, execution costs, and any applicable foreign withholding taxes, without provision for federal and state income taxes, if any. Returns for some accounts in the composite reflect the deduction of a broker fee that includes transaction costs and may include advisory, custody, and other administrative fees.

Beginning January 1, 2018, Brandes Investment Partners includes Brandes Investment Partners, L.P., Brandes Investment Partners (Europe) Limited, Brandes Investment Partners (Asia) Pte Ltd. and the Brandes Investment Partners & Co. assets sub-advised by Brandes Investment Partners, L.P. For the period from 1/1/06-12/31/17 the SMA Division of Brandes was excluded from the GIPS firm definition. The firm was redefined to reflect the dissolution of the SMA Division and the firm bringing those former SMA Division assets into compliance with the GIPS Standards.

This composite was created in 1990. The inception date is 6/30/1990.

Prior to April 2014 accounts were removed from the composite when an account's market value falls below US\$50,000 due to capital withdrawals.

The Brandes International Equity Composite seeks to achieve long-term capital appreciation by investing primarily in the equity securities of non-U.S. issuers whose equity market capitalizations exceed \$5 billion at the time of purchase. Generally, no more than 30% of the composite total assets, measured at the time of purchase, may be invested in securities of companies located in emerging and frontier countries throughout the world.

From 2013-2014 and from 2017-2018, composite performance after management fee returns were determined by reducing the gross of fee returns monthly by the highest applicable fee schedule per account. From 2015-2016 composite performance after management fee returns were calculated using actual fees. Composite performance after management fee returns were determined by using the highest applicable fee schedule per account in January – September 2019. As of October 2019, actual fees are used with the exception of select portfolios to which the applicable fee schedule was applied for the entire year to better reflect our typical management fees. The composite may include accounts with performance-based fees. For periods where actual fees were used to calculate the net return, a model fee representing the standard fee schedule is applied to any non-fee paying accounts included in the composite.

Standard fee schedule - First \$25 million 0.75%; Next \$25 million 0.60%; Next \$50 million 0.50%; Next \$50 million 0.45%; Amounts over \$150 million 0.40%. Brandes' investment advisory fees are detailed in Part 2A of its Form ADV.

Brandes claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Brandes has been independently verified for the annual periods 1995 through 2022.

A firm that claims compliance with the GIPS standards must establish policies and procedures for complying with all the applicable requirements of the GIPS standards. Verification provides assurance on whether the firm's policies and procedures related to composite and pooled fund maintenance, as well as the calculation, presentation, and distribution of performance, have been designed in compliance with the GIPS standards and have been implemented on a firm-wide basis. The International Equity Composite has had a performance examination for the periods since inception through year end 2022. The verification and performance examination reports are available upon request.

A list of composite and limited distribution pooled fund descriptions, a list of broad distribution pooled funds, and policies for valuing investments, calculating performance, and preparing GIPS Reports, are available upon request. Contact client service at 800-237-7119 or write P.O. Box 919048, San Diego, California 92191-9048 or email ClientService@Brandes.com.

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Investors should not rely on prior performance results as a reliable indication of future results.

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International and emerging markets investing is subject to certain risks such as currency fluctuation and social and political changes, differences in financial reporting standards and less stringent regulation of securities markets which may result in greater share price volatility; such risks are increased when investing in emerging markets. Additional risks associated with emerging markets investing include smaller-sized markets, liquidity risks, and less established legal, political, social, and business systems to support securities markets. Some emerging markets countries may have fixed or managed currencies that are not free-floating against the U.S. dollar. Certain of these currencies have experienced, and may experience in the future, substantial fluctuations or a steady devaluation relative to the U.S. dollar. Frontier markets are less advanced capital markets from the developing world. They are countries with investable stock markets that are less established than those in emerging markets.

Past performance is not a guarantee of future results. The performance results presented were achieved in particular market conditions which may not be repeated. Moreover, the current market volatility and uncertain regulatory environment may have a negative impact on future performance.

The declaration and payment of shareholder dividends are solely at the discretion of the issuer and are subject to change at any time.

The foregoing reflects the thoughts and opinions of Brandes Investment Partners exclusively and is subject to change without notice.

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# Memorandum

**To:** CMERS Investment Committee

**From:** Erich Sauer, CFA, CAIA

**Date:** November 5, 2024

**Re:** 2025 Tentative Due Diligence schedule

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As part of ERS policy, investment staff conducts a due diligence meeting with each of its existing investment managers every other year. Please find the due diligence meetings that are scheduled to take place in 2025 in the table below. The meetings are expected to be in person, although certain portions of the meetings, or any necessary follow-up, may be conducted virtually. Board members are encouraged to join ERS staff on these due diligence meetings, as they provide a valuable opportunity to learn more about the Fund's investment managers. Please let me know if you are interested in joining staff on any of the upcoming due diligence meetings.

Tentative Schedule:

Investment Manager(s)	Strategy or Strategies	Location	Likely Staff Lead	Target Date
BlackRock	Active & Passive Public Equity, Passive US Fixed Income, Transition Management	San Francisco, CA	Keith & Aaron	Q1 or Q2
Apogem	Private Equity	Richmond, VA	David & Aaron	Q2 or Q3
Reams	Active US Fixed Income	Indianapolis, IN	Erich & Keith	Q2 or Q3
Neuberger, Abbott	Private Equity	New York, NY	Erich & Tom	Q2 or Q3
Harrison Street	Private Real Estate	Chicago, IL	Erich, Keith, Aaron, Tom	Q2 or Q3
Principal (IA)	Diversified Real Assets	Des Moines, IA	Keith & Aaron	Q3 or Q4
Principal (NY), GTA	Diversified Real Assets, Trade Cost Analysis	New York, NY	Keith & Aaron	Q3 or Q4

# **3rd Quarter 2024 Performance Report**

November 7, 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 Q3 2024
Public Equity	MSCI ACWI IMI	39%	6.8%
Fixed Income	Bloomberg U.S. Agg.	29%	5.2%
Real Assets <sup>(1)</sup>	Blended Benchmark	13%	1.8%
Private Equity <sup>(1)</sup>	Russell 3000 + 2%	12%	3.5%
Absolute Return	90-Day T-Bill + 3%	7%	2.0%

	Q3 2024
<b>CMERS Benchmark</b>	<b>5.0%</b>

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

# Relative Performance Expectations

		Q3 2024		Q3 2024	Q3 2024
<b>Value Equity Bias</b>	Russell 3000 Value	9.5%	Russell 3000 Growth	3.4%	↑
<b>Small Cap Equity Bias</b>	Russell 2000	9.3%	Russell 1000	6.1%	↑
<b>Fixed Income Credit</b>	Loomis Sayles (net)	6.0%	Bloomberg US Agg.	5.2%	↑
<b>Private Equity<sup>(1)(2)</sup></b>	CMERS PE (net)	0.5%	PE Benchmark	3.5%	↓↓

	Q3 2024
<b>CMERS Total Fund (net)</b>	<b>4.8%</b>
<b>CMERS Benchmark</b>	<b>5.0%</b>

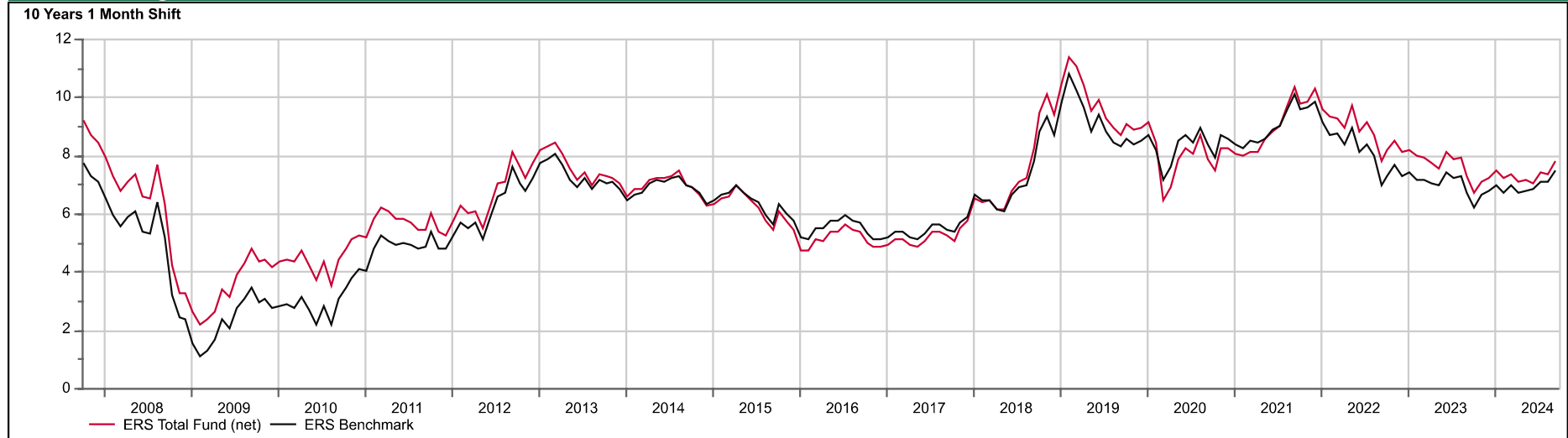
<sup>(1)</sup>Private Equity benchmark return is reported on a 1-quarter lag.

<sup>(2)</sup> All of the Fund's Q2 2024 Private Equity returns are reflected in the July-September time period.



# Total Fund Performance

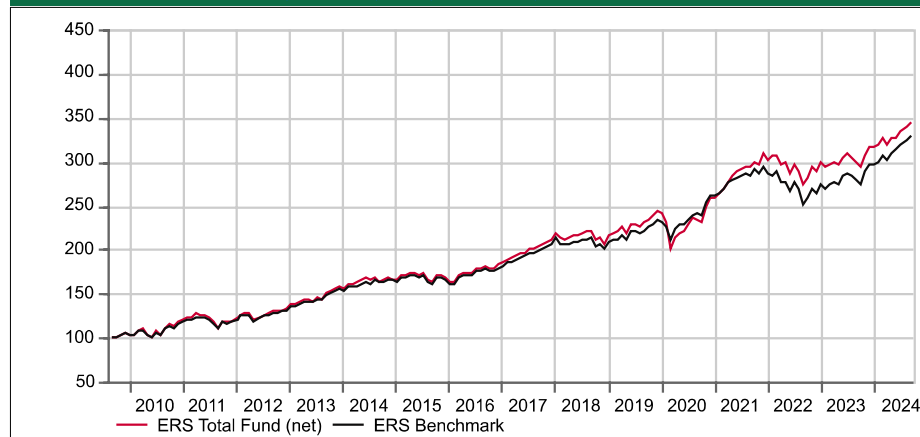
## 10 Year Rolling Returns – 11/1/1997 to 9/30/2024



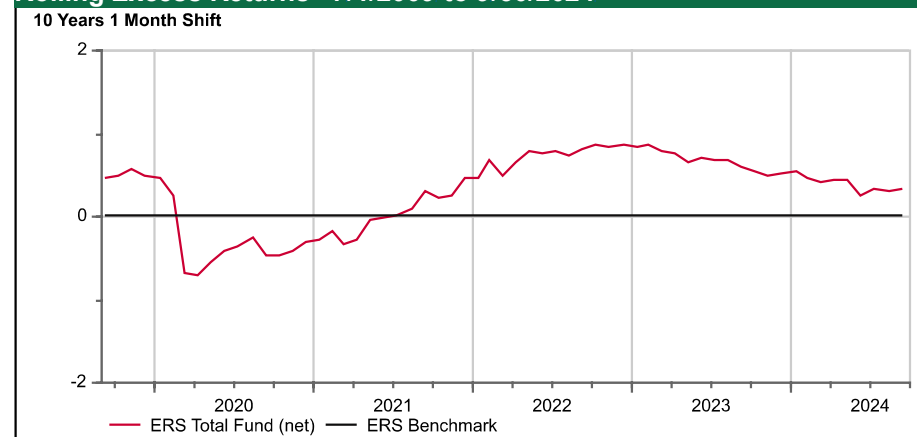
## Trailing Returns

	Annualized Return							
	QTR	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
ERS Total Fund (net)	4.8	8.6	15.1	5.4	8.3	7.8	7.7	8.6
ERS Benchmark	5.0	11.4	18.3	5.0	8.3	7.5	7.4	8.3

## Investment Growth –7/1/2009 to 9/30/2024



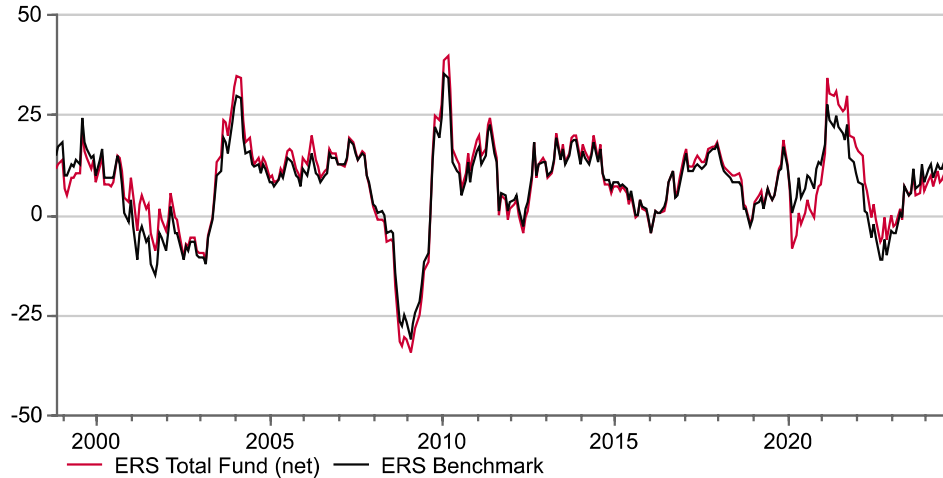
## Rolling Excess Returns –7/1/2009 to 9/30/2024



# Total Fund Rolling Returns as of September 30, 2024

## 1 Year Rolling Returns – 12/1/1997 to 9/30/2024

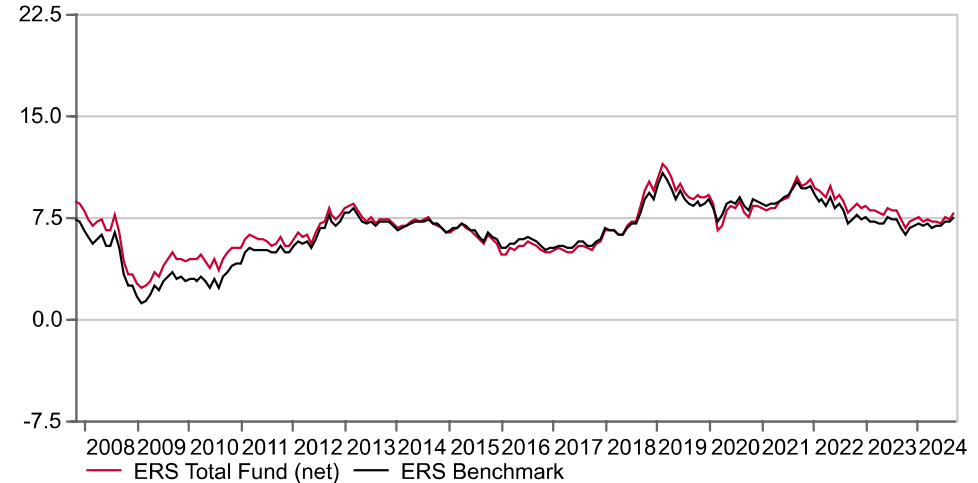
### 1 Year 1 Month Shift



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## 10 Year Rolling Returns – 12/1/1997 to 9/30/2024

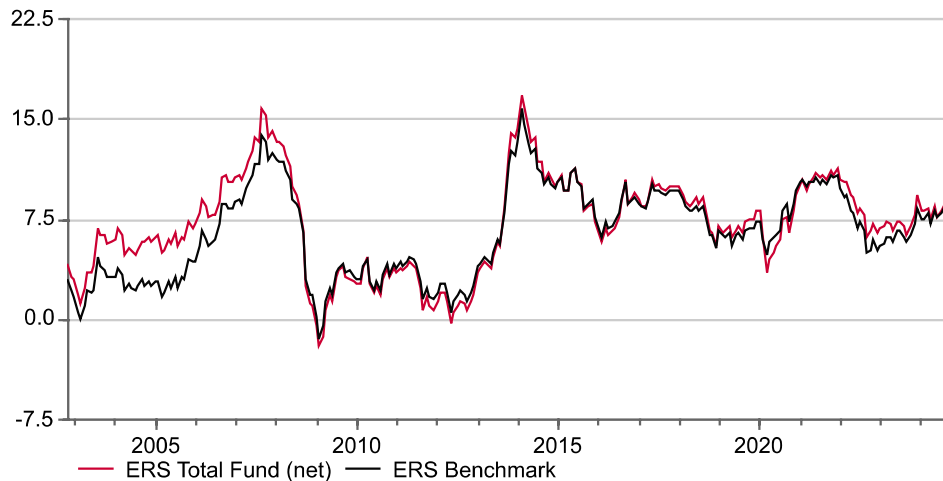
### 10 Years 1 Month Shift



©FactSet Research Systems

## 5 Year Rolling Returns – 12/1/1997 to 9/30/2024

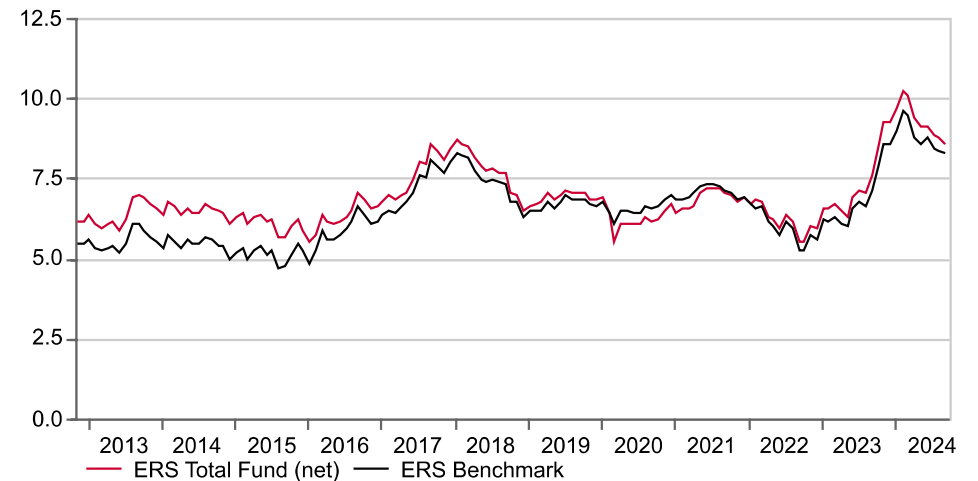
### 5 Years 1 Month Shift



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## 15 Year Rolling Returns – 12/1/1997 to 9/30/2024

### 15 Years 1 Month Shift



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# ERS Fund Attribution – 3rd Quarter 2024

Asset Class	Benchmark	Average Weight %	Policy Weight %	+/-	Portfolio Return	Benchmark Return	+/-	Attribution Effect(%)			
								Broad Category Group Allocation	Manager Selection	Style Bias	Total Active Return
<b>Public Equity</b>	MSCI ACWI IMI NR USD	<b>39.7</b>	<b>39.0</b>	<b>0.7</b>	<b>7.3</b>	<b>6.8</b>	<b>0.5</b>	<b>0.0</b>	<b>-0.3</b>	<b>0.5</b>	<b>0.2</b>
<b>Fixed Income</b>	Bbg US Agg Bond TR USD	<b>28.7</b>	<b>29.0</b>	<b>-0.3</b>	<b>5.1</b>	<b>5.2</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.1</b>	<b>-0.1</b>	<b>0.0</b>
<b>Private Equity<sup>(2)</sup></b>	Russell 3000 (Qtr Lag) + 200bps <sup>(1)</sup>	<b>13.0</b>	<b>12.0</b>	<b>1.0</b>	<b>0.5</b>	<b>3.5</b>	<b>-3.0</b>	<b>0.0</b>	<b>-0.4</b>	<b>0.0</b>	<b>-0.4</b>
<b>Real Assets<sup>(2)</sup></b>	Real Assets Benchmark <sup>(1)</sup>	<b>10.9</b>	<b>13.0</b>	<b>-2.1</b>	<b>2.5</b>	<b>1.8</b>	<b>0.8</b>	<b>0.1</b>	<b>0.1</b>	<b>0.0</b>	<b>0.2</b>
<b>Absolute Return</b>	90 Day T-Bill +3%	<b>7.7</b>	<b>7.0</b>	<b>0.7</b>	<b>2.5</b>	<b>2.0</b>	<b>0.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Total</b>		<b>100.0</b>	<b>100.0</b>	<b>0.0</b>	<b>4.8</b>	<b>5.0</b>	<b>-0.1</b>	<b>0.0</b>	<b>-0.5</b>	<b>0.4</b>	<b>-0.1</b>

## Main Drivers of Q3 2024 Relative Performance

### Private Equity

## Impact %

**-0.40%**

## Attribution Category

**Manager Selection**

**Public Equity Manager Performance (8 out of 10 active mandates underperformed)**

**DFA Strategies, William Blair & AQR**

**Brandes outperformance**

**-0.43%**

**0.26%**

**Manager Selection**

**Manager Selection**

### Public Equity

**0.46%**

**Style Bias**

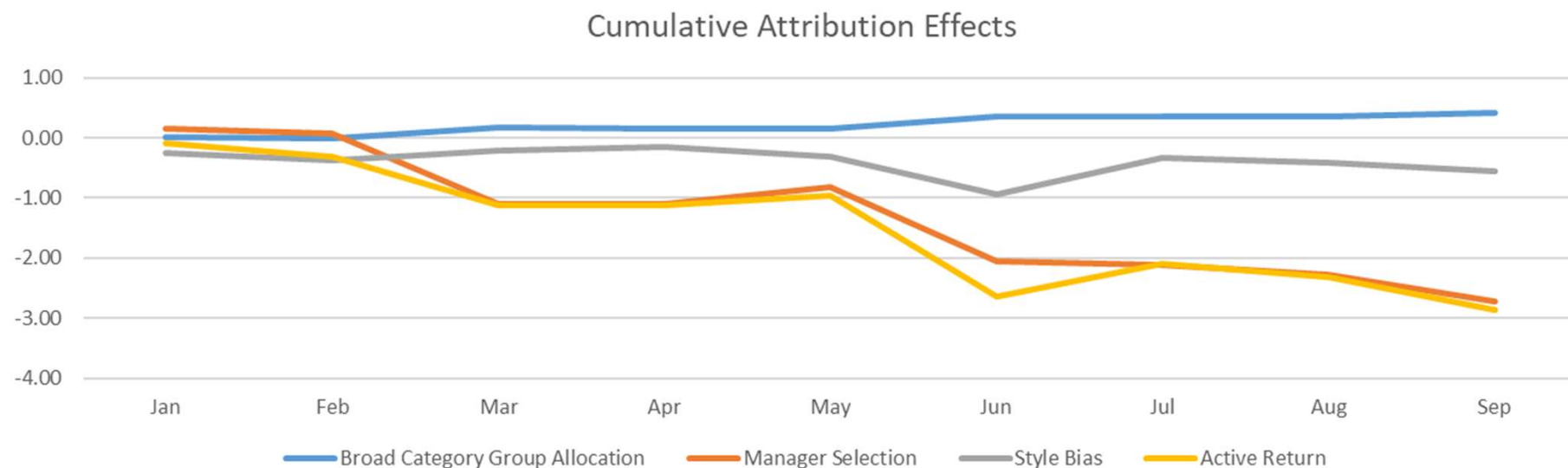
**Primarily value and small cap in public equity**

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

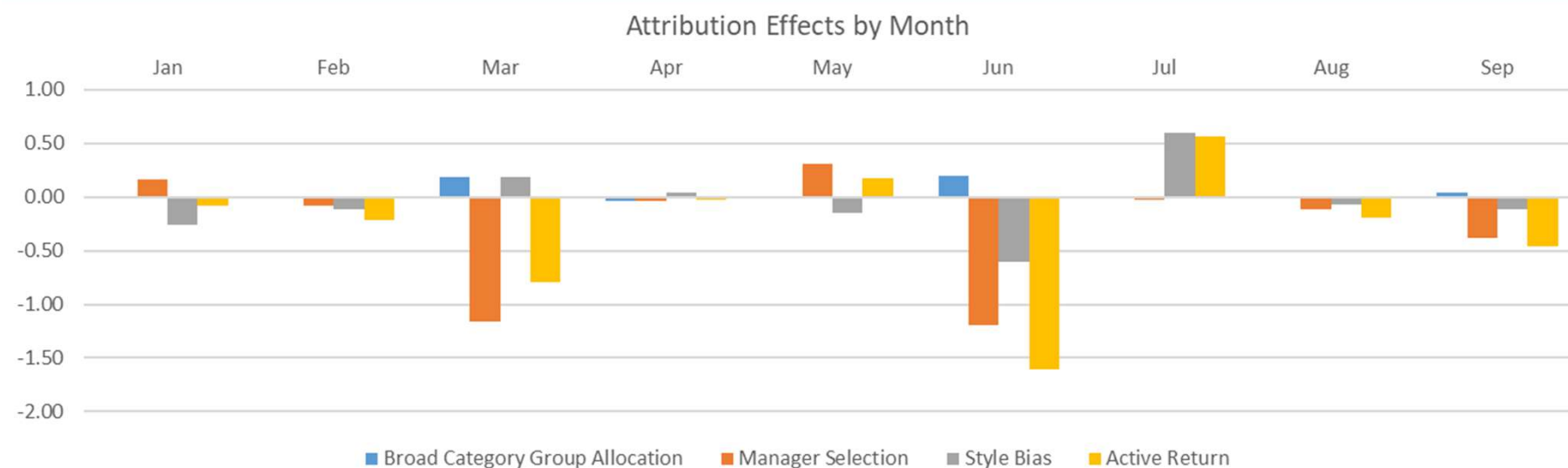
<sup>(2)</sup> All of the Fund's Q2 2024 Private Equity returns are reflected in the July-September time period. Some Real Estate returns are reported on a 1-quarter lag.

# YTD 2024 Attribution

## Cumulative Attribution Effects



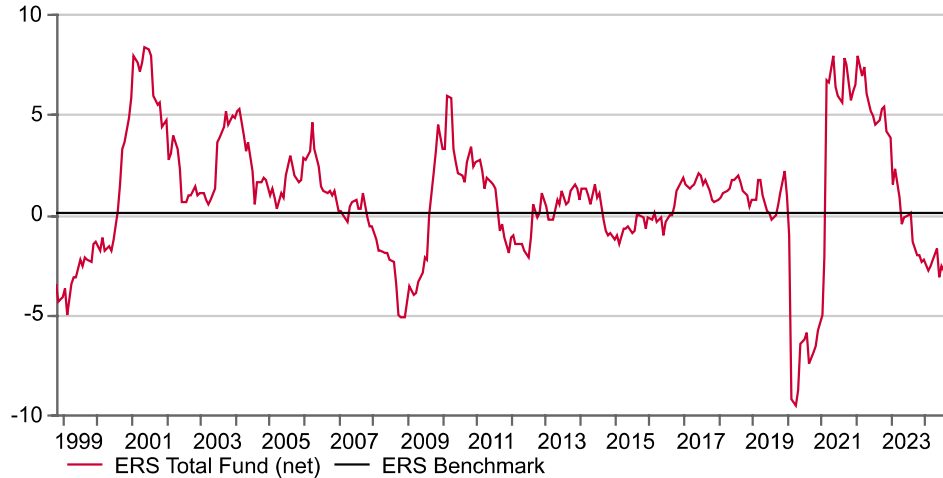
## Monthly Attribution Effects



# Total Fund Rolling Excess Returns as of September 30, 2024

## 1 Year Rolling Excess Returns – 12/1/1997 to 9/30/2024

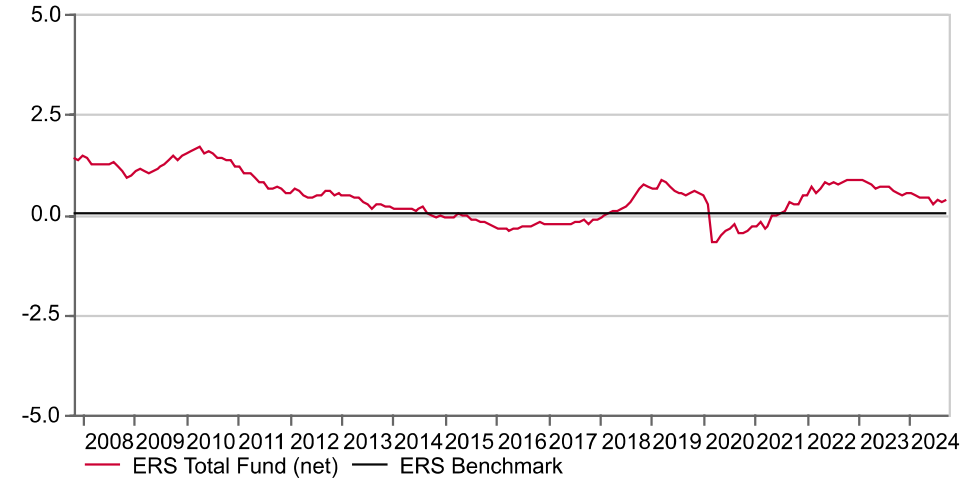
### 1 Year 1 Month Shift



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## 10 Year Rolling Excess Returns – 12/1/1997 to 9/30/2024

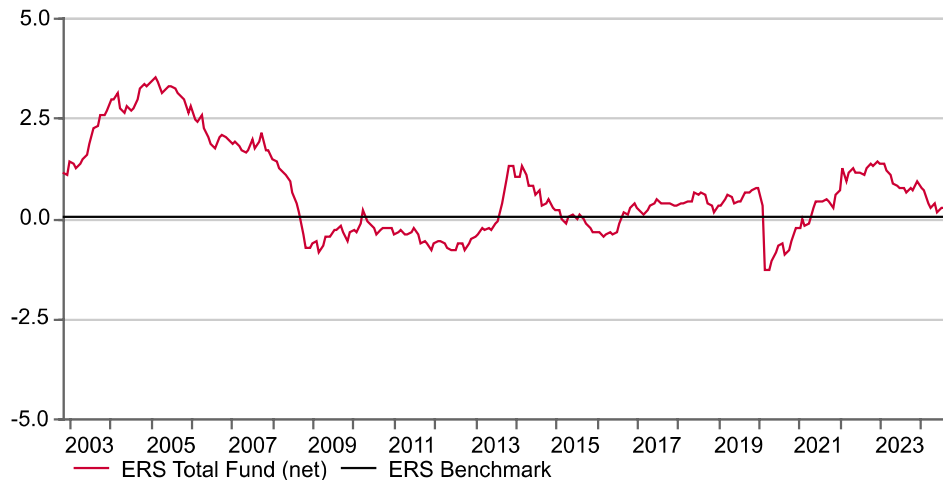
### 10 Years 1 Month Shift



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## 5 Year Rolling Excess Returns – 12/1/1997 to 9/30/2024

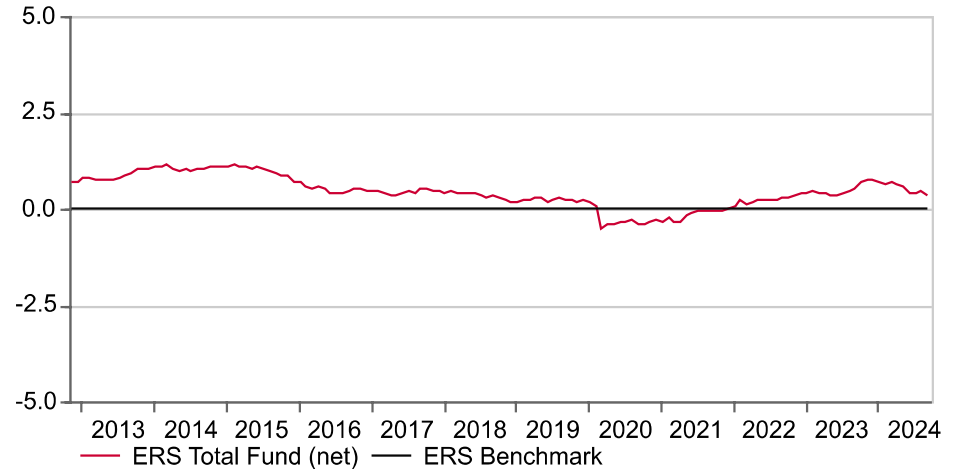
### 5 Years 1 Month Shift



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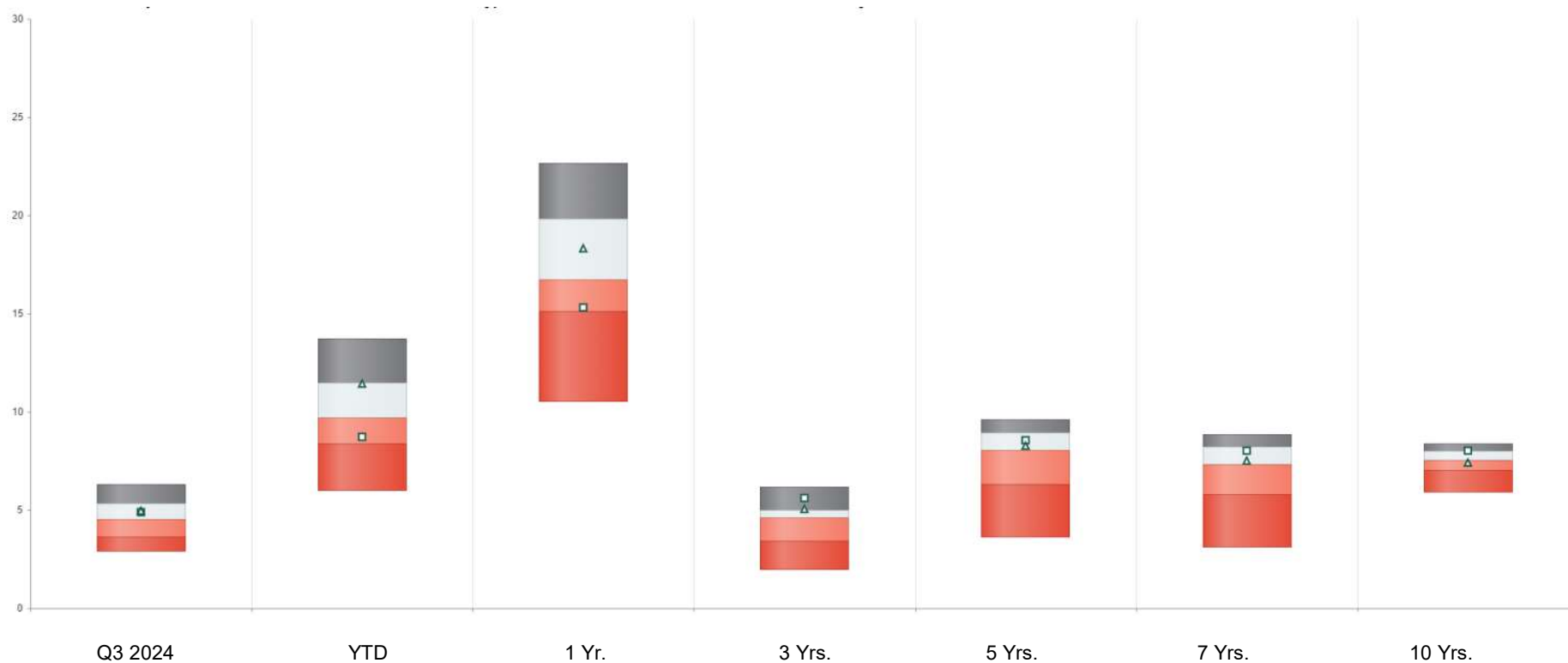
## 15 Year Rolling Excess Returns – 12/1/1997 to 9/30/2024

### 15 Years 1 Month Shift



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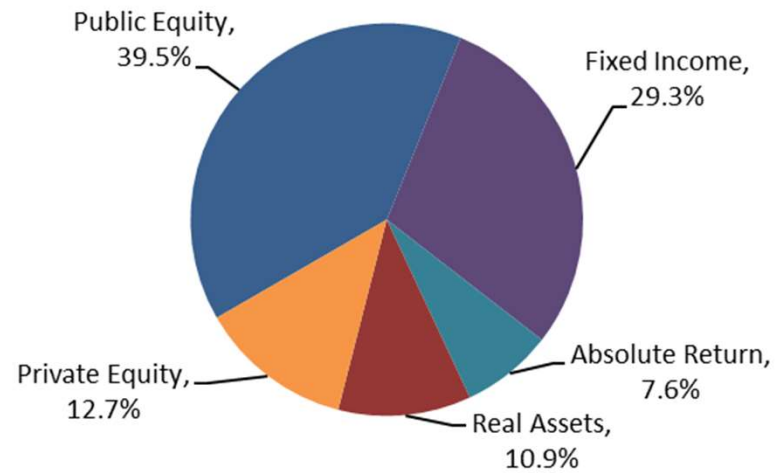
# Total Fund vs Universe



	Q3 2024	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
	Account						
	Index						
	Q3 2024	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	4.9	8.7	15.3	5.6	8.5	8.0	8.0
Percentile Rank	36	72	74	15	32	33	21
Index Return	5.0	11.4	18.3	5.0	8.3	7.5	7.4
Percentile Rank	34	26	35	23	43	45	54
1st Quartile	5.3	11.5	19.8	5.0	8.9	8.2	8.0
Median	4.5	9.7	16.7	4.6	8.1	7.3	7.6
3rd Quartile	3.6	8.4	15.1	3.4	6.3	5.8	7.0
Observations	50	48	48	46	42	41	28

# Asset Allocation as of September 30, 2024

## Actual Asset Allocation\*



## Actual Asset Allocation vs. Policy Target



# YTD 2024 Market Value Change

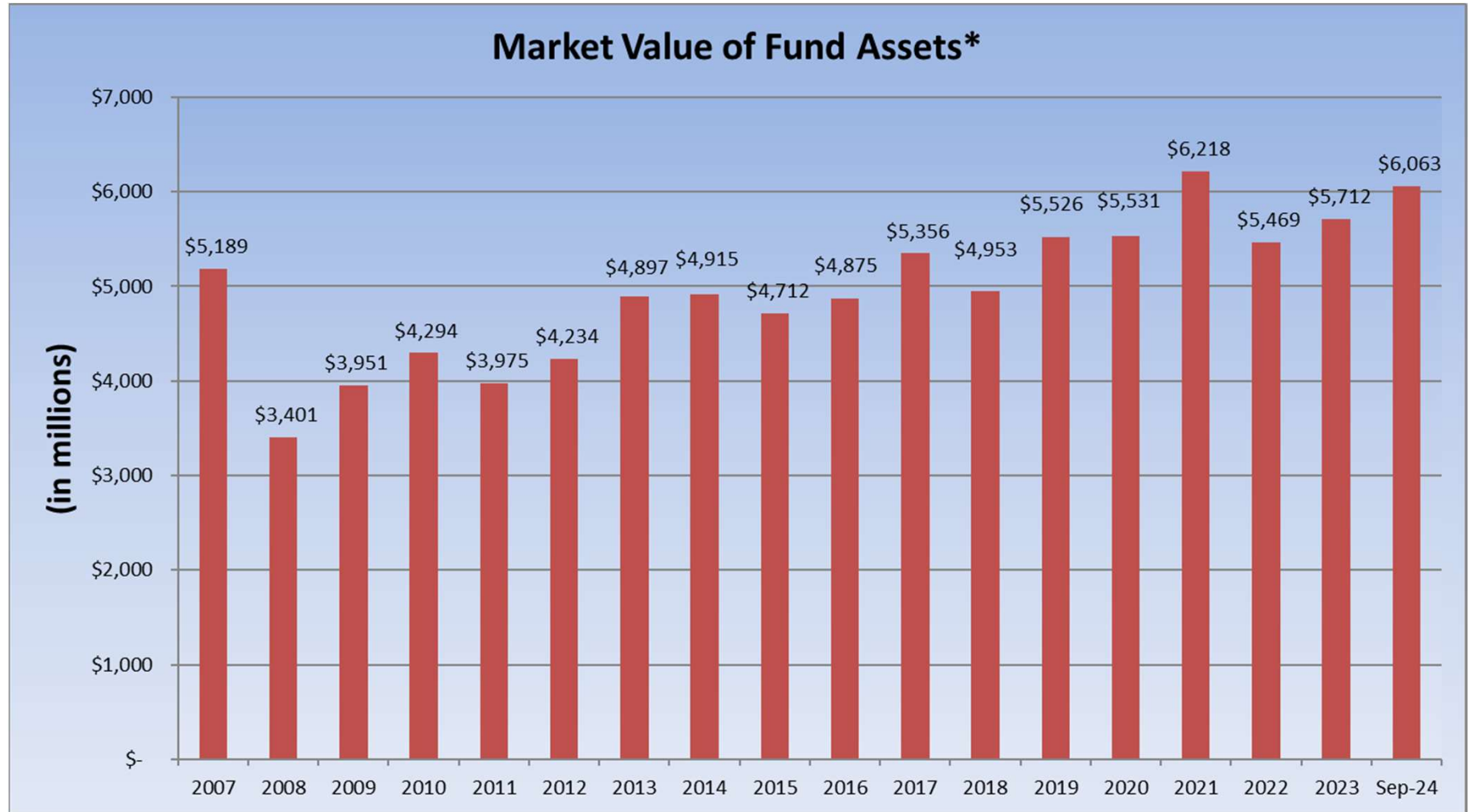
December 31, 2023 Market Value including City Reserve & PABF Accounts			\$ 5,797,273,012
Monthly Cash Outflows thru	<u>September 30, 2024</u>		
Retiree Payroll Expense		\$ (361,587,945)	
PABF Payroll Expense		\$ (4,000)	
Expenses Paid		\$ (14,514,343)	
GPS Benefit Payments		<u>\$ (6,161,341)</u>	
Sub-Total Monthly Cash Outflows			\$ (382,267,629)
Monthly Cash Inflows thru	<u>September 30, 2024</u>		
Contributions		\$ 237,681,017	
PABF Contribution		<u>\$ 4,500</u>	
Sub-Total Monthly Contributions			\$ 237,685,517
Capital Market Gain/(Loss)			<u>\$ 499,339,513</u>
Value including City Reserve & PABF Accounts as of	<u>September 30, 2024</u>		<u>\$ 6,152,030,413</u>
Less City Reserve Account <sup>1</sup>			\$ 89,003,896
Less PABF Fund <sup>2</sup>			\$ 2,435
Net Projected ERS Fund Value as of	<u>September 30, 2024</u>		<u>\$ 6,063,024,082</u>

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 – September 30, 2024

(Year Ended Dates Reflect 12/31 Fund Values)



Most recent Actuarial valuation projects benefit payments to total \$5.6 billion in next 10 years.

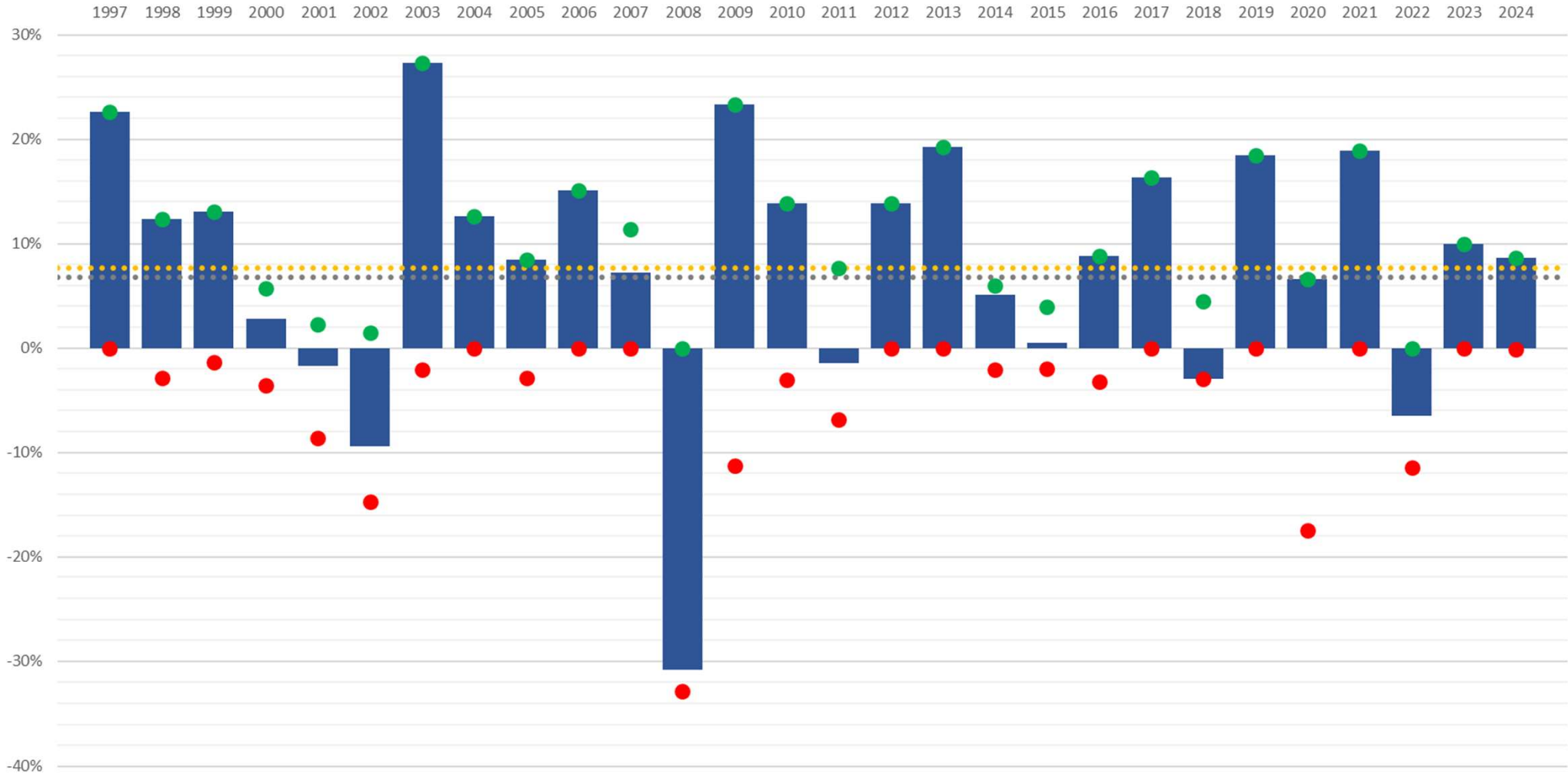
<b>Benefit Payments</b>	\$6.0 billion
<b>Expenses</b>	\$296 million
<b>Contributions</b>	\$1.8 billion
<b>Investment Gain</b>	\$5.4 billion

16 3/4 Year Estimates (1/1/2008 - 9/30/2024)

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.

