



**Alameda County Employees' Retirement Association  
BOARD OF RETIREMENT**

**INVESTMENT COMMITTEE/BOARD MEETING**

**ACERA MISSION:**

**To provide ACERA members and employers with flexible, cost-effective, participant-oriented benefits through prudent investment management and superior member services.**

**Wednesday, March 5, 2025  
10:30 a.m.**

<b>LOCATION AND TELECONFERENCE</b>	<b>COMMITTEE MEMBERS</b>	
<p>ACERA C.G. "BUD" QUIST BOARD ROOM 475 14<sup>TH</sup> STREET, 10<sup>TH</sup> FLOOR OAKLAND, CALIFORNIA 94612-1900 MAIN LINE: 510.628.3000 FAX: 510.268.9574</p> <p>The public can observe the meeting and offer public comment by using the below Webinar ID and Passcode after clicking on the below link or calling the below call-in number.</p> <p>Link: <a href="https://zoom.us/join">https://zoom.us/join</a> Call-In: 1 (669) 900-6833 US Webinar ID: 879 6337 8479 Passcode: 699406 For help joining a Zoom meeting, see: <a href="https://support.zoom.us/hc/en-us/articles/201362193">https://support.zoom.us/hc/en-us/articles/201362193</a></p>	<b>GEORGE WOOD CHAIR</b>	<b>ELECTED GENERAL</b>
	<b>TARRELL GAMBLE VICE CHAIR</b>	<b>APPOINTED</b>
	<b>OPHELIA BASGAL</b>	<b>APPOINTED</b>
	<b>KEITH CARSON</b>	<b>APPOINTED</b>
	<b>ROSS CLIPPINGER</b>	<b>ELECTED SAFETY</b>
	<b>HENRY LEVY</b>	<b>TREASURER</b>
	<b>ELIZABETH ROGERS</b>	<b>ELECTED RETIRED</b>
	<b>KELLIE SIMON</b>	<b>ELECTED GENERAL</b>
	<b>STEVEN WILKINSON</b>	<b>APPOINTED</b>
	<b>CYNTHIA BARON</b>	<b>ALTERNATE RETIRED<sup>1</sup></b>
<b>KEVIN BRYANT</b>	<b>ALTERNATE SAFETY<sup>2</sup></b>	

<sup>1</sup> The Alternate Retired Member votes in the absence of the Elected Retired Member, or, if the Elected Retired Member is present, then votes if both Elected General members, or the Safety Member and an Elected General member, are absent.

<sup>2</sup> The Alternate Safety Member votes in the absence of the Elected Safety, either of the two Elected General Members, or both the Retired and Alternate Retired members.

*Note regarding accommodations:* If you require a reasonable modification or accommodation for a disability, please contact ACERA between 9:00 a.m. and 5:00 p.m. at least 72 hours before the meeting at [accommodation@acera.org](mailto:accommodation@acera.org) or at 510-628-3000.

Public comments are limited to four (4) minutes per person in total. The order of items on the agenda is subject to change without notice.

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# ***INVESTMENT COMMITTEE/BOARD MEETING***

**NOTICE and AGENDA Wednesday, March 5, 2025**

**Call to Order:** 10:30 a.m.

## **Roll Call**

**Public Input (The Chair allows public input on each agenda item at the time the item is discussed)**

### **Action Items: Matters for discussion and possible motion by the Committee**

1. Interview of the four Finalists for ACERA's Emerging Markets Manager Search – Public Equities and Possible Motion that the Investment Committee Recommends one Finalist to the Board

10:35 – 11:05	Celina Rodriguez, ABS Global Investments Guilherme Valle, ABS Global Investments
11:05 – 11:35	Andrew Miller, Acadian Asset Management LLC Mark Roemer, Acadian Asset Management LLC
11:35 – 12:05	Jack Coan, ARGA Investment Management, LP Rama Krishna, ARGA Investment Management, LP
12:05 – 12:35	Elizabeth Tyndale, Pzena Investment Management Caroline Cai, Pzena Investment Management
12:35 – 1:05	Sam Austin, NEPC Dan Hennessy, NEPC Stephen Quirk, ACERA Julius Cuaresma, ACERA Noe Reynoso, ACERA Betty Tse, ACERA

### **Information Items: These items are not presented for Committee action but consist of status updates and cyclical reports**

1. Review of Real Assets Policy

1:05 – 1:35	Sam Austin, NEPC Rose Dean, NEPC Clint Kuboyama, NEPC Betty Tse, ACERA
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# ***INVESTMENT COMMITTEE/BOARD MEETING***

**NOTICE and AGENDA Wednesday, March 5, 2025**

2. Asset Allocation Update

1:35 – 1:50

Sam Austin, NEPC  
Dan Hennessy, NEPC  
Betty Tse, ACERA

3. Semiannual Performance Review for the Period Ending December 2024 – Total Fund  
Highlighting Public Markets Asset Classes

1:50 – 2:10

Sam Austin, NEPC  
Betty Tse, ACERA

**Trustee Remarks**

**Future Discussion Items**

None

**Establishment of Next Meeting Date**

April 2, 2025 at 10:30 a.m.



To: Members of the Investment Committee  
From: Stephen Quirk, Investment Officer *Stephen Quirk*  
Date: March 5, 2025  
Subject: Interview of the four Finalists for ACERA's Emerging Markets Manager Search – Public Equities and Possible Motion that the Investment Committee Recommends one Finalist to the Board

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## Recommendation

Staff recommends that the Investment Committee select and recommend to the Board either **Arga Investment Management Emerging Markets Equity** (“Arga”) or **Pzena Investment Management Emerging Markets Focused Value** (“Pzena”) - the two highest scorers, as ACERA's second dedicated Public Equity Emerging Markets (EM) manager<sup>1</sup> from the following group of finalist candidates: Arga, Pzena, Acadian Asset Management Emerging Markets Equity, and ABS Global Investments Emerging Markets Strategic Portfolio.

## Background

At the 2023 February and April Committee Meetings, the Board approved a new International Equity Structure which included an EM Equity Manager RFI Search for a second dedicated EM manager. At the July 2024 Committee Meetings, the Board, with NEPC as new General Investment Consultant, approved a new Asset Allocation, “Mix C”. NEPC, on behalf of Staff, issued the RFI Questionnaire with Minimum Qualifications (see Attachment #1) on September 25, 2024, and proposals were received by the October 23, 2024 deadline. Staff and NEPC independently evaluated and scored each proposal by applying the Board-approved Scoring Matrix (see Attachment #2) and subsequently, on December 4, 2024, the Board approved a short-list of emerging market equity manager finalists (Arga, Pzena, Acadian, and ABS) for further review and to conduct on-site visits. As a result of the new Asset Allocation, the ACERA Public Equity Policy (48% target) will have a global benchmark, the MSCI ACWI IMI index. The MSCI Emerging Markets index comprises approximately 10% of the MSCI ACWI IMI index. ACERA will employ two EM managers with a 5% target allocation designated to William Blair and the other 5% designated to the new EM mandate (approximately \$300 million).

## Discussion

Among the finalists, Arga and Pzena have the best long-term performance and diversify the ACERA Public Equity portfolio the most (minimize the risk). Since the Arga Founder and Chief Investment Officer (Rama Krishna) came from Pzena, the investment philosophies and processes of the two strategies are similar. Both strategies maintain their consistency and discipline across environments and geographies. Both firms have experienced and deep fundamental global research teams that leverage technology to construct high conviction portfolios. Both organizations promote a culture that aligns employee and client interests. Arga is a minority-owned manager that was sourced through the ACERA Investment Products and Services Introductions (IPSI) process and provided strong performance via the Bivium Capital allocation while Pzena previously managed a US Large Cap Value mandate for ACERA with a different portfolio management team than the EM strategy.

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<sup>1</sup> William Blair Emerging Markets Growth is the incumbent strategy

Staff and NEPC completed on-site visits to the four finalists<sup>2</sup> to verify the information provided by the prospective managers (RFI responses) and to conduct further due diligence. Our collective understanding of each firm was greatly increased, and we refreshed our scoring according to the Scoring Matrix. The Arga and Pzena scores converged based on how similar their strategies are. The Acadian score increased due to the high quality of the team that runs the quantitative models. The ABS score increased because their initial RFI response was very concise, and they provided a more thorough overview of their organization and investment process.

The updated scoring summary which had no changes to the ranked orders at the December Investment Committee meeting (see Attachment #3 for the detailed scores):

Rank	Manager	Initial Scores			Updated Scores			Change in
		Staff	NEPC	Average	Staff	NEPC	Average	Avg Score
1	Arga	92.5	80.0	86.3	90.0	80.0	85.0	-1.3
1	Pzena	82.5	81.0	81.8	88.0	82.0	85.0	+3.3
3	Acadian	78.5	82.0	80.3	82.0	82.0	82.0	+1.8
4	ABS	61.5	83.0	72.3	75.0	82.5	78.8	+6.5

The composite returns excess of the MSCI EM index net of management fees (see Attachment #4 for detailed manager performance comparison):

As of 12/31/24	3 Years	5 Years	7 Years	10 Years	Since Inception return excess of benchmark <sup>3</sup>
ABS	-1.9	1.0	0.9		0.9
Acadian	5.1	4.1	2.1	1.5	1.2
ARGA	7.9	4.8	4.1	3.4	2.1
Pzena	8.0	5.0	3.5	2.7	2.2

The Risk impact of adding the EM manager candidates to the current ACERA Public Equity structure (see Attachment #5 for the back test):

Risk Impact	Tracking Error
ABS	Increase
Acadian	Neutral
Arga	Decrease
Pzena	Decrease

The proposed ACERA fees are based on a \$300 million commingled fund mandate:

Management Fees <sup>4</sup>	Flat Fee		Underlying Manager Fees		Total Fees	
	Bps	Dollars	Bps	Dollars	Bps	Dollars
ABS	55	1,650,000	54	1,620,000	109	3,270,000
Acadian	75	2,250,000	-	-	75	2,250,000
Arga	70	2,100,000	-	-	70	2,100,000
Pzena	75	2,250,000	-	-	75	2,250,000

<sup>2</sup> On-Site visits: Pzena (NYC), Arga (Stamford, CT), and ABS (Stamford) on 1/14/25, and Acadian (Boston) on 1/15/25

<sup>3</sup> 7 years for ABS, 30 years for Acadian, 11.5 years for Arga, and 17 years for Pzena

<sup>4</sup> All managers also offer performance-based incentive fees. ABS is a manager of managers with estimated underlying manager fees of 54 bps.

Below is a summary of the perceived strengths and weaknesses of each firm (see Attachment #6 for NEPC detailed manager profiles and Attachment #7 for manager presentations):

### **Arga (85 points)**

Strengths:

- Superior performance and maximum diversification of the ACERA public equity portfolio (minimizes the risk)
- Rigorous adherence to their investment philosophy via intensive research and disciplined portfolio construction
- Experienced investment team with a global perspective that leverages technology as a competitive advantage

Weaknesses:

- Primary equity ownership concentration with Founder and CIO Krishna owning 100% of the firm

### **Pzena (85 points)**

Strengths:

- Superior performance and maximum diversification of the ACERA public equity portfolio (minimizes the risk)
- Rigorous adherence to their investment philosophy via intensive research and disciplined portfolio construction
- Experienced and deep investment team with broad and significant equity ownership to align incentives

Weaknesses:

- Process is susceptible to “value traps” – stocks that appear cheap but are not actually good businesses

### **Acadian (82 points)**

Strengths:

- Pioneer in emerging markets investing that employs a quantitative model to exploit market inefficiencies
- Systematic investing foundation built on experienced team, extensive data collection, and robust technology

Weaknesses:

- Does not diversify the ACERA public equity portfolio
- Lack of transparency into the proprietary dynamic stock selection model to understand performance patterns

### **ABS (78.8 points)**

Strengths:

- Differentiated approach to emerging markets that partners with local specialists that have regional market expertise
- Thoughtful approach to portfolio construction that minimizes country, sector, and style biases

Weaknesses:

- Increases the ACERA public equity portfolio risk because of high correlations to its current manager structure
- Lack of transparency into the underlying managers and relatively short performance record

### **Conclusion and Next Steps**

Staff recommends either Arga or Pzena to fill the second dedicated Emerging Markets equity mandate because they performed the best since inception, diversify the ACERA Public Equity portfolio the most, maintain organizational stability, utilize disciplined investment processes, and employ experienced and talented teams. The commingled fund base management fees offered are typical for each strategy and both managers offer performance-based incentive fees. Upon the selection of a candidate, Staff will proceed to the next steps referenced below in our operational due diligence and implementation of the Board’s decision:

1. Reference checks
2. Background investigations
3. Legal due diligence
4. Contract negotiations

## Attachments

1. ACERA Emerging Markets (EM) Equity Manager Search Recommended Minimum Qualifications – adopted June 2023
2. ACERA Emerging Markets (EM) Equity Manager Search Recommended Scoring Matrix – adopted June 2023
3. ACERA Emerging Markets Equity Manager Search Scoring Matrix Summary (Final) – prepared by Staff
4. Manager performance comparison - prepared by Staff
5. ACERA Public Equity Back Test - prepared by Staff
6. Manager profiles - prepared by NEPC<sup>5</sup>
7. Introduction presentations - prepared by managers

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<sup>5</sup> Certain information contained herein (the “Information”) is sourced from/copyright of MSCI Inc., MSCI ESG Research LLC, or their affiliates (“MSCI”), or information providers (together the “MSCI Parties”) and may have been used to calculate scores, signals, or other indicators. The Information is for internal use only and may not be reproduced or disseminated in whole or part without prior written permission. The Information may not be used for, nor does it constitute, an offer to buy or sell, or a promotion or recommendation of, any security, financial instrument or product, trading strategy, or index, nor should it be taken as an indication or guarantee of any future performance. Some funds may be based on or linked to MSCI indexes, and MSCI may be compensated based on the fund’s assets under management or other measures. MSCI has established an information barrier between index research and certain Information. None of the Information in and of itself can be used to determine which securities to buy or sell or when to buy or sell them. The Information is provided “as is” and the user assumes the entire risk of any use it may make or permit to be made of the Information. No MSCI Party warrants or guarantees the originality, accuracy and/or completeness of the Information and each expressly disclaims all express or implied warranties. No MSCI Party shall have any liability for any errors or omissions in connection with any Information herein, or any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

**ACERA EMERGING MARKETS (EM) EQUITY MANAGER SEARCH  
RECOMMENDED MINIMUM QUALIFICATIONS**

1. The Firm must agree to act as fiduciary to ACERA.
2. The Firm must be registered as an investment adviser under the Investment Advisers Act of 1940, a bank (as defined in that Act) or an insurance company qualified to perform investment management services under state law in more than one state, including the State of California.
3. Separate account for the active emerging markets equity mandate is acceptable; however, commingled account is preferred as long as other terms are equal.
4. The Firm must have \$1.4 billion or more in total Assets under Management (AUM) firm-wide as of 6/30/24. The proposed strategy should have \$1.8 billion or more in AUM as of 3/31/24. ACERA's investment portfolio (or account) should not comprise more than 25% of the Firm's total AUM at any time in accordance with ACERA's General Investment Guidelines, Policies and Procedures.
5. ACERA will only consider Emerging Investment Managers that meet all of the Minimum Qualifications for Proposal.
6. The Firm must be directly responsible for the management of the account, and all personnel responsible for the account must be employees of the Firm or a legal joint venture partner.
7. The Firm must have a minimum three-year, continuous performance history as of 6/30/24 managing the international emerging markets equity fund product for institutional investors by the existing portfolio manager or portfolio manager team. The manager's performance history must be documented, and real time (i.e. not simulated or back-tested) and in compliance with CFA Institute (CFAI) Global Investment Performance Standards (GIPS).
8. The product must currently be benchmarked against the MSCI Emerging Markets Index (either standard or IMI, and either gross or net of dividends).
9. If hired, the Firm must agree to accept the MSCI Emerging Markets Index (ND) as the ACERA mandate benchmark for the firm's proposed international emerging markets equity product.
10. The product must historically exhibit a median market capitalization commensurate with the MSCI Emerging Markets Index standard, either gross or net of dividends, with an average median market capitalization greater than \$6B.
11. The Firm must be able to provide monthly GIPS-compliant performance reports to ACERA, its General Consultant, and its Custodian Bank.
12. The Firm must be able to provide a minimum of monthly liquidity.
13. The Firm should carry the following minimum insurance coverage or should apply for it by contract execution (subject to change upon final contract negotiation):
  - a. Commercial General Liability – \$4,000,000
  - b. Crime Coverage
    - i. Employee Dishonesty Coverage - \$10,000,000
    - ii. Computer Theft Coverage - \$1,000,000
  - c. Error and Omissions (Professional Liability) - \$10,000,000
  - d. Fiduciary Liability - \$25,000,000, or 10% of the total assets managed in the ACERA account, whichever is higher, unless the proposed contract specifies otherwise
  - e. Workers' Compensation and Employer's Liability - \$1,000,000
14. The Firm must provide a description of its ESG policies and objectives and Diversity & Inclusion efforts and objectives.
15. The Firm must agree to attend ACERA's Investment Committee Meetings as needed.
16. The Firm must be willing to allow ACERA to review the latest 3-5 years of the firm's audited financial statements. In-office reviews are acceptable.
17. Once selected by ACERA as the recommended Firm, the Firm must consent to a background investigation of the investment management entity and key individuals.



**ACERA EMERGING MARKETS (EM) EQUITY MANAGER SEARCH  
RECOMMENDED SCORING MATRIX**

**A. Organization**

**30 Points**

1. History
2. Ownership, Organization, and Staffing
3. Compliance
4. Client Service

**B. Investment Team**

**35 Points**

1. Strategy
  - a. Philosophy
  - b. Process
  - c. ESG considerations/integration
2. Experience
3. Research Capabilities
4. Other Resources
5. Trading/Operations
6. Risk Management

**C. Performance and Risk**

**25 Points**

1. Consistency Beating Benchmark
2. Peer Group Ranking
3. Risk (to benchmark/tracking error, upside/downside)
4. Risk-Adjusted Returns

**D. Proposed Fee Schedule/Structure**

**10 Points**

## ACERA Emerging Markets Equity Manager Search Scoring Matrix Summary (Final)

	4	3	1	1
	<b>ABS</b>	<b>Acadian</b>	<b>Arga</b>	<b>Pzena</b>
<b>Average</b>	<b>78.8</b>	<b>82.0</b>	<b>85.0</b>	<b>85.0</b>

<b>Total</b>	ACERA	75.0	82.0	90.0	88.0
	NEPC	82.5	82.0	80.0	82.0
<b>Organization</b>	ACERA	26.0	25.0	27.0	27.5
	NEPC	26.0	23.0	23.5	26.0
<b>Team</b>	ACERA	27.5	34.0	34.0	33.0
	NEPC	32.0	33.0	30.0	31.0
<b>Performance/Risk</b>	ACERA	18.5	18.0	22.0	22.5
	NEPC	21.5	21.0	19.5	20.0
<b>Fees</b>	ACERA	3.0	5.0	7.0	5.0
	NEPC	3.0	5.0	7.0	5.0

## Initial Scores (Pre Onsite Due Diligence)

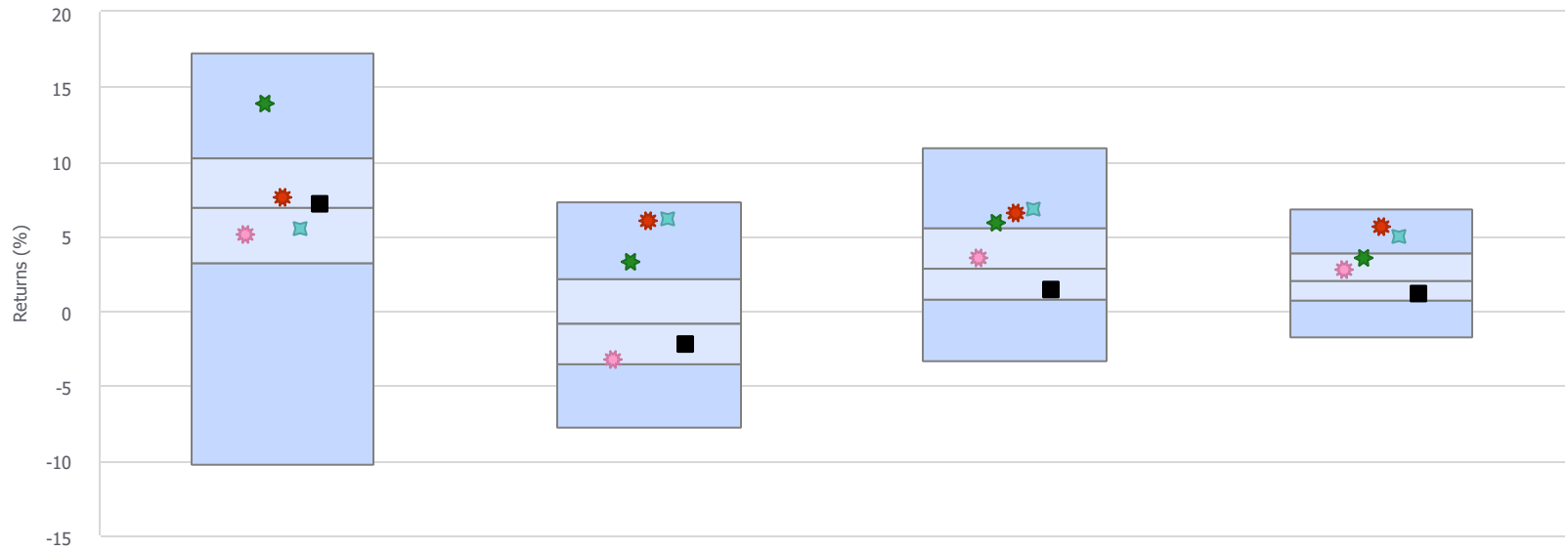
	6	3	1	6	4	2	7
	<b>ABS</b>	<b>Acadian</b>	<b>Arga</b>	<b>Brandes</b>	<b>LSV</b>	<b>Pzena</b>	<b>Westwood</b>
<b>Average</b>	<b>72.3</b>	<b>80.3</b>	<b>86.3</b>	<b>72.3</b>	<b>76.6</b>	<b>81.8</b>	<b>67.1</b>

<b>Total</b>	ACERA	61.5	78.5	92.5	76.5	75.3	82.5	60.3
	NEPC	83.0	82.0	80.0	68.0	78.0	81.0	74.0
<b>Organization</b>	ACERA	22.5	27.0	27.0	28.0	21.8	24.0	19.8
	NEPC	26.0	23.0	25.0	26.0	25.0	26.0	25.0
<b>Team</b>	ACERA	24.0	33.5	33.5	30.5	28.5	30.5	26.5
	NEPC	32.0	33.0	30.0	28.0	30.0	31.0	30.0
<b>Performance/Risk</b>	ACERA	12.0	13.0	25.0	11.0	22.0	23.0	11.0
	NEPC	22.0	21.0	18.0	7.0	20.0	19.0	16.0
<b>Fees</b>	ACERA	3.0	5.0	7.0	7.0	3.0	5.0	3.0
	NEPC	3.0	5.0	7.0	7.0	3.0	5.0	3.0

**ABS Global Investments, Acadian Asset Management LLC, ARGA Investment Management, LP, Pzena Investment Management, LLC**

December 2024

**Trailing Performance**



**Universe: eVestment All Emerging Mkts Equity (Percentile)**

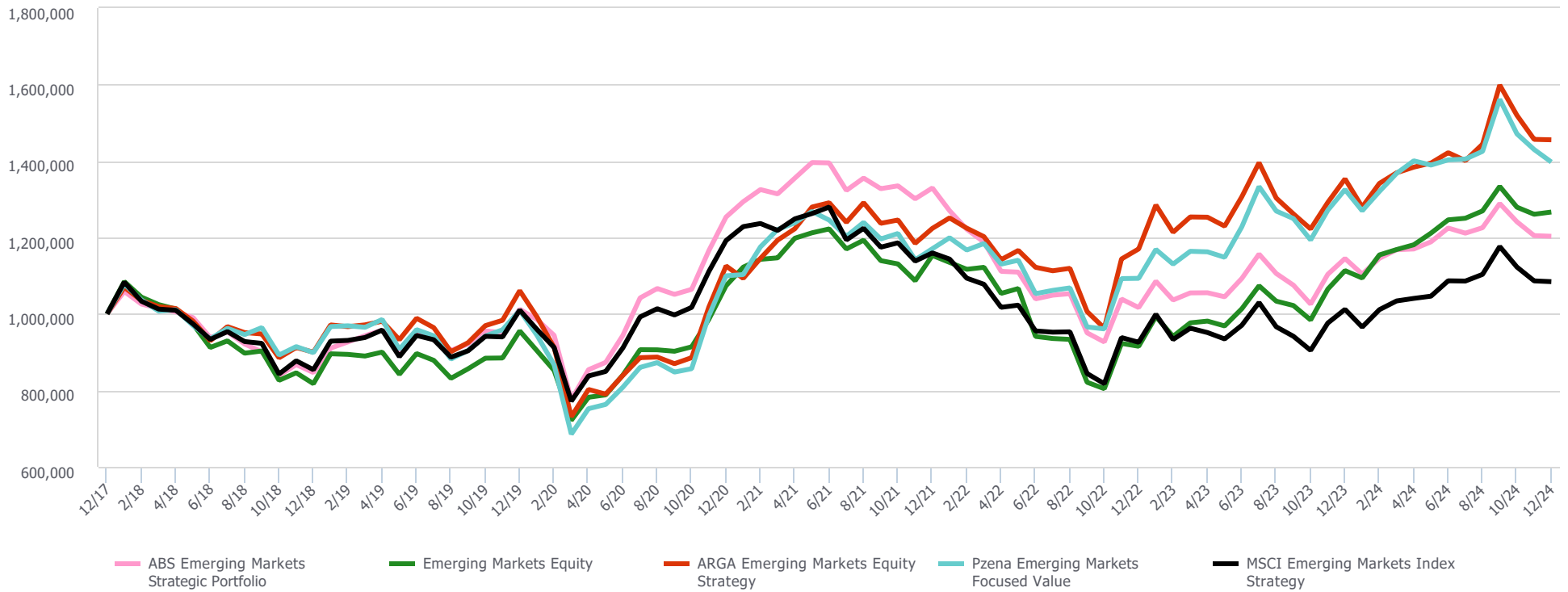
	RM	1 Year		3 Years		5 Years		7 Years	
			Rk		Rk		Rk		Rk
5th percentile		17.2		7.3		10.9		6.8	
25th percentile		10.2		2.1		5.5		3.8	
Median		6.9		-0.9		2.8		2.0	
75th percentile		3.2		-3.6		0.7		0.7	
95th percentile		-10.3		-7.8		-3.4		-1.8	
# of Observations		549		488		431		370	
ABS Global Investments	N F	5.1	63	-3.3	72	3.5	41	2.7	36
Acadian Asset Management LLC	N F	13.8	11	3.2	19	5.8	23	3.4	28
ARGA Investment Management, LP	N F	7.6	42	5.9	8	6.5	19	5.5	11
Pzena Investment Management, LLC	N F	5.4	61	6.1	8	6.7	18	4.9	15
BlackRock	G F	7.2	46	-2.2	62	1.4	66	1.2	65

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# ABS Global Investments, Acadian Asset Management LLC, ARGA Investment Management, LP, Pzena Investment Management, LLC

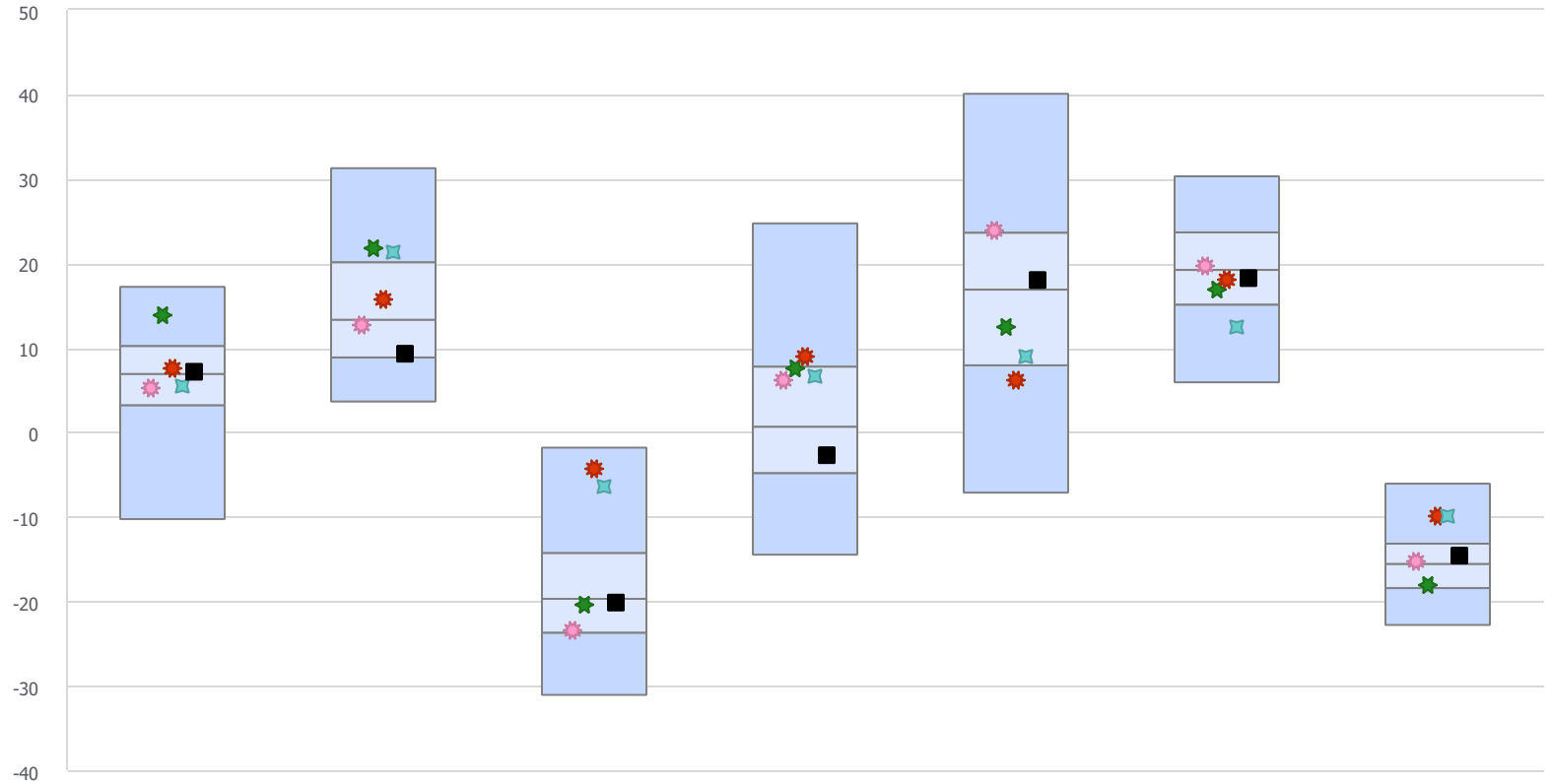
December 2024

## Growth of \$100 (Common Time Period)



Firm Name	VT	Returns	Cumulative Returns	Excess Returns	Cumulative Excess
ABS Global Investments	C F	2.68	20.31	1.51	11.88
Acadian Asset Management LLC	SA	3.43	26.65	2.27	18.21
ARGA Investment Management, LP	SA	5.51	45.54	4.34	37.11
Pzena Investment Management, LLC	SA	4.90	39.73	3.73	31.29
BlackRock	C F	1.16	8.44	0.00	0.00

**Calendar Year Performance**



**Universe: eVestment All Emerging Mkts Equity (Percentile)**

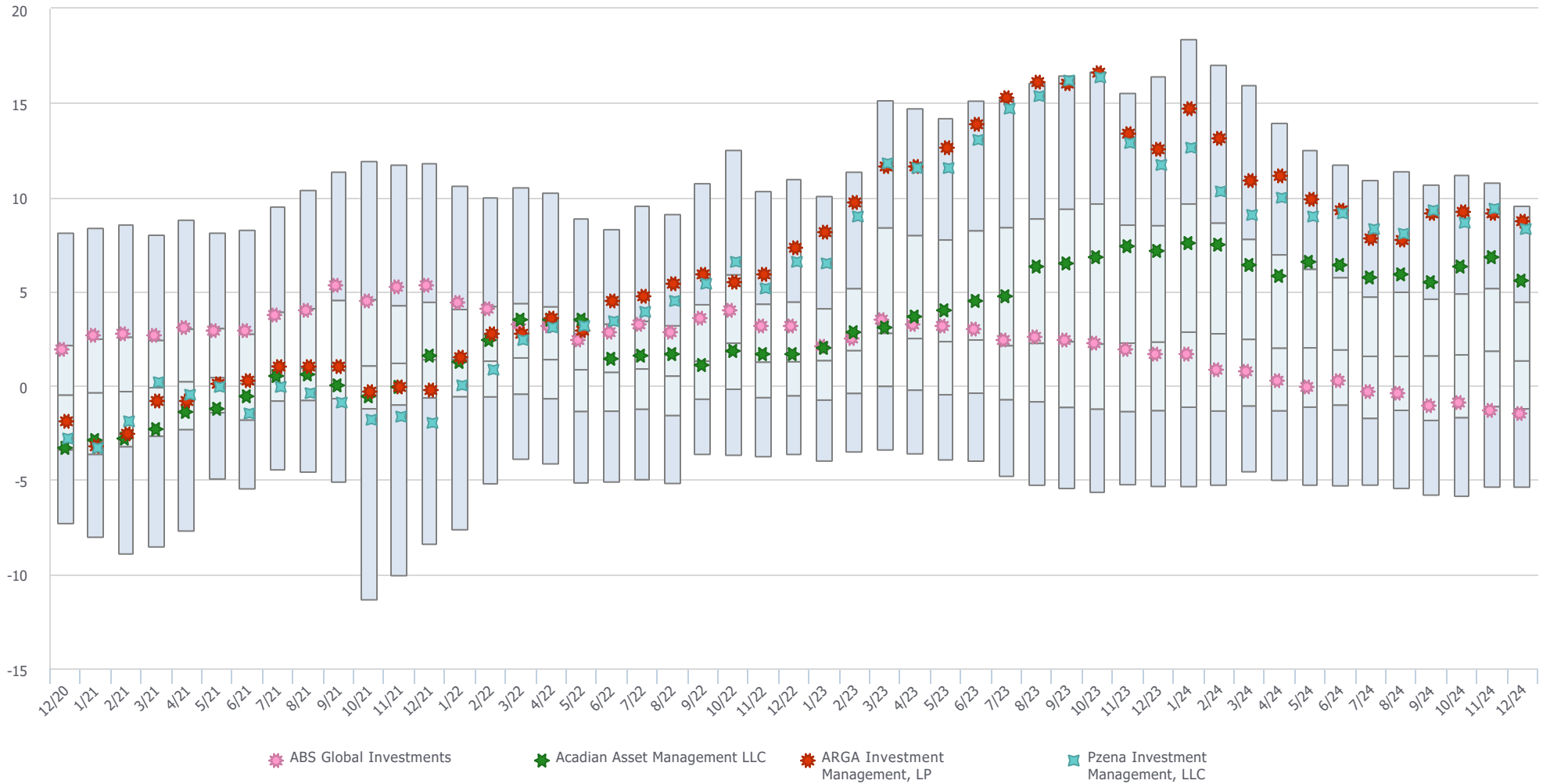
	RM	2024		2023		2022		2021		2020		2019		2018	
			Rk		Rk		Rk		Rk		Rk		Rk		Rk
★ ABS Global Investments	N F	5.1	63	12.6	52	-23.5	74	6.1	30	23.8	25	19.6	48	-15.3	46
★ Acadian Asset Management LLC	N F	13.8	11	21.6	22	-20.6	57	7.4	26	12.4	65	16.9	67	-18.3	74
★ ARGA Investment Management, LP	N F	7.6	42	15.6	38	-4.4	7	8.7	24	6.1	78	17.9	60	-10.0	10
★ Pzena Investment Management, LLC	N F	5.4	61	21.2	23	-6.6	9	6.4	29	9.0	74	12.3	85	-10.1	11
■ BlackRock	G F	7.2	46	9.3	70	-20.2	53	-2.7	67	18.0	43	18.2	57	-14.6	37

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# ABS Global Investments, Acadian Asset Management LLC, ARGA Investment Management, LP, Pzena Investment Management, LLC

December 2024

## 3-Yr Rolling Alpha



Universe: eVestment All Emerging Mkts Equity

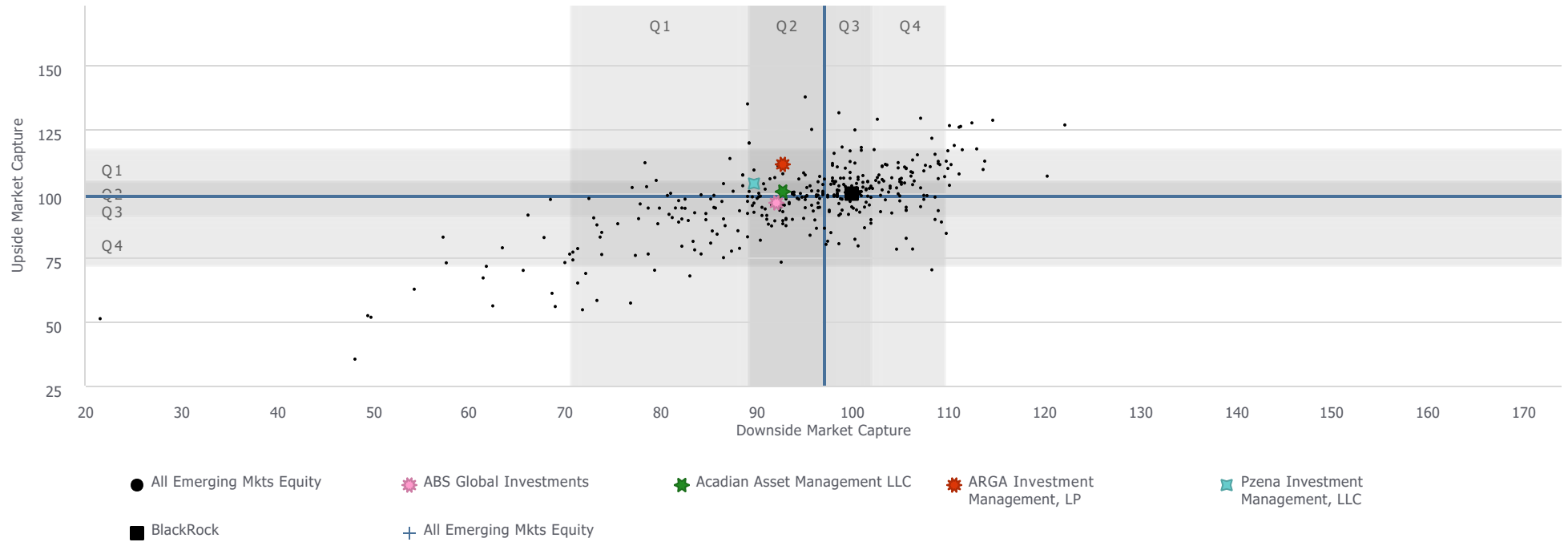
MSCI Emerging Markets Index Strategy

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# ABS Global Investments, Acadian Asset Management LLC, ARGA Investment Management, LP, Pzena Investment Management, LLC

December 2024

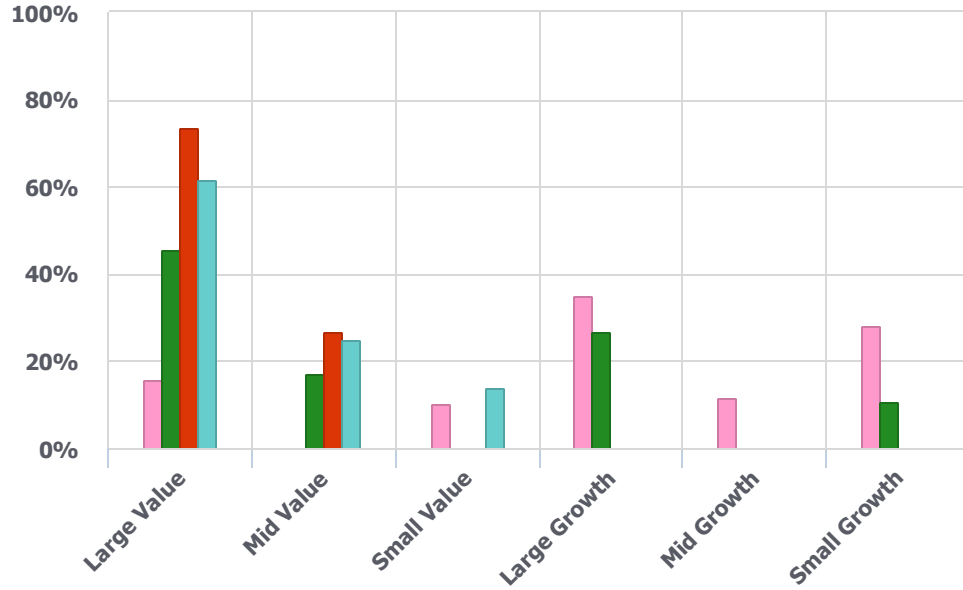
## Upside Vs Downside (Common Time Period)



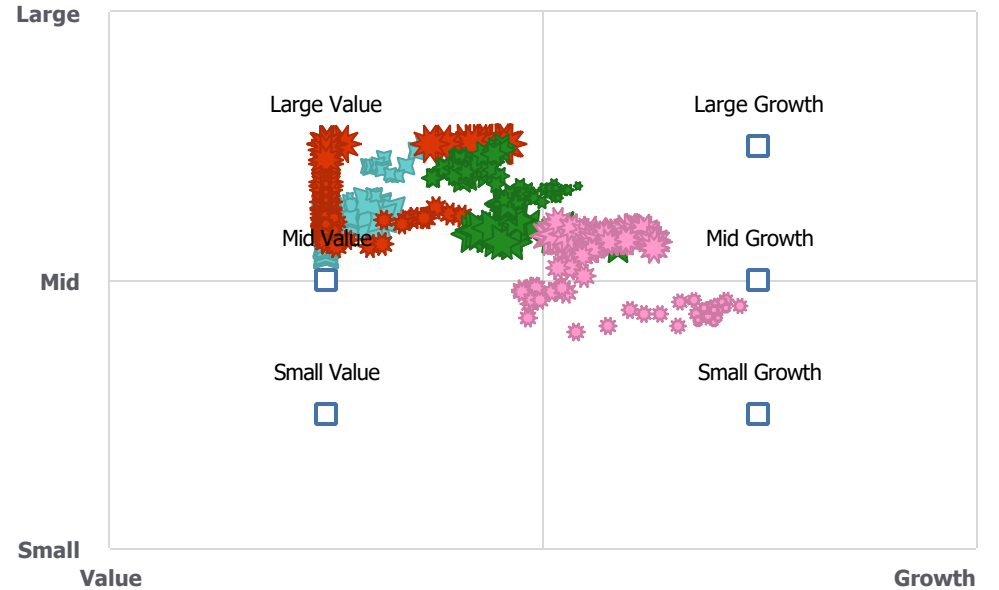
Firm Name	VT	# Positive Periods	# Negative Periods	Best Period	Worst Period	Up Market Returns	Down Market Returns	Avg Positive Returns	Avg Negative Returns	Upside Market Capture	Downside Market Capture
ABS Global Investments	C F	43	41	12.11	-17.88	58.06	-34.69	3.96	-3.46	95.83	92.04
Acadian Asset Management LLC	S A	45	39	14.74	-15.32	60.94	-34.94	4.02	-3.74	100.60	92.72
ARGA Investment Management, LP	S A	44	40	18.81	-19.88	67.44	-35.00	4.71	-3.91	111.33	92.86
Pzena Investment Management, LLC	S A	49	35	16.19	-20.93	62.84	-33.86	4.02	-4.31	103.73	89.85
BlackRock	C F	43	41	14.76	-15.39	60.58	-37.69	4.08	-3.81	100.00	100.00

**Style Analysis**

Total Average Style Allocation as of: December 31, 2024



3 Year Rolling Style Map - Traditional as of: December 31, 2024



- ✿ ABS
- ✿ Acadian
- ✿ ARGA
- ✿ Pzena

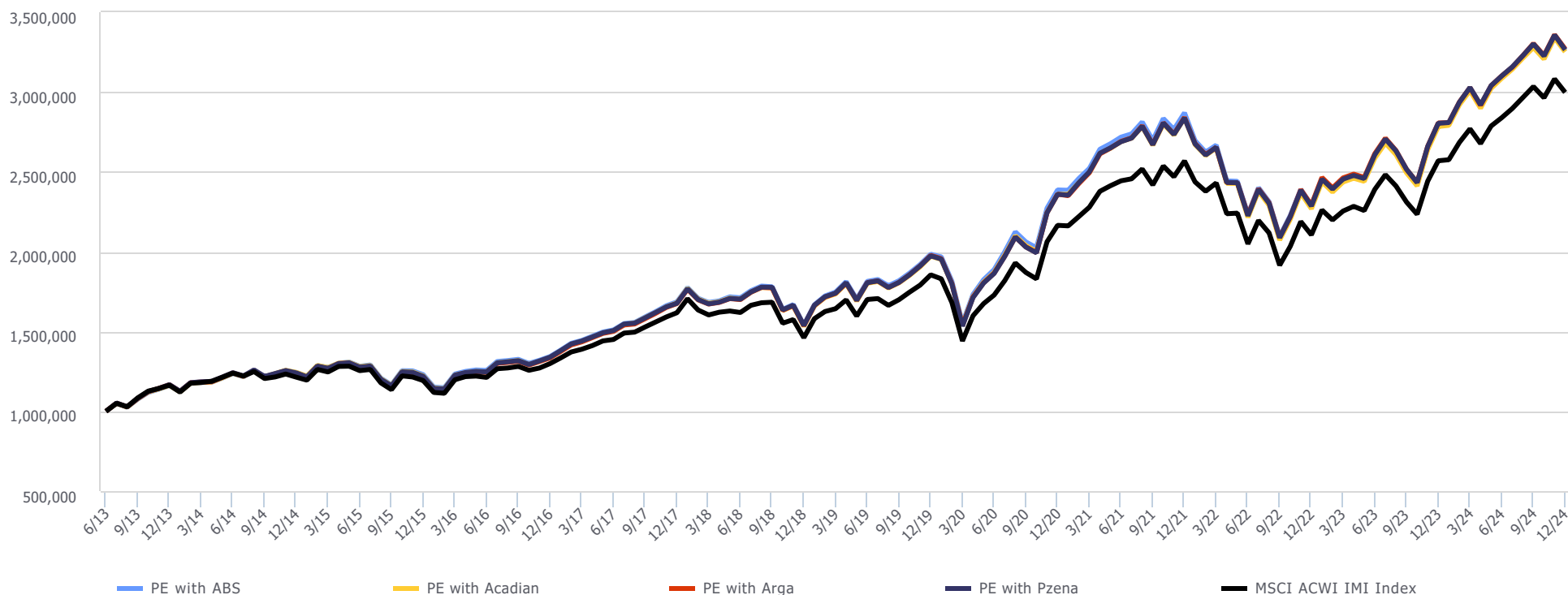


## ACERA Public Equity Back Test

For the Risk category within Performance/Risk, Staff developed a comprehensive methodology to analyze the diversification benefits/costs of adding each of the candidates to the total ACERA public equity portfolio. Staff calculated the historical excess return correlations of the four EM manager candidates to ACERA's eight current active public equity managers (**Green** indicates negative correlations which decrease risk and **Red** indicates positive correlations which increase risk) and back tested the aggregate public equity structure to measure the diversification effect. Including Arga and Pzena resulted in the public equity portfolios with the lowest tracking errors to the Policy benchmark and were thus scored higher by Staff. In contrast, including ABS and Acadian resulted in the highest tracking error public equity portfolios and were thus scored lower by Staff.

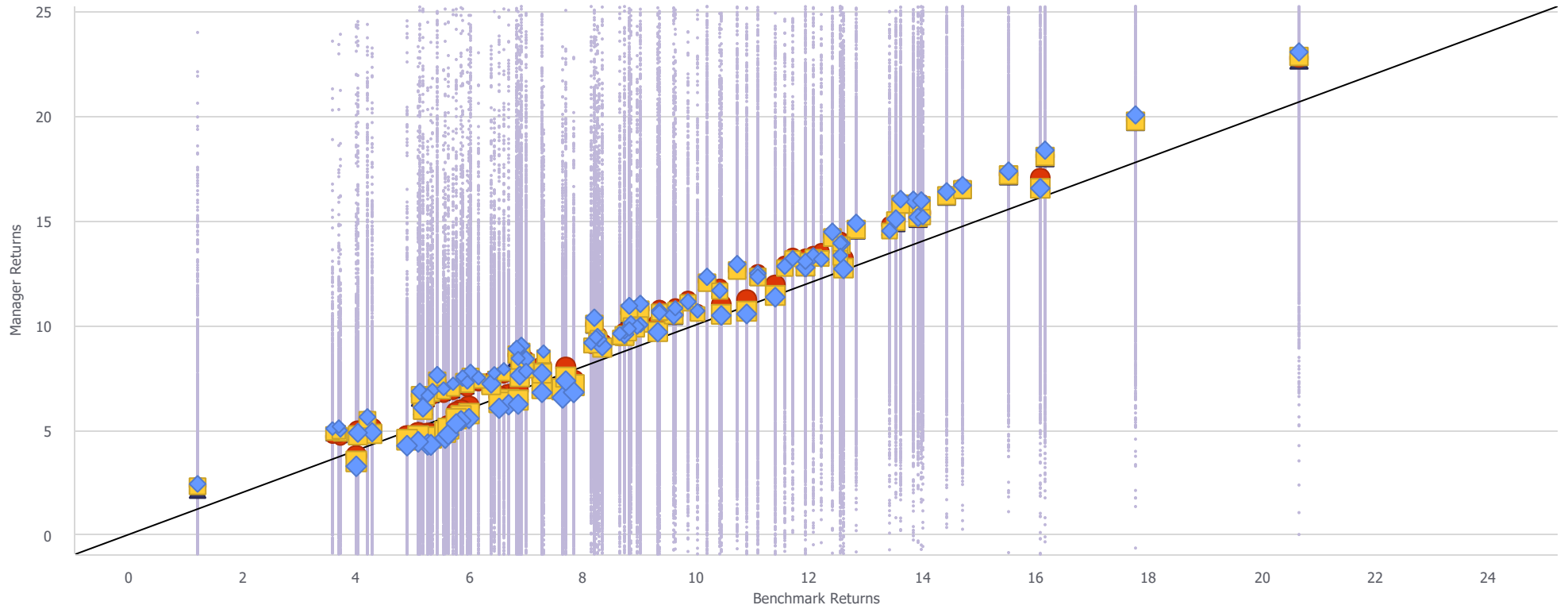
	Policy Allocation	Excess Returns Correlations			
		ABS	Acadian	Arga	Pzena
Russell 1000 Passive	52.0%				
MSCI International Passive	11.5%				
Aristotle	3.3%	0.02	-0.14	-0.21	-0.29
Bivium	5.0%	-0.03	-0.07	0.28	0.15
Capital Group	5.0%	0.09	-0.17	-0.20	-0.35
Franklin Templeton	3.5%	0.05	-0.11	-0.10	-0.17
Kennedy	3.3%	0.18	0.04	-0.03	-0.08
TCW	3.3%	0.18	-0.05	-0.09	-0.18
William Blair Small Growth	3.3%	-0.08	0.02	0.25	0.16
William Blair EM	5.0%	0.46	0.02	-0.56	-0.49
New EM manager	5.0%				

Growth of \$100 (Common Time Period)



Firm Name	VT	Returns	Cumulative Returns	Info Ratio	Tracking Error
ACERA PE (ABS)	BP	10.81	225.47	0.70	1.13
ACERA PE (Acadian)	BP	10.80	225.17	0.76	1.02
ACERA PE (Arga)	BP	10.85	226.98	0.86	0.97
ACERA PE (Pzena)	BP	10.84	226.44	0.84	0.97
BlackRock	C F	10.02	199.76	--	0.00

Manager Consistency (Rolling 3Yr)



Universe: eVestment All Global Equity

	RM	# of Observations	# OutPerform Benchmark	% OutPerform Benchmark
◆ ACERA PE (ABS)	BP	103	83	80.6%
■ ACERA PE (Acadian)	BP	103	85	82.5%
● ACERA PE (Arga)	BP	103	92	89.3%
▲ ACERA PE (Pzena)	BP	103	91	88.3%
--- MSCI ACWI IMI Index	---	---	---	---

MSCI ACWI IMI Index

# ABS - EMS PORTFOLIO

## DUE DILIGENCE RATING: 1

Attachment #6

The team believes their investment edge lies in their qualitative, bottom-up approach in identifying local specialists, in conjunction with their proprietary investment and risk management tool called the ABSolute. Their experience and networks in emerging markets help them identify local investment talents.