# Annual Returns, Peaks, and Troughs

CMERS Peak Trough Current Discount Rate (6.8%) CMERS Annualized Return (7.7%)

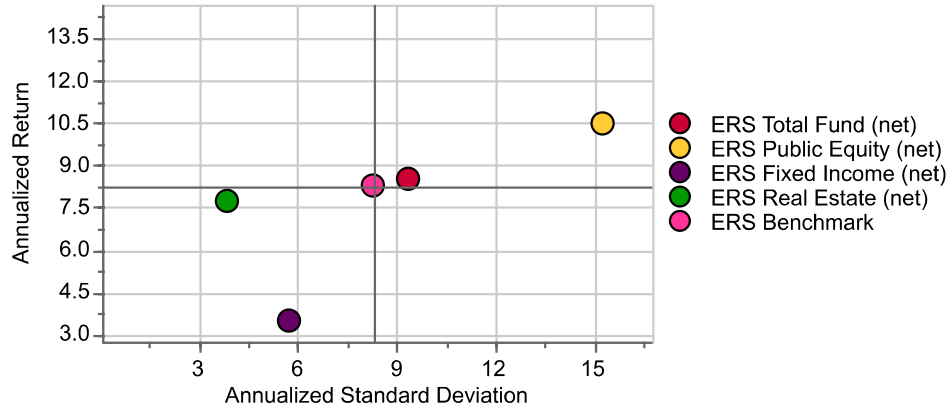


	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	YTD 2024
CMERS	22.7%	12.4%	13.1%	2.8%	-1.7%	-9.4%	27.3%	12.6%	8.5%	15.1%	7.2%	-30.8%	23.3%	13.9%	-1.4%	13.9%	19.3%	5.1%	0.5%	8.8%	16.4%	-2.9%	18.4%	6.6%	18.9%	-6.5%	10.0%	8.6%
Peak	22.7%	12.4%	13.1%	5.7%	2.3%	1.5%	27.3%	12.6%	8.5%	15.1%	11.4%	0.0%	23.3%	13.9%	7.6%	13.9%	19.3%	6.0%	4.0%	8.8%	16.4%	4.5%	18.4%	6.6%	18.9%	0.0%	10.0%	8.6%
Trough	0.0%	-2.9%	-1.4%	-3.6%	-8.6%	-14.7%	-2.0%	0.0%	-2.9%	0.0%	0.0%	-32.9%	-11.3%	-3.0%	-6.8%	0.0%	0.0%	-2.1%	-2.0%	-3.3%	0.0%	-2.9%	0.0%	-17.5%	0.0%	-11.4%	0.0%	-0.1%

\*Net of Fees

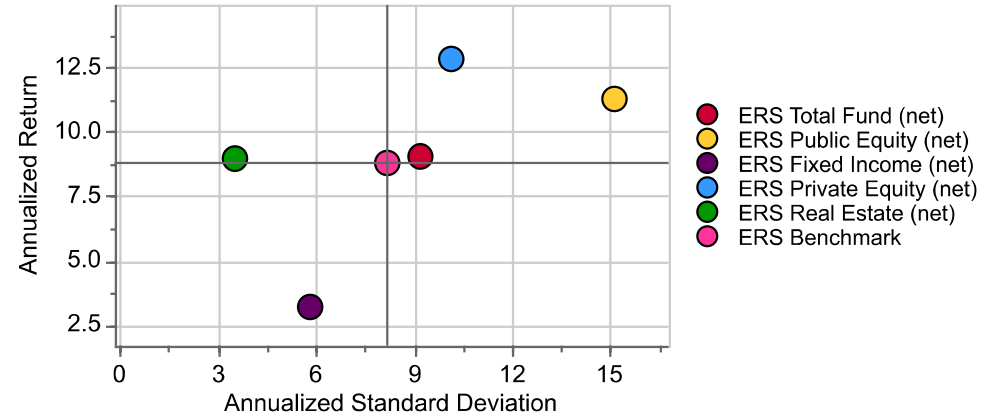
# Total Fund Statistics

## 15 Year Risk-Reward –10/1/2009 to 9/30/2024



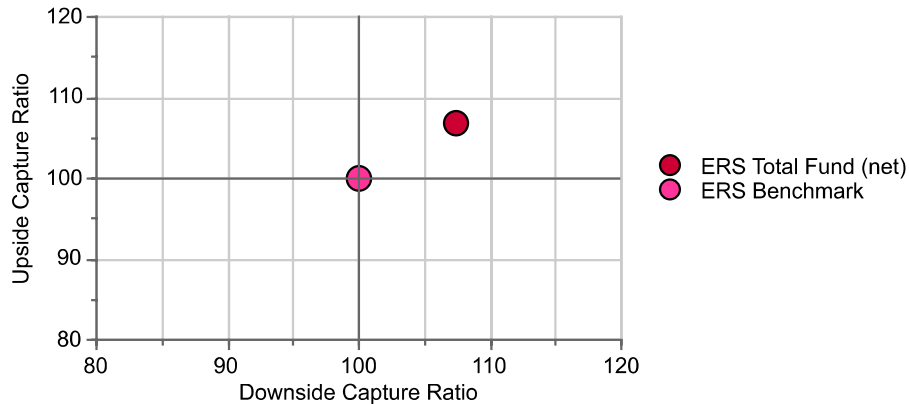
©FactSet Research Systems

## Risk-Reward Since Private Equity Inception – 7/1/2010 to 9/30/2024



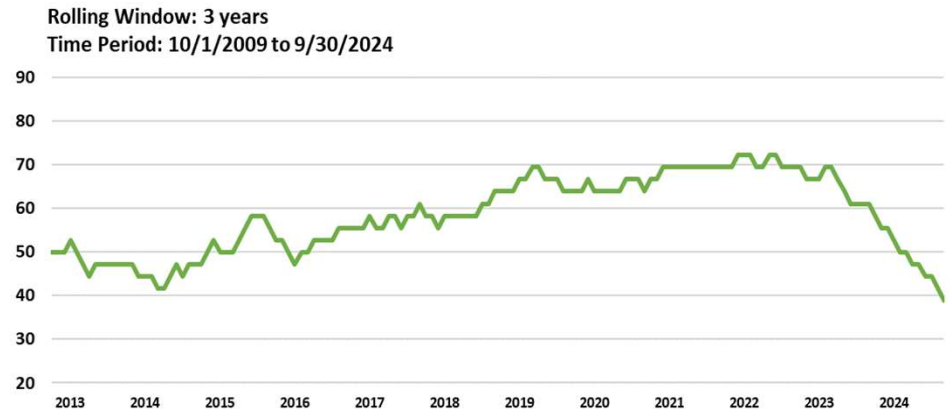
©FactSet Research Systems

## 15 Year Upside-Downside –10/1/2009 to 9/30/2024



©FactSet Research Systems

## Batting Average



## 15 Year Risk –10/1/2009 to 9/30/2024

	Annualized Return	Standard Deviation	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Total Fund (net)	8.6	9.3	0.0	0.8	0.0	2.7	1.1
ERS Benchmark	8.3	8.3	0.0	0.9	--	--	1.0

## Risk – 7/1/2013 to 9/30/2024

	Annualized Return	Standard Deviation	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Total Fund (net)	8.3	8.8	0.0	0.8	0.0	3.0	1.1
ERS Benchmark	8.0	7.7	0.0	0.8	--	--	1.0

# Public Equity

# Public Equity Performance

## 10 Year Rolling Returns – 7/1/2000 to 9/30/2024



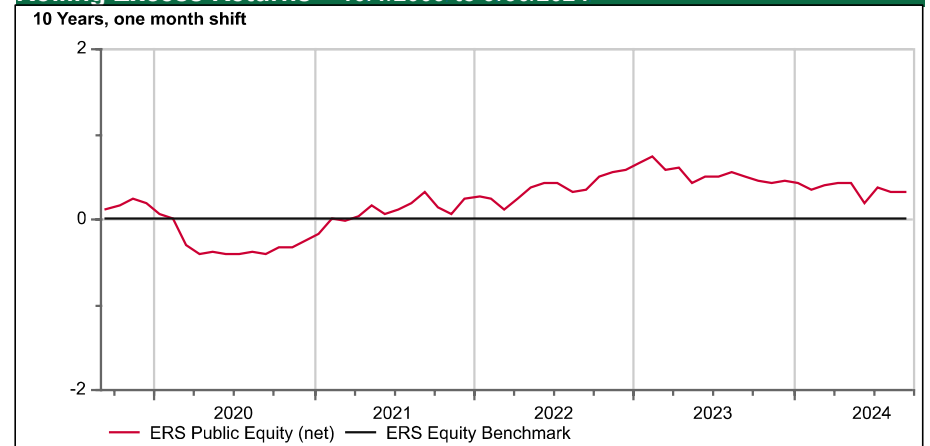
## Trailing Returns

	Annualized Return							
	QTR	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
ERS Public Equity (Gross)	7.4	15.6	28.9	7.8	12.5	10.4	10.2	10.9
ERS Public Equity (Net)	7.3	15.3	28.4	7.4	12.1	10.0	9.8	10.5
ERS Public Equity Benchmark	6.8	17.8	31.0	7.4	11.9	9.8	9.5	10.3
MSCI AC World IMI	6.8	17.8	31.0	7.4	11.9	9.8	9.2	9.6

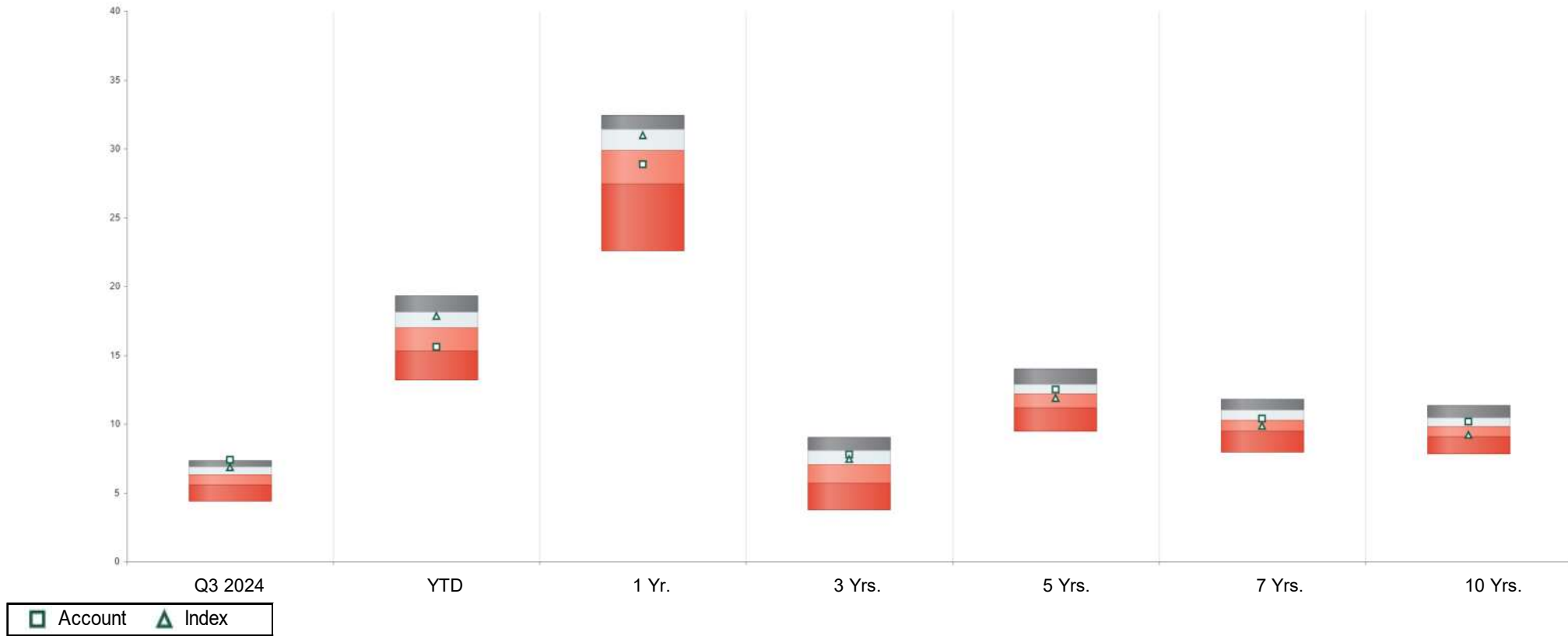
## Investment Growth – 10/1/2009 to 9/30/2024



## Rolling Excess Returns – 10/1/2009 to 9/30/2024



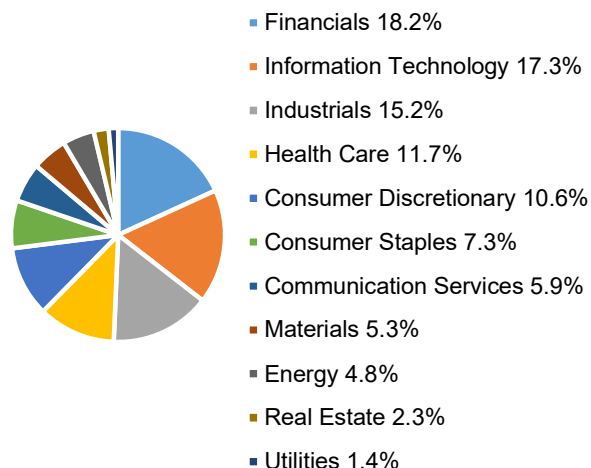
# Public Equity vs Universe



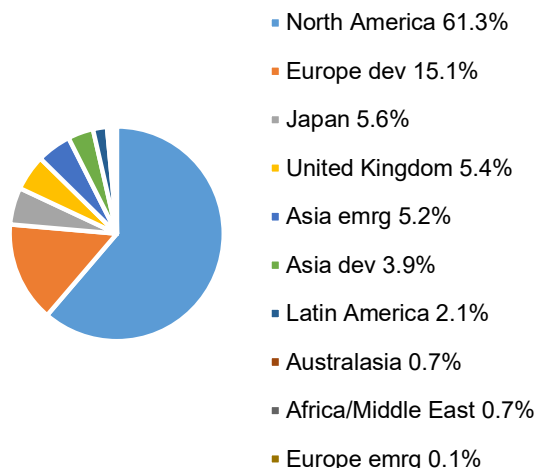
	Q3 2024	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	7.4	15.6	28.9	7.8	12.5	10.4	10.2
Percentile Rank	9	71	66	31	35	46	36
Index Return	6.8	17.8	31.0	7.4	11.9	9.8	9.5
Percentile Rank	27	32	33	40	63	68	3rd Quartile
1st Quartile	6.9	18.1	31.4	8.1	12.9	11.0	10.5
Median	6.3	17.0	29.9	7.1	12.2	10.3	9.9
3rd Quartile	5.6	15.3	27.5	5.7	11.2	9.5	9.1
Observations	123	121	121	124	122	121	112

# Public Equity Portfolio Snapshot

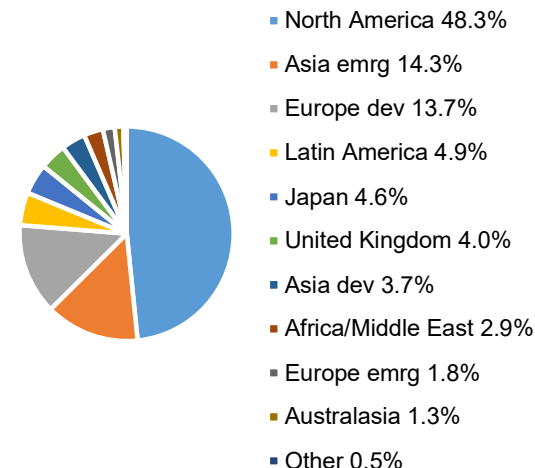
## Equity Sector Exposure (GICS)



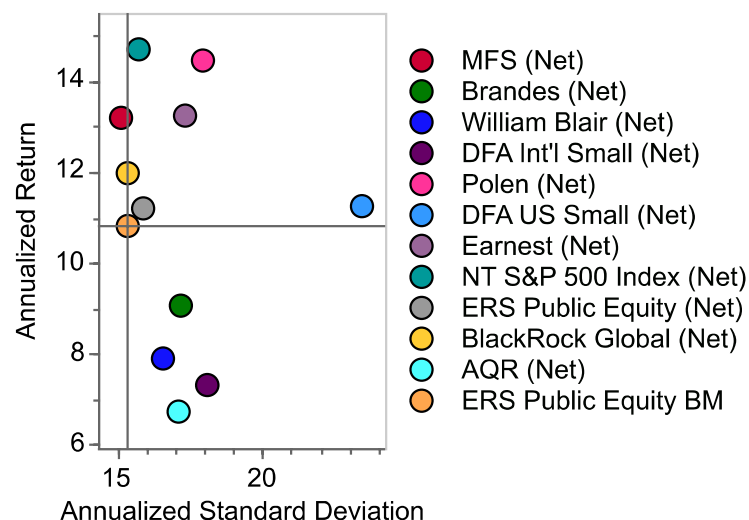
## Regional Exposure by Domicile



## Regional Exposure by Source of Revenue



## Risk – Reward – 8/1/2016 to 9/30/2024



©FactSet Research Systems

## Top 10 Holdings

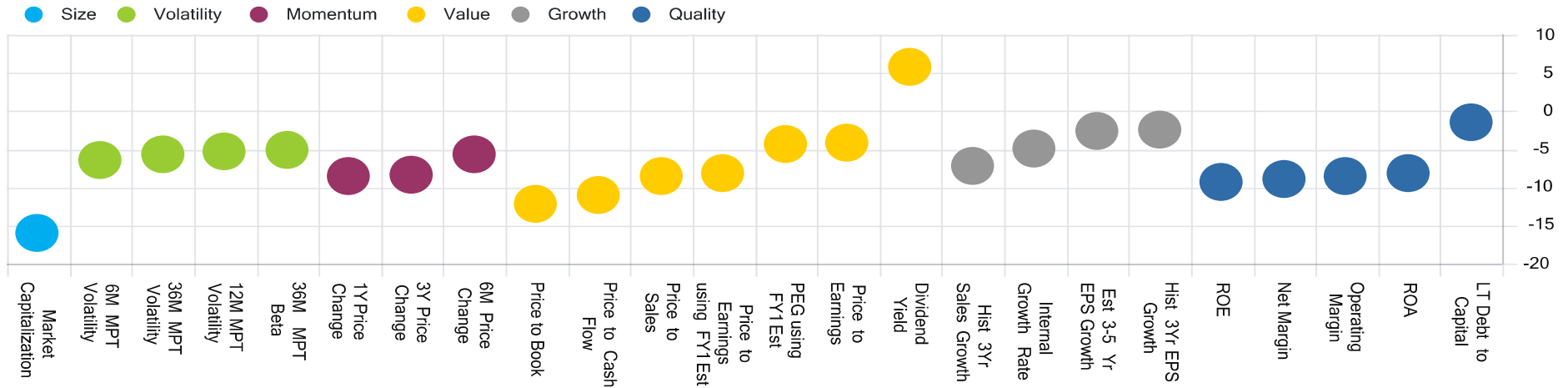
Portfolio Date 9/30/24	Weight %	Return %
Microsoft Corporation	2.2	-3.6
Apple Inc.	1.9	10.7
NVIDIA Corporation	1.4	-1.7
Taiwan Semi Mfg. Co.	1.3	1.2
Alphabet Inc.	1.2	-8.8
Amazon.com, Inc.	1.2	-3.6
Visa Inc.	0.8	5.0
JPMorgan Chase & Co.	0.7	4.8
Accenture plc	0.7	17.0
Berkshire Hathaway Inc.	0.7	13.1

## Top 10 Managers

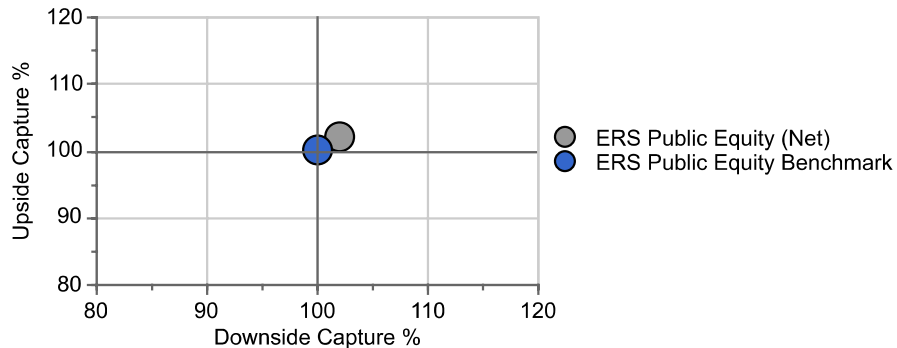
Portfolio Date 9/30/24	Weight %
Brandes Int'l Value	13.8
BlackRock Global Core	11.0
William Blair Int'l Growth	10.0
MFS Global Growth	9.0
NTQA S&P 500 Index Core	8.7
BlackRock R1000 Value Index	8.7
DFA US Small Cap Value	8.3
Earnest Mid Cap Core	7.6
DFA Int'l Small Cap Value	7.2
DFA US Large Cap Value	6.3

# Public Equity Statistics

## Characteristics Tilt vs MSCI ACWI IMI 9/30/2024

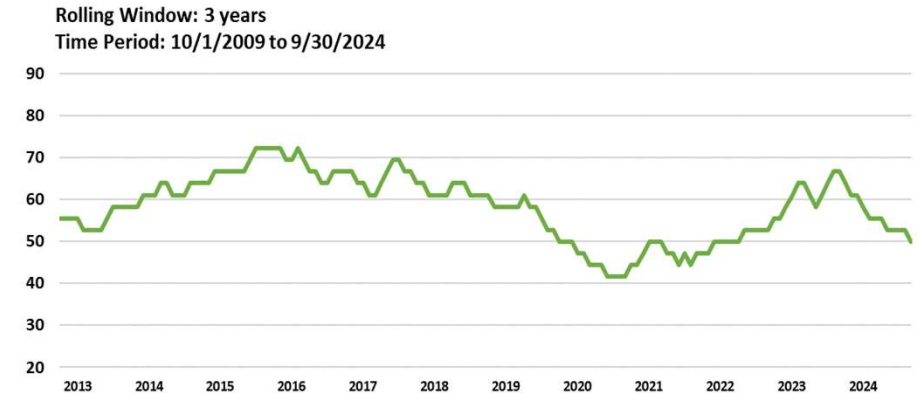


## 15 Year Upside-Downside –10/1/2009 to 9/30/2024



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## Batting Average



## 15 Year Risk –10/1/2009 to 9/30/2024

	Annualized Return	Standard Deviation	Sharpe Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Public Equity (Net)	10.5	15.2	0.0	0.6	0.0	1.9	1.0
ERS Public Equity Benchmark	10.3	14.7	0.0	0.6	--	--	1.0

## Risk – 7/1/2013 to 9/30/2024

	Annualized Return	Standard Deviation	Sharpe Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
ERS Public Equity (Net)	10.6	14.9	0.0	0.6	0.0	1.9	1.0
ERS Public Equity Benchmark	10.3	14.5	0.0	0.6	--	--	1.0



# Public Equity Valuation Characteristics

As of September 30, 2024

	Price/ Earnings	P/E using FY2 Est	Price/ Book	Price/ CF	Dividend Yield	Est. 3-5 yr. EPS Growth
ERS Public Equity	17.8	14.1	1.8	9.4	2.05	13.3
MSCI AC World IMI	18.3	16.5	2.4	12.0	1.83	14.2

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	20.8	16.3	2.7	12.4	1.99	AQR Emerging Markets Core	10.7	8.7	1.5	5.7	3.74
DFA Large Value	17.0	13.4	2.2	9.7	2.07	BlackRock Global Core	21.0	16.3	3.1	12.1	1.77
DFA Small Value	13.0	10.8	1.2	6.4	1.70	Brandes Int'l Value	14.8	10.3	1.2	5.8	3.68
Earnest Mid Core	21.2	16.0	2.7	12.2	1.42	DFA Int'l Small Value	10.4	9.0	0.8	4.9	3.62
NT S&P 500 Index	28.0	20.9	4.8	18.4	1.26	MFS Global Growth	28.8	22.4	5.1	20.7	1.11
Polen Large Growth	37.6	28.1	10.9	28.2	0.51	William Blair Int'l Growth	26.3	19.1	4.2	19.8	1.45

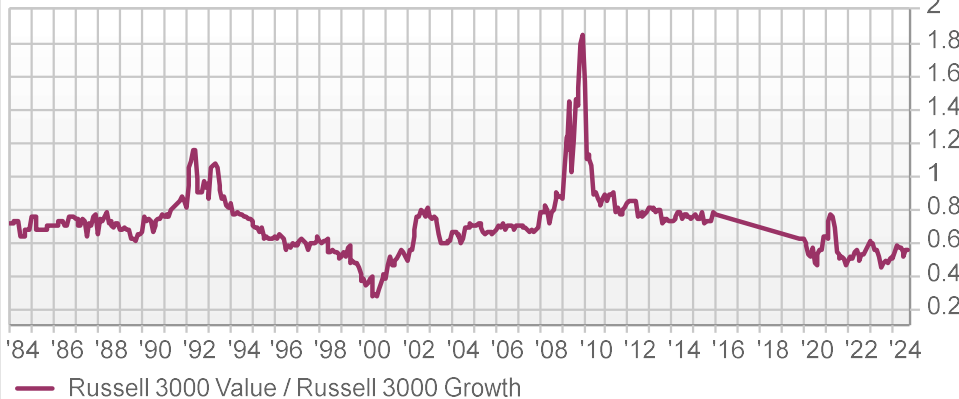
\*"Price/Earnings" and "P/E using FY2 Est" values exclude companies with negative earnings from calculations.

# P/E Ratio Comparisons in the U.S. Since 1980 - As of September 30, 2024

## Value vs. Growth

### Relative Price to Earnings

30-Dec-1983 to 30-Sep-2024 (Monthly)



© FactSet Research Systems

## Large vs. Small

### Relative Price to Earnings

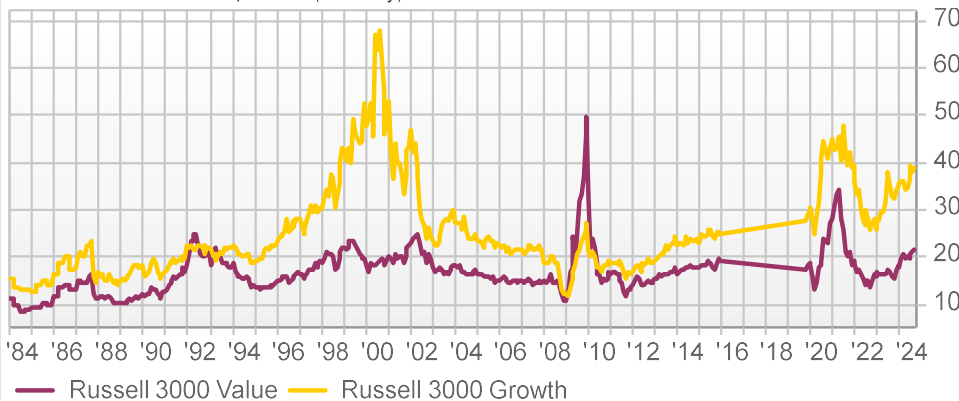
30-Dec-1983 to 30-Sep-2024 (Monthly)



© FactSet Research Systems

### Price to Earnings - Russell 3000 Value vs Russell 3000 Growth

30-Dec-1983 to 30-Sep-2024 (Monthly)



© FactSet Research Systems

### Relative Price to Earnings

30-Dec-1983 to 30-Sep-2024 (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 September, 2024

### Outperforming Equity Managers

	3rd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
<b>Brandes</b>	12.2%	17.7%	30.3%	12.7%	11.6%	7.9%	6.9%
<i>MSCI EAFE</i>	4.9%	4.8%	5.5%	7.3%	3.4%	1.9%	1.2%
<b>MFS</b>	7.2%	15.1%	28.0%	7.1%	12.4%	12.7%	12.0%
<i>MSCI ACWI</i>	0.6%	3.6%	3.8%	1.0%	0.2%	2.4%	2.6%
<b>ERS Public Equity</b>	7.3%	15.3%	28.4%	7.4%	12.1%	10.0%	9.8%
<i>ERS Equity Benchmark</i>	0.4%	2.6%	2.6%	0.1%	0.3%	0.1%	0.3%

Relative outperformance in blue

Relative underperformance in red

\*Returns net of fees

# Relative Investment Performance – Active Equity Managers

## as of September 30, 2024

### Underperforming Equity Managers

	3rd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
AQR	2.6%	14.5%	26.2%	1.8%	7.4%	3.7%	N/A
<i>MSCI EM</i>	6.1%	2.4%	0.1%	1.4%	1.7%	0.1%	
William Blair	5.0%	10.5%	24.9%	-2.3%	8.1%	6.3%	6.3%
<i>MSCI ACWI ex US</i>	3.1%	4.2%	1.1%	7.0%	0.0%	0.3%	0.6%
DFA U.S. Small Value	7.6%	7.4%	23.8%	10.6%	15.0%	9.8%	10.1%
<i>Russell 2000 Value</i>	2.6%	1.8%	2.1%	6.9%	5.7%	3.2%	1.9%
Polen	3.5%	10.7%	26.5%	0.0%	12.0%	14.1%	14.6%
<i>S&amp;P 500</i>	2.4%	11.4%	9.9%	11.9%	4.0%	0.4%	1.2%
DFA International	8.5%	15.4%	26.1%	7.7%	9.8%	4.7%	6.2%
<i>MSCI EAFE Small Cap</i>	2.1%	4.3%	2.7%	8.0%	3.4%	0.5%	0.0%
DFA U.S. Large Value	7.4%	15.9%	26.4%	9.7%	11.0%	N/A	N/A
<i>Russell 1000 Value</i>	2.0%	0.8%	1.3%	0.7%	0.3%		
Blackrock Global Alpha Tilts	5.3%	19.6%	33.2%	9.4%	12.9%	10.6%	N/A
<i>MSCI ACWI</i>	1.3%	0.9%	1.4%	1.3%	0.7%	0.3%	
Earnest	8.3%	10.9%	25.1%	6.9%	12.3%	12.0%	12.2%
<i>Russell Midcap</i>	0.9%	3.7%	4.2%	1.2%	1.0%	1.5%	2.0%
ERS Public Equity	7.3%	15.3%	28.4%	7.4%	12.1%	10.0%	9.8%
<i>ERS Equity Benchmark</i>	0.4%	2.6%	2.6%	0.1%	0.3%	0.1%	0.3%

Relative outperformance in blue

Relative underperformance in red

\*Returns net of fees

# Relative Investment Performance – Passive Equity Managers & Other as of September 30, 2024

## Passive Equity Managers

	3rd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Northern Trust S&P 500 Index <i>S&amp;P 500</i>	5.9% 0.0%	22.1% 0.0%	36.3% 0.0%	11.9% 0.0%	16.0% 0.0%	14.5% 0.0%	13.4% 0.0%
BlackRock Russell 1000 Value Index <i>Russell 1000 Value</i>	9.4% 0.0%	16.7% 0.0%	27.8% 0.0%	9.0% 0.0%	10.7% 0.1%	9.6% 0.1%	N/A

## Real Assets Manager

	3rd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Principal Diversified Real Assets <i>Blended Benchmark</i>	7.8% 1.4%	9.2% 1.1%	16.9% 1.7%	3.6% 0.8%	6.3% 0.2%	5.1% 0.1%	N/A

Relative outperformance in blue

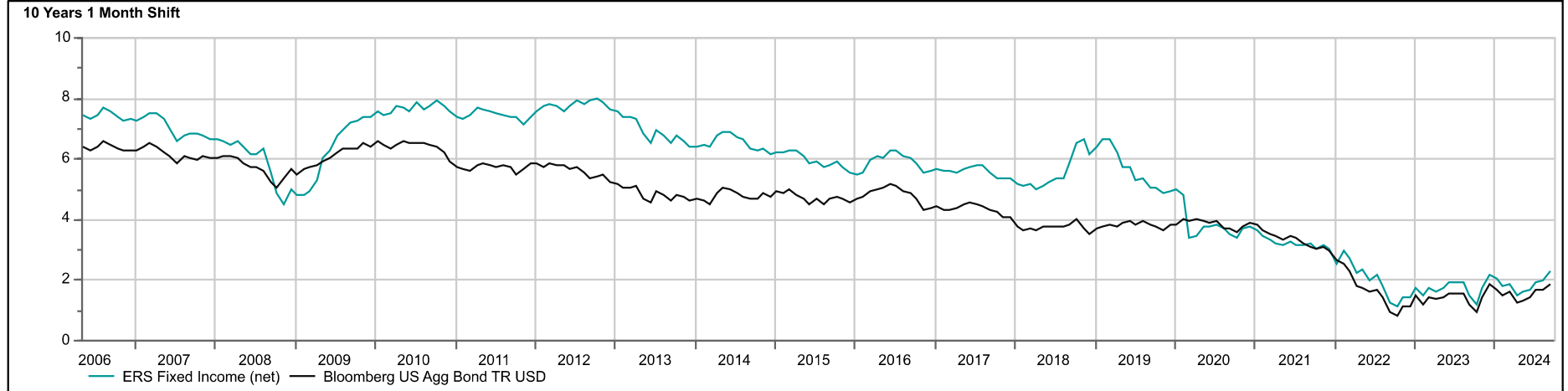
Relative underperformance in red

\*Returns net of fees

# Fixed Income

# Fixed Income Performance

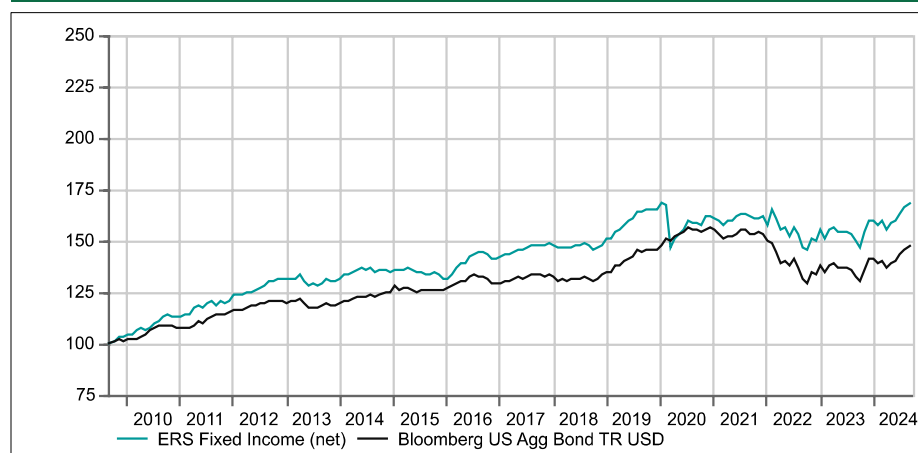
## 10 Year Rolling Returns – 6/1/1996 to 9/30/2024



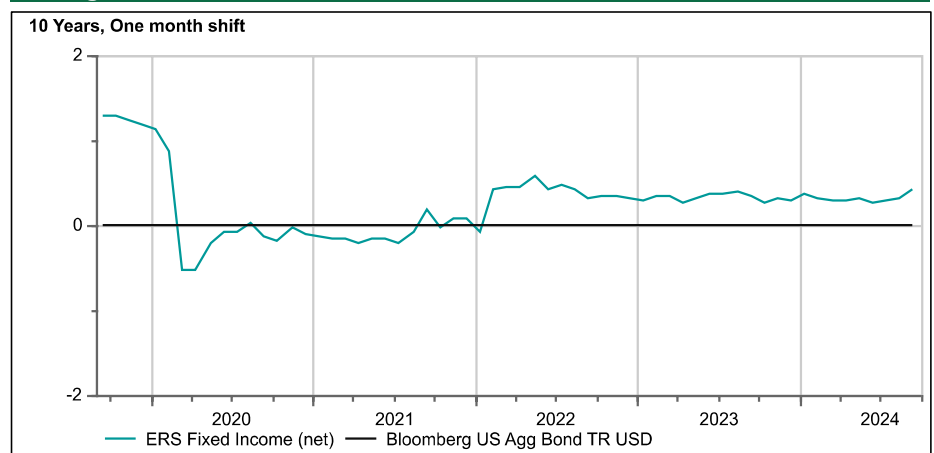
## Trailing Returns

	Annualized Return							
	QTR	YTD	1 Year	3 Year	5 Year	7 Year	10 Year	15 Year
Total Fixed Income (Gross)	5.3	5.3	12.6	1.5	0.6	2.0	2.4	3.6
Total Fixed Income (Net)	5.3	5.2	12.5	1.4	0.5	1.9	2.3	3.5
Bloomberg US Aggregate	5.2	4.4	11.6	-1.4	0.3	1.5	1.8	2.6

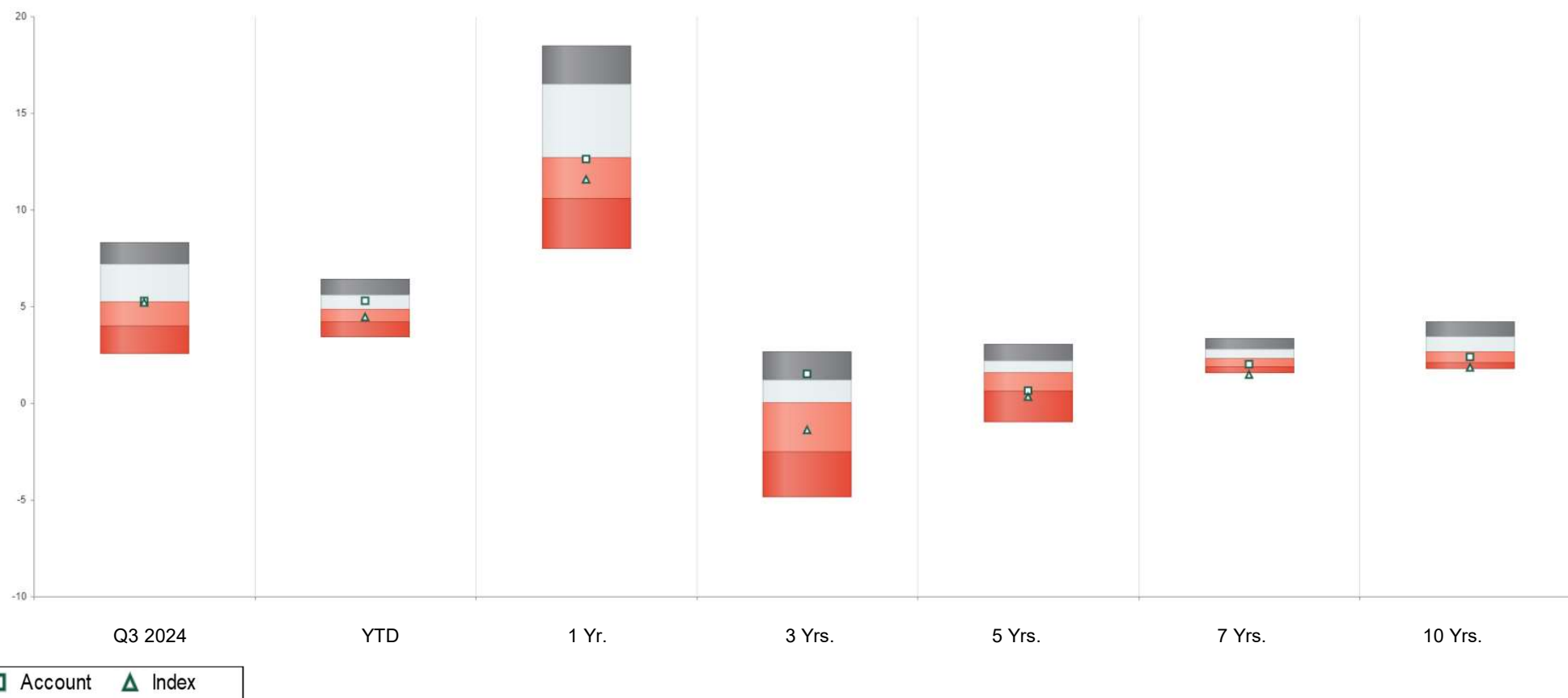
## Investment Growth –10/1/2009 to 9/30/2024



## Rolling Excess Return –10/1/2009 to 9/30/2024



# Fixed Income vs Universe



	Q3 2024	YTD	1 Yr.	3 Yrs.	5 Yrs.	7 Yrs.	10 Yrs.
Account Return	5.3	5.3	12.6	1.5	0.6	2.0	2.4
Percentile Rank	47	39	52	22	76	71	62
Index Return	5.2	4.4	11.6	-1.4	0.3	1.5	1.8
Percentile Rank	51	68	64	72	80	92	89
1st Quartile	7.2	5.6	16.5	1.2	2.2	2.8	3.4
Median	5.3	4.9	12.7	0.0	1.6	2.3	2.7
3rd Quartile	4.0	4.2	10.6	-2.5	0.6	1.9	2.1
Observations	91	90	91	90	90	89	89



## Relative Investment Performance – Fixed Income Managers as of September 30, 2024

	3rd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
Loomis Sayles <i>Bloomberg U.S. Agg.</i>	6.0% 0.8%	6.8% 2.4%	15.0% 3.5%	0.5% 1.8%	2.5% 2.1%	3.2% 1.8%	3.7% 1.8%
Reams <i>Bloomberg U.S. Agg.</i>	5.1% 0.1%	4.9% 0.5%	12.5% 1.0%	-0.2% 1.2%	2.7% 2.4%	3.4% 1.9%	3.3% 1.4%
BlackRock Index <i>Bloomberg U.S. Government</i>	4.7% 0.0%	4.0% 0.1%	9.7% 0.0%	N/A	N/A	N/A	N/A
ERS Fixed Income <i>Bloomberg U.S. Agg.</i>	5.3% 0.1%	5.2% 0.8%	12.5% 1.0%	1.4% 2.8%	0.5% 0.2%	1.9% 0.4%	2.3% 0.4%

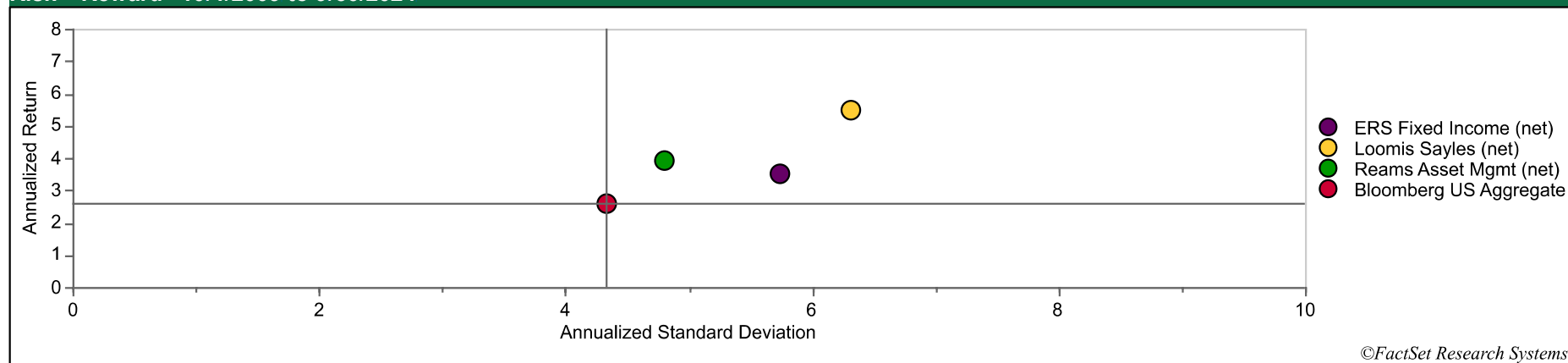
Relative outperformance in blue

Relative underperformance in red

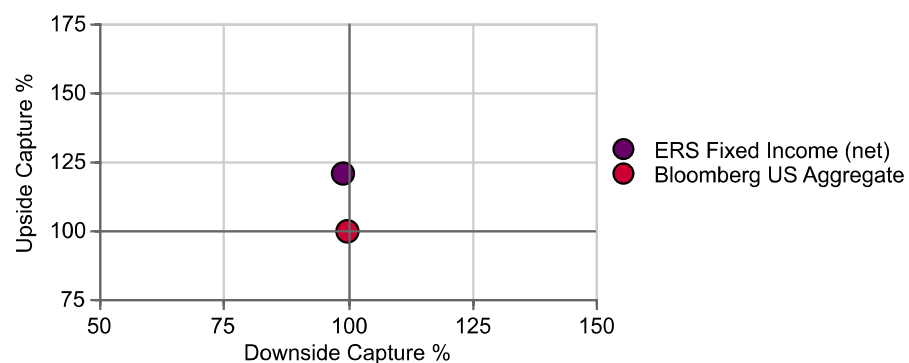
\*Returns net of fees

# Fixed Income Statistics

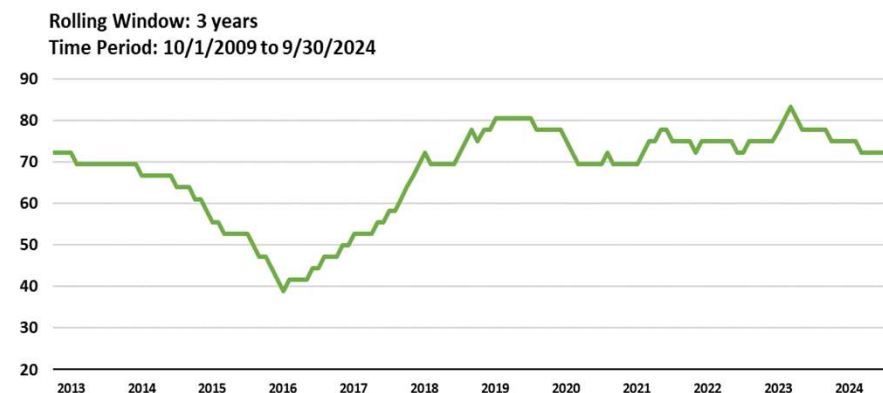
## Risk – Reward –10/1/2009 to 9/30/2024



## 15 Year Upside-Downside –10/1/2009 to 9/30/2024



## Batting Average



## 15 Year Risk –10/1/2009 to 9/30/2024

	Annualized Return	Standard Deviation	Sharpe Alpha	Information Ratio	Tracking Ratio	Error	Beta
Total Fixed Income (Net)	3.5	5.7	0.1	0.4	0.1	3.9	1.0
Bloomberg US Aggregate	2.6	4.3	0.0	0.3	--	--	1.0

## Risk – 7/1/2013 to 9/30/2024

	Annualized Return	Standard Deviation	Sharpe Alpha	Information Ratio	Tracking Ratio	Error	Beta
Total Fixed Income (Net)	2.5	6.2	0.0	0.2	0.0	4.2	1.0
Bloomberg US Aggregate	2.0	4.7	0.0	0.1	--	--	1.0

# Absolute Return

## Relative Investment Performance – Absolute Return Managers as of September 30, 2024

	3rd Qtr	YTD	1 Year	3 Year	5 Year	7 Year	10 Year
UBS A&Q <i>1 Year Libor / SOFR + 4%</i>	2.6% 0.3%	7.3% 0.3%	10.1% 0.7%	8.6% 1.3%	9.5% 2.8%	8.0% 1.3%	N/A
Aptitude <i>1 Year Libor / SOFR + 4%</i>	2.3% 0.0%	8.7% 1.7%	11.0% 1.5%	N/A	N/A	N/A	N/A
ERS Absolute Return <i>3 Month T-Bill + 3%</i>	2.5% 0.5%	7.9% 1.6%	10.4% 2.0%	13.5% 6.7%	6.5% 1.0%	6.3% 1.0%	6.0% 1.3%

Relative outperformance in blue

Relative underperformance in red

### Risk Adjusted Returns (9/30/14 - 9/30/24)

	Return	Std Dev	Sharpe Ratio	Max Drawdown
ERS Public Equity (net)	9.2%	15.3%	0.5	-25.3%
ERS Fixed Income (net)	2.1%	6.5%	0.1	-13.6%
ERS Absolute Return (net)	6.0%	9.2%	0.5	-27.1%

\*Returns net of fees

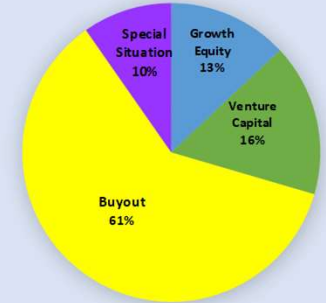
# Private Equity

# Milwaukee ERS Private Equity Portfolio as of June 30, 2024

## PE Summary - Portfolio Capital Calls, Distributions, NAV & Returns

Partnership	Vintage Year	Committed	Invested Capital*	Uncalled Commitments*	Distributions*	NAV	NAV Change	IRR*	TVPI*	DPI*	RVPI*
Abbott 2010	2010	35,000,000	34,650,405	349,595	54,470,026	16,129,656	(199,499)	13.86%	2.04	1.57	0.47
Abbott 2011	2011	55,000,000	54,730,191	269,809	83,420,322	34,716,690	(493,925)	15.43%	2.16	1.52	0.63
Abbott 2012	2012	40,000,000	39,600,000	400,000	55,103,662	31,776,981	(623,335)	16.06%	2.19	1.39	0.80
Abbott 2013	2013	35,000,000	34,650,000	350,000	47,797,586	30,999,336	(402,489)	17.45%	2.27	1.38	0.89
Abbott 2014	2014	35,000,000	34,300,000	700,000	44,806,982	34,138,320	(498,475)	17.62%	2.30	1.31	1.00
Abbott 2015	2015	25,000,000	25,050,000	-	23,962,500	29,348,371	(108,358)	17.81%	2.13	0.96	1.17
Abbott 2016	2016	20,000,000	19,717,500	282,500	12,497,500	27,617,825	299,572	19.03%	2.03	0.63	1.40
Abbott 2018	2018	20,000,000	19,315,000	685,000	4,325,000	24,662,711	395,324	15.22%	1.50	0.22	1.28
Abbott 2019	2019	20,000,000	18,270,000	1,730,000	3,140,000	22,471,958	271,658	15.95%	1.40	0.17	1.23
Abbott 2020	2020	40,000,000	28,130,000	11,870,000	2,360,000	30,624,334	227,964	9.19%	1.17	0.08	1.09
Abbott 2021	2021	20,000,000	9,674,749	10,325,251	-	10,576,917	45,935	4.79%	1.09	0.00	1.09
Abbott 2022	2022	35,000,000	11,819,734	23,180,266	-	11,582,658	(178,942)	-1.48%	0.98	0.00	0.98
Abbott 2023	2023	30,000,000	3,318,750	26,681,250	-	3,431,410	(106,708)	5.69%	1.03	0.00	1.03
Abbott 2024	2024	40,000,000	1,200,000	38,800,000	-	1,168,169	(31,831)	-	0.97	0.00	0.97
Mesirow V	2008	75,000,000	71,471,194	3,528,806	136,798,045	33,891,789	(929,907)	16.14%	2.39	1.91	0.47
Mesirow VI	2013	60,000,000	54,120,000	5,880,000	80,496,748	58,715,421	(623,467)	19.37%	2.57	1.49	1.08
Mesirow VII	2017	100,000,000	83,014,499	16,985,501	15,498,942	129,751,351	1,435,867	14.94%	1.75	0.19	1.56
Mesirow VIII	2020	120,000,000	67,800,000	52,200,000	-	72,193,561	150,787	14.17%	1.06	0.00	1.06
Neuberger Berman III	2013	30,000,000	31,978,099	-	41,883,661	6,775,070	124,134	16.26%	1.52	1.31	0.21
Neuberger Berman IV	2017	25,000,000	24,873,659	126,341	20,732,278	17,556,015	70,850	18.97%	1.54	0.83	0.71
Neuberger Berman V	2021	100,000,000	43,575,000	56,425,000	10,859,903	49,777,750	2,057,256	-	1.39	0.25	1.14
Private Advisors VI	2014	30,000,000	34,707,965	-	43,829,049	21,293,177	464,019	18.58%	1.88	1.26	0.61
Private Advisors VII	2016	15,000,000	18,794,968	-	18,304,573	13,841,384	207,657	17.05%	1.71	0.97	0.74
Private Advisors VIII	2018	15,000,000	16,901,007	-	8,832,219	20,987,763	1,177,991	22.27%	1.76	0.52	1.24
Private Advisors IX	2019	35,000,000	37,550,083	-	15,514,058	38,183,977	765,669	22.42%	1.43	0.41	1.02
Private Advisors X	2022	30,000,000	11,175,938	18,824,062	1,791,662	13,974,497	201,301	23.99%	1.41	0.16	1.25
Total ERS		1,085,000,000	830,388,742	269,593,381	726,424,715	786,187,091	3,699,049	16.33%	1.82	0.87	0.95
% of ERS Fund				4.6%		13.3%					

## Sub-Asset Class Breakdown



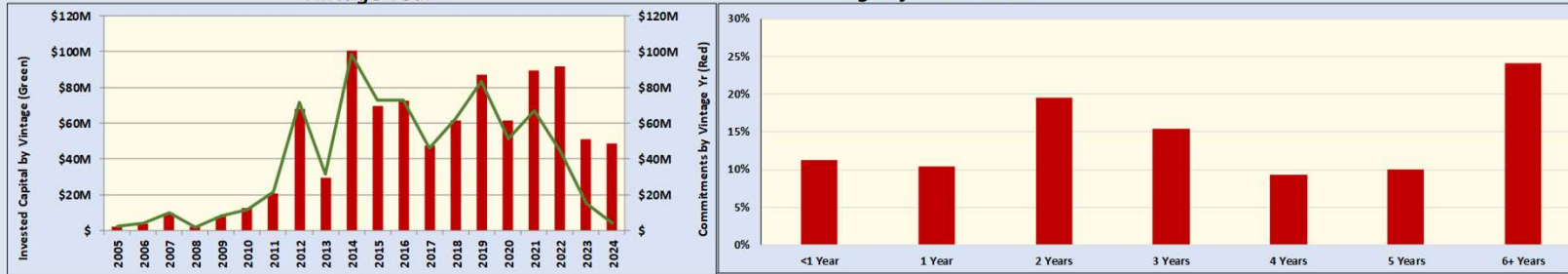
Approximately 5.7% of Private Equity allocation exposure is held in Public Equity investments.

## NAV by Vintage Year

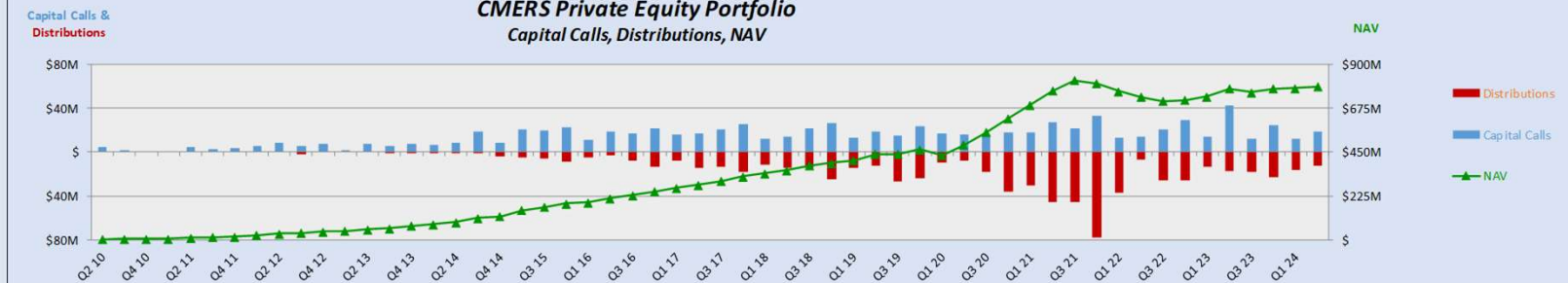


## Vintage Year\*\*

## Age of Investment\*\*\*



## CMERS Private Equity Portfolio Capital Calls, Distributions, NAV



\* Invested capital, uncalled commitments, IRR calculations, 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." It is calculated as the sum of NAV & Distributions, divided by Invested Capital. DPI stands for "Distributed to Paid in Capital" (Distributions/Invested Capital). RVPI stands for "Residual Value to Paid in Capital" (NAV/Invested Capital).

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

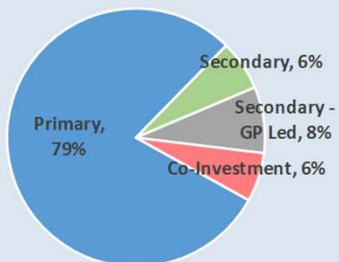
\*\*\* Portfolio Companies by Age of Investment figures have not been fully adjusted for overlapping investments. Excludes Neuberger Berman.

# Private Equity Continued

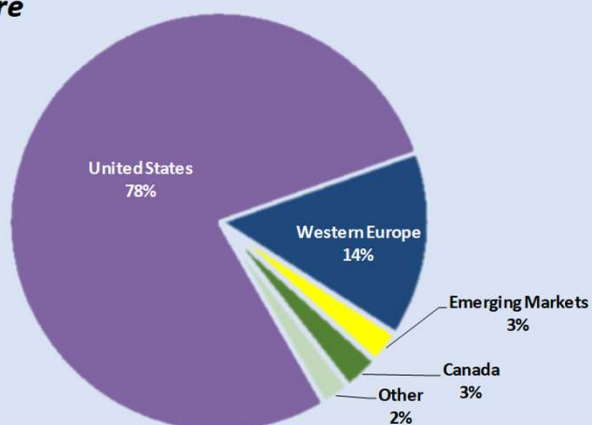
Total Managers	254*
Number of Partnerships	673*
Number of Portfolio Companies	6,386*

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

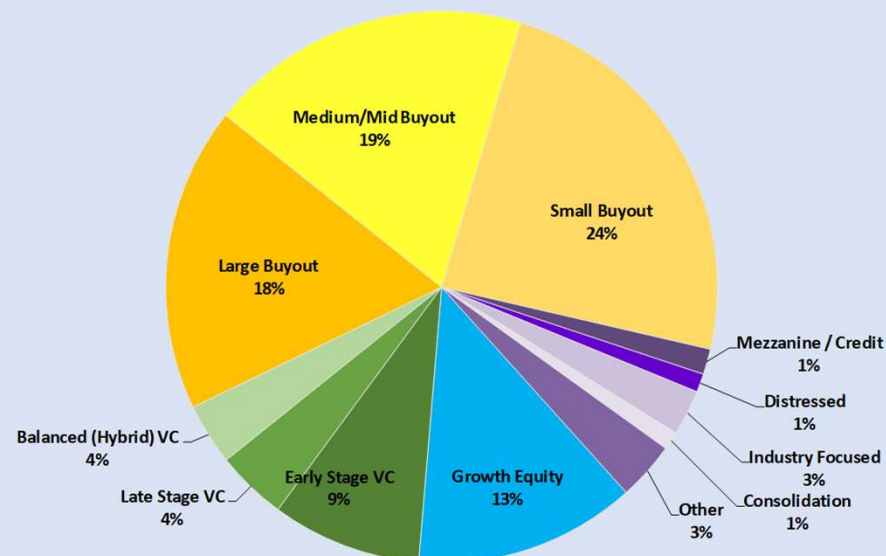
## Transaction Type



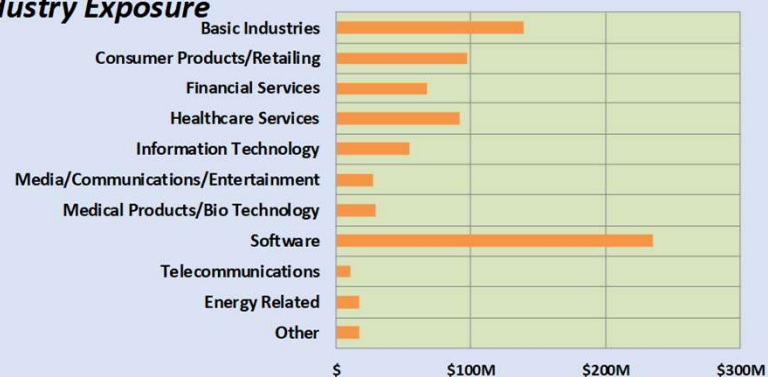
## Geographic Exposure



## Strategy Exposure



## Industry Exposure



# Performance Update



# Performance Update

Estimated ERS Total Fund Market Value is \$5.92 billion as of October 31, 2024

Period	ERS Fund*	Benchmark
YTD through September 30, 2024	8.6%	11.4%
October (Estimate)	-1.8%	-1.7%
YTD Through October 31, 2024 (Estimate)	6.6%	9.6%

\*Returns Net of Fees

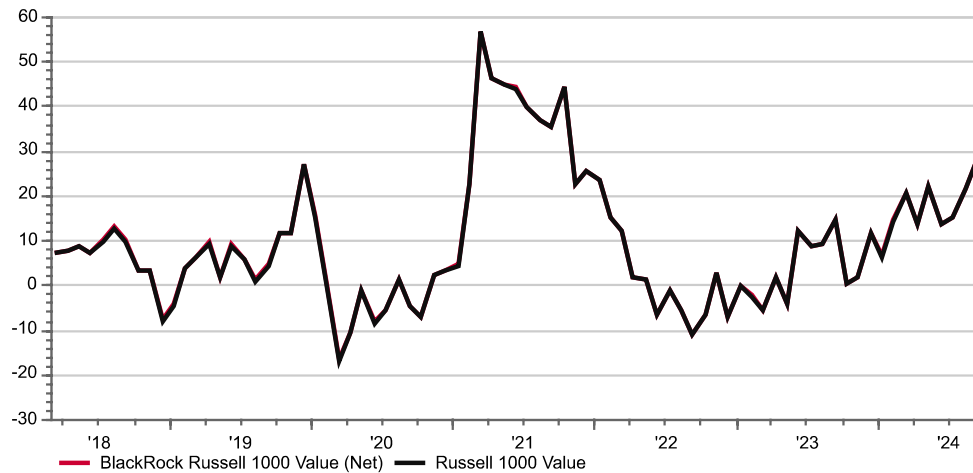
# Appendix

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# BlackRock Russell 1000 Value Portfolio Snapshot – September 30, 2024

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



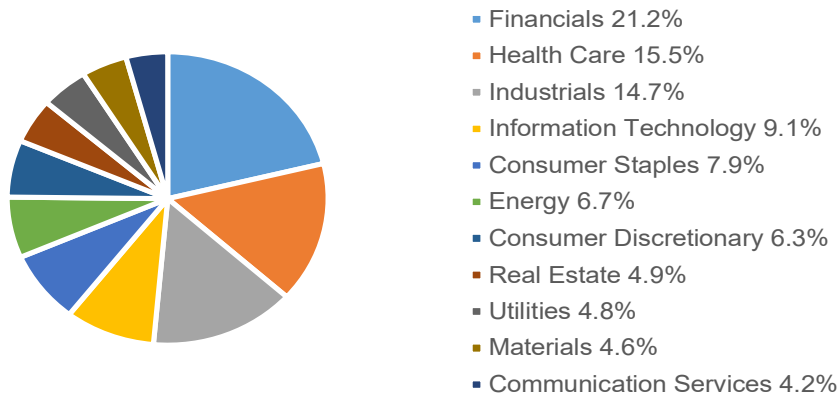
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Berkshire Hathaway Inc.	3.33	13.14
JPMorgan Chase & Co.	2.39	4.82
Exxon Mobil Corporation	2.08	2.64
UnitedHealth Group Incorporated	1.98	15.22
Johnson & Johnson	1.55	11.71
Walmart Inc.	1.39	19.58
Procter & Gamble Company	1.26	5.68
Bank of America Corporation	1.06	0.43
Chevron Corporation	1.00	-4.81
Thermo Fisher Scientific Inc.	0.93	11.93

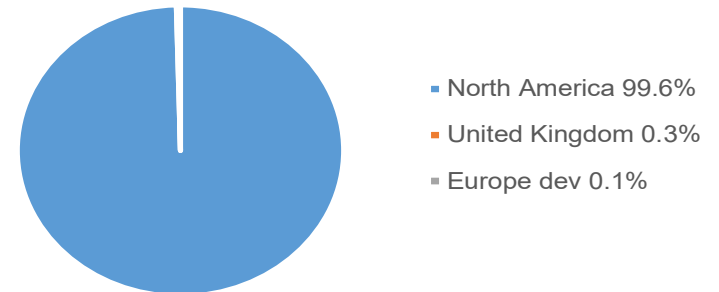
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 4/1/2017
BlackRock R1000 Value (Net)	9.4	16.7	27.8	9.0	10.7	9.6
Russell 1000 Value	9.4	16.7	27.8	9.0	10.7	9.5

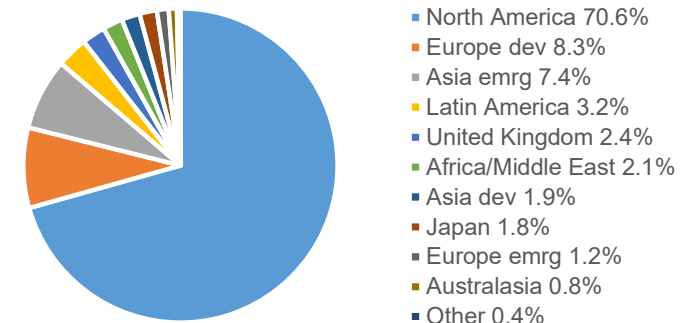
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



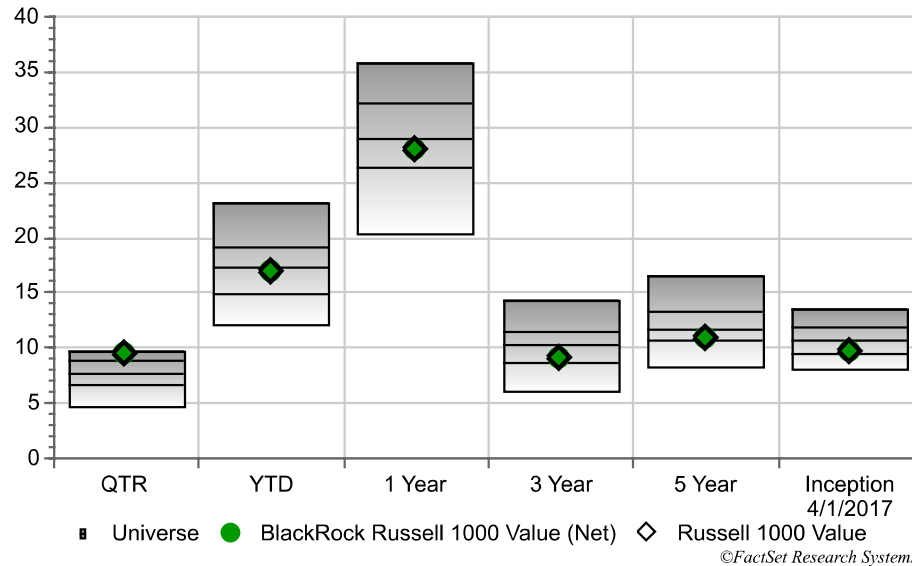
## Regional Exposure by Source of Revenue



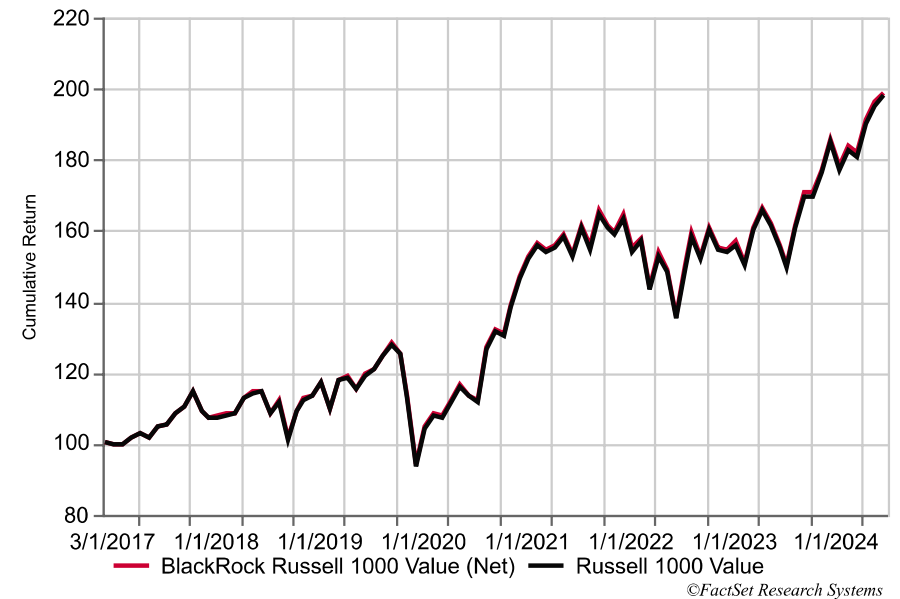
# BlackRock Russell 1000 Value vs Universe & Benchmark

## Performance Relative to Peer Group as of 9/30/2024

### Universe: Lipper US:Large-Cap Value

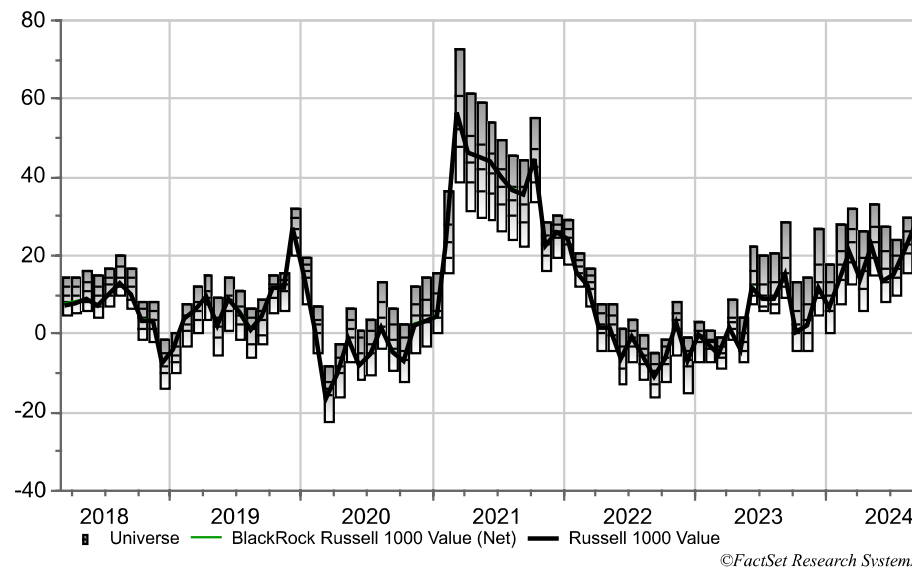


## Investment Growth Since Inception 4/1/2017



## Rolling Returns 4/1/2017 – 9/30/2024 (1 Year, 1 Month Shift)

### Universe: Lipper US:Large-Cap Value

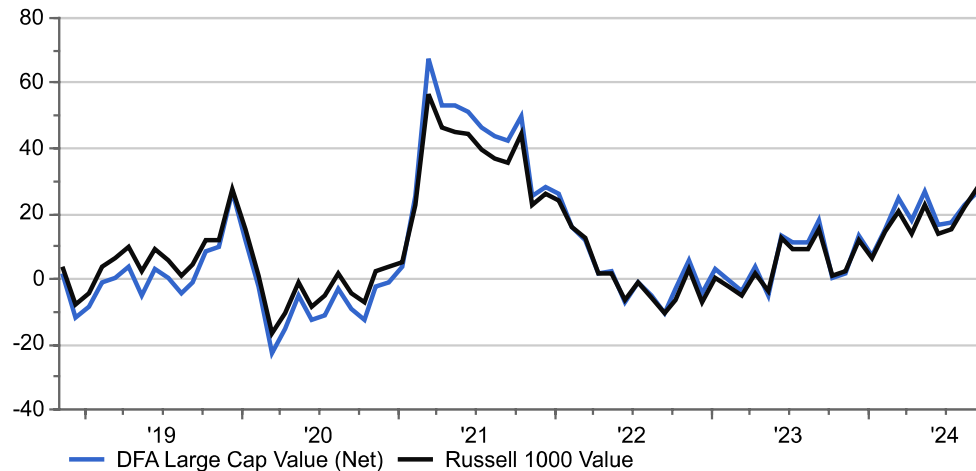


## Risk Since Inception 4/1/2017

	Return	Std Dev	Sharpe Ratio	Tracking Error
BlackRock R1000 Value (Net)	9.6	16.6	0.4	0.1
Russell 1000 Value	9.5	16.6	0.4	--

# DFA LCV Portfolio Snapshot – September 30, 2024

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



©FactSet Research Systems

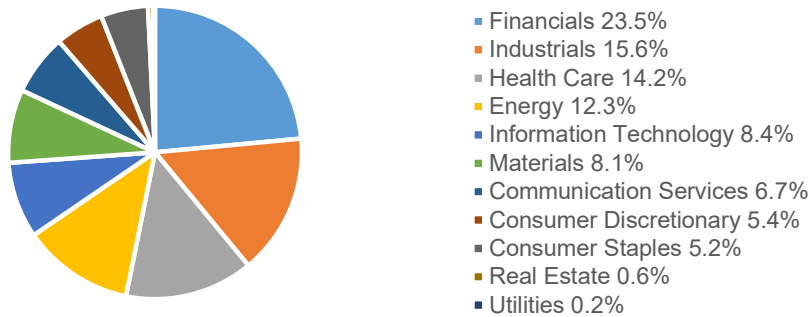
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
JPMorgan Chase & Co.	4.61	4.82
Exxon Mobil Corporation	4.03	2.64
Berkshire Hathaway Inc.	2.17	13.14
Chevron Corporation	2.02	-4.81
Verizon Communications Inc.	1.48	10.69
Cisco Systems, Inc.	1.32	12.94
Comcast Corporation	1.28	7.47
AT&T Inc.	1.22	16.78
UnitedHealth Group Incorporated	1.12	15.22
Salesforce, Inc.	1.09	6.78

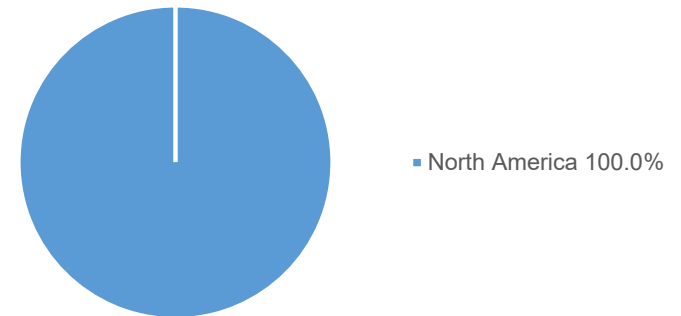
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 12/1/2017
DFA US Large Value	7.4	15.9	26.4	9.7	11.0	8.6
Russell 1000 Value	9.4	16.7	27.8	9.0	10.7	9.2

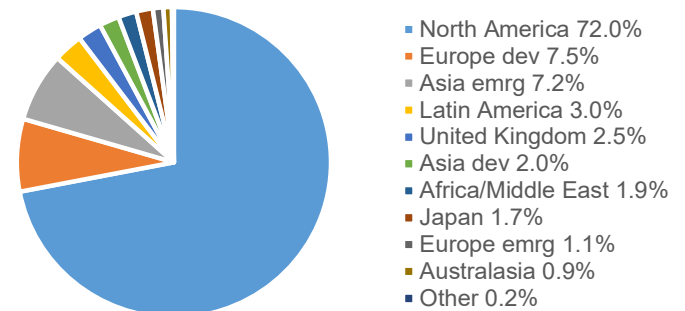
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



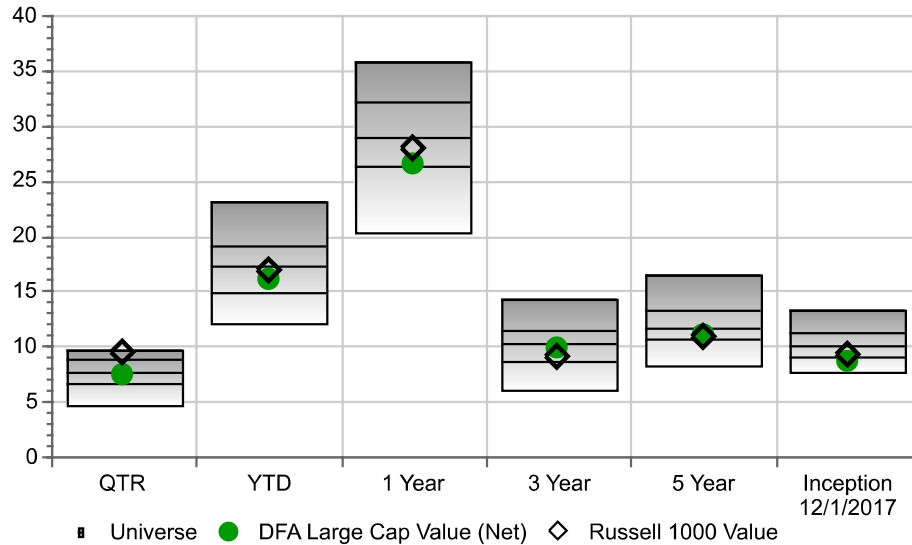
## Regional Exposure by Source of Revenue



# DFA LCV vs Universe & Benchmark

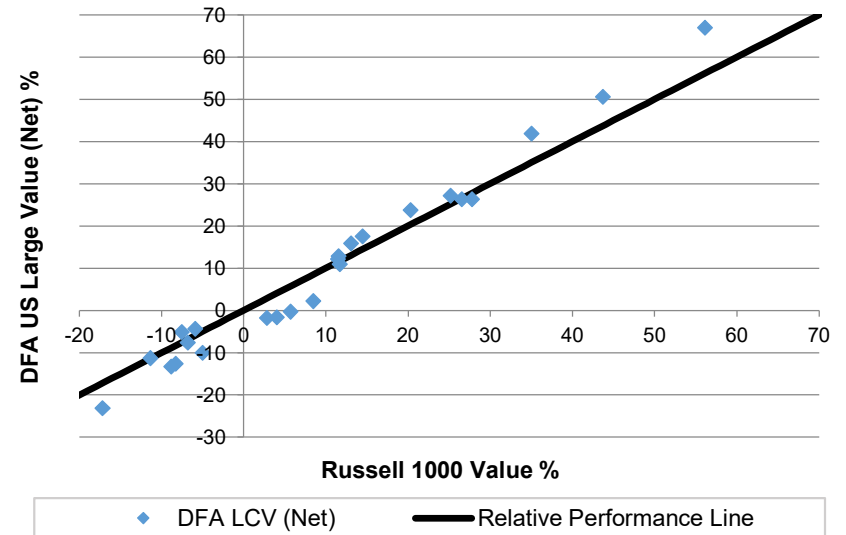
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US Large Cap Value



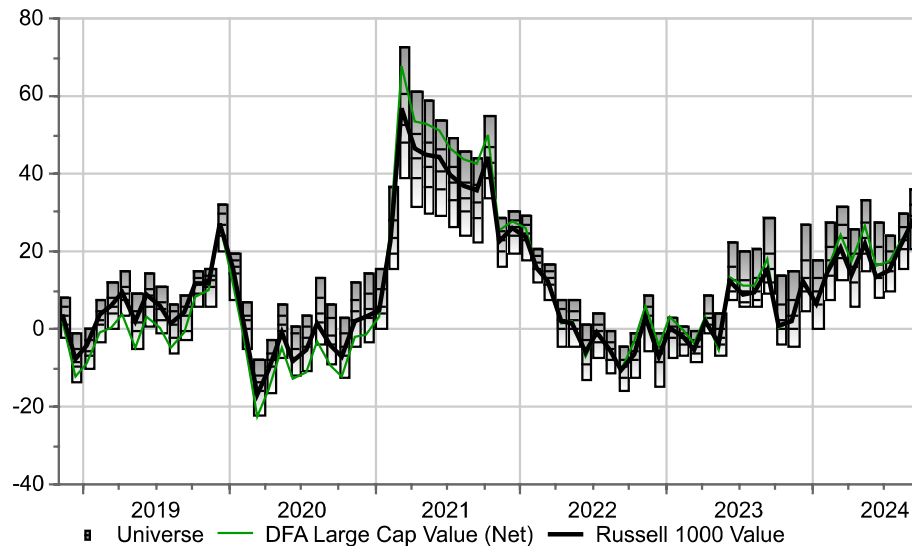
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## One-Year Rolling Return Versus Benchmark



## Rolling Returns 12/1/2017 – 9/30/2024 (1 Year, 1 Month Shift)

Universe: Lipper US Large Cap Value



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## Over/Under Benchmark Analysis

12	Outperform
12	Underperform
24	# Observations
50%	% Outperform

## DFA LCV Attribution Analysis – September 30, 2024

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Parker-Hannifin Corporation	0.86	0.56	0.13
D.R. Horton, Inc.	0.55	0.33	0.12
United Rentals, Inc.	0.62	0.46	0.11
Quanta Services, Inc.	0.73	0.62	0.10
PulteGroup, Inc.	0.45	0.34	0.09
CBRE Group, Inc.	0.39	0.25	0.09
JPMorgan Chase & Co.	4.86	2.25	0.08
Builders FirstSource, Inc.	0.32	0.24	0.08
AT&T Inc.	1.14	0.54	0.08
Deutsche Telekom AG	0.85	0.47	0.08

### Top 10 Leading Detractors

	Avg. Weights	Relative Weights	Active Return
Walmart Inc.	0.00	-1.31	-0.24
Int'l Business Machines Corp.	0.02	-0.72	-0.20
Berkshire Hathaway Inc.	2.11	-1.32	-0.19
Philip Morris International Inc.	0.00	-0.75	-0.15
Johnson & Johnson	0.72	-0.89	-0.14
McDonald's Corporation	0.00	-0.68	-0.14
NextEra Energy, Inc.	0.00	-0.66	-0.13
GE Aerospace	0.13	-0.54	-0.10
S&P Global Inc.	0.00	-0.63	-0.10
Caterpillar Inc.	0.00	-0.47	-0.09

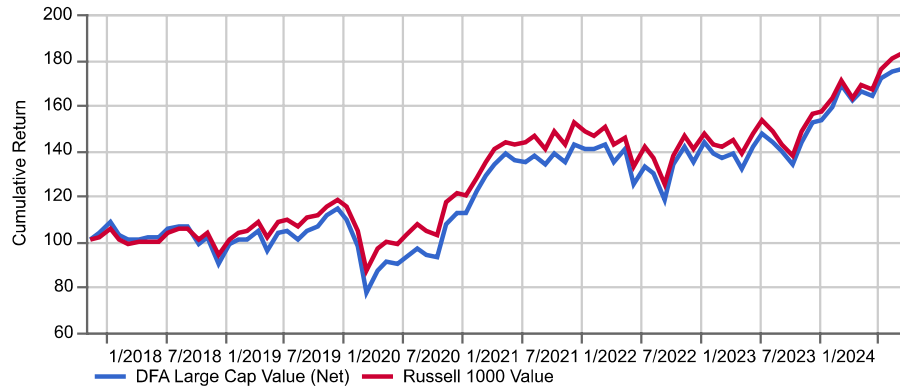
### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	2.3	10.8	7.8	0.0	0.2	0.2
Consumer Discretionary	-0.2	9.6	12.7	0.0	-0.2	-0.2
Consumer Staples	-3.3	6.7	10.6	-0.1	-0.2	-0.2
Energy	5.7	-2.9	-3.1	-0.7	0.0	-0.7
Financials	1.7	9.2	10.2	0.0	-0.2	-0.2
Health Care	-1.3	8.1	7.3	0.0	0.1	0.1
Industrials	0.8	13.3	11.5	0.0	0.3	0.3
Information Technology	-0.8	2.9	2.8	0.1	0.0	0.1
Materials	3.4	6.4	8.8	0.0	-0.2	-0.2
Real Estate	-4.2	37.2	16.7	-0.3	0.1	-0.2
Utilities	-4.4	26.0	17.7	-0.4	0.0	-0.4
Cash	0.3	1.3	0.0	0.0	0.0	0.0
Total	0.0	7.4	8.9	-1.4	0.0	-1.5



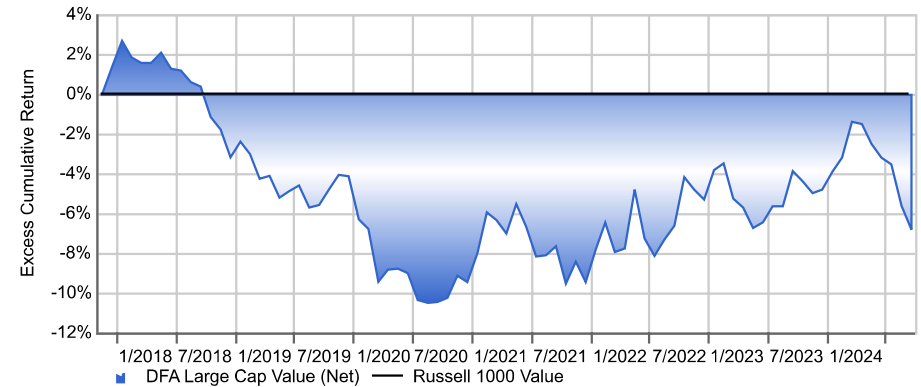
# DFA LCV Inception Performance & Statistics

## Investment Growth Since Inception 12/1/2017



©FactSet Research Systems

## Relative Cumulative Performance Since Inception 12/1/2017

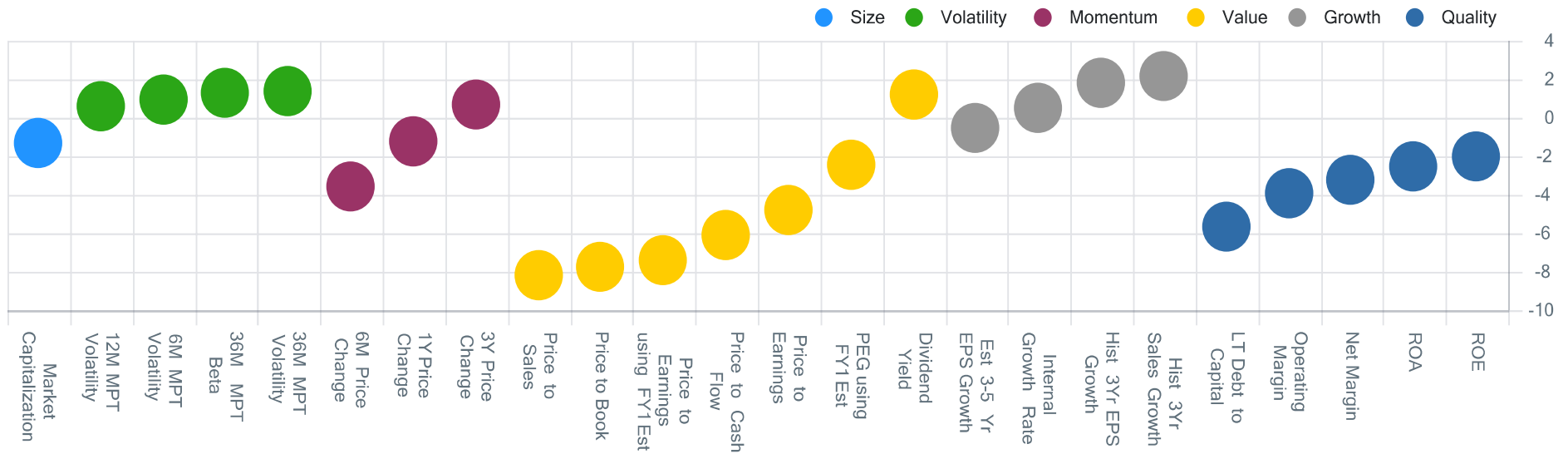


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## Risk Since Inception 12/1/2017

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA US Large Value	8.6	19.8	-1.1	0.3	-0.2	3.7	1.1
Russell 1000 Value	9.2	17.3	--	0.4	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



# DFA US SCV Portfolio Snapshot

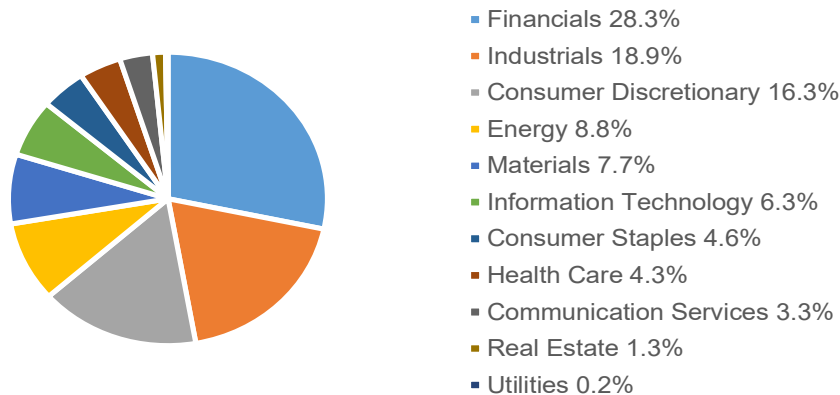
## Rolling Returns Since Inception 10/1/1996 (Ten Year, One Month Shift)