<b>Firm</b> <b>1</b>	<b>Philosophy</b> <b>2</b>
<b>People</b> <b>2</b>	<b>Performance</b> <b>3</b>

### TEAM COMMENTS

Guilherme Valle is the PM for this strategy and is supported by 5 qualitative analysts that are dedicated to the strategy. Decisions are made by the Investment Committee consisting of Guilherme, Laurence Russian, Michael Halper and Sean White

### INVESTMENT STYLE/STRATEGY

Qualitative, bottom-up approach in identifying local specialists to source names, in conjunction with their proprietary investment and risk management tool called the ABSolute.

### PERFORMANCE EXPECTATIONS

The strategy aims to generate 3-5% net alpha over the MSCI EM IMI Index over a full market cycle which equates to a gross alpha of roughly 4-6%.

### PORTFOLIO POSITIONING

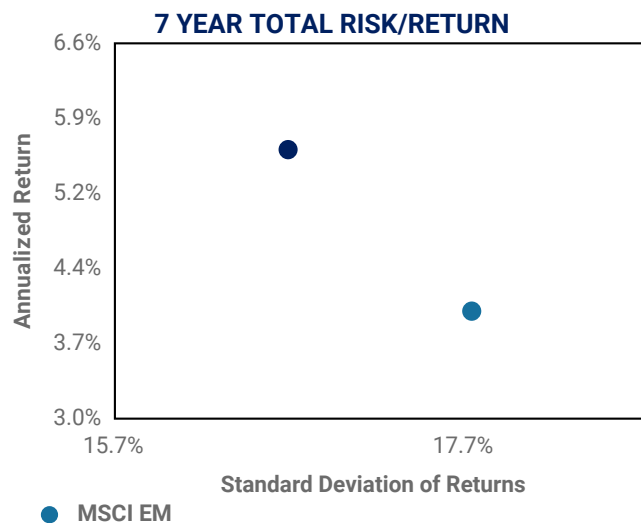
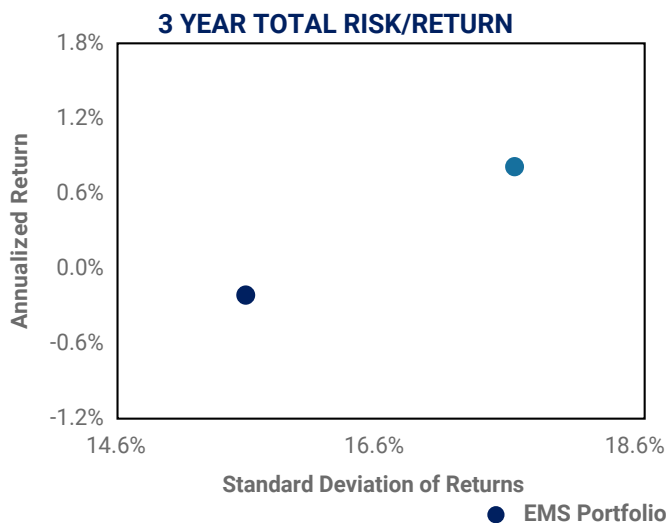
The strategy is well diversified, typically holding about 400-600 names. The strategy tends to hold names for longer periods of time with annual turnover historically being about 40%. Will tend to hold more small cap names than peers and is benchmarked to the MSCI EM IMI index.

### FIRM FACTS

Location	Stamford, Connecticut
Year Founded	2002
Total AUM (\$MM)	7,766
Fixed Income AUM (%)	0
Equity AUM (%)	0
Other AUM (%)	0
# of Employees / Investment Professionals	43 / -
% Employee Owned	79

### STRATEGY FACTS

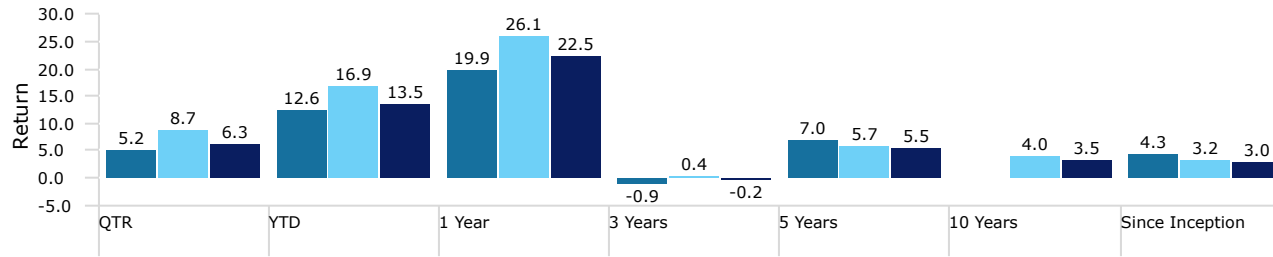
Inception Date	2017
Total AUM (\$MM)	2,023
# of Portfolio Managers	1
# of Research Analysts	6
Available Vehicles	CM
Preferred Benchmark	MSCI EM
Primary Market Capitalization	All Cap
Investment Style	Fundamental, Bottom-Up



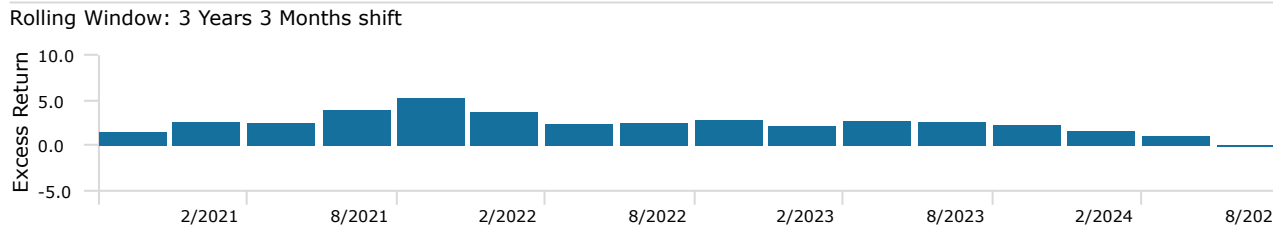
# ABS Emerging Markets Strategic

● ABS Emerging Markets Strategic    ■ MSCI EM NR USD    ▼ US Fund Diversified Emerging Mkts

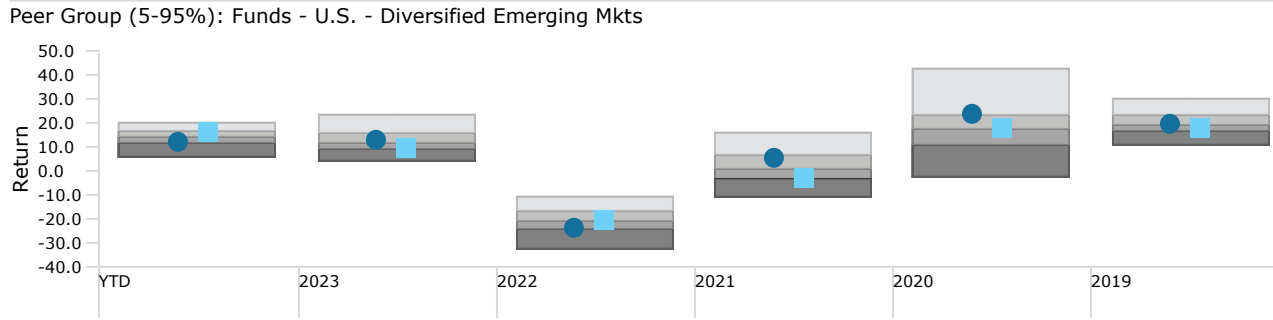
## Trailing Period Returns



## Rolling Excess Returns



## Performance Relative to Peer Group



## Quarterly Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	2.00	4.89	5.23		12.58
2023	3.77	3.61	-1.41	6.51	12.90
2022	-10.65	-12.51	-8.55	6.97	-23.53
2021	4.83	6.19	-4.84	0.14	6.09
2020	-23.44	21.78	11.41	19.25	23.87
2019	11.37	0.67	-2.93	9.99	19.70
2018	1.46	-7.55	-3.97	-6.01	-15.34
2017	-	-	-	-	-

## Excess Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	-0.37	-0.11	-3.49		-
2023	-0.19	2.71	1.52	-1.35	3.07
2022	-3.67	-1.06	3.02	-2.73	-3.44
2021	2.54	1.14	3.25	1.45	8.63
2020	0.16	3.70	1.85	-0.45	5.56
2019	1.44	0.07	1.31	-1.85	1.27
2018	0.04	0.41	-2.88	1.47	-0.76
2017	-	-	-	-	-

## Summary Statistics

Time Period: 10/1/2019 to 9/30/2024

	Strategy	Benchmark
Up Capture Ratio	96.40	100.00
Down Capture Ratio	90.26	100.00
Std Dev	17.98	18.63
Information Ratio	0.31	-
Alpha	1.38	0.00
Beta	0.94	1.00
R2	95.49	100.00
Tracking Error	3.95	0.00
Sharpe Ratio	0.33	0.26

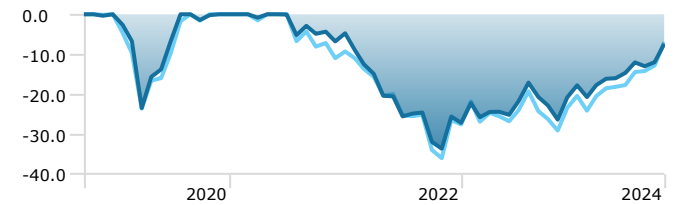
## Drawdown Statistics

Time Period: Since Common Inception (12/1/2017) to 9/30/2024

	Strategy	Benchmark
Max Drawdown	-33.61	-35.98
Max Drawdown # of Months	17	16
Max Drawdown Peak Date	6/1/2021	7/1/2021
Max Drawdown Valley Date	10/31/2022	10/31/2022
Recovery # of Months	-	-

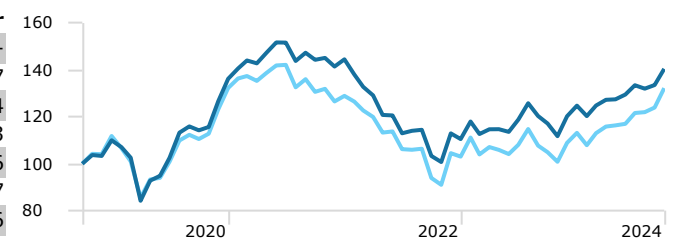
## Drawdown

Time Period: 10/1/2019 to 9/30/2024



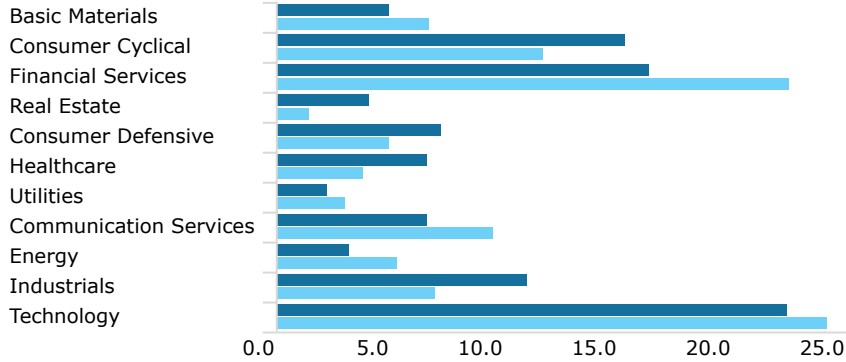
	Strategy	Benchmark
M-Squared (Risk Adjusted-Return)	8.64%	7.32%

## Investment Growth

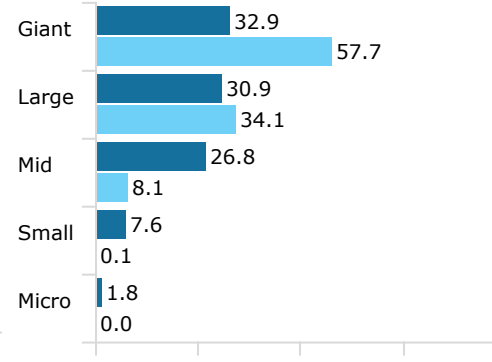


# ABS Emerging Markets Strategic

## Sector Exposure



## Market Cap



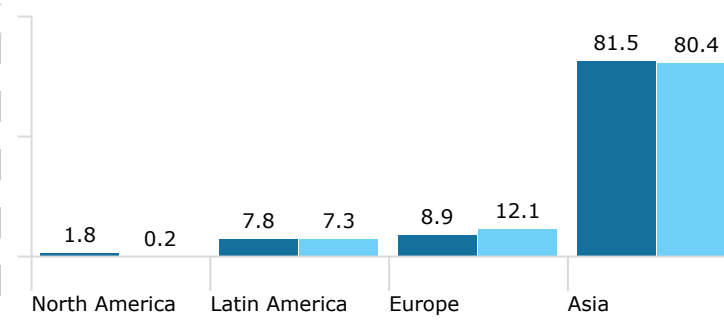
## Characteristics

	Strategy	Benchmark
P/E	13.62	14.60
P/B	1.68	1.76
Dividend Yield	2.89%	2.98%
Average Market Cap	12,135	47,237
% Asset in Top 10 Holdings	18.3%	26.1%
# of Holdings	696	1,278
Turnover Ratio %	18%	—
Inception Date	11/30/2017	1/1/2001

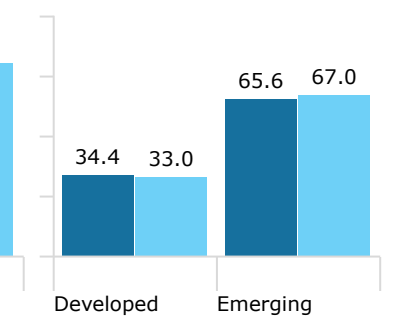
## Top Holdings

Company	Weight
Taiwan Semiconductor Manufacturing Co Ltd	4.0%
Tencent Holdings Ltd	2.0%
Samsung Electronics Co Ltd	1.7%
Greentown China Holdings Ltd	1.2%
China Merchants Bank Co Ltd Class H	1.2%
ICICI Bank Ltd	1.1%
PDD Holdings Inc ADR	1.1%
Largan Precision Co Ltd	1.0%
Bank Of Ningbo Co Ltd Class A	1.0%
Saudi National Bank	0.9%

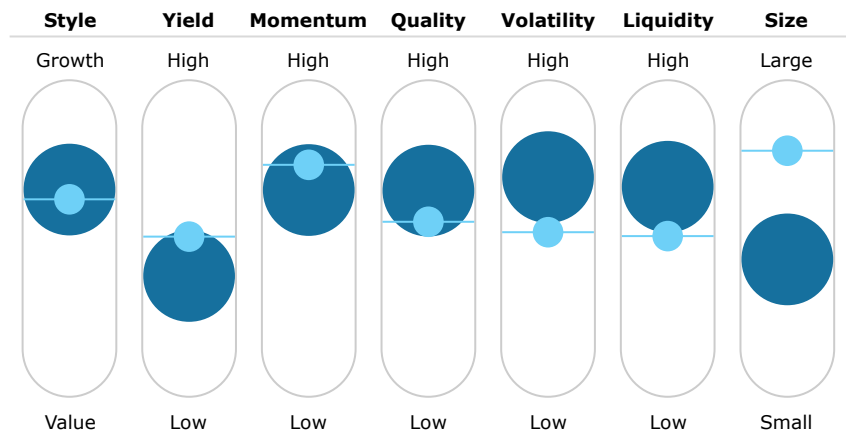
## Region Exposure



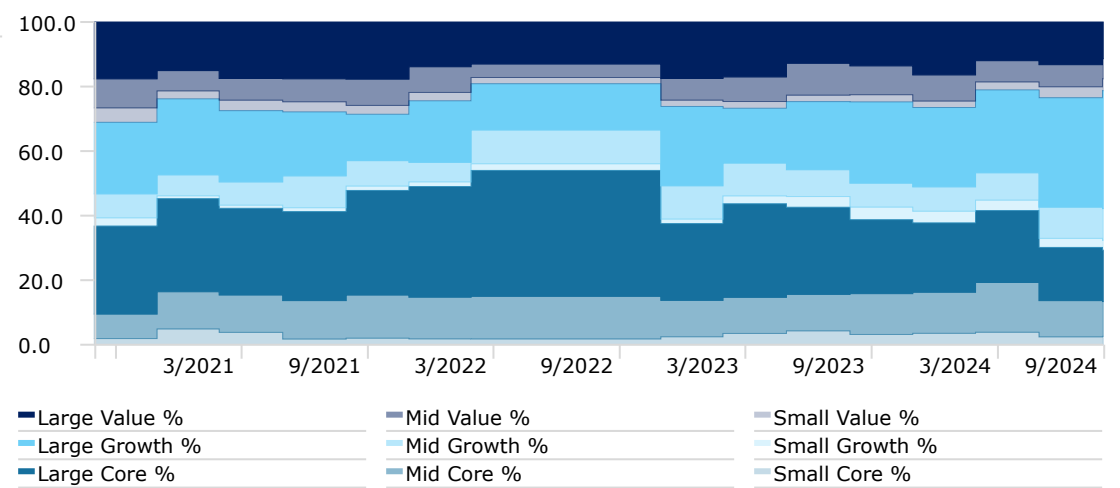
## Market Classification



## Factor Profile



## Equity Style



● ABS Emerging Markets Strategic

◆ MSCI EM NR USD



# ACADIAN - EMERGING MARKETS

## DUE DILIGENCE RATING: 1

Acadian's edge is attributable to their method of applying their proprietary dynamic multi-factor quantitative stock selection model systematically to a broad universe to exploit market inefficiencies in emerging markets including off-benchmark securities. The equity model is based on a factor library and forecasts expected returns at the stock level using factors including valuation, growth, quality, and technical. The model provides Acadian's portfolio managers with specific stock level alpha scores from which portfolios are optimized. Acadian has been managing quantitative portfolios since 1977 and has effectively built a large amount of intellectual capital into their portfolios. Acadian portfolios have performed strongest in markets with large inefficiencies, especially in emerging markets and small market cap strategies.

Firm  
3

Philosophy  
1

People  
2

Performance  
1

### TEAM COMMENTS

Acadian has a 100+ person investment team spanning Investment Analytics & Data, Global Equity Research, Equity Portfolio Management, Implementation. Brendan Bradley is Chief Investment Officer.

### INVESTMENT STYLE/STRATEGY

The strategy is a quantitative model that focuses on valuation, price trend, quality, and earnings. It is slightly different than other Acadian models as the EM team uses a top-down country model in their process.

### PERFORMANCE EXPECTATIONS

This strategy will do better in markets where value is in favor.

### PORTFOLIO POSITIONING

Quantitative blend of top-down country model and bottom-up stock selection model. Can be a stand alone EM manager or paired with a bottom-up fundamental manager.

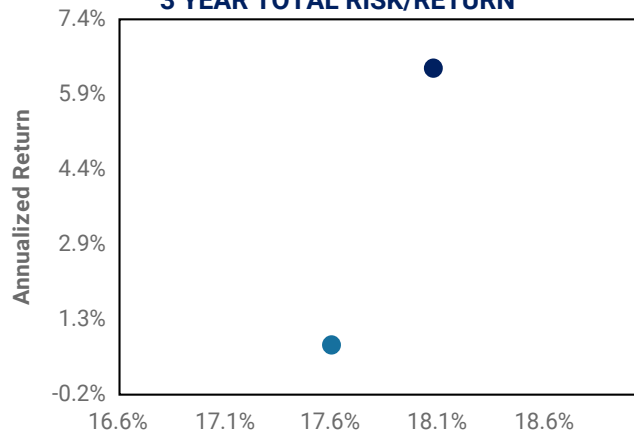
### FIRM FACTS

Location	Boston, Massachusetts
Year Founded	1986
Total AUM (\$MM)	118,812
Fixed Income AUM (%)	0
Equity AUM (%)	100
Other AUM (%)	0
# of Employees / Investment Professionals	363 / 119
% Employee Owned	0

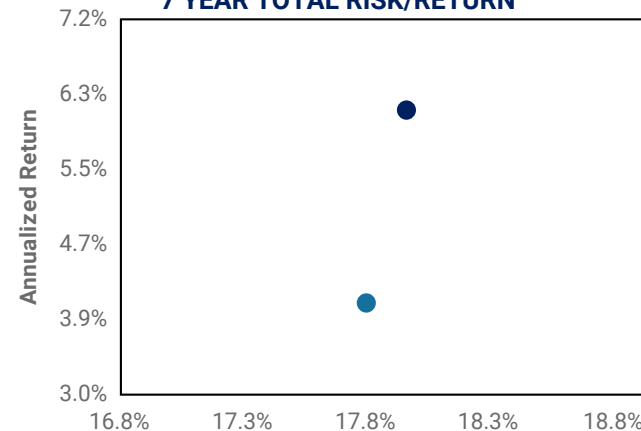
### STRATEGY FACTS

Inception Date	1994
Total AUM (\$MM)	17,719
# of Portfolio Managers	34
# of Research Analysts	54
Available Vehicles	SA, CM
Preferred Benchmark	MSCI EM
Primary Market Capitalization	All Cap
Investment Style	Quantitative, Bottom-Up

#### 3 YEAR TOTAL RISK/RETURN



#### 7 YEAR TOTAL RISK/RETURN



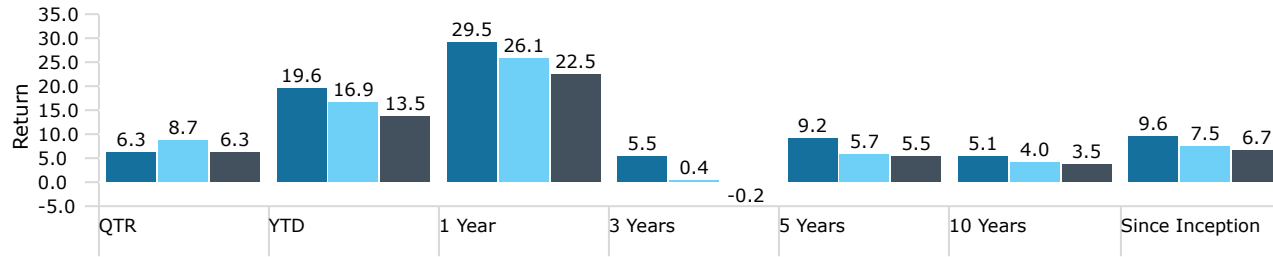
● Emerging Markets ● MSCI EM



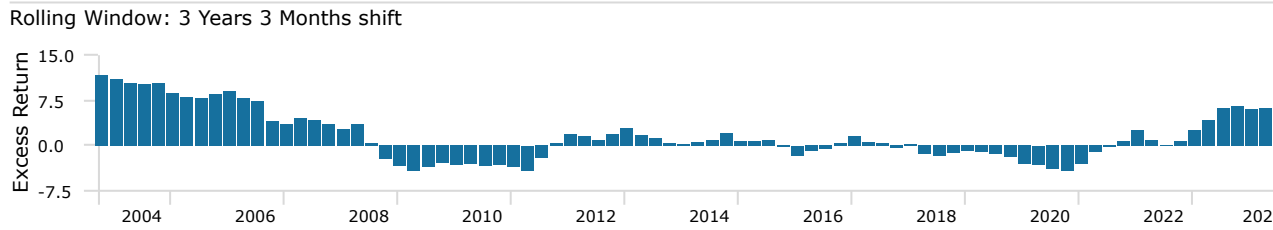
# Acadian Emerging Markets Equity

● Acadian Emerging Markets Equity    ■ MSCI EM NR USD    ▲ US Fund Diversified Emerging Mkts

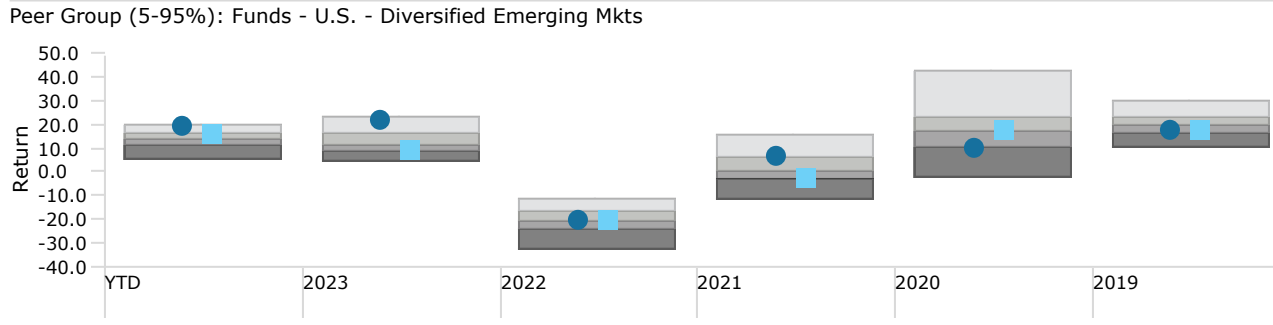
## Trailing Period Returns



## Excess Rolling Returns



## Performance Relative to Peer Group



## Quarterly Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	5.05	7.12	6.30		19.63
2023	6.77	5.00	1.07	8.22	22.62
2022	-2.39	-15.71	-13.45	12.15	-20.14
2021	6.51	6.65	-6.08	0.25	6.96
2020	-25.28	17.04	7.17	17.71	10.32
2019	9.28	0.46	-4.13	12.11	18.01
2018	1.92	-11.92	-0.95	-8.55	-18.68
2017	14.14	5.05	7.84	6.43	37.63

## Excess Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	2.69	2.12	-2.42		2.77
2023	2.81	4.10	4.00	0.35	12.80
2022	4.58	-4.26	-1.88	2.45	-0.05
2021	4.22	1.61	2.01	1.56	9.50
2020	-1.68	-1.04	-2.39	-1.99	-7.98
2019	-0.64	-0.15	0.12	0.28	-0.43
2018	0.50	-3.96	0.15	-1.07	-4.10
2017	2.69	-1.22	-0.05	-1.00	0.34

## Summary Statistics

Time Period: 10/1/2019 to 9/30/2024

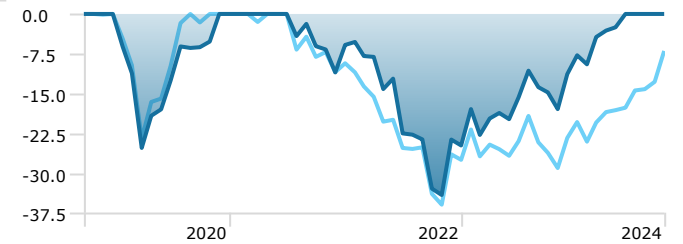
	Strategy	Benchmark
Up Capture Ratio	102.14	100.00
Down Capture Ratio	88.41	100.00
Std Dev	19.05	18.63
Information Ratio	0.58	—
Alpha	3.39	0.00
Beta	0.98	1.00
R2	91.56	100.00
Tracking Error	5.53	0.00
Sharpe Ratio	0.43	0.26

## Drawdown Statistics

Time Period: Since Common Inception (2/1/2001) to 9/30/2024

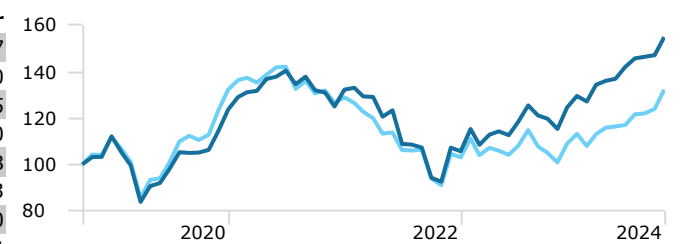
	Strategy	Benchmark
Max Drawdown	-67.52	-61.59
Max Drawdown # of Months	16	16
Max Drawdown Peak Date	11/1/2007	11/1/2007
Max Drawdown Valley Date	2/28/2009	2/28/2009
Recovery # of Months	106	101

## Drawdown



	Strategy	Benchmark
M-Squared (Risk Adjusted-Return)	10.43%	7.32%

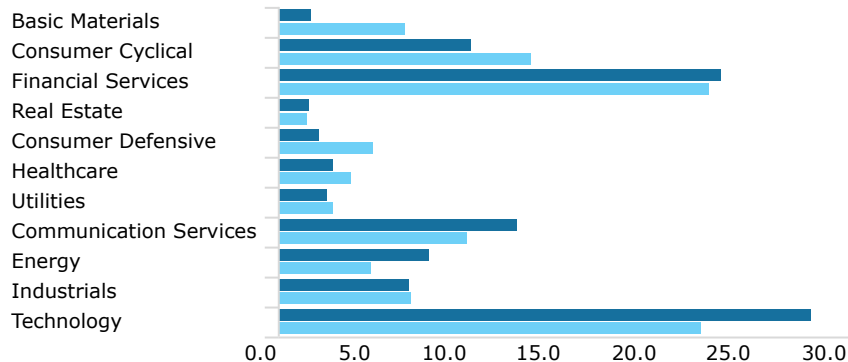
## Investment Growth



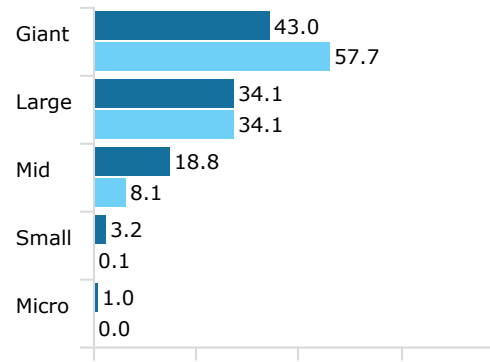


# Acadian Emerging Markets Equity

## Sector Exposure



## Market Cap



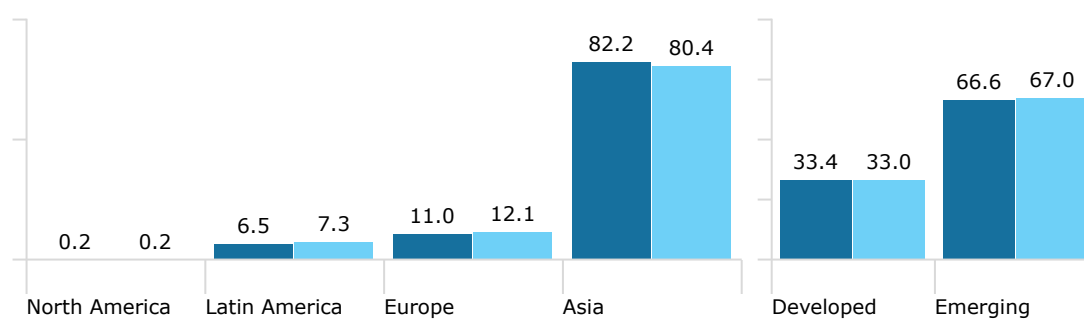
## Characteristics

	Strategy	Benchmark
P/E	10.98	14.60
P/B	1.36	1.76
Dividend Yield	3.37%	2.16%
Average Market Cap	25,895	47,237
% Asset in Top 10 Holdings	26.4%	26.1%
# of Holdings	702	1,278
Turnover Ratio %	68%	—
Inception Date	6/17/1993	1/1/2001

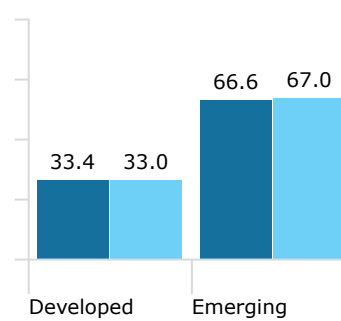
## Top Holdings

Company	Weight
Taiwan Semiconductor Manufacturing Co Ltd	8.3%
Tencent Holdings Ltd	4.5%
China Construction Bank Corp Class H	3.1%
HCL Technologies Ltd	1.9%
MediaTek Inc	1.6%
Alibaba Group Holding Ltd Ordinary Shares	1.6%
Hon Hai Precision Industry Co Ltd	1.4%
Samsung Electronics Co Ltd	1.4%
Bangkok Bank PCL DR	1.3%
Coal India Ltd	1.3%

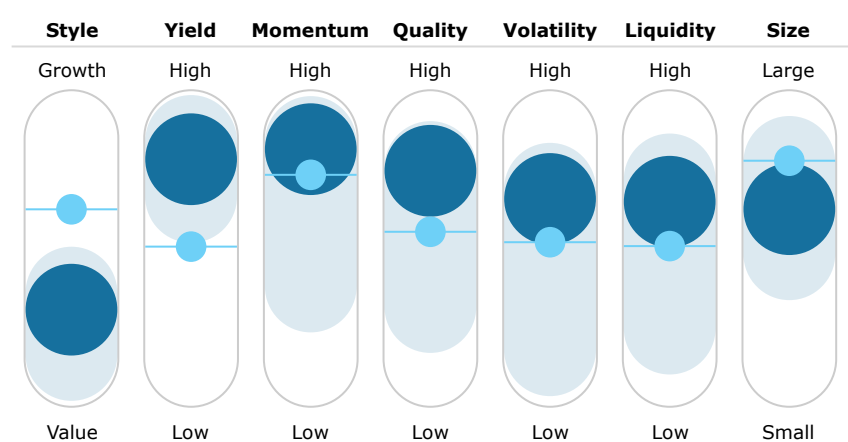
## Region Exposure



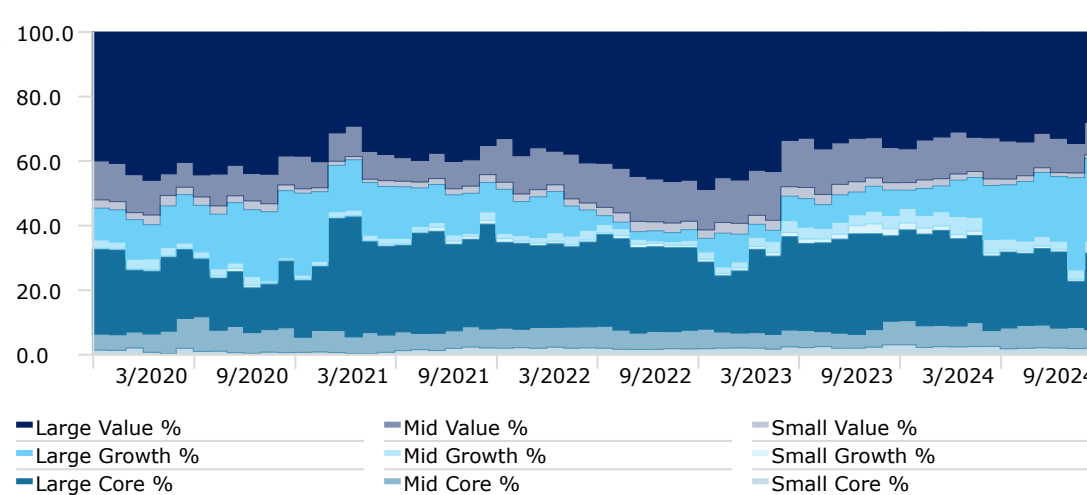
## Market Classification



## Factor Profile



## Equity Style



● Acadian Emerging Markets Equity

● Historical Range

● MSCI EM NR USD



# ARGA EMERGING MARKETS EQUITY

## DUE DILIGENCE RATING: 3

3

ARGA believes that good investment opportunities come from temporary market overreactions to times of stress (whether it be macro or stock-specific). They seek to use these temporary times of stress to purchase good companies at a discount to their intrinsic value. They rely on a value investment philosophy and investment process to "buy low and sell high" across a variety of countries and industries.

### TEAM COMMENTS

Rama Krishna is the Chief Investment Officer and lead portfolio manager. He is supported by a team of 30+ global investment analysts and research associates. The investment team is primarily based in Connecticut and in India.

### INVESTMENT STYLE/STRATEGY

ARGA's value strategy relies on a dividend discount model as the primary basis for company valuation.

### PERFORMANCE EXPECTATIONS

This strategy will perform better in markets where value is in favor, and will likely lag in growth-led markets. ARGA's excess return target for this strategy is 200 to 300 basis points over a full market cycle of 3 to 5 years.

### PORTFOLIO POSITIONING

This strategy is benchmark agnostic, and its past investment returns have often been significantly more volatile than the MSCI EM benchmark, so should be sized appropriately for investors prepared to tolerate volatile performance from its managers.

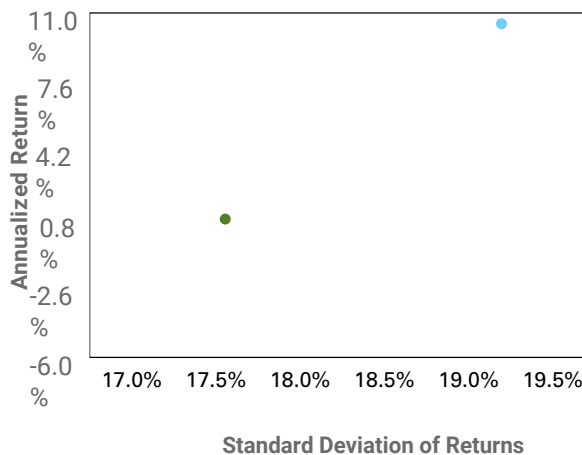
### FIRM FACTS

Location	Stamford, Connecticut
Year Founded	2010
Total AUM (\$MM)	16,062
Fixed Income AUM (%)	0
Equity AUM (%)	100
Other AUM (%)	0
# of Employees / Investment Professionals	146 / 56
% Employee Owned	60%

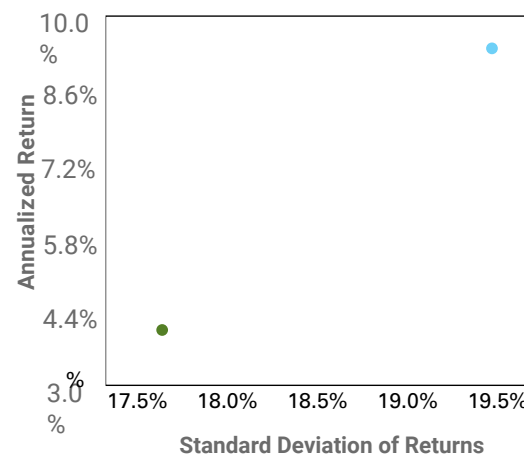
### STRATEGY FACTS

Inception Date	1994
Total AUM (\$MM)	7,902
# of Portfolio Managers	3
# of Research Analysts	14
Available Vehicles	SA, CM
Preferred Benchmark	MSCI EM
Primary Market Capitalization	Mid-Large Cap
Investment Style	Fundamental Value

3 YEAR TOTAL RISK/RETURN



7 YEAR TOTAL RISK/RETURN



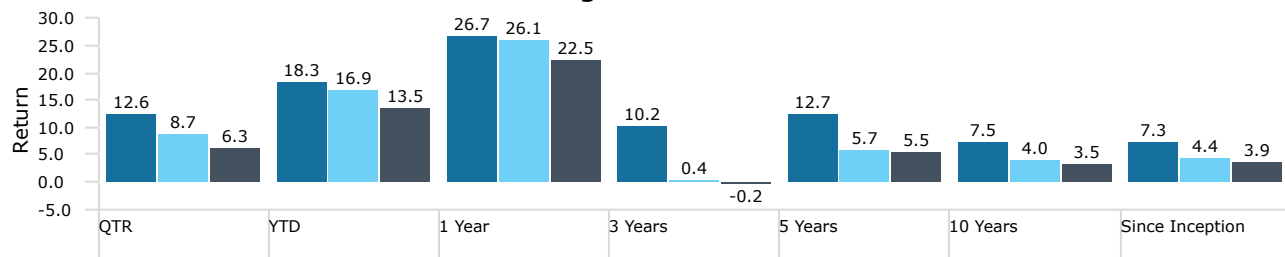
● ARGA Emerging ● MSCI EM



# ARGA Emerging Markets Equity

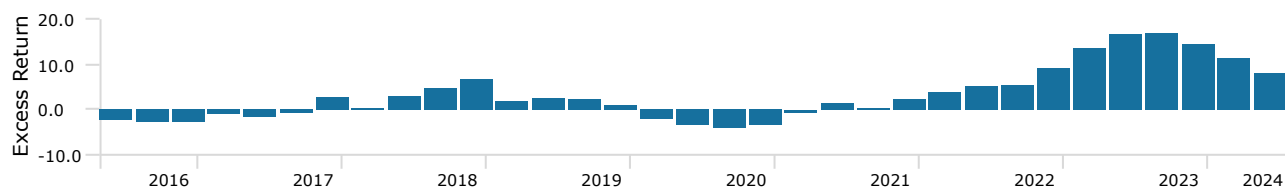
● ARGA Emerging Markets Equity    ■ MSCI EM NR USD    ▲ US Fund Diversified Emerging Mkts

## Trailing Period Returns



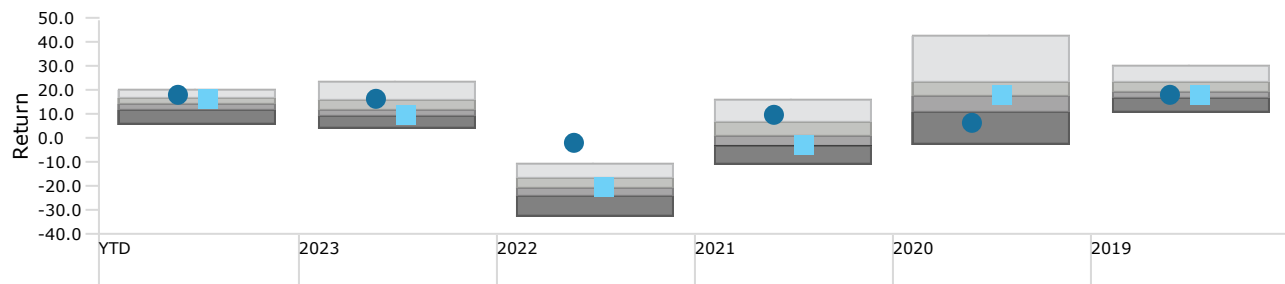
## Rolling Excess Returns

Rolling Window: 3 Years 3 Months shift



## Performance Relative to Peer Group

Peer Group (5-95%): Funds - U.S. - Diversified Emerging Mkts



## Quarterly Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	1.20	3.84	12.59		18.32
2023	7.65	4.59	-3.53	7.09	16.33
2022	-0.88	-5.69	-9.89	16.86	-1.57
2021	6.23	8.51	-3.45	-1.16	10.01
2020	-31.04	14.81	3.64	29.39	6.18
2019	7.99	1.82	-6.39	14.74	18.10
2018	1.97	-8.74	2.21	-4.62	-9.27
2017	12.99	6.24	5.12	8.82	37.31

## Excess Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	-1.17	-1.16	3.87	-0.77	—
2023	3.70	3.70	-0.61	-0.77	6.50
2022	6.09	5.76	1.68	7.15	18.52
2021	3.94	3.47	4.64	0.16	12.55
2020	-7.44	-3.27	-5.92	9.70	-12.13
2019	-1.94	1.21	-2.14	2.90	-0.33
2018	0.56	-0.78	3.31	2.85	5.30
2017	1.55	-0.03	-2.78	1.38	0.03

## Summary Statistics

Time Period: 10/1/2019 to 9/30/2024

	Strategy	Benchmark
Up Capture Ratio	111.79	100.00
Down Capture Ratio	85.86	100.00
Std Dev	21.39	18.63
Information Ratio	0.80	—
Alpha	6.61	0.00
Beta	1.06	1.00
R2	85.77	100.00
Tracking Error	8.15	0.00
Sharpe Ratio	0.55	0.26

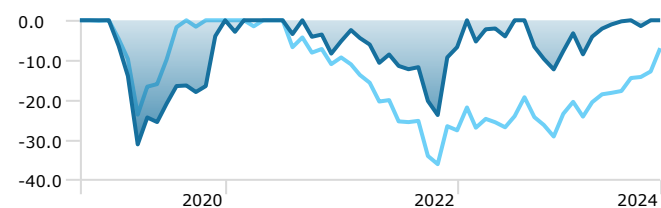
## Drawdown Statistics

Time Period: Since Common Inception (8/1/2013) to 9/30/2024

	Strategy	Benchmark
Max Drawdown	-39.53	-35.98
Max Drawdown # of Months	17	16
Max Drawdown Peak Date	9/1/2014	7/1/2021
Max Drawdown Valley Date	1/31/2016	10/31/2022
Recovery # of Months	18	—

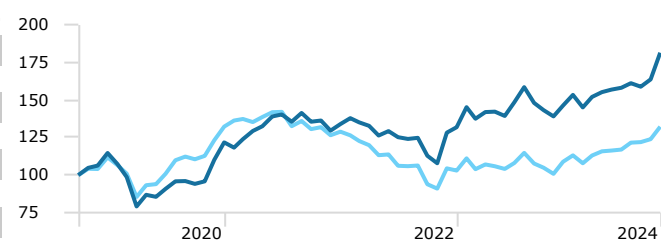
## Drawdown

Time Period: 10/1/2019 to 9/30/2024



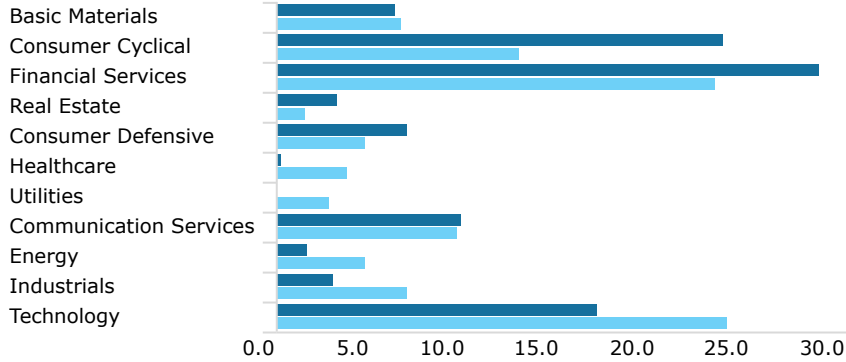
	Strategy	Benchmark
M-Squared (Risk Adjusted-Return)	13.59%	7.32%

## Investment Growth

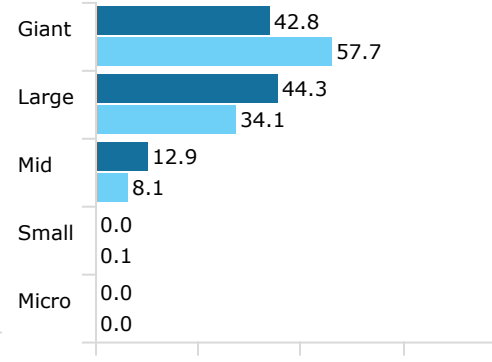


# ARGA Emerging Markets Equity

## Sector Exposure



## Market Cap



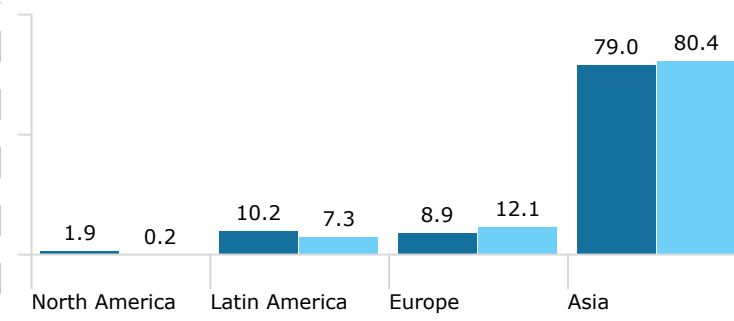
## Characteristics

	Strategy	Benchmark
P/E	11.03	14.60
P/B	1.27	1.76
Dividend Yield	4.49%	2.98%
Average Market Cap	30,497	47,237
% Asset in Top 10 Holdings	34.4%	26.1%
# of Holdings	59	1,278
Turnover Ratio %	28%	—
Inception Date	7/1/2013	1/1/2001

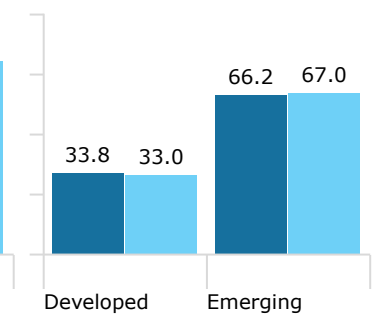
## Top Holdings

Company	Weight
Gree Electric Appliances Inc of Zhuhai Class A	4.7%
Tencent Holdings Ltd	4.3%
Taiwan Semiconductor Manufacturing Co Ltd	3.8%
Ping An Insurance (Group) Co. of China Ltd Class A	3.2%
Yageo Corp	3.2%
China Overseas Land & Investment Ltd	3.2%
Samsung Electronics Co Ltd	3.0%
Naspers Ltd Class N	2.9%
Trip.com Group Ltd ADR	2.8%
SK Hynix Inc	2.8%

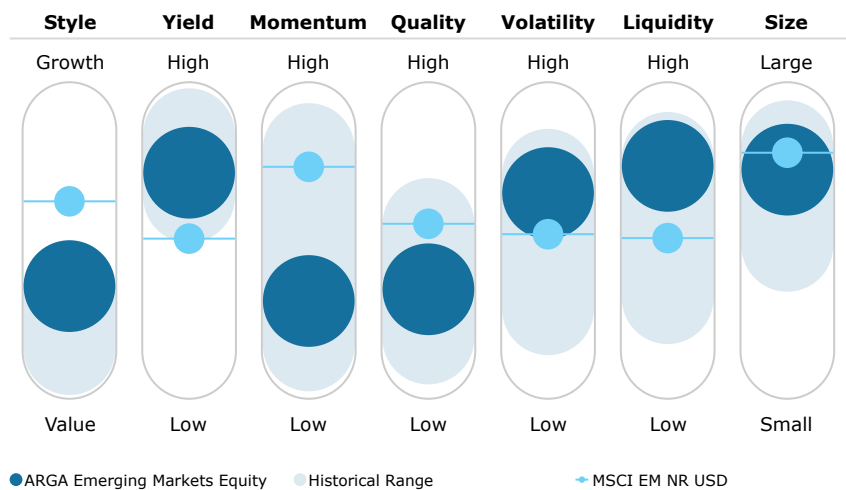
## Region Exposure



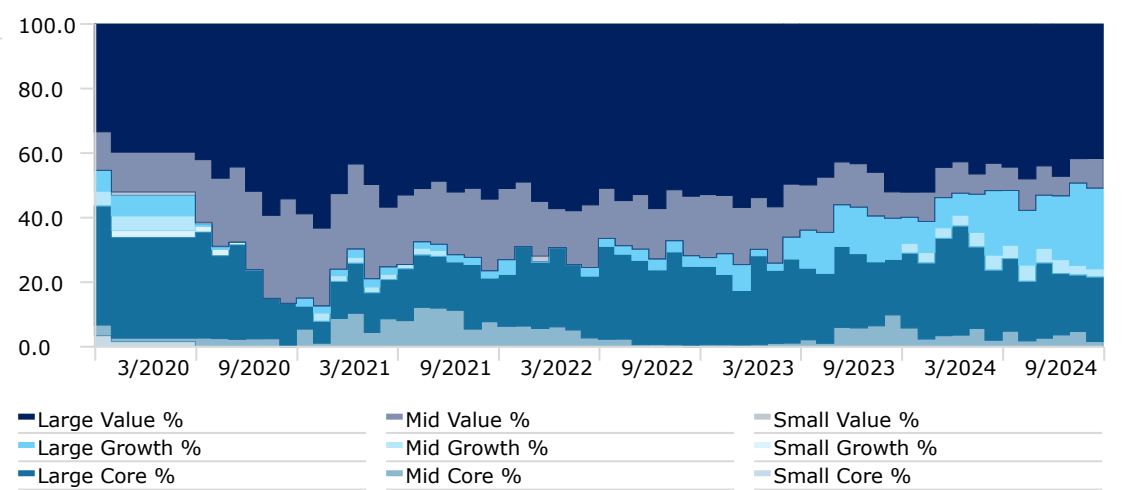
## Market Classification



## Factor Profile



## Equity Style



# PZENA - EMERGING MARKETS

## DUE DILIGENCE RATING: 1

Pzena Investment Management practices deep value investing, choosing to focus on companies that are trading at deep discounts on various traditional value metrics with particular emphasis on stocks with low price-to-normal earnings. To Pzena, value investing is composed of two aspects:

- 1) exposure to companies before the stock price reflects signs of obvious business improvement
- 2) long-term mindset matched with significant patience.