## Trailing Returns as of September 30, 2024

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
DFA Small Cap Value (Net)	7.6	7.4	23.8	10.6	15.0	10.1	12.2
Russell 2000 Value	10.2	9.2	25.9	3.8	9.3	8.2	9.8

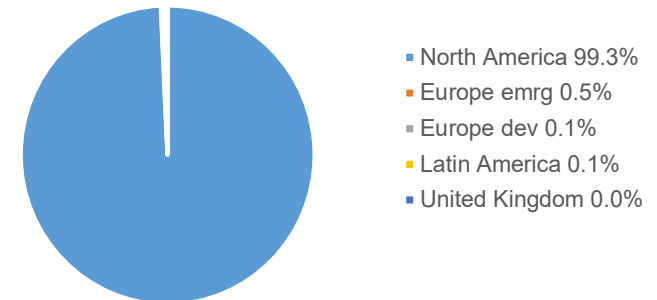
## Equity Sector Exposure (GICS) as of August 31, 2024



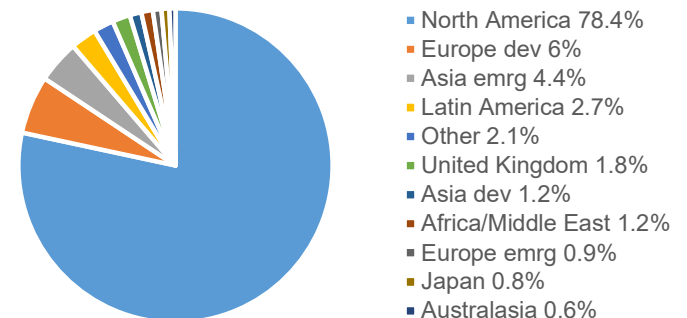
## Top 10 Holdings as of August 31, 2024

	Portfolio Weight	Quarterly Return
United States Steel Corporation	0.86	0.42
Taylor Morrison Home Corporation	0.84	21.45
Amkor Technology, Inc.	0.73	-17.59
Jackson Financial Inc.	0.69	22.10
MGIC Investment Corporation	0.67	18.61
Kirby Corporation	0.62	0.16
Avnet, Inc.	0.61	7.81
F.N.B. Corporation	0.61	10.38
Mohawk Industries, Inc.	0.60	36.58
Element Solutions Inc	0.60	-1.11

## Regional Exposure by Domicile as of August 31, 2024



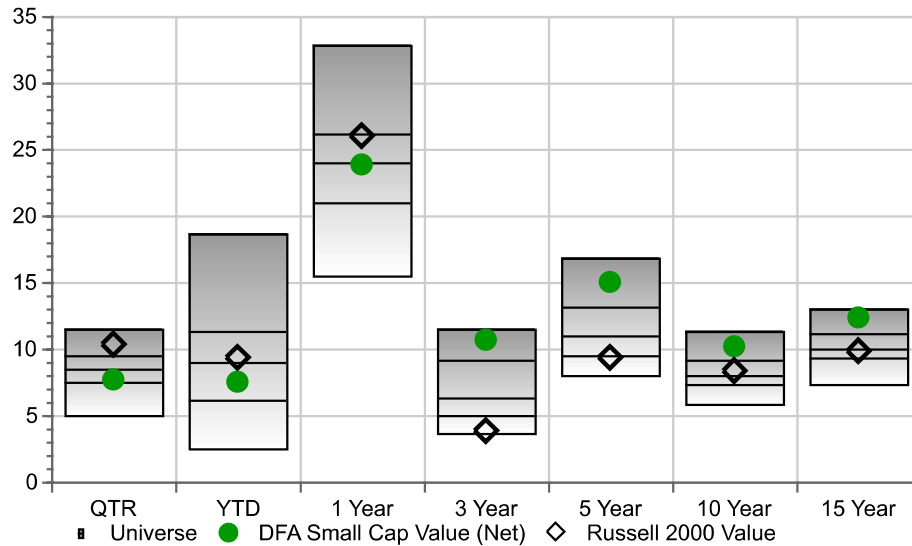
## Regional Exposure by Source of Revenue as of August 31, 2024



# DFA US SCV vs Universe & Benchmark

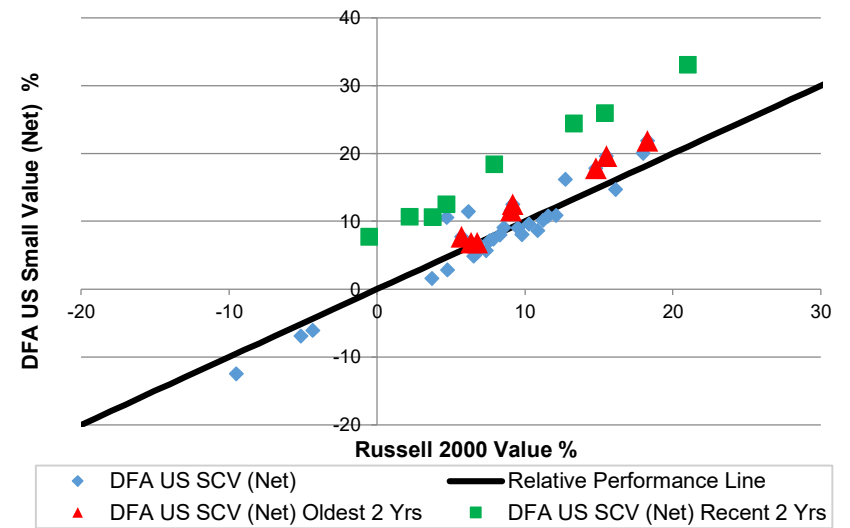
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US Small Cap Value



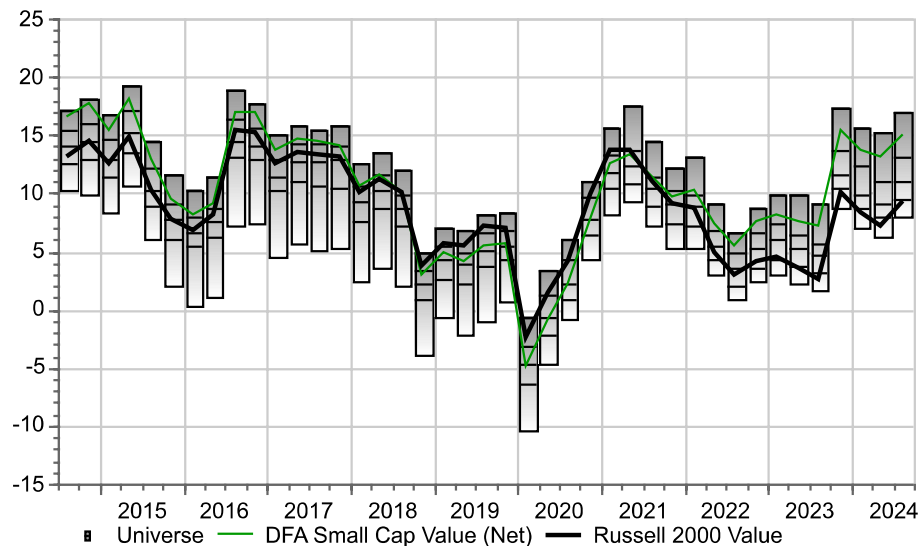
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 9/30/2024 (5 Year, 3 Month Shift)

Universe: Lipper US Small Cap Value



©FactSet Research Systems

## Over/Under Benchmark Analysis

21	Outperform
19	Underperform
40	# Observations
53%	% Outperform

# DFA US SCV Attribution Analysis

## Top 10 Leading Contributors

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## Top 10 Leading Detractors

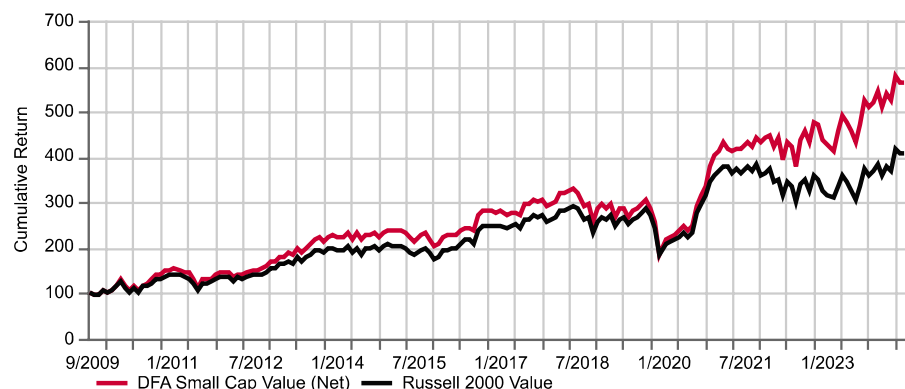
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## Sector Attribution

Intentionally left blank

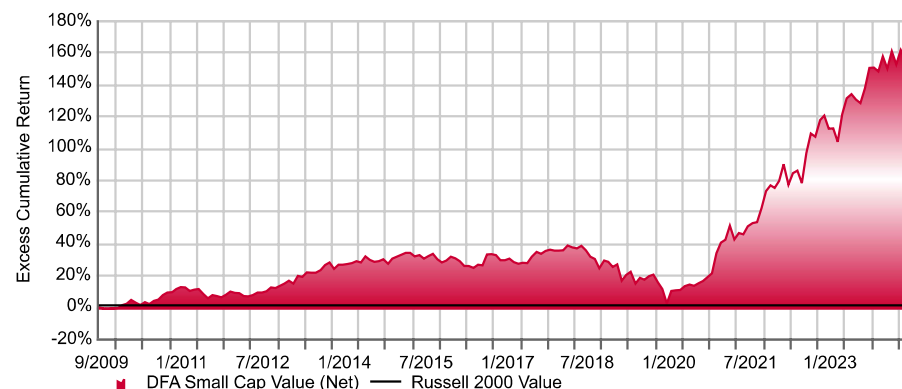
# DFA US SCV 15 Year Performance & Statistics

## Investment Growth – 15 Years



©FactSet Research Systems

## Relative Cumulative Performance – 15 Years

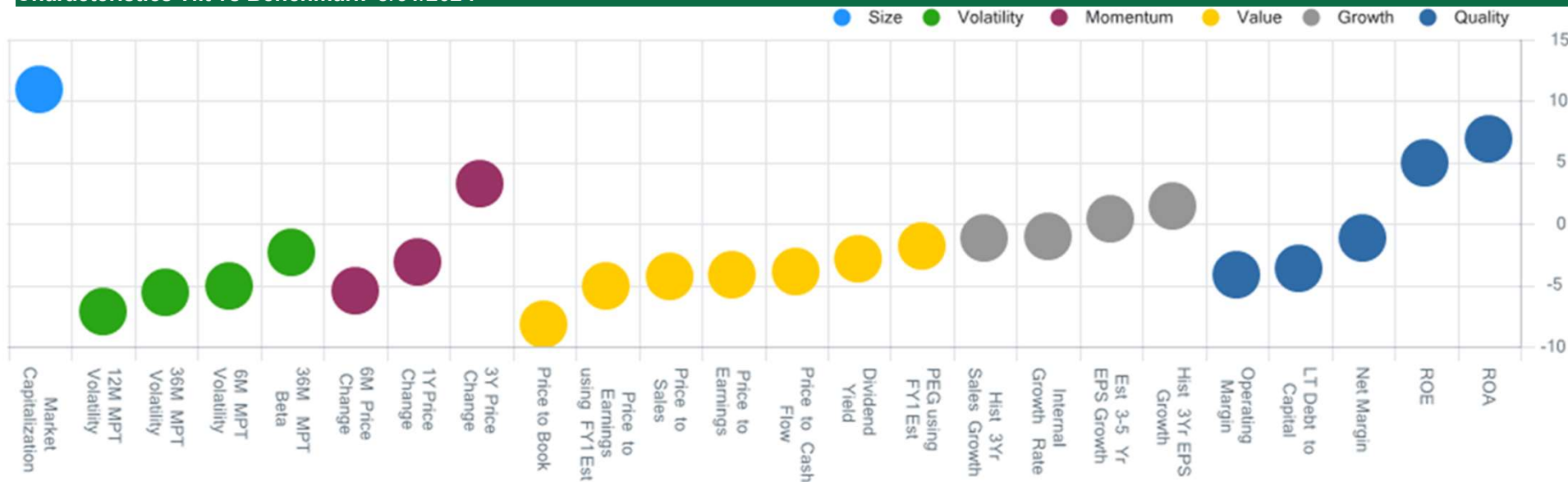


©FactSet Research Systems

## Risk – 15 Years as of September 30, 2024

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA Small Cap Value (Net)	12.2	21.4	1.9	0.5	0.7	3.7	1.1
Russell 2000 Value	9.8	19.9	--	0.4	--	--	1.0

## Characteristics Tilt vs Benchmark 8/31/2024



# Earnest Portfolio Snapshot – September 30, 2024

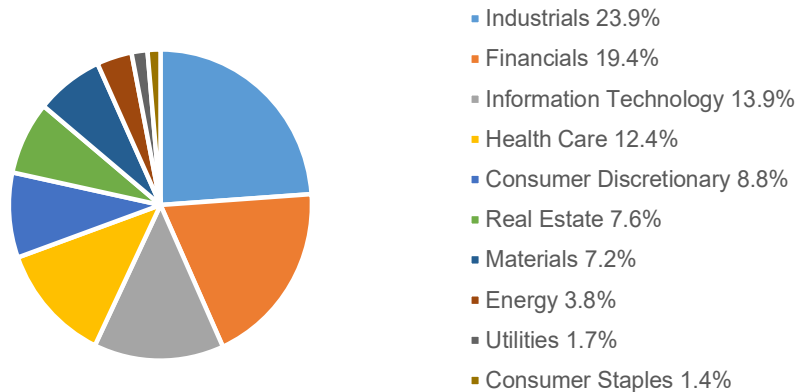
## Rolling Returns Since Inception 5/1/2005 (Ten Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Earnest (Net)	8.3	10.9	25.1	6.9	12.3	12.2	13.5
Russell Midcap	9.2	14.6	29.3	5.8	11.3	10.2	12.5

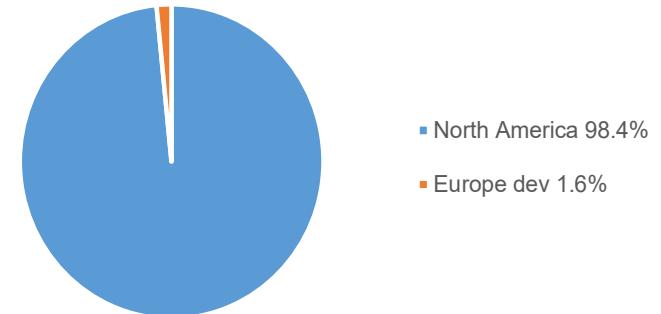
## Equity Sector Exposure (GICS)



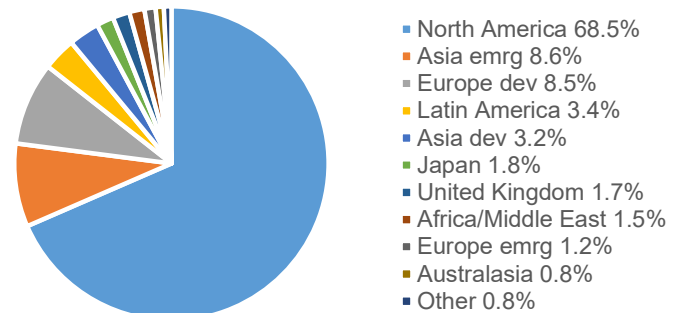
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
CBRE Group, Inc.	3.00	39.69
Republic Services, Inc.	2.86	3.63
Progressive Corporation	2.80	22.23
Masco Corporation	2.77	26.36
D.R. Horton, Inc.	2.76	35.58
Reinsurance Group of America, Inc.	2.45	6.57
Intercontinental Exchange, Inc.	2.36	17.68
Houlihan Lokey, Inc.	2.32	17.60
Entegris, Inc.	2.17	-16.82
Stifel Financial Corp.	2.07	12.09

## Regional Exposure by Domicile



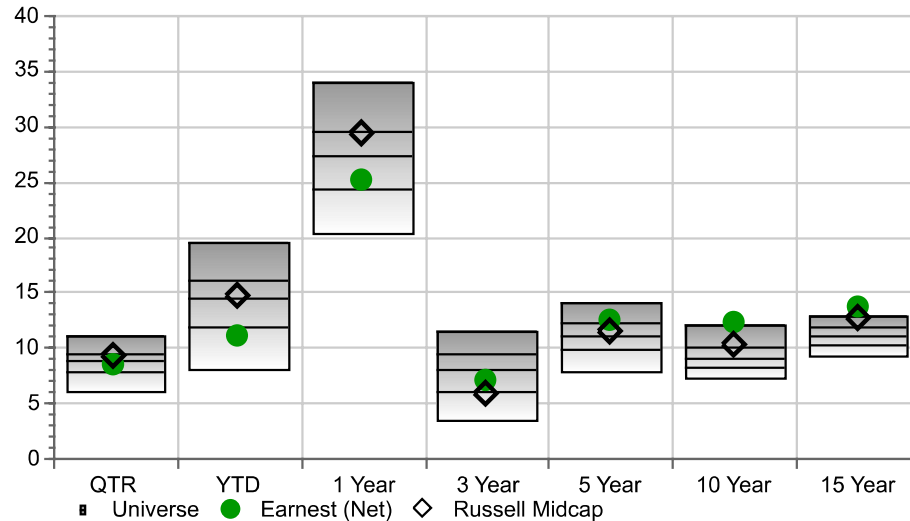
## Regional Exposure by Source of Revenue



# Earnest vs Universe & Benchmark

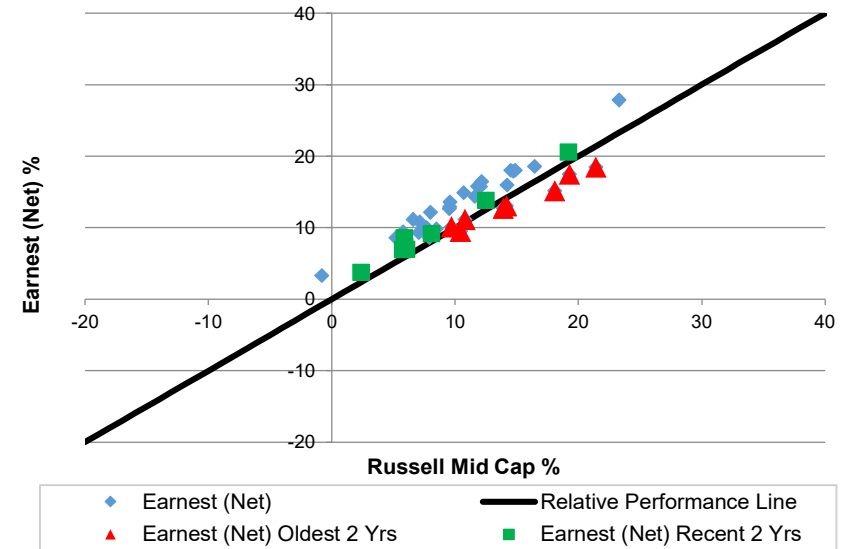
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US: Mid Cap Core



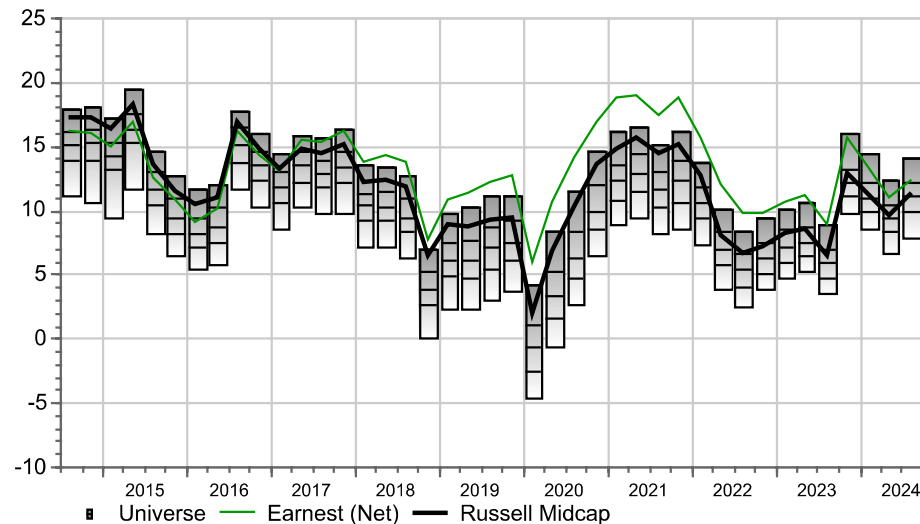
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 9/30/2024 (5 Year, 3 Month Shift)

Universe: Lipper US: Mid Cap Core



©FactSet Research Systems

## Over/Under Benchmark Analysis

34	Outperform
6	Underperform
40	# Observations
85%	% Outperform

## Earnest Attribution Analysis – September 30, 2024

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
CBRE Group, Inc.	2.64	2.36	0.82
D.R. Horton, Inc.	2.54	2.09	0.65
Masco Corporation	2.56	2.41	0.59
Progressive Corporation	2.57	2.57	0.53
Scotts Miracle-Gro Company	1.48	1.45	0.46
BXP, Inc.	1.53	1.43	0.42
Intercontinental Exchange, Inc.	2.29	2.29	0.38
Houlihan Lokey, Inc.	2.24	2.18	0.36
RenaissanceRe Holdings, Ltd.	1.80	1.69	0.35
Bio-Rad Laboratories, Inc.	1.47	1.42	0.30

### Top 10 Leading Detractors

	Avg. Weights	Relative Weights	Active Return
Entegris, Inc.	2.48	2.31	-0.45
Applied Materials, Inc.	1.71	1.71	-0.30
Synopsys, Inc.	1.43	1.43	-0.24
Palantir Technologies Inc.	0.00	-0.49	-0.21
Murphy Oil Corporation	0.83	0.83	-0.15
Coterra Energy Inc.	1.49	1.32	-0.13
Helmerich & Payne, Inc.	0.91	0.91	-0.13
Aflac Incorporated	0.00	-0.50	-0.12
KKR & Co. Inc.	0.00	-0.21	-0.11
AppLovin Corporation	0.00	-0.18	-0.11

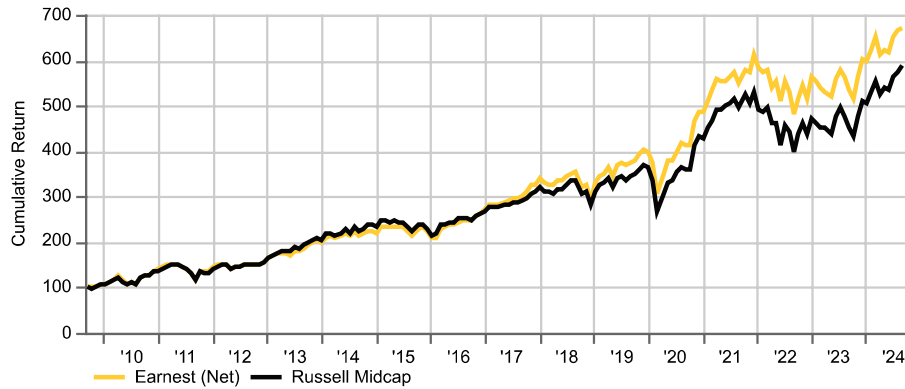
### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-3.3	0.0	6.2	0.1	0.0	0.1
Consumer Discretionary	-3.2	15.3	10.4	0.0	0.3	0.3
Consumer Staples	-3.2	9.9	3.5	0.1	0.1	0.2
Energy	-1.0	-12.2	-1.7	0.1	-0.5	-0.4
Financials	2.7	13.5	11.9	0.0	0.3	0.3
Health Care	1.2	9.7	6.6	0.0	0.2	0.1
Industrials	6.3	5.9	11.0	0.1	-1.3	-1.1
Information Technology	1.7	-2.6	2.9	-0.1	-0.9	-1.0
Materials	0.7	16.2	7.0	0.0	0.6	0.6
Real Estate	-1.0	28.8	16.0	-0.1	0.8	0.7
Utilities	-3.9	23.4	17.7	-0.3	0.1	-0.3
Cash	3.1	1.3	0.0	-0.3	0.0	-0.3
Total	0.0	8.2	8.9	-0.4	-0.3	-0.6

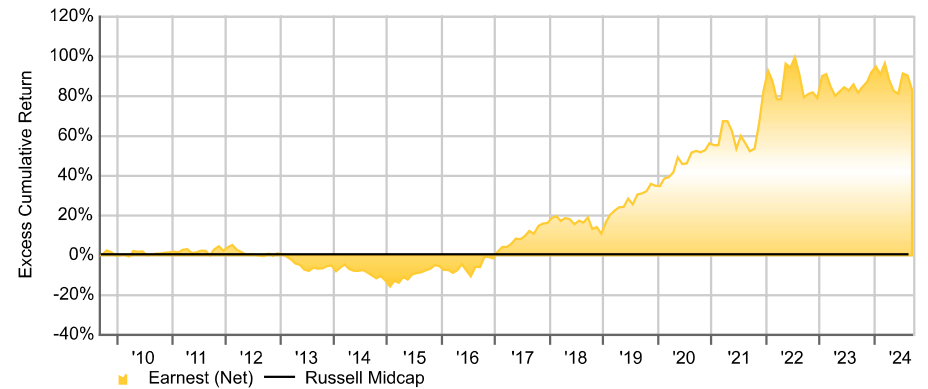


# Earnest 15 Year Performance & Statistics

## Investment Growth – 15 Years



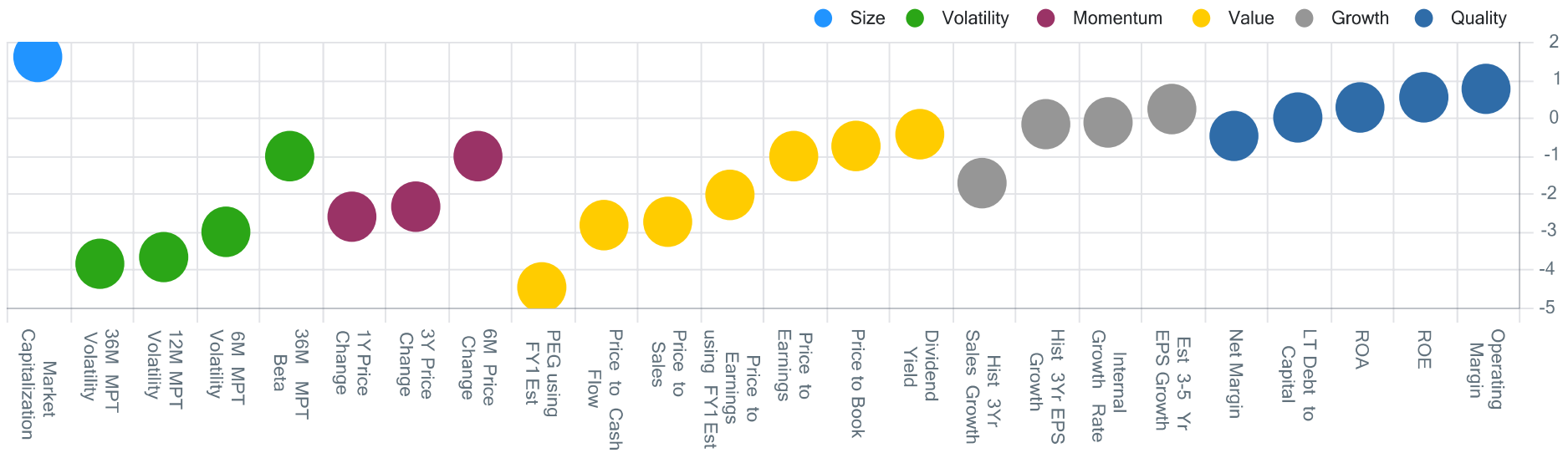
## Relative Cumulative Performance – 15 Years



## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Earnest (Net)	13.5	16.4	1.3	0.8	0.3	3.5	1.0
Russell Midcap	12.5	16.6	--	0.7	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



# Northern Trust S&P 500 Portfolio Snapshot – September 30, 2024

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



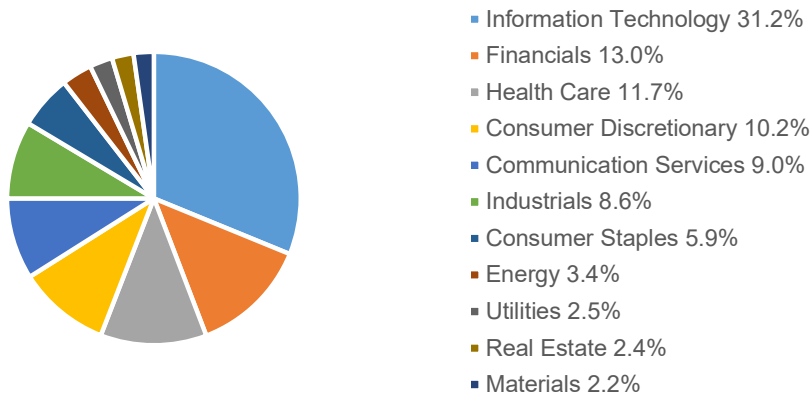
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Apple Inc.	6.91	10.75
Microsoft Corporation	6.58	-3.55
NVIDIA Corporation	6.14	-1.69
Alphabet Inc.	3.68	-8.79
Amazon.com, Inc.	3.51	-3.58
Meta Platforms, Inc.	2.58	13.63
Berkshire Hathaway Inc.	1.71	13.14
Broadcom Inc.	1.54	7.77
Tesla, Inc.	1.50	32.22
Eli Lilly and Company	1.10	-2.01

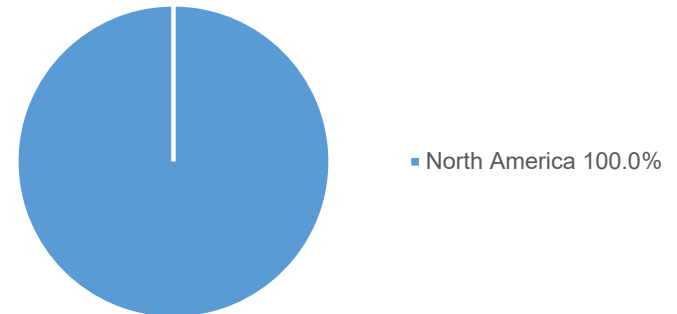
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
NT S&P 500 Index (Net)	5.9	22.1	36.3	11.9	16.0	13.4	14.2
S&P 500	5.9	22.1	36.4	11.9	16.0	13.4	14.1

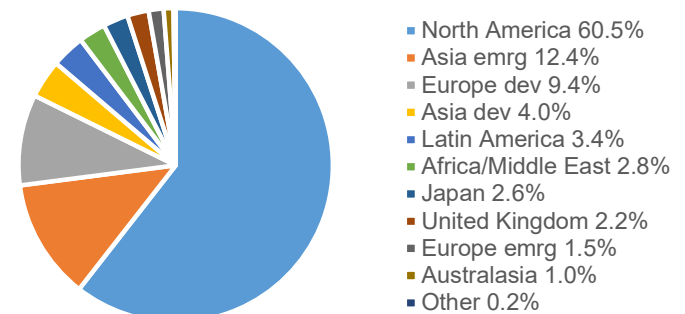
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



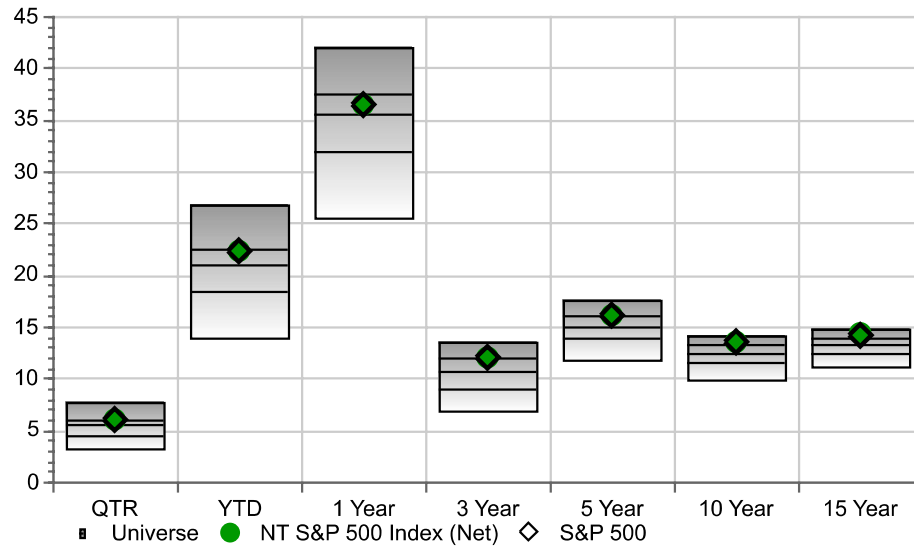
## Regional Exposure by Source of Revenue



# Northern Trust S&P 500 vs Universe & Benchmark

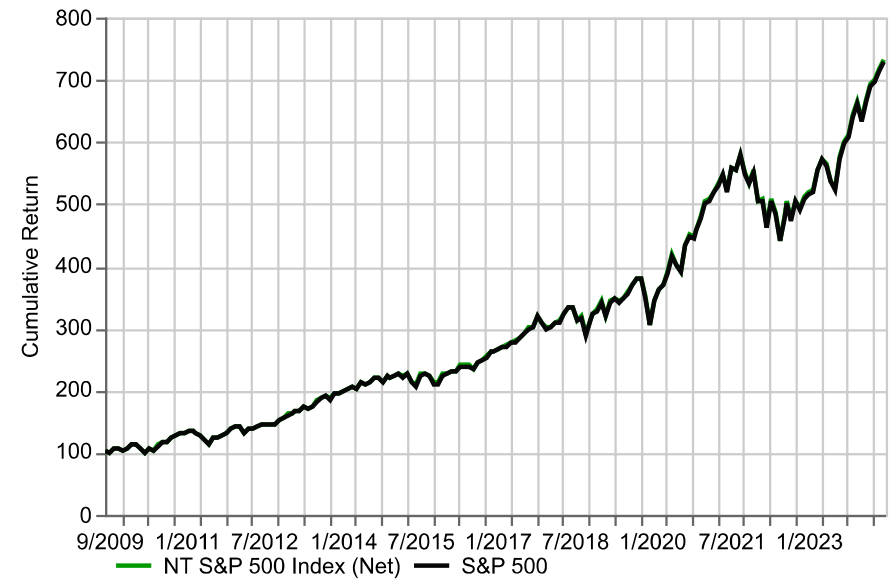
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US: Large Cap Core



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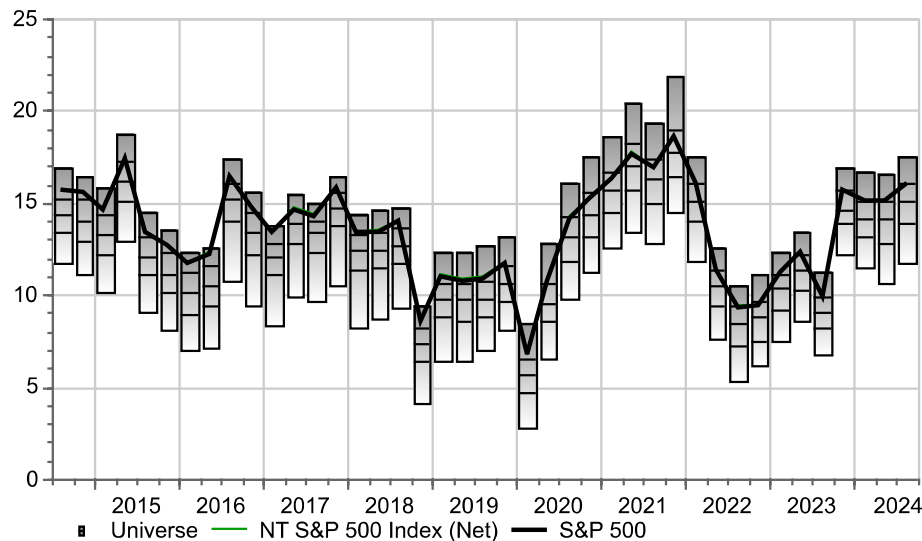
## Investment Growth – 15 Years



©FactSet Research Systems

## Rolling Returns 7/1/2008 – 9/30/2024 (5 Year, 3 Month Shift)

Universe: Lipper US: Large Cap Core



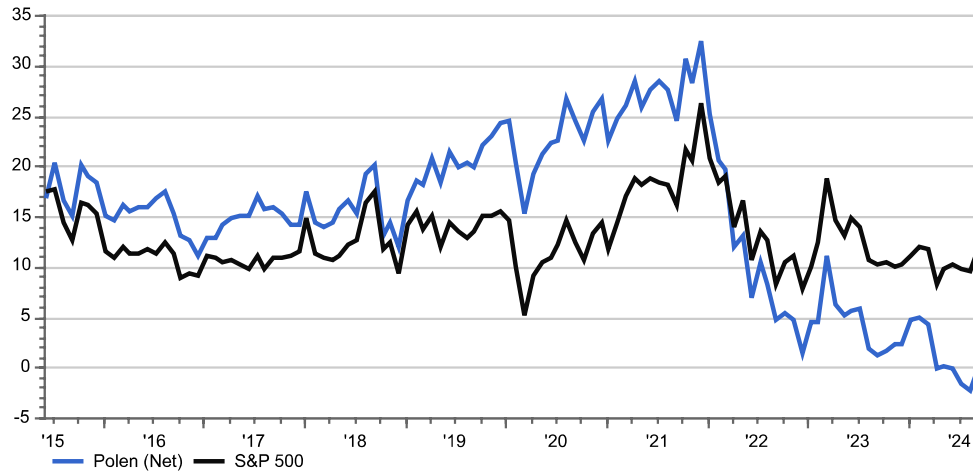
©FactSet Research Systems

## Risk – 15 Years

	Return	Std Dev	Sharpe Ratio	Tracking Error
NT S&P 500 Index (Net)	14.2	14.5	0.9	0.0
S&P 500	14.1	14.5	0.9	--

# Polen Portfolio Snapshot – September 30, 2024

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



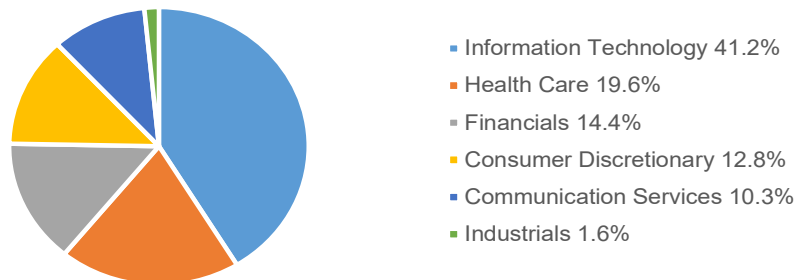
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Amazon.com, Inc.	9.38	-3.58
Microsoft Corporation	8.27	-3.55
Alphabet Inc.	6.08	-8.74
ServiceNow, Inc.	5.73	13.69
Visa Inc.	5.41	4.95
Mastercard Incorporated	5.10	12.09
Thermo Fisher Scientific Inc.	4.91	11.93
Apple Inc.	4.77	5.03
Adobe Inc.	4.64	-6.80
Oracle Corporation	4.31	20.96

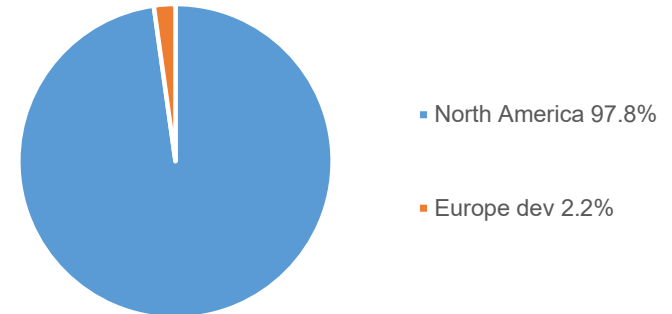
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	Inception 7/1/2012
Polen (Net)	3.5	10.7	26.5	0.0	12.0	14.6	14.6
S&P 500	5.9	22.1	36.4	11.9	16.0	13.4	14.6
S&P 500 Growth	3.7	28.2	41.1	10.1	17.6	15.2	16.1

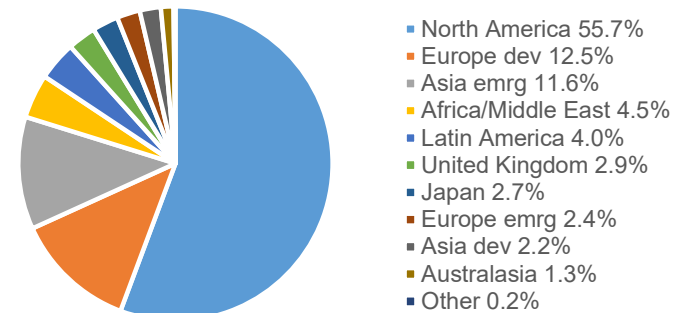
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



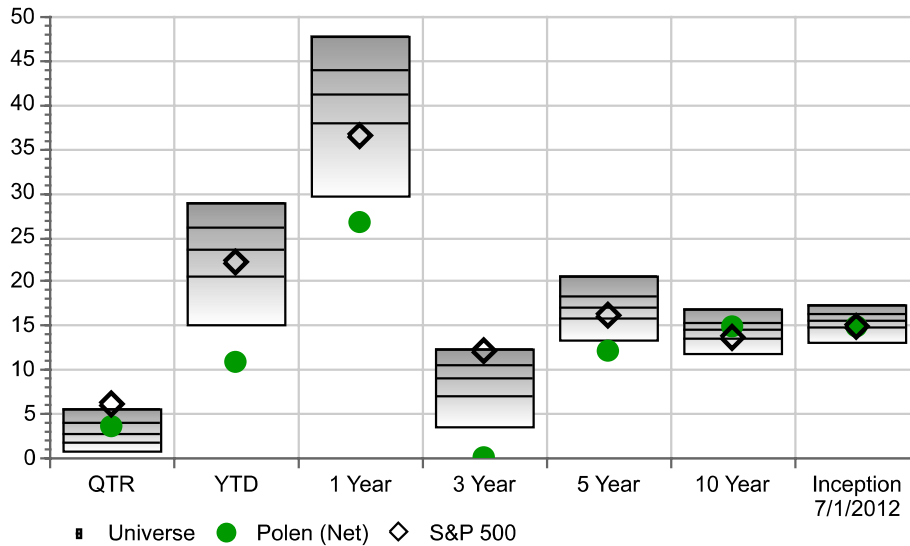
## Regional Exposure by Source of Revenue



# Polen vs Universe & Benchmark

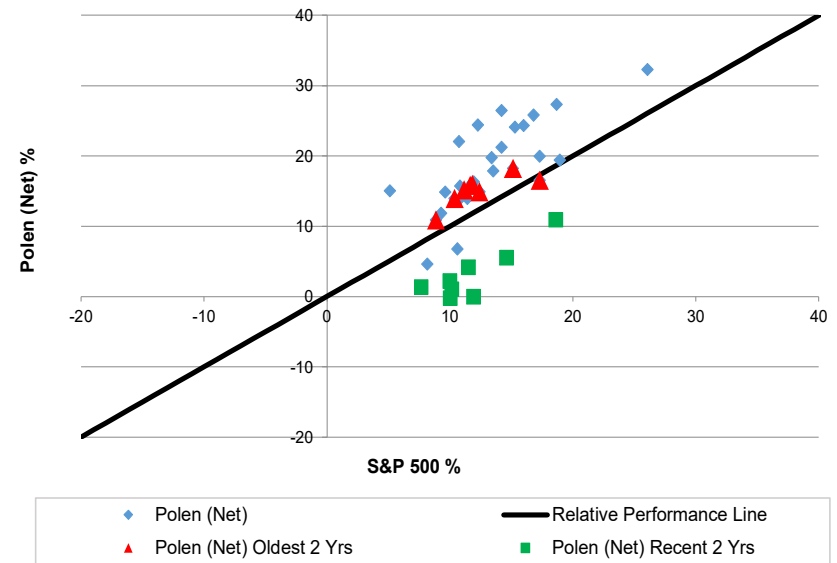
## Performance Relative to Peer Group as of 9/30/2024

### Universe: Lipper US Large Cap Growth



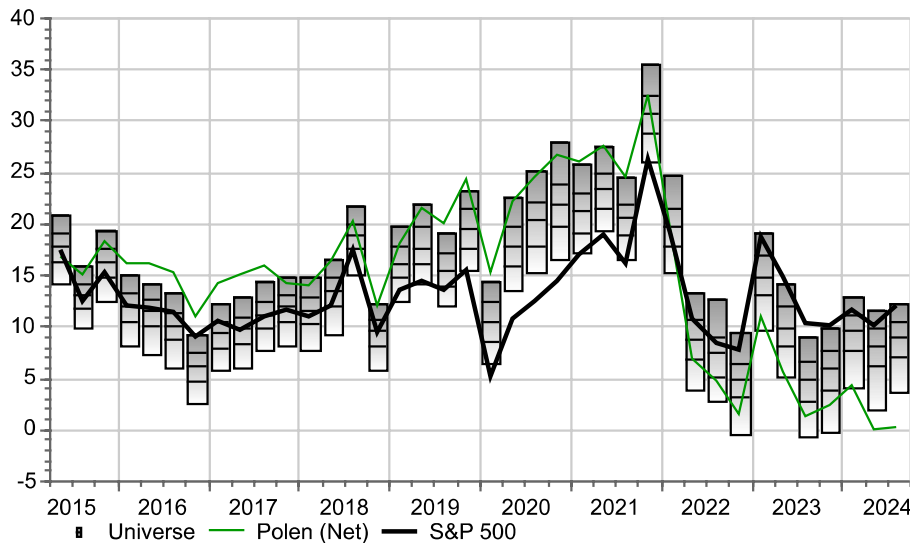
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2012 – 9/30/2024 (3 Year, 3 Month Shift)