Firm  
1

Philosophy  
2

People  
2

Performance  
1

### TEAM COMMENTS

The Emerging Markets Focused Value strategy has a co-portfolio structure with Rakesh Bordia, Caroline Cai, CFA, Allison Fisch, and Akhil Subramanian as co-portfolio managers, and have joint decision-making responsibility.

### INVESTMENT STYLE/STRATEGY

Deep value bottom-up process that ranks companies by normalized P/E. Only consider stocks in the cheapest quintile. Conduct thorough review - financial modeling and on the ground research including meeting with management.

### PERFORMANCE EXPECTATIONS

Benchmark agnostic strategy is committed to deepest value opportunities. Will tend to struggle in growth markets. While research is focused on avoiding value traps, they can get caught. Overall, results have been volatile.

### PORTFOLIO POSITIONING

This is a 40-80 stock portfolio of mid to large cap stocks. Pzena will take large bets away from the benchmark based on where they see value in the market.

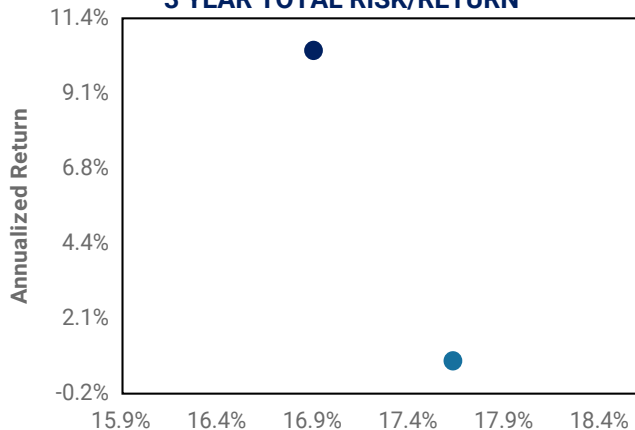
### FIRM FACTS

Location	New York, New York
Year Founded	1995
Total AUM (\$MM)	72,191
Fixed Income AUM (%)	0
Equity AUM (%)	100
Other AUM (%)	0
# of Employees / Investment Professionals	158 / 32
% Employee Owned	

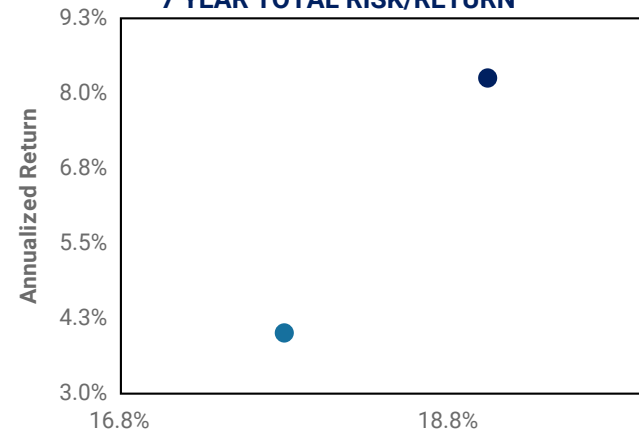
### STRATEGY FACTS

Inception Date	2008
Total AUM (\$MM)	7,432
# of Portfolio Managers	4
# of Research Analysts	26
Available Vehicles	SA, CM, MFI
Preferred Benchmark	MSCI EM
Primary Market Capitalization	All Cap
Investment Style	Fundamental, Bottom-Up

#### 3 YEAR TOTAL RISK/RETURN



#### 7 YEAR TOTAL RISK/RETURN



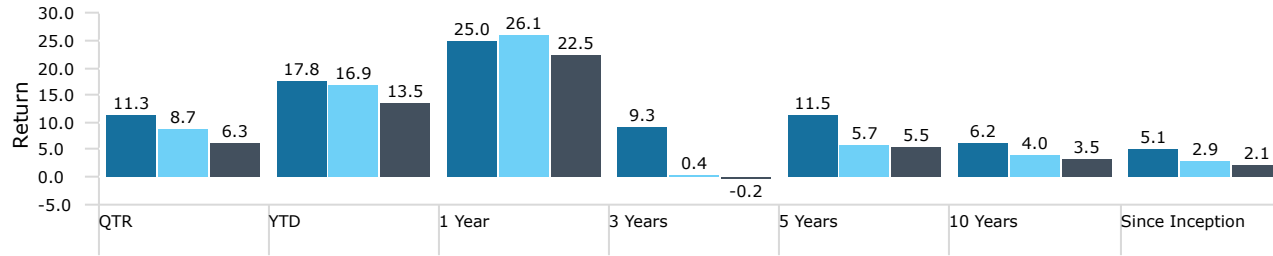
● Emerging Markets ● MSCI EM



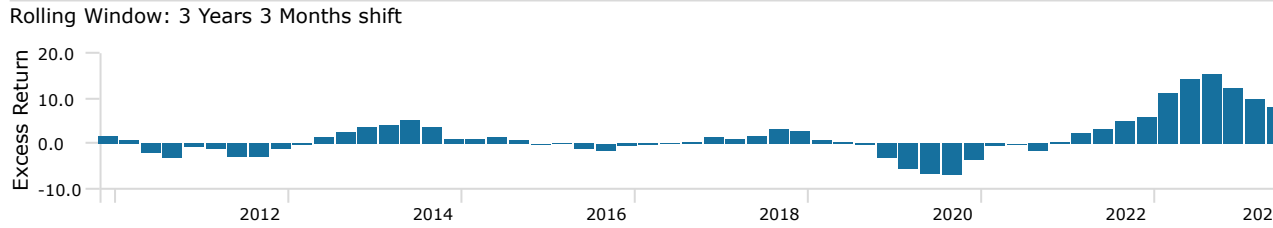
# Pzena Emerging Markets Focused Value

● Pzena Emerging Markets Focused Value    ■ MSCI EM NR USD    ▲ US Fund Diversified Emerging Mkts

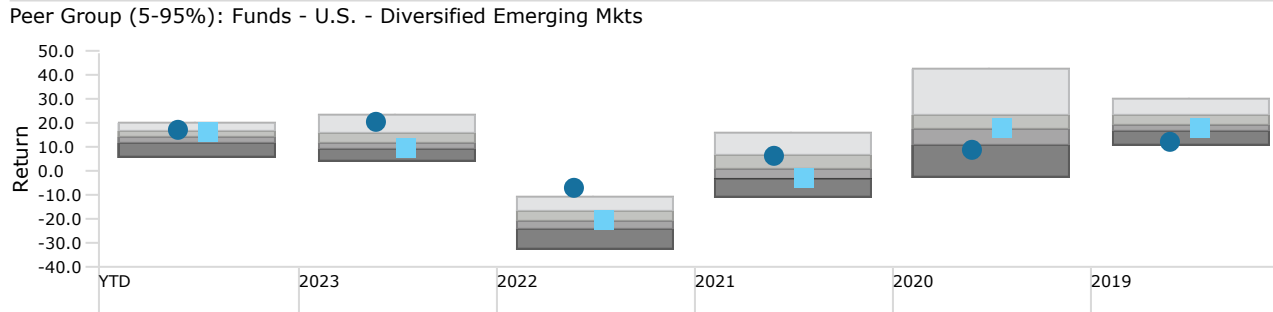
## Trailing Period Returns



## Rolling Excess Returns



## Performance Relative to Peer Group



## Quarterly Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	3.19	2.59	11.29		17.81
2023	6.47	5.51	1.75	6.07	21.24
2022	1.16	-11.08	-8.27	13.17	-6.62
2021	11.01	2.02	-3.96	-2.14	6.44
2020	-32.09	17.93	4.88	29.70	8.95
2019	7.38	-0.66	-5.66	11.58	12.29
2018	0.73	-7.19	3.14	-6.80	-10.14
2017	13.48	4.90	4.99	4.36	30.43

## Excess Returns

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Year
2024	0.83	-2.41	2.57		-
2023	2.52	4.62	4.67	-1.80	11.41
2022	8.14	0.37	3.30	3.46	13.47
2021	8.72	-3.03	4.13	-0.82	8.98
2020	-8.49	-0.15	-4.67	10.01	-9.36
2019	-2.55	-1.26	-1.41	-0.26	-6.14
2018	-0.69	0.77	4.23	0.68	4.44
2017	2.03	-1.37	-2.90	-3.08	-6.86

## Summary Statistics

Time Period: 10/1/2019 to 9/30/2024

	Strategy	Benchmark
Up Capture Ratio	105.23	100.00
Down Capture Ratio	82.49	100.00
Std Dev	20.38	18.63
Information Ratio	0.69	-
Alpha	5.68	0.00
Beta	1.01	1.00
R2	84.97	100.00
Tracking Error	7.89	0.00
Sharpe Ratio	0.52	0.26

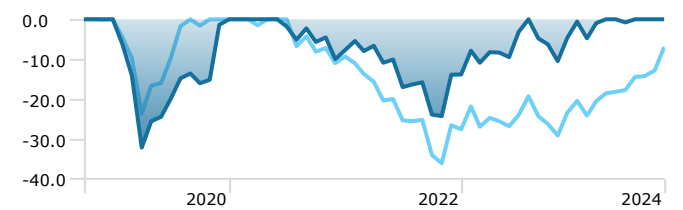
## Drawdown Statistics

Time Period: Since Common Inception (2/1/2008) to 9/30/2024

	Strategy	Benchmark
Max Drawdown	-54.72	-57.97
Max Drawdown # of Months	9	9
Max Drawdown Peak Date	6/1/2008	6/1/2008
Max Drawdown Valley Date	2/28/2009	2/28/2009
Recovery # of Months	19	22

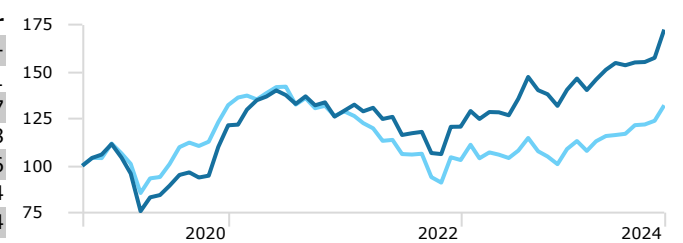
## Drawdown

Time Period: 10/1/2019 to 9/30/2024



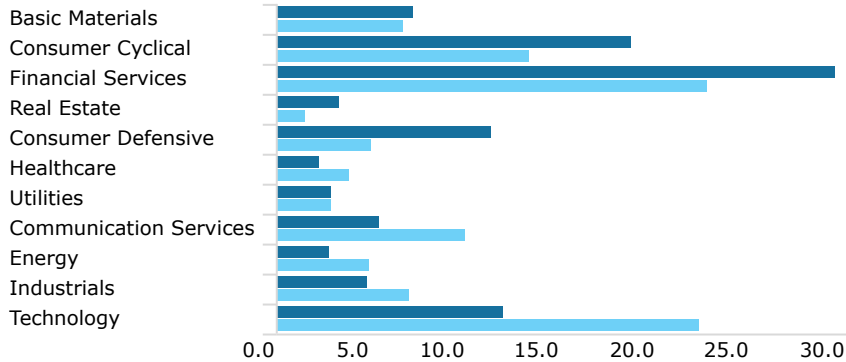
	Strategy	Benchmark
M-Squared (Risk Adjusted-Return)	13.04%	7.32%

## Investment Growth

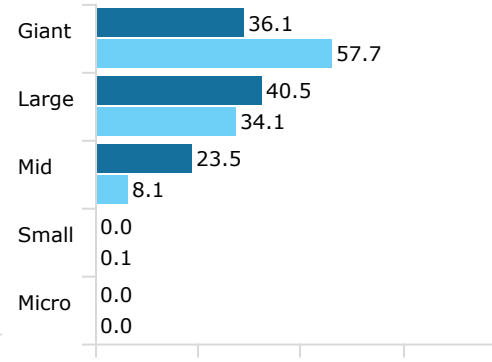


# Pzena Emerging Markets Focused Value

## Sector Exposure



## Market Cap



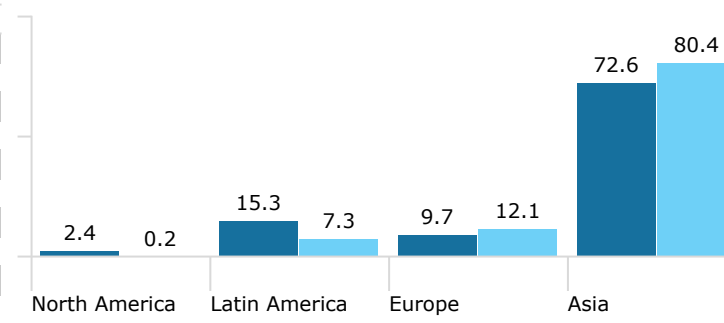
## Characteristics

	Strategy	Benchmark
P/E	9.57	14.60
P/B	1.08	1.76
Dividend Yield	5.37%	2.98%
Average Market Cap	23,265	47,237
% Asset in Top 10 Holdings	29.3%	26.1%
# of Holdings	64	1,278
Turnover Ratio %	38%	—
Inception Date	1/2/2008	1/1/2001

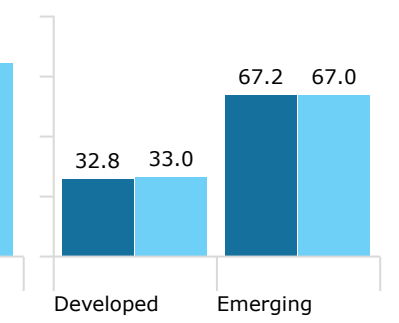
## Top Holdings

Company	Weight
Taiwan Semiconductor Manufacturing Co Ltd	4.2%
Alibaba Group Holding Ltd Ordinary Shares	3.7%
China Overseas Land & Investment Ltd	3.3%
Ambev SA	2.8%
Tencent Holdings Ltd	2.7%
Samsung Electronics Co Ltd	2.6%
Weichai Power Co Ltd Class H	2.6%
Haier Smart Home Co Ltd Class H	2.5%
WH Group Ltd Shs Unitary 144A/Reg S	2.5%
Cognizant Technology Solutions Corp Class A	2.4%

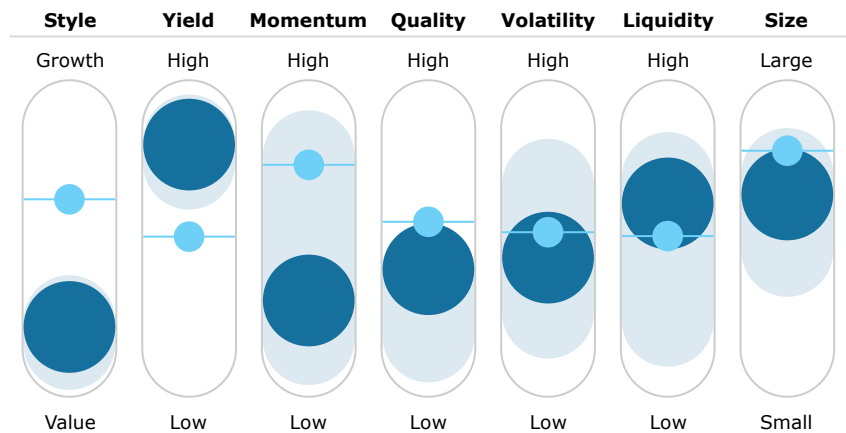
## Region Exposure



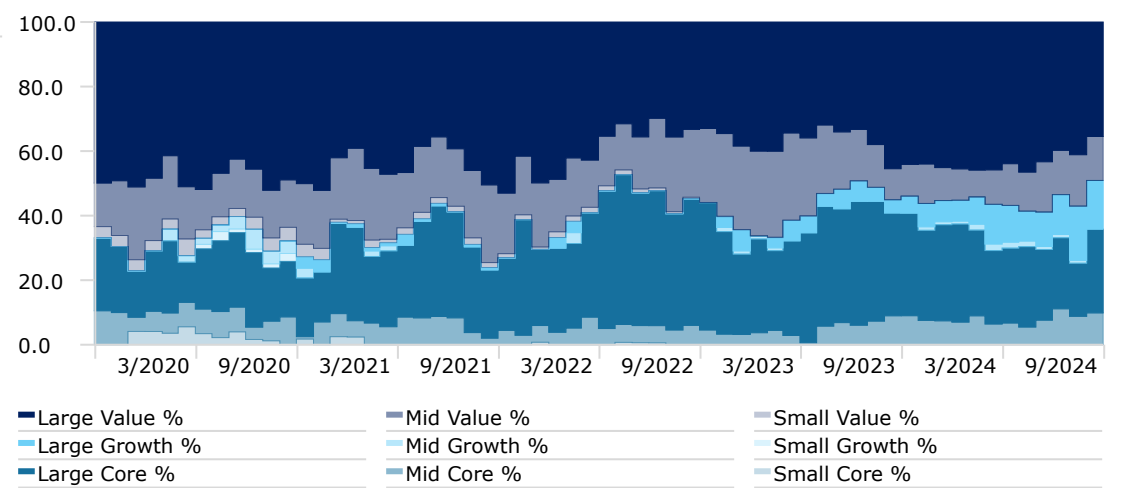
## Market Classification



## Factor Profile



## Equity Style



● Pzena Emerging Markets Focused Value    ● Historical Range    ◆ MSCI EM NR USD



# NEPC RATINGS DEFINITIONS

## DUE DILIGENCE RATING

<b>1</b>	NEPC Research views 1-rated strategies as best ideas. The strategy has a clearly articulated investment thesis, and the manager is sufficiently resourced and incentivized to execute on the thesis. NEPC Research has high conviction that 1-rated strategies are positioned to deliver on a stated investment thesis and target return over a full investment cycle.
<b>2</b>	NEPC Research has a positive view of the strategy. The strategy has a clearly articulated investment thesis, and the manager is sufficiently resourced and incentivized to execute on the thesis. A single factor or mosaic of factors may lead NEPC Research to a 2 rating rather than a 1 rating.
<b>3</b>	NEPC Research has a constructive view of the strategy and believes the strategy can play an appropriate role in certain clients portfolios. Through initial and/or ongoing research of a strategy, NEPC has not identified unreasonable risks from an organizational, process, operational or investment perspective.
<b>4</b>	NEPC Research has conducted a reasonable level of due diligence and has an unfavorable view of the strategy due to issues, weaknesses or risks that we believe would challenge the manager's ability to execute on a stated investment thesis.
<b>5</b>	NEPC has conducted a reasonable level of due diligence on the strategy and has significant concerns about the effectiveness or viability of the strategy. Through the due diligence process, NEPC has uncovered serious issues, weaknesses or risks that we believe challenge the manager's ability to execute on a stated investment thesis.

## DUE DILIGENCE STATUS

<b>Watch</b>	Issues have surfaced to be concerned over; manager can participate in future searches, but current and prospective clients must be made aware of the issues.
<b>Hold</b>	Serious issues surface with an investment manager; (a manager could gravitate from watch to hold after further due diligence); a manager cannot participate in future searches unless a client specifically requests. Current and prospective clients must be made aware of the issues.
<b>Client Review</b>	Serious issues surface with an investment manager; manager cannot be in futures searches unless a client specifically requests. Current clients must be advised to review the manager.
<b>Terminate</b>	Serious issues surface with an investment manager; manager would not be recommended for searches and clients would be discouraged from using. The manager cannot be in futures searches unless a client specifically requests. Current clients must be advised to replace the manager.

## DISCLAIMERS

This report contains summary information regarding the investment management approaches described herein but is not a complete description of the investment objectives, policies or portfolio management and research that supports these approaches. This analysis does not constitute a recommendation to implement any of the aforementioned approaches.

Past performance is no guarantee of future results.

NEPC may provide background information on fund structures or the impact of taxes but you should contact your legal counsel or tax professional for specific advice on such matters.

Information on market indices was provided by sources external to NEPC, and other data used to prepare this report was obtained directly from the investment manager(s). While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.







# ABS EMERGING MARKETS STRATEGIC PORTFOLIO

ALAMEDA COUNTY EMPLOYEES' RETIREMENT ASSOCIATION

March 5, 2025

# A Differentiated Approach

FOCUS ON LOCAL SPECIALISTS

## Why ABS? A Local Approach to Emerging Markets

- Emerging markets are an **inefficient** asset class, offering significant opportunities for alpha generation through **fundamental stock selection**
- ABS partners with **local specialists** to invest in stocks within their respective markets
- This approach enables us to generate alpha **independent of style biases or country selection**
- Since inception, this strategy has delivered annualized **net excess returns of 2.7%**
- **Why ABS Now?** In a deglobalized world, domestic priorities dominate, making strong local partnerships crucial to capture emerging market opportunities

Relative performance calculated based on returns from July 1, 2012 to December 31, 2024. The MSCI Emerging Markets IMI Index includes the reinvestment of dividends the impact of currency and is net of foreign taxes, symbol MIMUEMRN; Performance numbers are estimates, include reinvestment of earnings, are net of a flat 0.55% p.a. management fee and are subject to change. Prior to December 2017, the back-tested returns for the ABS EM Strategic Portfolio presented herein are calculated by applying the above stated management fee rate to the net returns of the long only managers from ABS Emerging Markets Portfolio. From December 2017 onwards, the returns for the ABS EM Strategic Portfolio presented herein are actual fund returns. Past returns are not a guarantee of future results.



# **ABS GLOBAL INVESTMENTS**

## FIRM OVERVIEW

# ABS Global Investments

## OVERVIEW

ABS specializes in sourcing alpha across global equity markets

**\$8B** AUM

**44** employees

**25** equity partners

**21** investment professionals

**12** nationalities



### ABS Innovation & Strategy Evolution

**2003** Global Equity

**2012** Emerging Markets

**2021** Crossover Growth

Firm AUM is approximate as of January 1, 2025 and is subject to change. Personnel information is as of January 1, 2025. The above reflect the opinions of ABS and is subject to change at any time, without notice to investors.

# People

## ORGANIZATIONAL CHART

### ABS Organizational Chart

#### Investment Team (21)

Qualitative Analysis / Portfolio Management (13)		Operations / Accounting (12)	Business Development (11)
<p>Guilherme Valle, CFA* <i>Co-Founder / Portfolio Manager</i></p> <p>Laurence Russian, CFA* <i>Co-Founder / Portfolio Manager</i></p> <p>Michael Halper, CFA* <i>Portfolio Manager</i></p>	<p>David Finn, CPA* <i>CFO / CCO</i></p> <p>John Mulfinger, CPA <i>Head of Accounting</i></p> <p>Dayana Khemraj <i>Head of Operations</i></p>	<p>Jon Feinberg* <i>Head of Business Development</i></p> <p>Jestine Roberts <i>Head of Investor Relations</i></p>	
Quantitative Analysis Risk Management (3)	Operational Due Diligence (5)	System Development Team (12)**	
<p>Sean White, CFA* <i>Head of Risk/Quant</i></p>	<p>Frank Docimo, CPA <i>Head of Ops Due Diligence</i></p>		

\*ABS Operating Committee Members

#### Investment Experience

**18** Avg years industry experience

**12** Avg years ABS tenure

#### Diversity

**12** Nationalities

**12** Languages spoken

#### Ownership

**25** Equity Holders

**12** Women/minority partners

As of January 1, 2025. Investment experience references investment team only.

# ABS Emerging Markets Investment Team

DEDICATED QUALITATIVE TEAM



**Guilherme Valle, CFA**

Portfolio Manager/Co-Founder and Managing Director



**Joe Kassab**

Investment Analyst  
*Coverage: Global EM*



**Omar Yacoub, CFA, CAIA**

Associate Portfolio Manager/Partner  
*Coverage: Global EM, Frontier, EMEA*



**Donald Leung, CFA**

Investment Analyst/Partner  
*Coverage: Asia*



**Sharon Liu, CFA**

Investment Analyst  
*Coverage: Asia*



**Natascha Willans**

Associate Portfolio Manager/Partner  
*Coverage: Latin America*



**Yousif Al-Shamali, CAIA**

Investment Analyst  
*Coverage: Middle East*

# Partnerships

DIVERSE, SOPHISTICATED & INSTITUTIONAL CLIENT BASE

## AUM by the Numbers

**\$8B**

Assets Under Management

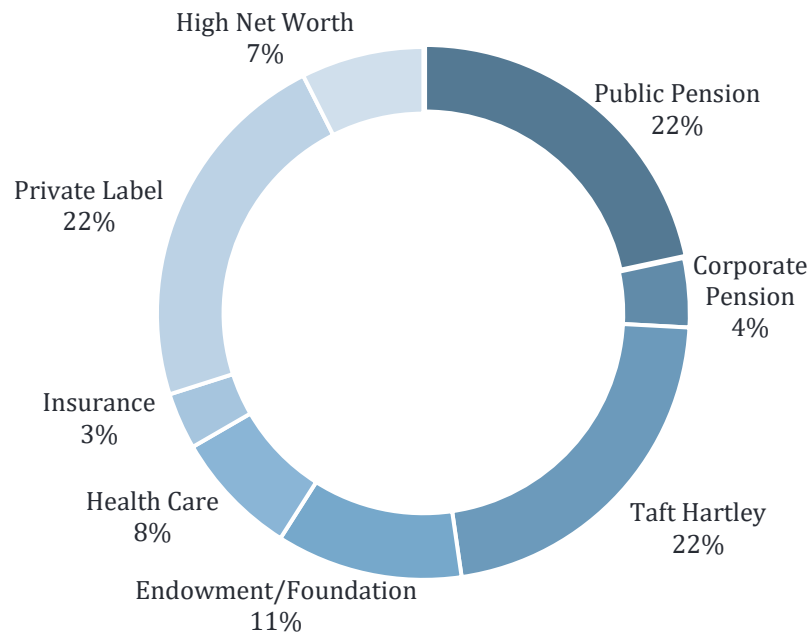
**398**

Client Relationships

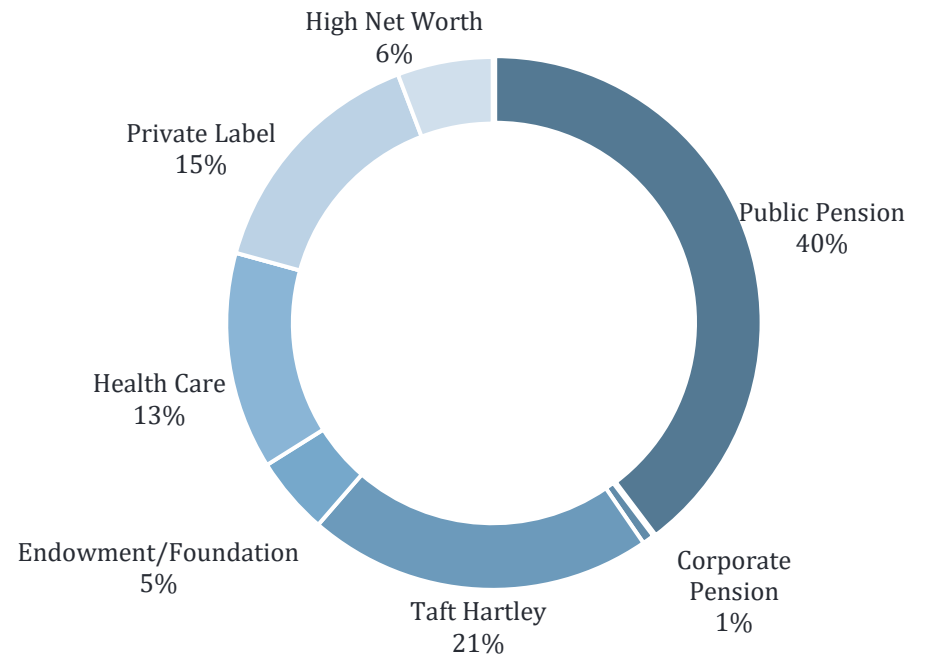
**50**

Advisor/Consultant Relationships

## AUM by Client Type at Firm Level



## AUM by Client Type in Emerging Markets Strategies



AUM data as of January 1, 2025. Client/advisor relationships and AUM by client type as of December 31, 2024.



## **OUR PHILOSOPHY**

PARTNERSHIPS WITH LOCAL SPECIALISTS



# Partnerships with Local Specialists

## OUR PHILOSOPHY

We believe our partnerships with local specialists gives us a unique advantage relative to our peers

- 1. Stock selection generates consistent alpha in Emerging Markets**
- 2. A broad, diversified approach maximizes alpha opportunities**
- 3. Local investing is crucial for achieving differentiated returns and enhanced alpha**

This approach delivers a more consistent level of excess performance

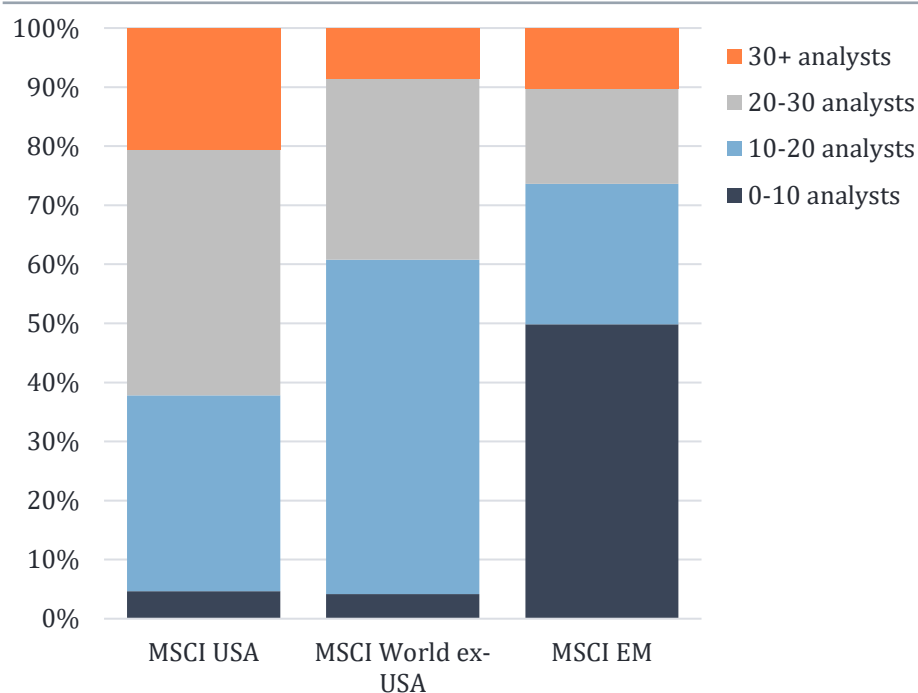
# Alpha Generation Via Stock Selection

## OUR PHILOSOPHY

### 1. Stock Selection is Key to Consistent Alpha in Emerging Markets

Emerging markets are inefficient: too few analysts cover too many stocks.

Market Inefficiency: Analyst Coverage Per Stock



Country Selection Can be Challenging: Annual Returns

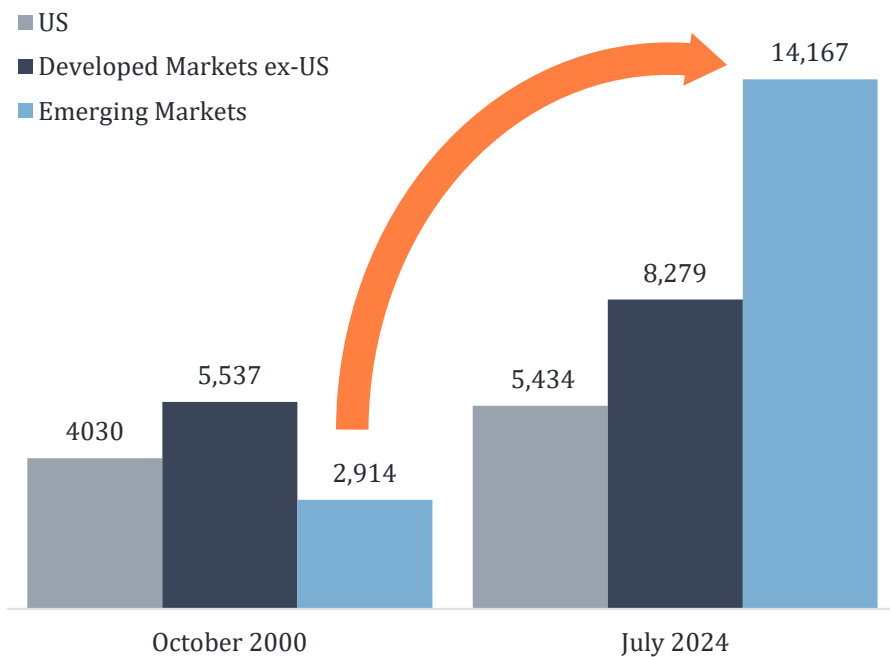
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
India	-6%	66%	55%	30%	36%	45%	50%	90%	49%	37%
Korea	-7%	27%	54%	16%	26%	41%	35%	14%	41%	24%
S. Arabia	-8%	19%	47%	0%	23%	29%	26%	5%	33%	22%
China	-8%	18%	39%	-6%	13%	16%	26%	4%	30%	13%
Taiwan	-12%	17%	38%	-6%	11%	4%	23%	-2%	23%	10%
Mexico	-14%	14%	36%	-7%	11%	3%	15%	-4%	21%	5%
UAE	-18%	10%	35%	-8%	10%	-1%	8%	-5%	15%	5%
Indonesia	-19%	9%	28%	-9%	10%	-2%	4%	7%	7%	3%
Qatar	-20%	6%	25%	-9%	9%	-2%	2%	-6%	4%	2%
Malaysia	-20%	1%	24%	-13%	9%	-4%	-1%	-7%	2%	0%
Thailand	-24%	0%	24%	-16%	8%	-8%	-6%	-8%	1%	-3%
Poland	-25%	-1%	16%	-19%	4%	-9%	-8%	-22%	-3%	-7%
S. Africa	-25%	-4%	6%	-21%	-1%	-11%	-17%	-27%	-6%	-8%
Turkey	-32%	-8%	3%	-25%	-2%	-12%	-22%	-29%	-10%	-15%
Brazil	-41%	-9%	-12%	-41%	-6%	-19%	-28%	-30%	-11%	-18%

Source: Bloomberg and MSCI as of July 31, 2024. Annual Returns represent the returns of the 15 largest countries allocations in the MSCI Emerging Markets Index as of July 31, 2024. Past returns are not a guarantee of future results. Graph is presented for illustrative purposes only and should not be relied on to make an investment decision.

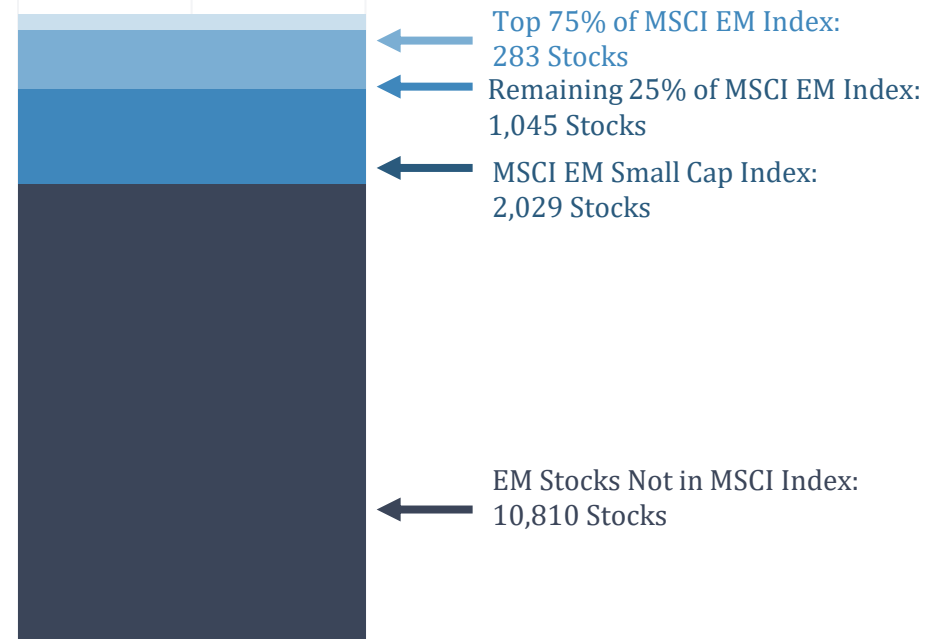
## 2. A Broad, Diversified Approach Maximizes Alpha Opportunities

Emerging markets are vast. Partnering with local specialists enables both depth and breadth of research.

**A Universe that is Too Large: Number of Stocks**



**Breaking Up the Universe: Number of Stocks**



Source of October 2000 Data: MSCI, FactSet as of October 31, 2000. Includes all stocks by country with market caps over \$100M as of 10/31/2000. Source of July 2024 Data: MSCI, Bloomberg. Data based on Bloomberg EQS screen that includes all stocks by country with market caps over \$100M as of July 31, 2024. Developed and Emerging Market country definitions based on MSCI classifications. Graph is presented for illustrative purposes only and should not be relied on to make an investment decision. Past performance are not an indicator of future performance.

# Focus and Specialization Via Local Specialists

OUR PHILOSOPHY

## 3. Local Investing is Crucial for Differentiated Returns and Enhanced Alpha

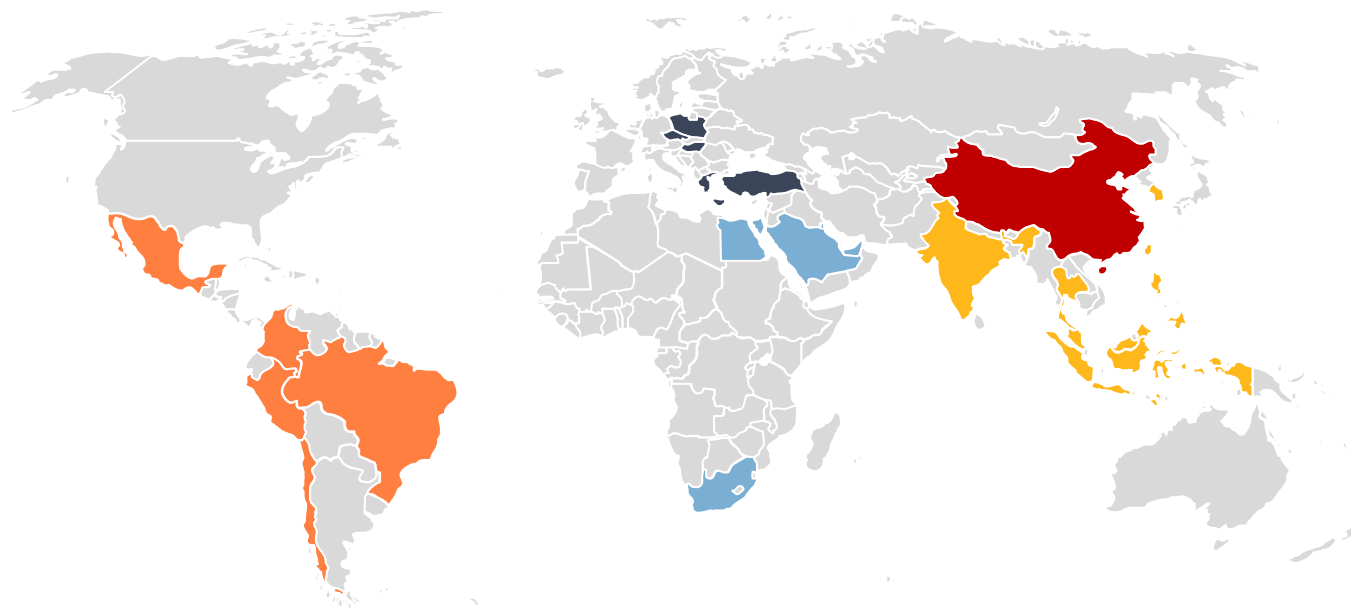
Emerging markets are diverse and complex. Local investors are uniquely positioned to identify nuanced opportunities and mitigate risks.

14,000+  
Stocks

24  
Emerging Market Countries

5  
Continents

16  
Languages



Source: MSCI. Data updated through July 31, 2024. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information.

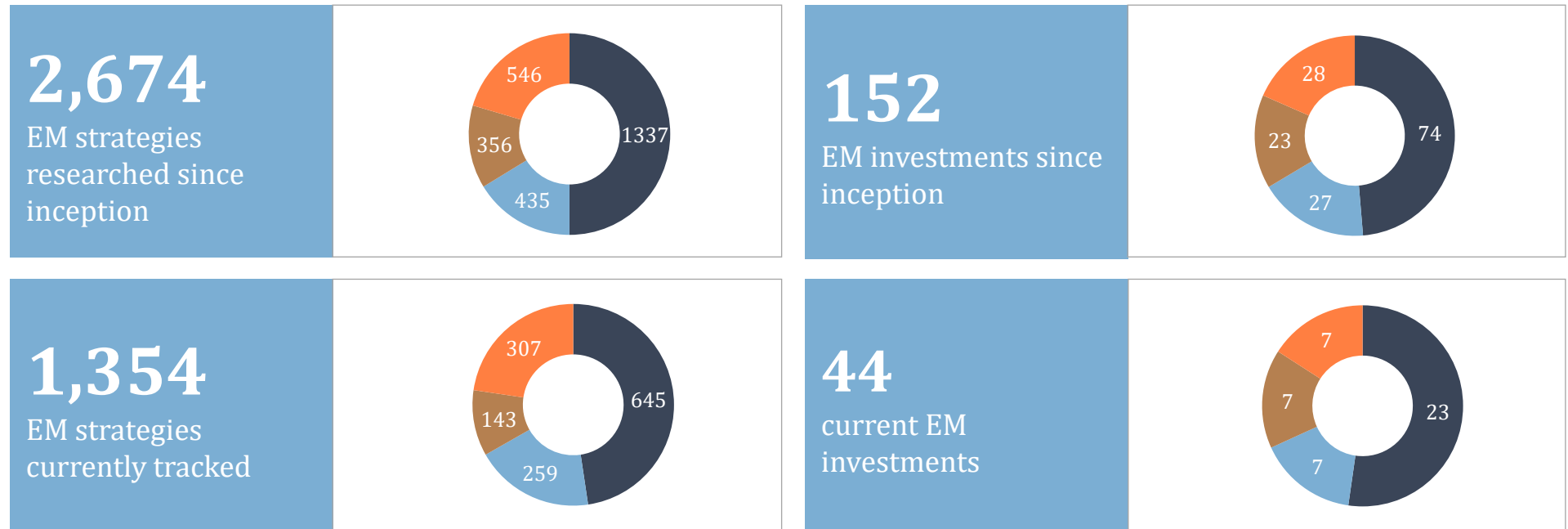


# **INTENSIVE RESEARCH PROCESS**

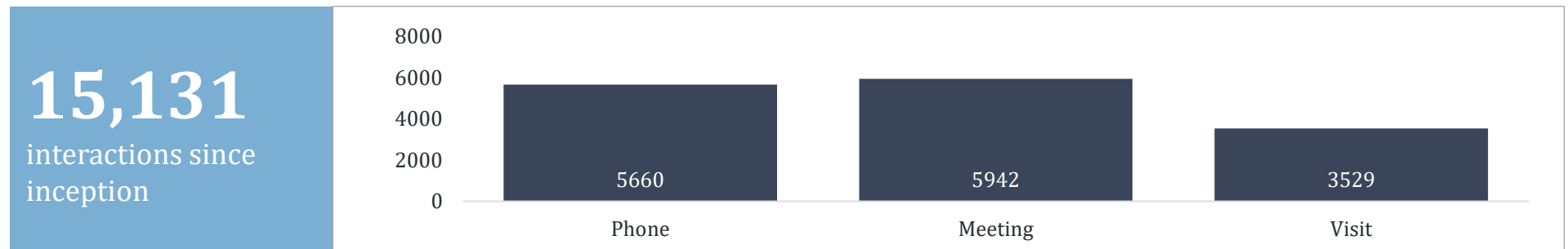
## A DISCIPLINED APPROACH

# Intensive Research Process

## ABS EMERGING MARKETS RESEARCH AT A GLANCE



Asia
  EMEA
  Latin America
  Global EM



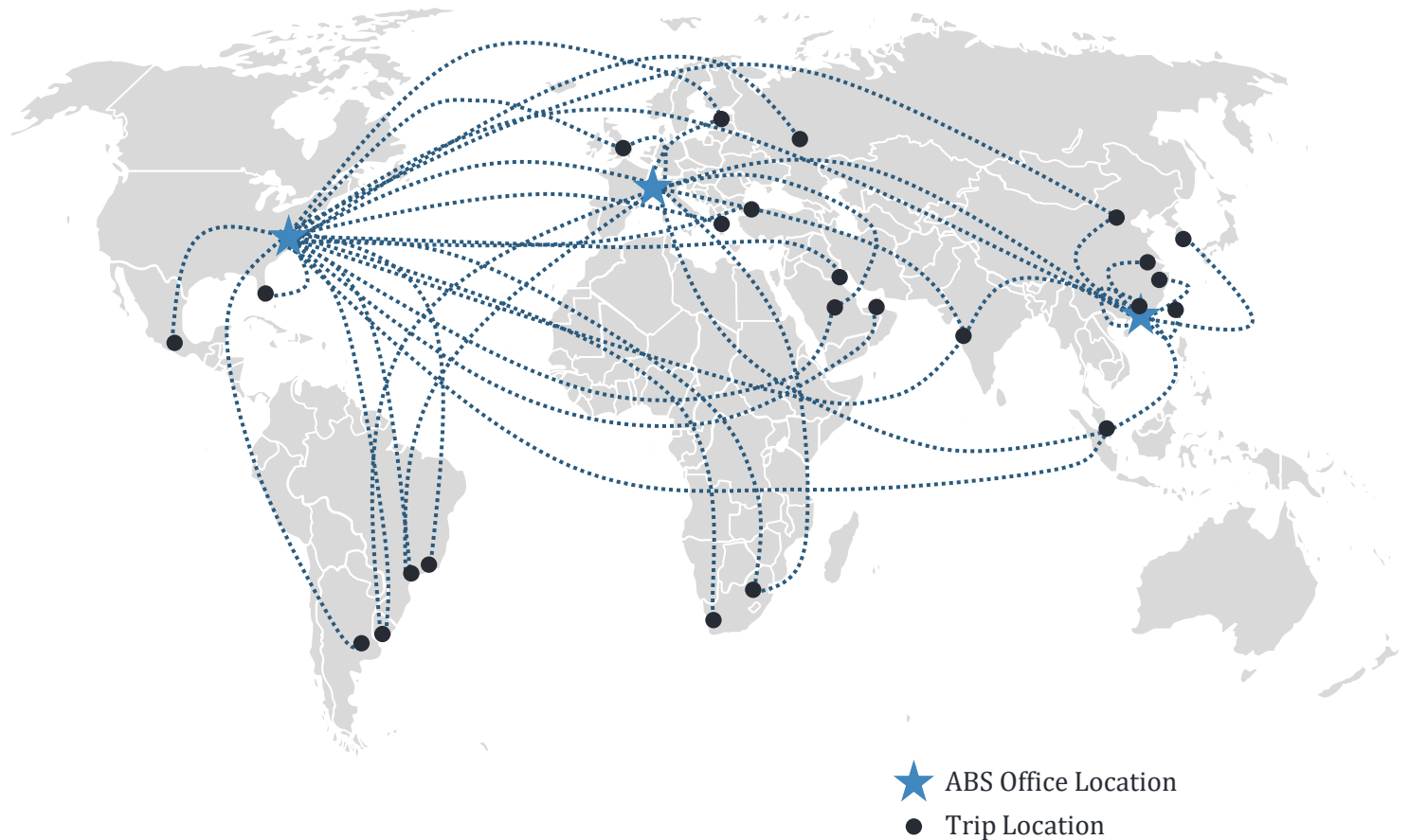
Data updated through August 27, 2024. Different strategies run by the same team are counted as separate strategies/investments. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision.