### Universe: Lipper US Large Cap Growth



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## Over/Under Benchmark Analysis

27	Outperform
11	Underperform
38	# Observations
71%	% Outperform

# Polen Attribution Analysis – September 30, 2024

## Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
ServiceNow, Inc.	5.54	5.18	0.69
Shopify Inc.	2.72	2.72	0.58
Thermo Fisher Scientific Inc.	4.97	4.48	0.52
Mastercard Incorporated	5.04	4.23	0.50
Accenture plc	3.52	3.08	0.50
MSCI Inc.	2.64	2.55	0.42
Zoetis Inc.	3.26	3.08	0.38
Abbott Laboratories	4.18	3.78	0.38
UnitedHealth Group Incorporated	3.40	2.30	0.33
Gartner, Inc.	2.38	2.30	0.28

## Top 10 Leading Detractors

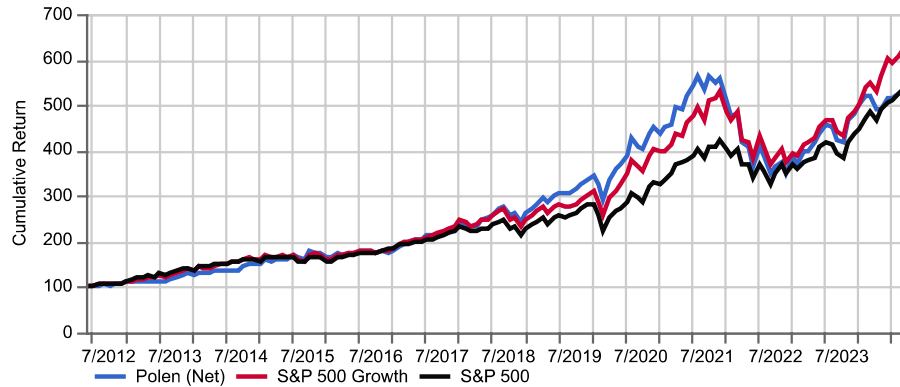
	Avg. Weights	Relative Weights	Active Return
Airbnb, Inc.	3.68	3.55	-0.69
Apple Inc.	3.06	-3.75	-0.50
Novo Nordisk A/S	2.67	2.67	-0.50
Alphabet Inc.	8.40	4.40	-0.43
Tesla, Inc.	0.00	-1.28	-0.38
Meta Platforms, Inc.	0.00	-2.35	-0.32
Adobe Inc.	4.62	4.09	-0.30
Berkshire Hathaway Inc.	0.00	-1.71	-0.22
Amazon.com, Inc.	9.63	5.97	-0.16
Home Depot, Inc.	0.00	-0.76	-0.14

## Sector Attribution

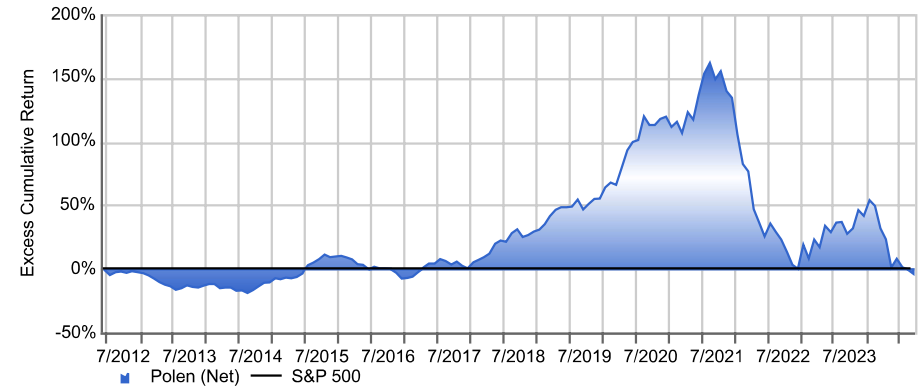
	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	3.3	-4.6	1.7	-0.2	-0.8	-1.0
Consumer Discretionary	4.1	-7.1	7.8	0.1	-2.1	-2.0
Consumer Staples	-5.8	0.0	9.0	-0.2	0.0	-0.2
Energy	-3.6	0.0	-2.3	0.3	0.0	0.3
Financials	0.3	10.3	10.7	0.0	0.0	-0.1
Health Care	8.0	6.8	6.1	0.1	0.0	0.2
Industrials	-7.4	16.6	11.5	-0.4	0.0	-0.4
Information Technology	4.9	5.1	1.6	-0.1	1.2	1.1
Materials	-2.2	0.0	9.8	-0.1	0.0	-0.1
Real Estate	-2.3	0.0	17.2	-0.2	0.0	-0.2
Utilities	-2.4	0.0	19.4	-0.3	0.0	-0.3
Cash	3.0	1.3	1.3	-0.1	0.0	-0.1
Total	0.0	3.1	5.9	-1.2	-1.7	-2.7

# Polen Inception Performance & Statistics

## Investment Growth Since Inception 7/1/2012



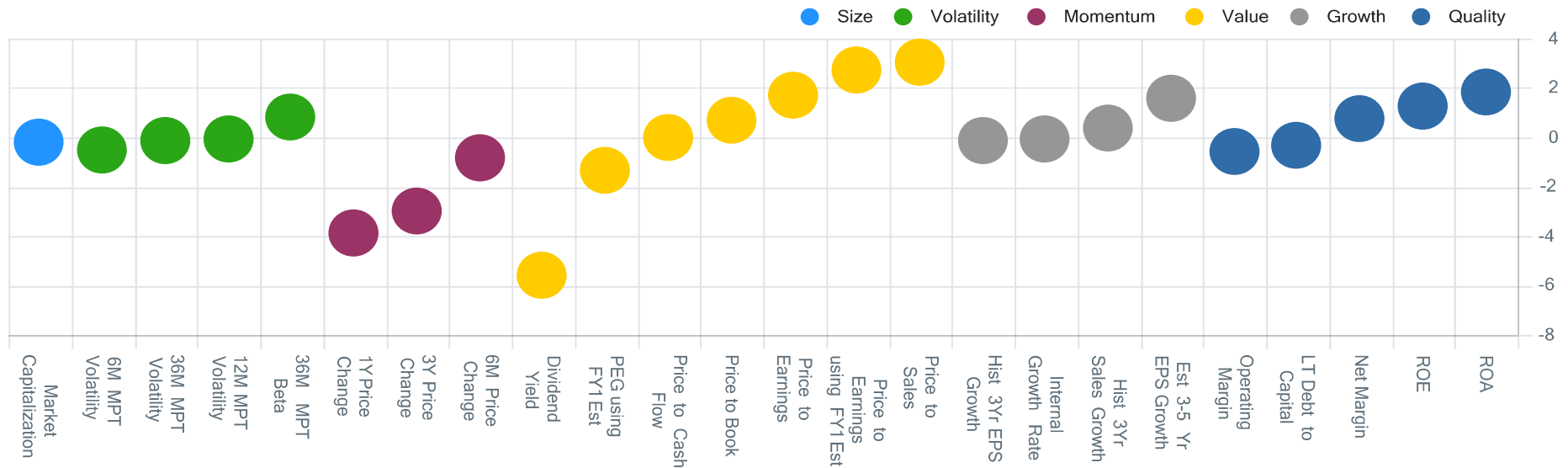
## Relative Cumulative Performance Since Inception 7/1/2012



## Risk Since Inception 7/1/2012

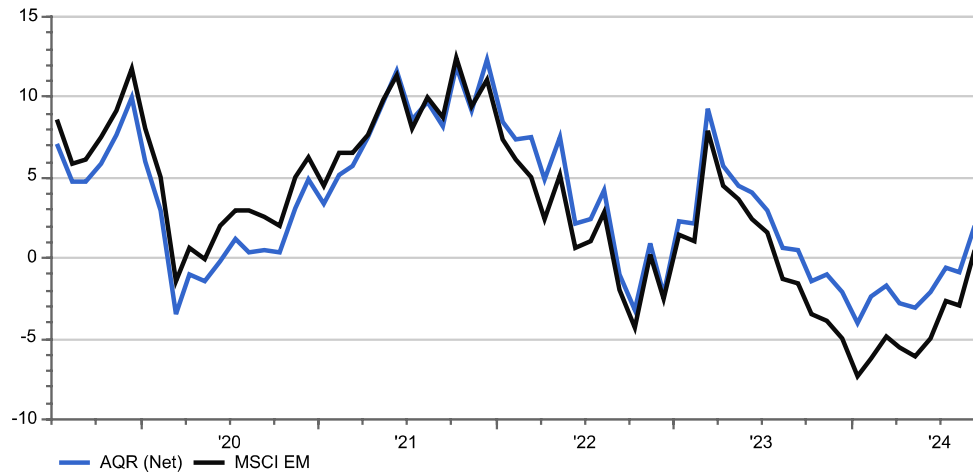
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Polen (Net)	14.6	16.0	-0.1	0.8	0.0	6.7	1.0
S&P 500	14.6	14.2	--	0.9	--	--	1.0
S&P 500 Growth	16.1	15.4	--	1.0	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



# AQR Portfolio Snapshot – September 30, 2024

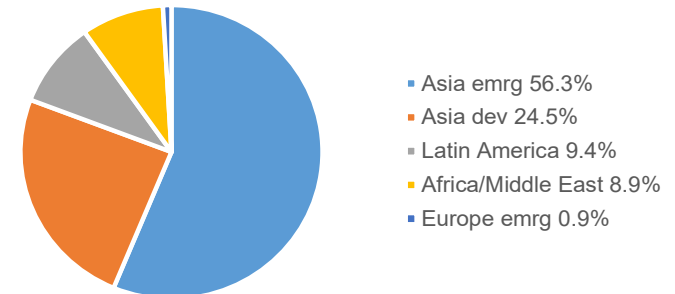
## Rolling Returns Since Inception 8/1/2016 (Three Year, One Month Shift)



## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Taiwan Semi. Mfg. Co. Ltd.	8.76	1.97
Tencent Holdings Ltd.	3.01	20.00
China Construction Bank Corp.	1.99	10.94
Samsung Electronics Co., Ltd.	1.85	-20.10
TATA Consultancy Services Ltd.	1.51	9.05
Cathay Financial Holdings Co., Ltd.	1.34	10.53
Vedanta Ltd.	1.34	17.88
China CITIC Bank Corp. Ltd.	1.16	7.64
CEMEX, S.A.B. de C.V.	1.12	-3.61
Indian Oil Corporation Ltd.	1.11	12.20

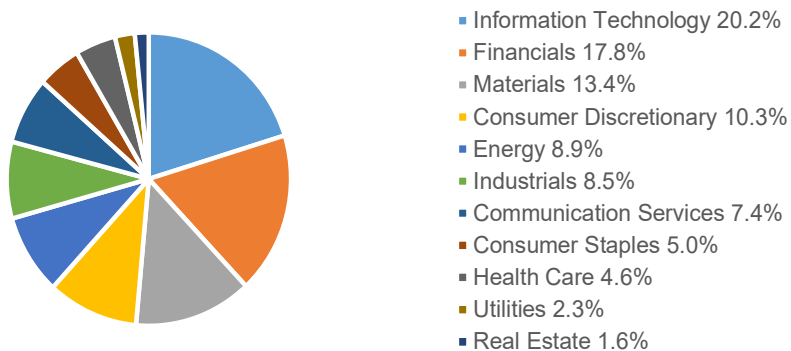
## Regional Exposure by Domicile



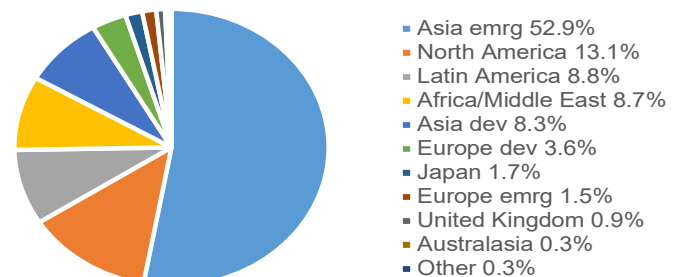
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 8/1/16
AQR (Net)	2.6	14.5	26.2	1.8	7.4	6.7
MSCI EM	8.7	16.9	26.1	0.4	5.7	6.2

## Equity Sector Exposure (GICS)



## Regional Exposure by Source of Revenue

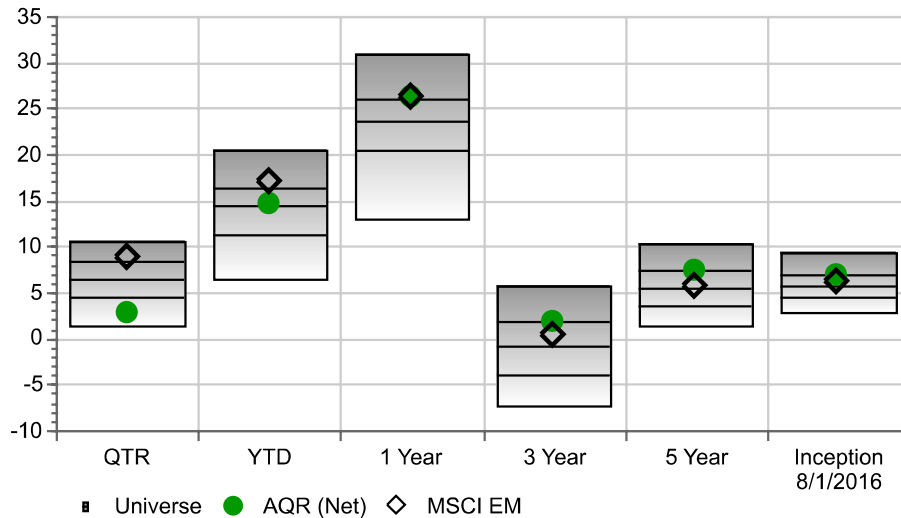




# AQR vs Universe & Benchmark

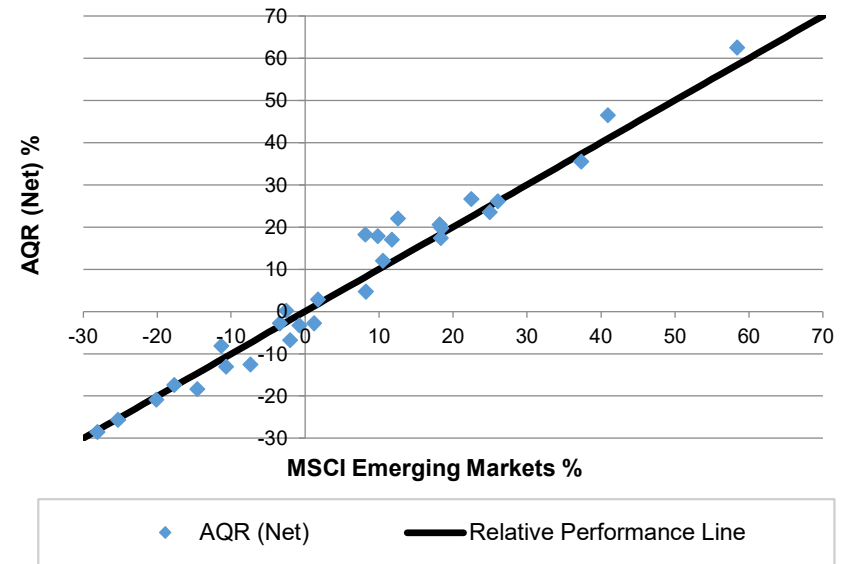
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US Emerging Markets



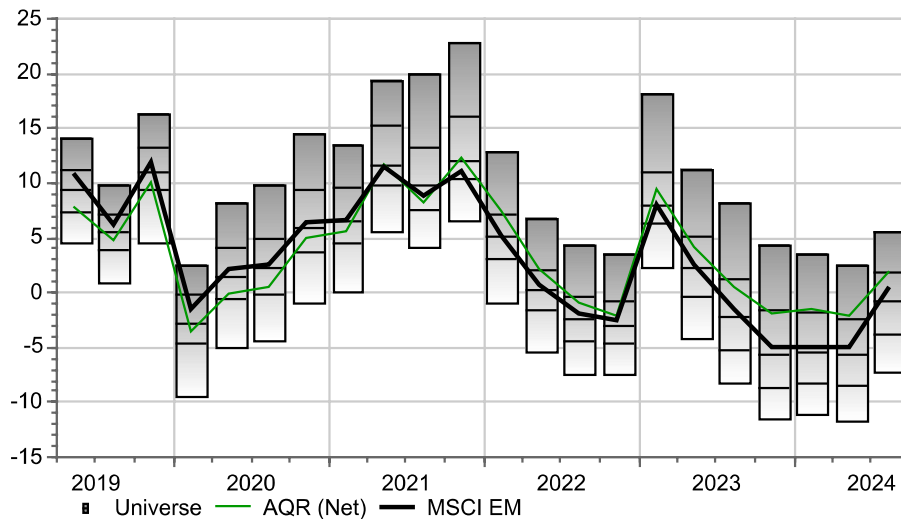
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## One-Year Rolling Return Versus Benchmark



## Rolling Returns 8/1/2016 – 9/30/2024 (3 Year, 3 Month Shift)

Universe: Lipper US Emerging Markets



©FactSet Research Systems

## Over/Under Benchmark Analysis

16	Outperform
13	Underperform
29	# Observations
55%	% Outperform

## AQR Attribution Analysis – September 30, 2024

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
PT Adaro Energy Indonesia Tbk	0.97	0.93	0.41
China Taiping Insurance Hldgs. Co., Ltd.	0.58	0.55	0.33
Jardine Matheson Hldgs. Ltd.	1.26	1.15	0.33
KASIKORNBANK Public Co. Ltd.	0.86	0.83	0.30
Samsung Electronics Co., Ltd.	2.57	-1.62	0.30
CITIC Ltd.	0.94	0.87	0.28
Vedanta Incorporated	1.35	1.26	0.23
Bharat Petroleum Corp. Ltd.	0.79	0.71	0.22
Trent Ltd.	0.73	0.55	0.21
Hindustan Petroleum Corp. Ltd.	0.44	0.39	0.19

### Top 10 Leading Detractors

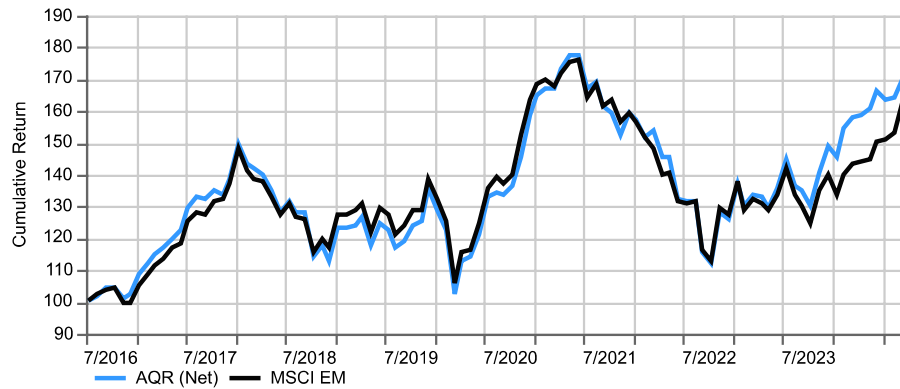
	Avg. Weights	Relative Weights	Active Return
Alibaba Group Holding Ltd.	1.03	-1.01	-0.58
Meituan	0.00	-0.97	-0.53
Tencent Holdings Ltd.	2.94	-1.24	-0.28
Infosys Ltd.	0.21	-0.73	-0.17
MediaTek Inc.	1.67	0.87	-0.13
Sasol Ltd.	1.10	1.04	-0.12
Quanta Computer Inc.	0.76	0.44	-0.12
Trip.com Group Ltd.	0.00	-0.34	-0.11
Realtek Semiconductor Corp	1.20	1.10	-0.11
BYD Company Ltd.	0.00	-0.51	-0.10

### Sector Attribution

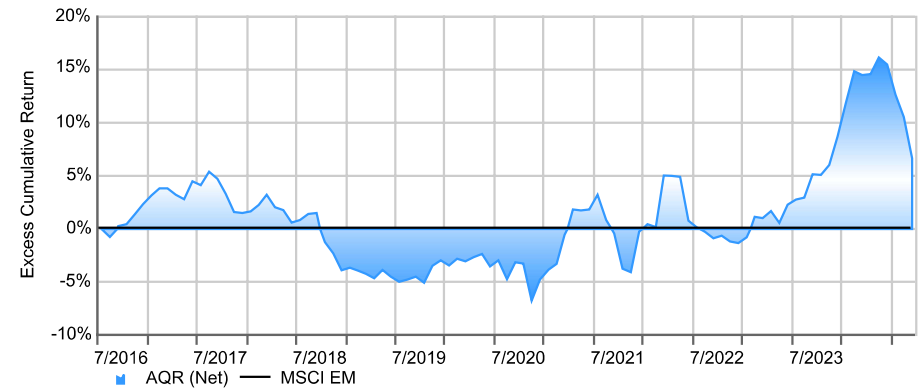
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# AQR Inception Performance & Statistics

## Investment Growth Since Inception 8/1/2016



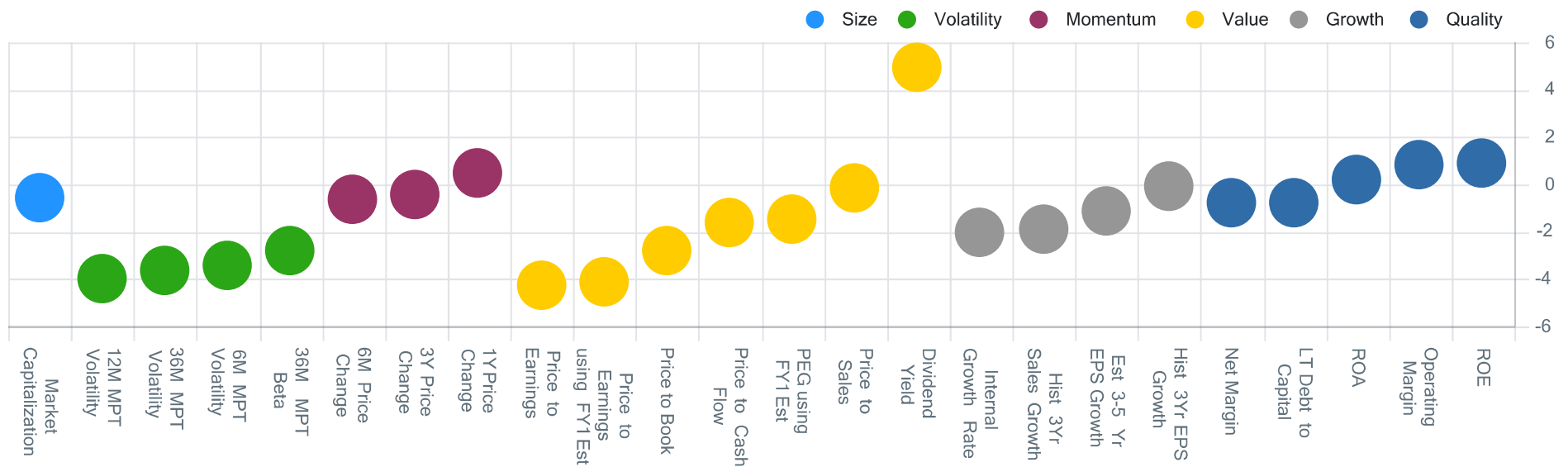
## Relative Cumulative Performance Since Inception 8/1/2016



## Risk Since Inception 8/1/2016

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
AQR (Net)	6.7	17.1	0.6	0.3	0.1	3.7	1.0
MSCI EM	6.2	16.7	--	0.2	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



# Brandes Portfolio Snapshot – September 30, 2024

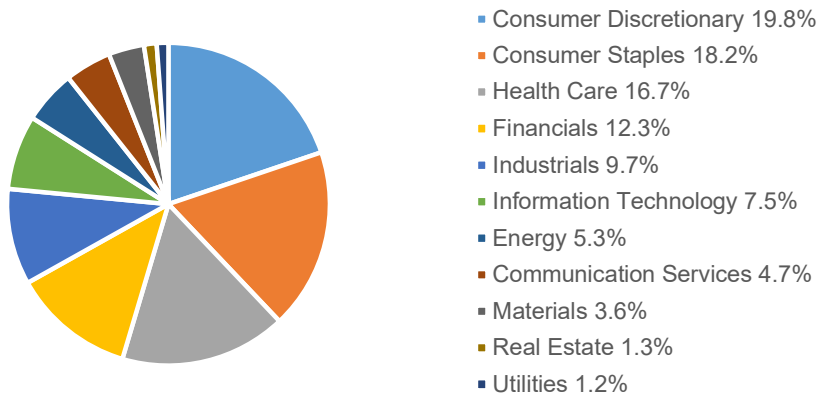
## Rolling Returns Since Inception 2/1/1998 (Ten Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Brandes (Net)	12.2	17.7	30.3	12.7	11.6	6.9	6.7
MSCI EAFE	7.3	13.0	24.8	5.5	8.2	5.7	6.0
MSCI EAFE Value	8.9	13.8	23.1	8.9	8.3	4.6	4.9

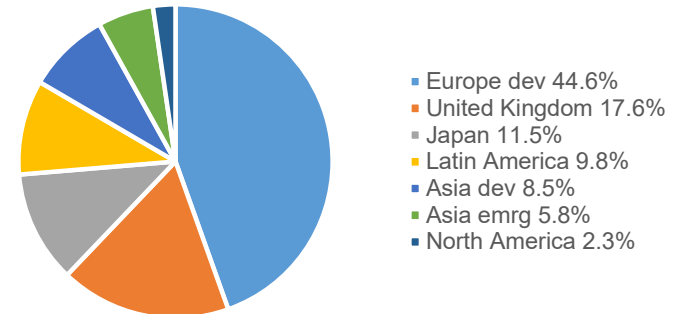
## Equity Sector Exposure (GICS)



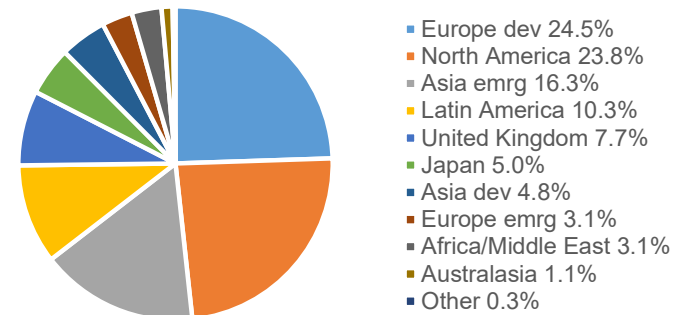
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Alibaba Group Holding Limited	3.80	56.83
Takeda Pharmaceutical Co. Ltd.	2.97	13.24
Sanofi	2.64	19.14
Heineken Holding N.V.	2.45	-3.17
Swatch Group AG	2.27	5.29
UBS Group AG	2.20	4.96
Henkel AG & Co. KGaA	2.08	8.24
Carrefour SA	2.07	20.78
Rolls-Royce Holdings plc	2.05	22.46
SAP SE	1.98	12.31

## Regional Exposure by Domicile



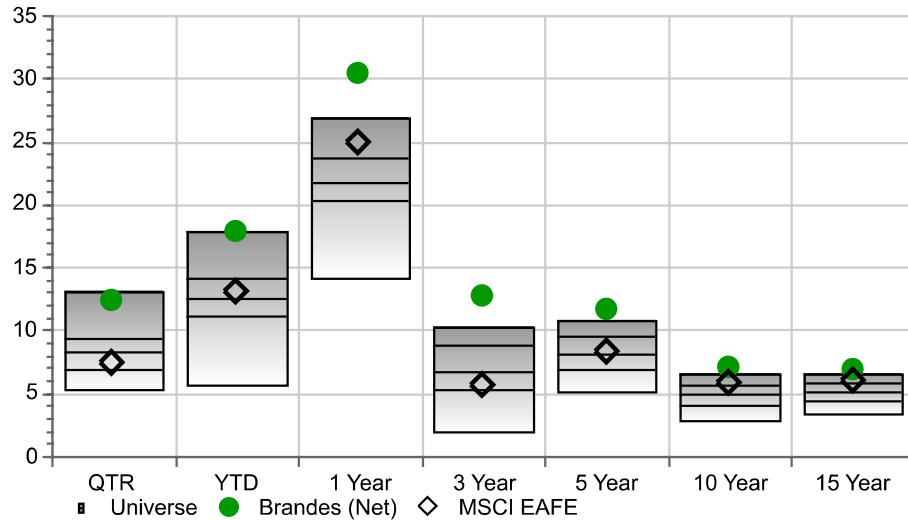
## Regional Exposure by Source of Revenue



# Brandes vs Universe & Benchmark

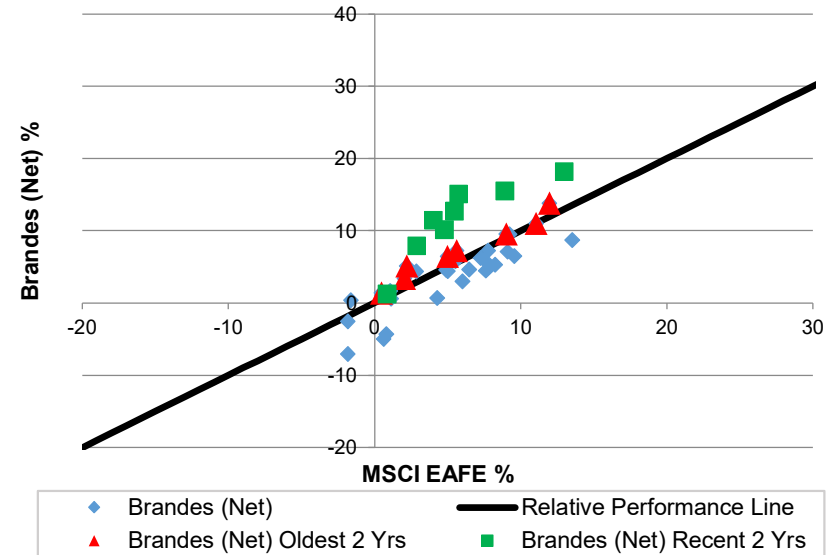
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US Int'l Multi-Cap Value



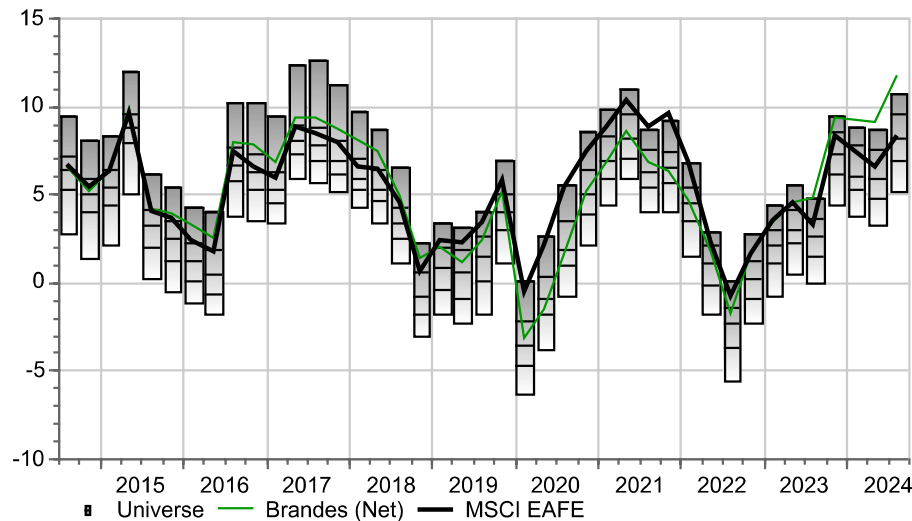
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 9/30/2024 (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 – September 30, 2024

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Alibaba Group Holding Limited	2.75	2.75	1.45
Grifols, S.A.	1.64	1.62	0.65
Embraer S.A.	1.97	1.97	0.65
Koninklijke Philips N.V.	1.88	1.75	0.50
Anheuser-Busch InBev SA/NV	2.66	2.34	0.44
Fresenius SE & Co. KGaA	1.49	1.41	0.43
Kingfisher plc	1.24	1.20	0.42
Smith & Nephew plc	1.72	1.65	0.39
Tesco PLC	1.76	1.58	0.39
KT&G Corporation	1.37	1.37	0.39

### Top 10 Leading Detractors

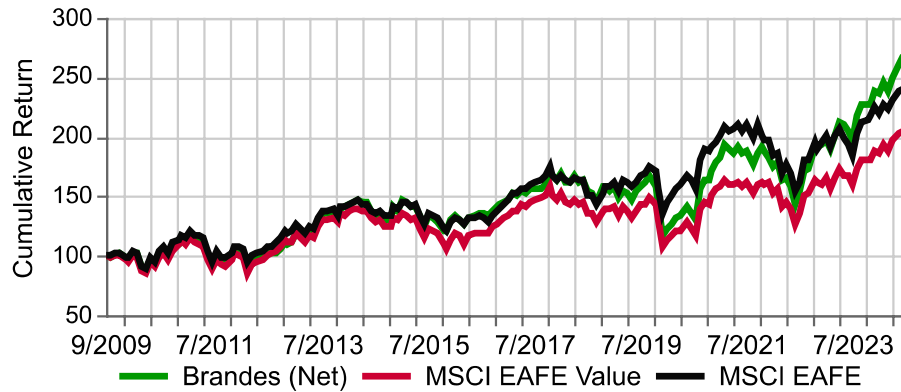
	Avg. Weights	Relative Weights	Active Return
Kering	1.50	1.36	-0.33
Samsung Electronics Co., Ltd.	1.49	1.49	-0.30
Roche Holding AG	0.00	-1.53	-0.26
Unilever PLC	0.00	-0.89	-0.16
Nissan Motor Co., Ltd.	0.89	0.85	-0.15
AIA Group Limited	0.00	-0.45	-0.14
BHP Group Limited	0.00	-0.83	-0.12
Hyundai Mobis Co., Ltd	1.10	1.10	-0.12
Allianz SE	0.00	-0.67	-0.12
Hitachi Ltd.	0.00	-0.62	-0.11

### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	1.1	10.5	12.1	0.0	0.2	0.0
Consumer Discretionary	5.4	16.7	4.9	-0.2	2.4	2.0
Consumer Staples	9.0	12.0	9.4	0.2	0.9	0.7
Energy	1.4	-2.3	-5.9	-0.2	0.3	0.0
Financials	-6.2	8.9	10.2	-0.2	-0.2	-0.3
Health Care	4.1	19.8	5.0	0.0	2.4	2.6
Industrials	-6.5	19.8	7.6	0.0	1.2	1.0
Information Technology	-3.9	-0.5	3.8	0.1	0.0	-0.2
Materials	-2.7	1.4	10.2	-0.1	-0.2	-0.4
Real Estate	-1.1	-3.5	16.9	-0.1	-0.1	-0.3
Utilities	-2.0	21.2	14.7	-0.2	0.1	-0.1
Cash	1.4	1.5	0.0	0.0	0.0	-0.1
Total	0.0	12.3	7.3	-0.6	7.1	5.0

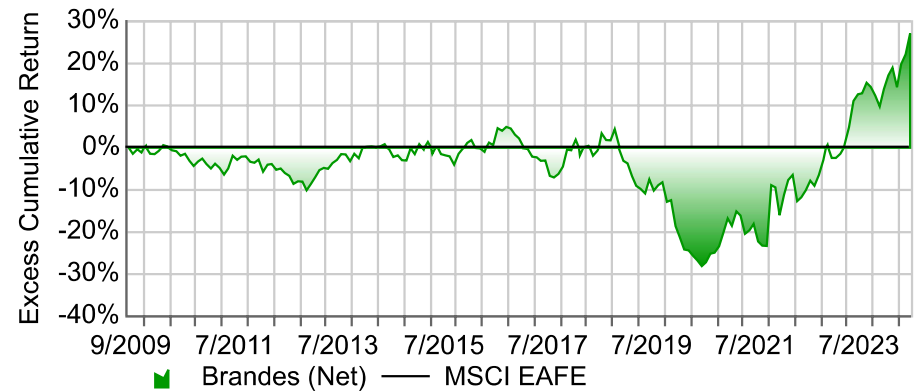
# Brandes 15 Year Performance & Statistics

## Investment Growth – 15 Years



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## Relative Cumulative Performance – 15 Years

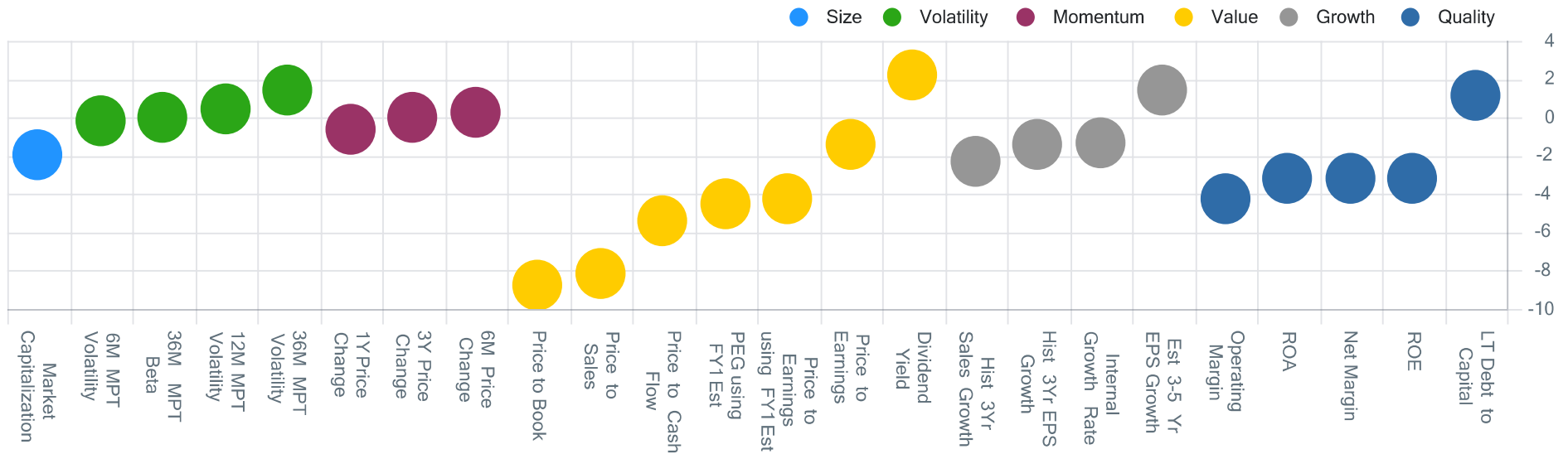


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## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Brandes (Net)	6.7	16.6	0.8	0.3	0.1	5.3	1.0
MSCI EAFE	6.0	15.6	--	0.3	--	--	1.0
MSCI EAFE Value	4.9	16.6	--	0.2	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



# DFA International Portfolio Snapshot

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



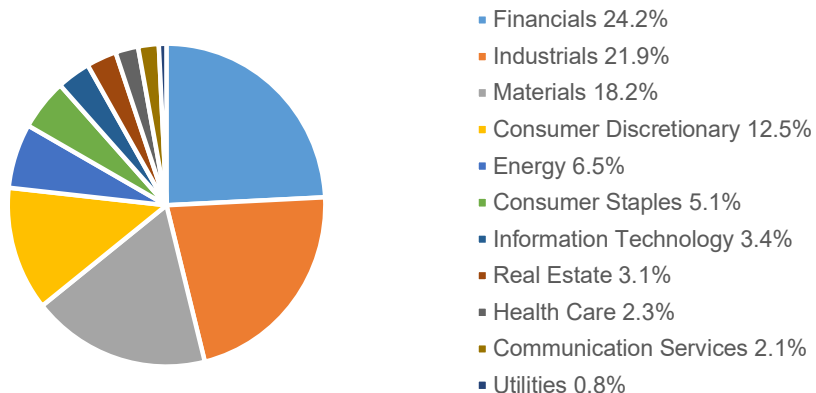
## Top 10 Holdings as of August 31, 2024

	Portfolio Weight	Quarterly Return
Banco de Sabadell, S.A.	1.70	15.15
Alamos Gold Inc	1.00	23.04
Vistry Group plc	0.87	20.19
Helvetia Holding AG	0.84	17.33
Jyske Bank A/S	0.74	0.82
BPER Banca S.p.A.	0.74	11.07
Bellway p.l.c.	0.73	25.60
Leonardo SpA	0.73	10.10
Marks and Spencer Group PLC	0.73	24.59
Siegfried Holding AG	0.67	27.22

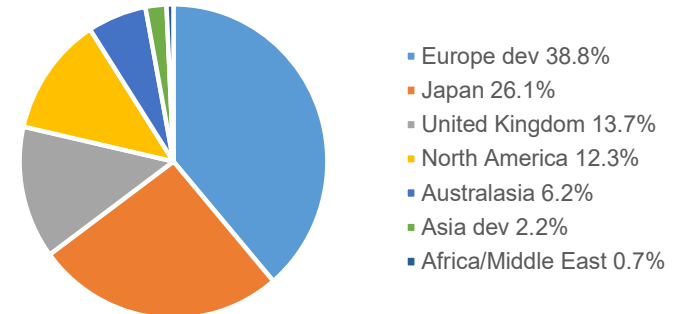
## Trailing Returns as of September 30, 2024

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
DFA Int'l Small Cap (Net)	8.5	15.4	26.1	7.7	9.8	6.2	7.1
MSCI EAFE Small Cap	10.5	11.1	23.5	-0.4	6.4	6.2	6.9
MSCI World ex US Small Cap Value	10.9	12.1	23.3	3.6	7.4	5.6	6.4

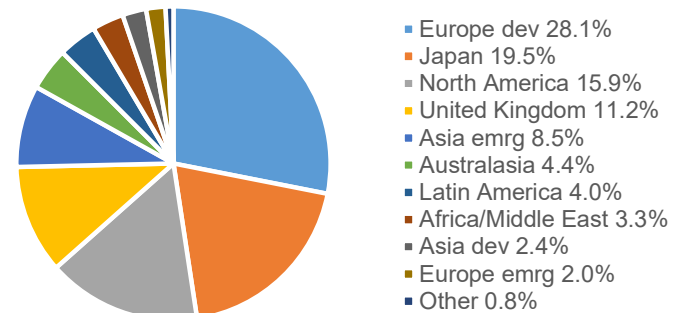
## Equity Sector Exposure (GICS) as of August 31, 2024



## Regional Exposure by Domicile as of August 31, 2024



## Regional Exposure by Source of Revenue as of August 31, 2024

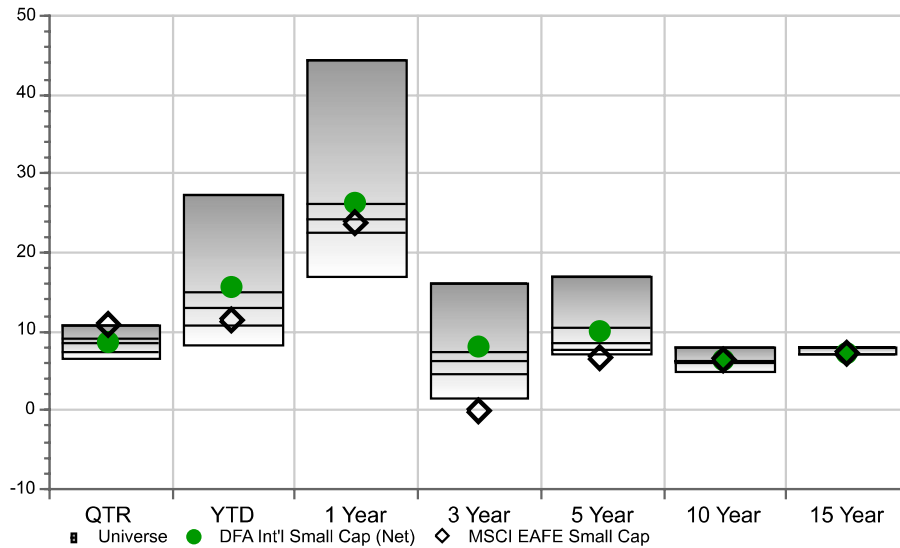




# DFA International vs Universe & Benchmark

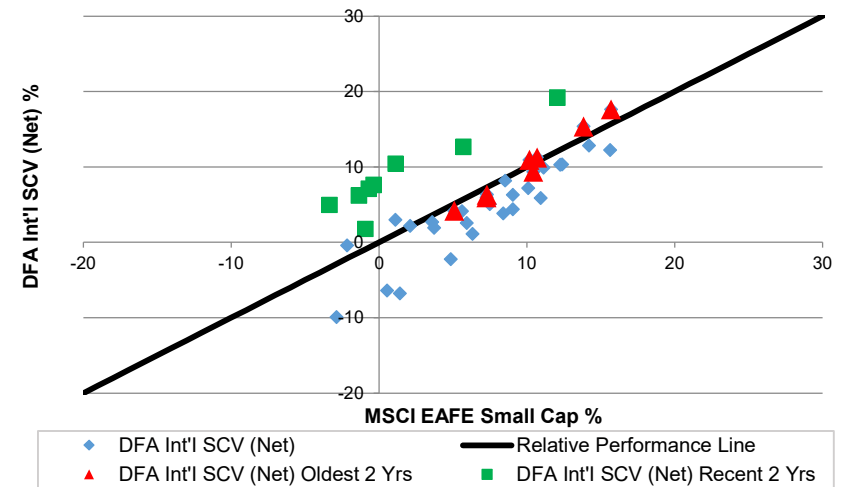
## Performance Relative to Peer Group as of 9/30/2024