# Intensive Research Process

BREADTH AND DEPTH OF RELATIONSHIPS

## Representative Research Travel Efforts

- Beijing
- Hong Kong
- Shanghai
- Shenzhen
- Hangzhou
- Mumbai
- Seoul
- Taipei
- Singapore
- Riyadh
- Dubai
- Abu Dhabi
- Kuwait city
- London
- Tallin
- Moscow
- Athens
- Istanbul
- Johannesburg
- Cape Town
- São Paulo
- Rio de Janeiro
- Mexico City
- Buenos Aires





# ABS EMERGING MARKETS STRATEGIC PORTFOLIO

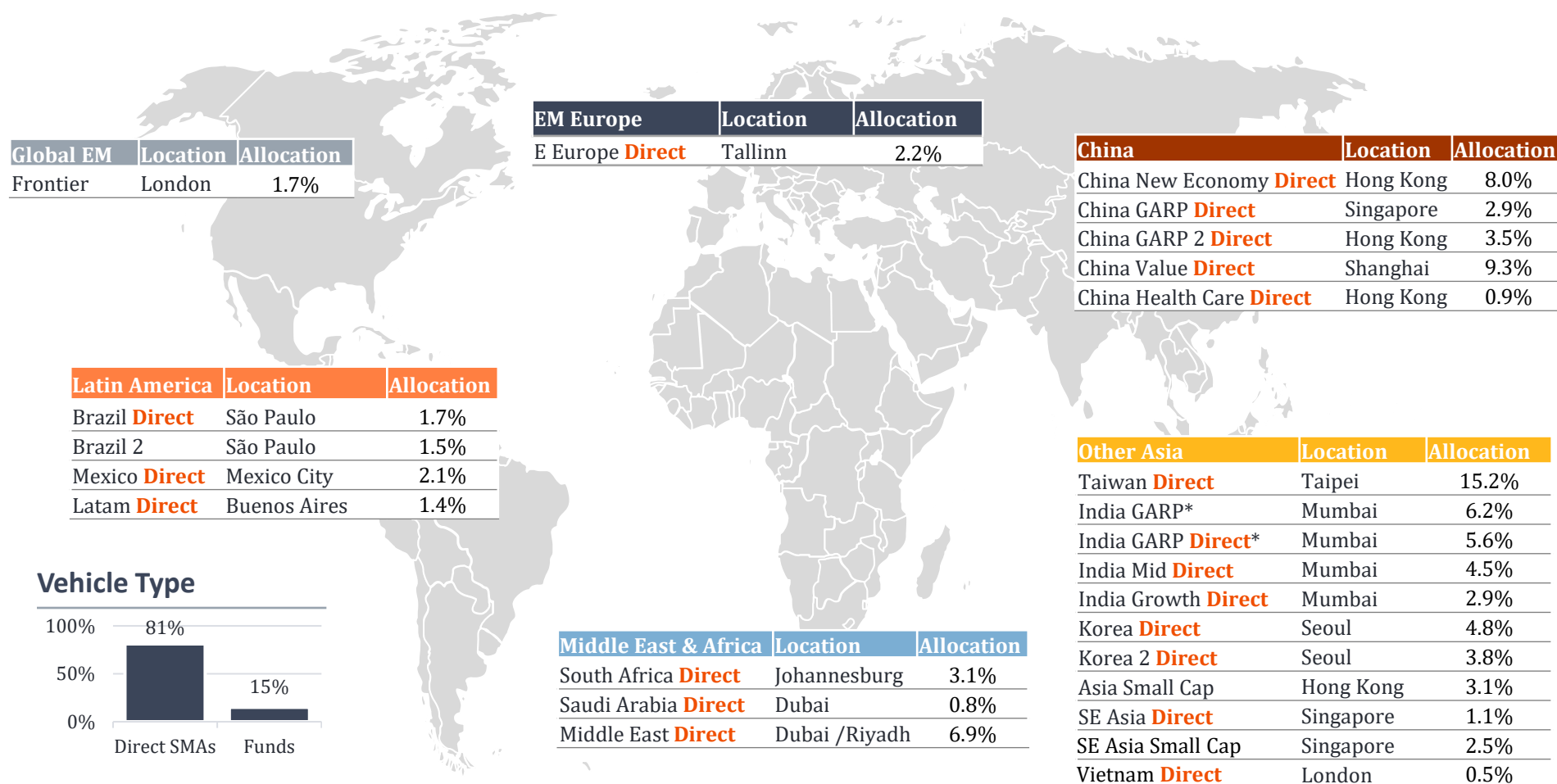


# ABS Emerging Markets Strategic Portfolio

FOCUS ON LOCAL SPECIALISTS

## ABS Emerging Markets Strategic Portfolio Breakdown by Region & Specialist

as of January 1, 2025



\*These specialists manage both fund and SMA vehicles for ABS. Data updated through January 1, 2025. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information.

# ABS Emerging Markets Strategic Portfolio

LARGE, DEEP AND SPECIALIZED RESEARCH TEAM

## 300+ Investment Professionals

- Dedicated to sourcing investment opportunities
- Generating alpha through fundamental stock selection

Local Specialist By Country	# of Research Professionals
China	62
China New Economy SMA	11
China GARP SMA	13
China GARP 2 SMA	27
China Value SMA	7
China Health Care	4
Taiwan	27
Taiwan SMA	27
India	85
India GARP	49
India GARP SMA	49
India Mid	16
India Growth	20
Korea	24
Korea SMA	8
Korea 2 SMA	16
SE Asia	37
SE Asia SMA	13
SE Asia Small Cap	8
Vietnam SMA	16
Asia	12
Asia Small Cap	12
Middle East & Africa	31
South Africa SMA	13
Saudi Arabia SMA	9
Middle East SMA	9
Emerging Europe	5
E. Europe SMA	5
Latin America	50
Brazil SMA	12
Brazil 2	22
Mexico SMA	4
Latam SMA	12
Frontier	16
Frontier	16

Data updated through December 1, 2024. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information.

# ABS Emerging Markets Strategic Portfolio

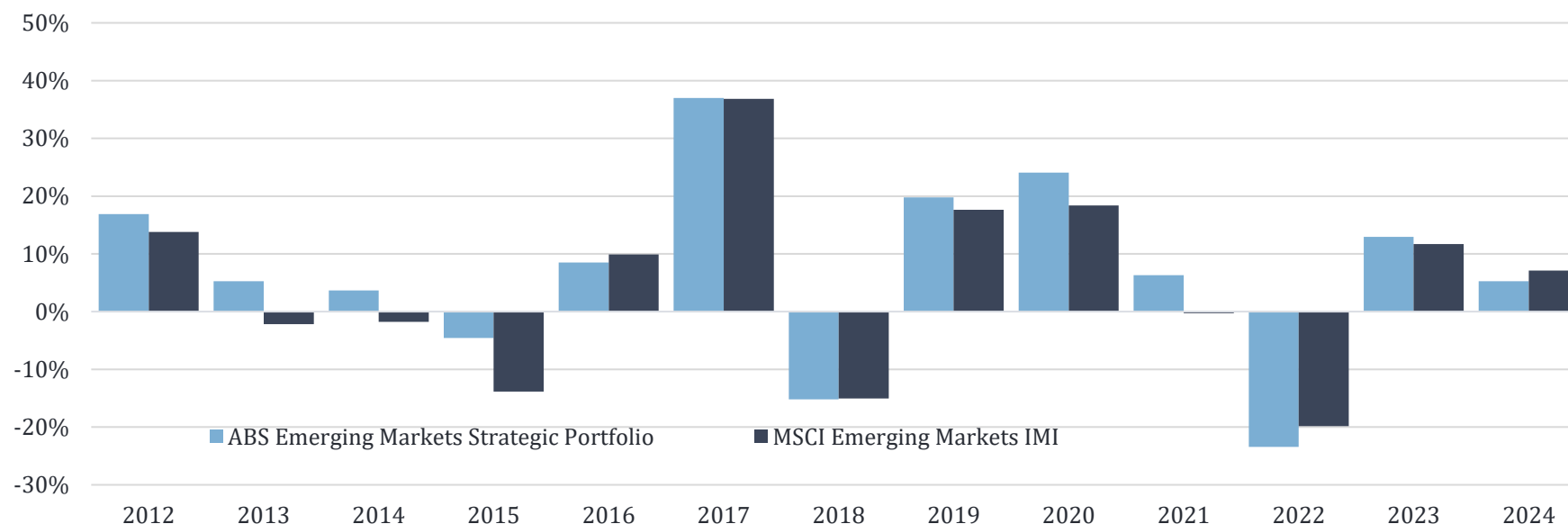
## RETURN & RISK

### Annualized Risk/Return Statistics

July 2012 – December 2024

	Ann. 1-Year	Ann. 3-Year	Ann. 5-Year	Ann. 10-Year	Ann. Return Since Inception	Ann. Volatility Since Inception	Cum. Return Since Inception
ABS Emerging Markets Strategic Portfolio	5.3%	-3.1%	3.7%	5.6%	6.5%	14.8%	120.7%
MSCI Emerging Markets IMI Index	7.1%	-1.4%	2.5%	3.9%	3.8%	16.0%	60.2%
Excess Return	-1.8%	-1.7%	1.2%	1.7%	2.7%		60.5%

### Annual Returns



Data updated through December 31, 2024. The MSCI Emerging Markets IMI Index includes the reinvestment of dividends the impact of currency and is net of foreign taxes, symbol MIMUEMRN; Performance numbers are estimates, include reinvestment of earnings, are net of a flat 0.55% p.a. management fee and are subject to change. Prior to December 2017, the back-tested returns for the ABS EM Strategic Portfolio presented herein are calculated by applying the above stated management fee rate to the net returns of the long only managers from ABS Emerging Markets Portfolio. Return information is calculated by ABS using performance information believed to be reliable and provided by the underlying managers. Such information is provided "as is" and may not be independently verified. ABS assumes no responsibility for the accuracy of this information and undertakes no independent verification of it. From December 2017 onwards, the returns for the ABS EM Strategic Portfolio presented herein are actual fund returns. Past returns are not a guarantee of future results. Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information.

# ABS Emerging Markets Strategic Portfolio

## CURRENT EXPOSURE BY GEOGRAPHY, SECTOR, STYLE & MARKET CAP

### Portfolio Allocation by Geography

	Portfolio	Index	Relative Exposure
China	24%	25%	0%
Taiwan	18%	20%	-2%
India	19%	21%	-2%
Korea	9%	9%	-1%
Thailand	0%	2%	-1%
Indonesia	1%	2%	0%
Other EM Asia	3%	2%	1%
Brazil	3%	4%	-1%
Mexico	3%	2%	1%
Other Latin America	1%	1%	0%
EM Europe	2%	3%	-1%
South Africa	3%	3%	0%
Saudi Arabia	5%	4%	1%
Other EMEA	4%	3%	1%
Dev. Markets	2%	0%	1%

### Portfolio Allocation by Sector

	Portfolio	Index	Relative Exposure
Comm. Svcs	5%	9%	-3%
Cons. Discre.	13%	13%	0%
Cons. Staples	7%	5%	2%
Energy	3%	4%	-1%
Financial	19%	22%	-3%
Healthcare	6%	4%	2%
Industrial	12%	8%	4%
Materials	4%	7%	-2%
Real Estate	3%	2%	1%
Technology	22%	23%	-1%
Utilities	2%	3%	-1%

### Portfolio Allocation by Style

	Portfolio	Index	Relative Exposure
Growth Tilt	33%	33%	0%
No Bias	33%	34%	-1%
Value Tilt	29%	32%	-4%

### Portfolio Allocation by Market Cap





















	Portfolio	Index	Relative Exposure
Large Cap	47%	69%	-22%
Mid Cap	32%	23%	9%
Small Cap	18%	9%	9%

Data estimated as of January 1, 2025. Relative exposure is versus the MSCI Emerging Markets IMI Index. Exposure information is calculated by ABS using exposure information believed to be reliable and provided by the underlying managers. Such information is provided "as is" and may not be independently verified. ABS assumes no responsibility for the accuracy of this information and undertakes no independent verification of it. Please see the end of this presentation for important disclosure information.

# ABS Emerging Markets Strategic Portfolio

## PORTFOLIO HOLDINGS

### Top and Bottom 10 Relative Allocations by Stock

Stock	Portfolio	Index	Relative Exposure
 Greentown China Hldgs	1.3%	0.0%	1.3%
 China Merchants Bank H	1.3%	0.2%	1.1%
 Bank of Ningbo A	0.9%	0.0%	0.9%
 Asmedia Technology	0.9%	0.0%	0.8%
 Largan Precision Co Ltd	0.9%	0.1%	0.8%
 The Saudi National Bank	1.0%	0.3%	0.7%
 China Oilfield Services H	0.7%	0.0%	0.7%
 Hong Kong Exchanges & Clear	0.7%	-	0.7%
 Varun Beverages Ltd	0.7%	0.1%	0.6%
 China Airlines Ltd	0.7%	0.0%	0.6%
 Infosys Ltd	0.2%	0.8%	-0.6%
 HDFC Bank Limited	0.7%	1.3%	-0.6%
 Mediatek Inc	0.1%	0.7%	-0.7%
 Xiaomi Corp B	0.0%	0.8%	-0.7%
 Samsung Electronics Co Ltd	1.2%	1.9%	-0.7%
 Hon Hai Precision	-	0.8%	-0.8%
 Reliance Industries Ltd	0.1%	1.0%	-0.8%
 Taiwan Semiconductor	7.9%	9.0%	-1.1%
 Alibaba Group Hldgs	0.3%	1.9%	-1.7%
 Tencent Holdings Ltd	2.0%	3.9%	-1.9%

### Portfolio Summary

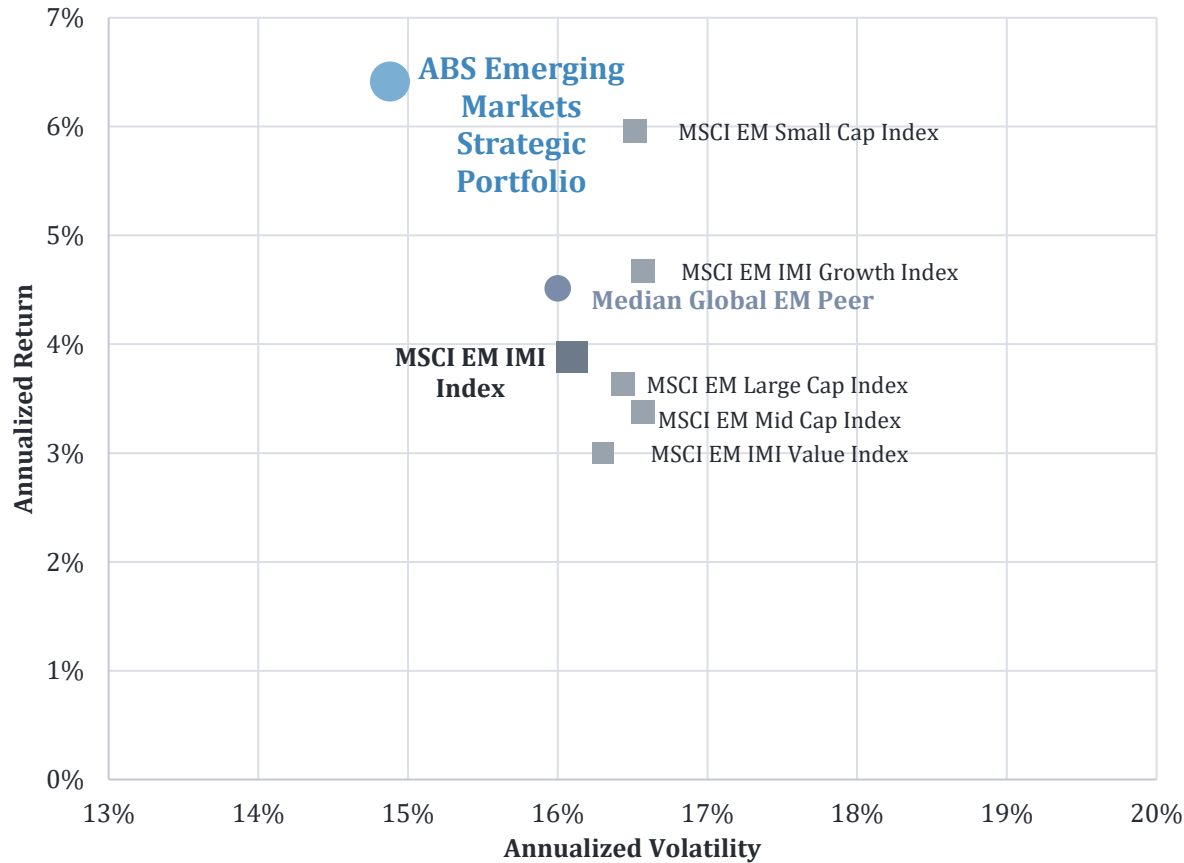
	Portfolio	Index
Total Holdings	750	3,265
Unique Stocks (not in index)	217	-
Active Share	61%	-
Tracking Error	4.1%	
Tracking Error – Underlying Specialist Weighted Average	9.8%	
Specialist Turnover – 3 Year Average	7%	
Specialist Turnover – 2024	11%	
Stock Turnover – 3 Year Average	28%	
Stock Turnover – 2024	32%	

Source: ABS, Underlying Managers, Bloomberg and MSCI. Data estimated as of January 1, 2025. Tracking error calculated from July 1, 2012 to December 31, 2024. All relative data, including relative exposure, tracking error and active share, is calculated versus the MSCI Emerging Markets IMI Index. Stock exposure information is calculated by ABS using information believed to be reliable and provided by the underlying managers. Such information is provided "as is" and may not be independently verified. ABS assumes no responsibility for the accuracy of this information and undertakes no independent verification of it. Top and bottom 10 holdings inclusion criteria are not performance based. Please see the end of this presentation for important disclosure information.

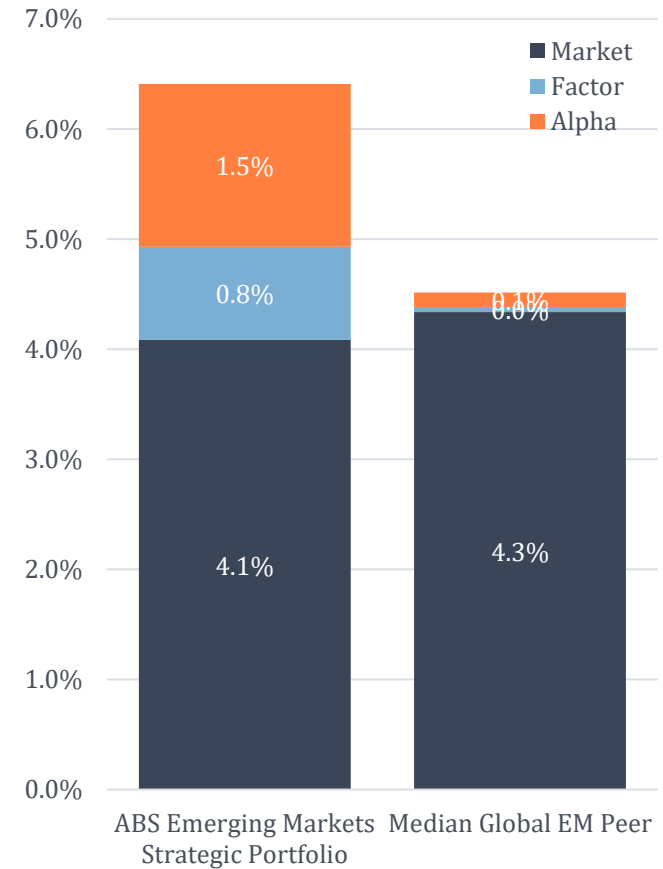
# ABS Emerging Markets Strategic Portfolio

## RISK/RETURN ANALYSIS

### Risk/Return Relative to MSCI EM Indexes



### Components of Returns



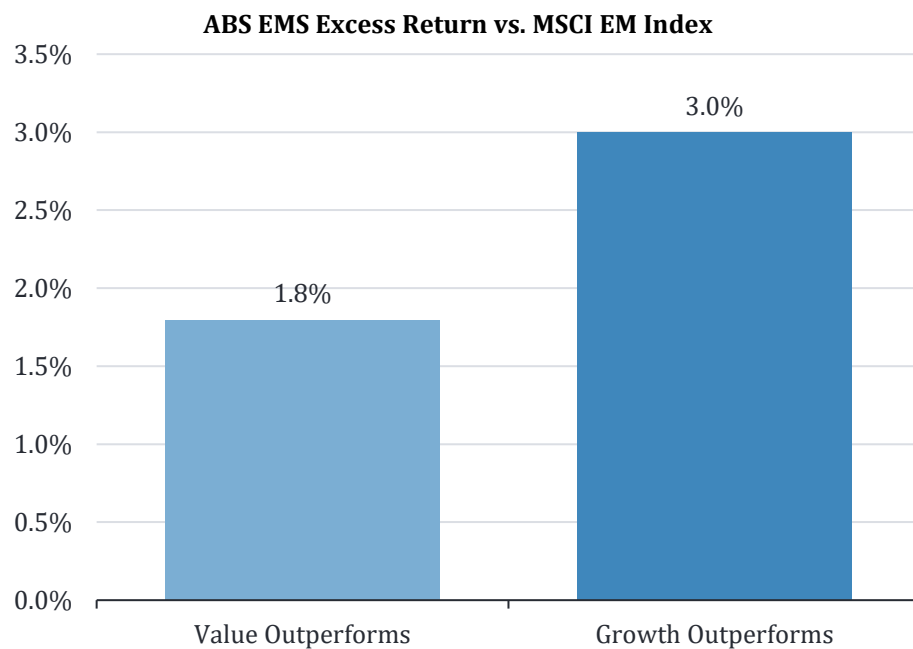
Data updated since July 31, 2012 through November 30, 2024. Performance numbers for the ABS EM Strategic Portfolio are estimates, include reinvestment of earnings, are net of a flat 0.75% p.a. management fee and are subject to change. Prior to December 2017, the back-tested returns for the ABS EM Strategic Portfolio presented herein are calculated by applying the above stated management fee rate to the net returns of the long only managers from ABS Emerging Markets Portfolio. Return information is calculated by ABS using performance information believed to be reliable and provided by the underlying managers. Such information is provided "as is" and may not be independently verified. ABS assumes no responsibility for the accuracy of this information and undertakes no independent verification of it. From December 2017 onwards, the returns for the ABS EM Strategic Portfolio presented herein are actual fund returns. Past returns are not a guarantee of future results. Components of return analysis based on historical regression of monthly returns relative to the MSCI EM IMI Index for Market, MSCI EM IMI Growth, MSCI EM IMI Value, and MSCI EM Small Cap Indexes for Factor, and excess returns for Stock/Alpha. Average Peer data is based on peer group screens for all Global Emerging Market Equity products in the eVestment universe that have at least 4 years of track record, excluding small, SMID, and micro cap strategies (207 funds). Graphs are provided for illustrative purposes only and should not be relied upon to make an investment decision. Please see the end of this presentation for important disclosure information.

# ABS Emerging Market Strategic Portfolio

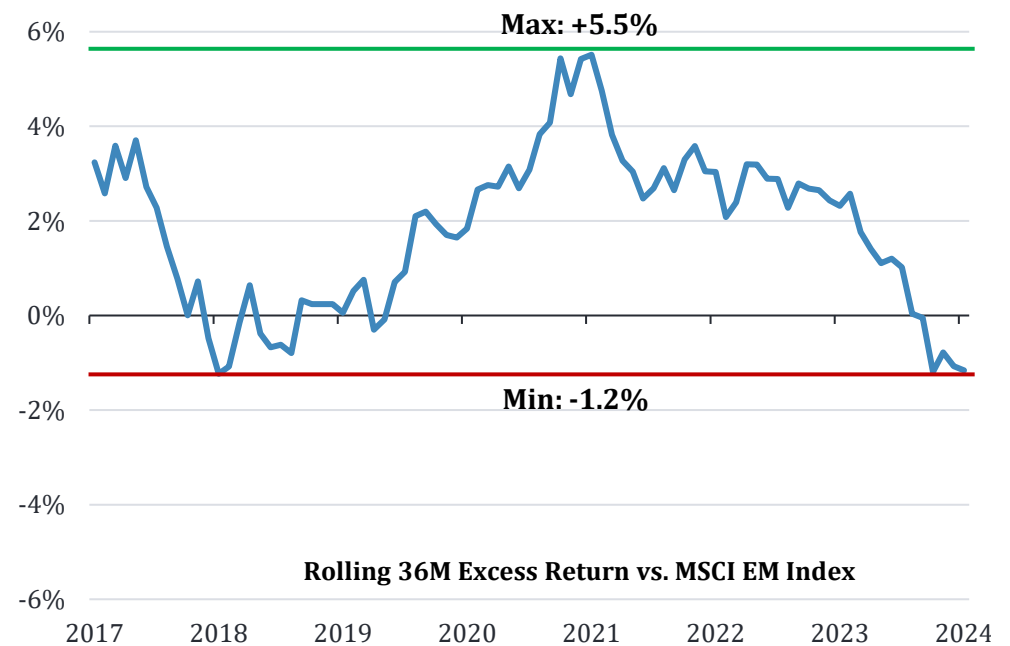
ALPHA APPROACH VIA LOCAL SPECIALIST PARTNERS

- Excess performance is primarily driven by **local stock selection**
- Our **diversified, core approach** yields a more consistent level of excess performance

## Excess Returns in Different Environments Since Inception



## ABS EMS Excess Return vs. MSCI EM



The information on this slide is the opinion of ABS and should not be taken as investment advice. Excess Returns in Different Environments based on the 12M rolling performance differential between the MSCI EM Value and MSCI EM Growth Indexes. Performance of the ABS EM Strategic Portfolio is based on the fee schedule proposed in this presentation and is since inception of the fund in December 2017.

### Why ABS? A Local Approach to Emerging Markets

- We believe our partnerships with local specialists gives us a **unique advantage** relative to our peers
- This approach enables us to generate alpha **independent of style biases or country selection**
- Since inception, this strategy has delivered annualized **net excess returns of 2.7%**
- **Why ABS Now?** In a deglobalized world, domestic priorities dominate, making strong local partnerships crucial to capture emerging market opportunities

Relative performance calculated based on returns from July 1, 2012 to December 31, 2024. The MSCI Emerging Markets IMI Index includes the reinvestment of dividends the impact of currency and is net of foreign taxes, symbol MIMUEMRN; Performance numbers are estimates, include reinvestment of earnings, are net of a flat 0.55% p.a. management fee and are subject to change. Prior to December 2017, the back-tested returns for the ABS EM Strategic Portfolio presented herein are calculated by applying the above stated management fee rate to the net returns of the long only managers from ABS Emerging Markets Portfolio. From December 2017 onwards, the returns for the ABS EM Strategic Portfolio presented herein are actual fund returns. Past returns are not a guarantee of future results.





## TERMS & DISCLOSURES

# ABS Emerging Markets Strategic Portfolio

## PRODUCT DESCRIPTION

<b>Investment Objective</b>	Targets superior returns relative to MSCI Emerging Markets IMI Index over a full market cycle
<b>Inception Date</b>	December 2017
<b>Strategy AUM</b>	\$3.5 billion (USD)
<b>Target Return</b>	2% - 4% over the MSCI Emerging Markets IMI Index
<b>Local Specialists</b>	15 - 25
<b>Style</b>	Core
<b>Market Cap Exposure</b>	All Cap, expected to be overweight mid and small cap
<b>Country Exposure</b>	+/- 5% relative to the index
<b>Sector Exposure</b>	+/- 10% relative to the index

AUM figure is estimated as of January 1, 2025, and represents all assets managed within long only EM. Please see the end of this presentation for important disclosure information

# ABS Emerging Markets Strategic Portfolio

## TERMS

### Structure and Terms

#### ABS Emerging Markets Strategic Portfolio

Structure	3c1, Limited Partnership
Redemption	Monthly, 60 days prior notice
Subscriptions	Monthly
ACERA Discounted fee	<b>Option I:</b> 0.40% & 10% over MSCI EM index <b>Option II:</b> 0.55%
Standard fee	<b>Option I:</b> 0.55% & 10% over MSCI EM IMI index <b>Option II:</b> 0.85%

# ABS Emerging Markets Strategic Portfolio

## IMPORTANT DISCLOSURES

**ABS Emerging Markets Strategic Portfolio:** This presentation was prepared to provide some general background, current statistics and performance returns for the ABS Emerging Markets Strategic Portfolio LP (for purposes of this paragraph, the “Fund” or “Portfolio”) and its preceding carve out since July 1, 2012 as described above using the fee terms of 0.55% management fee per annum. Fees are not necessarily representative of any client’s actual returns. Based on the timing of capital contributions or higher performance and /or management fees, the returns achieved by an existing investor over a shorter or identical period may be materially lower. Furthermore, in considering the prior performance information contained herein, prospective investors should bear in mind that past performance is no guarantee of future results and there can be no assurance that the Fund will achieve comparable results. There can also be no assurance that any targeted returns contained in this presentation can be realized or that actual results will not be materially lower than those targeted.

**ABS Emerging Markets Strategic Carve Out Methodology:** Each month, the percentage allocation of each long-only manager in the ABS Emerging Markets Portfolio was multiplied by the fund’s monthly performance to determine each fund’s attribution to the portfolio. Then we removed the funds that are not long-only and re-scaled the allocations as if the long-only funds represented 100% of portfolio. The process was repeated each month to determine a monthly return on invested capital for the 20 different funds that we have invested with in the ABS Emerging Markets Portfolio. The minimum number of long-only funds in the portfolio was 3, and the maximum was 14. Date range: July 2012 - November 2017 (net of underlying manager fees and a 0.75% management fee applied at the ABS level). There was no cash allocation in this methodology. The full performance track record of the ABS Emerging Markets Portfolio is available upon request.

**Carve-out performance results are based upon a segment of the emerging markets strategies managed by ABS and were not managed separately but as part of a larger strategy. Results should not be considered indicative of the skill of the adviser. During the period 2012-November 2017 ABS was not managing assets according to the strategy depicted. Carve-out performance does not include other fees or charges for administration, custody or any other expenses included with the management of a fund. No cash balance or cash flow is included in the calculation. Clients may experience a loss. No representation is being made that any fund will or is likely to achieve profits or losses similar to those shown herein.**

**Hypothetical, back-tested performances have many inherent limitations only some of which are described as follows: (i) Hypothetical, back-tested results are achieved by means of retroactive application of a model designed using historical information, which may constitute the benefit of hindsight. (ii) Such performance is designed based on historical data, which may include revisions and/or the benefit of hindsight. (iii) Such performance does not reflect the adviser’s decision making process if the adviser were actually managing a client’s portfolio, which may include sentiment and/or emotional influences by market and/or economic events. (iv) Such performance does not reflect actual client asset trading and cannot accurately account for trading costs and the ability to withstand losses. (v) The information is based, in part, on hypothetical assumptions made for modeling purposes that may not be realized in the actual management of accounts. No representation or warranty is made as to the reasonableness of the assumptions made or that all assumptions used in achieving the returns have been stated or fully considered. Assumption changes may have a material impact on the model returns presented. Results may not reflect the impact of material market or economic factors that might have influenced the back-tested methodology if it had actually been in use during the period shown**

This presentation shall not constitute an offer to sell or the solicitation of any offer to buy which may only be made at the time a qualified investor receives a final confidential private offering memorandum (the “Fund Documents”) describing the Fund. In the event of any inconsistency between this presentation and the Fund Documents, the Fund Documents will govern. This presentation being provided to a prospective investor does not guarantee an investor’s qualification for an investment in the Fund or the Fund’s capacity for its investment. Such criteria may only be determined upon completion of the Subscription Material for the Fund. This presentation is strictly confidential and is not to be provided to any person without the approval of ABS Investment Management LLC. An investment in the Fund will involve significant risks, including the risk of loss of the amount invested. Although indices used in this presentation have been gathered using public and private sources and data we believe to be reliable, we make no representations as to their accuracy or completeness. The MSCI Emerging Markets TR Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes, symbol NDUEEGF; Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index. The Fund’s financial statements are audited within 180 days after each year end and thus the prior year’s annual return may be unaudited for up to six months into the current year. The most recent month’s performance return is an internal estimate and has not been calculated by the Fund’s third party administrator. References made to “ABS” herein refer to ABS Investment Management LLC, the investment manager to the Fund, which manages multiple portfolios other than the Fund. The size and nature of the other portfolios has varied since the Fund’s inception and the size of the Fund relative to other ABS portfolios may materially differ at certain points in time. The underlying managers provided data used herein by ABS to calculate annualized returns, but have not reviewed this presentation for accuracy or completeness. The data utilized in the calculation of annualized returns since inception is purported to be net of all underlying manager fees and expenses, but has not necessarily been verified by ABS or an independent party.

# ABS Emerging Markets Strategic Portfolio

## IMPORTANT DISCLOSURES

Year	Fund Gross Return (%)	Fund Net Return (%)	Benchmark Return (%)	3 Year Annualized Standard Deviation		Fund Assets (\$M)	Firm Assets (\$M)
				Fund Gross (%)	Benchmark (%)		
2017*	3.35	3.28	3.60	N/A	N/A	104	5,372
2018	-14.69	-15.42	-15.04	N/A	N/A	268	5,215
2019	20.41	19.39	17.64	N/A	N/A	699	6,070
2020	24.72	23.72	18.39	19.65	20.15	1,183	6,590
2021	6.89	6.00	-0.28	18.54	18.75	1,616	7,389
2022	-22.97	-23.65	-19.83	20.64	20.65	1,404	6,593
2023	13.54	12.52	11.67	15.56	16.92	1,742	6,811

1. ABS Investment Management LLC claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. ABS Investment Management LLC has been independently verified for the periods January 1, 2015 through December 31, 2021. The verification report is available upon request. 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. Verification does not provide assurance on the accuracy of any specific performance report.
2. ABS Investment Management LLC is a privately owned investment manager registered with the SEC. The firm is an investment management firm specializing in global equity solutions, with extensive experience in both emerging markets and early stage investing. The firm primarily provides services to a broad array of sophisticated investors from around the world including Pension Plans (Public, Corporate and Taft Hartley), Endowments, Foundations, Insurance Companies and High Net Worth Individuals. ABS manages a family of global equity long/short multi-manager funds along with long-only and long-biased emerging market strategies.
3. The ABS Emerging Markets Strategic Portfolio invests in long-only emerging market equity managers. The Fund focuses on country and regional specialists in emerging markets countries as defined by the MSCI global classification standards. In addition, the portfolio has the ability to allocate up to 15% in opportunistic strategies in frontier and/or developed markets. The portfolio aims to be fully invested at all times and seeks to outperform the MSCI Emerging Markets IMI Index over a full market cycle with a similar level of risk. The Fund is valued monthly.
4. The benchmark provided is the MSCI Emerging Markets IMI Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes.
5. Gross fund returns are presented before the deduction of management fees but reflect the deduction of all trading and administrative expenses and underlying fund fees. Net returns reflect the deduction of all management fees, trading and administrative expenses, and underlying fund fees. Option R launched in August 1, 2020, returns prior to this date were calculated using a management fee model calculated by deducting 1/12th of 0.85% management fee monthly which represents Option R fees. Fund returns are net of withholding taxes. The management fee for Option R is 0.85%. The expected total expense ratio for Option R is 93%. All returns and assets are presented in US dollars.
6. The Fund inception date is December 1, 2017, which is the date of the first investment. List and description of limited and broad distribution pooled funds is available upon request. Policies for valuing investments, calculating performance, and preparing GIPS reports are available upon request. The three-year annualized standard deviation measures the variability of the fund and the benchmark returns over the preceding 36-month period. GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein. The Fund allocates a material amount of its assets to sub-advisors, directly and indirectly. In accordance with U.S. GAAP the Fund uses the net asset value provided by each of the underlying investment funds as its fair value methodology for all non-cash investments.

# MSCI

## IMPORTANT DISCLOSURES

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Although indices used in this presentation have been gathered using public and private sources and data we believe to be reliable, we make no representations as to their accuracy or completeness. The MSCI All Country World Total Return Index (Local) includes the reinvestment of dividends net of foreign taxes, symbol NDLEACWF; it is not the Fund’s benchmark and is provided as we believe it provides a similar geographic exposure to how the Fund’s underlying managers may invest and is for informational purposes only. The HFRI FOF: Strategic Index consists of Fund of Funds exhibiting one or more of the following characteristics: seeks superior returns by primarily investing in funds that generally engage in more opportunistic strategies such as Equity Hedge, Sector Specific and Emerging Markets; exhibits a greater dispersion of returns and higher volatility compared to the HFRI Fund of Funds Composite Index, which possesses a lower risk/reward profile. A fund in the HFRI Fund of Fund Strategic Index tends to outperform the HFRI Fund of Fund Composite Index in up markets and underperform the index in down markets. Bloomberg ticker: HFRIFOFS. This index is being provided for comparative purposes relative to the other strategic Fund of Funds, is not the Fund’s benchmark, and is being provided for informational purposes only.

The MSCI All Country World Total Return Index (Local) includes the reinvestment of dividends net of foreign taxes, symbol NDLEACWF; it is not the Fund’s benchmark and is provided as we believe it provides a similar geographic exposure to how the Fund’s underlying managers may invest and is for informational purposes only.

The MSCI Emerging Markets Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes; it is not the Fund’s benchmark in certain cases and is provided for informational purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses.

The MSCI Emerging Markets Small Cap Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes, symbol MSLUEMRN; it is not the Fund’s benchmark and is provided for informational purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses.

The MSCI Emerging Markets Mid Cap Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes, symbol MMDUEMRN; it is not the Fund’s benchmark and is provided for informational purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses.

The MSCI Emerging Markets Large Cap Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes, symbol MLCUEMRN; it is not the Fund’s benchmark and is provided for informational purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses.

The MSCI Emerging Markets Growth Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes, symbol NGUEGFN; it is not the Fund’s benchmark and is provided for informational purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses.

The MSCI Emerging Markets Value Index includes the reinvestment of dividends, the impact of currency and is net of foreign taxes, symbol NUVEEMVN; it is not the Fund’s benchmark and is provided for informational purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses.



## CONTACT

### RELATIONSHIP MANAGEMENT TEAM

[ir@absinv.com](mailto:ir@absinv.com)

### USA

2187 Atlantic Street  
Suite 604  
Stamford, CT 06902  
203-618-3700

### ZURICH

### HONG KONG



# Alameda County Employees' Retirement Association

## Emerging Markets Equity

March 5, 2025



# Presentation Team



## **Mark Roemer — Senior Vice President, Portfolio Manager**

Mark joined Acadian in 2017 and is a member of the Equity Team. Prior to Acadian, he was a portfolio manager and director with Allianz Global Investors, where he managed and conducted research on a number of quantitative equity strategies as part of the firm's systematic team. He previously worked at Barclays Global Investors as a principal and U.S. equity product manager. Mark has an M.S. in engineering from Stanford University in their joint master's program between the College of Engineering and Stanford Business School, a M.S. in finance from the London Business School, and a B.S. in mechanical engineering from Virginia Tech.



## **Andrew Miller — Senior Vice President, Business Development**

Andrew joined Acadian in 2004 and is a senior member of Acadian's Global Client Group, focusing on business development within public pension and Taft-Hartley funds. Prior to his current role, he worked in client service, business development, and operations functions at Acadian. Before joining Acadian, he worked in global custody at State Street Corporation. Andrew is a member of numerous public pension associations including: the National Association of State Retirement Administrators (NASRA), National Council on Teacher Retirement (NCTR), National Conference on Public Employee Retirement Systems (NCPERS), and the State Association of County Retirement Systems (SACRS). He also serves on the Fenway High School (Boston) Investment Committee. Andrew received an M.B.A. from Northeastern University and a B.A. from Wheaton College.



# OVERVIEW

# Acadian Systematic Investing Built On



**Economic intuition & insights of a talented, experienced, diverse group of investors:**

100+ person investment team | 1600+ years' collective experience  
100+ advanced analytical degrees

**PEOPLE**

**DATA**

**Extensive data repository supplemented by alternative data scouting effort:**

518M+ daily observations | 58TB+ data  
150+ global markets | 40K+ traded assets



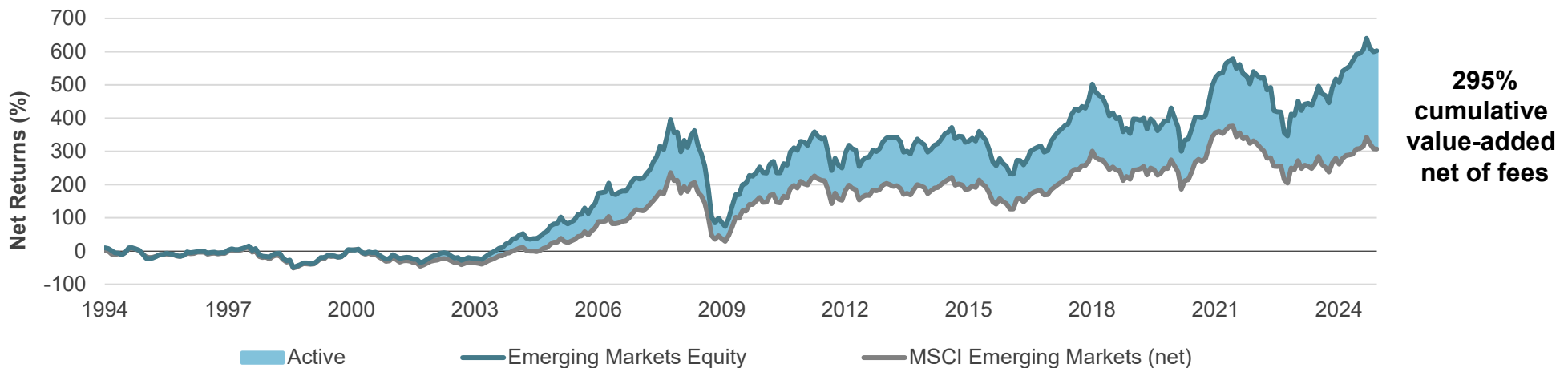
**Transforming information into insights:**

Robust technological infrastructure  
Sophisticated analytical tools & portfolio attribution illuminate trends, relationships, and drivers of alpha

**CLARITY**

# Why Acadian in Emerging Markets?

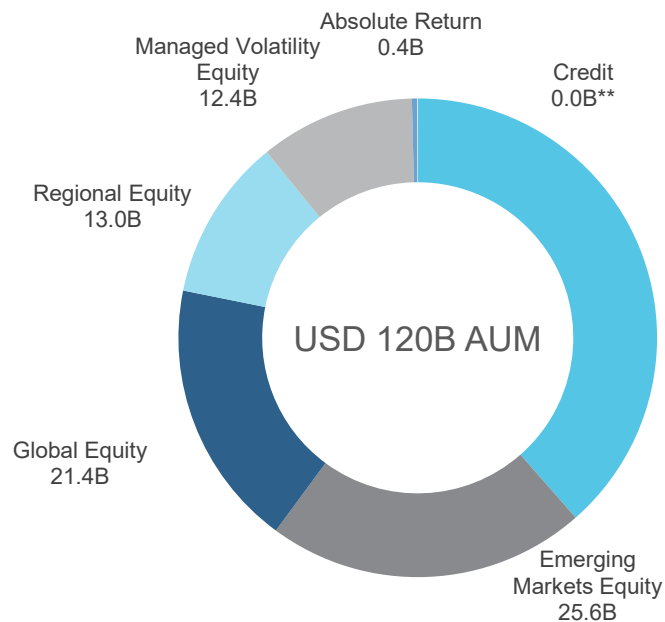
- Pioneering investor in emerging markets equities, beginning in 1994
- Broad and mispriced security universe in an inefficient asset class
- Outperformance in 18 out of 31 years, with a since inception annualized return of 6.5% versus 4.6% for the benchmark as of December 31, 2024\*



\*Emerging Markets Equity Composite vs. the MSCI Emerging Markets benchmark. After management fees in USD. Inception January 1, 1994. Reference to the benchmark is for comparative purposes only and is not intended to indicate that the composite will contain the same investments as the benchmark. Investors have the opportunity for losses as well as profits. Past performance is no guarantee of future returns. The complete performance disclosure can be found in the composite performance disclosure page attached. Index Source: MSCI Copyright MSCI 2025. All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.

# Organizational Overview

- Acadian has been a pioneer in systematic investing since our founding in 1986
- We believe that a systematic approach grounded in fundamentals is well suited to delivering consistent risk-adjusted returns
- Our 362-person team is focused on continuous research and innovation



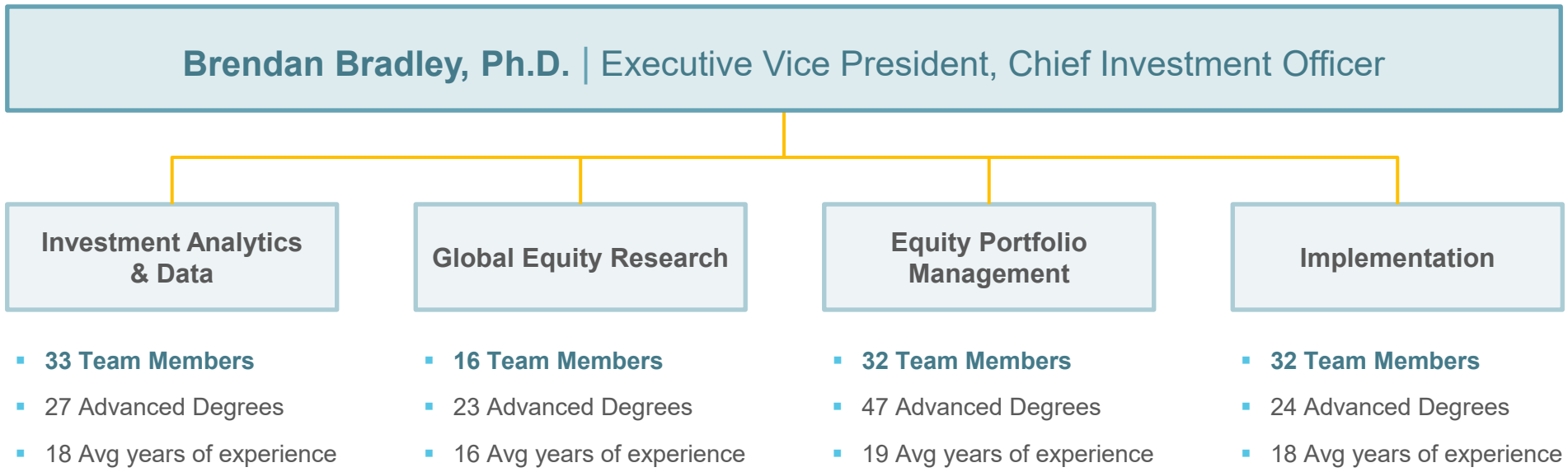
September 30, 2024

Rounding is applied to the total firm AUM which includes \$1442.6 million in model advisory contracts where Acadian does not have trading authority. The individual strategy level assets under management (AUM) are rounded to the nearest million unless otherwise noted and do not include model advisory assets.

\*As a separate legal entity, Acadian Asset Management (Australia) Limited. This was initially established as a joint venture with Colonial First State Investments Limited and became a wholly owned entity on June 30, 2015.

\*\*Credit AUM: \$48.8M

# Investment Team – Equities



# D&I: Overview

A diverse firm across race/ethnicity, gender, culture, language, and other factors.

## *We believe diversity and inclusive practices...*

- ▶ *lead to strength across all facets of our organization*
- ▶ *enhance decision-making and creativity, resulting in more resilient portfolios improved business outcomes*
- ▶ *result in a more engaged and positive work environment*

## *A values-driven program based on:*



### **Governance & commitment**

Structured **accountability** across executive team, senior management, DEI leadership, and through external pledges and industry initiatives



### **Data & transparency**

Driving toward leadership diversity goals through continuous **measurement**



### **Focused initiatives**

Engaging employees and leaders through high-impact programs across our **workforce, business, and community** strategies

# Representative Investors

## Public

---

Employees' Retirement Fund of the City of Dallas  
 Florida State Board of Administration  
 Government Pension Investment Fund (Japan)  
 Los Angeles County Employees Retirement Association  
 Massachusetts Pension Reserves Investment Management Board †  
 Municipal Employees' Retirement System of Michigan  
 New York City Employees Retirement System †  
 Ohio Public Employees Retirement System †  
 Oregon Public Employees  
 Public School & Education Employee Retirement Systems of Missouri  
 Tennessee Consolidated Retirement System  
 Virginia Retirement System  
 West Virginia Investment Management Board

## Corporate

---

3M Company  
 Altria Group  
 Dow Inc.  
 JM Family Enterprises, Inc.  
 Pfizer  
 The Boeing Company

## Endowment/Foundation

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Carnegie Mellon University  
 Cornell University †

## Sub-Advisory

---

Harbor Overseas Fund  
 Optimum International Fund  
 SEI †

## Taft-Hartley

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North Atlantic States Carpenters Benefit Funds  
 Producer-Writers Guild of America Pension Plan

## Australia

---

Aware Super  
 Colonial First State Investments Ltd. †  
 Rest Super

## Canada

---

Mouvement Desjardins †  
 Ville de Montréal

## Europe

---

Fidelity International  
 Hampshire County Council †  
 Kempen Capital Management †

† Denotes investors with tailored ESG implementations





**PROCESS**

# Investment Philosophy

- Financial assets are often **mispriced** due to investors incorrectly processing information, having incomplete information, or both
- **Systematic** processes best capture inefficiencies arising from mispriced fundamental and market information
- Our **edge** comes from embracing new ideas and a continuous investment in people, technology, and data

# Investment Process



## Emerging Markets

18,000 stock investment universe



## Objective Return Forecast

**Stock-specific**  
Selection within traditionally defined groups

+

**Peer**  
Overlooked information from alternative peer groups

+

**Macro**  
Top-down group signals (industry and country)



## Disciplined Portfolio Construction

Multi-horizon forecasts

Proprietary risk models

Dynamic transaction cost modeling



## Structured Trading Process

Systematic approach

Dynamic routing based on order profiling

Real-time oversight

ESG Issues Are Integrated Throughout

Integrated ESG Signals Active Research Agenda

Application of ESG Screens, Risk Management, Portfolio Tilting\*

Portfolio Characteristics Report, Proxy Voting, Women & Minority Brokerage, Engagement Reporting

\*ESG screens and portfolio tilts are implemented at client direction.

# Return Forecast Example

Model	Theme	Sample signals	Forecast
Stock-Specific	Value	→ Adjusted Intrinsic Value <sup>+</sup> Extended Asset Value	+0.59
	Quality	→ Financial Strength Management Behavior <sup>+</sup>	+0.60
	Growth	→ Earnings Surprise Recommendation Change	+0.79
	Technical	→ Institutional Investor Crowding Smart Reversal	+1.05
Peer	Proprietary Networks	→ Momentum Fundamentals	+0.56
Macro	Country	→ Corruption Adjusted Valuation Macro Environment	+0.12
	Industry	→ Quality Global Growth Sensitivity	-0.12
	Country/Industry Intersection	→ Price Momentum Adjusted Valuation	+0.02

Total Forecast	
+3.57%	
<b>Company:</b>	FUSHENG PRECISION CO LTD
<b>Market Cap:</b>	USD 1B
<b>Country:</b>	Taiwan
<b>Industry:</b>	Consumer Durables & Apparel
<b>Description:</b>	Engaged in the manufacture, processing, assembly and sale of various metal products, such as golf club heads

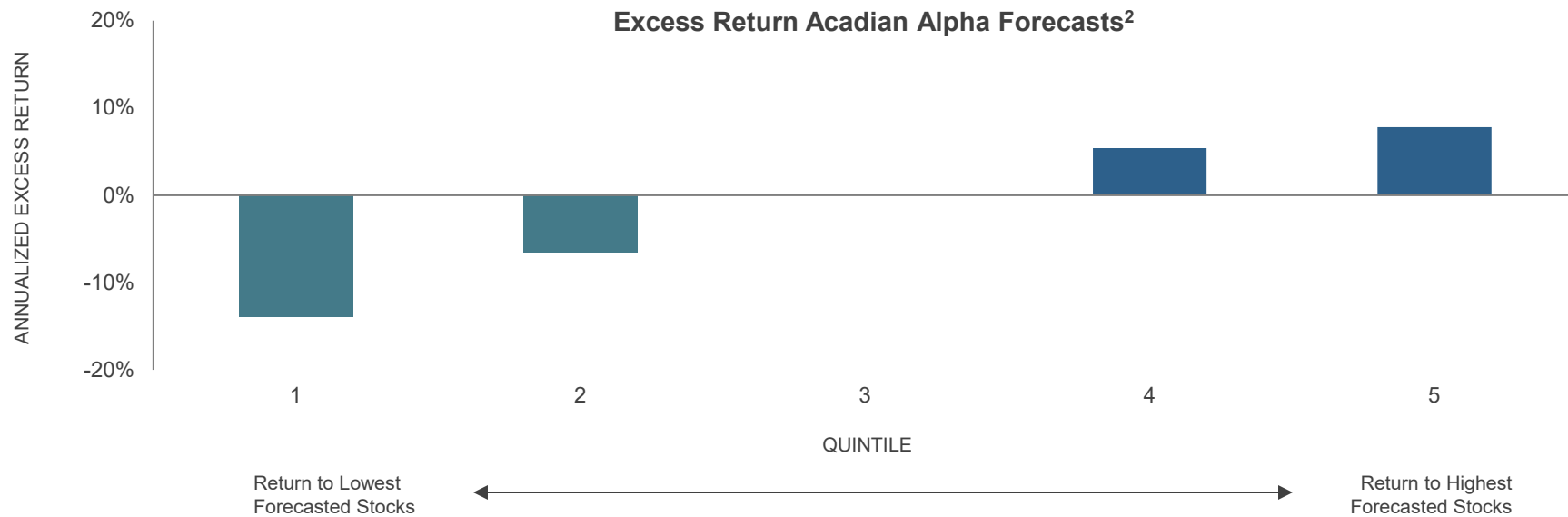
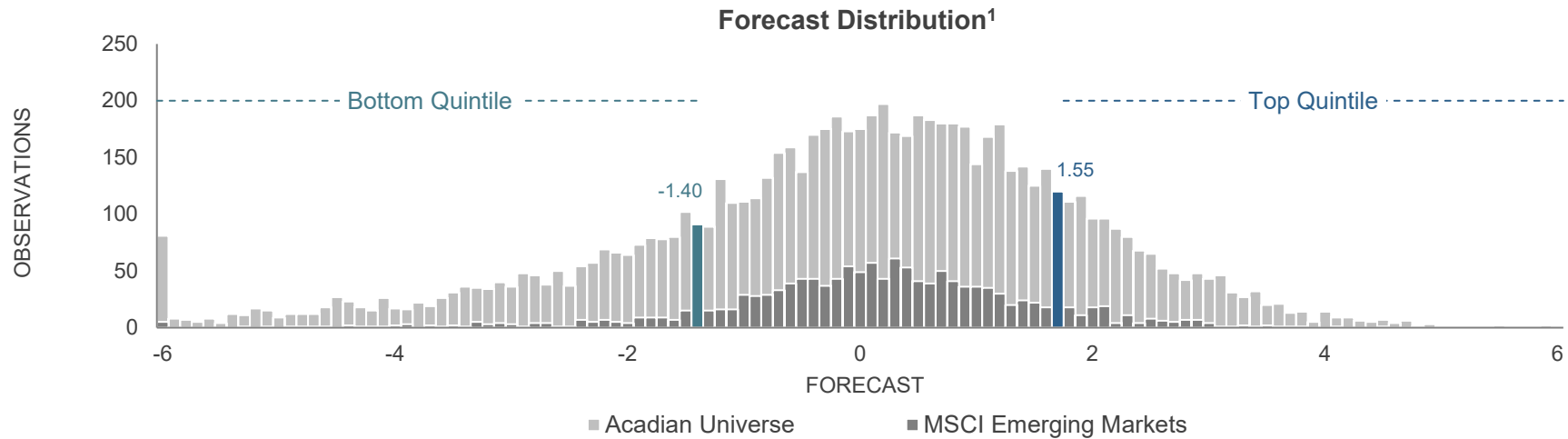
† Denotes integrated ESG signals

Source: Acadian Asset Management LLC. The information provided is for illustrative purposes only based on proprietary models. There can be no assurance that the forecasts will be achieved. The selected stock is intended to be an example of the process and is not a recommendation to buy or sell this specific security.



# Stock Forecast Distribution and Returns

Trailing 10 Years as of December 2023



Source: Acadian Asset Management LLC. For illustrative purposes only

<sup>1</sup>Source: Acadian's Emerging Markets universe with a market cap greater than \$100M. Methodology: Observations represents the number of forecasts. The highlighted values represent the observations in the top and bottom quintiles. The information is not reflective of a particular time period and is provided for illustrative purposes only. The chart depicts our forecast distribution process based on proprietary models. There can be no assurance that the forecasts will be achieved.

<sup>2</sup>This is not intended to represent investment returns generated by an actual portfolio. They do not represent actual trading or an actual account but were achieved by means of using Acadian's Emerging Markets universe of securities for the period specified above. Results do not reflect transaction costs or other implementation costs. Past performance is no guarantee of future results. Index Source: MSCI Copyright MSCI 2025. All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.

# Risk Management and Portfolio Construction

Emerging Markets Equity

<b>Active risk</b>	4% - 6% tracking error
<b>Market risk</b>	Beta, volatility & size constrained relative to market
<b>Security risk</b>	Up to 2.25% active weight
<b>Country/Industry/Currency risk</b>	Risk aware, active bounds
<b>Factor crowding</b>	Mitigate factor crowding through Dynamic Factor Weighting
<b>Human oversight</b>	Portfolio review, discretionary risk management

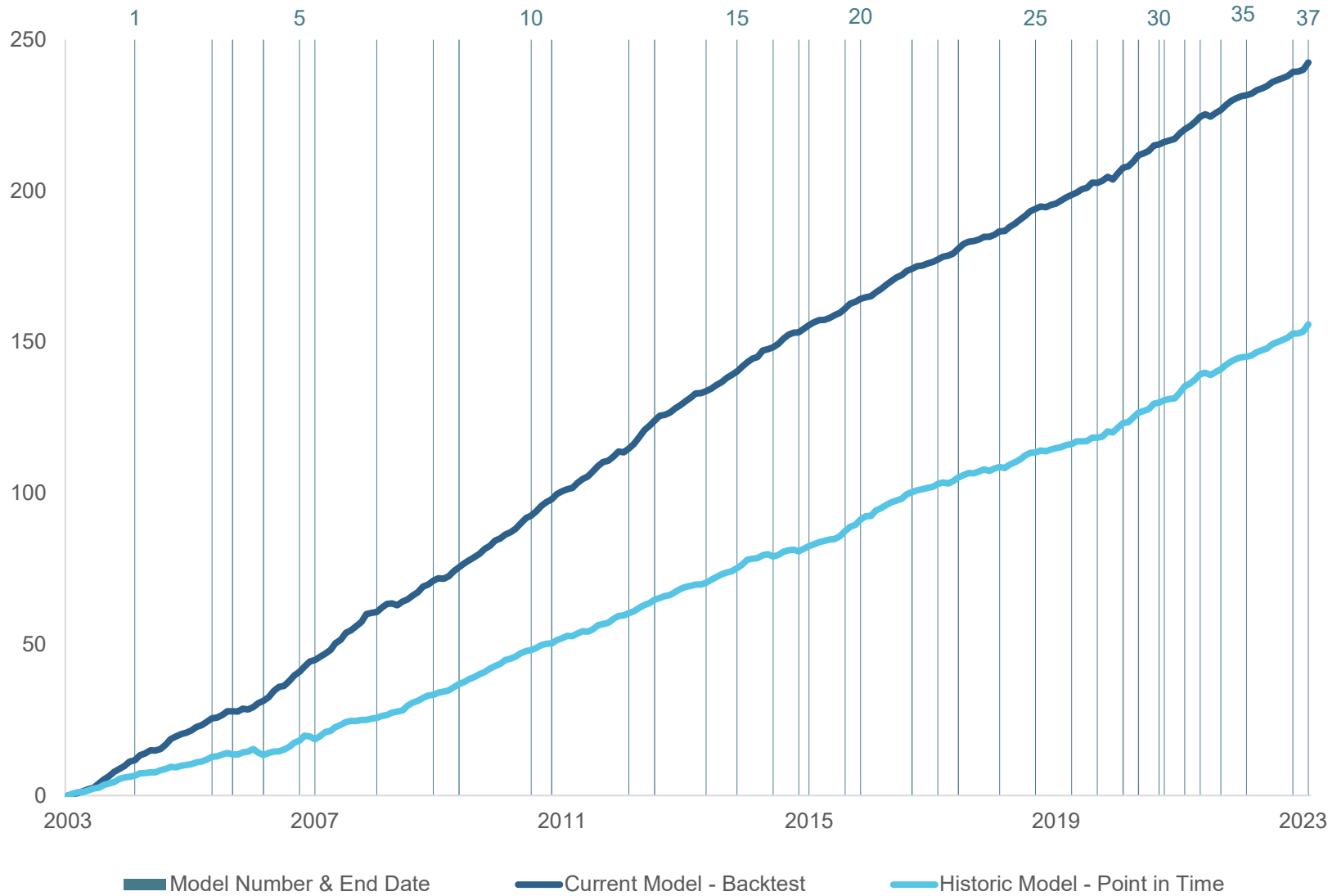
# Research: Representative Projects

Project Theme	Investment Thesis	Representative Project
Alternative Data	Collective actions by uninformed investors push asset prices away from fundamentals →	Passive Trading Impact
Machine Learning	Large language models can identify less obvious investment insights by processing large-scale data →	LLM Sentiment
Macro	Macro models require special statistical considerations given low statistical breadth →	Macro Model Refined Estimation
Group Networks	Investors overlook public firm linkages based on private subsidiaries →	Private Company Similarity
ESG	Workforce skill diversity contributes more to a firm's valuation than market participants realize →	Skills Diversity



# Research: Impact

Hypothetical Cumulative Sum of Monthly Payoffs in Emerging Markets (%)



Historical Model Number	Correlation to Current Model
38 (Current)	1.00
37	0.99
36	0.99
35	0.97
34	0.97
33	0.97
32	0.94
31	0.94
30	0.90
29	0.88
28	0.88
27	0.87
26	0.82
25	0.81
24	0.79
23	0.79
22	0.76
21	0.74
20	0.70
19	0.69
18	0.69
17	0.64
16	0.61
15	0.61
14	0.60
13	0.59
12	0.61
11	0.61
10	0.58
9	0.53
8	0.49
7	0.47
6	0.35
5	0.36
4	0.21
3	0.27
2	0.26
1	0.28

The chart presented here is a hypothetical illustration for educational purposes only showing the cumulative sum of monthly payoffs in Emerging Markets. The light blue solid line represents the historic model's efficacy, while the dark blue solid line represents the efficacy of the current model in a backcast. Source: Acadian investable universe with a market capitalization greater than \$100MM. This is meant to be an educational illustrative example and is not intended to represent investment results generated by an actual portfolio. The payoffs do not represent actual trading or an actual account. Results do not reflect transaction costs, other implementation costs and do not reflect advisory fees or their potential impact. Hypothetical results are not indicative of actual future results. Every investment program has the opportunity for loss as well as profit.



**STRATEGY**

# Strategy Overview

## Emerging Markets Equity

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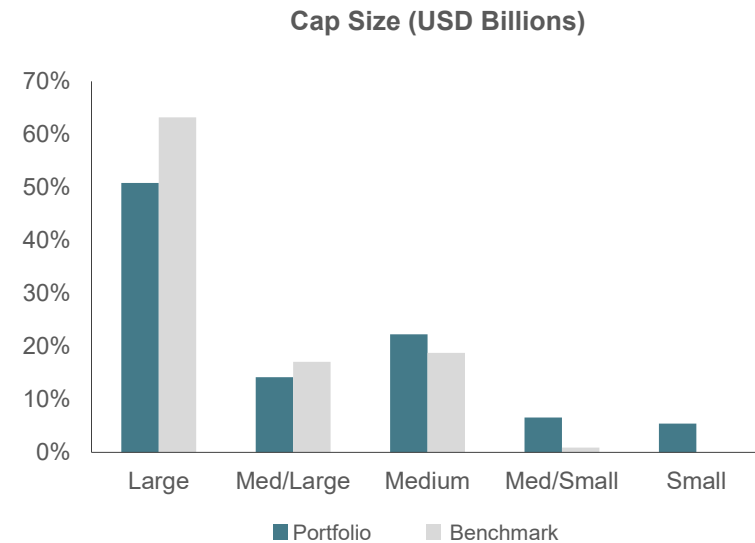
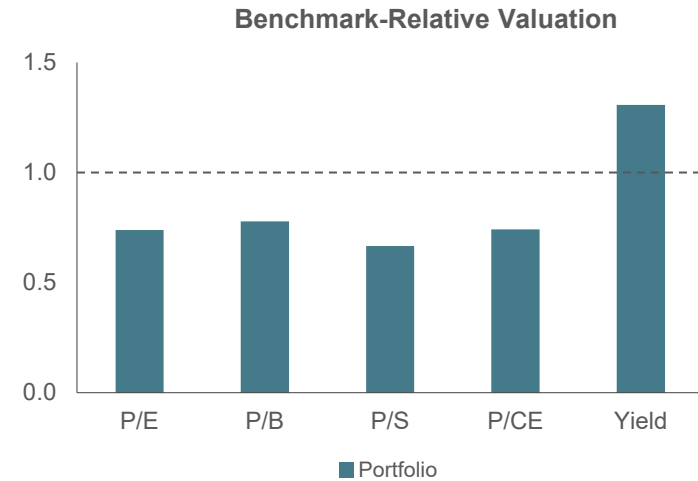
<b>Style</b>	All-Cap
<b>Process</b>	Systematic stock selection, 100+ proprietary signals
<b>Universe</b>	17,500 securities
<b>Benchmark</b>	MSCI Emerging Markets
<b>Excess Return Target</b>	2% - 3% (net of fees)
<b>Active Risk Target</b>	4% - 6%
<b>Turnover</b>	40% - 80%

# Emerging Markets Equity

Key Characteristics – December 31, 2024\*

Valuation	Portfolio	Benchmark
Price/Earnings	11.6	15.7
Price/Book	1.4	1.8
Price/Sales	1.0	1.5
Price/Cash Earnings	7.2	9.7
Yield	3.4%	2.6%
Total Securities	738	1252

Cap Size (USD Billions)	Portfolio	Benchmark
Large > \$20B	50.8%	63.2%
Med/Large \$10-\$20	14.2%	17.1%
Medium \$3-\$10	22.3%	18.8%
Med/Small \$1.5-\$3	6.6%	0.9%
Small < \$1.5	5.4%	0.0%
Median	1.1	8.3
Weighted Average	147.6	170.7



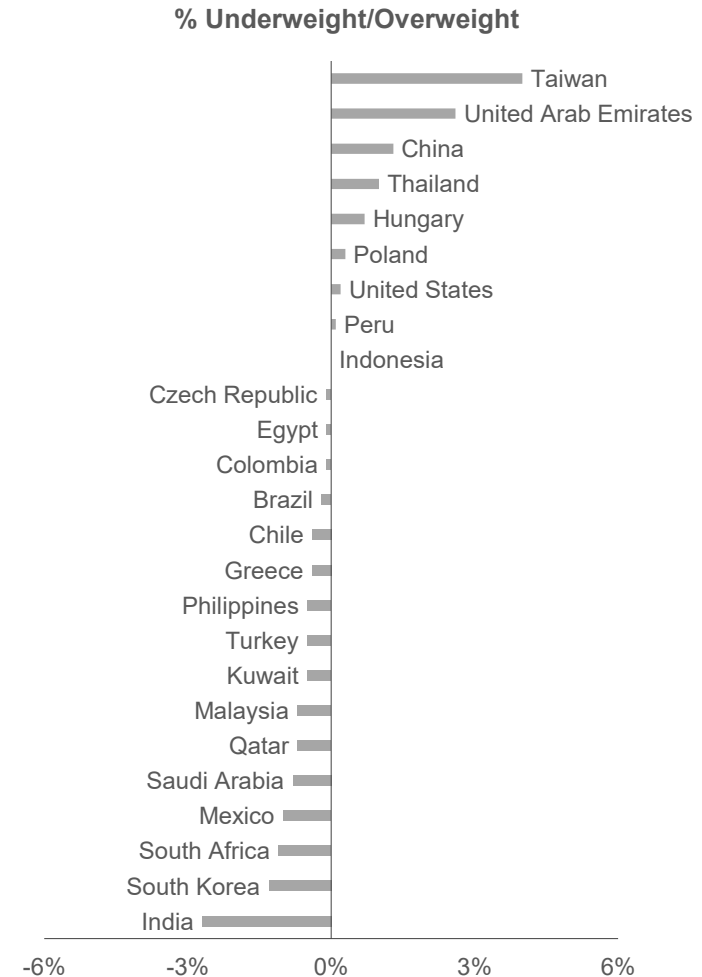
**Portfolio:** Emerging Markets Equity. **Benchmark:** MSCI Emerging Markets.

\*Preliminary. The data presented here is for a representative portfolio and is supplemental to the composite performance disclosure page attached. Reference to the benchmark is for comparative purposes only and is not intended to indicate that the composite will contain the same investments as the benchmark. Investors have the opportunity for losses as well as profits. Index Source: MSCI Copyright MSCI 2025. All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.

# Emerging Markets Equity

Emerging Markets Allocations – December 31, 2024\*

	Portfolio	Benchmark	Difference
<b>Europe/Mid East/Africa</b>	<b>11.8%</b>	<b>12.4%</b>	<b>-0.6%</b>
Czech Republic	0.1	0.1	-0.1
Egypt	0.0	0.1	-0.1
Greece	0.0	0.5	-0.4
Hungary	1.0	0.2	0.7
Kuwait	0.2	0.7	-0.5
Poland	1.1	0.8	0.3
Qatar	0.1	0.8	-0.7
Saudi Arabia	3.3	4.2	-0.8
South Africa	1.8	2.9	-1.1
Turkey	0.1	0.7	-0.5
United Arab Emirates	3.9	1.4	2.6
<b>Latin America</b>	<b>5.1%</b>	<b>6.6%</b>	<b>-1.5%</b>
Brazil	3.9	4.1	-0.2
Chile	0.0	0.4	-0.4
Colombia	0.0	0.1	-0.1
Mexico	0.8	1.8	-1.0
Peru	0.4	0.3	0.1
<b>Asia</b>	<b>82.1%</b>	<b>80.9%</b>	<b>1.2%</b>
China	29.1	27.8	1.3
India	16.7	19.4	-2.7
Indonesia	1.4	1.5	0.0
Malaysia	0.8	1.5	-0.7
Philippines	0.0	0.5	-0.5
South Korea	7.7	9.0	-1.3
Taiwan	23.8	19.7	4.0
Thailand	2.4	1.4	1.0
<b>Developed Markets</b>	<b>0.2%</b>	<b>0.0%</b>	<b>0.2%</b>
<b>Cash Equitization</b>	<b>0.5</b>		
<b>Cash</b>	<b>0.3</b>		



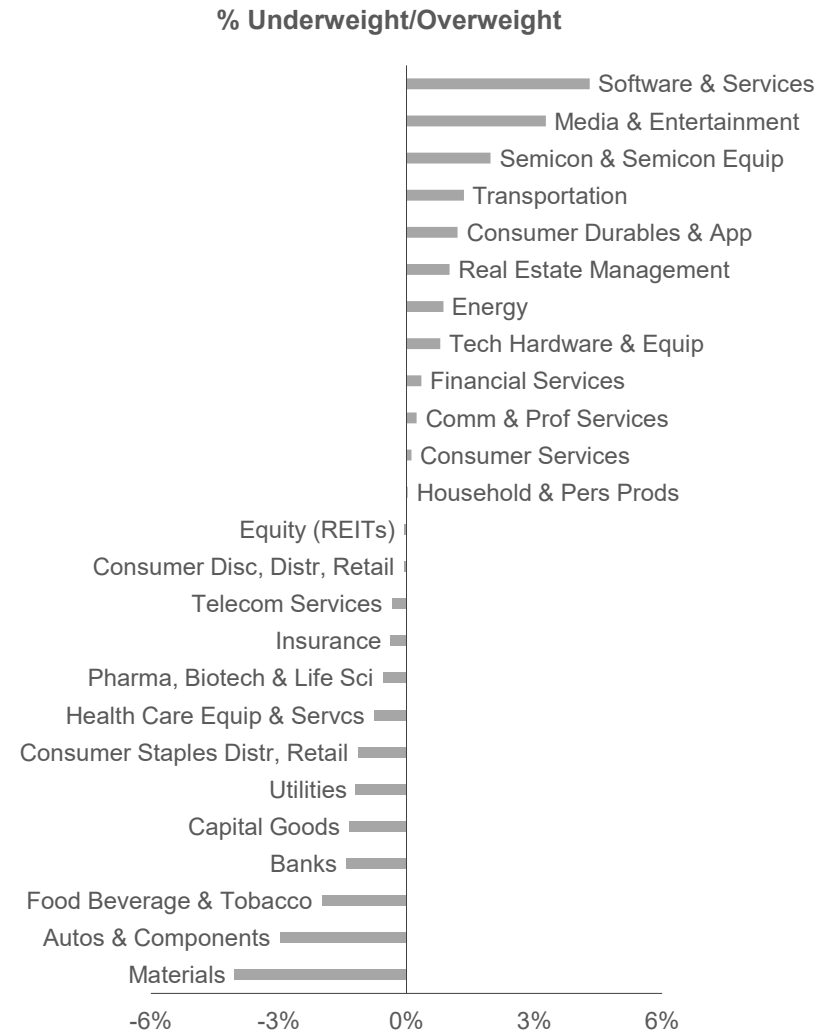
**Portfolio:** Emerging Markets Equity. **Benchmark:** MSCI Emerging Markets.

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# Emerging Markets Equity

Industry Allocations – December 31, 2024\*

	Portfolio	Benchmark	Difference
<b>Communication Services</b>	<b>12.3%</b>	<b>9.4%</b>	<b>2.9%</b>
Media & Entertainment	9.9	6.6	3.3
Telecommunication Services	2.4	2.8	-0.3
<b>Consumer Discretionary</b>	<b>11.4%</b>	<b>13.1%</b>	<b>-1.7%</b>
Automobiles & Components	0.7	3.7	-3.0
Consumer Discretionary Distribution & Retail	5.1	5.2	-0.1
Consumer Durables & Apparel	2.4	1.2	1.2
Consumer Services	3.2	3.0	0.1
<b>Consumer Staples</b>	<b>1.7%</b>	<b>4.8%</b>	<b>-3.1%</b>
Consumer Staples Distribution & Retail	0.0	1.2	-1.1
Food, Beverage & Tobacco	1.0	3.0	-2.0
Household & Personal Products	0.7	0.6	0.0
<b>Energy</b>	<b>5.4%</b>	<b>4.6%</b>	<b>0.9%</b>
<b>Financials</b>	<b>22.3%</b>	<b>23.7%</b>	<b>-1.5%</b>
Banks	16.4	17.9	-1.4
Financial Services	3.2	2.8	0.4
Insurance	2.7	3.1	-0.4
<b>Health Care</b>	<b>2.1%</b>	<b>3.4%</b>	<b>-1.3%</b>
Health Care Equipment & Services	0.1	0.9	-0.8
Pharmaceuticals, Biotechnology & Life Sciences	2.0	2.6	-0.6
<b>Industrials</b>	<b>6.8%</b>	<b>6.6%</b>	<b>0.2%</b>
Capital Goods	3.4	4.7	-1.4
Commercial & Professional Services	0.3	0.0	0.2
Transportation	3.2	1.9	1.4
<b>Information Technology</b>	<b>31.3%</b>	<b>24.3%</b>	<b>7.1%</b>
Semiconductors & Semiconductor Equipment	15.7	13.7	2.0
Software & Services	7.0	2.7	4.3
Technology Hardware & Equipment	8.6	7.8	0.8
<b>Materials</b>	<b>1.7%</b>	<b>5.7%</b>	<b>-4.0%</b>
<b>Real Estate</b>	<b>2.6%</b>	<b>1.7%</b>	<b>1.0%</b>
Equity Real Estate Investment Trusts (REITs)	0.0	0.1	0.0
Real Estate Management	2.6	1.6	1.0
<b>Utilities</b>	<b>1.5%</b>	<b>2.7%</b>	<b>-1.2%</b>
<b>Cash Equitization</b>	<b>0.5</b>		
<b>Cash</b>	<b>0.3</b>		



**Portfolio:** Emerging Markets Equity. **Benchmark:** MSCI Emerging Markets.

\*Preliminary. The data presented here is for a representative portfolio and is supplemental to the composite performance disclosure page attached. Reference to the benchmark is for comparative purposes only and is not intended to indicate that the composite will contain the same investments as the benchmark. Investors have the opportunity for losses as well as profits. Index Source: MSCI Copyright MSCI 2025. All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.

# Emerging Markets Equity

Top Ten Portfolio Holdings – December 31, 2024\*

Name	Country	Industry	Portfolio (%)
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	Taiwan	Semiconductors & Semiconductor Equipment	9.9
TENCENT HOLDINGS LTD	China	Media & Entertainment	4.7
CHINA CONSTRUCTION BANK CORP.	China	Banks	3.3
HCL TECHNOLOGIES LTD	India	Software & Services	2.5
MEDIATEK INC	Taiwan	Semiconductors & Semiconductor Equipment	2.2
MEITUAN	China	Consumer Services	2.1
ALIBABA GROUP HOLDING LTD	China	Consumer Discretionary Distribution & Retail	2.0
INFOSYS LTD	India	Software & Services	1.9
HON HAI PRECISION INDUSTRY CO LTD	Taiwan	Technology Hardware & Equipment	1.8
EMAAR PROPERTIES PJSC	United Arab Emirates	Real Estate Management	1.8

Summary	Portfolio	Benchmark	Active Weight
% of Portfolio for Top 10 Active Weights	18.1	3.0	15.1
% of Portfolio for Top 20 Current Holdings	45.2	26.6	18.6
% of Non-Benchmark Portfolio Holdings	17.0		
Active Share of Portfolio	62.6		

**Portfolio:** Emerging Markets Equity. **Benchmark:** MSCI Emerging Markets.

\*Preliminary. Portfolio holdings are subject to change and should not be considered a recommendation to buy or sell individual securities. The data presented here is for a representative portfolio and is supplemental to the composite performance disclosure page attached. Reference to the benchmark is for comparative purposes only and is not intended to indicate that the composite will contain the same investments as the benchmark. Investors have the opportunity for losses as well as profits. Index Source: MSCI Copyright MSCI 2025. All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.

# Emerging Markets Equity Composite

Performance (Returns in USD – Before and After Management Fees)

Time Period	Composite (gross)*	Composite (net)*	Benchmark	Value-Added (gross) vs. Benchmark
1994 (Inception: Jan 1, 1994)	(6.6)%	(7.5)%	(7.3)%	0.7%
1995	(5.1)	(6.1)	(5.2)	0.1
1996	11.2	10.1	6.0	5.2
1997	(11.9)	(12.7)	(11.6)	(0.3)
1998	(22.3)	(23.1)	(25.3)	3.0
1999	65.2	63.6	66.4	(1.2)
2000	(25.2)	(26.0)	(30.6)	5.4
2001	5.7	4.6	(2.6)	8.3
2002	(2.3)	(3.2)	(6.2)	3.9
2003	75.9	74.2	55.8	20.1
2004	33.7	32.4	25.6	8.1
2005	35.4	34.0	34.0	1.4
2006	33.1	31.8	32.1	1.0
2007	44.3	42.9	39.4	4.9
2008	(55.9)	(56.4)	(53.3)	(2.6)
2009	78.4	76.7	78.5	(0.1)
2010	23.0	21.8	18.9	4.1
2011	(17.8)	(18.6)	(18.4)	0.6
2012	23.9	22.7	18.2	5.7
2013	(1.1)	(2.1)	(2.6)	1.5
2014	2.6	1.6	(2.2)	4.8
2015	(16.0)	(16.8)	(14.9)	(1.1)
2016	14.4	13.3	11.2	3.2
2017	39.3	38.0	37.3	2.0
2018	(17.4)	(18.3)	(14.6)	(2.8)
2019	18.0	16.9	18.4	(0.4)
2020	13.5	12.4	18.3	(4.8)
2021	8.5	7.4	(2.5)	11.0
2022	(19.8)	(20.6)	(20.1)	0.3
2023	22.8	21.6	9.8	13.0
2024	14.9	13.8	7.5	7.4
One Year Annualized Return	14.9	13.8	7.5	7.4
Three Year Annualized Return	4.2	3.2	(1.9)	6.1
Five Year Annualized Return	6.9	5.8	1.7	5.2
Ten Year Annualized Return	6.2	5.1	3.6	2.6
Since-Inception Annualized Return	7.6	6.5	4.6	3.0
Since-Inception Annualized Standard Deviation	22.3	22.3	21.5	
Since-Inception Active Risk				5.0
Since-Inception Information Ratio				0.6

**Composite:** Emerging Markets Equity. **Benchmark:** MSCI Emerging Markets (net) 2001-01-01 To Present, MSCI Emerging Markets (gross) 1994-01-01 To 2001-01-01.

\*Returns that include the most recent month are preliminary. Acadian Asset Management LLC claims compliance with the Global Investment Performance Standards (GIPS®). GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein. Reference to the benchmark is for comparative purposes only and is not intended to indicate that the composite will contain the same investments as the benchmark. Investors have the opportunity for losses as well as profits. Past performance is no guarantee of future returns. The complete performance disclosure can be found in the composite performance disclosure page attached. Index Source: MSCI Copyright MSCI 2025. All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.





# SUPPORTING EXHIBITS

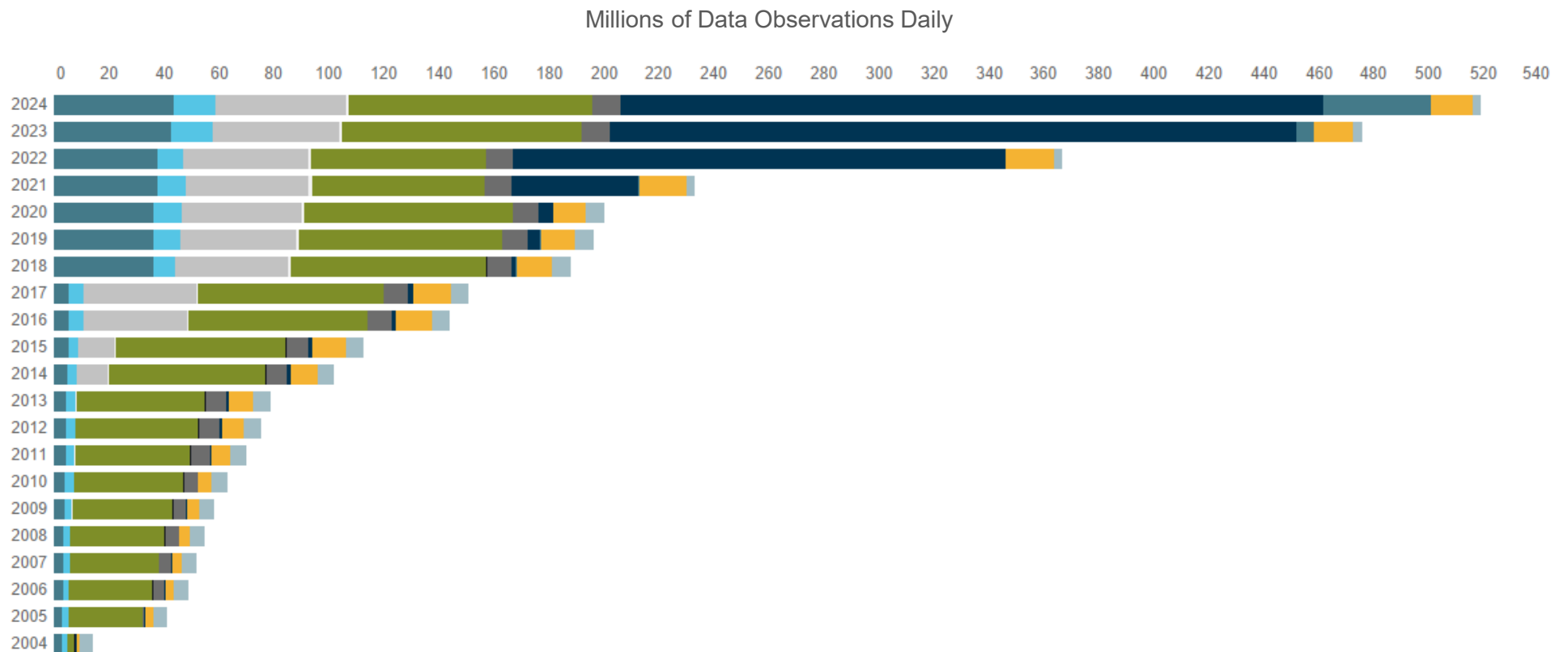
# Global Data

44,000 COMPANIES  
100 COUNTRIES

518 MILLION DAILY  
OBSERVATIONS

58 TERABYTE  
DATABASE

Daily data from over 40 sources including regulatory authorities, company websites, media sources, and industry trade organizations not available in standard vendor offerings:



Colors on the chart symbolize different data sources. Data as of January 2024.



# BIOGRAPHIES

# Investment Team

## **Brendan Bradley, Ph.D. – Executive Vice President, Chief Investment Officer**

- 27 years of investment experience
- Member of the Acadian Board of Managers, Executive Management Team, Executive Committee, Responsible Investing Committee
- Ph.D. in applied mathematics from Boston University
- B.A. in physics from Boston College

## **Alexandre Voitenok – Executive Vice President, Deputy Chief Investment Officer**

- 24 years of investment experience
- Member of Acadian’s Executive Committee, Executive Management Team and Diversity & Inclusion Forum
- M.Sc. in software engineering from Minsk Radio Engineering Institute

## **Malcolm Baker, Ph.D. – Director, Research**

- 23 years of investment experience
- Research consultant since 2006
- Robert G. Kirby Professor of Finance, Harvard Business School
- Ph.D. from Harvard University
- M.Phil. From Cambridge University
- B.A. from Brown University

## **Michael Gleason – Senior Vice President, Director, Equity Alternative**

- 29 years of investment experience
- MSF from Northeastern University
- B.S. in management science from Bridgewater State University

## **Andy Moniz Ph.D., CFA – Senior Vice President, Director of Responsible Investing**

### **Acadian Asset Management (U.K.) Limited**

- 25 years of professional experience
- Ph.D. in natural language processing and information retrieval from Erasmus University
- MSc. in applied statistics from the University of London
- M.A. in economics from Cambridge University
- B.A. in economics from Cambridge University
- CFA charterholder and member of CFA Society U.K.

## **Ryan Taliaferro, Ph.D. – Senior Vice President, Director, Investment Strategies**

- 23 years of professional experience
- Member of Acadian’s Executive Committee
- Ph.D. in business economics (finance) from Harvard University
- M.B.A. in finance and economics from the University of Chicago
- A.M. in economics from Harvard University
- A.M. and A.B. in physics from Harvard University

## **Fanesca Young, Ph.D., CFA – Senior Vice President, Director, Equity Portfolio Management**

- 20 years of professional experience
- Ph.D. in statistics from Columbia University
- M.Phil. in statistics from Columbia University
- M.A. in statistics from Columbia University
- B.A. in mathematics from the University of Virginia
- CFA charterholder

## **Vladimir Zdorovtsov, Ph.D. – Senior Vice President, Director, Global Equity Research**

- 23 years of investment experience
- Member of the Acadian Executive Committee
- Ph.D. in finance from University of South Carolina
- M.B.A. from University of Arkansas
- B.A. in international economics from Sumy University, Ukraine

## **Francis Seah, CFA – Senior Vice President, Portfolio Manager and Managing Director, Acadian Singapore Acadian Asset Management (Singapore) Pte Ltd**

- 21 years of investment experience
- B.S. and M.S. from Nanyang Technological University
- CPA, Institute of Certified Public Accountants Singapore
- CFA charterholder and a member of CFA Singapore
- Computational Finance Certificate from Carnegie Mellon University

## **Jean Christophe (J.C.) De Beaulieu, CFA – Senior Vice President, Head of Investments, Australia**

### **Acadian Asset Management (Australia) Limited**

- 27 years of investment experience
- Advanced Master in financial techniques from ESSEC Business School
- D.E.A. in numerical analysis from Pierre and Marie Curie University and Ecole Polytechnique
- M.S. in mathematics from Pierre and Marie Curie University
- CFA charterholder and member of CFA Society Boston

## **Mark Birmingham, CFA – Senior Vice President, Head of Risk Modeling, Portfolio Manager**

- 30 years of investment experience
- A.B. in computer science from Princeton University
- CFA charterholder and member of CFA Society Boston

## **Doug Eisenstein – Senior Vice President, Head of Investment Data Solutions**

- 25 years of professional experience
- Studied computer science at Suffolk University

# Investment Team

## **Joel Feinberg – Senior Vice President, Head of Trading**

- 19 years of investment experience
- MSIM from Boston University
- B.B.A. in finance from the University of Massachusetts

## **Alexander Galakatos, Ph.D. – Senior Vice President, Head of Investment Data Engineering**

- 6 years of professional experience
- Ph.D. in computer science from Brown University
- ScM in computer science from Brown University
- B.Sc. in computer engineering from Lehigh University

## **Anton Kapliy, Ph.D., CFA – Senior Vice President, Head of Portfolio Analytics**

- 11 years of professional experience
- Ph.D. in high energy physics from University of Chicago
- B.A. in physics from University of Pennsylvania
- CFA charterholder and a member of CFA Society Boston

## **Jian Pan, CFA – Senior Vice President, Head of Quantitative Systems**

- 31 years of professional experience
- M.S. in computer science from the University of Massachusetts
- B.S. industrial automation control from Nanjing University of Technology, China

## **Michael McCart, CFA – Senior Vice President, Investment Systems Architect**

- 27 years of investment experience
- B.S. in engineering and economics, University of Pennsylvania
- CFA charterholder and a member of CFA Society Boston

## **Javier Alcazar, Ph.D. – Senior Vice President, Portfolio Manager, Research Acadian Asset Management (U.K.) Limited**

- 23 years of professional experience
- Ph.D. in mechanical engineering from the Universidad Pontificia Comillas, ICAI, Spain
- M.Sc. in advanced mathematics and theoretical Physics from the University of Cambridge
- M.Sc. in aeronautical engineering from the Universidad Politecnica de Madrid, Spain
- M.Sc. in parallel computing from Imperial College London
- B.Sc. in theoretical physics from Universidad Complutense de Ciencias Fisicas, Spain

## **Daniel Adamson – Senior Vice President, Portfolio Manager, Implementation**

- 22 years of professional experience
- M.B.A. from Boston College
- B.A. in accountancy and management information systems from Miami University

## **Giuliano Amantini, Ph.D. – Senior Vice President, Portfolio Manager, Implementation**

- 20 years of professional experience
- Ph.D. in engineering and applied sciences from Yale University
- M.S. in mathematical finance from Bocconi University
- M.S. in mechanical engineering from Yale University
- M.S. in aerospace engineering from La Sapienza University
- B.S. in mechanical engineering from Tor Vergata University

## **Ioannis Baltopoulos – Senior Vice President, Portfolio Manager**

- 16 years of professional experience
- M.Sc. in advanced computing from Imperial College London
- B.Sc. in computer science from the University of Kent

## **Pavel Bandarchuk, Ph.D., CFA – Senior Vice President, Portfolio Manager, Research**

- 18 years of investment experience
- Ph.D. in international economics and finance from Brandeis University
- M.S. in finance from Brandeis University
- Diploma in international economics from Belarusian State University
- Certified FRM and CFA charterholder

## **Scott Brymer, CFA – Senior Vice President, Portfolio Manager**

- 27 years of professional experience
- B.B.A. in finance from the University of Massachusetts Amherst
- CFA charterholder and a member of CFA Society Boston

## **Heidi Chen, CFA – Senior Vice President, Portfolio Manager**

- 11 years of professional experience
- S.M. in computational science and engineering from Harvard University
- B.A. with Honors in mathematics from Williams College
- CFA charterholder and member of CFA Society Boston

## **Zhe Chen, Ph.D., CFA – Senior Vice President, Portfolio Manager, Research**

### **Acadian Asset Management (Australia) Limited**

- 16 years of professional experience
- Ph.D. in empirical finance from Macquarie University
- Bachelor of Engineering (bioinformatics), First Class Honours and University Medal, from the University of New South Wales
- Bachelor of Commerce (finance) from UNSW
- CFA charterholder

## **Chris Covington, CFA – Senior Vice President, Portfolio Manager**

- 18 years of professional experience
- M.S. in investment management from Boston University
- B.A. in mathematical economics from Colorado College
- CFA charterholder

# Investment Team

## **Thomas Dobler, Ph.D. – Senior Vice President, Portfolio Manager**

- 29 years of investment experience
- Member of Acadian's Diversity & Inclusion Forum
- Ph.D. in mathematics from Columbia University
- M.S. in mathematics from University of Illinois
- B.S. in mathematics from University of Vienna, Austria

## **Timothy Ellerton, CFA – Senior Vice President, Portfolio Manager Acadian Asset Management (U.K.) Limited**

- 25 years of professional experience
- M.Sc. in mathematical trading & finance from the Bayes Business School at City University
- B.A. in law & society from the University of Exeter
- CFA charterholder and member of CFA Society U.K

## **Denys Glushkov, Ph.D. – Senior Vice President, Portfolio Manager, Research**

- 19 years of professional experience
- Ph.D. in finance, University of Texas at Austin
- M.S. in economic cybernetics, Dnipropetrovsk State University (Ukraine)
- M.A. in economics, Central European University (Hungary)

## **Katrina Khouponsy, CFA – Senior Vice President, Portfolio Manager, Research**

### **Acadian Asset Management (Australia) Limited**

- 31 years of professional experience
- Bachelor in mathematics and finance (Hons) from the University of Technology, Sydney
- Graduate Diploma in applied finance and investments from the Securities Institute of Australia
- CFA charterholder

## **Owen Lamont, Ph.D. – Senior Vice President, Portfolio Manager, Research**

- 37 years of professional experience
- Ph.D. in economics from the Massachusetts Institute of Technology
- B.A. in economics from Oberlin College

## **Devin Nial – Senior Vice President, Portfolio Manager, ESG**

- 20 years of professional experience
- M.S. in finance from Boston College
- M.A. in computer science from Boston University
- B.A. in English literature from SUNY Albany

## **Brendan O'Leary, CFA – Senior Vice President, Portfolio Manager, Research**

- 12 years of professional experience
- B.S.E. in mechanical & aerospace engineering from Princeton University
- CFA charterholder

## **Dmitry Olevsky, CFA – Senior Vice President, Portfolio Manager, Research**

- 23 years of investment experience
- M.B.A. from Harvard Business School
- B.S. in structural engineering from Michigan Technological University
- FRM designation and CFA charterholder

## **Matthew Picone, CFA – Senior Vice President, Portfolio Manager, ESG Acadian Asset Management (Australia) Limited**

- 21 years of professional experience
- Bachelor of Commerce in finance and econometrics from the University of Sydney
- CFA charterholder
- Member of the PRI Australian Advisory Committee

## **Lukasz Pomorski, Ph.D. – Senior Vice President, Portfolio Manager**

- 19 years of professional experience
- Ph.D. in finance from the University of Chicago
- M.A. in finance from Tilburg University
- M.A. and B.A. in economics from the Warsaw School of Economics

## **Mark Roemer – Senior Vice President, Portfolio Manager**

- 29 years of professional experience
- M.S. in finance from London Business School
- M.S. in engineering from Stanford University
- B.S. in mechanical engineering from Virginia Polytechnic Institute & State University

## **Bin Shi, Ph.D., CFA – Senior Vice President, Portfolio Manager, Research**

- 19 years of investment experience
- Ph.D. in industrial and systems engineering from Georgia Institute of Technology
- M.S. in operations research from Georgia Institute of Technology
- B.S. in mechanical engineering from Southeast University, China
- CFA charterholder

## **Olivia Tang, Ph.D., CFA – Senior Vice President, Portfolio Manager, Research**

- 15 years of professional experience
- Ph.D. in systems engineering, with a concentration in operations research, from Boston University
- B.S. in mathematics from Peking University (China)
- CFA charterholder

## **Charles Augello, CFA – Senior Vice President, Lead Analyst, Integration, Multi-Asset Class Strategies**

- 20 years of professional experience
- B.A. in engineering sciences and economics from Dartmouth College
- CFA charterholder

# Investment Team

## **Rob Ricciarelli, CFA – Senior Vice President, Lead Analyst, IPD**

- 29 years of professional experience
- M.B.A. from Suffolk University
- B.S. in management and B.A. in psychology from the University of Massachusetts, Boston
- CFA charterholder

## **Jeffrey Sutthoff, CFA – Senior Vice President, Lead Analyst, Integration**

- 30 years of professional experience
- M.B.A. in finance from Boston College
- B.S. in mathematics from Stetson University
- CFA charterholder

## **Mark Weissman – Senior Vice President, Lead Analyst, Research**

- 19 years of investment experience
- B.S. in computer science, SUNY at Buffalo
- B.S. in chemical engineering from SUNY at Buffalo

## **Xiaoting Zhang, CFA, FRM – Senior Vice President, Lead Analyst, Integration**

- 21 years of investment experience
- M.B.A. from the University of Chicago
- M.S. in financial mathematics from the University of Chicago
- M.S. in computer science from Loyola University Chicago
- B.A. in architecture from Tianjin University, China
- Certified FRM and CFA charterholder

## **Deborah Waters – Senior Vice President, Senior Trader, Implementation**

- 35 years of professional experience
- B.S. in finance from Northeastern University

## **Tom Bilbe – Vice President, Portfolio Manager**

### **Acadian Asset Management (U.K.) Limited**

- 13 years of professional experience
- MSc in finance and investment from the University of Edinburgh Business School
- BEng in mechanical engineering with management from the University of Edinburgh

## **Stephen Fang – Vice President, Portfolio Manager, Research**

- 8 years of investment experience
- M.S. in computational science and engineering from Harvard University
- B.A. in mathematics and economics from Middlebury College

## **Sean Geary, CFA – Vice President, Portfolio Manager**

- 17 years of professional experience
- M.B.A. from Boston College
- M.S. in mechanical engineering from Boston University
- B.S. in physics from James Madison University
- CFA charterholder and member of CFA Society Boston

## **Charles Johnson – Vice President, Portfolio Manager**

- 23 years of professional experience
- M.S. in finance from Northeastern University
- M.B.A. from Northeastern University
- B.S. in finance from the University of Massachusetts at Dartmouth

## **John King – Vice President, Portfolio Manager**

- 24 years of professional experience
- Associate's degree in computer technology from Southern Maine Community College
- B.S. in analytics from Northeastern University

## **Dan Le, CFA – Vice President, Portfolio Manager**

- 20 years of professional experience
- B.A. in psychology from Brown University
- CFA charterholder and a member of CFA Society Boston

## **Adhi Mallik, CFA – Vice President, Portfolio Manager**

- 14 years of investment experience
- M.B.A. with a concentration in finance & accounting from Carnegie Mellon University
- B.A. in economics from University of CA – San Diego
- CFA charterholder
- Holds the CQF designation from CQF Institute

## **Ken Masse, CFA – Vice President, Portfolio Manager**

- 33 years of investment experience
- M.S. in finance from Boston College Carroll School of Management
- B.S. in finance from Bentley University
- CFA charterholder

## **Kyle McCarthy, CFA – Vice President, Portfolio Manager, Implementation**

- 19 years of professional experience
- B.S. in finance from Bentley University
- CFA charterholder and member of CFA Society Boston

## **Louis Seng – Vice President, Portfolio Manager, Implementation**

### **Acadian Asset Management (Singapore) Pte Ltd**

- 16 years of investment experience
- B.B.M in finance from Singapore Management University

## **Linda Wang – Vice President, Portfolio Manager, Research**

- 12 years of investment experience
- Master of Finance from MIT's Sloan School of Management
- B.S. in finance and accounting from Drexel University
- Certified FRM

# Investment Team

## **Steven Wong – Vice President, Portfolio Manager, Research Acadian Asset Management (Australia) Limited**

- 14 years of professional experience
- Ph.D. in statistics from the University of Sydney
- Master of Finance from the University of New South Wales
- Bachelor of Commerce and Bachelor of Engineering (Hons, University Medal) from the University of New South Wales

## **Xunqi (Richie) Yu, CFA – Vice President, Portfolio Manager**

- 17 years of professional experience
- Ph.D. in electrical and computer engineering from the University of Miami
- M.S. in computational finance from Carnegie Mellon University, Tepper School of Business
- B.S. in information engineering from Wuhan University, School of Remote Sensing and Information Engineering
- CFA charterholder

## **Wesley Jeng, CFA – Vice President, Associate Portfolio Manager, Implementation**

### **Acadian Asset Management (Australia) Limited**

- 12 years of investment experience
- Dual Master's Degree from UT Austin and ESCP Europe
- BA (Hons) from University of Nottingham
- CFA charterholder

## **Jeffrey Lobdell, CMT – Vice President, Associate Portfolio Manager, Implementation**

- 17 years of professional experience
- M.B.A. in finance from the University of Massachusetts
- B.A. in communications from the University of Massachusetts
- CMT charterholder

## **Anna Papush, Ph.D. – Vice President, Associate Portfolio Manager,**

- 11 years of professional experience
- Ph.D. in operations research from Massachusetts Institute of Technology
- B.A. in mathematics from Cornell University

## **Shivani Patnaik – Vice President, Associate Portfolio Manager**

- 14 years of professional experience
- M.S. in mathematical finance from Boston University
- B.S. in chemical engineering from University of Maryland

## **Alexander Rikun – Vice President, Associate Portfolio Manager**

- 15 years of professional experience
- Ph.D. in operations research from Massachusetts Institute of Technology
- B.S. in applied mathematics with a minor in economics from Columbia University

## **Vincent Tang – Vice President, Associate Portfolio Manager, Research**

- 8 years of investment experience
- M. Eng. in financial engineering from Cornell University
- B. Econ in finance, with a minor in computer science, from Wuhan University

## **James Toppa, CFA, CAIA – Vice President, Associate Portfolio Manager, Implementation**

- 17 years of professional experience
- B.S. in business administration from Bryant University
- CAIA charterholder
- CFA charterholder

## **James Coder, CFA – Vice President, Lead Analyst, Integration**

- 12 years of investment experience
- B.S. in finance from the University of Kansas
- CFA charterholder

## **Bhaskar Edara, CFA, FRM – Vice President, Lead Analyst, Implementation**

- 30 years of professional experience
- M.S. in finance from Boston College
- B.Tech. in mechanical engineering from the National Institute of Technology, India
- Certified FRM and CFA charterholder

## **Lucas Manley, CFA – Vice President, Lead Analyst**

- 21 years of investment experience
- M.S. in investment management from Boston University
- B.S. in business administration from Northeastern University
- CFA charterholder and a member of CFA Society Boston

## **Yevgen Revtsov, CFA – Vice President, Lead Analyst, Integration**

- 12 years of professional experience
- B.S. in computer systems engineering from Boston University
- CFA charterholder