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



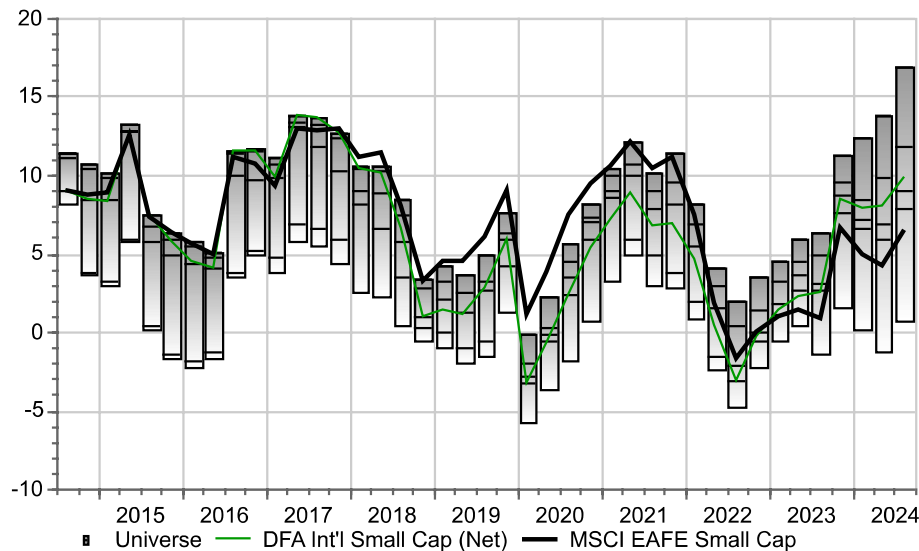
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 9/30/2024 (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

## Top 10 Leading Contributors

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## Top 10 Leading Detractors

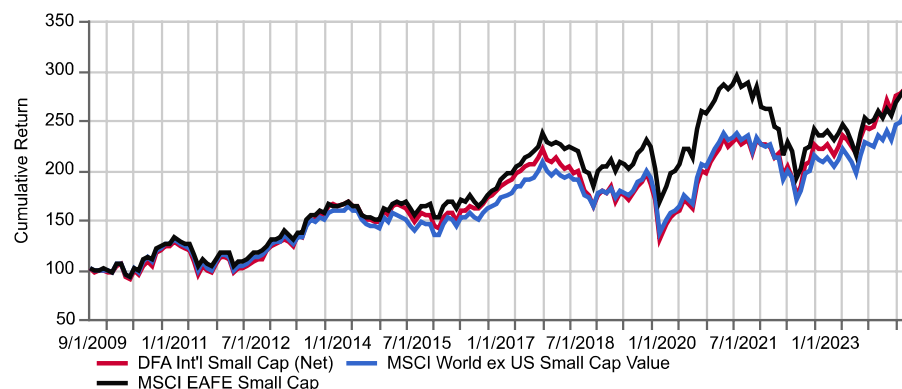
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## Sector Attribution

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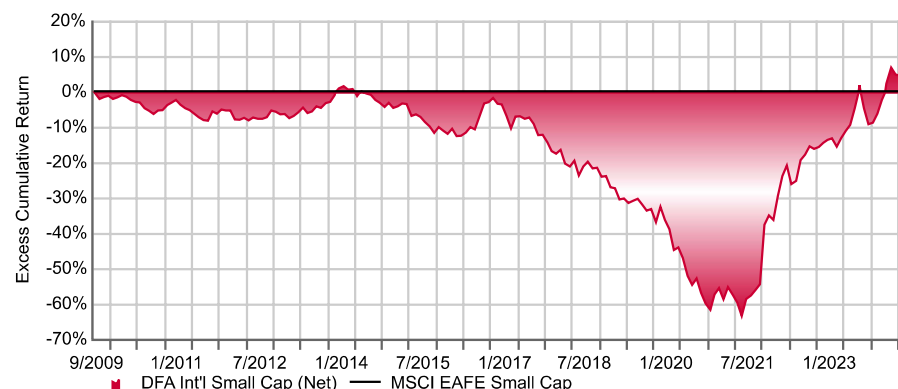
# DFA International Inception Performance & Statistics

## Investment Growth – 15 Years



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## Relative Cumulative Performance – 15 Years

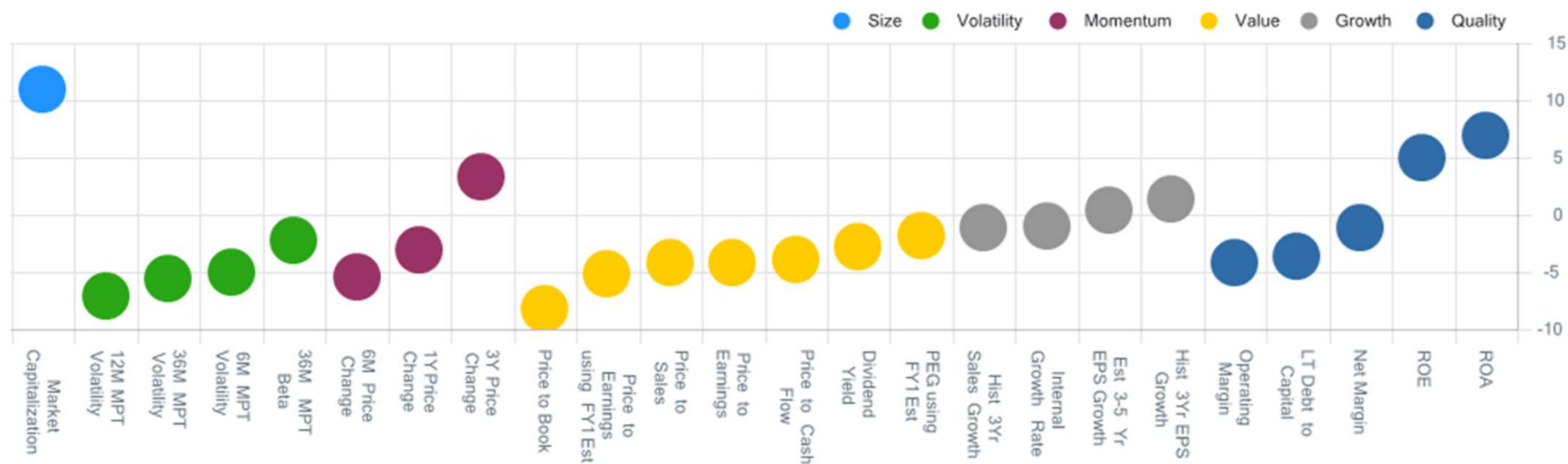


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## Risk – 15 Years as of September 30, 2024

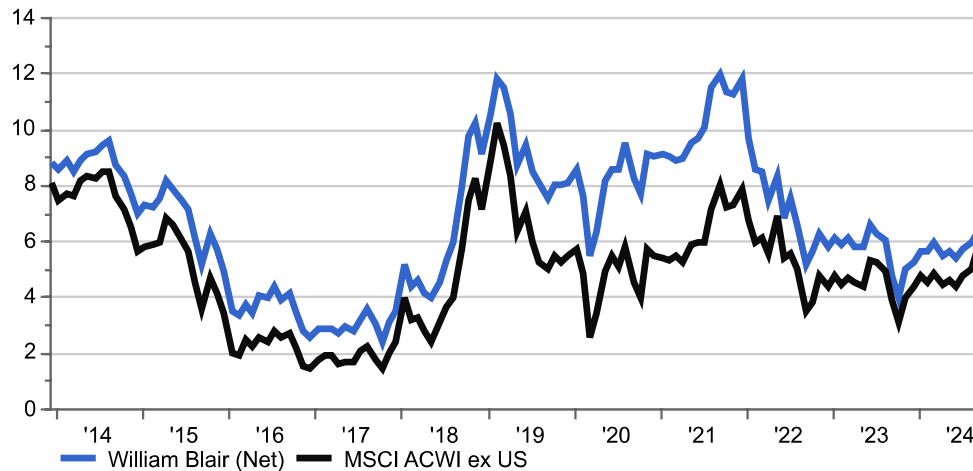
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
DFA Int'l Small Cap (Net)	7.1	17.9	0.0	0.3	0.0	4.5	1.0
MSCI EAFE Small Cap	6.9	16.7	--	0.4	--	--	1.0
MSCI World ex US Small Cap Value	6.4	17.0	--	0.3	--	--	1.0

## Characteristics Tilt vs Benchmark 8/31/2024



# William Blair Portfolio Snapshot – September 30, 2024

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



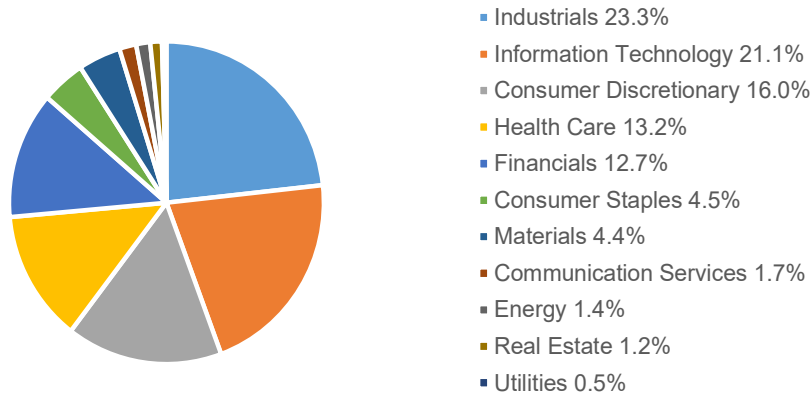
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Taiwan Semi. Mfg. Co. Ltd.	2.29	1.98
Novo Nordisk A/S	2.06	-18.19
SAP SE	1.83	12.31
ASML Holding NV	1.51	-19.33
London Stock Exchange Group plc	1.51	15.83
3i Group plc	1.49	14.38
AstraZeneca	1.41	0.10
Keyence Corporation	1.39	9.21
Safran SA	1.31	11.36
Linde Plc	1.27	8.99

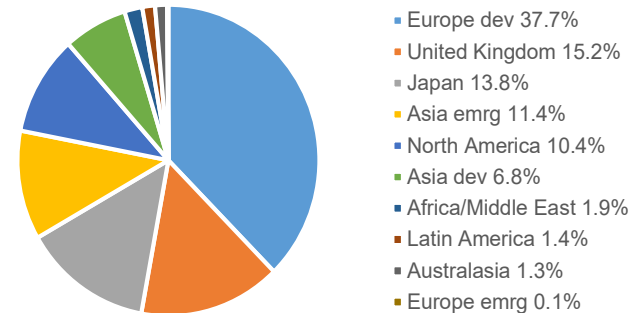
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
William Blair (Net)	5.0	10.5	24.9	-2.3	8.1	6.3	7.7
MSCI ACWI ex US	8.2	14.7	26.0	4.7	8.1	5.7	6.0
MSCI ACWI ex US Growth	7.0	14.3	27.1	1.1	7.4	6.3	6.6

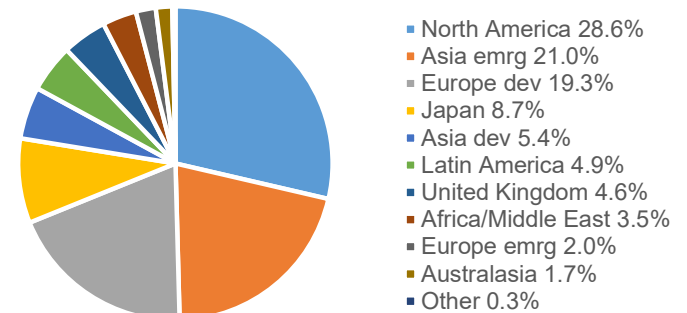
## Equity Sector Exposure (GICS)



## Regional Exposure by Domicile



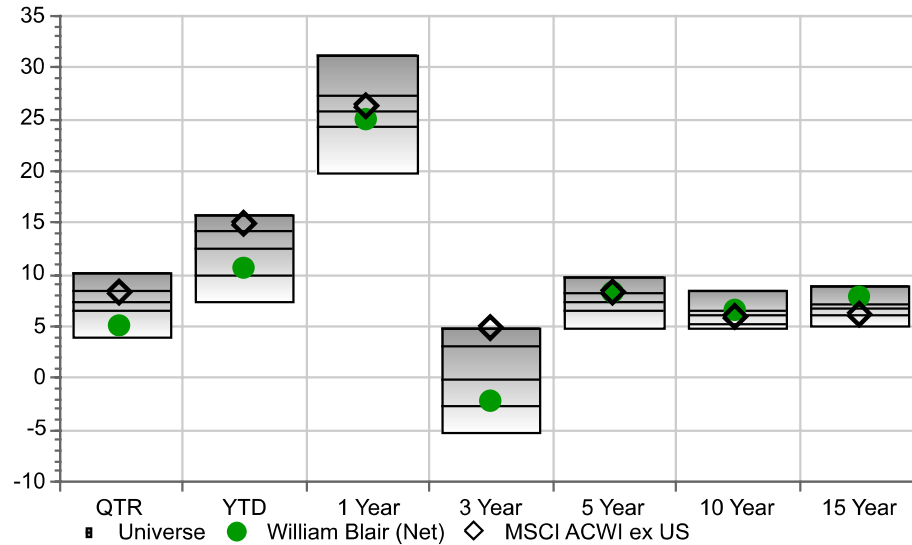
## Regional Exposure by Source of Revenue



# William Blair vs Universe & Benchmark

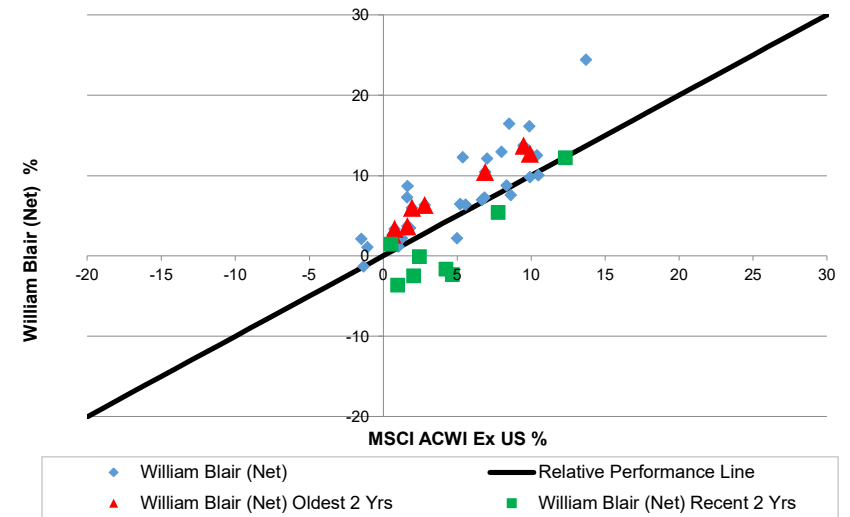
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US:International Multi-Cap Growth



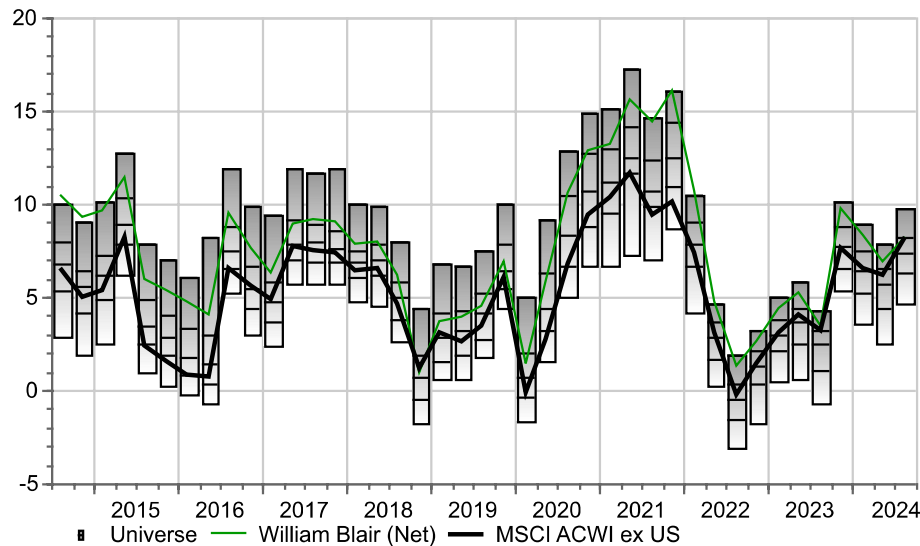
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 9/30/2024 (5 Year, 3 Month Shift)

Universe: Lipper US:International Multi-Cap Growth



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## Over/Under Benchmark Analysis

29	Outperform
11	Underperform
40	# Observations
73%	% Outperform

# William Blair Attribution Analysis – September 30, 2024

## Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
DSV A/S	0.85	0.74	0.24
Chugai Pharmaceutical Co., Ltd.	0.86	0.75	0.23
London Stock Exchange Group plc	1.56	1.35	0.20
MTU Aero Engines AG	0.96	0.91	0.19
Haleon plc.	0.76	0.64	0.18
3i Group plc	1.39	1.24	0.17
Compass Group PLC	1.03	0.84	0.14
Accenture plc	0.84	0.84	0.14
Industria de Diseno Textil, S.A.	0.96	0.75	0.13
MercadoLibre, Inc.	0.54	0.54	0.13

## Top 10 Leading Detractors

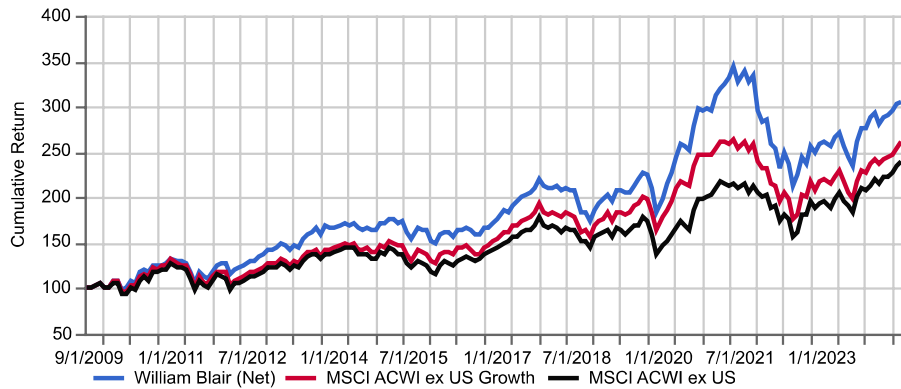
	Avg. Weights	Relative Weights	Active Return
Alibaba Group Holding Limited	0.00	-0.58	-0.31
DISCO Corporation	0.62	0.50	-0.18
Novo Nordisk A/S	2.49	0.79	-0.15
ASML Holding NV	1.98	0.55	-0.14
Lasertec Corporation	0.28	0.22	-0.13
Roche Holding Ltd. Dividend Right Cert.	0.00	-0.83	-0.13
SK hynix Inc.	0.77	0.46	-0.12
BE Semiconductor Industries N.V.	0.36	0.31	-0.12
ICON plc	1.22	1.22	-0.11
Royal Bank of Canada	0.00	-0.60	-0.11

## Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-2.5	19.6	15.1	-0.2	0.1	-0.1
Consumer Discretionary	3.0	11.6	10.6	0.1	0.4	0.2
Consumer Staples	-3.1	6.9	10.1	0.0	-0.1	-0.2
Energy	-3.4	-2.9	-3.7	0.4	0.0	0.4
Financials	-10.3	9.6	11.5	-0.4	-0.5	-0.5
Health Care	2.7	5.8	6.7	-0.2	-0.3	-0.3
Industrials	12.4	3.2	7.4	-0.2	-0.9	-1.1
Information Technology	7.6	1.5	1.7	-0.5	-0.1	-0.6
Materials	-2.4	10.8	9.1	0.0	0.0	0.1
Real Estate	-0.7	7.7	17.3	-0.1	-0.1	-0.2
Utilities	-3.3	15.9	14.1	-0.2	0.0	-0.2
Total	0.0	5.7	8.2	-1.4	-1.4	-2.5

# William Blair 15 Year Performance & Statistics

## Investment Growth – 15 Years



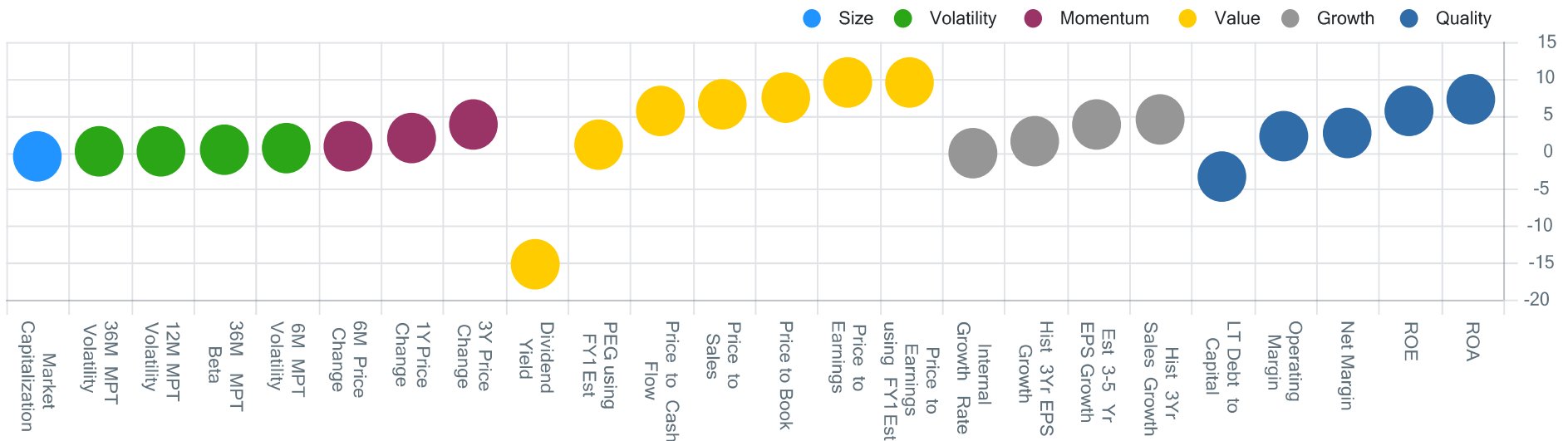
## Relative Cumulative Performance – 15 Years



## Risk – 15 Years

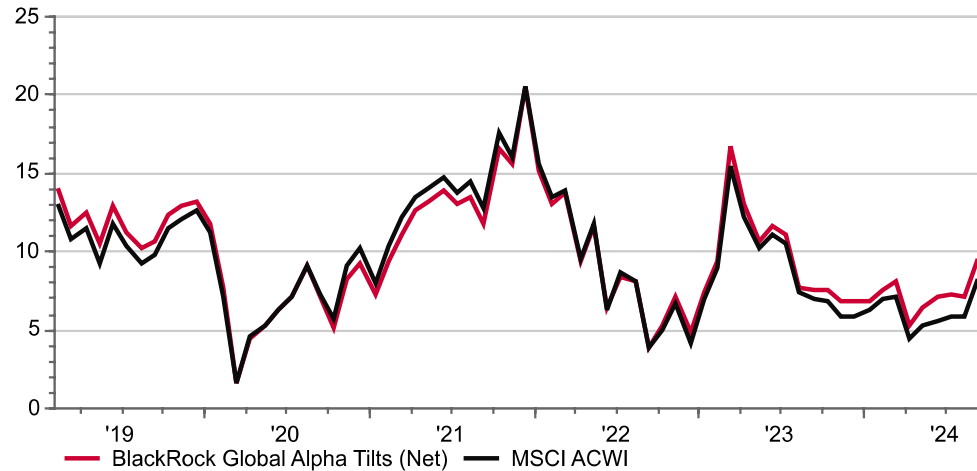
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
William Blair (Net)	7.7	15.7	1.9	0.4	0.3	5.4	1.0
MSCI ACWI ex US	6.0	15.4	--	0.3	--	--	1.0
MSCI ACWI ex US Growth	6.6	15.3	--	0.4	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



# BlackRock Global Portfolio Snapshot – September 30, 2024

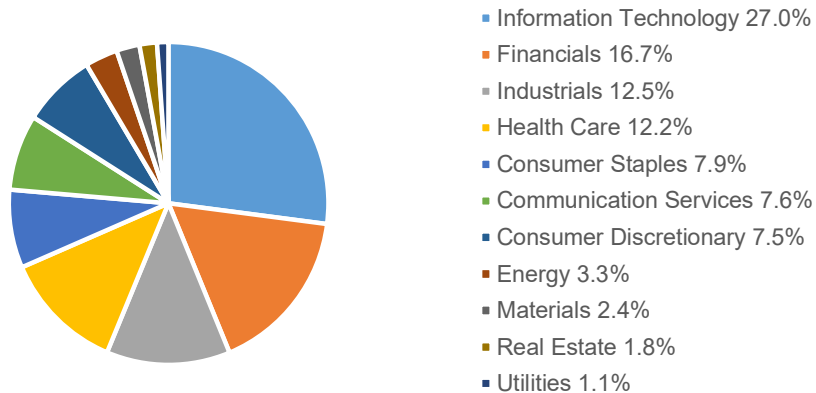
## Rolling Returns Since Inception 3/1/2016 (Three Year, One Month Shift)



## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	Inception 3/1/2016
BlackRock Global Alpha Tilts (Net)	5.3	19.6	33.2	9.4	12.9	12.8
MSCI ACWI	6.6	18.7	31.8	8.1	12.2	12.2

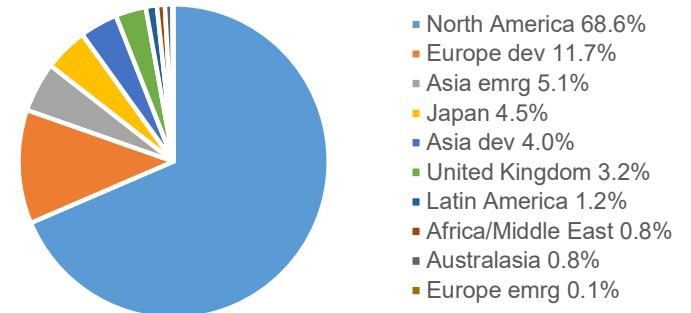
## Equity Sector Exposure (GICS)



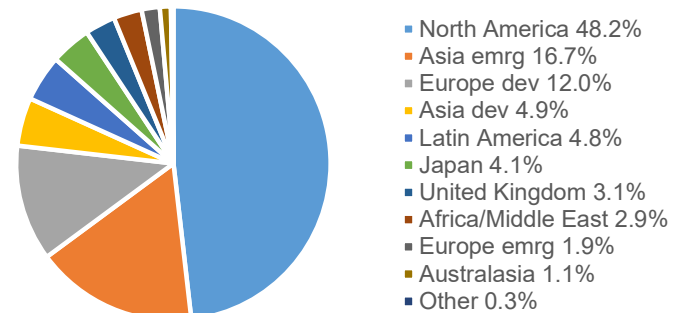
## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Apple Inc.	5.43	10.75
Microsoft Corporation	4.95	-3.55
NVIDIA Corporation	4.34	-1.69
Amazon.com, Inc.	2.67	-3.58
Alphabet Inc.	2.16	-8.77
Walmart Inc.	1.57	19.58
Johnson & Johnson	1.53	11.71
Bank of America Corporation	1.45	0.43
Lockheed Martin Corporation	1.31	25.82
Novartis AG	1.30	7.61

## Regional Exposure by Domicile



## Regional Exposure by Source of Revenue

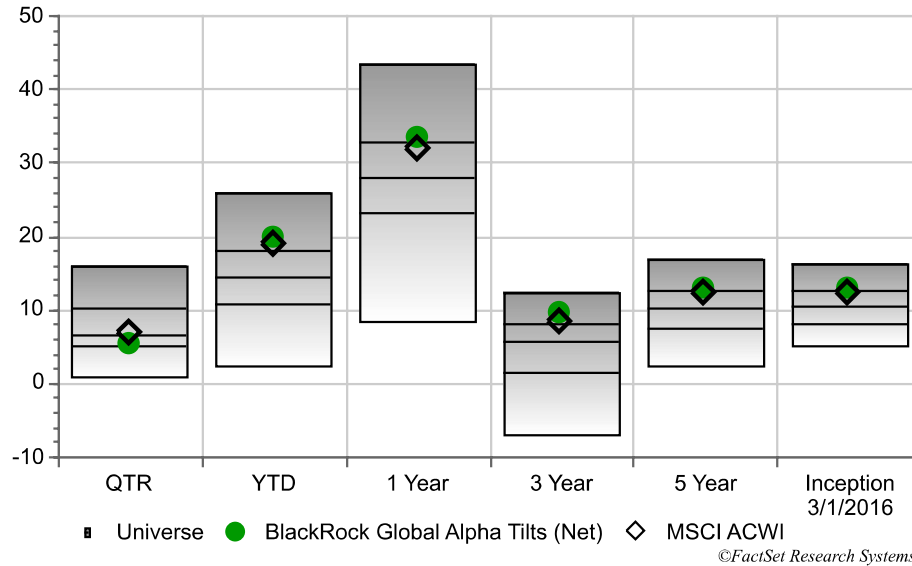




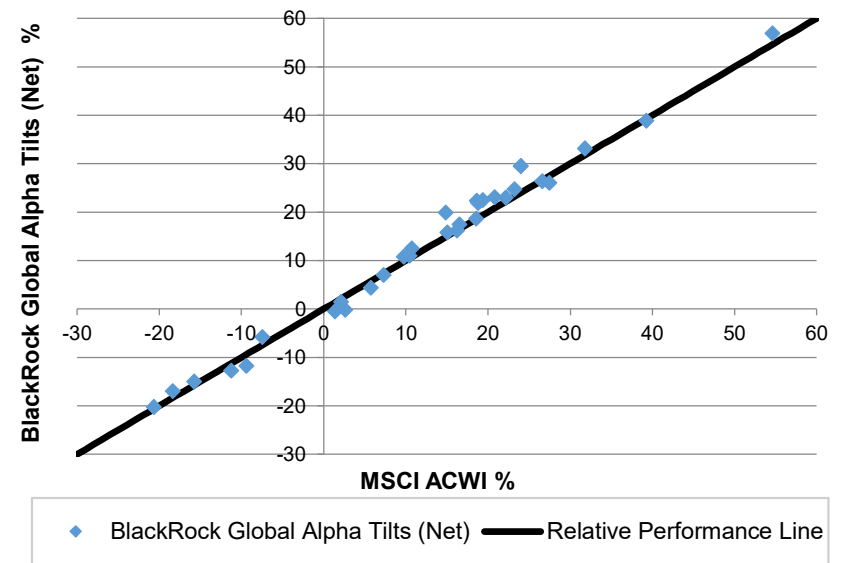
# BlackRock Global vs Universe & Benchmark

## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US:Global

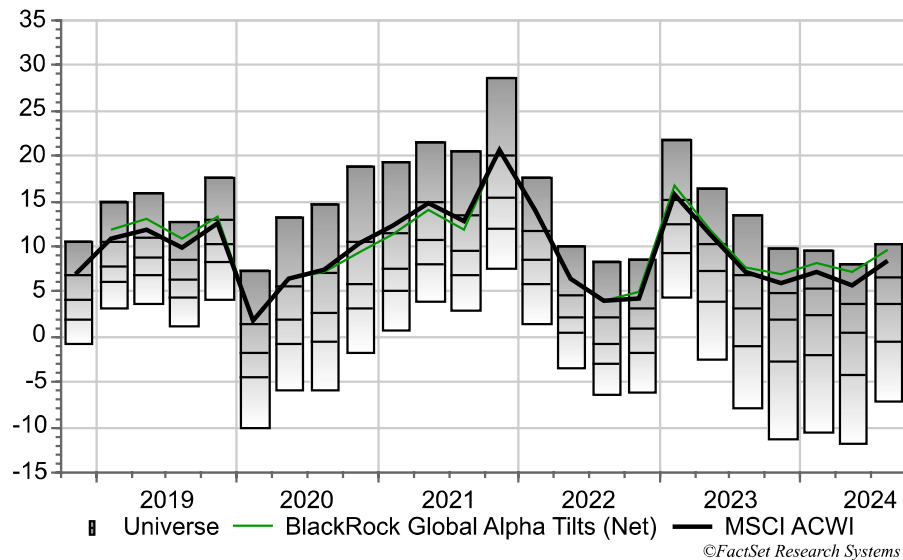


## One-Year Rolling Return Versus Benchmark



## Rolling Returns 3/1/2016 – 9/30/2024 (3 Year, 3 Month Shift)

Universe: Lipper US Global Equity



## Over/Under Benchmark Analysis

21	Outperform
10	Underperform
31	# Observations
68%	% Outperform

# BlackRock Global Attribution Analysis – September 30, 2024

## Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Lockheed Martin Corporation	1.27	1.12	0.27
Brookfield Corporation	1.03	0.95	0.22
AIA Group Limited	0.65	0.55	0.20
HCA Healthcare, Inc.	1.00	0.91	0.20
S&P Global Inc.	1.26	1.05	0.17
D.R. Horton, Inc.	0.33	0.27	0.13
Mastercard Incorporated	1.56	1.04	0.13
Johnson & Johnson	1.58	1.08	0.13
UniCredit S.p.A.	0.79	0.71	0.12
Walmart Inc.	0.97	0.55	0.12

## Top 10 Leading Detractors

	Avg. Weights	Relative Weights	Active Return
Lam Research Corporation	0.98	0.82	-0.25
Novo Nordisk A/S	1.44	0.83	-0.16
QUALCOMM Incorporated	1.01	0.73	-0.13
UnitedHealth Group Incorporated	0.03	-0.65	-0.09
MediaTek Inc.	0.64	0.56	-0.09
Applied Materials, Inc.	0.62	0.39	-0.08
Tokyo Electron Limited	0.53	0.40	-0.08
Meta Platforms, Inc.	0.71	-0.75	-0.08
Alphabet Inc.	2.91	0.37	-0.07
Micron Technology, Inc.	0.54	0.37	-0.07

## Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	-0.1	3.0	4.4	0.0	-0.1	-0.1
Consumer Discretionary	-1.4	9.4	9.2	-0.1	0.1	-0.1
Consumer Staples	-1.2	11.6	9.5	-0.1	0.2	0.1
Energy	0.4	-7.3	-2.0	0.0	-0.3	-0.3
Financials	0.4	11.9	10.8	0.0	0.1	0.1
Health Care	1.0	4.7	6.3	-0.1	-0.2	-0.3
Industrials	1.0	13.1	10.2	0.0	0.4	0.4
Information Technology	4.0	-0.3	1.2	-0.2	-0.4	-0.7
Materials	-1.3	11.2	9.7	0.0	0.0	0.0
Real Estate	-0.9	17.0	17.0	-0.1	0.0	-0.1
Utilities	-1.9	6.9	16.8	-0.2	-0.1	-0.3
Total	0.0	5.4	6.7	-0.8	-0.3	-1.3

# BlackRock Global Inception Performance & Statistics

## Investment Growth Since Inception 3/1/2016



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## Relative Cumulative Performance Since Inception 3/1/2016

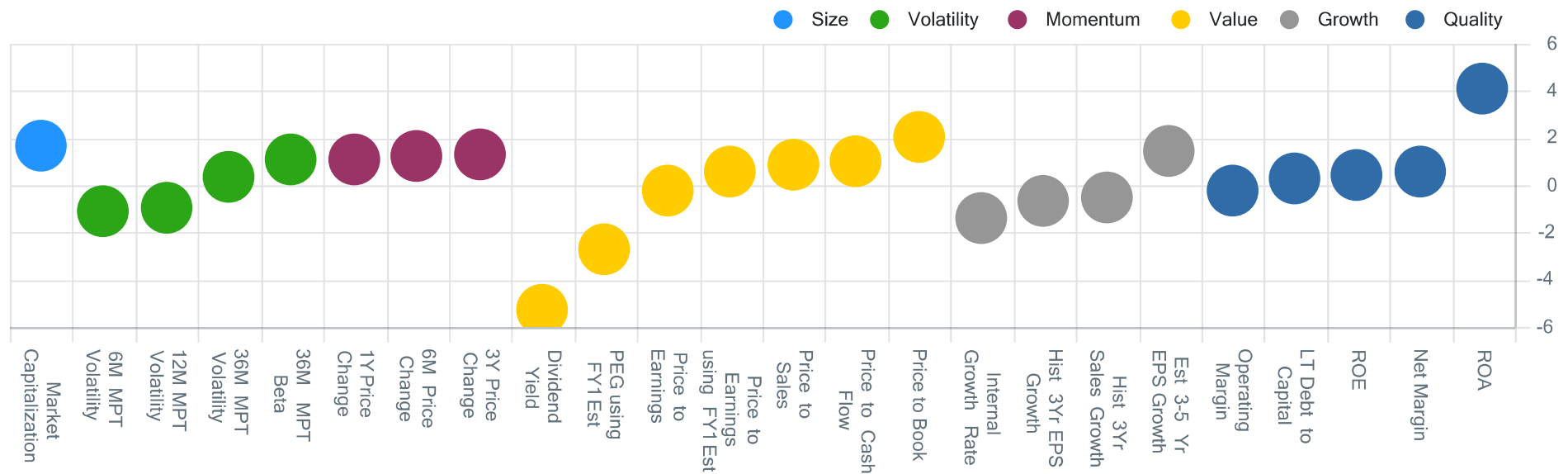


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## Risk Since Inception 3/1/2016

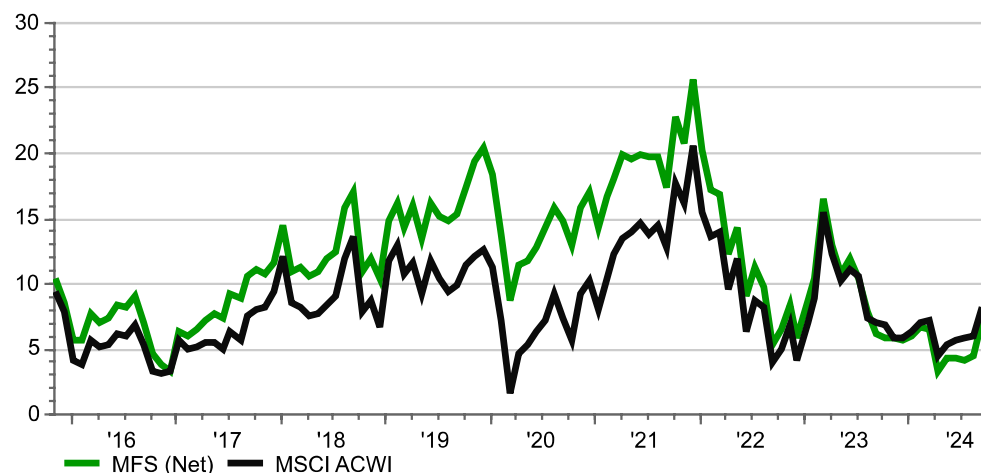
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
BlackRock Global Alpha Tilts (Net)	12.8	15.2	0.5	0.7	0.4	1.6	1.0
MSCI ACWI	12.2	14.9	--	0.7	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



# MFS Portfolio Snapshot – September 30, 2024

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

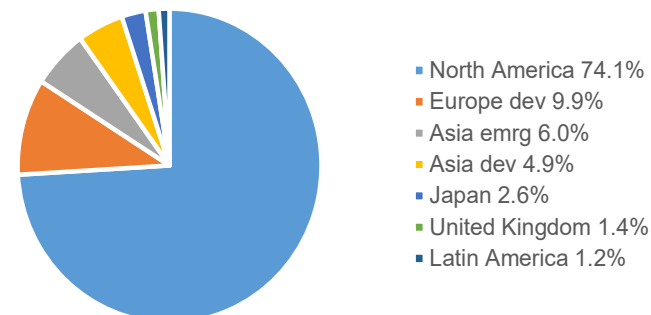


©FactSet Research Systems

## Top 10 Holdings

	Portfolio Weight	Quarterly Return
Microsoft Corporation	5.29	-3.55
Taiwan Semi. Mfg. Co. Ltd.	3.49	1.98
Visa Inc.	3.32	4.95
Accenture plc	2.73	16.96
NVIDIA Corporation	2.69	-1.69
Alphabet Inc.	2.60	-8.84
Apple Inc.	2.58	10.75
Tencent Holdings Limited	2.36	20.00
Agilent Technologies, Inc.	2.31	14.73
Canadian Pacific Kansas City Limited	2.27	8.83

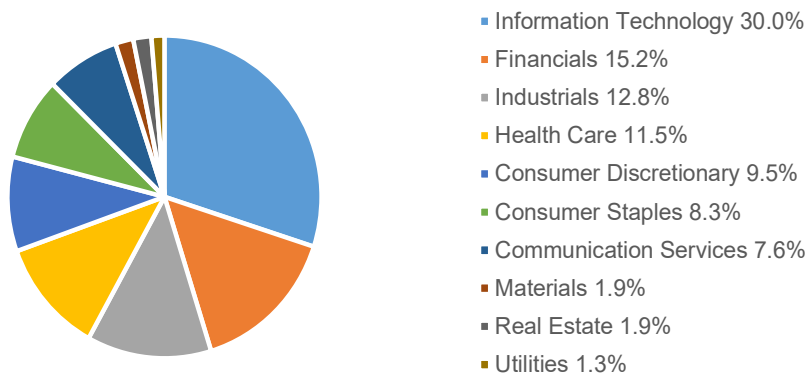
## Regional Exposure by Domicile



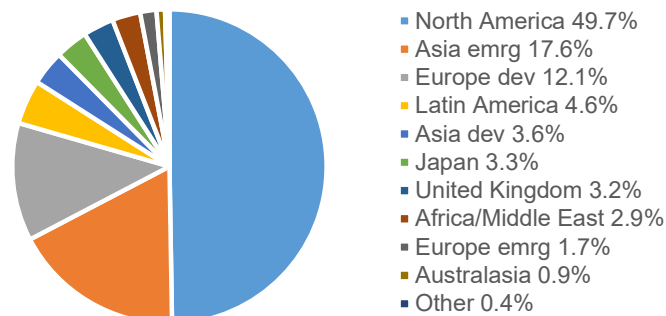
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	Inception 12/1/2012
MFS (Net)	7.2	15.1	28.0	7.1	12.4	12.0	12.3
MSCI ACWI	6.6	18.7	31.8	8.1	12.2	9.4	10.3
MSCI ACWI Growth	4.1	21.0	36.5	7.2	14.7	11.8	12.3

## Equity Sector Exposure (GICS)



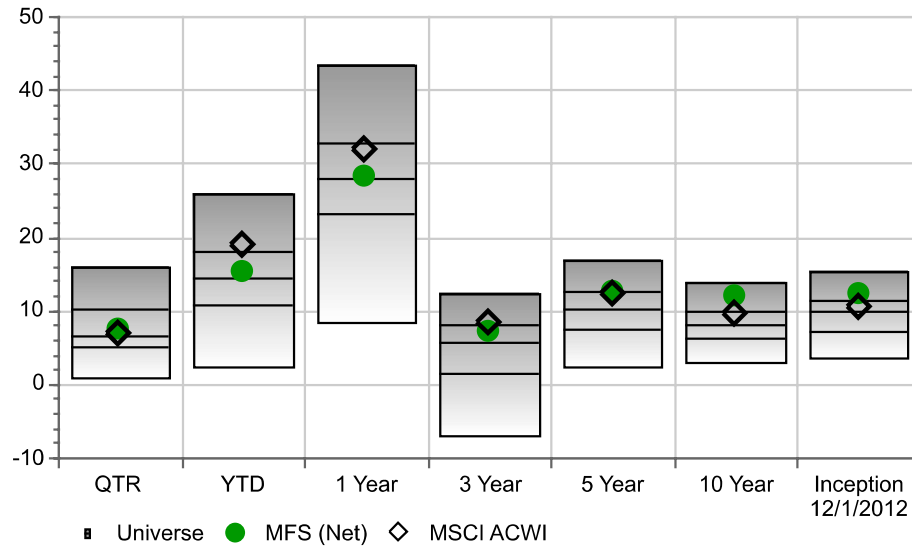
## Regional Exposure by Source of Revenue



# MFS vs Universe & Benchmark

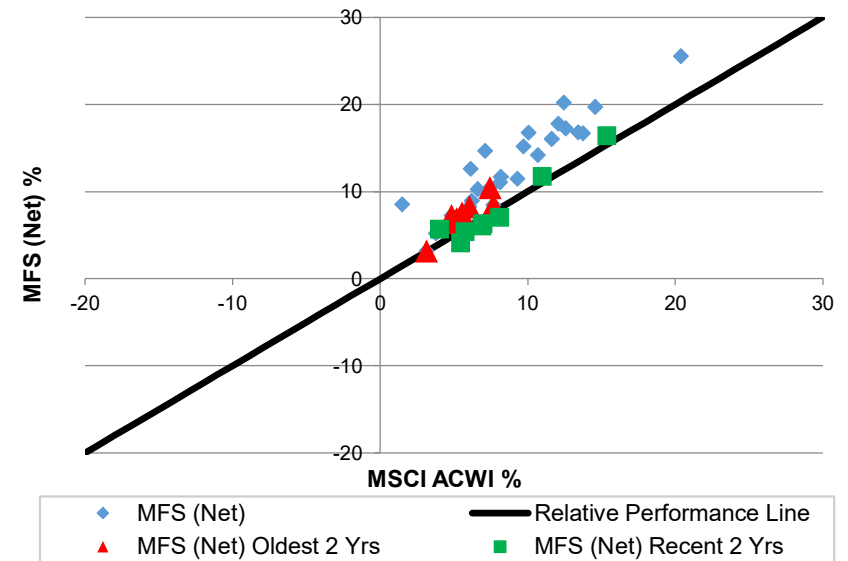
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US:Global



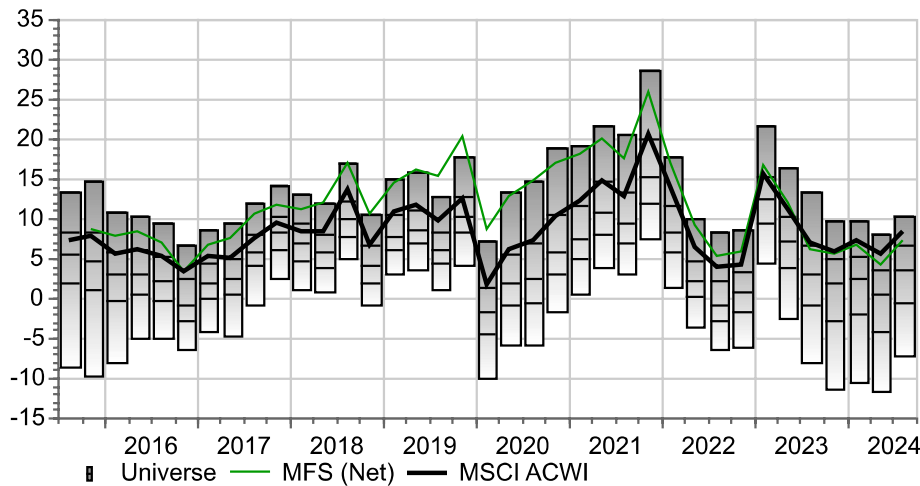
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 12/1/2012 – 9/30/2024 (3 Year, 3 Month Shift)

Universe: Lipper US Global Equity



©FactSet Research Systems

## Over/Under Benchmark Analysis

31	Outperform
5	Underperform
36	# Observations
86%	% Outperform

## MFS Attribution Analysis – September 30, 2024

### Top 10 Leading Contributors

	Avg. Weights	Relative Weights	Active Return
Accenture plc	2.63	2.36	0.39
TransUnion	0.99	0.97	0.32
Tencent Holdings Limited	2.06	1.63	0.32
Aon plc	1.86	1.77	0.31
Kweichou Moutai Co., Ltd. A	1.30	1.28	0.31
American Tower Corporation	1.75	1.62	0.30
Fiserv, Inc.	1.62	1.50	0.29
OBIC Co., Ltd.	0.90	0.88	0.29
Agilent Technologies, Inc.	2.04	1.98	0.29
NIKE, Inc.	1.53	1.40	0.26

### Top 10 Leading Detractors

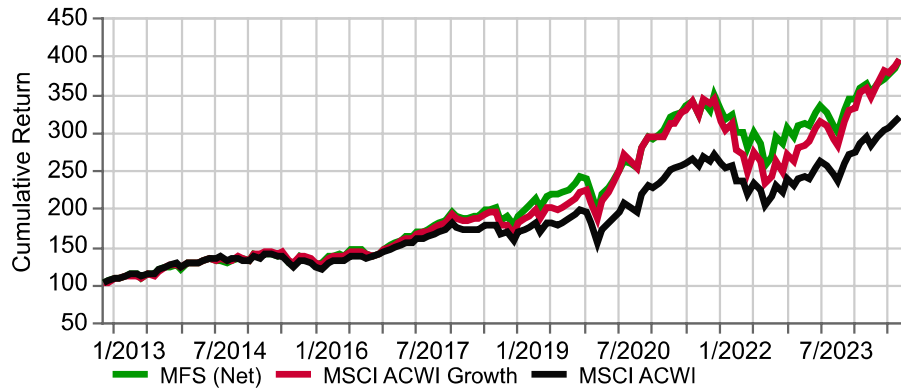
	Avg. Weights	Relative Weights	Active Return
Tesla, Inc.	0.00	-0.82	-0.25
Meta Platforms, Inc.	0.00	-1.46	-0.20
Apple Inc.	2.55	-1.76	-0.19
Microsoft Corporation	7.03	3.01	-0.13
Alibaba Group Holding Limited	0.00	-0.21	-0.11
ICON plc	1.35	1.35	-0.10
UnitedHealth Group Incorporated	0.00	-0.69	-0.10
Berkshire Hathaway Inc.	0.00	-0.77	-0.10
Charles Schwab Corporation	0.83	0.70	-0.10
Estee Lauder Companies Inc.	1.42	1.39	-0.09

### Sector Attribution

	Average relative weighting (%)	Portfolio returns (%)	Benchmark returns (%)	Sector allocation (%)	Stock selection (%)	Relative contribution (%)
Communication Services	0.2	4.2	4.1	0.0	0.0	0.0
Consumer Discretionary	-1.8	7.4	8.9	0.0	-0.1	-0.2
Consumer Staples	1.4	5.8	9.4	0.0	-0.2	-0.2
Energy	-4.1	0.0	-2.9	0.4	0.0	0.4
Financials	-1.0	9.6	10.7	0.0	0.1	-0.2
Health Care	-0.6	10.4	6.4	0.0	0.6	0.4
Industrials	2.4	9.4	9.7	0.1	0.0	0.0
Information Technology	6.2	4.0	1.8	-0.3	0.7	0.4
Materials	-2.2	22.6	9.5	0.0	0.2	0.1
Real Estate	-0.4	19.6	16.9	0.0	0.1	0.0
Utilities	-1.6	19.3	16.7	-0.2	0.0	-0.1
Cash	1.7	1.3	0.0	-0.1	0.0	-0.1
Total	0.0	7.3	6.7	-0.2	1.5	0.6

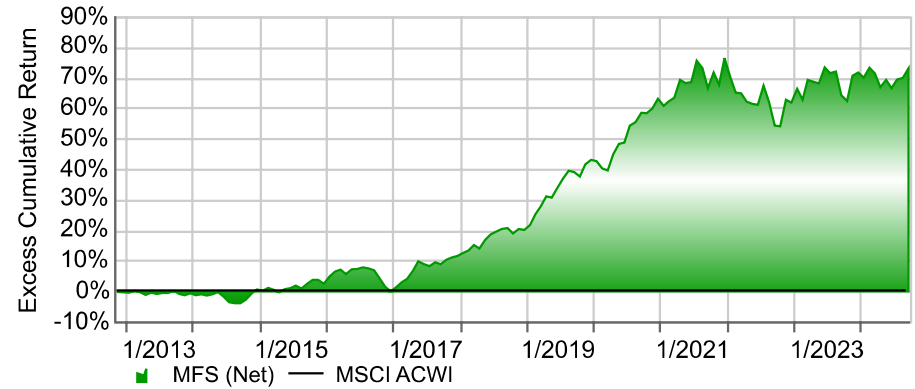
# MFS Inception Performance & Statistics

## Investment Growth Since Inception 12/1/2012



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## Relative Cumulative Performance Since Inception 12/1/2012

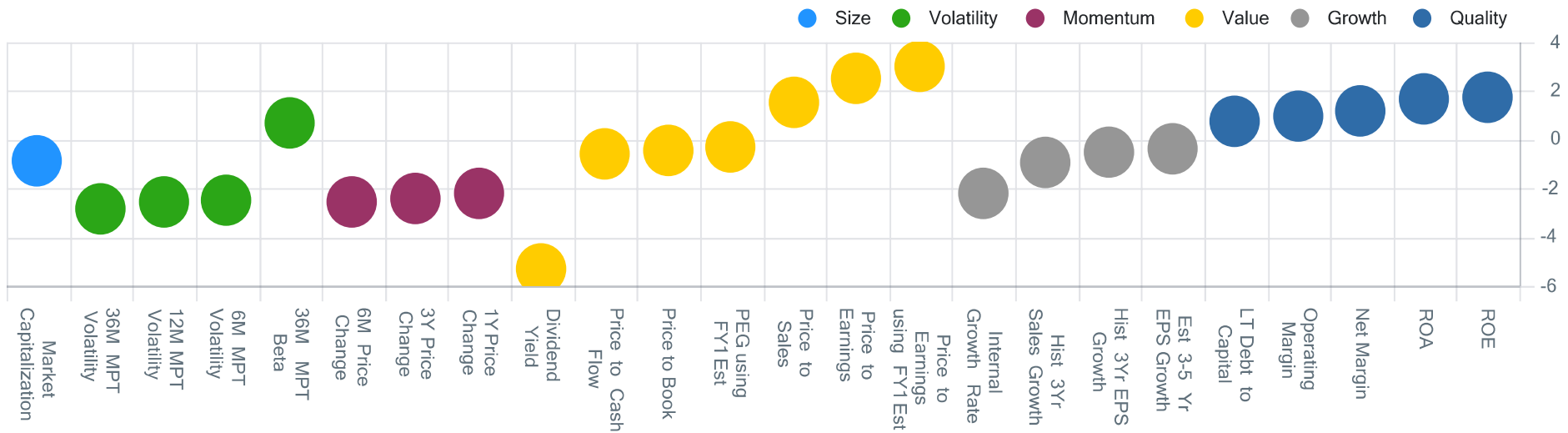


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## Risk Since Inception 12/1/2012

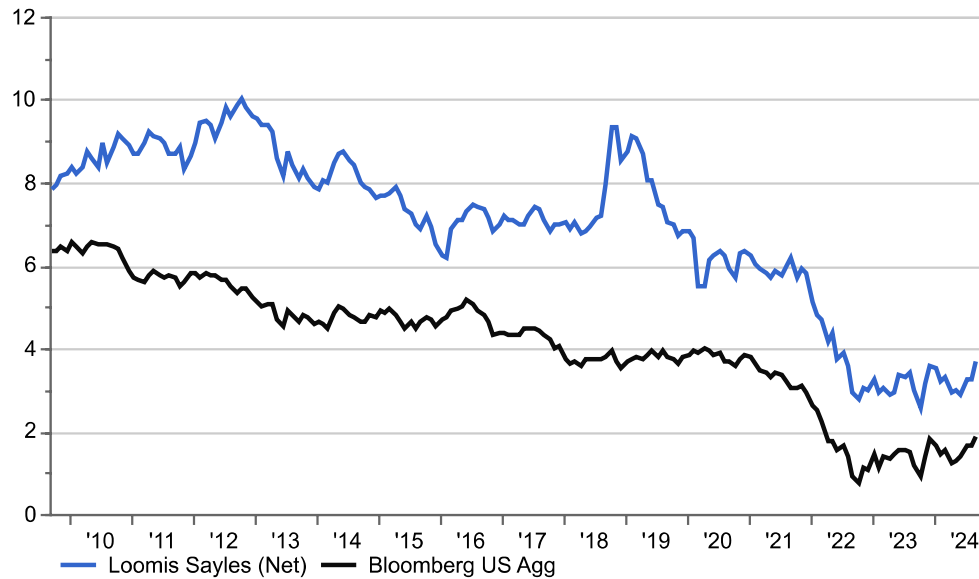
	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
MFS (Net)	12.3	14.1	1.9	0.8	0.6	3.2	1.0
MSCI ACWI	10.3	14.0	--	0.6	--	--	1.0
MSCI ACWI Growth	12.3	15.2	--	0.7	--	--	1.0

## Characteristics Tilt vs Benchmark 9/30/2024



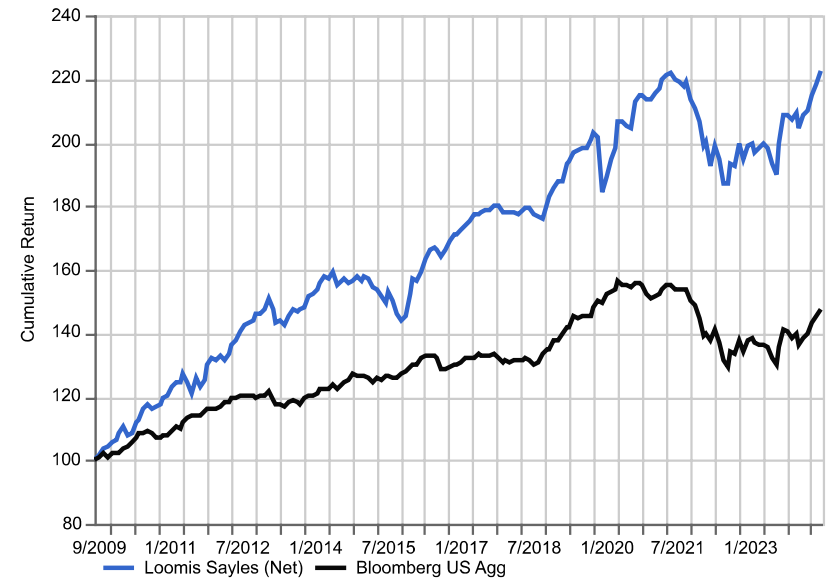
# Loomis Sayles Portfolio Snapshot – September 30, 2024

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



©FactSet Research Systems

## Investment Growth – 15 Years



©FactSet Research Systems

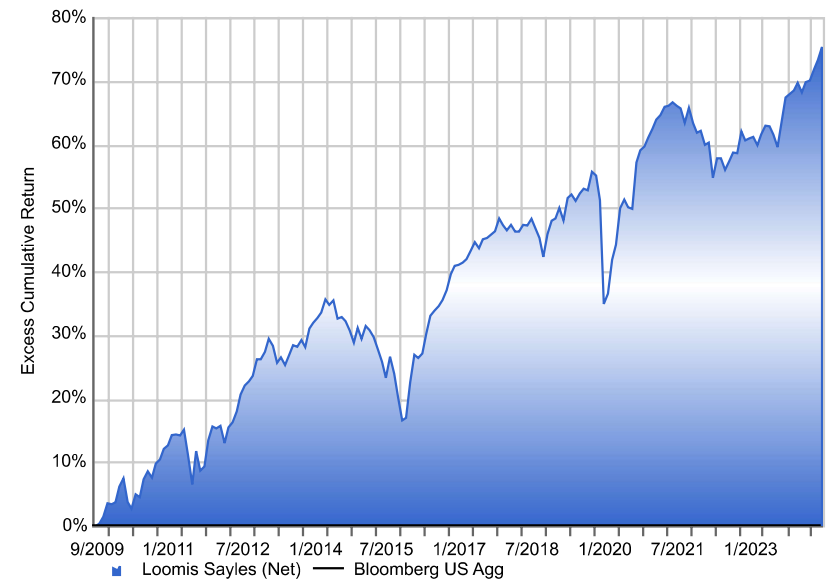
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Loomis Sayles (Net)	6.0	6.8	15.0	0.5	2.5	3.7	5.5
Bloomberg US Aggregate	5.2	4.4	11.6	-1.4	0.3	1.8	2.6

## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Loomis Sayles (Net)	5.5	6.3	3.0	0.7	0.6	4.9	0.9
Bloomberg US Aggregate	2.6	4.3	--	0.3	--	--	1.0

## Relative Cumulative Performance – 15 Years



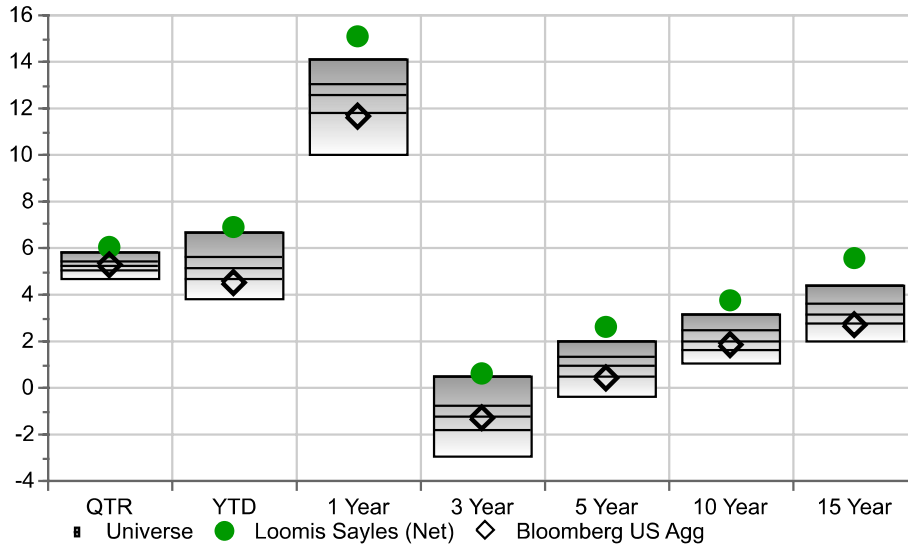
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# Loomis Sayles vs Universe & Benchmark

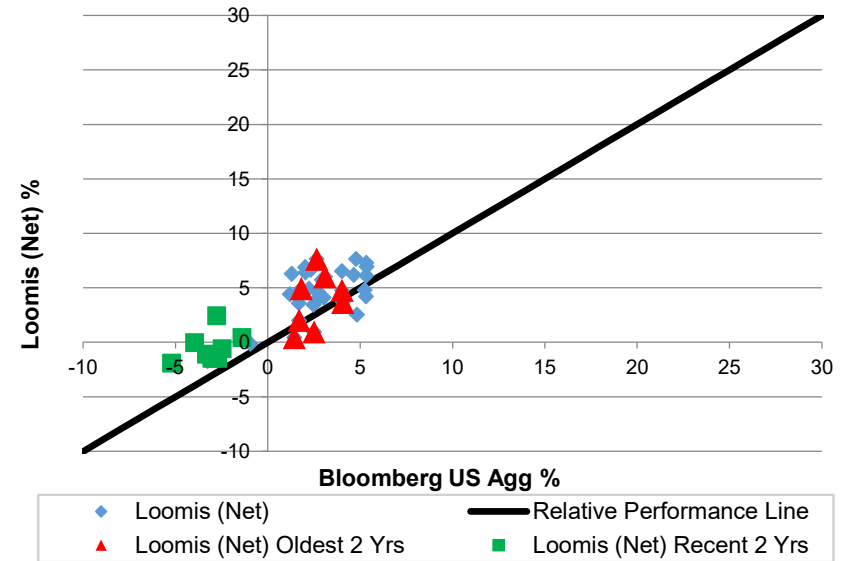
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US Core Plus Bond



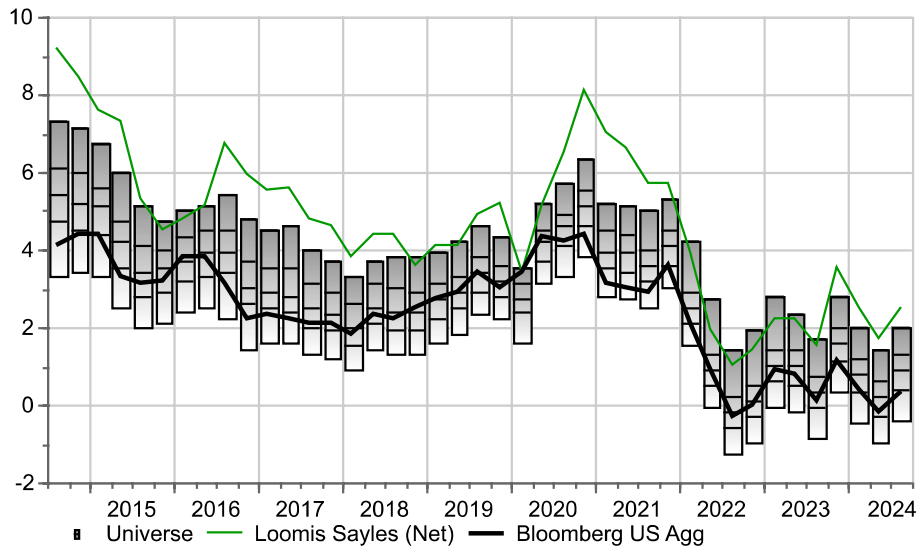
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 9/30/2024 (5 Year, 3 Month Shift)

Universe: Lipper US:Core Plus Bond



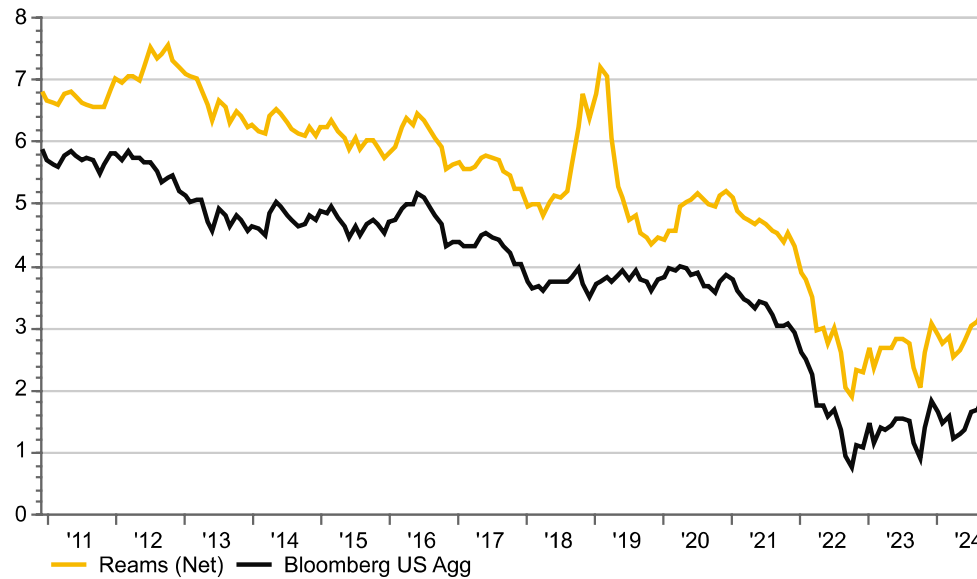
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## Over/Under Benchmark Analysis

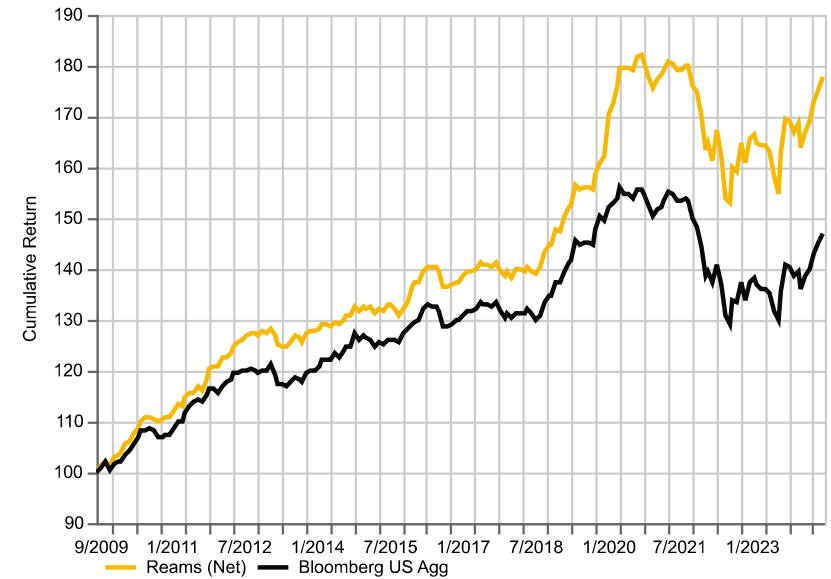
34	Outperform
6	Underperform
40	# Observations
85%	% Outperform

# Reams Portfolio Snapshot – September 30, 2024

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



## Investment Growth – 15 Years



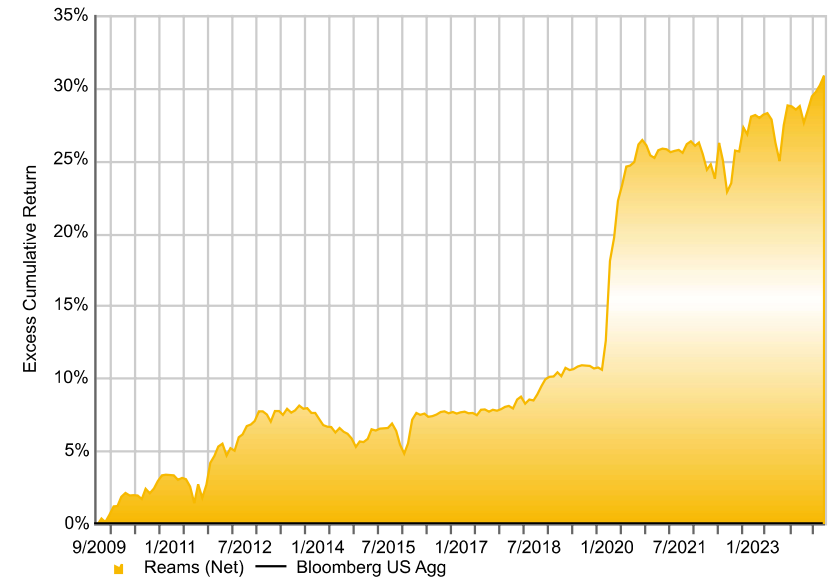
## Trailing Returns

	QTR	YTD	1 Year	3 Year	5 Year	10 Year	15 Year
Reams (Net)	5.1	4.9	12.5	-0.2	2.7	3.3	3.9
Bloomberg US Aggregate	5.2	4.4	11.6	-1.4	0.3	1.8	2.6

## Risk – 15 Years

	Return	Std Dev	Alpha	Sharpe Ratio	Information Ratio	Tracking Error	Beta
Reams (Net)	3.9	4.8	1.2	0.6	0.8	1.6	1.0
Bloomberg US Aggregate	2.6	4.3	--	0.3	--	--	1.0

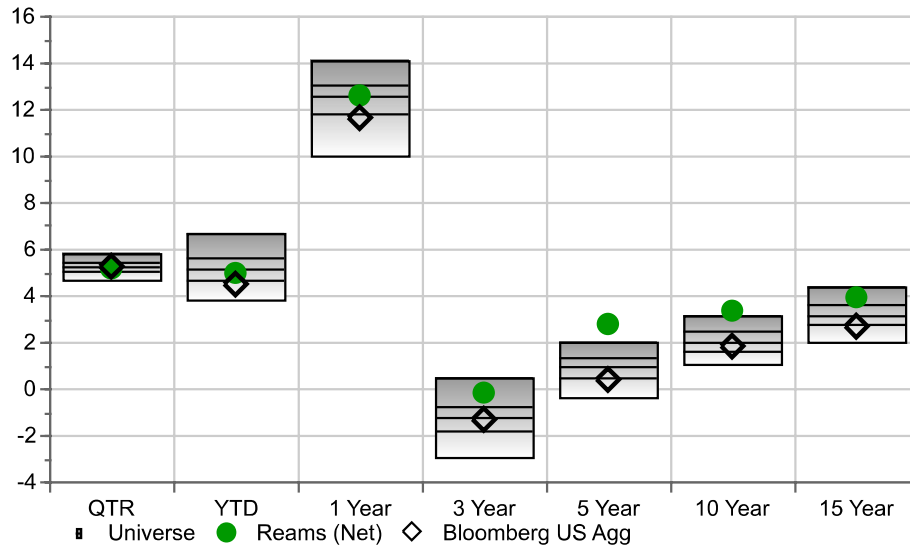
## Relative Cumulative Performance – 15 Years



# Reams vs Universe & Benchmark

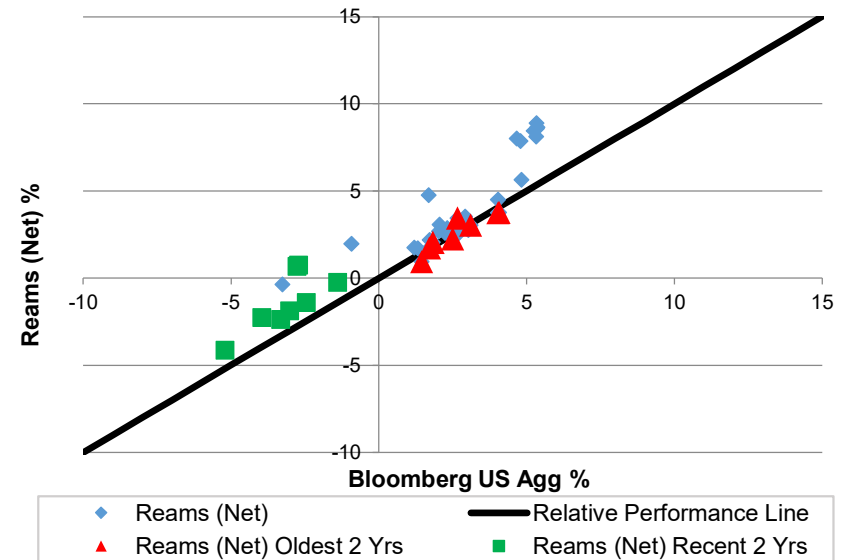
## Performance Relative to Peer Group as of 9/30/2024

Universe: Lipper US Core Plus Bond



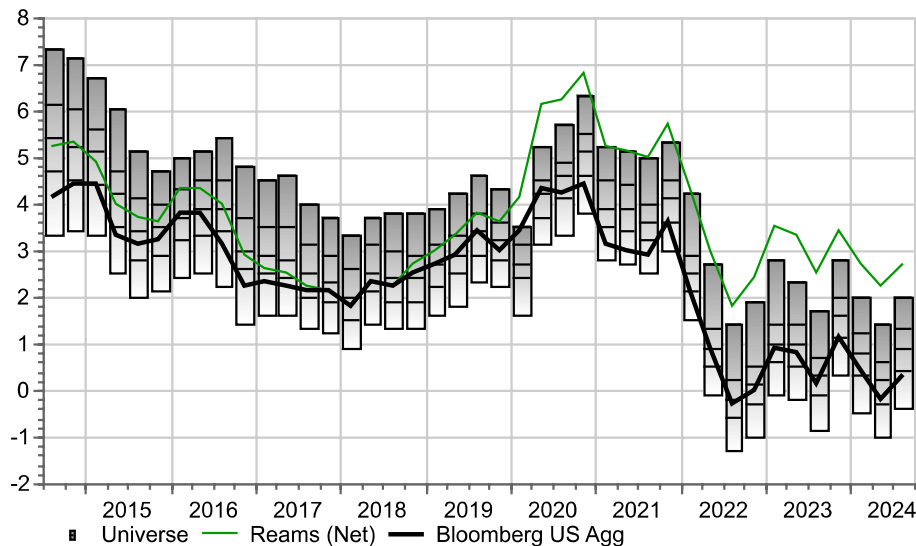
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## Three-Year Rolling Return Versus Benchmark



## Rolling Returns 7/1/2008 – 9/30/2024 (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

# Memorandum

**To:** CMERS Investment Committee

**From:** Aaron Shew, CFA

**Date:** November 7, 2024

**Re:** Loomis Sayles Due Diligence Meeting: July 25, 2024

**Team:** Erich Sauer & Aaron Shew

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## **Background**

Loomis Sayles & Company (Loomis) was hired in 1981 to manage a core-plus fixed income strategy for the City of Milwaukee Employees' Retirement System (CMERS). Loomis is CMERS' longest-serving manager. As of September 30, 2024, Loomis managed \$488.4 million, or 8.1% of the Fund's assets.

## **Key Takeaways from the Recent Meeting**

- Loomis has a highly experienced investment team. The strategy continues to be managed by Matt Eagan and Brian Kennedy, both of whom have over 30 years of industry experience. Bryan Hazelton, with 16 years of industry experience, was promoted to an Associate Portfolio Manager for the strategy in Q2 2023. This promotion coincides with the retirement of Elaine Stokes which was announced in Q2 2023 and took full effect in February 2024.
- Several guideline changes were approved in late 2023. These are discussed in detail within the memorandum.
- The transition of Dan Fuss to a Senior Advisor role that began in December 2020 had been well telegraphed and has gone smoothly. Mr. Fuss will continue his responsibilities as Vice Chairman of the firm and as a senior advisor to the strategy.
- Security-specific research drives the portfolio construction process and continues to be a key aspect of performance for the strategy. The firm continues to invest in this area.

## **Firm Summary**

Loomis, headquartered in Boston, MA, was founded in 1926 as an investment management company. The firm is structured as a limited partnership and operates as a wholly-owned subsidiary of Natixis Investment Managers, LLC (NIM). NIM is a majority-owned U.S.-based subsidiary of Paris-based Natixis, which is a holding company of BPCE, the second largest banking group in France. In July 2021, BPCE completed a tender offer to purchase all outstanding shares of Natixis. BPCE directly owned 71% of Natixis prior to the tender offer.

As of March 31, 2024, Loomis had 879 employees in 8 offices. The number of investment professionals at the firm is 346 with the majority of employees working in Boston.

Loomis had \$348.4 billion in assets under management as of March 31, 2024. CMERS invests in Loomis' Multisector Full Discretion core-plus strategy, which has a total of \$24.7 billion in assets under management. Firm assets have decreased compared to the December 31, 2021 levels of \$363.0 billion, while strategy assets have fallen from \$31.2 billion. Retail investors represent a significant clientele of Loomis and account for 39.0% of the assets under management in the Multisector Full Discretion strategy through a mutual fund offering. However, Loomis did note that over the past several years, retail investors' appetite for a strategy like Multisector Full Discretion has been decreasing, and the majority of outflows in the strategy have been from retail investors

(AUM in the mutual fund offering for retail clients decreased from \$15.4 billion to \$9.6 billion from December 31, 2021 to March 31, 2024). The institutional investment in the strategy has been relatively stable.

### **Investment Team**

When Mr. Fuss relinquished PM responsibilities and became a senior advisor to the strategy in 2020, there were three primary Portfolio Managers for the Multisector Full Discretion strategy; Matthew Eagan, Brian Kennedy, and Elaine Stokes. In Q2 2023, Ms. Stokes announced her retirement. She relinquished all portfolio management responsibilities as of December 31, 2023, and her retirement went into full effect in February 2024. Bryan Hazelton was promoted from a portfolio strategist to an associate portfolio manager for the strategy in Q2 2023, bringing with him 17 years of industry experience. Mr. Eagan and Mr. Kennedy both have 34 years of industry experience. Loomis reviews and approves the firm's succession management plan at least annually and the investment team structure allows for continuity and succession to flow naturally in the case of unexpected departures. All decisions made by the portfolio managers are concluded jointly, therefore, investment decisions and processes that have been implemented over time have not been reliant on one portfolio manager. Loomis appears to be handling the succession from Mr. Fuss well but staff and Callan will continue to monitor the team going forward for any additional changes.

Portfolio managers utilize the resources of Loomis' central analyst platform, which includes twelve fixed income sector teams. Six research strategists are responsible for focusing the work of the research analysts. Peter Sheehan is the Credit strategist, Bryan Hazelton is the Investment Grade strategist, Chris Romanelli is the High Yield strategist, Steve LaPlante is the Securitized strategist, Scott Darci is the Equity & Derivatives strategist, and Hassan Malik is the Sovereign & FX strategist. Total analysts at the firm were 176, which is down slightly from 185 at our 2022 visit. Staff is not currently concerned about analyst coverage given that the headcount is still trending upward over time.

CMERS staff spent time in the 2022 due diligence meeting with Mr. Kennedy discussing changes expected to the portfolio given Mr. Fuss' changing role. Most importantly, it was indicated that any changes would be at the margin and the overall process and philosophy of the portfolio would not change. Notable changes to the portfolio were that it will have fewer large positions above a 2% weight and while the portfolio would likely have a similar total allocation to equities, it would be more diversified across twenty to thirty names, as opposed to the typical five or fewer that were seen with Mr. Fuss. Finally, the team expected to be more tactical with respect to the high yield and cash allocations. These changes were a result of the CIO challenging the team to focus more on mitigating drawdowns. Again, this was not a significant change – Mr. Kennedy cited a goal of having the portfolio rank in the third quartile among peers, compared to historically falling in the bottom 90<sup>th</sup> percentile during market drawdowns. Loomis believes this can be achieved without sacrificing return objectives over full market cycles. The portfolio now also has fewer large FX positions relative to the strategy's historical FX position sizing.

More recently, staff continued the discussion with Loomis regarding the equity exposure in the portfolio. Staff learned that the strategy was more focused on dividend growth as opposed to income. Staff and Callan agreed this was not in the spirit of a core-plus mandate. As a result, Loomis was directed to sell the equity completion portfolio that was included in the strategy but they are allowed to maintain equity exposures that are based on the teams' capital structure views (e.g., the dividend yield on the stock is greater than the yield on the bonds for a particular issuer).

### **Investment Portfolio Construction Process**

The two co-PMs of Eagan and Kennedy are responsible for portfolio construction, informed by their participation in the sector team meetings, which is where the security-specific research and discussion takes place. It is worth noting that Mr. Eagan and Mr. Kennedy each have over three decades of industry experience and have been on the strategy since 1997 and 2007, respectively, much of it under the tutelage of Mr. Fuss. The slight changes since Mr. Fuss transitioned to his advisory role were noted earlier in the memo.

The philosophy and process of the strategy remain unchanged. Loomis believes that bond markets often misprice risk and this creates opportunities to outperform traditional market benchmarks over time. The portfolio managers incorporate both macroeconomic views and fundamental research into the portfolio construction process. Loomis has a Global Allocation team that meets monthly to discuss the macroeconomic outlook and the portfolio team meets weekly to discuss its impact on portfolio positioning. For the fundamental research, the portfolio managers and senior credit analysts work together in the previously mentioned sector teams. The portfolio managers meet bi-weekly to analyze the research generated by the sector teams and construct a portfolio designed to meet the risk and return objectives while remaining within guidelines. Ultimately, credit analysis is the main determinant of portfolio construction and the sector weights are a result of where Loomis finds the most attractive investment opportunities. Loomis also considers country and currency selection, duration and maturity structure, and yield curve positioning when constructing the portfolio.

Loomis hired a new Director of ESG in 2022, as well as a Chief Diversity Officer to lead the firm's DE&I efforts. ESG is integrated into the investment process, with analysts considering material ESG factors in their security analysis. Loomis is always focused on total return, but all else equal may buy a security with a higher ESG score. Loomis also looks at securities with poor ESG scores as an opportunity, buying at a discount with the expectation that the discount will narrow as ESG improves over time.

Typically, the PMs will collaborate with the sector teams and specify exposures that they would like the portfolio to have. These include specified quality, maturity, duration, sector, and liquidity characteristics. The strategists and the traders are then allowed to identify and select the specific securities that fulfill the exposures while adhering to the PM specifications. The result is a relatively decentralized process for the selection of securities and specific trades. Callan noted this is fairly common for firms like Loomis, given the high degree of collaboration of the sector teams, the significant tenure of the team and the process, and the intensity of the bottom-up fundamental research and security selection. The portfolio managers on our strategy have several other strategy responsibilities and this decentralized security selection process is what enables them to balance those responsibilities.

### **Portfolio Risk Controls**

Loomis has historically constructed a fixed income portfolio with characteristics that are significantly different than its benchmark, the Bloomberg U.S. Aggregate Index. CMERS' guidelines provide Loomis with a large degree of flexibility to adjust the portfolio's duration and weightings in Corporate, Non-Dollar, and High Yield bonds to take advantage of opportunities in the market. Loomis' guidelines allow the portfolio to hold up to 3% in securities that have been downgraded below B-/B3 by both Moody's and S&P. Loomis also has the flexibility to invest up to 5% of the portfolio in common equities and 5% in collateralized loan obligations (CLOs). While these guidelines give Loomis sufficient flexibility to implement their strategy, our separate account does have tighter risk controls than the retail mutual fund.

Loomis can be considered benchmark agnostic and this usually results in high tracking error. It is also worth noting that given Loomis' preference to hold the majority of the portfolio in the credit sector, the strategy's performance often has a high correlation to the stock market. This is because bond spreads typically widen when stocks fall and narrow when stocks rise. However, since credit bonds sit higher in the capital structure than equities, many investors view the credit sector as an attractive place to invest.

Loomis' track record of delivering excellent performance to CMERS mitigates concern associated with the high tracking error of this strategy. Loomis also has very sophisticated risk and compliance monitoring tools. The Portfolio Managers conduct scenario analysis on the portfolio using the Loomis Sayles' Risk Model (LRM). The LRM uses historical correlation data to assess the impact of changes in currency, yield curve, and spreads. The Portfolio Managers also review the portfolio's duration, sector, industry, credit quality, country, and currency positioning daily. Additional risk modeling is conducted with In2!, a proprietary tool developed in-house to calculate scenario analyses for portfolios. The quantitative research risk analysis (QRR) group conducts risk analyses and prepares reports for portfolio managers, which provides systematic factor exposures of strategy holdings and identifies possible securities as candidates for further research. Finally, Loomis generally limits its issuer risk to 3% at the time of purchase. CMERS guidelines permit up to 5% by market value in any single issuer.

At the 2022 due diligence visit, Loomis expressed a desire to increase the CLO limit from 5% to 10%, add the ability to invest 10% of the portfolio in treasury futures, add 10% to the CDX high yield credit default swap index, and eliminate the guideline that places a limit on 144a securities. These update requests were brought for consideration to the CMERS investment committee in November of 2023 and the following noteworthy requests were granted:

- Limit on 144(a) securities increased from 50% to 65%
- Individual bank loans were added with a limit of 15%
- Currency forwards allowed for hedging purposes only
- US Treasury Futures allowed for hedging and non-hedging purposes and are limited by the portfolio's duration restriction
- Long-only (sell protection) Index Credit Default Swaps were added with a limit of 30% and cannot be used to create leverage or for speculative purposes, liabilities resulting from CDX use must be fully collateralized by cash, cash equivalents, and U.S. Treasuries

More recently, the Board approved an additional guideline modification that allows for Loomis to participate in security exchanges resulting from corporate actions. This modification arose from the merger offer involving Dish Network, whose bondholders, including Loomis Sayles, were given the option to convert their existing bonds to securities backed by the new entity. This new entity is expected to be a stronger guarantor and to provide better collateral. Therefore, it was determined that Loomis should be allowed to convert these bonds and to be able to use their discretion in making the proper decisions for the portfolio regarding corporate actions, conversions, exchanges, dispositions, etc. going forward. Loomis will still require approval from the Board if the converted securities cause the portfolio to temporarily exceed the 3% limit in its' downgrade bucket as set forth in the guidelines.

### **Portfolio Compliance and Personal Transactions**

Don Ryan is Loomis' Chief Compliance Officer. Mr. Ryan reports to the firm's General Counsel and sits on multiple committees, including those on Risk Management, Pricing, Trading

Oversight, and Ethics. Mr. Ryan has 57 staff members working in his department and they are heavy users of technology to help them monitor guideline compliance.

Portfolio managers and other members of the investment management team are responsible for monitoring their respective portfolios to make sure they are in compliance with client specific guidelines. All client guidelines are coded into the Charles River ComplianceMaster System, which Loomis uses to monitor pre- and post-trade compliance. This system is regarded as one of the best in the industry.

From an internal compliance perspective, Loomis has hired Ernst & Young to conduct a Service Organization Control (SOC) 1 audit on an annual basis. The SOC 1 is an audit that assesses the firm's compliance, operations, and technology controls. Loomis has had no material deficiencies in these audits over the past two years. The SEC provided notice on August 17, 2023, regarding a routine examination with additional information requested regarding the use of artificial intelligence. Loomis has provided the SEC with all of the information they have requested to date. The firm also has an internal audit program. Every new employee receives training on the firm's Code of Ethics.

### **Trading**

Loomis' portfolio annual turnover has averaged approximately 30% over the past three years. Given the Loomis' stated three-to-five-year time horizon when purchasing a security, this turnover is toward the higher end for the most recent three-year period, however, this largely reflects above average volatility that has existed in the fixed income markets during this timeframe. In addition, portfolio turnover was higher due to the team's desire to further diversify the portfolio relative to Mr. Fuss' more concentrated positioning, whereby number of issues increased from 201 holdings in 2020 to 664 holdings in the most recent reporting. Global Trading Analytics (GTA), CMERS' transaction cost measurement provider, reports that Loomis' trading costs have been in-line with their peers over the past two years, ranking in the second quartile over this timeframe. Loomis' FX trading performance also ranked in the third quartile relative to its peer universe. Because Loomis is often a liquidity provider at times of market stress, they buy securities at a discount, and it has been common to see them rank high in GTA's universe throughout our history with the strategy.

Rowland Bankes is Loomis' Head of Trading and is responsible for overseeing the trading desk for the firm's fixed income strategies. Loomis employs 32 fixed income traders and 18 portfolio specialists. There is one trader assigned to each sector team. This structure ensures that traders, portfolio managers, and portfolio specialists work closely together and allows each trader to become very familiar with the securities they trade. Each trader, along with their respective sector team, supports all of Loomis' fixed income strategies and aggregates trades when possible. Loomis uses multiple mediums for its fixed income trading, including traditional brokers, electronic crossing networks, and alternative trading systems. The size of the trade and the liquidity in the market are the main determinants of the trading strategy. Loomis has hired TCA consultants, GTA and Trade Informatics, to perform trading cost analyses. In addition, Loomis reviews dealers monthly and incorporates measures of best execution into the performance evaluation of its traders.