## **Bernard Sim – Vice President, Lead Analyst, IPD**

### **Acadian Asset Management (Singapore) Pte Ltd**

- 24 years of professional experience
- Bachelor of Commerce in finance from the Australia National University

## **Michael Szrom, CFA – Vice President, Lead Analyst, Implementation**

- 8 years of professional experience
- B.S. in computer science and computer engineering from Northeastern University
- CFA charterholder

## **Michael Vashevko – Vice President, Lead Analyst, Implementation**

- 29 years of professional experience
- M.S. in applied mathematics and computer science from Belarusian State University



# Investment Team

## **Yu (Richard) Wang, CFA, FRM – Vice President, Lead Analyst, Integration**

- 20 years of professional experience
- M.B.A. from the University of Chicago Booth
- M.S. in computer science from Cornell University
- B.S. in computer science from National University of Singapore
- FRM and CFA charterholder

## **Shin Zhao, CFA – Vice President, Lead Analyst, Integration**

- 22 years of professional experience
- M.S. in electrical and computer engineering from the University of Massachusetts
- B.S. in physics from the University of Science and Technology of China
- CFA charterholder

## **Matthew Calder – Vice President, Senior Analyst, Investment Data Engineering**

- 27 years of professional experience
- Ph.D. in probability and mathematical statistics from Colorado State University
- B.S. in mathematics and statistics from the University of Wisconsin

## **Chong Chen – Vice President, Senior Analyst, Integration**

- 10 years of professional experience
- M.A. in mathematics of finance from Columbia University
- M.S. in economics from Shanghai Jiao Tong University
- B.S. in finance and mathematics from Wuhan University

## **Rei Cheong, CFA – Vice President, Senior Analyst, IPD**

### **Acadian Asset Management (Singapore) Pte Ltd**

- 21 years of professional experience
- Masters in Business Administration from the Singapore Management University
- Graduate Diploma in Financial Management from the Singapore Institute of Management
- Bachelor of Electrical Engineering from the National University of Singapore
- CFA charterholder

## **Eric Guenterberg – Vice President, Senior Analyst, Implementation**

- 26 years of professional experience
- M.S. in electrical engineering from University of Texas at Dallas
- B.S. in electrical engineering from University of California, Los Angeles

## **Soichi Hayashi – Vice President, Senior Analyst, Implementation**

- 24 years of professional experience
- B.S. in computer science and physics from Henderson State University

## **Shi He – Vice President, Senior Analyst, Integration**

- 7 years of professional experience
- M.S. in data science from Worcester Polytechnic Institute
- B.S. in computer science from Hubei University of Police, China

## **Michael Kelsey – Vice President, Senior Analyst, Implementation**

- 23 years of professional experience
- M.B.A. from Northeastern University
- B.S. from Babson College

## **Anthony King – Vice President, Senior Analyst, IPD**

- 25 years of professional experience
- M.S. in computer science from Boston University
- B.S. in management science and information systems from The Pennsylvania State University

## **Anna Lang, CFA – Vice President, Senior Analyst, IPD**

- 13 years of professional experience
- M.B.A. from Boston University
- B.S. in accounting from the International Slavic University
- CFA charterholder and a member of CFA Society Boston

## **Zhenan (Micky) Li, CFA – Vice President, Senior Analyst, IPD**

- 14 years of investment experience
- M.S. in economics from Boston University
- B.S. in international business and trade from ShanDong University of Science & Technology
- B.S. in business management and administration from Cambridge College
- CFA charterholder and member of CFA Society Boston

## **Guy Mann – Vice President, Senior Analyst, Implementation**

- 22 years of professional experience
- B.S. in computer science from Worcester Polytechnic Institute

## **David Meadows – Vice President, Senior Analyst**

- 16 years of professional experience
- B.Sc. in computer science from Newcastle University

## **Aashir Naqvi – Vice President, Senior Analyst, Implementation**

- 6 years of professional experience
- B.S. in industrial engineering from Northeastern University

## **Diego Torres Patino, Ph.D. – Vice President, Senior Analyst, Implementation**

- 10 years of investment experience
- Ph.D. in economics from Stanford University
- B.S. degrees in industrial engineering and in economics from Instituto Tecnológico Autónomo de México

## **Sam Rogers – Vice President, Senior Analyst, Integration**

- 8 years of professional experience
- B.A. in economics from The University at Buffalo

# Investment Team

## **Alagappan Solaiappan – Vice President, Senior Analyst, Data Engineering**

- 20 years of professional experience
- M.E. in engineering from Anna University
- B.E. in engineering from Madurai Kamaraj University

## **Carl Thunman – Vice President, Senior Analyst, Implementation**

- 14 years of professional experience
- B.S. in engineering and computer science from Princeton University

## **Shikun (George) Xue, CFA – Vice President, Senior Analyst, Integration**

- 16 years of professional experience
- M.A. in finance from Peking University
- B.A. in economics and B.S. in mathematics from Wuhan University
- CFA charterholder

## **Jason Withrow – Vice President, Senior Analyst, Integration**

- 28 years of professional experience
- Member of Acadian's Diversity & Inclusion Forum
- B.A. in computer science from the University of Rhode Island

## **Ted Zhang, CFA – Vice President, Senior Analyst, IPD**

- 19 years of professional experience
- M.S. in finance from Bentley University
- B.S. accounting from Bentley University
- CFA charterholder and a member of CFA Society Boston

## **Jian Du- Vice President, Senior Trader, Implementation**

### **Acadian Asset Management (Australia) Limited**

- 13 years of professional experience
- Masters in Finance from London Business School
- Bachelor of Engineering from The University of Melbourne

## **Benjamin Hutchens, CAIA – Vice President, Senior Trader, Implementation**

- 18 years of professional experience
- M.S. in investment management from Boston University
- B.A. in international affairs and political science from Northeastern University
- CAIA charterholder

## **Jason Littlefield – Vice President, Senior Trader, Implementation**

- 20 years of professional experience
- M.S. in finance from Northeastern University
- B.S. in business administration, with a dual concentration in accounting and marketing, from Northeastern University

## **Udaiy Ogirala – Vice President, Senior Trader, Multi-Asset**

- 25 years of professional experience
- B.A. in English from University of Rochester

## **Sean Paylor – Vice President, Senior Trader, Implementation**

- 19 years of professional experience
- B.A. in sociology from Princeton University

## **Gregory Spyropoulos, CFA – Vice President, Credit Trader, Implementation**

- 22 years of professional experience
- B.S in finance from Bentley College
- CFA charterholder

## **Jianing Duan – Assistant Vice President, Associate Portfolio Manager, Research**

- 7 years of professional experience
- Ph.D. in mathematical finance from Boston University
- MSc in financial mathematics from University of Chicago
- BSc in applied mathematics from Peking University

## **Eric Huang – Assistant Vice President, Associate Portfolio Manager**

- 9 years of professional experience
- B.S. in operations research and financial engineering from Princeton University

## **Jerry Yu, Ph.D., CFA – Assistant Vice President, Associate Portfolio Manager, ESG**

- 5 years of investment experience
- Ph.D. in political science and scientific computing from the University of Michigan
- M.A. in statistics from the University of Michigan
- CFA charterholder and a member of the CFA Society Boston

## **Anh Huynh – Assistant Vice President, Senior Analyst, Integration**

- 11 years of professional experience
- M.Sc. in mathematics from the University of Washington
- B.Sc. in mathematics from MIT

## **Steven Wang – Assistant Vice President, Senior Analyst Acadian Asset Management (Australia) Limited**

- 18 years of professional experience
- Bachelor of Engineering (software engineering), First Class Honours, from the University of New South Wales
- Bachelor of Commerce (finance) from the University of New South Wales

## **Rajasekar (Raj) Karuppiah – Assistant Vice President, Data Engineer**

- 19 years of professional experience
- B.E. in electrical and electronics engineering from Anna University, Chennai, India

## **Siyu Chen – Assistant Vice President, Analyst, IPD**

- 6 years of professional experience
- M.S. in management and finance from Case Western Reserve University
- B.S. in economics from Beihang University

# Investment Team

## **Ian Chong, CFA – Assistant Vice President, Analyst, IPD**

### **Acadian Asset Management (Singapore) Pte Ltd**

- 8 years of professional experience
- Master of IT in business (artificial intelligence) from Singapore Management University
- M.S. in applied finance from Singapore Management University
- Specialist diploma in data science (artificial intelligence) from Singapore Polytechnic
- Bachelor of Business and Commerce from Monash University
- CFA charterholder

## **Jacob Hall – Assistant Vice President, Analyst, IPD**

- 6 years of professional experience
- B.A. in business, entrepreneurship, and organizations from Brown University

## **Shirley Lu – Assistant Vice President, Analyst**

- 9 years of investment experience
- M.S. in finance from MIT
- B.Econ. from Shanghai Jiao Tong University

## **Kunbo Wang – Assistant Vice President, Analyst, Research**

- 4 years of investment experience
- Ph.D. in applied math and statistics from Johns Hopkins University
- M.Sc. in financial mathematics from Johns Hopkins University



# APPENDIX

# Hypothetical Disclosure

*Acadian is providing hypothetical performance information for your review as we believe you have access to resources to independently analyze this information and have the financial expertise to understand the risks and limitations of the presentation of hypothetical performance. Please immediately advise if that is not the case.*

*Hypothetical performance results have many inherent limitations, some of which are described below. No representation is being made that any account will or is likely to achieve profits or losses similar to those shown. In fact, there are frequently sharp differences between hypothetical performance results and the actual performance results subsequently achieved by any particular trading program.*

*One of the limitations of hypothetical performance results is that they are generally prepared with the benefit of hindsight. In addition, hypothetical trading does not involve financial risk, and no hypothetical trading record can completely account for the impact of financial risk in actual trading. For example, the ability to withstand losses or to adhere to a particular trading program in spite of trading losses are material points which can also adversely affect actual trading results. There are numerous other factors related to the markets in general or to the implementation of any specific trading program which cannot be fully accounted for in the preparation of hypothetical performance results and all of which can adversely affect actual trading results.*

# Annual Performance Disclosure

## Emerging Markets Equity Composite

	Composite Return (%)	Composite Return (%)	Benchmark Return (%)	Dispersion of Returns Within Composite (%)	Three-Year ex-Post Standard Deviation of Absolute Gross Returns		Number of Portfolios in Composite	Assets In Composite (\$MMs)	Total Firm Assets Under Management (\$MMs)
					Composite	Benchmark			
2014	2.6	1.6	-2.2	1.4	15.7	15.0	29	18,467	70,339
2015	-16.0	-16.8	-14.9	1.4	13.6	14.1	28	13,803	66,834
2016	14.4	13.3	11.2	0.7	15.4	16.1	28	14,867	74,174
2017	39.3	38.0	37.3	1.6	15.2	15.4	28	20,910	96,765
2018	-17.4	-18.3	-14.6	0.8	15.0	14.6	28	17,421	85,338
2019	18.0	16.9	18.4	1.0	14.9	14.2	30	19,615	101,232
2020	13.5	12.4	18.3	1.2	19.6	19.6	29	19,336	107,229
2021	8.5	7.4	-2.5	1.6	18.3	18.3	28	19,386	116,160
2022	-19.8	-20.6	-20.1	1.7	20.9	20.3	25	13,589	92,796
2023	22.8	21.6	9.8	1.5	18.0	17.1	25	15,372	102,930

Performance Inception: January 1, 1994. This composite was created on: February 1, 1994. All figures stated in USD.

Acadian Asset Management claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. Acadian Asset Management has been independently verified for the periods January 1, 1994 through December 31, 2023<sup>1</sup>. A copy of the verification report is available upon request. 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. Verification does not provide assurance on the accuracy of any specific performance report. Reference to the benchmark is for comparative purposes only and is not intended to indicate that the composite will contain the same investments as the benchmark. Investors have the opportunity for losses as well as profits. **Past performance is no guarantee of future returns.** Acadian Asset Management is an investment adviser specializing in global equity management. Acadian Asset Management is defined to include assets managed by Acadian Asset Management LLC, an investment adviser registered with and regulated by the United States Securities and Exchange Commission, as well as assets managed by its wholly-owned affiliates, Acadian Asset Management (Australia) Limited (ABN 41 114 200 127), Acadian Asset Management Singapore Pte Ltd, (Registration Number: 199902125D) is licensed by the Monetary Authority of Singapore, and Acadian Asset Management (UK) Limited, authorized and regulated by the Financial Conduct Authority of the United Kingdom. On June 30, 2015, Acadian acquired the assets of Acadian's Australian office.

**Methodology:** Returns are net of foreign withholding taxes on dividends, interest, and capital gains. Since January 1, 2010 Acadian's methodology was augmented to produce a more accurate gross return figure by eliminating modest cash flows such as securities lending income and custodial fees which are regarded as independent of the investment management process; the reinvestment of all income and trading expenses continue to be included. Monthly composite results are asset-weighted by beginning-of-month asset values of member portfolios which are geometrically linked to arrive at the annual composite return. Net-of-fee performance is calculated on a monthly basis by deducting a model management fee equal to 1/12 of the highest annual management fee listed in the standard fee schedule for accounts shown below. The standard fee schedule for accounts managed with this product is 1% on the first \$50 million, 0.75% on the next \$50 million, 0.65% on the next \$50 million, and 0.5% thereafter. The standard fee schedule was changed on 10/1/2012, and the new fee has been used to calculate the net-of-fees performance for the entire history of the composite. The combined, all-in maximum fee that includes management and operating expenses for the Acadian Emerging Markets Equity CIT, which is included in the composite, is 0.85% on all assets. The standard management fee schedule and total expense ratio for the Acadian Emerging Markets Equity Fund, which is included in the composite, are 0.75% on all assets and 0.91%, respectively. The standard management fee schedule and total expense ratio for the Acadian Emerging Markets Equity II Fund, which is included in the composite, are 0.75% on all assets and 0.90%, respectively. Management fees may vary according to the range of services provided, investment performance, and the amount of assets under management. Constituent portfolios are included from the first full month after inception to the present or the last full month prior to cessation of the client relationship with the firm. For example, an account that opened January 15, 2019 will be included beginning February 1, 2019. An account that terminated February 12, 2019 will be included through January 31, 2019. Policies for valuing investments, calculating performance, and preparing GIPS reports are available upon request.

**Dispersion and Standard Deviation:** Acadian's broad definitions are mainly the product of a highly customized process that may result in modest differences with regards to portfolio characteristics among constituents. All accounts managed with directly comparable investment objectives are included, though it's possible for members to utilize slightly different benchmarks in optimization and reporting. Although at times dispersion among constituents may be high, the long-term forecast for each portfolio is consistent with the overall composite. The 'Dispersion' statistic presented above uses gross of fee returns and is an annual, asset-weighted standard deviation calculation performed only on those portfolios who have been members for the entire calendar year. These figures are not applicable if there is only one portfolio in the composite for the full year. Thirty-six months are required to calculate the 'Three Year ex-Post Standard Deviation' statistic. These figures are not applicable if thirty-six months of composite returns are not available.

**Composite Description:** This composite invests in emerging equity markets with no developed markets exposure. Complete lists of the firm's composite descriptions, limited distribution pooled fund descriptions, and broad distribution funds are available upon request.

**Benchmark Description:** The benchmark for the composite is MSCI Emerging Markets wherein a combination of gross and net (of dividends and withholding taxes) is used since the net version isn't publicly available until January 2001. The net version of MSCI Emerging Markets was retroactively applied effective July 1, 2012. The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets.

Index Source: MSCI Copyright MSCI 2025. All Rights Reserved. Unpublished. PROPRIETARY TO MSCI.

<sup>1</sup>Ashland Partners verified Acadian's GIPS Compliance claim through March 31, 2017. ACA Compliance Group acquired Ashland's GIPS Verification unit and provided subsequent verifications.

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GLOBAL AFFILIATES

Boston London Singapore Sydney

ACADIAN-ASSET.COM

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# ARGA Investment Management, LP

## Emerging Markets Equity

4Q 2024

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Jack Coan  
+1.415.261.7237  
jcoan@argainvest.com



## Biographies

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### **A. Rama Krishna, CFA** *Founder and Chief Investment Officer*

Mr. Krishna has over 30 years' experience in managing global equities. Before founding ARGA in 2010, Mr. Krishna was President - International, Managing Principal, Member of Executive Committee, and Portfolio Manager at Pzena Investment Management in New York. In addition to launching and managing the US Large Cap Value strategy in his early years at Pzena, he led the development of the International Value and Global Value strategies, and co-managed the Emerging Markets Value strategy. Previously, Mr. Krishna was at Citigroup Asset Management, where he was Chief Investment Officer and Head of Institutional and International. He also represented the asset management business on the Citigroup Management Committee and managed the Global Emerging Markets Equity strategy. Before that, Mr. Krishna was Director of International Equity Research, Portfolio Manager - Global/International Equities, and Chief Investment Officer - Emerging Markets Equities at AllianceBernstein in New York, London and Tokyo. Earlier, he worked at Credit Suisse First Boston in New York, Tokyo and Singapore, first as Equity Research Analyst and later as Chief Investment Strategist and Director - Equity Research. Mr. Krishna earned a joint M.B.A./M.A. in Asian Studies with a Japan Specialization from the University of Michigan in 1987 and a B.A. (Honors) in Economics from St. Stephen's College, The University of Delhi in 1984. He received University of Michigan's Prize Fellowship in Japanese Business and University Fellowship, and Middlebury College Scholarship.

### **John (Jack) Coan** *Director - Client Relations*

Before joining ARGA in 2023, Mr. Coan was Director of North America Consultant Relations and Head of Institutional Client Relations at Ninety One Asset Management for 10 years. Previously, he held similar client-facing roles at Renaissance Technologies and Boston Partners Asset Management. Mr. Coan earned a B.A. in Economics from Harvard University in 1988.

## Our Philosophy

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- **Overreaction creates market anomalies**
  - Temporary stress disproportionately impacts valuations
  - As conditions normalize, valuations recover
  
- **This inefficiency is persistent and exploitable**
  - Behavioral biases drive near-term focus
  - News adds fear and uncertainty
  - Exploitation requires long-term focus and research

*Fear and uncertainty create opportunity*

## ARGA Overview

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- **Global value manager**
  - Across environments and geographies
- **Experienced investment team**
  - Business analysts
- **Global perspective**
  - Developed and emerging market locations
- **Client communication**
  - Transparent
- **Alignment of interests**
  - Employee-owned

*We bring experience and discipline to global equity investing*

## Clients (as of 12/31/2024)

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**\$18.0 billion AUM**

### Key Strategies

- Global: \$2.9B
- International: \$5.0B
- EAFE: \$1.4B
- Emerging Markets: \$8.7B

### 154 Global Institutional Clients

- Public pensions and related\*: \$6.5B
- Sub-advisory: \$8.1B
- Family office, wealth management, high net worth: \$2.0B
- Corporate ERISA, SWF, union pensions: \$0.6B
- Endowment & foundation: \$0.8B

*17 client portfolios representing \$665 million in AUM are derived from Manager of Manager organizations: 14 public pension portfolios - \$586 million, 1 corporate pension portfolio - \$39 million, 1 foundation portfolio - \$23 million, and 1 union pension portfolio - \$17 million. \*Related refers to entities associated with specific public pension plans and designated to provide investment services.*

*Source: ARGA Data. Numbers/data are unaudited, as is, subject to rounding, subject to change without notice and presented for information purposes only. See [Risks and Limitations](#) and [Material Disclosures](#).*

## Team Composition (as of 12/31/2024)

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### Total: 150

- By Function
  - Research: 47
  - Climate Transition: 7
  - ESG: 5
  - Operations: 31
  - Administration: 11
  - Compliance: 7
  - Client Relations/Service: 21
  - Information technology: 21
  
- By Location
  - Stamford: 52
  - India: 94
  - UK: 4

## Investment Leadership Depth

	Leadership Roles	# Years Experience	# Years at ARGA
Bryan Cheng	GBA, PCT	21	15
John DeTore, CFA	Director - Strategic R&D	42	4
Haofei Ge	GBA, PCT	11	11
Irina Gheorghe, CFA	Head of ESG	16	8
Philip Gutfleish	GBA, Training/Mentoring	40	7
Takashi Ito, CFA	GBA, PCT	29	12
Vipul Kodan, FRM	Associate Director of Research, GBA	16	15
A. Rama Krishna, CFA	Chief Investment Officer, GBA, PCT	38	15
Sujith Kumar	Research Manager, GBA, PCT	16	15
Monish Mahurkar	Head of Climate Transition	39	2
Robert Mitchell, Ph.D.	GBA, PCT	36	15
Steven Morrow, CFA	Director of Research, GBA, PCT	32	14

GBA: Global Business Analyst; PCT: Portfolio Construction Team

## Investment Team\* (as of 12/31/2024)

### Global Business Analysts (GBA) – 17

- Excellence in models & forecasts

### Senior Research Associates (SRA) – 13

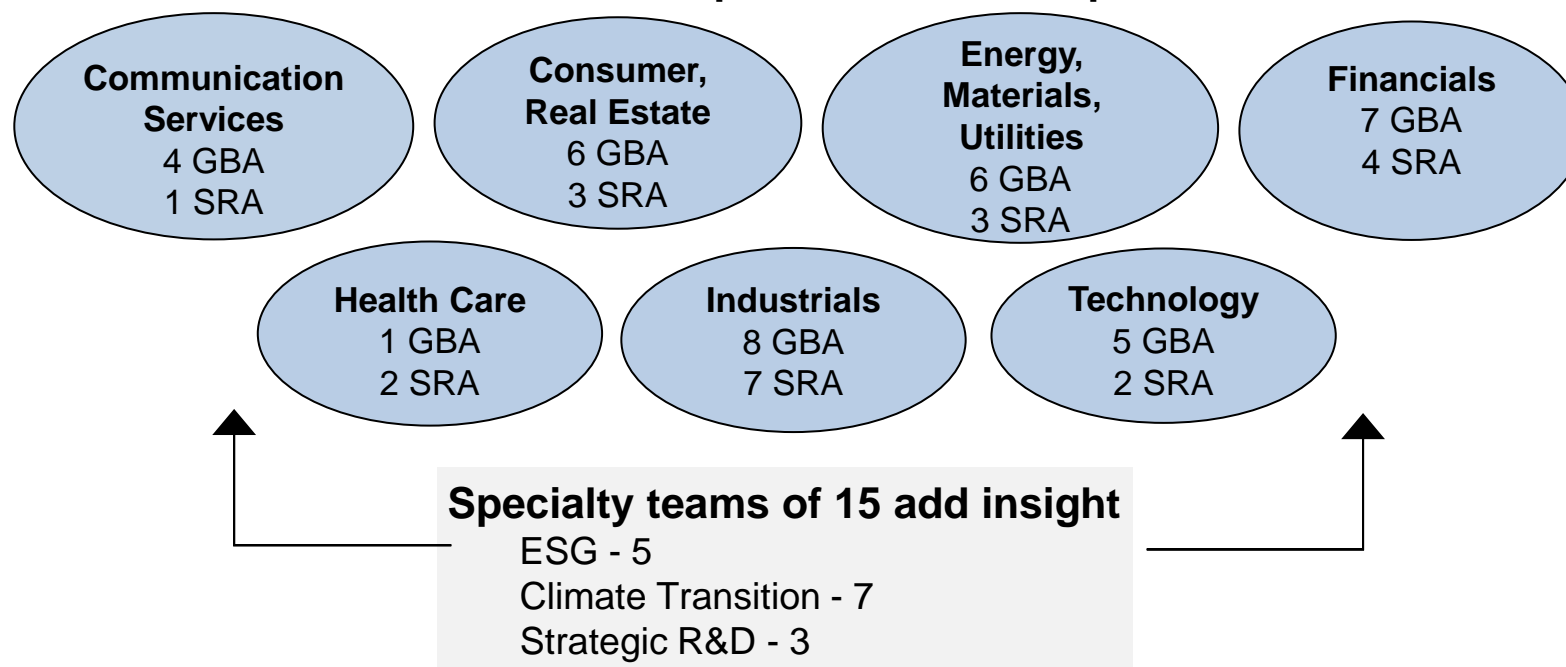
- Supervised coverage

### Research Associates – 14

- No coverage, 2-3 year role

\*Includes 7 Mandarin speakers

### Sector Pods – Expand breadth & depth



Source: ARG A Data. Numbers/data are unaudited, as is, subject to change without notice and presented for information purposes only. See [Risks and Limitations](#) and [Material Disclosures](#).

## Our Investment Approach: Valuation

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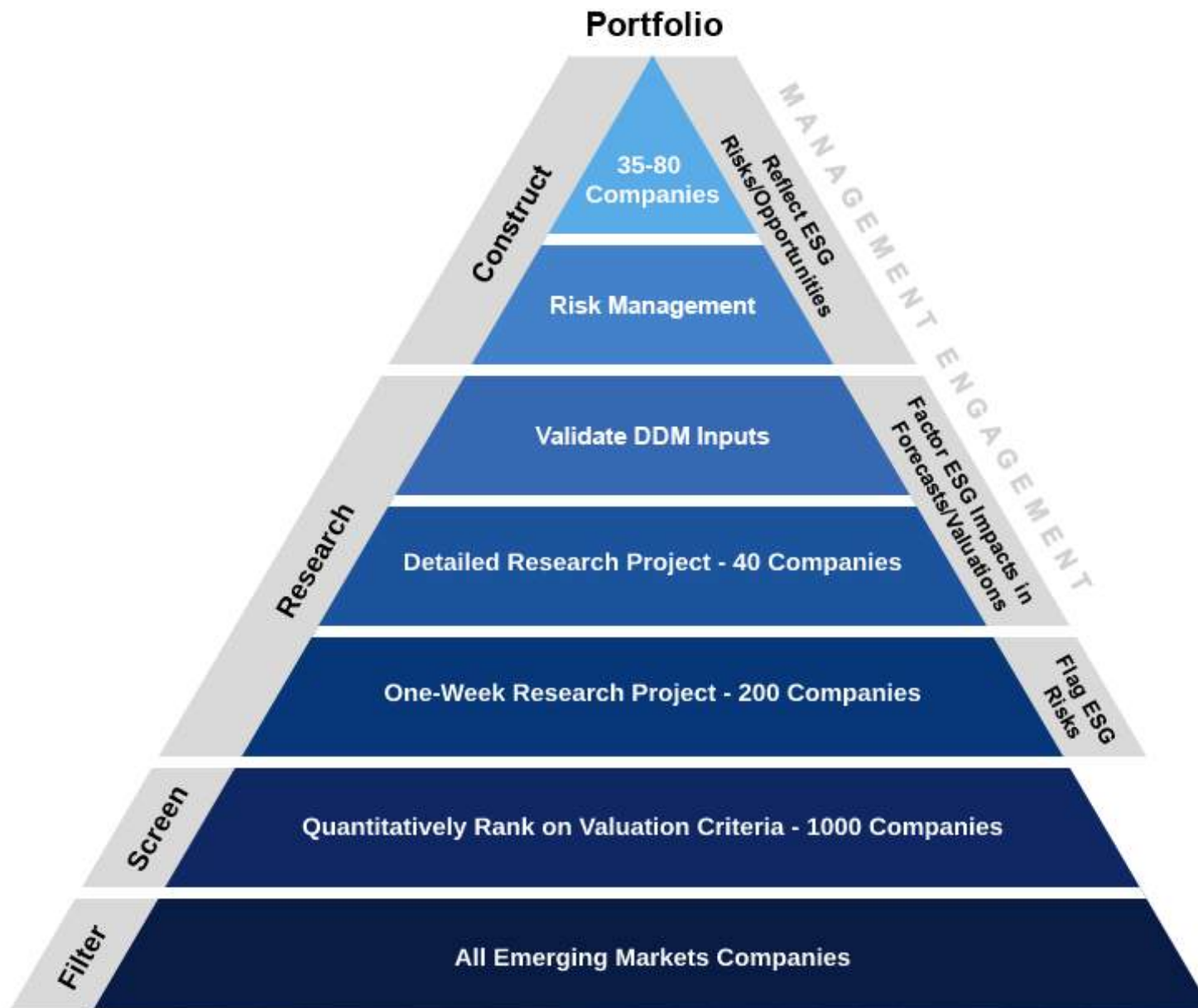
### **Invest in undervalued businesses based on fundamental research and present value**

- Investor overreaction results in exploitable anomalies
- Stock screens identify potentially undervalued businesses
- DDM measures base and stress undervaluation
- Consistent industry/company analysis drives DDM inputs
- Adjust for company quality, ESG, economic risks

***We remove emotion from investing***



# Disciplined Investment Process



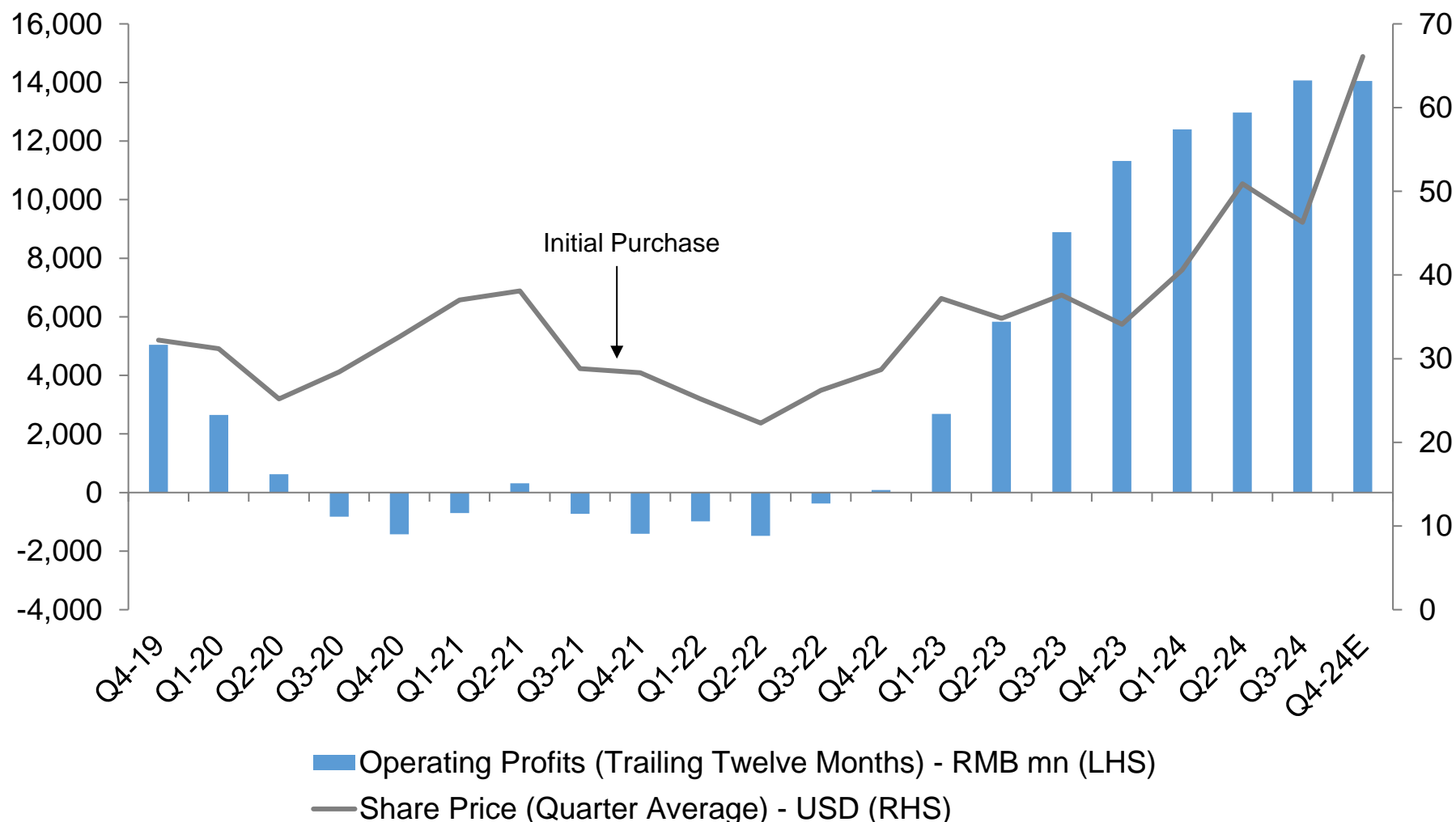
Source: ARGA Analysis. See [Risks and Limitations](#) and [Material Disclosures](#).

## ESG Experience

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- **ARGA Global ESG Scoring Framework**
  - Flags ESG risks & opportunities
- **Process integration**
  - Assess ESG in company DDM and Global Industry Models
- **Company engagement**
  - Engage on ESG outcomes
- **Organizational commitment**
  - ESG and Climate Transition teams support research

## Trip.com Case Study



Source: S&P Capital IQ, Company Reports, ARGA Analysis. Any referenced companies are selected based on non-performance-based criteria and presented for illustrative and information purposes only to provide insights into ARGA's process. They are subject to change at any time without notice, may not be representative of current holdings and are subject to risk. It should not be assumed that an investment in any referenced company, or in accounts holding any referenced company, was or will be profitable or that any investment decision we make in the future will be profitable. Third-party data is derived from sources ARGA believes to be reliable but has not been independently confirmed and ARGA expressly disclaims any liability for any errors or omissions in such third-party data. For illustrative purposes only. Charts/graphs have inherent limitations. See [Risks and Limitations](#) and [Material Disclosures](#).

# Portfolio Construction and Sell Discipline

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## Portfolio Construction

- Valuation: upside vs. downside
- Industry and region confirmation
- Confidence in long-term earnings power

## Risk Management

- Stress scenarios
- Risk buckets
- Diversification: currency, industry, geography
- Max 5% in any company at cost, 8% at market
- Max 25% in any industry at cost, 35% at market

## Portfolio Monitoring

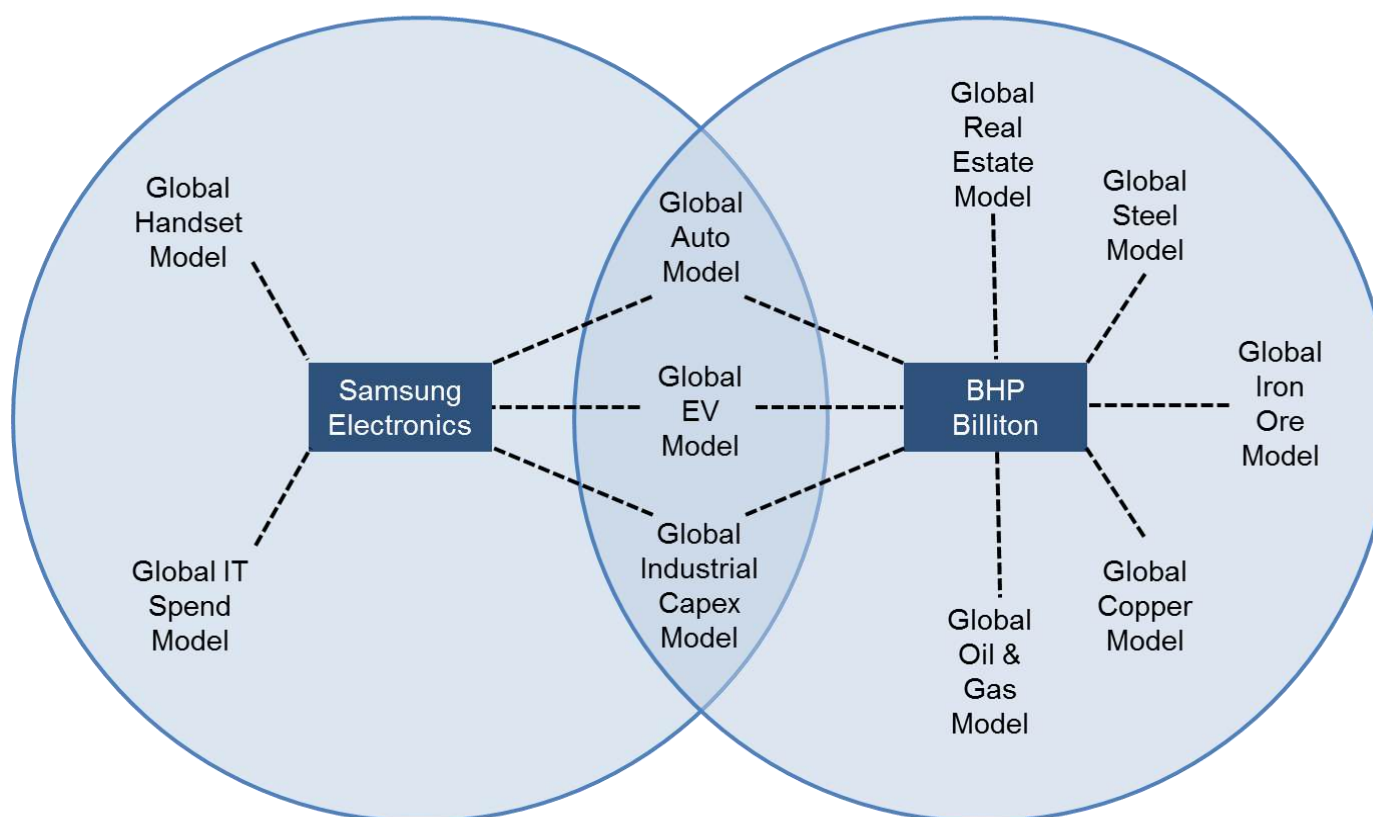
- Daily update of company metrics
- Emphasis on valuation and fundamentals
- Ongoing dialogue with research team on changes in perspective

## Sell Discipline

- Bottom half of universe on valuation
- Alternatives more attractively valued

## ARGA Global Industry Models: Research Advantage

- Insights across industries, geographies, companies
- Consistency in forecasts and valuations
- Global benchmark for assumptions, trends, ESG



Source: ARGA Analysis. Any referenced companies are selected based on non-performance-based criteria and presented for illustrative and information purposes only to provide insights into ARGA's process. They are subject to change at any time without notice, may not be representative of current holdings and are subject to risk. It should not be assumed that an investment in any referenced company, or in accounts holding any referenced company, was or will be profitable or that any investment decision we make in the future will be profitable. See [Risks and Limitations](#) and [Material Disclosures](#).

## ARGA Differentiation: People and Technology

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- **Analyst longevity**
  - Industry expertise
  - Global collaboration
  
- **ARGA technology**
  - Technology does not replace judgement – it augments it
  - Comprehensive database system
    - Stores and structures institutional knowledge
    - Applies relationships and algorithms

# ARGA Firmwide ESG and DEI Initiatives

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## ARGA Environmental Initiatives

- Aim to be carbon neutral by 2040
- Actions to improve energy efficiency, reduce water usage, limit waste
- Promote eco-friendly management practices in buildings housing ARGAs offices
- Encourage employees to control emissions from transportation
- Engage with vendors on emission reduction

## ARGA Social/Diversity Initiatives

- ARGAs is a certified Minority Business Enterprise
- A signatory of the CFA Institute Diversity, Equity, and Inclusion Code
- Promote an inclusive and collaborative corporate culture
- Strive to increase diversity amongst employees:
  - 23% minority\*
  - 25% female
  - 10 nationalities
  - 16+ languages spoken
- Recruitment initiatives to improve DEI (e.g. Historically Black Colleges and Universities)
- Advertise open positions on diversity job boards, where possible

*\*ARGA defines as minority, employees who are classified as such in the country in which they reside.*

*Source: ARGAs Data. Numbers/data are unaudited, as is, subject to change without notice and presented for information purposes only. See [Risks and Limitations](#) and [Material Disclosures](#).*

## Appendices

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- Portfolio Characteristics
- Results
- ARGA Firmwide ESG and DEI Initiatives



## Portfolio Characteristics

As of 12/31/2024

	<b>Emerging Markets</b>
P/E IBES FY1	9.5x
Price/Book	1.3x
Return on Equity—5 Yr Avg	15.7%
Dividend Yield	3.4%
Market Cap—Wtd Avg	\$111.5B
Market Cap—Median	\$14.4B
Number of Holdings	55
Active Share	78%

*Source: ARGA Data. Portfolio characteristics are derived from a representative account selected based on objective, non-performance-based criteria, taking into account consistently the weighting of every holding in the representative account as of the last trading day of the previous, full calendar month. They are subject to change without notice, may not be current, and are subject to risk. Portfolio characteristics may not be the same across all accounts; individual portfolios may vary. It should not be assumed that an investment in accounts with these characteristics was or will be profitable. The representative account is the first account managed to the strategy. See [Risks and Limitations](#) and [Material Disclosures](#).*

## Top Ten Holdings

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As of 12/31/2024

	<b>Emerging Markets</b>
TSMC	5.1%
Gree	4.7%
Tencent	4.5%
Banco Bradesco	3.3%
Ping An	3.2%
Yageo	3.0%
HDFC Bank	2.9%
China Overseas Land & Investment	2.8%
MTN Group	2.6%
Samsung Electronics	2.6%

*Source: ARGA Data. Referenced holdings are derived from a representative account selected based on objective, non-performance-based criteria, taking into account consistently the weighting of every holding in the representative account as of the last trading day of the previous, full calendar month. They are subject to change without notice, may not be current, and are subject to risk. They may not represent all the securities purchased, sold or recommended for client accounts; individual portfolios may vary. It should not be assumed that an investment in these securities, or in accounts with these securities, was or will be profitable. The representative account is the first account managed to the strategy. See [Risks and Limitations](#) and [Material Disclosures](#).*

## Sector Exposure

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As of 12/31/2024

	<b>Emerging Markets</b>
Communication Services	7%
Consumer Discretionary	24%
Consumer Staples	6%
Energy	2%
Financials	30%
Health Care	0%
Industrials	3%
Information Technology	17%
Materials	8%
Real Estate	3%
Utilities	0%

*Source: ARGA Data. Referenced sector weightings are derived from a representative account selected based on objective, non-performance-based criteria, taking into account consistently the weighting of every holding in the representative account as of the last trading day of the previous, full calendar month. They are subject to change without notice, may not be current, and are subject to risk. They may not represent all the exposures recommended for client accounts; individual portfolios may vary. It should not be assumed that an investment in these exposures, or in accounts with these exposures, was or will be profitable. The representative account is the first account managed to the strategy. See [Risks and Limitations](#) and [Material Disclosures](#).*

# Country Exposure

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As of 12/31/2024

## Emerging Markets

Brazil	8%	South Africa	7%
China	37%	South Korea	12%
Hong Kong	10%	Taiwan	10%
Hungary	1%	Thailand	5%
India	6%	United States	2%
Peru	2%		

*Source: ARGA Data. Referenced country exposures are derived from a representative account selected based on objective, non-performance-based criteria, taking into account consistently the weighting of every holding in the representative account as of the last trading day of the previous, full calendar month. They are subject to change without notice, may not be current, and are subject to risk. They may not represent all the exposures recommended for client accounts; individual portfolios may vary. It should not be assumed that an investment in these exposures, or in accounts with these exposures, was or will be profitable. The representative account is the first account managed to the strategy. See [Risks and Limitations](#) and [Material Disclosures](#).*

## Results (as of 12/31/2024)

### Emerging Markets Equity Composite

(Inception July 1, 2013)	QTD	YTD	1 Year	3 Year	5 Year	10 Year	ITD
Gross <sup>1</sup>	-8.9%	8.6%	8.6%	8.2%	8.6%	8.8%	7.5%
Net <sup>2</sup>	-9.0%	7.5%	7.5%	5.9%	6.5%	7.0%	5.8%
MSCI Emerging Markets (Net)	-8.0%	7.5%	7.5%	-1.9%	1.7%	3.6%	3.6%
MSCI Emerging Markets Value (Net)	-9.2%	4.5%	4.5%	0.2%	2.0%	2.8%	2.7%

<sup>1</sup> Returns are unaudited, do not reflect the payment of investment advisory fees, and are net of withholding taxes on dividends, interest income, and capital gains, and transaction costs and expenses. Effective October 2023, the ARGA Emerging Markets Equity Composite includes a collective investment trust that charges an all-in fee, which includes investment advisory fees and fund expenses. Gross returns for the collective investment trust are net of transaction costs but do not reflect the payment of such all-in fees.<sup>2</sup> Returns are unaudited, net of withholding taxes on dividends, interest income, and capital gains, and transaction costs, expenses and investment advisory fees, and based on the maximum possible combined management and performance fees. All returns include the reinvestment of net dividends and other income, and represent past returns, which do not guarantee future returns. Returns for periods of more than one year are annualized. Returns are as is, subject to rounding, subject to change and for information purposes only. Current returns may be lower or higher than presented returns. **PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.**

See [Risks and Limitations](#) and [Material Disclosures](#).

# Composite Disclosures

## Emerging Markets Equity Composite

Year End	Gross Return <sup>1</sup>	Net Return <sup>2</sup>	MSCI EM	Number of Portfolios	Internal Dispersion	Composite Annualized Standard Deviation (gross) <sup>3</sup>	Benchmark Annualized Standard Deviation <sup>3</sup>	Total Composite Assets	Total Firm Assets
2024	8.6%	7.5%	7.5%	13	0.8% <sup>7</sup>	19.1%	17.5%	\$8,536.5M	\$18,004.7M
2023	17.5%	15.7%	9.8%	12	0.8% <sup>7</sup>	18.5%	17.1%	\$6,769.8M	\$13,625.4M
2022	-0.6%	-4.4%	-20.1%	10	1.1% <sup>7</sup>	23.7%	20.3%	\$4,437.6M	\$10,326.7M
2021	11.1%	8.7%	-2.5%	10	2.0% <sup>7</sup>	21.6%	18.3%	\$2,982.6M	\$8,615.5M
2020	7.2%	6.1%	18.3%	8	1.9% <sup>7</sup>	21.8%	19.6%	\$3,372.0M	\$7,815.8M
2019	19.3%	17.9%	18.4%	7	0.5% <sup>7</sup>	13.1%	14.2%	\$1,727.8M	\$4,973.1M
2018	-8.4%	-10.0%	-14.6%	6	0.8% <sup>7</sup>	15.8%	14.6%	\$956.1M	\$3,617.1M
2017	38.7%	37.0%	37.3%	6	N/A <sup>5</sup>	20.0%	15.4%	\$858.7M	\$4,036.7M
2016	24.9%	23.4%	11.2%	5	N/A <sup>5</sup>	21.2%	16.1%	\$302.5M	\$2,722.3M
2015	-18.7%	-19.7%	-14.9%	5	N/A <sup>5</sup>	N/A <sup>6</sup>	N/A <sup>6</sup>	\$214.1M	\$2,168.0M
2014	-14.2%	-15.2%	-2.2%	3	N/A <sup>5</sup>	N/A <sup>6</sup>	N/A <sup>6</sup>	\$116.7M	\$2,227.4M
2013 <sup>4</sup>	15.2%	13.7%	7.7%	1	N/A <sup>5</sup>	N/A <sup>6</sup>	N/A <sup>6</sup>	\$2.5M	\$2,248.8M

<sup>1</sup> Returns are unaudited, do not reflect the payment of investment advisory fees, and are net of withholding taxes on dividends, interest income, and capital gains, and transaction costs and expenses. Effective October 2023, the ARGA Emerging Markets Equity Composite includes a collective investment trust that charges an all-in fee, which includes investment advisory fees and fund expenses. Gross returns for the collective investment trust are net of transaction costs but do not reflect the payment of such all-in fees.<sup>2</sup> Returns are unaudited, net of withholding taxes on dividends, interest income, and capital gains, and transaction costs, expenses and investment advisory fees, and based on the maximum possible combined management and performance fees. All returns include the reinvestment of net dividends and other income, and represent past returns, which do not guarantee future returns. Returns for periods of more than one year are annualized. Returns are as is, subject to rounding, subject to change and for information purposes only. Current returns may be lower or higher than presented returns.<sup>3</sup> Three year standard deviation is calculated using gross returns.<sup>4</sup> Returns are for the period from July 1, 2013 through December 31, 2013.<sup>5</sup> The internal dispersion is not presented because there were 5 or fewer accounts in the composite for the full year.<sup>6</sup> The three-year annualized standard deviation is not presented because 36 monthly returns are not available.<sup>7</sup> ARGA calculates dispersion using the equal-weighted standard deviation of the annual gross returns for composites that include 6 or more portfolios for the entire year.