### **Disaster Recovery**

Loomis has a disaster recovery plan in place that identifies steps the firm will take to try to ensure that critical systems such as portfolio management, accounting, and trading and settlement are supported in the case of an emergency. Loomis has in place a redundant data center and work area recovery site for the case of anything preventing the Boston headquarters



from being capable of housing operations. All critical data is replicated and stored off-site daily. The most recent business continuity test was conducted in December of 2023. The unannounced tests are designed to ensure that Loomis is positioned to perform critical business processes continuously in the event of an emergency. The unannounced test found no critical issues.

ERS staff discussed the faulty update issued by CrowdStrike on July 19, 2024 which caused widespread problems and debilitated many Microsoft Windows computers running the software. The IT teams were alerted of the issue overnight and were able to get the office computers up and running before the workday began. This situation demonstrated that frequent crisis practice is highly beneficial for Loomis as they were able to avoid a material outage.

The firm's investment professionals can access important systems online. The firm moved fully remote when the pandemic began in March 2020 and employees have started to transition back to the office recently. In 2022, personnel worked in the office for about two days per week and firm management is now ensuring that staff are in the office for three days per week.

### **Performance Summary and Conclusion**

The succession plan for Mr. Fuss was consistently noted as an issue to monitor in prior reports. While conceding that truly replacing a legend like Mr. Fuss is impossible, those reports noted that Loomis has had a plan in place for a number of years that provides for an orderly transition to a team of experienced PMs who worked closely with Mr. Fuss for decades. Now that the succession plan has gone into effect, Staff and Callan believe that Loomis has taken all the necessary steps to ensure that the strategy continues to deliver as it has in the past. We will continue to closely monitor this situation going forward.

Another minor issue that has been noted in prior reports is portfolio liquidity. In practice, CMERS has not had difficulty withdrawing money from its account with Loomis, however, it is possible that in a time of market stress, CMERS could experience such difficulty. Conservative positioning of the portfolio in the current market environment, along with some of the modifications the PMs are making to dampen downside volatility, should help mitigate liquidity concerns.

Loomis Sayles' net-of-fee returns have outperformed its benchmark over all time periods shown below, which are provided as of September 30, 2024. Loomis has been an excellent core-plus fixed income manager and has added significant excess returns to the Fund over time.

	1-Year	3-Year	5-Year	10-Year	15-Year
Loomis Sayles (net)	15.0%	0.5%	2.5%	3.7%	5.5%
<i>Bloomberg Barclays US Agg Index</i>	11.6%	-1.4%	0.3%	1.8%	2.6%

# Memorandum

**To:** CMERS Investment Committee  
**From:** Aaron Shew, CFA  
**Date:** November 7, 2024  
**Re:** MFS Due Diligence Meeting July 24, 2024  
**Team:** Erich Sauer and Aaron Shew

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## **Background**

The City of Milwaukee ERS (CMERS) hired MFS Investment Management (MFS) in December of 2012 to manage a Global Growth Equity mandate. As of September 30, 2024, MFS managed \$214.3 million, or 3.5% of the Fund's assets.

## **Key Takeaways from the Most Recent Visit**

- MFS' research analyst group is well resourced, deep in number, and provides broad coverage of global equity and fixed income sectors. Research is central to the firm's culture, and continues to be a key advantage and differentiator for the firm.
- MFS conducted a Thesis Drift study which found that stocks sold due to a thesis change subsequently underperformed and the higher conviction names, on average, outperformed in the following periods. Exiting positions that experience a thesis change saves the team considerable time and energy and allows for sales proceeds to be reallocated into higher-conviction, higher-performing names.
- Mike Roberge will move out of his role as Chair and CEO and assume the position of Executive Chair in January of 2025. Ted Maloney, CIO, will become the firm's CEO and Alison O'Neill, co-CIO of Equity, will become the firm's CIO at that time.
- ERS Staff came away from the meeting impressed with the portfolio managers and the research analysts, and believes they have the ability to implement the strategy successfully.

## **Firm Summary**

Founded in Boston in 1924 as Massachusetts Financial Services Company, MFS created the first US mutual fund, Massachusetts Investors Trust. Boston remains the firm's headquarters and primary investment office, although the firm has research personnel stationed around the world. MFS has been a subsidiary of Sun Life Financial, Inc., a diversified Canadian financial services organization, since 1982. MFS provides global asset management services with approximately \$628.8 billion in assets under management, of which \$212.8 billion is for the firm's 631 institutional clients, with the balance belonging to retail clients. The firm's products include equity, fixed income, and quantitative strategies. MFS Investment Management employs 2,122 individuals, including 266 investment professionals as of March 31, 2024.

In February 2024, MFS announced that Mike Roberge will move out of his role as Chair and CEO and assume the position of Executive Chair in January of 2025. Ted Maloney, CIO, will become the firm's CEO at that time. Following this, MFS announced in March 2024 that Alison O'Neill will move out of her role as co-CIO of Equity and assume the CIO role. MFS continues to telegraph significant staff changes well in advance. Callan and Staff do not view these changes as issues. MFS has developed a culture of developing and promoting their employees in-house, with many portfolio managers beginning at the analyst level. In addition, it is considered a positive that senior management consists of experienced investment management staff.

The strategy had \$8.9 billion in total assets under management, of which \$6.0 billion is in separate accounts as of March 31, 2024. This compares to \$8.5 billion and \$6.1 billion, respectively, as of our last visit. CMERS was the first U.S. public fund client of the strategy when we funded the mandate in 2012 and currently the strategy has 8 public fund clients, representing \$3.1 billion of assets invested with the strategy. At its current level, capacity in the strategy is not considered an issue since MFS has had other global equity strategies in the \$50 billion range. Some holdings overlap with related U.S. and International Equity strategies, but MFS evaluates capacity by taking into account not only related strategies, but all trading at the firm. MFS does not provide estimated capacity numbers for their strategies but they are proactive in monitoring asset growth and have been committed to closing strategies before capacity becomes an issue, providing CMERS comfort that our strategy would not be negatively impacted, even if the related strategies show significant asset growth.

### **Investment Team**

Mr. Constantino and Mr. Skorski joined the strategy in 2008 and 2018, respectively, and since that time they have been successful as co-PMs. As part of MFS' objectives to create long-term continuity among its investment teams, Mr. Skorski joined David Antonelli and Mr. Constantino as a third co-PM on the Global Growth Equity strategy in May 2018. Mr. Skorski joined MFS as an equity research analyst in 2007, and was a PM on the Japan equity strategy before joining the Global Growth team.

In October 2019, MFS announced that Mr. Antonelli would retire from MFS in April of 2021. Since that date, the co-PM team of Mr. Constantino and Mr. Skorski continues to work well in implementing the strategy's philosophy and process. Although ERS staff always places great scrutiny on the departure of an experienced PM, MFS telegraphed this departure well in advance, giving us time to evaluate the potential effects of the new leadership. The departure of Mr. Antonelli is also mitigated by the continued strength of the MFS research analyst platform. As part of the succession plan, Mr. Antonelli had devoted a significant portion of his responsibility to mentoring Mr. Skorski during the two years prior to his retirement. Staff met with Mr. Skorski in the most recent meeting and determined that he is a competent portfolio manager with a deep understanding of the Global Growth Equity strategy, philosophy, and process. In addition, Mr. Constantino and Mr. Skorski appear to be strong complements of each other and neither assumes a senior position to the other. Both Mr. Skorski and Mr. Constantino make investment decisions in tandem. Callan and staff will continue to monitor the co-PMs closely.

Mr. Constantino and Mr. Skorski have responsibilities in other products. Mr. Constantino and Mr. Skorski manage three additional strategies – U.S. Large Cap Growth Equity (\$14.6 billion), U.S. Large Cap Growth Concentrated Equity (\$477.5 million), and Global Growth Concentrated Equity (\$2.6 million). The U.S. large cap strategies overlap significantly with the U.S. portion of the Global Growth strategy. Even though Mr. Constantino's and Mr. Skorski's other responsibilities include U.S. products, we are comfortable with their ability to manage a global strategy given Mr. Constantino's experience on the global product and Mr. Skorski's prior experience with international stocks as an analyst and PM on the Japan strategy.

### **Investment Philosophy and Process**

MFS believes earnings growth drives stock performance over the long term and stock prices often overreact to short-term events, providing opportunities for long-term investors. Their investment process includes both a fundamental and quantitative component to identify companies with:

- Durable earnings growth rates that are higher than their industry peers

- Valuations that don't reflect long-term growth prospects
- Improving fundamentals that will drive multiple expansion

MFS employs a bottom-up investment approach that relies heavily on their global research platform consisting of 127 research analysts, which is an increase from 119 at our last visit. The research process begins by using the MSCI All Country World Index as the universe to consider investments from (other high-quality stocks outside of the Index are also considered if they are believed to provide above-average, durable earnings growth), which includes over 3,000 global stocks in emerging and developed markets. These are then screened primarily for liquidity factors, narrowing the universe of stocks to somewhere between 1,800 and 2,400 stocks that are monitored on an ongoing basis. MFS equity analysts research these remaining companies as part of global sector teams. The global sector teams generally meet weekly, and those weekly meetings are also attended by portfolio managers with expertise in each specific sector. The analysts conduct their own research on companies, including developing their own financial models, visiting company management, and interviewing competitors, suppliers, and customers with the goal of identifying well-managed companies with sustainable competitive advantages and the ability to generate strong returns. This process leads to a rating of buy, hold, or sell by the analyst for each company. The total number of buy-rated global stocks typically ranges from 750 to 850 names.

Portfolio managers then construct the portfolio with anywhere between 70 to 90 stocks based on the stock ratings and frequent collaboration with the equity analysts. Most of the stocks in the portfolio are buy-rated, and a few may be hold-rated. There are two scenarios under which a hold-rated security would be included in the portfolio. The first is simply that a security may be added to the portfolio when it is buy-rated, and may appreciate in price to the point where it is revised to hold. The second scenario is a bit more nuanced. MFS' analysts typically rate stocks assuming a three-year holding period. Under this assumption, the stock prices of some very strong companies never quite get cheap enough to be rated a buy. However, for companies with truly compelling competitive advantages, the Global Growth strategy PMs will use a five- or even ten-year holding period, and with the longer holding period, those stocks make sense to be added to the portfolio, even though they are rated hold by the analyst.

During their weekly meetings, portfolio managers and analysts exchange ideas and information to ensure an analyst's "best ideas" are in the portfolio. The investment team also collaborates daily with research analysts on an informal basis via e-mail, face-to-face meetings, tele- and video-conferences, and a proprietary, web-based stock reporting and rating system.

The 127 research analysts are critical to the success of MFS' equity strategies, and could be considered to provide MFS with a competitive advantage over other firms with smaller teams. Turnover has been reasonable with eight net additions to the analyst pool since our last visit.

Portfolio sector and country weightings are a result of the bottom-up stock process rather than a top-down macroeconomic outlook. The investment team utilizes insights from MSCI Barra's risk model to ensure the strategy isn't taking any unintended bets in the portfolio at the sector and country levels. The strategy is limited to a maximum weight of 25% in emerging markets, but will typically be well below that amount. The portfolio managers often prefer to get emerging markets exposure through companies headquartered in developed markets that derive a significant portion of their revenue from emerging markets. While permitted to hedge currency, the strategy rarely, if ever, hedges. Rather, the research analysts are expected to conduct currency impact stress tests and to factor currency valuations into their earnings growth forecasts for each company.

While the portfolio managers are responsible for monitoring portfolio risk, MFS incorporates a monthly Investment Management Committee to monitor risk in all their equity strategies. MFS employs a Quantitative Risk Team using MSCI Barra to provide daily portfolio risk characteristics such as tracking error, beta, style characteristics, and risk decomposition to the portfolio management team. The Quantitative Risk Team also provides monthly and semiannual risk assessments to the Investment Management Committee. These formal processes are designed to ensure that portfolio managers are taking an appropriate level of risk that is disciplined and consistent with the investment philosophies of each strategy.

### **Trading**

Nola Kopfer joined MFS as Director of Trading in March of 2019 and has implemented a number of changes to firm trading. We met with Ms. Kopfer during our visit and she provided an overview of the trading department and highlighted procedural changes that have been initiated over the last several years. For example, MFS traders are now organized by sector, which aligns with industry standards. MFS has also been able to integrate equity and fixed income trading within the Charles River Investment Management System (CRIMS) and has additional plans to integrate all asset classes into the system. CRIMS has replaced many systems as part of an end-to-end trading strategic program initiative.

The international traders are organized into four regional sector teams and are based in Boston, London, and Toronto. The US-based traders are all located in Boston and are organized by sector. The Global Trading Department consists of 36 traders with an average of 21 years of experience.

Execution quality and transaction cost data is reported to MFS' Trade Management Oversight Committee on a daily, monthly, and quarterly basis.

The Global Growth Equity strategy utilizes the services of MFS' Equity Trading Team. The investment team enters trade orders via Charles River for equity trades. The Charles River system was implemented for equity trading six years ago and fixed income trading transitioned onto the Charles River system three years ago. Charles River includes a compliance module which conducts a compliance check against a client's investment guidelines prior to order entry and execution. MFS utilizes multiple sources to find liquidity, including full-service brokers, Electronic Communication Networks (ECN's), alternative trading systems (ATS), and direct market access. The trading department also utilizes the Bloomberg execution management system as well as the Global Portfolio Modeler, an internally developed order-creation system utilized to create blocks of orders.

Turnover for the strategy has averaged approximately 27% per year over the past three years, which is consistent with MFS' stated three-to-five-year time horizon when purchasing a security. According to Global Trading Analytics (GTA), CMERS' transaction cost measurement provider, MFS' equity trading results have been in the third quartile of GTA's universe on average over the past two years. Foreign exchange results rank in the fourth quartile on average over the same time period. GTA views these results to be within an acceptable range. Additionally, MFS has been good at keeping the explicit cost of commissions on equity trades relatively low. Staff and GTA will continue to monitor Ms. Kopfer's performance, new trading desk initiatives, and trading performance closely going forward.

### **Portfolio & Firm Compliance**

Martin Wolin, MFS' former Chief Compliance Officer, retired from the firm in February 2022. His responsibility as CCO has been split and handed off to Rosa Licea-Mailloux, Head of

Compliance for the Americas, and Nikki Cagan, Head of International Compliance. Ms. Licea-Mailloux and Ms. Cagan report to MFS' General Counsel, Heidi Hardin. MFS has not had any compliance issues with ERS' account since Mr. Wolin's departure. In addition to the systems mentioned above, the MFS compliance team continually monitors the portfolio for post-trade compliance with CMERS' guidelines. This process is largely automated, and any issues are reconciled with Northern Trust on a daily basis. The compliance team will call CMERS staff within one day after discovery of an issue and work with staff to bring the portfolio back into compliance.

MFS' Internal Audit Department incorporates many of its compliance processes into its annual audit plan. All oversight for compliance-related activities resides with an executive committee.

MFS' Code of Ethics governs all personal investing for employees, officers, and directors and requires them to certify quarterly that they are in compliance with the Code.

### **Information Technology and Disaster Recovery**

MFS' centralized technology platform has three main components:

- Applied Technology: responsible for the design, development, and maintenance of MFS business technology applications, consisting of project management, application development, business analysis, and quality assurance
- Infrastructure: responsible for the design, implementation, and maintenance of core technology platforms, including networking, telephone, web, messaging, production control, operations, and release management
- Global security: responsible for cyber, information, and physical security, the group monitors, assesses, manages, and maintains a registry of controls to protect the confidentiality, integrity, and availability of data, applications, systems, networks, and facilities from exposure of threats and vulnerabilities

MFS' business recovery and continuity plans provide for continued operations of the most critical functions of the organization. The plans are reviewed and updated semiannually. Additionally, MFS conducts periodic Disaster Recovery exercises to validate the plans. They also conduct joint tests with key service providers to ensure their ability to function during an emergency. MFS last conducted a disaster recovery exercise in September and October of 2023, and had no material issues. ERS staff discussed the faulty update issued by CrowdStrike on July 19, 2024 which caused widespread problems and debilitated many Microsoft Windows computers running the software. The crisis management teams were alerted of the issue at 12:30AM and were able to get every computer back up and running by 5:30AM, preventing a material outage at MFS. This situation demonstrated that frequent crisis practice is highly beneficial for MFS.

### **Proxy Voting**

MFS utilizes Institutional Shareholder Services (ISS) for proxy-related services, such as vote processing and recordkeeping functions. However, voting of proxies is in accordance with MFS' Proxy Voting Policies and Procedures and overseen by MFS' Proxy Voting Committee. MFS votes proxies based on what they believe is in the interests of its clients.

### **Performance Summary and Conclusion**

MFS' net-of-fee returns have outperformed its benchmark over the longer time periods shown, which are provided in the table below as of September 30, 2024.

	1 Year	3 Years	5 Years	10 Years	Since Inception (12/1/2012)
MFS Global Growth Equity (Net)	28.0%	7.1%	12.4%	12.0%	12.3%
<i>MSCI ACWI</i>	<i>31.8%</i>	<i>8.1%</i>	<i>12.2%</i>	<i>9.4%</i>	<i>10.3%</i>

While growth investing went through several years of very strong performance in the period ending in 2021, MFS' conservative growth style lagged a bit behind some of their more aggressive peers in recent years. Notably, MFS has maintained an underweight to the Mag-7 stocks. By underweighting the Mag-7, MFS has missed out on the significant, short-term gains that have been driven by generative AI expectations. However, MFS' portfolio is positioned to capitalize over the long-term by finding strong, high-growth companies for a reasonable price while generally avoiding companies with extremely high valuations. Overall, we have seen consistent long-term outperformance generated from this strategy and believe that the MFS team will continue to provide strong returns while ignoring short-term market noise.

Staff continues to be impressed by the vigilant research and collaboration that co-PMs, Mr. Constantino and Mr. Skorski, exhibit while implementing the strategy. Furthermore, MFS' research analyst platform has been equally impressive and therefore these considerations mitigate the departure of David Antonelli in 2021. ERS staff maintains confidence in MFS' ability to implement the strategy successfully for the ERS.

# Memorandum

**To:** CMERS Investment Committee  
**From:** Keith Dickerson, CFA  
**Date:** November 7, 2024  
**Re:** AQR Due Diligence Meeting: August 13, 2024  
**Team:** Erich Sauer and Keith Dickerson

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## **Background**

AQR Capital Management (AQR) has managed an Emerging Markets Core Equity mandate for the City of Milwaukee Employees' Retirement System (CMERS) since August of 2016. As of September 30, 2024, AQR managed 1.8% of the Fund's assets, or \$109.3 million.

## **Key Takeaways from the Recent Meeting**

- AQR's performance improved during 2023 and YTD 2024. Returns have outperformed the benchmark over the 1-year, 3-year, 5-year, and since inception periods as of September 30, 2024.
- Although firm assets remain below their highest levels from 2018, assets have begun to rebound as a result of inflows and market impact. AQR experienced a period of rapid growth in assets and headcount leading up to 2019 which have reversed in the years since. The organization is still in transition as it finds the right structure to match its current asset levels.
- Co-founders Cliff Asness and John Liew directly oversee all investment functions – a return to the structure in place prior to the noted firm growth. Recent departures of note include Principals Ashwin Thapar (2023), Lars Nielsen (2023), and Yao Hua Ooi (2024). This has led to the promotion Sophia Sun to a Managing Director role within the Quantitative Strategies group, and John Huss to the role of co-Head of Macro and Integrated Research. As part of this role, Mr. Huss will inherit the Country Selection model used to partially manage the CMERS Emerging Markets Equity portfolio.

## **Firm Summary**

AQR was founded in 1998 and is headquartered in Greenwich, CT with additional offices in the UK, Australia, Hong Kong, India, and Germany. The satellite offices are primarily focused on client service, except for India, which houses technology staff. Since its founding, the firm has grown significantly to become a global asset manager with approximately \$110 billion in assets under management (AUM) and 582 employees. Both AUM and headcount have fluctuated since CMERS hired AQR, starting at \$150 billion and 645 employees in 2016, and reaching \$225 billion and 914 employees when we visited in 2018, before falling back to current levels. AUM losses have impacted both the firm's alternative products and equity strategies. The Firm also discontinued its traditional long-only fixed income strategies at the end of 2021, further reducing AUM. AQR is employee-owned with 28 principals owning approximately 70% of the business, while Affiliated Managers Group (AMG) has a minority ownership interest of approximately 30% of the business. Since AMG's ownership is a minority position, AQR employees retain full independence with respect to both operational and investment process decisions.

As of June 30, 2024, the Emerging Market Equity (EM) strategy that the CMERS is invested in had \$9.3 billion in AUM. This is an increase from \$ 8.5 billion in 2022. The EM strategy has 12 public pension fund clients, representing \$4.6 billion in assets. The remaining \$4.9 billion is diversified primarily among sovereign wealth, corporate pension, Taft-Hartley, Foundation, and Endowment clients. In terms of the AUM split by vehicle, the LP vehicle in which the CMERS is invested has 19



total investors and \$2.4 billion in AUM, while 8 separate accounts have \$6.9 billion in AUM. This is a decrease of 11 clients and \$62 million for the LP vehicle since 2022.

AQR has taken a measured approach in attempting to manage the growth of its strategies. Because numerous strategies of the firm utilize the same research in targeting alpha, capacity is assessed on a firm wide basis. Based on these capacity assessments, AQR did hard close the EM strategy to existing and new investors in the third quarter of 2017, before re-opening the strategy in the first quarter of 2018 after experiencing outflows that alleviated capacity concerns. In 2024, AQR noted that it believes the firm's capacity within EM strategies to be \$40 billion, well beyond the current strategy AUM. Capacity assessment is critical when investing in areas such as emerging markets. While not a current concern due to recent outflows, staff and Callan will continue to closely monitor AQR's capacity for the strategy.

AQR has three of the four original founding Principals still actively managing the firm. Dr. Clifford Asness is the Managing Principal and public face of the firm. Dr. John Liew oversees the Portfolio Management and Research department, and Mr. David Kabiller leads the Client and Portfolio Solutions group. AQR's investment management is conducted out of the firm's headquarters, and the EM strategy draws on centralized resources from the firm's 27-person Macro Strategies Group for country and currency selection, and the 26-person Global Stock Selection (GSS) team for stock selection research, modeling, and portfolio management. The investment process is somewhat insulated from key-person risk through its utilization of these two teams, and other specialty teams within the firm. AQR had 243 investment professionals as of June 30, 2024. While investment headcount has fallen in recent years, it is worth noting that investment professional headcount as of June 30, 2024 is greater than the investment professional headcount at the firm as of March 31, 2016 when AUM was more than 50% higher (221 individuals).

In 2021, AQR reorganized its investment leadership. As part of this restructuring, investment teams began reporting directly to founding Principals Cliff Asness and John Liew. There have been a few notable Principal departures since CMERS' last visit. Former co-Head of Portfolio Management, Research, Risk, and Trading Lars Nielsen, and former Macro Strategies Principal Ashwin Tharpar both departed AQR in 2023. Additionally, co-Head of Macro Strategies Yao Hua Ooi departed in 2024. As a result of Ooi's departure, John Huss has been promoted to co-Head of Macro and Integrated Research. Staff and Callan are comfortable with the most recent departures and promotions, as this represents a return to the way the investment team was led prior to the firm's rapid expansion. We will continue to monitor the firm's ability to identify its next generation of investment leaders and execute an eventual succession plan for the founders.

### **Strategy Overview**

AQR believes that while markets are mostly efficient, inefficiencies do exist and can be exploited. They also recognize that international investing exposes investors to additional risks beyond stock specific risk in the form of country and currency risk. AQR's approach is to isolate stock, country, and currency risks and manage them separately. The strategy seeks to have 50% of active risk come from stock selection, and 25% each from country and currency.

The strategy is quantitative in nature, taking a set of fundamental signals and applying them in a disciplined and systematic process to select stocks for portfolio inclusion, with the goal of accumulating many small "edges." For the stock selection process, the primary signal themes are: valuation (attractive prices relative to fundamentals), momentum (improving prices and fundamentals), quality (high-quality financials and accounting practices), and sentiment (high-conviction investor support and shareholder-friendly management). Stocks are ranked based on

each of these signals, and the combined ranking determines a stock's weight in the portfolio. This process determines which stocks the strategy buys within a country, but in order to keep the country and currency risks separate, the stocks are bought in quantities that keep the total portfolio's country weights even with the benchmark. The strategy will typically hold approximately 400 stocks, as well as approximately 60 country investment positions and 100 currency investment positions. The number of holdings may fluctuate as the models attempt to precisely target the desired tracking error.

Country and currency tilts are determined independently based on a mix of fundamental and technical factors. The primary factors for the country model include valuation, momentum, and quality, but also mispricing, carry, and skew. The currency selection model is similar to the country selection model, but excludes quality, and considers additional factors such as futures mispricing and interest rates. One of the benefits of constructing the portfolio in this fashion is it allows for different views on country and currency to be reflected in the portfolio. An example of where this would be of a particular advantage is an expansionary monetary policy, which would be expected to be a positive for a country's equity index, but a negative for the currency.

The quantitative model for determining stock, country, and currency allocation is run daily. However, AQR carefully evaluates the costs of additional trading against how much closer that trading moves the portfolio to the "ideal" model portfolio. This means that even with the daily running of the model, the portfolio does not typically experience large changes day-to-day. The strategy also has a crisis management model that seeks to control risk by limiting overweight exposures to countries or currencies perceived to have an elevated risk of crisis. In the case of extreme events, the portfolio managers are able to step in and override the model portfolio, but do so rarely, and always with the goal of reducing active risk. AQR has modified its exposure tolerances since 2022. The Fund's sector maximum has been reduced from +/- 6% to +/- 5%, the country exposure has increased from +/- 10% to +/- 12%, and currency exposure increased from +/-15% to +/- 20%. AQR explained that the previous tolerances caused the portfolio to be under-risked and that the new tolerances allow for a more appropriate risk/return profile.

Like other managers, AQR reports its performance in a traditional context, but also through a theme attribution framework. Previously, AQR focused its investment themes in four primary areas: valuation, momentum, quality, and sentiment. Going forward, valuation and momentum will still be included in the attribution framework, in addition to the following: fundamentals, market participants, management behavior, indirect and industry, events and unstructured data, and factor timing. This enhanced attribution framework is a product of AQR's development of innovative and proprietary signals incorporating tools such as Natural Language Processing and Machine Learning.

The strategy had gone through two changes in custodian shortly after we hired AQR, from State Street to Citigroup, and then from Citigroup to JP Morgan. Staff was monitoring the situation because while these are all well qualified custodial banks, changes that rapid are somewhat rare. The situation has been stable since 2016, with JP Morgan still in place as custodian.

### **Portfolio Implementation and Trading**

AQR has built an impressive trading operation with the goal of reducing trading costs and increasing net returns for clients. The AQR Trading Team and AQR Portfolio Implementation team have recently been integrated. Both groups now report to Jeff Bolduc, Principal and Head of Trading and Portfolio Implementation at AQR. The Portfolio Implementation Team is responsible for portfolio construction, including costs and other considerations. They will take the views of the investment research area then evaluate current portfolio positions and account parameters, and ultimately provide trade orders to the trading team.

The trading team has 16 members, not including researchers and developers, who trade around the clock, making extensive use of algorithms and electronic trading systems. Vinod Addidam, Managing Director of Trading and Finance who oversees the firm's equities and commodities trading strategies, noted that as trading operations have become more automated and external trading algorithm providers have become more sophisticated, fewer traders are required. A dedicated transaction cost analysis team allows the trading department to build models to help balance the tradeoff between expected returns and costs.

Turnover is reasonable for a quantitative strategy. Over the past three years, the average turnover for the equity portfolio was approximately 89%. The average turnover for the country and currency components, based on the notional value of the derivative contracts, was approximately 161% and 373%, respectively. The differences in turnover rates between the equity, country, and currency components of the portfolio illustrate the importance of managing these components independently in the portfolio. Whenever possible, AQR avoids using brokers, instead bringing trades directly to market through their proprietary electronic trading platform, Evo, which allows for significant savings on commissions. The alpha sources of AQR's investment strategies are typically long-term in nature, such that the trading department can trade patiently, providing liquidity to the market rather than taking it.

In addition to the Evo system mentioned above, AQR also uses Charles River, a third-party system for trade order management, as well as O2, a proprietary order management system that interfaces with Charles River to create trade orders. For asset classes that require communicating with brokers, such as FX and swaps, AQR utilizes Adroit and Bloomberg trading platforms. AQR discontinued its securities lending program in 2022 within the fund. The firm determined that the costs of the program exceeded the benefit in the current environment but may reinstitute the program if lending conditions change.

### **Compliance**

H.J. Willcox, AQR's Chief Compliance Officer (CCO), is responsible for monitoring all compliance matters at the firm. Mr. Willcox reports to John Howard, Co-Chief Operating Officer. AQR uses ION Sentinel (AQR's portfolio compliance system) to perform pre-trade compliance checks on every trade order to ensure compliance with client guidelines. The compliance team also uses ION Sentinel to monitor portfolios post-trade on a daily basis and review for possible compliance violations. On an annual basis, AQR completes a SOC 1 examination of the firm's internal control framework. The most recent report noted no key deficiencies.

AQR has a Code of Ethics Policy that specifies the rules and procedures for personal trading. The firm also has a compliance manual and gives all of its new employees a compliance orientation that reviews relevant policies and procedures. All employees receive ongoing compliance training on an annual basis.

### **Risk Management**

Amir Becher is a Managing Director and the firm's Chief Risk Officer. He reports to John Liew, Founding Principal, and H.J. Willcox, Chief Legal Officer and Global Head of Compliance and Risk, to ensure that the risk management function remains independent of investment strategy. Mr. Becher previously served as the Head of the Market and Model risk group at AQR after working in risk management at another hedge fund earlier in his career.

Mr. Becher is responsible for overseeing market, liquidity, and model risk. His team monitors metrics that compliment portfolio management risk controls, ensures portfolios have sufficient

funding liquidity, and provides a second line of defense for models used in production. AQR Risk Management utilizes an internal portfolio risk monitoring tool called Intercept. Intercept monitors against internal limits that are more conservative than regulatory or client guideline limits. The dashboard includes an additional program, Constellation, responsible for flagging escalation items within Intercept when limits are approached or exceeded. While the risk team works collaboratively with investment researchers and portfolio managers, they are responsible for generating independent risk models and metrics.

AQR has an Enterprise Risk Committee to oversee risks across the firm, including counterparty, legal & regulatory, operational, and technology risk. The Committee is made up of the firm's Founding Principals, senior portfolio managers, and senior business and function heads.

### **Information Technology and Disaster Recovery**

Steven Mock was named as the sole Chief Technology Officer for the firm in 2021 and is responsible for managing a team of approximately 124 IT professionals. AQR has separate disaster recovery sites located in two separate geographic locations. The disaster recovery network infrastructure is identical to that of the Greenwich facility in order to ensure equal performance and functionality of all systems. All server data is replicated to the disaster recovery sites, which provide near real-time data recovery. AQR provides all employees with network access through a virtual private network to support continuity when working remotely. This prepared the firm well for the remote working environment of the COVID-19 pandemic and continues to serve as a pillar of the disaster recovery plan.

AQR typically tests its disaster recovery plan annually. The most recent firm-wide test was in March 2024, where critical functions such as portfolio management, trading, and cash management were able to run remotely with no issues.

### **Proxies**

AQR works with ISS Governance Services (ISS) for proxy voting, and will generally vote proxies according to the voting guidelines developed by ISS. ISS provides in-depth analysis of shareholder meeting agendas, vote recommendations, and recordkeeping. The firm also uses Glass Lewis for additional research and recommendations on proxy issues. AQR has a Stewardship Committee that assesses the performance of its Proxy Advisory firm(s). AQR's Stewardship Committee is responsible for the implementation of their Proxy Voting Policy, including the oversight and use of third-party proxy advisers, the manner in which AQR votes its proxies, and fulfilling AQR's obligation to vote proxies in the best interest of clients. AQR attempts to vote all proxies, but may not do so in cases where the cost of voting outweighs the benefit, which is more common with foreign securities than it is with domestic. In the case where AQR believes a vote contrary to the AQR Voting Guidelines is in the best interest of shareholders, the AQR Compliance Department must approve the vote.

### **Performance Summary and Conclusion**

Net of fee performance for the AQR Emerging Market Equity strategy in which the CMERS is invested, as of September 30, 2024, is presented below.

	1-year	3-year	5-year	Inception (8/1/2016)
AQR Emerging Equity	26.2%	1.8%	7.4%	6.7%
<i>MSCI Emerging Market</i>	26.1%	0.4%	5.8%	6.2%

Strategy performance has improved after a period of underperformance as the value factor within emerging markets has come back into favor. Recent outperformance has been driven by AQR's

stock selection, with country and currency selection providing mixed results. Staff discussed performance and portfolio composition with AQR and Callan, and while there are no guarantees, we do have the expectation that the strategy is positioned to perform well as the extreme outperformance of growth vs. value continues to normalize. Importantly, during periods where stock selection lagged due to the value factor, the country and currency portions of the investment process have been additive to performance, which helps to validate AQR's process of separating those sources of risk into distinct components.

Overall, CMERS staff continue to be impressed by AQR and confident in the firm's abilities. In addition to performance, other issues we will continue to monitor are asset levels at the firm, staffing of investment functions, and turnover among key personnel. AQR's internal investment research, portfolio construction process, and trading strategies are key strengths that should allow the strategy to be successful over the long term. Going forward, AQR appears capable of fulfilling CMERS' mandate of emerging markets core equity manager.

# Memorandum

**To:** CMERS Investment Committee  
**From:** Keith Dickerson, CFA  
**Date:** November 7, 2024  
**Re:** Goldman Sachs XIG Aptitude Due Diligence Meeting June 25 and September 18, 2024  
**Team:** David Silber, Keith Dickerson, Sean Lee (Callan)

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## **Background**

Goldman Sachs XIG Aptitude (Aptitude) manages a \$184.6 million custom hedge fund-of-funds portfolio for the City of Milwaukee Employees' Retirement System (CMERS). Aptitude began managing this portfolio for CMERS on October 1, 2022. This portfolio joined UBS in CMERS' Absolute Return allocation, which in total has a target of 7% of Fund assets.

## **Key Takeaways from Recent Meeting**

- Aptitude has retained its investment philosophy and integrated into Goldman Sachs Asset Management (GSAM).
- Leadership at the Goldman Sachs parent company level has experienced turnover since 2022, but Goldman Sachs expects this to stabilize going forward.
- The greater resources provided by GSAM have proven to benefit Aptitude's process.
- Staff is impressed with the integration of legal, operational, and risk diligence into the investment process, and encouraged that Jeff Klein remains the primary strategy architect on our portfolio.

## **Firm Summary**

The team that founded Aptitude Investment Management began investing in alternatives at Weyerhaeuser Asset Management (WAM), which was the in-house pension management team at Weyerhaeuser Company. In 2012, the firm spun out of WAM and began taking on additional clients. In 2018, GSAM acquired Aptitude, and it became a part of their Alternative Investments and Manager Selection (AIMS) platform, which has since been reorganized and rebranded as the External Investment Group (XIG).

As of March 31, 2024, XIG managed over \$385 billion in assets across public asset classes like equity, fixed income, and real assets, as well as private asset classes such as real estate, private equity, private credit, and hedge funds. The XIG hedge fund group, of which the Aptitude team is a part, managed \$24 billion.

The Aptitude strategy had \$5.3 billion in AUM as of March 31, 2024 between its commingled hedge fund-of-fund product and seven customized accounts. This amount is unchanged from the previous due diligence meeting conducted in 2022. Pensions and Private Wealth make up the majority of client assets, with other assets coming from clients such as Sovereign Wealth Funds, Endowments & Foundations, and Insurance. Customized accounts represent approximately 70% of assets.

## **Investment Team**

Jeff Klein is the lead portfolio manager and co-head of hedge funds within XIG. Mr. Klein was one of the founders of the Aptitude strategy when it started at WAM. Mr. Klein spends the majority of his time meeting with and researching hedge fund managers, and, with the rest of the portfolio management team, is responsible for the target allocations of our custom portfolio.

Other portfolio management team members include Gino Perrina, Linda Colwell, who is focused on legal due diligence, and Todd Keeney, who is focused on operational due diligence. Ms. Colwell and Mr. Keeney are long-time Aptitude employees. Mr. Perrina joined the team in 2021, and brings over 20 years of experience in assessing and managing risk in alternative investment portfolios.

Research portfolio managers Vinayak Maheshwari and Edwin Yu lead the manager research function for XIG Aptitude. Mr. Maheshwari and Mr. Yu both joined Aptitude in 2008 and were the primary research analysts for the strategy before the spinout from WAM and subsequent merger with AIMS. They lead a team of 18 analysts that covers all of the XIG hedge fund group's underlying hedge fund investments. Collectively, portfolio management team members, along with the research portfolio managers, make up the investment committee.

### **Investment Philosophy and Process**

Aptitude's investment philosophy is based upon the belief that significant skill exists in the active management universe, and this skill can deliver attractive risk-adjusted net returns over the long term. Because such skill is not easy to identify, it is imperative that an investment program have a long-term horizon, effective due diligence, and strong relationships with underlying managers. The time horizon is particularly important, as Aptitude believes it is often necessary to build conviction in a manager over time. Appropriate portfolio diversification is also extremely important in maximizing the combined risk-adjusted return.

Aptitude focuses on four key areas when assessing manager skill: (1) a governance structure that aligns the organization around appropriate performance objectives, (2) an investment approach that leads to sustainable outperformance, (3) appropriate evolution of this investment approach to sustain competitive advantages, and (4) the quality of operational and legal infrastructure to support these objectives.

Aptitude looks for the governance framework to promote a fiduciary mindset, and align all stakeholders around the investment performance objective. This includes the conduct, structure, and alignment of incentives of employees, as well as the setting of appropriate terms for investors.

The investment approach needs to be appropriately structured, such that Aptitude can gain confidence that it is repeatable over time. This is true for all aspects, including idea generation, research, portfolio construction execution, and risk management. Because competitive dynamics change within the hedge fund landscape, it is also important that investment and operational processes evolve over time in order to sustain a competitive advantage.

Aptitude believes that managers with robust operational, legal, and compliance frameworks are better equipped to deliver strong investment performance over the long term. Therefore, they integrate those diligence processes into the overall investment due diligence process. This is the reason Ms. Colwell and Mr. Keeney are members of the portfolio management team, and could be considered to be somewhat of a differentiator from Aptitude's peers in the HFOF space.

Aptitude employs a bottom-up, style agnostic approach to manager selection, seeking to identify managers that can generate sustainable alpha and possessing strong experience, track records, and sustainable competitive advantages in process, organization, or people. The analysis of a fund happens in three stages. First is an initial analysis and assessment of the manager. Strong candidates move to the next stage, which typically takes several months of in-person meetings

and includes evaluation of quantitative, qualitative, and governance factors. The final stage is legal and operational due diligence, which includes more in-person meetings with the prospective manager.

Mr. Klein is responsible for leading the portfolio construction process, but investments do require unanimous approval from the full investment committee. New positions typically start small and increase over time as conviction in a manager grows. Because of the focus on long term relationships with managers that have a sustainable edge, Aptitude generally seeks to have all portfolios employ a similar roster of underlying managers, and tweaks the weightings to meet different client objectives.

Conviction ratings in managers on the platform are monitored on an ongoing basis. Each fund has a manager coverage team, comprised of at least one senior analyst, supported by one or more secondary analysts. This team is responsible for keeping the broader investment team apprised of that fund's merits and weaknesses. The investment team has a formal weekly meeting where they discuss manager ratings, diligence, notable updates, and risk analytics.

The Aptitude custom fund-of-funds portfolio where CMERS is the sole investor has strategy allocation ranges that are as follows:

Relative Value: 20% - 70%

Tactical Trading: 10% - 40%

Equity Long Short: 10% - 50%

Event Driven: 0% - 40%

Concerning liquidity, at least 50% of the fund must be redeemable in under one year, at least 90% of the fund must be redeemable in three years, and the fund must be 100% redeemable in five years.

### **Operational and Legal Diligence**

Aptitude integrates operational and legal due diligence (ODD and LDD) into the investment process, with Mr. Keeney and Ms. Colwell serving as part of the portfolio management team. This integrated review helps the investment team to build conviction in a manager's governance quality, their ability to execute an investment strategy, and ensures the alignment of interests with investors. By conducting thorough operational and legal due diligence, Aptitude gains a better understanding of a manager's key operational, legal, and regulatory risks, and allows Aptitude to both highlight those risks, as well as suggest potential solutions to the manager, which can enable a manager to sustain their competitive advantages. The ODD team holds veto power over a manager being added to the XIG platform should that manager not meet ODD and LDD thresholds.

The broader XIG group also has an ODD team that runs a parallel review process. This is a more traditional ODD review, which looks at a manager's operations, and runs background checks on key individuals, to determine if a manager is acceptable to fund.

### **Risk Management**

The XIG Risk Management team provides an independent view on managers in the portfolio, but also contributes to the engagement the investment team has with managers, primarily by helping to understand what is driving performance, and if those performance drivers are what the team would have expected.

The Risk Management team recognizes that different managers on the platform offer differing levels of transparency, so they use a mosaic approach combining different data sources like the



XIG proprietary factor library, RiskMetrics reports, and their internal SecDB analytical system to triangulate views on manager risk. Risks are monitored at multiple levels, including firm level risks to the investment process or infrastructure, fund level risks that come out of the way the manager constructs the fund, and position level risks related to the underlying investments in a fund.

The XIG risk team has a state of alert process that operates around the clock, with the goal of anticipating and responding to key market events. This process features defined alert levels that, depending on the severity of the event, trigger activities such as enhanced market monitoring, targeted manager discussions, and full platform reviews. Following the market event, the team offers insights based on manager views and trading activity, and discusses how it can impact portfolios across asset classes.

### **Compliance**

Compliance at Aptitude is run through the broader Goldman Sachs compliance group. The compliance department at Goldman Sachs is independent from the firm's business units. The GSAM compliance group reports to the Chief Compliance Officer for Goldman Sachs. Steve Friedman and Ryan Horn are the two individuals in the compliance department who are dedicated to the business of XIG. Mr. Friedman and Mr. Horn regularly advise the XIG group on regulatory and policy matters, and work with the business and legal groups to develop GSAM compliance policies and procedures. They assess compliance training needs on an annual basis and conduct necessary training throughout the year.

Another important activity of the compliance department is monitoring. The compliance team conducts ongoing surveillance on a number of areas, such as adherence to policies and procedures, conflicts of interest, and material nonpublic information. They also conduct risk-based surveillance of employee electronic communications and test for fair allocation of investment opportunities among client accounts. Goldman Sachs has one of the strictest employee personal trading policies in the industry – Asset Management personnel and their related persons are generally not allowed to purchase or sell short publicly traded equity or debt securities of a single-name issuer in an account over which they have discretion or control.

### **Disaster Recovery**

Goldman Sachs has a dedicated team of professionals responsible for training and education; for creating and maintaining the disaster recovery program; and for implementing, managing, and monitoring the firm's preparedness. The program is comprised of six key elements: Crisis Management, Business Continuity Requirements, Technology Resilience, Business Recovery Solutions, Assurance and Process Improvement / Continual Assessment. People Recovery sites for critical business units have been established. These sites are available in all regions, and have all the equipment and capabilities necessary to carry on business operations in an emergency. In addition, employees have all the resources necessary to work remotely, and the remote access capability has multiple points of redundancy and resilience.

All the firm's data centers, offices, and back-up sites have standardized security measures, including card access, video surveillance, on site security staff, environment controls, and visitor management. Security personnel are on duty 24 hours a day. The disaster recovery plan is tested at the dedicated recovery sites throughout the year.

### **Performance Summary and Conclusion**

Net of fee performance for the Aptitude strategy in which CMERS is invested, as of September 30, 2024, is presented below.

	YTD	1-year	Inception (10/1/2022)
Aptitude	8.8	11.0	8.6
<i>SOFR + 4%</i>	<i>7.1</i>	<i>9.4</i>	<i>9.0</i>

CMERS staff is pleased with the performance of the Aptitude strategy since funding the portfolio in October of 2022. The strategy has demonstrated consistent positive performance month over month, at a 91.7% success rate, with February and March of 2023 being the lone exceptions, where returns were -0.4% and -0.5% net of fees, respectively. The strategy has produced an annualized volatility of 2.2% since inception and a Sharpe Ratio of 1.51. The fund is currently constructed with 28 distinct managers, with the top 5 managers comprising 41.8% of the fund. The portfolio's current positioning includes a 32.2% weight to Relative Value strategies, 29.1% towards Equity Long/Short strategies, 21.4% towards Tactical Trading strategies, and a 16.5% towards Event Driven strategies. All weightings are within portfolio guidelines.

CMERS staff remains impressed with Aptitude's capabilities in the hedge fund space. It appears that the integration of Aptitude into GSAM has gone well, allowing Aptitude to retain the investment philosophy which has been successful over the long term, while giving Aptitude greater resources with which to implement its investment process. Staff came away from the meeting impressed with the key decision makers at the firm, particularly with the integration of legal, risk, and operational due diligence into the investment process. It is also encouraging that Mr. Klein remains the key strategy architect for our custom portfolio.