# Composite Disclosures

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## Compliance Statement:

*ARGA Investment Management, LP (“ARGA”) claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. ARGA has been independently verified for the period July 1, 2010 to December 31, 2023. 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 ARGA Emerging Markets Equity Composite has been examined for the period July 1, 2013 to December 31, 2023. Verification and performance examination reports are available upon request.*

## Firm and Composite/Benchmark Information:

*ARGA is an investment adviser registered with the United States Securities and Exchange Commission. ARGA is also registered in certain provinces in Canada as an adviser in the category of portfolio manager. ARGA manages global, international, and emerging markets equity portfolios for institutional and qualified investors.*

## ARGA Emerging Markets Equity Composite

*The ARGA Emerging Markets Equity Composite was created on July 1, 2013 with an inception date of July 1, 2013. The composite includes all tax-exempt and taxable portfolios utilizing primarily a fully invested equity allocation to mid- to large-cap emerging markets companies. The benchmark is the MSCI Emerging Markets Index (USD) and is net of withholding taxes on dividends, interest income, and capital gains. The benchmark consists of 24 emerging market country indices. The composite includes all discretionary accounts managed to the ARGA Emerging Markets Equity Strategy. The composite includes a private fund, a UCITS fund, a collective investment trust, separate managed accounts and an investment company registered under the Investment Company Act of 1940.*

*A list of composite descriptions, limited distribution pooled fund descriptions, and broad distribution pooled funds is available upon request.*

*The index/benchmark comparisons herein are provided for information purposes only and should not be used as the basis for making an investment decision. There are significant differences between client accounts and the indices/benchmarks referenced herein including, but not limited to, risk profile, liquidity, volatility and asset composition.*

## Performance Calculations & Fees:

*Valuations and returns are expressed in US Dollars. Results are based on fully discretionary accounts under management, including those accounts no longer with the firm for the time period managed by the firm. Policies for valuing investments, calculating performance and preparing GIPS Reports are available upon request.*

## Composite Disclosures

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*The investment advisory fee schedule for the ARGA Emerging Markets Equity Composite is based on a percentage of assets: 1% for assets up to \$100 million and 0.70% for assets greater than \$100 million. Performance-based fee schedules are also available. The investment advisory fee for Class A interests in the ARGA Emerging Markets Equity Fund (the "Fund") is based on a percentage of assets, as described above. The fee for Class B interests is 70% of base management fee plus 15% of outperformance over the benchmark. Fund expenses (asset-based custodian, trustee and admin fees) are capped at 25 bps; other expenses (audit, legal and tax) are capped at 5 bps. Transaction costs and commissions, and contribution and redemption charges are not included in Fund and other expenses. The investment advisory fee schedule for the ARGA Emerging Markets Value Fund, an investment company registered under the Investment Company Act of 1940, is based on a percentage of assets: 0.70% for all assets. The expense ratio is 0.90%.*

*Actual investment advisory fees incurred by clients may vary.*

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*See [Risks and Limitations](#) and [Material Disclosures](#).*



## Risks and Limitations

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### Opinions and Forecasts

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### Risks of Value Investing

*Our value investment style carries certain risks. Investors could suffer losses if our assessment of market conditions, or a company’s value or prospects for exceeding earnings expectations, is inaccurate. In addition, value stocks can continue to be undervalued by the market for prolonged periods of time. While our risk management framework is designed to minimize the risk of permanent loss of capital, there can be no guarantee that this process proves effective over time. As a result, permanent loss of capital may occur.*

*While we believe our industry models add significant value to our research process, potential risks include having a framework which does not adequately capture all variables that reflect a particular company’s unique circumstances, leading to a potentially erroneous conclusion about its competitive positioning, valuation, etc.*

*Our investment process depends on high quality inputs into our valuation (DDM) models. Analysts must have in depth understanding of a company, its products, industry and cycle, competition, margins, reinvestment needs, risk factors and accounting issues in order to provide these inputs. There can be no guarantee that these inputs prove accurate over time.*

### ESG Risks

*ARGA may purchase and hold securities that present ESG risks. Evaluation of ESG factors is often subjective and ARGA may not identify or evaluate every relevant ESG factor for every investment. As a result, ARGA’s ESG evaluation may differ from evaluations made by other investment advisers and may not reflect the beliefs or values of any particular investor. A company’s ESG score is one factor considered by ARGA when determining whether to buy or sell a security. While ARGA may engage with companies on ESG/climate transition factors and related concerns as deemed appropriate, such engagement may not always yield positive outcomes and we make no representation that any change or improvement in a company’s ESG/climate transition or related issues is or was a direct result of our engagement.*

*Evaluation of ESG risks and opportunities and implementation of applicable ESG-related investment restrictions rely on availability of timely, complete and accurate ESG data reported by issuers and/or third-party research providers. ESG data is often based on estimates or assumptions. To the extent relevant data is unavailable or inaccurate, ARGA’s ability to evaluate ESG risks and opportunities and successfully implement applicable ESG-related investment restrictions may be limited or compromised.*

## Risks and Limitations

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*ARGA evaluates ESG factors that lead to potential risks or opportunities, in the same way as other financial factors. As a result, the integration of any such factor, including ESG, may lead portfolios to perform differently from those that do not integrate these factors.*

### Referenced Companies

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*Charts and graphs are presented for illustrative purposes only and contain inherent limitations, such as data completeness and availability. They are subject to differing interpretations and based on ARGA's assumptions. They may not be current, are subject to change at any time without notice and subject to risk. Charts and graphs, including any opinions or forecasts implied in such charts and graphs, should not be relied upon, in and of themselves, to make any investment decisions or reach any investment conclusions.*

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## Material Disclosures

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**PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.** *Inherent in any investment is the potential for loss. Investors could lose all or substantially all of their investment. Investing based on ARGA strategies is subject to a variety of risks described in Part 2A of ARGA’s Form ADV and in the offering memorandum with respect to any private fund for which each strategy is used.*

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## Material Disclosures

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*Any referenced benchmarks are used for comparative purposes only.*

*Any valuations and returns are expressed in US Dollars, unless otherwise indicated.*

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**EU Investors:** *This is a marketing communication within the meaning of Regulation (EU) 2019/1156 and should be read in conjunction with the prospectus of the ICAV, and the supplement and Key Investor Information Document before making any final investment decisions to invest in any ARGA UCITS fund. These documents are available free of charge from the management company to the ICAV, IQ EQ Fund Management (Ireland) Limited (the "Manager") (iqeq.com). A summary of the rights of investors and potential investors is available in the prospectus of the ICAV, in the section "IMPORTANT INFORMATION". The Manager may decide to terminate the arrangements made for the marketing of the fund in accordance with the provisions of the management agreement between the ICAV and the Manager.*

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*Any index referenced herein is used for comparative purposes only. An index cannot be invested in directly. Any composite referenced herein reflects the deduction of all fees and expenses, and reinvested dividends (different share classes may vary). A composite is significantly more concentrated in its holdings and has different region and sector weightings than the index. As a result, a composite's performance will be different from and at times more volatile than that of the index.*

*For the purposes of Article 6 of Regulation (EU) 2019/2088 on sustainability-related disclosures in the financial services sector, while ARGA considers sustainability risks in respect of ESG factors, the composite is focused on investing primarily in equity and equity linked securities of issuers (such as debentures, notes or preferred stock) that are traded on exchanges or recognised markets or over the counter, in both developed and emerging markets.*

*The fees and charges paid by any ARGA UCITS fund will reduce the return on your investment. Certain costs paid by a fund will be charged in USD and exchange rate fluctuations may cause these costs to increase or decrease when converted into your local currency.*

## Material Disclosures

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*The ARGA UCITS funds may be exposed to the creditworthiness and performance of one or more counterparties. Although the funds will strive to reduce counterparty credit risk, there is no assurance that the counterparty will not default or that the funds will not sustain losses as a result. The funds may at times invest in securities that are inherently less liquid and more difficult to sell. The funds invest in equities globally and are, therefore, exposed to fluctuations in currency exchange rates as well as unstable currencies in certain developed and emerging markets. The performance results of participatory notes may not replicate exactly the performance of the issuers that the notes seek to replicate due to transaction costs and other expenses. Investing in emerging markets involves a greater degree of risk than investments in more developed countries. The funds' success may be affected by general economic and market conditions that could adversely impact the funds' profitability or result in losses. For a full list of possible risk factors please see section entitled "Risk Factors" set on in the Prospectus and Supplement of the applicable fund.*

*The tax treatment of the gains and losses made by the investor and of distributions received by the investor depends on the individual circumstances of each investor and may imply the payment of additional taxes. Before any investment is made in a fund, investors are urged to consult with their tax advisors for a complete understanding of the tax regime which is applicable to their individual case.*

*Historical returns are no guarantee of future returns. The money placed in a fund can both increase and decrease in value and you may not get back the full invested amount.*

*The ARGA UCITS funds are domiciled in Ireland. The funds' supplement, ICAV prospectus, articles of association, annual reports, semi-annual reports and KIIDs can be obtained free of charge at [www.iqueq.com/skyline](http://www.iqueq.com/skyline) from IQ EQ Fund Management (Ireland) Limited ([iqueq.com](http://iqueq.com)) or may be requested from [ManCo@iqueq.com](mailto:ManCo@iqueq.com). The Net Asset Value per share can be requested from [ManCo@iqueq.com](mailto:ManCo@iqueq.com). The prospectus and KIID for the ARGA Global Equity Fund may be obtained in the following languages: English, German, Italian, Spanish. The prospectus and KIID for the ARGA Emerging Market Equity Fund may be obtained in the following languages: English, Norwegian. The prospectus and KIID for the ARGA European Equity Fund may be obtained in the following languages: English.*

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### Investors in Norway

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## Material Disclosures

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### Investors in the UK

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*This material constitutes a financial promotion for the purposes of the Financial Services and Markets Act 2000 (the "Act") and the handbook of rules and guidance issued from time to time by the FCA (the "FCA Rules"). This material is for information purposes only and does not constitute an offer to subscribe for or purchase of any financial instrument. ARGA UK neither provides investment advice to, nor receives and transmits orders from, persons to whom this material is communicated nor does it carry on any other activities with or for such persons that constitute "MiFID or equivalent third country business" for the purposes of the FCA Rules. All information provided is not warranted as to completeness or accuracy and is subject to change without notice. This communication and any investment or service to which this material may relate is exclusively intended for persons who are Professional Clients or Eligible Counterparties for the purposes of the FCA Rules and other persons should not act or rely on it. This communication is not intended for use by any person or entity in any jurisdiction or country where such distribution or use would be contrary to local law or regulation.*

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## Material Disclosures

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## Material Disclosures

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Introduction to Pzena:  
Our Philosophy and Process

Fourth Quarter 2024

PREPARED FOR



Contact:  
Elizabeth Tyndale  
tyndale@pzena.com  
646.344.8494



**Caroline Cai**

Managing Principal, Chief Executive Officer, Portfolio Manager, and a member of the firm’s Executive Committee. Ms. Cai is a co-portfolio manager for the Global, International, and Emerging Markets strategies, and the Financial Opportunities service. Ms. Cai became a member of the firm in 2004. Prior to joining Pzena Investment Management, Ms. Cai was a senior analyst at AllianceBernstein LLP, and a business analyst at McKinsey & Company. She earned a B.A. summa cum laude in Math and Economics from Bryn Mawr College. Ms. Cai holds the Chartered Financial Analyst® designation.



**Elizabeth Tyndale**

Principal and Co-Head of North American Distribution. Ms. Tyndale became a member of the firm in 2012. Prior to joining Pzena Investment Management, Ms. Tyndale was a senior salesperson and founding member of the U.S. office of Olivetree Securities. Prior to joining Olivetree Securities, Ms. Tyndale worked at Morgan Stanley in the Equity & Investment Banking Divisions, including as head of client strategy and head of European equity sales, and was a European salesperson at JP Morgan. She earned a B.S. from Boston College and an M.B.A. from the Wharton School of the University of Pennsylvania.

## Unwavering Commitment to Deep Value Investing

- Concentrated portfolio of deeply undervalued businesses
  - Intensive Proprietary Research
  - Systematic Process
- Long-term investment horizon

## The Right Investment Team

- 30-person global investment team with 19 together for 7+ years
- Business people focused on evaluating businesses

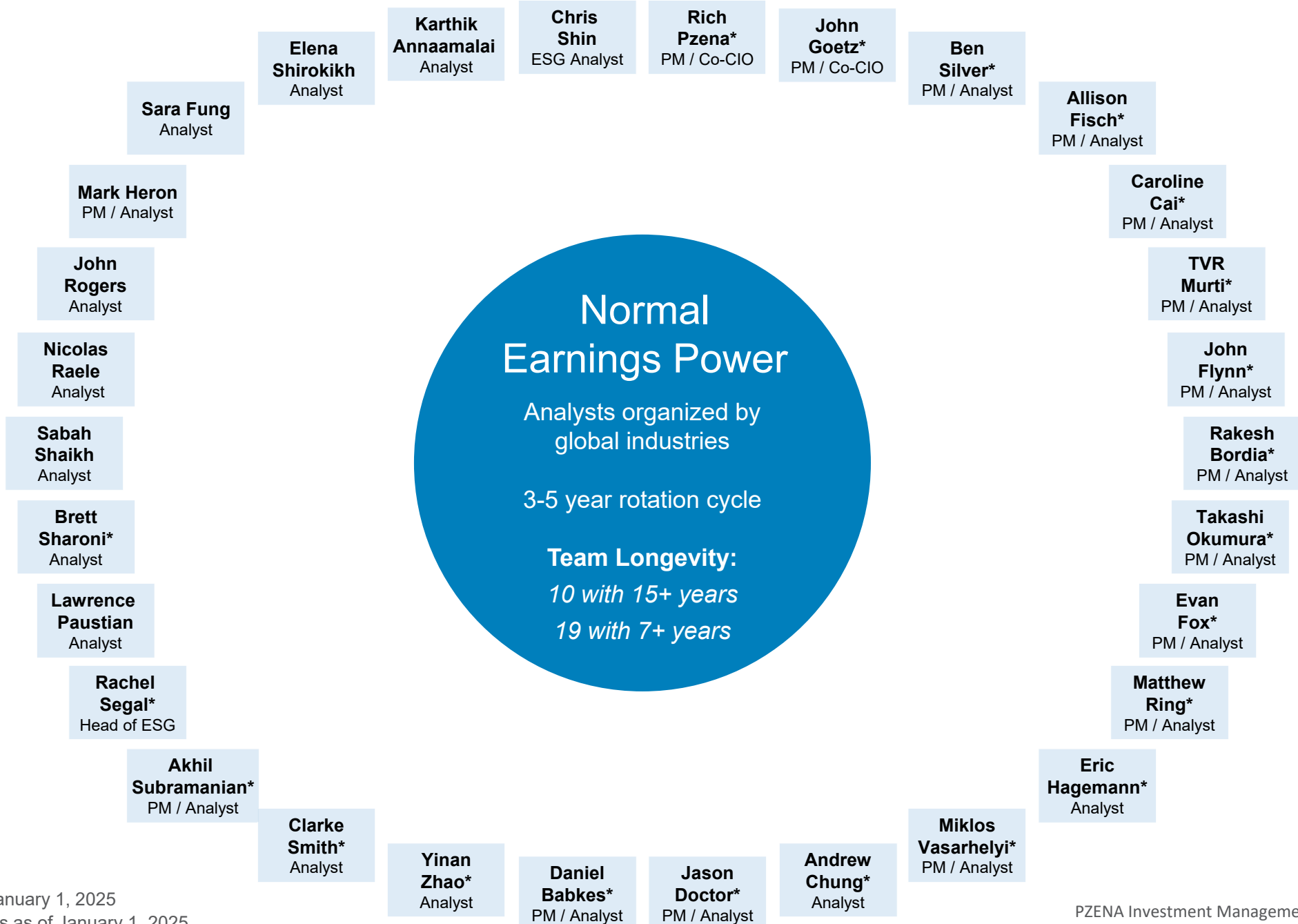
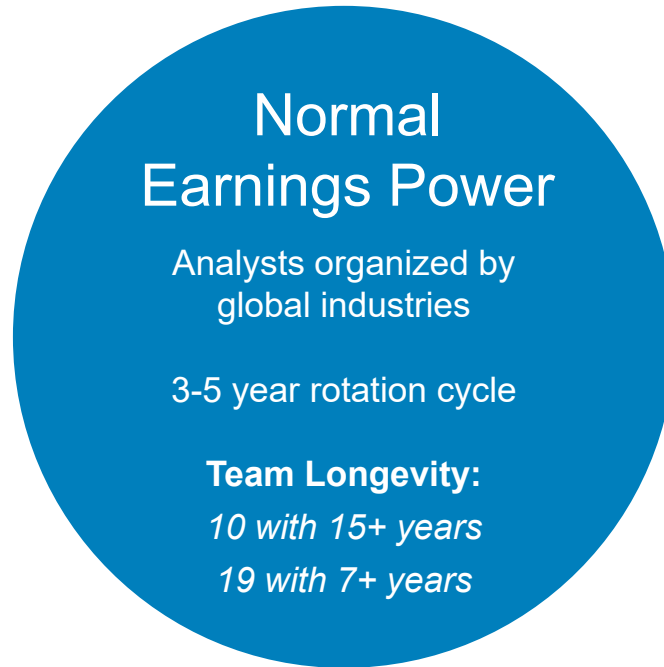
## Culture of Ownership

- Broad and significant equity ownership
- 76 Partners – fosters a culture of shared purpose with clients

As of January 1, 2025



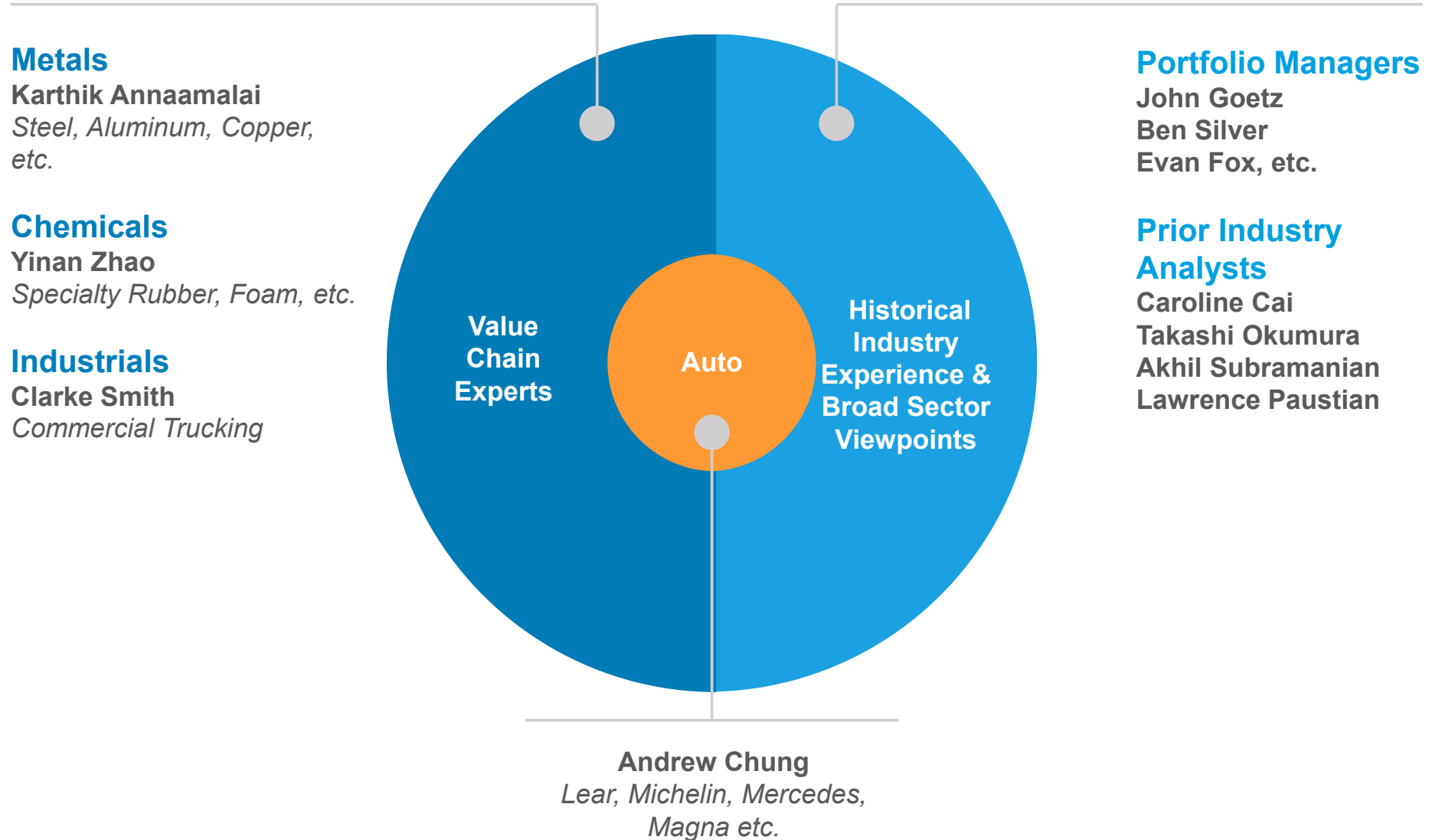
# Experienced Global Investment Team



As of January 1, 2025  
 \*Partners as of January 1, 2025

# Strong Industry Expertise: Deep Understanding From Multiple Lenses

## Example: Auto



## We seek to expose our clients to skewed potential outcomes\*

### Quantitative Screen

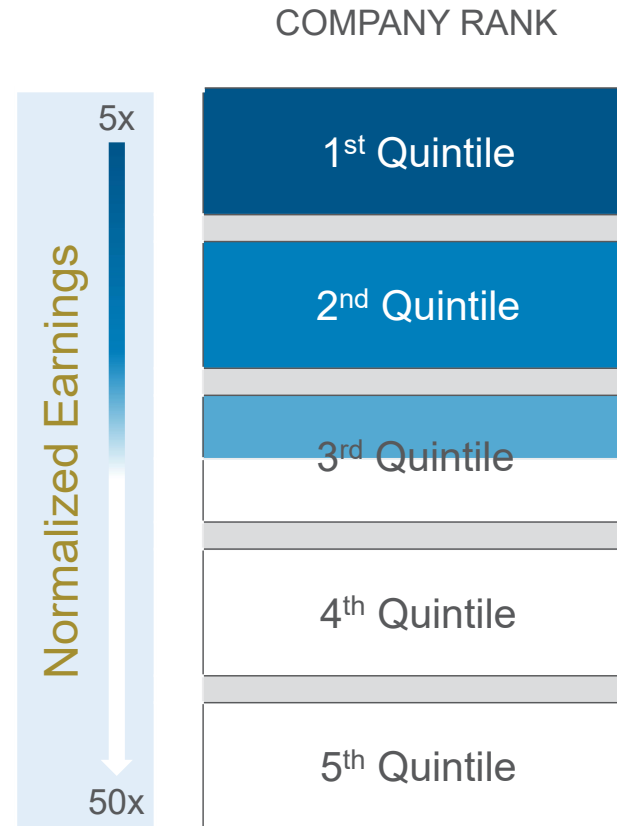
- Low price-to-normal earnings level
- Current earnings below historical norms

### Fundamental Research

- The problem is temporary and not permanent
- The company's business is good
- Downside risk analysis

\*There can be no assurances that the strategy will achieve its objective or that it will not incur losses.

- Bottom-up process
- Rank universe of companies by price-to-normalized earnings
- Select from the cheapest quintile\*



\*Subject to construction guidelines.

Applies to Focused Value strategies. Positions in other strategies may be added to accommodate portfolio construction guidelines.





## Initial Position Size Based On:

### 1. Valuation

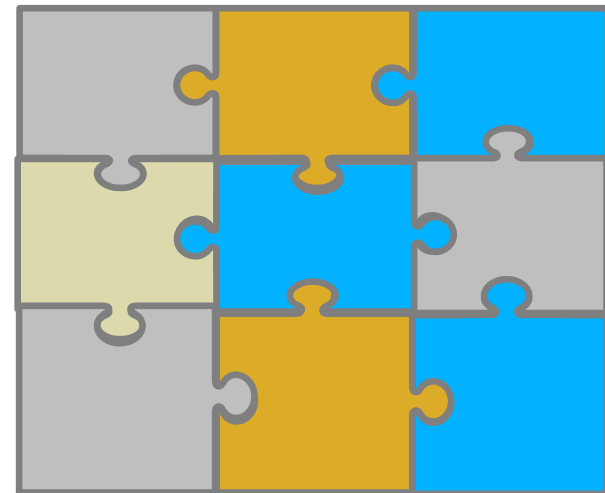
- Price-to-normal earnings

### 2. Risk

- Potential range of outcomes
- Leverage
- Trailing 12-month price volatility

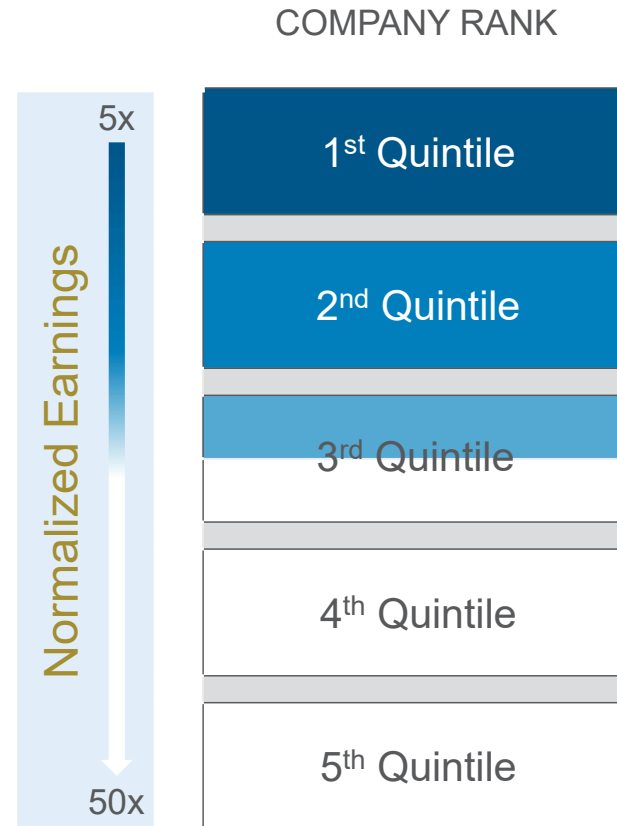
### 3. Diversification

- Sector / Industry
- Country / Region



## A security is sold\* when:

- It reaches fair value
- There are more attractive opportunities
- There is a change in company fundamentals



\*Subject to construction guidelines.

Applies to Focused Value strategies. Positions in other strategies may be held to accommodate portfolio construction guidelines.

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# Pzena Emerging Markets Focused Value

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## Bottom-Up

- Recognize company-specific factors
- Scrutinize sector and industry economics

## Country and Macro Factors

- Examine macro factors: country, region, and globe where appropriate
- Apply different discount rates by country, derived from US\$ sovereign bond spreads over US Treasuries
- Review overall country valuations to sanity check process

■ Universe	1500 Largest Companies in Non-Developed Markets
■ Portfolio Management Team	Rakesh Bordia, Caroline Cai, Allison Fisch, Akhil Subramanian
■ # of Positions	Generally 40 – 80
■ Position Limits:	
At Purchase	4%
At Market	6%
■ Sector Constraints	Not to exceed the greater of: (a) 20% of the total portfolio or (b) 150% of the sector's weight in the MSCI Emerging Markets Index
■ Country Limit	Not to exceed the greater of: (a) 20% of the total portfolio or (b) 150% of the country's weight in the MSCI Emerging Markets Index or MSCI Frontier Markets Index
■ New Buys	Cheapest Quintile
■ Sell Discipline	Universe Mid-Point



## Portfolio Characteristics: Pzena Emerging Markets Focused Value

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	Pzena Emerging Markets Focused Value	MSCI Emerging Markets Index
■ Price to Normal Earnings <sup>1</sup>	8.1x	17.7x*
■ Price / Earnings (1-Year Forecast)	8.1x	13.1x
■ Price / Book	1.0x	1.8x
■ Median Market Cap (\$B)	\$11.7	\$7.5
■ Weighted Average Market Cap (\$B)	\$99.4	\$163.4
■ Active Share	80.7%	--
■ Dividend Yield	4.6%	2.6%
■ Number of Stocks (model portfolio)	53	1,252

As of December 31, 2024

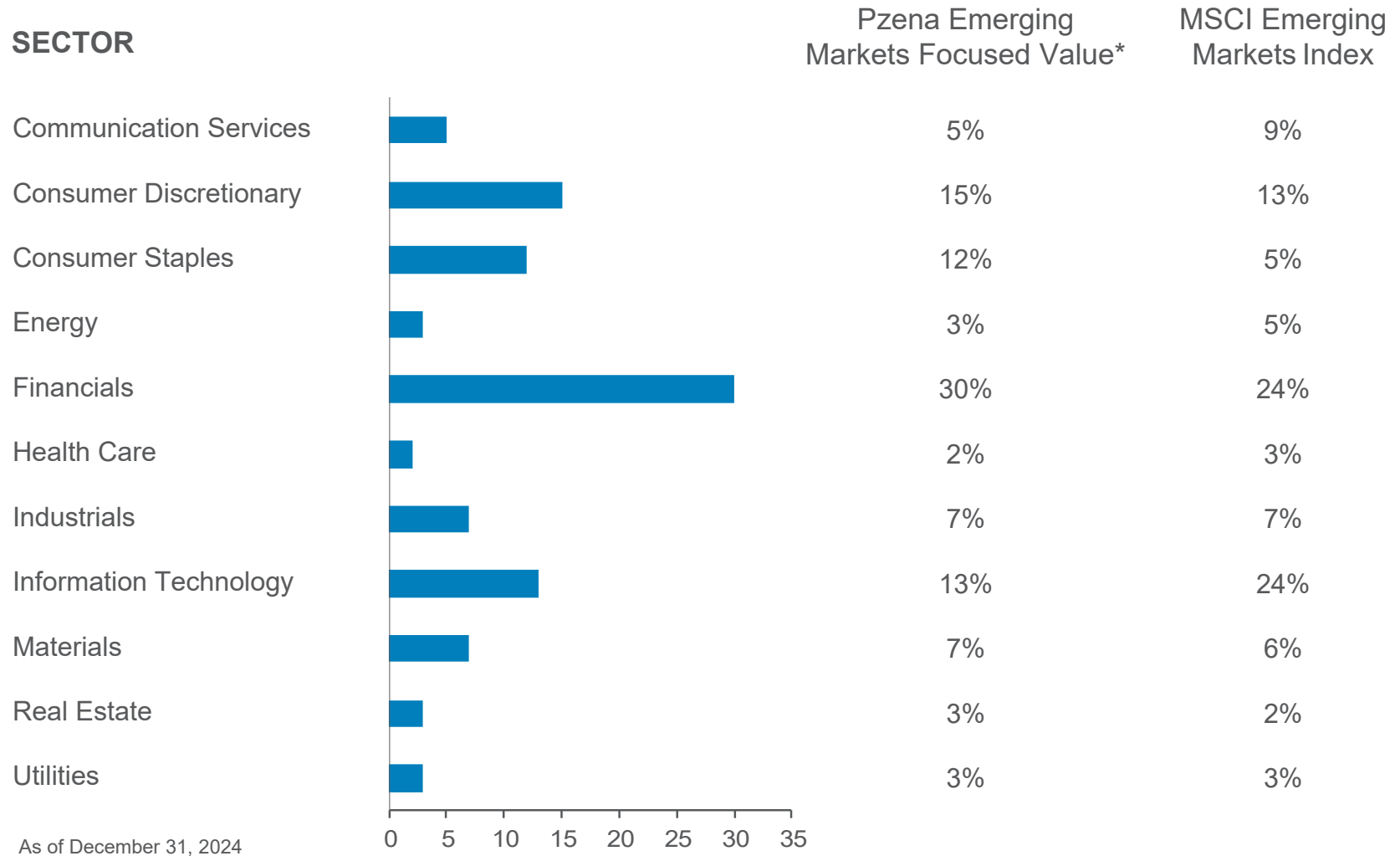
Past performance is not indicative of future returns.

<sup>1</sup>Pzena's estimate of normal earnings; \*Emerging Markets Universe Median (1500 Largest Companies in Non-Developed Markets)

Source: FactSet, MSCI, Pzena Analysis



## Sector Weights: Pzena Emerging Markets Focused Value

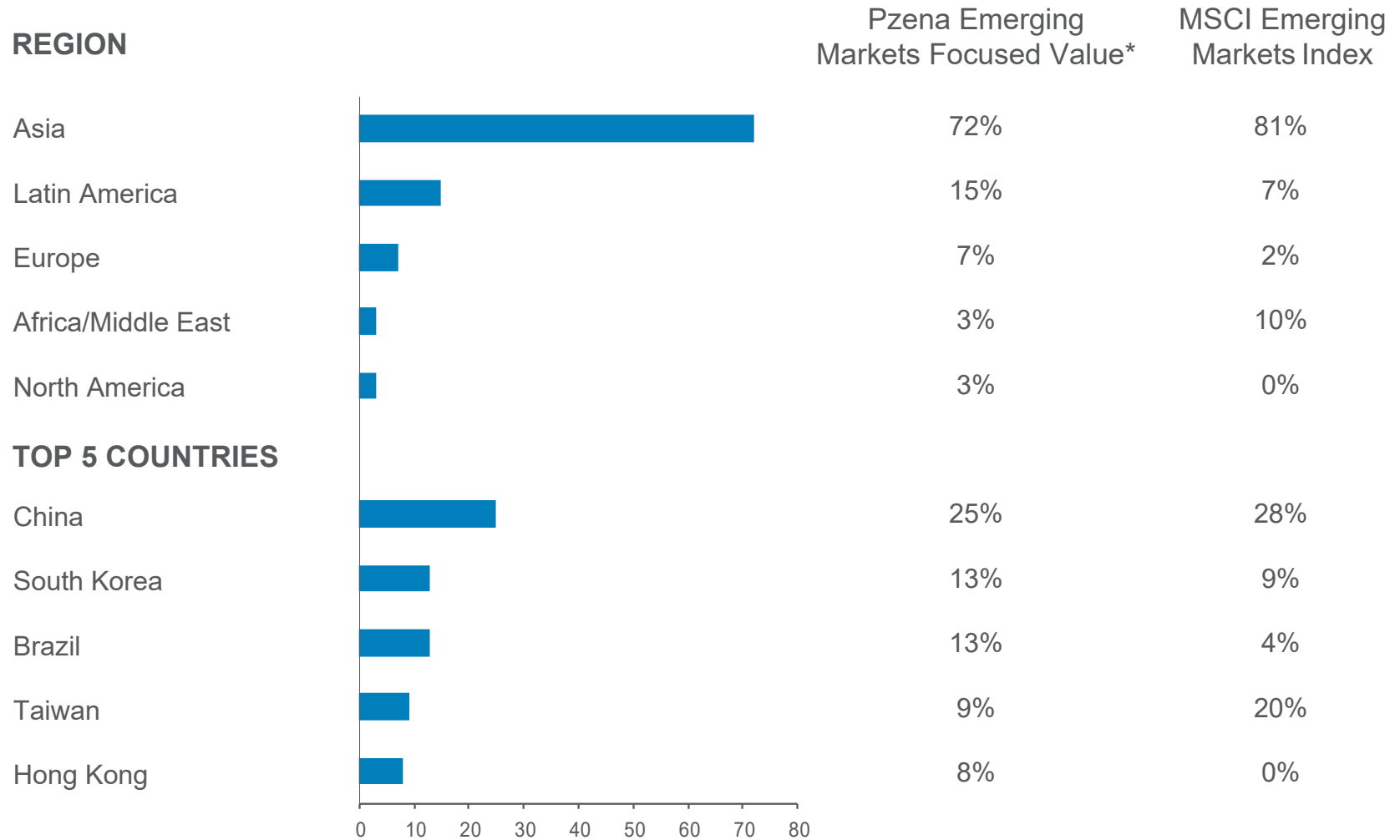


\*Pzena Emerging Markets Focused Value Composite estimate

Source: FactSet, MSCI, The Global Industry Classification Standard (GICS®)

Sector weights adjusted for cash – may appear higher than actual. Numbers may not add to 100% due to rounding.

## Regional / Country Weights: Pzena Emerging Markets Focused Value



As of December 31, 2024

\*Pzena Emerging Markets Focused Value Composite estimate

Source: FactSet, MSCI

Region weights adjusted for cash – may appear higher than actual. Numbers may not add to 100% due to rounding.



## COMMUNICATION SERVICES

Baidu, Inc.	2.5%
Tencent Holdings Ltd.	2.0%

## CONSUMER DISCRETIONARY

Alibaba Group Holding Ltd.	3.0%
Galaxy Entertainment Group Ltd.	2.0%
Haier Smart Home Co., Ltd.	2.5%
HANKOOK TIRE & TECHNOLOGY Co., Ltd.	2.0%
Hyundai Mobis Co., Ltd.	2.0%
Man Wah Holdings Ltd.	1.0%
Zhongsheng Group Holdings Ltd.	1.5%

## CONSUMER STAPLES

Ambev SA	2.5%
Natura &Co Holding SA	2.0%
ORION Corp. (Korea)	1.5%
Vietnam Dairy Products Corp.	2.0%
WH Group Ltd. (HK)	2.5%
Wilmar International Ltd.	2.3%

## ENERGY

MOL Hungarian Oil & Gas Plc	1.0%
Petróleo Brasileiro SA	1.5%
Saudi Arabian Oil Co.	1.0%

## FINANCIALS

Abu Dhabi Commercial Bank	1.0%
Akbank TAS	1.0%
Banco do Brasil SA	1.5%
Bangkok Bank PCL	2.0%
China Merchants Bank Co., Ltd.	2.0%
Credicorp Ltd.	2.0%
DB Insurance Co., Ltd.	1.5%
HDFC Bank Ltd.	2.0%
Itaú Unibanco Holding SA	1.5%
Kaspi.kz JSC	1.0%
KB Financial Group, Inc.	1.5%
OTP Bank Nyrt	2.0%
Ping An Insurance (Group) Co. of China Ltd.	1.5%
PT Bank Rakyat Indonesia (Persero) Tbk	2.0%
SCB X Public Co. Ltd.	1.8%
Shinhan Financial Group Co., Ltd.	1.5%

## HEALTH CARE

Chemical Works of Gedeon Richter Plc	1.5%
Shandong Weigao Group Medical Polymer Co. Ltd.	1.0%

## INDUSTRIALS

Pacific Basin Shipping Ltd.	2.0%
United Integrated Services Co., Ltd.	1.5%
Weichai Power Co., Ltd.	2.5%
ZTO Express (Cayman), Inc.	1.5%

## INFORMATION TECHNOLOGY

Cognizant Technology Solutions Corp.	2.5%
Compal Electronics, Inc.	1.0%
Samsung Electronics Co., Ltd.	4.0%
Taiwan Semiconductor Manufacturing Co., Ltd.	4.0%

## MATERIALS

Beijing Oriental Yuhong Waterproof Technology Co., Ltd.	1.0%
Indorama Ventures Public Co. Ltd.	1.0%
Sasol Ltd.	1.5%
UPL Ltd.	2.0%
Vale SA	2.0%
Zhejiang Longsheng Group Co., Ltd.	1.0%

## REAL ESTATE

China Overseas Land & Investment Ltd.	3.0%
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## UTILITIES

Companhia Energética de Minas Gerais SA	2.0%
Neoenergia SA	1.0%



## Investment Performance: Pzena Emerging Markets Focused Value Composite

Returns in USD	Annualized Returns						
	4Q 2024	YTD	One Year	Three Year	Five Year	Ten Year	Since Inception 1/1/08
Pzena Emerging Markets Focused Value Composite —Gross*	-10.2%	6.6%	6.6%	7.2%	7.8%	7.4%	4.8%
Pzena Emerging Markets Focused Value Composite — Net*	-10.5%	5.5%	5.5%	6.1%	6.7%	6.4%	3.7%
MSCI Emerging Markets Index**	-8.0%	7.5%	7.5%	-1.9%	1.7%	3.6%	1.6%
MSCI Emerging Markets Value Index**	-9.2%	4.5%	4.5%	0.2%	2.0%	2.8%	1.1%

Returns through December 31, 2024

Past performance is not indicative of future returns. Returns could be impacted, positively or negatively, by currency fluctuations, where applicable.

A full exhibit of composite performance (the “GIPS Compliant Presentation”) that adheres to the Global Investment Performance Standards (GIPS®) is provided in the Appendix of this presentation. For calendar year returns please refer to the GIPS Compliant Presentation.

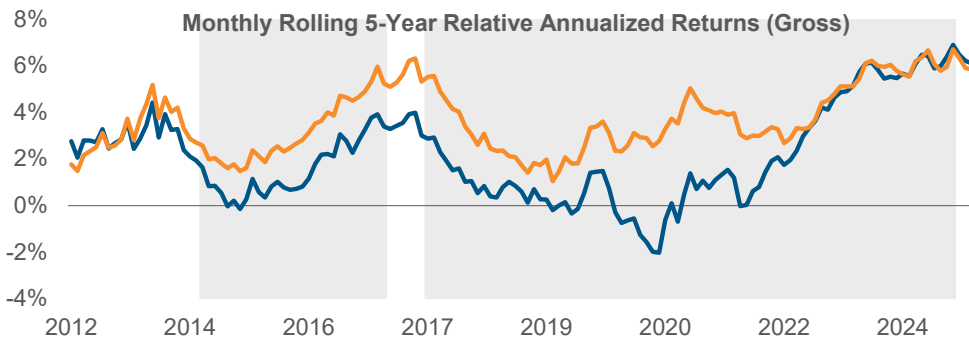
\*Gross rates of return are presented gross of investment management fees and net of the deduction of transaction costs. An investor’s actual return will be reduced by investment management fees. Net Returns are derived using a model fee applied monthly to Gross returns. Pzena uses the highest tier fee schedule, excluding performance fees, to illustrate the impact of fees on performance returns. As product fees change, the current highest tier schedule will be in effect.

\*\*The information provided is for equity returns including dividends net of withholding tax rates as calculated by MSCI. All performance numbers are preliminary and subject to change.



# Pzena EM\* Has Outperformed Even in a Spread Widening Dominant Environment

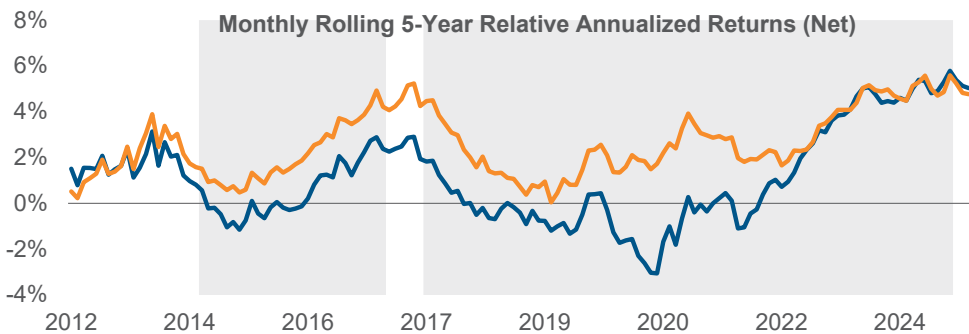
- The Pzena EMFV strategy has outperformed both the core and value index on a 5-year monthly rolling basis since inception
- Even during anti-value environments (highlighted by the shaded grey bars), EMFV has outperformed the core index on average



### Gross Since Inception vs. MSCI EM Index

### vs. MSCI EM Value Index

# of Periods	Avg Relative Return	Outperform Frequency	# of Periods	Avg Relative Return	Outperform Frequency
<b>145</b>	<b>2.2%</b>	<b>89%</b>	<b>145</b>	<b>3.7%</b>	<b>100%</b>



### Net Since Inception vs. MSCI EM Index

### vs. MSCI EM Value Index

# of Periods	Avg Relative Return	Outperform Frequency	# of Periods	Avg Relative Return	Outperform Frequency
<b>145</b>	<b>1.1%</b>	<b>63%</b>	<b>145</b>	<b>2.6%</b>	<b>100%</b>

P/B Dispersion Widened
  P/B Dispersion Contracted  
 Pzena EMFV vs. MSCI EM Index
  Pzena EMFV vs. MSCI EM Value Index

Source: MSCI, Sanford C. Bernstein & Co., Pzena Analysis

\*Gross and net performance of the Pzena Emerging Markets Focused Value Composite in US dollars. A full presentation of composite performance that adheres to the Global Investment Performance Standards (GIPS®) is provided later in this presentation. The inception date of the strategy is January 1, 2008. Data through December 31, 2024. Past performance is not indicative of future returns. The shaded bars represent periods where dispersion widened or contracted by at least 0.5 standard deviation during the trailing 5-year period. Dispersion is expressed in standard deviations, based on price/book of the cheapest quintile within the MSCI Emerging Markets universe vs. the most expensive quintile; equal-weighted data from January 1, 1992 – December 31, 2024. "Normal" periods are defined as periods where there were no shaded areas.



## Fee Schedule: Pzena Emerging Markets Focused Value

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First \$50,000,000	1.00%
Thereafter	0.70%

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Minimum separate account size is \$25 million  
Commingled funds are available\*  
All fees are in US dollars

\*Funds offered through Pzena Financial Services, LLC a member of FINRA and SIPC. Pzena Financial Services, LLC is a wholly-owned subsidiary of Pzena Investment Management, LLC.

# Appendix



**Rakesh Bordia**

Principal and Portfolio Manager. Mr. Bordia is a co-portfolio manager for the Emerging Markets and International strategies. Mr. Bordia became a member of the firm in 2007. Prior to joining Pzena Investment Management, Mr. Bordia was a principal at Booz Allen Hamilton focusing on innovation and growth strategies, and a software engineer at River Run Software Group. He earned a Bachelor of Technology in Computer Science and Engineering from the Indian Institute of Technology, Kanpur, India and an M.B.A. from the Indian Institute of Management, Ahmedabad, India.



**Allison Fisch**

Managing Principal, President, Portfolio Manager, and a member of the firm's Executive Committee. Ms. Fisch became a member of the firm in 2001 and helped to launch the Emerging Markets strategies in 2008, on which she has been a co-portfolio manager since inception. She joined the International portfolio management team in 2016. Ms. Fisch also co-managed the International Small Cap Value strategy and oversaw Global Best Ideas from 2017 to 2022. She was promoted to President in 2023. Prior to joining Pzena Investment Management, Ms. Fisch was a business analyst at McKinsey & Company. She earned a B.A. summa cum laude in Psychology and a minor in Drama from Dartmouth College.



**Caroline Cai, CFA®**

Managing Principal, Chief Executive Officer, Portfolio Manager, and a member of the firm's Executive Committee. Ms. Cai is a co-portfolio manager for the Global, International, and Emerging Markets strategies, and the Financial Opportunities service. Ms. Cai became a member of the firm in 2004. Prior to joining Pzena Investment Management, Ms. Cai was a senior analyst at AllianceBernstein LLP, and a business analyst at McKinsey & Company. She earned a B.A. summa cum laude in Math and Economics from Bryn Mawr College. Ms. Cai holds the Chartered Financial Analyst® designation.



**Akhil Subramanian**

Principal and Portfolio Manager. Mr. Subramanian became a member of the firm in 2017. He is a co-portfolio manager for Emerging Markets strategies. Prior to joining Pzena Investment Management, Mr. Subramanian was an analyst at SLS Capital, a concentrated long/short equities fund. Prior to that, Mr. Subramanian worked at TGG Group as a senior consultant and Credit Suisse as an investment banking analyst. Mr. Subramanian graduated with a B.S. in Mathematics and a B.A. in Economics from the University of Chicago, and an M.B.A. from Columbia Business School.

## Karthik Annaamalai

Research Analyst. Mr. Annaamalai became a member of the firm in 2023. Prior to joining Pzena Investment Management, Mr. Annaamalai held roles at Blackstone and BlueMountain Capital Management where he specialized in Distressed and Special Situations, after starting his career in Restructuring at Evercore. Mr. Annaamalai graduated with a B.S. in Business Administration from Carnegie Mellon University and completed his M.B.A with a specialization in Strategic Management from the Wharton School of the University of Pennsylvania.

## Daniel L. Babkes

Principal and Portfolio Manager. Mr. Babkes is a co-portfolio manager for the Focused Value and Large Cap strategies. Mr. Babkes became a member of the firm in 2016. Prior to joining Pzena Investment Management, Mr. Babkes worked as an analyst at LG Capital Management, an event-driven hedge fund, and as an investment banker in the restructuring group at Evercore Partners. He began his finance career as a trader at Chesapeake Partners, a multi-billion dollar hedge fund. He earned a B.A. cum laude from Amherst College and an M.B.A from the Wharton School of the University of Pennsylvania.

## Rakesh Bordia

Principal and Portfolio Manager. Mr. Bordia is a co-portfolio manager for the Emerging Markets and International strategies. Mr. Bordia became a member of the firm in 2007. Prior to joining Pzena Investment Management, Mr. Bordia was a principal at Booz Allen Hamilton focusing on innovation and growth strategies, and a software engineer at River Run Software Group. He earned a Bachelor of Technology in Computer Science and Engineering from the Indian Institute of Technology, Kanpur, India and an M.B.A. from the Indian Institute of Management, Ahmedabad, India.

## Caroline Cai, CFA®

Managing Principal, Chief Executive Officer, Portfolio Manager, and a member of the firm's Executive Committee. Ms. Cai is a co-portfolio manager for the Global, International, and Emerging Markets strategies, and the Financial Opportunities service. Ms. Cai became a member of the firm in 2004. Prior to joining Pzena Investment Management, Ms. Cai was a senior analyst at AllianceBernstein LLP, and a business analyst at McKinsey & Company. She earned a B.A. summa cum laude in Math and Economics from Bryn Mawr College. Ms. Cai holds the Chartered Financial Analyst® designation.

## Andrew Chung, CFA®

Principal and Senior Research Analyst. Mr. Chung became a member of the firm in 2014. Prior to joining Pzena Investment Management, Mr. Chung was a senior associate at Dodge & Cox and began his career as a research associate at Sanford C. Bernstein. He earned a B.S.E. summa cum laude in Finance and a B.A.S. in Computer Science from the University of Pennsylvania. Mr. Chung holds the Chartered Financial Analyst® designation.

## Jason Doctor, CFA®

Principal and Portfolio Manager. Mr. Doctor became a member of the firm in 2014. He is a co-portfolio manager for the International Small Cap strategy. Prior to Pzena Investment Management, Mr. Doctor was a senior research analyst at Evercore Asset Management, a research analyst at Viking Global Investors, and a research associate at Citigroup Asset Management. He earned a B.S.F.S. in International Economics from Georgetown University and holds the Chartered Financial Analyst® designation.

## Allison Fisch

Managing Principal, President, Portfolio Manager, and a member of the firm's Executive Committee. Ms. Fisch became a member of the firm in 2001 and helped to launch the Emerging Markets strategies in 2008, on which she has been a co-portfolio manager since inception. She joined the International portfolio management team in 2016. Ms. Fisch also co-managed the International Small Cap Value strategy and oversaw Global Best Ideas from 2017 to 2022. She was promoted to President in 2023. Prior to joining Pzena Investment Management, Ms. Fisch was a business analyst at McKinsey & Company. She earned a B.A. summa cum laude in Psychology and a minor in Drama from Dartmouth College.

## John J. Flynn

Principal and Portfolio Manager. Mr. Flynn is a co-portfolio manager for the U.S. Mid Cap and Large Cap strategies, along with the Focused Value, Small Cap Focused Value and SMID services. Mr. Flynn became a member of the firm in 2005. Prior to joining Pzena Investment Management, Mr. Flynn was an associate at Weston Presidio, a middle-market private equity investment firm. He earned a B.A. in Music from Yale University and an M.B.A. with distinction from the Harvard Business School.

## Evan D. Fox, CFA®

Principal and Portfolio Manager. Mr. Fox is a co-portfolio manager for the Small Cap Focused Value, SMID, Global Small Cap Focused, Mid Cap and Mid Cap Focused Value services. Mr. Fox became a member of the firm in 2007. Prior to joining Pzena Investment Management, Mr. Fox was a teaching assistant for the Wharton School Finance Department, a summer analyst at Lazard, and a summer researcher at Lucent Technologies. He graduated summa cum laude with a B.S. in Economics from the Wharton School of the University of Pennsylvania and a B.A.S. from the University of Pennsylvania School of Engineering and Applied Science. Mr. Fox holds the Chartered Financial Analyst® designation.

## Sara Fung, CFA®

Research Analyst. Ms. Fung became a member of the firm in 2022. Prior to joining Pzena Investment Management, Ms. Fung was Associate Director at HSBC Global Banking Hong Kong where she advised Asia conglomerates, blue chips, and family offices on capital markets and funding solutions. Ms. Fung graduated with First Class Honours in Global Business and Economics from the Hong Kong University of Science and Technology, and an M.B.A. from Wharton Business School as a Dr. Bruce I. Jacobs Scholar in Quantitative Finance. Ms. Fung holds the Chartered Financial Analyst® designation.

## John P. Goetz

Managing Principal, Co-Chief Investment Officer, Portfolio Manager, and member of the firm's Executive Committee. Mr. Goetz is a co-portfolio manager for the Global, International, European and Japan Focused Value strategies. He also previously served as the Director of Research and was responsible for building and training the research team. Mr. Goetz became a member of the firm in 1996. Prior to joining Pzena Investment Management, Mr. Goetz held a range of key positions at Amoco Corporation, his last as the Global Business Manager for Amoco's \$1 billion polypropylene business where he had bottom-line responsibility for operations and development worldwide. Prior positions included strategic planning, joint venture investments, and project financing in various oil and chemical businesses. Before joining Amoco, Mr. Goetz had been employed by The Northern Trust Company and Bank of America. He earned a B.A. summa cum laude in Mathematics and Economics from Wheaton College and an M.B.A from the Kellogg School at Northwestern University.



## Eric M. Hagemann, CFA®

Principal and Senior Research Analyst. Mr. Hagemann became a member of the firm in 2011. Prior to joining Pzena Investment Management, Mr. Hagemann was a summer analyst at Echo Street Capital Management, where he researched prospective investments in a generalist capacity. He earned a B.A. magna cum laude from Columbia College, graduating with departmental honors in Philosophy and an M.B.A. from Columbia Business School. Mr. Hagemann holds the Chartered Financial Analyst® designation.

## Mark Heron, CFA®

Portfolio Manager and Head of Leveraged Loans/High Yield Credit. Mr. Heron became a member of the firm in 2022. Prior to joining Pzena Investment Management, Mr. Heron was the Portfolio Manager – Head of Distressed Debt at Ellington Management Group, where he established a corporate credit business and grew it to over \$2Bn in AUM. Prior to that, Mr. Heron spent ten years as the Managing Director - Head of Distressed Debt Desk Analysis at Credit Suisse, following six years in their Investment Banking Division. He earned a B.A. in Economics and History from the University of Western Ontario, and an MBA from the Schulich School of Business at York University. Mr. Heron also holds the Chartered Financial Analyst® designation.

## TVR Murti

Principal and Portfolio Manager. Mr. Murti is a co-portfolio manager for the Long/Short Value service. Mr. Murti became a member of the firm in 2005. Prior to joining Pzena Investment Management, Mr. Murti was a business manager at Capital One Financial Corporation, a senior consultant with Coopers and Lybrand Consulting, and an engineer with Suzuki Motor Company's subsidiary in India. He earned a Bachelor of Technology in Mechanical Engineering with honors from the Indian Institute of Technology, Kharagpur, India, and an M.B.A. with distinction from the Indian Institute of Management, Ahmedabad, India.

## Takashi Okumura

Principal and Portfolio Manager. Mr. Okumura is the portfolio manager for the Japanese Focused Value service. Mr. Okumura became a member of the firm in 2007. Prior to joining Pzena Investment Management, he was a sales director at E2open Japan Corporation, a business-to-business software venture jointly established by 10 high tech companies including IBM, Hitachi, Matsushita, and Toshiba. Prior to that, he was a sales specialist at IBM Japan responsible for business development of emerging business, and a sales representative with Daitokyo Fire & Marine Insurance. He earned a B.A. in Commerce from Waseda University, Tokyo, Japan, and an M.B.A. from Columbia Business School.

## Lawrence Paustian, CFA®

Senior Research Analyst. Mr. Paustian became a member of the firm in 2019. Prior to joining Pzena Investment Management, Mr. Paustian was a managing partner at Crown Venture Management, a value-based equity hedge fund, and an officer in the U.S. Army. He earned a B.S. in Economics from the United States Military Academy and an M.B.A. from the Wharton School of the University of Pennsylvania. Mr. Paustian holds the Chartered Financial Analyst® designation.

## Richard S. Pzena

Founder, Principal, Chairman, Co-Chief Investment Officer, Portfolio Manager. Mr. Pzena is the architect of the firm's investment strategy and conceived and developed our proprietary screening model. He serves as co-portfolio manager for the U.S. Large Cap strategies, along with the U.S. Best Ideas service. Mr. Pzena began the firm in 1995. Prior to forming Pzena Investment Management, Mr. Pzena was the Director of U.S. Equity Investments and Chief Research Officer for Sanford C. Bernstein & Company. He joined Bernstein as an oil industry analyst and was named to the Institutional Investor All America Research Team for three years running. Mr. Pzena also served as Chief Investment Officer, Small Cap Equities. Prior to joining Bernstein, Mr. Pzena worked for the Amoco Corporation in various financial and planning roles. He earned a B.S. summa cum laude and an M.B.A. from the Wharton School of the University of Pennsylvania.

## Nicolas Raele

Senior Research Analyst. Mr. Raele became a member of the firm in 2021. Prior to joining Pzena Investment Management, Mr. Raele was an investment banking associate at Credit Suisse. Prior to that, Mr. Raele worked at LXG Capital as an investment banking analyst. Mr. Raele graduated with a B.S. in Industrial Engineering from Instituto Tecnológico de Buenos Aires (ITBA), an M.B.A. from the Wharton School, and an M.A. in International Studies from the Lauder Institute.

## Matthew J. Ring

Principal, Director of Research, and Portfolio Manager. Mr. Ring is a co-portfolio manager for the International Small Cap Focused Value, European Value, and Global Small Cap Focused services. Mr. Ring became a member of the firm in 2010. Prior to joining Pzena Investment Management, he was a senior manager with consulting firm Simat Helliesen & Eichner, providing due diligence for investments in the Industrials and Aerospace & Defense sectors. Mr. Ring began his career with General Electric Aircraft Engines as a design engineer and holds a patent on his GENx compressor case design for the Boeing 787. He earned a B.S. magna cum laude in Aerospace Engineering from the University of Notre Dame, a Masters in Mechanical Engineering from The Ohio State University, and an M.B.A. from Columbia Business School, graduating with honors.

## John Rogers

Senior Research Analyst. Mr. Rogers became a member of the firm in 2021. Prior to joining Pzena Investment Management, Mr. Rogers was a senior research associate at AllianceBernstein. He was formerly an analyst at Goldman Sachs and worked in the front office of the NFL's Cleveland Browns. Mr. Rogers graduated with a B.A. in Philosophy, Politics, and Economics from the University of Pennsylvania, an M.B.A. from Columbia Business School, and a J.D. from Columbia Law School.

## Rachel Segal

Principal and Head of ESG. Ms. Segal became a member of the firm in 2019. Prior to joining Pzena Investment Management, Ms. Segal was a Senior Associate in ESG at BNY Mellon. Prior to that, Rachel worked as a sustainability consultant for both PwC and Kantar Consulting. Ms. Segal graduated with a B.A. from Cambridge University and an M.A. from The Johns Hopkins School of Advanced International Studies (SAIS).

## Sabah Shaikh

Senior Research Analyst. Ms. Shaikh joined Pzena Investment Management in 2019. Prior to joining the firm, Ms. Shaikh was a Private Equity Analyst at The Blackstone Group and a Business Analyst at McKinsey & Company. Ms. Shaikh graduated with a Bachelors of Technology in Civil Engineering from Indian Institute of Technology, Madras and an M.B.A from The Wharton School.

## Brett Sharoni

Principal and Senior Research Analyst. Mr. Sharoni became a member of the firm in 2019. Prior to joining Pzena Investment Management, Mr. Sharoni was an associate at American Securities, a middle market private equity firm, and analyst at Citadel and Brenner West Capital Partners. He earned a B.A. in Economics from Johns Hopkins University and an M.B.A. from Harvard Business School.

## Chris Shin

ESG Research Analyst, became a member of the firm in 2024. Prior to joining Pzena Investment Management, Mr. Shin attended Princeton University where he studied environmental policy and economics, and went on to hold various roles at Broadstreet Impact Services, Georgia Rural Investment Fund, LISC and Carbon Path. Mr. Shin also completed a 6-month Intelligence Officer training at Goodfellow Air Force Base, where he conducted extensive research, analysis, and fusion for the Intelligence Community.

## Elena Shirokikh

Research Analyst. Ms. Shirokikh became a member of the firm in 2023. Prior to joining Pzena Investment Management, Ms. Shirokikh held several roles at General Electric, most recently as a Senior Finance Manager at General Electric corporate headquarters. Ms. Shirokikh received her B.S. in Economics from the Higher School of Economics in Moscow and received her M.B.A. with Dean's Honors from Columbia Business School where she also completed the Value Investing Program.

## Benjamin S. Silver, CFA®

Principal and Portfolio Manager. Mr. Silver is a co-portfolio manager for the Global strategies and the U.S. Large Cap, Mid Cap, Focused Value and Small Cap strategies. He is also a portfolio manager for Global Best Ideas. He previously served as co-Director of Research for 9 years. Mr. Silver became a member of the firm in 2001. Prior to joining Pzena Investment Management, Mr. Silver was a research analyst at Levitas & Company and a Manager for Ernst & Young LLP. He earned a B.S. magna cum laude in Accounting from Sy Syms School of Business at Yeshiva University. Mr. Silver holds the Chartered Financial Analyst® designation.

## Clarke M. Smith

Principal and Senior Research Analyst. Mr. Smith became a member of the firm in 2017. Prior to joining Pzena Investment Management, Mr. Smith was a senior analyst at Eachwin Capital, a concentrated long-term US equities fund. He began his finance career at Barclays Capital as a credit analyst in long-short proprietary trading. Mr. Smith graduated summa cum laude with a B.A. in Classics from Princeton University and was inducted into the Phi Beta Kappa Society. He earned his M.B.A from the Stanford Graduate School of Business.

## Akhil Subramanian

Principal and Portfolio Manager. Mr. Subramanian became a member of the firm in 2017. He is a co-portfolio manager for Emerging Markets strategies. Prior to joining Pzena Investment Management, Mr. Subramanian was an analyst at SLS Capital, a concentrated long/short equities fund. Prior to that, Mr. Subramanian worked at TGG Group as a senior consultant and Credit Suisse as an investment banking analyst. Mr. Subramanian graduated with a B.S. in Mathematics and a B.A in Economics from the University of Chicago, and an M.B.A. from Columbia Business School.

## Miklos C. Vasarhelyi

Principal and Portfolio Manager. Mr. Vasarhelyi is a co-portfolio manager for the European strategy. Mr. Vasarhelyi became a member of the firm in 2012. Prior to joining Pzena Investment Management, he worked at Sanford C. Bernstein as a senior research associate covering U.S. large cap banks, and a research analyst at Banc of America Securities covering the Specialty Finance sector. He earned a B.A. in East Asian Languages and Cultures from Columbia College, where he served as President of the Student Body, and an M.B.A. with Dean's Honors and Distinction from Columbia Business School.

## Yinan Zhao, CFA®

Principal and Senior Research Analyst. Mr. Zhao became a member of the firm in 2016. Mr. Zhao joined Pzena Investment Management upon graduating with an M.B.A. from Columbia Business School, where he was enrolled in the Value Investing Program. Prior to business school, Mr. Zhao worked at Susquehanna International Group as a senior research associate and began his career as a research analyst at Merrill Lynch. He earned a B.S. in Electrical Engineering from Stanford University and holds the Chartered Financial Analyst® designation.

# GIPS Compliant Presentation – Pzena Emerging Markets Focused Value Composite

Pzena Investment Management, LLC  
 Schedule of Investment Performance  
 Pzena Emerging Markets Focused Value Composite

Year Ended Dec 31	Rate of Return (Gross)	Rate of Return (Net)	Benchmark Return <sup>(d)</sup>	Number of Portfolios	Composite Assets at End of Period (US\$ millions)	Total Firm Assets at End of Period (US\$ millions)	Total Product Managed Assets <sup>(a)</sup> at End of Period (US\$ millions)	Composite Assets as a Percentage of Firm Assets	Composite Assets as a Percentage of Product Managed Assets <sup>(a)</sup>	High <sup>(b)</sup>	Low <sup>(b)</sup>	Composite 3-yr Annualized Standard Deviation	Benchmark 3-yr Annualized Standard Deviation <sup>(d)</sup>
2023	22.4%	21.2%	9.8%	11	3,783	58,865	6,006	6.4%	63.0%	23.1%	19.9%	16.3%	17.1%
2022	-5.7%	-6.6%	-20.1%	12	3,392	49,299	5,084	6.9%	66.7%	-4.2%	-6.4%	23.2%	20.3%
2021	7.5%	6.4%	-2.5%	15	3,899	50,648	5,547	7.7%	70.3%	10.4%	6.4%	22.1%	18.3%
<b>3-yr Annualized</b>	<b>7.5%</b>	<b>6.4%</b>	<b>-5.1%</b>										
2020	10.0%	9.0%	18.3%	16	3,861	41,136	4,979	9.4%	77.5%	13.0%	9.2%	22.7%	19.6%
2019	13.4%	12.3%	18.4%	15	3,069	39,209	4,054	7.8%	75.7%	15.2%	12.0%	13.7%	14.2%
<b>5-yr Annualized</b>	<b>9.2%</b>	<b>8.1%</b>	<b>3.7%</b>										
2018	-9.2%	-10.1%	-14.6%	14	2,747	32,198	3,574	8.5%	76.9%	-8.4%	-10.3%	14.6%	14.6%
2017	31.7%	30.4%	37.3%	13	2,577	37,690	3,491	6.8%	73.8%	32.6%	31.2%	16.5%	15.4%
2016	23.0%	21.8%	11.2%	10	1,610	30,035	2,135	5.4%	75.4%	23.8%	21.2%	17.4%	16.1%
2015	-15.6%	-16.5%	-14.9%	11	1,342	25,999	1,619	5.2%	82.9%	-15.3%	-16.8%	15.3%	14.1%
2014	-9.9%	-10.8%	-2.2%	11	1,112	27,738	1,112	4.0%	100.0%	-9.0%	-10.6%	16.1%	15.0%
<b>10-yr Annualized (d)</b>	<b>5.6%</b>	<b>4.6%</b>	<b>2.7%</b>										
2013	10.0%	8.9%	-2.6%	7	775	24,977	851	3.1%	91.1%	10.1%	9.4%	18.8%	19.0%
2012	24.3%	23.1%	18.2%	2	267	17,107	267	1.6%	100.0%	24.7%	24.3%	21.9%	21.5%
2011	-21.9%	-22.7%	-18.4%	3	193	13,519	193	1.4%	100.0%	N/A	N/A	26.2%	25.8%
2010	16.5%	15.4%	18.9%	1	2	15,630	51	Less Than 1%	4.2%	N/A	N/A	N/A	N/A
2009	85.6%	82.9%	78.5%	1	2	14,285	2	Less Than 1%	100.0%	N/A	N/A	N/A	N/A
2008 (c)	-47.8%	-48.7%	-53.3%	1	1	10,707	1	Less Than 1%	100.0%	N/A	N/A	N/A	N/A

(a) Product Managed Assets information is included as supplemental information. See Note to Schedule of Investment Performance.

(b) High and Low performance for the Composite is presented when two or more accounts were active for the entire year.

(c) Composite created in January 2008 with an inception date of 1/1/2008.

(d) This information is not covered by the report of independent accountants.

Past performance is not indicative of future returns.

Pzena Investment Management, LLC (the “Firm”) claims compliance with the Global Investment Performance Standards (“GIPS®”) and has prepared and presented this report in compliance with the GIPS standards. Pzena Investment Management, LLC has been independently verified for the periods January 1, 1996 to December 31, 2023.

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 Pzena Emerging Markets Focused Value Composite has had a performance examination for the periods January 1, 2008 to December 31, 2023. The verification and performance examination reports are available upon request. The Firm commenced operations on January 1, 1996. The Firm is a registered investment adviser that follows a classic value investment approach.

The Pzena Emerging Markets Focused Value Composite (the “Composite”) represents returns for clients invested in the Pzena Emerging Markets Focused Value strategy. Pzena Emerging Markets Focused Value is a portfolio generally consisting of 40-80 stocks generally taken from the largest 1,500 companies in the non-developed markets at the time of initial purchase. The presentation of investment performance sets forth the time-weighted rates of return (the “Return”) for the Composite. Past performance is not an indication of future results and may differ for future time periods.

The Composite includes all portfolios since inception date, and mutual fund portfolios since April 2011, that are managed on a fully discretionary basis by the Firm, according to the Pzena Emerging Markets Focused Value strategy. Eligible new portfolios are added to the Composite at the beginning of the first full month under management. Terminated portfolios are removed from the Composite after the last full month that the portfolio is under firm management. FX currency transactions were used to transact in equity securities only, where applicable.

The Total Product Managed Assets represents the total value of all accounts invested in the Pzena Emerging Markets Focused Value strategy managed and traded by the Firm, including accounts with client-imposed restrictions or accounts not fully invested at year-end.

Generally, securities listed on any national securities exchange are valued at the last quoted sale price on the exchange. For securities that have not recently traded, an estimate of current price is used to value the security. Securities which are not listed are valued at the most recent publicly quoted bid price. Securities transactions are recorded on a trade date basis. Dividend income is recorded as of the ex-dividend date. The results for the Composite for all periods shown are net of withholding taxes, where applicable, on dividends, interest, and capital gains. The withholding tax rates used in the return calculations are the actual withholding tax rates of each country in which an investment was made or held during the period of such calculation.

The rate of return is calculated on a time-weighted, total return basis and includes all dividends, interest, accrued income and realized and unrealized gains or losses. Returns are calculated in U.S. dollars (“USD”).

Gross rates of return are presented gross of investment management fees and net of the deduction of brokerage commissions and transaction costs. Net Returns are derived using a model fee applied monthly to Gross returns. Pzena uses the highest tier fee schedule, excluding performance fees, to illustrate the impact of fees on performance returns. An investor’s actual return will be reduced by investment management fees.

Generally, investment management fees are charged based upon the size of the portfolio, and are applied quarterly. The Firm's standard annual asset-based fee schedule for separately managed accounts is as follows: 1.00% per annum on the first \$50 million and 0.70% per annum on assets above \$50 million. The management fee schedule for the Illinois Group Trust is the same as the fee schedule for separately managed accounts and as of 12/31/2023 the admin expense ratio is 0.18%. The management fee schedule and admin expense ratio for the 40 Act Mutual Fund as of 12/31/2023 are 1.00% and 0.09%, respectively. The management fee schedule and admin expense ratio for the Collective Investment Trust as of 12/31/2023 are 1.00% and 0.20%, respectively. Generally, fees are not negotiable. The fees may vary depending on the date the account is opened or on an account's particular requirements. To illustrate the compounded effect of the deduction of a 1% annual fee on a hypothetical investment of \$1,000 in an account where the average annual return before fees was 10% for a 10-year period, and assuming reinvestment of all dividends and interest, the initial investment would have grown to \$1,100 after one year before fees and \$1,089 after fees; to \$1,611 after five years before fees and \$1,532 after fees; and to \$2,594 at the end of ten years before fees and \$2,346 after fees. Further discussion regarding our advisory fees is contained in our Form ADV Part 2.

Composite returns are benchmarked to the MSCI Emerging Markets Index (the "Index"). The benchmark is used for comparative purposes only and generally reflects the risk or investment style of the investments reported on the schedule of investment performance. The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance of emerging markets, and provides equity returns including dividends net of withholding tax rates as calculated by MSCI. The Index cannot be invested in directly. The Pzena Emerging Markets Focused Value strategy is significantly more concentrated in its holdings and has different sector and regional weights than the Index. Accordingly, the performance of the Composite will be different from, and at times more volatile, than that of the Index.

The standard deviation of comparable performance over time is a measure of volatility. The three-year annualized standard deviation measures the variability of the composite and the benchmark returns over the preceding 36-month period. The three-year annualized standard deviation was not required to be reported prior to 2011. The Firm also presents the gross returns for the highest and lowest yielding portfolios in the Composite. High and Low performance for the Composite is only presented when two or more accounts were active for the entire year. Additional information is available upon request regarding policies for valuing portfolios, calculating performance, and preparing compliant presentations, as well as a list of composite descriptions and a list of pooled fund descriptions for limited distribution pooled funds and broad distribution pooled funds.

Past performance is no guarantee of future results, and the past performance of Pzena Emerging Markets Focused Value composite should not be considered indicative of the future performance of any accounts or commingled funds managed by the Firm. Investment return and principal value of an investment will fluctuate over time. Additionally, there are special risks associated with investing in foreign securities which may affect performance. For example, the value of foreign currencies may decline relative to the U.S. dollar, or political, social or economic instability in a foreign country in which a client invests may cause the value of the client's investments to decline.

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TO: Members of the Investment Committee
FROM: Clint Kuboyama, Senior Investment Officer
DATE: March 5, 2025
SUBJECT: Review of Real Assets Policy

Recommendation:

N/A – This is an Information item.

Background:

As a result of the Board's July 18, 2024 adoption of the "Mix C" asset allocation for the total Fund, Staff and NEPC have been working with the Investment Committee ("IC") and Board to update the investment policies of ACERA's private asset classes to reflect the related asset-class-level changes, as well as other policy changes such as updated delegated authority amounts. Accordingly, the Board adopted changes to the Private Credit Policy on October 17, 2024. In addition, the IC adopted changes to the Private Equity Policy on February 20, 2025. Now, Staff and NEPC are bringing this information item policy review for the Real Assets asset class, with the proposed policy changes provided in a redline of the current Real Assets Policy (see Attachment #1), as well as major proposed changes described below. The intention of this review is for Staff and NEPC to propose changes to the policy, discuss the proposed changes with the IC, and receive the IC's feedback. Then, at an ensuing IC meeting, Staff and NEPC will present the proposed changes (adjusted for IC feedback) as an action item for the IC to recommend to the Board to adopt.

Discussion of Major Proposed Changes to the RA Policy:

1) RA Asset Class Structure: The Mix C asset allocation adopted by the Board calls for a change in the RA asset-class structure from one that is a mix of private and publicly traded investments to one that is 100% private investments. The RA asset class will be comprised of two sub-classes of investments – private infrastructure and private natural resources. Staff and NEPC are proposing sub-asset class targets of 67% private infrastructure and 33% private natural resources due to: 1) a more attractive risk/return profile in infrastructure; and 2) a broader opportunity set in private infrastructure. Table 1 below shows the old RA structure versus the proposed, new RA structure:

Table 1: Old and New Real Assets ("RA") Asset Class Structures. Table with 3 columns: Asset Class, Old RA Structure, New RA Structure. Rows include Private Investments (Infrastructure, Natural Resources, Total Private Investments), and Liquid/Public Investments (aka "Liquid Pool") (Infrastructure, Natural Resources, Commodities, Total Liquid/Public Investments).

As a result of this structural change, the proposed changes to the RA Policy focus on the “New RA Targets” shown in Table 1 above. In addition, because the only types of investments that are expected to be made going forward are private funds in the infrastructure and natural resources sectors (i.e., “private investments”), there are also proposed policy changes that reduce the types of investments allowable under the policy. Section IV (“TYPES OF REAL ASSETS INVESTMENTS”), Section VI (“STRATEGIC ALLOCATIONS TO REAL ASSETS”), Section X (“PERFORMANCE EVALUATION CRITERIA”), and APPENDIX III in the RA Policy have been updated to reflect these proposed changes.

- 2) ***Interim Allowable Investments and Sub-Class Ranges:*** As of 6/30/24, the date of the most recent performance report on RA asset class, the RA asset class was comprised of 56% publicly traded investments and 44% private investments and the total value of the asset class, at 5.8% of the total Fund, was close to its current 6% target weighting. If ACERA immediately adopted a 100% private-investment RA asset class and divested the publicly-traded investments, the RA asset class would immediately lose close to half of its market value and the RA asset class would be significantly underweight its 6% target. In addition, it takes time to build out a portfolio of 100% private investments as it is prudent to build a portfolio that is diversified by vintage year commitments. Moreover, once a commitment is made to a private fund, the commitment is invested over multiple years during these funds’ investment periods (typically 4 – 6 years).

Because of the above factors, Staff and NEPC recommend to temporarily, over the medium term and while the private investments in the RA portfolio ramp up, maintain publicly-traded investments in the RA asset class. There is an existing vehicle in the RA portfolio, which represents the totality of publicly-traded investment exposure in the RA asset class known as the “Liquid Pool”. The Liquid Pool is an investment vehicle that invests in passive investments that seek to replicate publicly-traded equity and commodity indexes currently in the following weighting: 60% S&P Global Infrastructure Index/35% S&P Global LargeMidCap Commodity and Resources Index/5% Bloomberg Roll Select Commodity Index. The S&P Global Infrastructure Index is a global index of publicly-traded infrastructure equities. The S&P Global LargeMidCap Commodity and Resources Index is a global index of publicly-traded natural resource (i.e., energy, materials, and agriculture) equities. The Bloomberg Roll Select Commodity Index is a diversified commodity-futures index.

Staff and NEPC have planned to use the Liquid Pool to proxy, via similar publicly traded equity exposures, the private infrastructure and natural resources investments while these private investments ramp up. Under the current plan, the Bloomberg Roll Select Commodity Index would be divested from the Liquid Pool and the weightings of the S&P Global Infrastructure Index and the S&P Global LargeMidCap Commodity and Resources Index would be re-weighted to mirror the RA asset class target weightings for private infrastructure (67%) and private natural resources (33%) investments, respectively, and managed, going forward, along these weightings. Then, as new private commitments are made and capital is called into these private vehicles, thereby building the private investment exposure in the RA asset class over time, the Liquid Pool will be drawn down dollar for dollar until the weighting of the private investments in the RA portfolio is 100% and the weighting to the Liquid Pool is 0%.

To accommodate this transition, language in the policy has been included to allow for publicly-traded investments to be temporarily invested in as part of the RA portfolio during the transitional period. The most prominent proposed policy changes related to this issue can be found towards the end of the Policy in the “ADDENDUM”. Additional, related policy changes are also found in Section IV (“TYPES OF REAL ASSETS INVESTMENTS”), and Section VI (“STRATEGIC ALLOCATIONS TO REAL ASSETS INVESTMENTS”).

- 3) ***Updating of Target Weighting for the RA Asset Class:*** The RA Policy was last amended on December 17, 2020. At that time, the target weight of the RA asset class in the total Fund was 5%. Then, on June 17, 2021, a new total Fund asset allocation was approved by the Board, which increased the target weighting of the RA asset class to 6%, but the RA Policy was not updated at that time to reflect the higher target weighting. Since then, the target weighting to the RA asset class has remained the same at 6% including in the Mix C asset allocation adopted by the Board on July 18, 2024. Now, through this round of RA Policy updates, the RA Policy

is being updated to include a 6% target weighting for the RA asset class. This update can be found in Section VI (“STRATEGIC ALLOCATION TO REAL ASSETS”), Section VII (“SPECIFIC GUIDELINES FOR REAL ASSETS PORTFOLIO”), and Appendix III.

- 4) **Addition of Sub-Class Descriptions:** Descriptions of the types of investments expected in RA sub-classes of Natural Resources and Infrastructure have been added to the RA Policy to provide more information and clarity. These additions can be found in Section VII (“SPECIFIC GUIDELINES FOR REAL ASSETS PORTFOLIO”).
- 5) **Updated RA Asset Class Benchmark:** To reflect the RA asset class’ mix of publicly-traded and private investments while the asset class transitions to 100% private investments, as well as the target sub-class weightings to private infrastructure (67%) and natural resources (33%) investments, the proposed, updated benchmark is 67% S&P Global Infrastructure Index/33% S&P Global LargeMidCap Commodity and Resources Index + 100 basis points. The 100 basis points is added to reflect the higher required rate of return of private infrastructure and natural resources investments versus their public counterparts that comprise the benchmark index components. By comparison, the legacy benchmark is 60% S&P Global Infrastructure Index/35% S&P Global LargeMidCap Commodity and Resources Index/5% Bloomberg Commodity Index. Changes to the RA Policy related to this proposed update are found in Section X (“PERFORMANCE EVALUATION CRITERIA”).
- 6) **Delegated Authority:** Prior to this update, the RA Policy did not contain language related to the Board/IC delegating authority to Staff to make investment decisions and, accordingly, no RA investments have been made under delegated authority to date. However, delegated authority language is now being proposed in the RA Policy that is similar to the delegated authority language found in the updated Private Credit and Private Equity Policies. The delegated authority limits included in this policy update are: 1) 7% (of the target allocation to the RA asset class) for private investments managed by managers that are new to ACERA; and 2) 15% for aggregate commitments (i.e., existing plus incremental commitments) to existing private RA managers in good standing. In addition, like the Private Credit and Private Equity Policies, delegated authority language is added to allow for Staff to make decisions on “Continuation Funds” related to existing private funds because of the truncated timeframes (i.e., 10 – 20 business days) under which a decision must typically be made. Section VIII (“ROLES AND RESPONSIBILITIES”) has been updated to reflect these changes.
- 7) **Updated Information Disclosure Policy for RA Investments:** In order to update and align it with the Private Credit and Private Equity Policies, the language in the RA Policy related to information disclosure on RA Investments has been updated. These updates can be found in Section XII (“REAL ASSETS INFORMATION DISCLOSURE POLICY”) and Appendix IV (“Details of Disclosure Policy For Real Assets Investments (“RA Funds”)).

**Attachment:**

#1 Redlined ACERA Real Assets Policy, prepared by Staff and NEPC

**Alameda County Employees'  
Retirement Association**

**ACERA**

**REAL ASSETS POLICY**

**Amended: TBD December 17, 2020**

# ACERA REAL ASSETS POLICY

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# Real Assets Policy

## I. SCOPE

This Real Assets Policy (“RA Policy” or “Policy”) governs all investments in the Real Assets (“RA”) asset class made by Alameda County Employees’ Retirement Association (“ACERA”). Established in April, 2011 the RA Policy is subject to all provisions of applicable law and applicable limitations and requirements of ACERA’s General Investment Guidelines, Policies and Procedures. If there is any conflict between this RA Policy and ACERA’s General Investment Guidelines, Policies and Procedures pertaining to investments in the RA asset class, the Policy prevails. The ACERA Board (“Board”) reserves the right to amend, supplement, and/or rescind the Policy at any time.

## II. PURPOSE

The purpose of the Policy is to:

1. Set forth the RA investment policies and guidelines which are deemed to be appropriate and prudent;
2. Establish criteria against which RA investment opportunities are to be measured; and
3. Serve as a review document to guide the ongoing oversight of ACERA’s Real Assets Portfolio on a consistent basis.

The Policy also defines roles and responsibilities of the Board, the ACERA Investment Committee (“IC”), the ACERA Staff (“Staff”), the ACERA RA Consultant (“Consultant”), and the RA Investment Managers hired by ACERA to manage its assets (“Managers”).

It is expected that the Policy will be a living document and that changes will be made from time-to-time to reflect experience, evolving investment products, and opportunities and changes in the economic and capital market environment.

The RA asset class is designed to produce positive expected returns and to ~~protect~~mitigate the impact against of domestic inflation.

The RA portfolio is principally intended to:

1. Exceed the RA Policy benchmark on a net of fees basis.
2. ~~Protect against~~Mitigate the impact of domestic inflation and trending inflation, especially during periods of unexpected inflation.
3. Add alpha and diversification to the ACERA portfolio.

## III. LEGAL AUTHORITY

The Policy is established in accordance with Article XVI, Section 17 of the California Constitution and California Government Code sections 31594 and 31595, which establish the exclusive authority and fiduciary responsibility of the Board for the investment and administration of the ACERA Trust Fund (“Fund”).

#### IV. TYPES OF REAL ASSETS INVESTMENTS

The RA portfolio ~~will invest in liquid and illiquid~~ is intended to invest in private natural resources and infrastructure investments over the long term. In order to maintain the RA portfolio's market value close to its target weighting in the total Fund as the portfolio transitions to 100% private investments, however, the RA portfolio will, over the medium-term, maintain its exposure to liquid/publicly traded investments<sup>1</sup> (please see Addendum for more information).

The private and liquid/publicly-traded investments in the RA portfolio ~~strategies that will seek~~ are expected to provide a positive expected return and to help mitigate the impact of domestic inflation on the total Fund. Liquid/publicly-traded investments are expected to consist of publicly-traded equities in the natural resources and infrastructure sectors ~~commodities, inflation-protected bonds (TIPS) and other exchange-listed securities that are believed to provide an appropriate hedge to inflation~~. In addition, the RA portfolio ~~will~~ is expected to invest in ~~illiquid~~, private limited partnerships and secondaries in sectors with inflation-sensitive assets including, but not limited to, energy, mining, ~~infrastructure~~, timberland, and farmland (collectively private natural resources investments), as well as infrastructure.

All RA investments/strategies made through privately-placed funds are considered Alternative Investments.

RA investments include, but are not limited to, the following:

1. ~~Commodities~~
2. ~~Treasury Inflation Protected Securities (TIPS), Inflation Break-evens~~
3. ~~Developed and Emerging Market Currencies~~
- 4.1. Natural Resources - Related Equities
- 5.2. Infrastructure - Related Equities
6. ~~Gold, Other Precious Metals~~
7. ~~Publicly-traded Real Estate Investment Trusts (REITs)~~
- 8.3. Privately-placed Energy Funds Investments
- 9.4. Privately-placed Mining Funds Investments
10. ~~Privately-placed Infrastructure Funds~~
5. Privately-placed Farmland Funds Investments
6. Privately-placed, Timber Funds Investments
- 11.7. Privately-placed Infrastructure Funds Investments
12. ~~Publicly-traded Energy Master Limited Partnerships (MLP's)~~
13. ~~Other Inflation Hedging Assets~~

#### V. STRATEGIC OBJECTIVE OF REAL ASSETS INVESTMENTS

The strategic objective of real assets investments is to generate a positive, ~~domestic inflation sensitive~~ return in excess of the asset class's assigned benchmark, while mitigating the impact of domestic inflation on the total Fund. The Board believes the Fund's overall returns can be enhanced, on a risk-adjusted basis, by investing a portion of its assets in RA assets.

#### VI. STRATEGIC ALLOCATIONS TO REAL ASSETS

The target allocation to the Real Assets Asset Class is 65.0% of the total Fund. The long-term RA target

<sup>1</sup> The publicly-traded investments will consist of two passively managed equity index strategies managed in one vehicle that seeks to replicate the blended return of 67% S&P Global Infrastructure Index/33% S&P Global LargeMidCap Commodity and Resources Index.

portfolio will consist ~~of of both liquid and illiquid private~~ investments with a target allocation between the two ~~sub-classes of private pools of~~ investments ~~(i.e., natural resources and infrastructure), at~~ ~~commitment level,~~ as follows:



<b>Permanent RA Portfolio<sup>1</sup></b>	<b>Target Allocations</b>
<b>Liquid Pool (publicly-traded)</b>	<b>25%</b>
<b>Commodities</b>	5%
<b>Natural Resources</b>	10%
<b>Infrastructure</b>	10%
<b>Illiquid Pool (privately-placed)</b>	<b>75%</b>
<b>Natural Resources</b>	25%
<b>Infrastructure</b>	50%

<b>RA Portfolio</b>	<b>Long-Term Target Allocation<sup>1</sup></b>	<b>Long-Term Min./Max. Ranges<sup>1</sup></b>
<b>Real Assets</b>	<b>6.0%</b>	<b>3.0% to 9.0%</b>
-Private Infrastructure	67%	47% to 87%
-Private Natural Resources	33%	13% to 53%

However, in order to maintain the RA portfolio’s target weighting in the total Fund while building investment exposure to private investments, a liquid vehicle (“Liquid Pool”) will be used in the interim that invests in publicly traded global equities targeting the same percentage weightings for natural resources (33%) and infrastructure (67%) as the RA portfolio’s long-term private targets to these sub classes. As more private investments are made, the private portion of the RA portfolio is expected to grow towards 100% of the RA portfolio while the Liquid Pool is being progressively and completely divested. (Please see Addendum for interim weightings to the private investments and the Liquid Pool.)

**The Liquid Pool serves four purposes:**

1. Provide a high correlation to inflation
2. Allow ACERA to fund its RA target allocation, providing the Total Fund with RA risk exposures to the private real asset strategies
3. Act as a drawdown vehicle to fund commitments made by ACERA within the illiquid portfolio.
4. Ensure that ACERA has sufficient liquidity either to meet the Total Fund’s needs and/or to take advantage of attractive investment opportunities

It is expected that the liquid pool will comprise the majority of the RA portfolio until privately-placed commitments are made and investment dollars are called.

**The Illiquid Pool serves two purposes:**

- ~~1. Provide a return premium above the publicly listed infrastructure and natural resource equity markets.~~
- ~~2. Enhance portfolio diversification by reducing the RA portfolio's public equity correlation~~

It is expected that the RA assets will be managed on a discretionary basis by investment managers, who are evaluated and monitored by Staff and Consultant. All investment managers will adhere to specific investment guidelines which are generally consistent with the intent of the Policy. Portfolio construction will be designed to produce a diversified mix of returns, ~~subject to the guidelines and constraints outlined under each sub-category above.~~ While specific investments may incur losses of all or part of the capital invested, it is expected that a diversified RA Portfolio will produce a positive return that exceeds the RA Policy benchmark. The risks associated with RA investments will be viewed within the context of the entire Fund. ACERA may take on over and under weights to sub-asset classes within the RA Portfolio to

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<sup>1</sup> Please see the Addendum to this RA Policy for the interim asset allocation ranges.

improve its risk/return posture based upon an assessment of the relative attractiveness of all available opportunities.

## VII. SPECIFIC GUIDELINES FOR REAL ASSETS PORTFOLIO

ACERA will gain exposure to RA investments by hiring external investment managers either directly or through participation in secondary RA markets. It is expected that the RA Portfolio will exceed the custom, blended benchmark net of all fees and expenses over a 7-10-year period (full market cycle).

The RA Portfolio is to be implemented over 3 to 5 years and diversified as follows:

By sub-asset classes: ~~Among n~~ Natural resources ~~and, i~~ Infrastructure, ~~commodities, and other similar investments.~~

### A. Natural Resources Investments

Description: Natural Resources investments are public and private investments that include, but are not limited to, equity, royalty, and debt investments in companies that produce commodities such as precious metals, industrial metals, minerals, energy, agriculture, and timberland. The companies invested in may focus solely on the production of commodities and may operate throughout commodity supply chains.

ACERA will look to hire external managers with the goal of achieving a diversified exposure across sectors, regions, and vintage year.

### B. Infrastructure Investments

Description: Infrastructure investments are public and private investments that include, but are not limited to, equity and debt investments in infrastructure assets or companies. Infrastructure assets and companies include, but are not limited to, those involved with renewable energy, energy transition, traditional energy, transportation, power, digital infrastructure, and social infrastructure.

ACERA will look to hire external managers with the goal of achieving a diversified exposure across sectors, regions, and vintage year.

By vintage year: It is expected that ACERA will commit capital to private real assets investments each year to take advantage of opportunities across vintage year. The commitment amounts will vary to adjust for changes in the market value of ACERA's plan, and accommodate market opportunities. Roughly equal amounts of new funding will be invested or committed to private investments in each calendar year, with significant deviations permitted to accommodate market opportunities and to facilitate initial entry into the asset class.

By Investment Manager: No more than twenty (20) percent of the Fund's total ~~six~~ ~~five~~ (65) percent target allocation to the RA Portfolio may be ~~invested~~/committed to any one ~~illiquid~~ private investment ~~manager~~ ~~vehicle~~.

By private fund: No more than ten (10) percent of the Fund's total ~~six~~ (6) percent target allocation to the RA portfolio may be committed to any one private fund.

By geography: Through investments/commitments to funds on a global basis ~~to~~ ~~mitigate the impact of~~ ~~provide protection against~~ domestic inflation.

By industry sector: As a result of the diversified investments/commitments outlined above, it is expected that the RA Portfolio will generally be diversified within the natural resources and infrastructure by sectors by industry.

## VIII. ROLES AND RESPONSIBILITIES

The delineation of roles and responsibilities is important for effective administration of ACERA's RA Portfolio. The duties and responsibilities of the Board, IC, Staff, Consultant, and Managers are stated below:

### A. Board

The Board shall be responsible for approving the Policy that governs the RA Portfolio and approving the Investment Plans for ACERA's RA Portfolio. From time-to-time the Board, with input from the IC, shall review the Policy to determine whether amendments are advisable. The Board shall also be responsible for reviewing and approving all RA ~~commitments~~/investments with individual commitments exceeding Staff's delegated authority as described in subparagraph C below~~that are recommended by Staff and Consultant to the IC, Staff, and Consultant.~~

### B. Investment Committee

The IC shall be responsible for the following:

1. Establishing the RA Policy to govern all investments in the Real Assets asset class;
2. Reviewing the RA Policy, evaluating proposals for RA Policy amendments, if any, and making recommendations to the Board;
3. Reviewing and approving ~~the~~ Investment Plans for ACERA's RA Portfolio Investment Plan;
4. Recommending Reviewing RA investments recommended by Staff and/or Consultant and making recommendations to the Board ~~a Policy to govern all investments in or commitments to the RA asset class; for adoption; and~~
5. Delegation<sup>2</sup> :
  - a. Delegating to Staff the authority to make final decisions on new proposed RA investments with an individual commitment up to 7% of the target allocation to the total RA Portfolio.
  - b. Delegating to Staff the authority to make final decisions on proposed "re-up" RA investments with existing managers in good standing, an individual commitment in addition to the existing commitments, up to 15% of the target allocation to the total RA Portfolio.

+

- ~~2.1. Reviewing the Policy, evaluating proposals for amendments, if any, and making recommendations to the Board;~~
- ~~3.1. Reviewing and approving Investment Plans for ACERA's RA Portfolio;~~

~~4. Reviewing RA investments/commitments recommended by Staff and Consultant and recommending them to the Board for approval.~~

C. Staff

Staff shall be responsible for oversight of ACERA's RA Portfolio. Staff's responsibilities shall include, but not be limited to the following:

1. Developing and recommending all necessary changes to the [RA](#) Policy with input from Consultant;
2. Developing and maintaining specific procedures, if necessary, to comply with the approved [RA](#) Policy with input from Consultant;
- ~~2.3.~~ [Developing the investment plan of ACERA's RA Portfolio and making recommendations to the Committee for adoption with input from Consultant;](#)
4. Reviewing, conducting due diligence, and, if satisfied, recommending RA investment/commitment proposals to the IC. Staff and Consultant shall provide the IC all required reports ([See Appendices I through III](#));
5. [Delegation<sup>2</sup>:](#)
  - a. [Approving Consultant's RA investment proposals \(new proposals\) with each individual commitment up to 7% of the target allocation to the RA portfolio upon completion of a thorough review and due diligence process with satisfactory results. Staff and Consultant shall provide the Investment Committee all required reports \(See Appendices I through III\).](#)
  - b. [Approving Consultant's RA investment proposals for "re-ups" with existing managers with each individual commitment in addition to the existing commitments, up to 15% of the target allocation to the total RA portfolio to managers in good standing<sup>3</sup> upon completion of a thorough review and due diligence process with satisfactory results. Staff and Consultant shall provide the Investment Committee all required reports \(See Appendices I through III\).](#)
  - ~~3.c.~~ [When the investment manager or general partner of existing investment vehicles offer related continuation vehicles \(aka "continuation funds"\), following a thorough evaluation of the investment options related to the continuation vehicle \(i.e., subscribing to the continuation vehicle, receiving liquidity, or, in some cases, both\), and in alignment with Consultant's recommendation, approving of investment in continuation vehicles or other related options such as receiving liquidity \(i.e., receiving cash proceeds for the investments that are to be transferred into the continuation vehicle\);](#)
6. [Through the ACERA Investment Products and Services Introduction \("IPSI"\) program and with the concurrence of the Consultant, recommend highly qualified RA investments to the IC or approve investments under delegated authority upon completion of a thorough due diligence process and the requisite reporting \( See Appendices I through III\).](#)
- 4.7. Monitoring the RA Portfolio for performance and compliance with the Policy;
- ~~5.8.~~ Monitoring the performance of the underlying Managers and their compliance with a) the investment guidelines as set forth in their respective contracts; b) the Policy; and c) applicable requirements of ACERA's General Investment Guidelines, Policies and Procedures;
- ~~6.9.~~ Conducting comprehensive ~~annual~~ reviews of ACERA's RA Portfolio and the individual investments in the Portfolio;
- 7.10. Reporting to the IC any violations of the Policy with appropriate recommendations;
- 8.11. Assisting ACERA's legal department in contract negotiations with the selected Managers;
- 9.12. Evaluating RA investment opportunities with Consultant's input on an ongoing basis; and
- ~~10.13.~~ Evaluating and making recommendations for retention and termination of Managers.

<sup>2</sup> Investment manager may not appear before the Investment Committee in circumstances when Staff has exercised its delegated authority.

<sup>3</sup> An investment manager will be considered to be in good standing if there is sufficient comfort with factors including, but not limited to, its organization, strategy, performance, and compliance.

#### D. Consultant

Consultant hired by the Board is a fiduciary to ACERA and its Board. Consultant shall independently and continuously monitor and analyze the performance of ACERA's RA Portfolio and make related recommendations to serve the best interests of the plan members. Consultant shall assist Staff in developing the Policy and recommending all necessary changes to the Policy. In addition, Consultant shall be responsible for:

1. Analyzing the asset allocation of the RA Portfolio by sub-asset classtype, implementation vehicle, geography, industry, and vintage year, and making recommendations for reallocation of assets, as appropriate;
2. Developing an investment plan for ACERA's RA Portfolio every 1 to 3 yearsannually;
3. Developing a search strategy for highly qualified RA investments and maintaining a robust database containing information on qualifying Managers;
4. Recommending highly qualified investments to Staff and/or the Investment Committee upon completion of a thorough due diligence process and providing the required reports to Staff and/or the IC;
- 4.5. When continuation vehicles are offered related to existing investment vehicles, and following a thorough evaluation of the related investment options, recommending to Staff which investment option is most suitable for the RA Portfolio;
- 5-6. Ongoing monitoring of the investment performance of ACERA's RA Portfolio and individual investment strategiess in the Portfolio;
- 6-7. Conducting ongoing due diligence on Managers, notifying ACERA of any significant developments and adverse events and providing analysis and advice on such issues;
- 7-8. Monitoring Managers' compliance with a) their respective investment guidelines as set forth in their contracts; b) the RA Policy; and c) applicable requirements of ACERA's General Investment Guidelines, Policies and Procedures;
- 8-9. Assisting Staff in contract negotiations with the selected Managers;

- 9.10. Submitting performance evaluation reports and conducting comprehensive reviews of the RA Portfolio ~~semi-annually with the IC and on~~ individual Managers when appropriate, ~~semi-annually to the IC in conjunction with the regular quarterly performance report and review;~~
- 10.11. Making recommendations for retention or termination of Managers;
- 11.12. Attending IC and Board meetings as needed; and
- 12.13. Performing other duties in accordance with the terms of its contract and applicable State and Federal law.

E. Managers

Managers are fiduciaries and shall manage ACERA's assets prudently and in the best interests of ACERA and its members. Managers shall abide by all applicable policies and procedures established by ACERA and comply with applicable law. Managers shall be responsible for compliance with a) the specific investment guidelines as set forth in their respective contracts; b) the Policy; and c) applicable requirements of ACERA's General Investment Guidelines, Policies and Procedures. They shall also:

1. Communicate with Staff and/or Consultant promptly regarding investment strategy, investment results, and any non-conforming issues that may have significant and/or negative impact on the portfolio;
2. Cooperate fully with Staff, Consultant, ACERA's custodian, and other ACERA vendors concerning requests for information;
3. Submit reports in a timely manner to Staff and Consultant in accordance with their contract terms; and
4. Attend meetings as needed.

## IX. DUE DILIGENCE PROCESS FOR RA INVESTMENT SELECTION

ACERA recognizes that a proper due diligence process is essential to control the risks associated with RA investments and, therefore, hereby establishes the following due diligence processes for both its Consultant and Staff:

A. Consultant

Consultant shall conduct extensive, documented due diligence before making any RA investment recommendations to Staff and the IC. Consultant shall involve work closely with Staff in the due diligence process when appropriate. For those investments recommended to be included in the ACERA RA Portfolio, eConsultant's duties shall include but not be limited to:

1. Assessing the reputation of the individuals who manage the RA investments. Consider background checks, internet searches, and in-person meetings with these individuals, etc.;
2. Conducting on-site visits to the offices of the Managers;
3. Checking references from other investors that have invested in these RA investments, and, when advisable, from competitors;
4. Determining that the RA investment funds are audited, at least annually, by a reputable and recognized external auditing firm;
5. Reviewing Managers' investment strategies, policies, operating procedures, and historical performances;
6. Reviewing and understanding the valuation procedures employed by the Managers;
7. Reviewing and understanding the business terms of all operational documents and other related materials for the RA investments under consideration, including but not limited to offering memoranda, subscription agreements, fund policies, due diligence questionnaires, and Forms

ADV, if and as available.

- ~~7. Reviewing business terms of all legal agreements and other related documents for the RA investments under consideration, such as offering memorandum, legal agreements, and SEC Forms ADV;~~
8. Assessing what exit strategies exist to avoid future investments in or liquidate exiting investments from strategies exhibiting poor performance; and



9. Reviewing the investments for potential exposure to Unrelated Business Taxable Income (UBTI) as specified by the Investment Manager, with the understanding that tax-related implications are outside the expertise of the Consultant-

B. Staff

Staff shall ensure that Consultant has conducted extensive, documented due diligence on all RA investment proposals recommended to Staff and the IC. Staff shall participate in Consultant’s due diligence process when appropriate and shall also:

1. Review the comprehensive analysis report prepared by Consultant on its recommended RA investments;
2. Verifying the compliance of each recommended RA investment with the RA Policy, the investment plan for ACERA’s RA Portfolio and other applicable ACERA investment policies;
3. Discussing issues related to the recommended RA investments with Consultant and with Investment Managers to gain a thorough understanding of each strategy’s return drivers, key terms, and investment guidelines, and determine the investment suitability for ACERA’s RA Portfolio;
- 2.4. Conduct independent internal due diligence on the recommended investment, including, but not limited to: meeting with Managers and their proposed management teams, performing background checks on related parties, review of the offering materials and proposed investment contracts, and attending onsite diligence meetings at the Managers’ offices when possible;
3. ~~Verify the appropriateness of each recommended RA investment with consideration to the Policy, the investment plan for ACERA’s RA Portfolio and other applicable investment policies;~~
4. ~~Discuss all issues related to the recommended RA investments with Consultant and if necessary, with the Managers; and~~
5. Arrange presentations to the IC for ~~all~~ recommended RA investments when needed to as applicable ~~allow the IC to make recommendations to the Board for approval.~~

**X. PERFORMANCE EVALUATION CRITERIA**

When appropriate, the specific performance evaluation criteria, including, but not limited to benchmarks, for Managers will be established in the investment agreements between ACERA and individual Managers.

Performance of the RA portfolio will be measured against the following blended benchmark:

67% S&P Global Infrastructure Index/33% S&P Global LargeMidCap Commodity and Resources Index +100 basis points

<del>S&amp;P Global LargeMidCap Commodity and Resources Index</del>	<del>35%</del>
<del>S&amp;P Global Infrastructure Index</del>	<del>60%</del>
<del>Bloomberg Commodity Index</del>	<del>5%</del>

Individual managers will be measured against their respective benchmarks.

Privately-placed and publicly-traded Natural Resources <u>Investments</u>	S&P Global LargeMidCap Commodity and Resources Index
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Privately-placed and publicly-traded Infrastructure <u>Investments</u>	S&P Global Infrastructure Index
<del>Privately placed and publicly traded Commodities</del>	<del>Bloomberg Commodity Index</del>

## XI. MONITORING AND REPORTING

Consultant and Staff will monitor and analyze the RA Portfolio closely so that the strategic objective(s) of the Portfolio can be met.

Managers shall submit all reports to Staff, Consultant, ACERA's custodian, and other ACERA vendors in accordance with their respective contracts.

Consultant shall submit all reports to Staff in accordance with its contract terms and the Policy.

Consultant, in conjunction with Staff, shall perform evaluations of ACERA's RA Portfolio and the underlying Managers ~~annually and, when appropriate,~~ semiannually. Consultant shall report the findings to Staff and the IC.

## XII. REAL ASSETS INFORMATION DISCLOSURE POLICY

ACERA is a public agency subject to state laws, including, without limitation, (a) the California Public Records Act (Cal. Gov. Code § ~~7920.000~~6250 *et seq.*) (the "Public Records Act"), which provides generally that all records relating to a public agency's business are open to public inspection, disclosure and copying, unless specifically exempted under the Public Records Act, (b) the Ralph M. Brown Act (Cal. Govt. Code § 54950, *et. seq.*) (the "Brown Act"), which provides generally for open meetings for local legislative bodies, and (c) the California Government Code Section 7514.7 ("the Fee Disclosure Act) which provides generally that public pension systems in California obtain and publicly disclose certain information regarding fees, expenses and returns from the alternative investment vehicles in which they invest. See Appendix IV for details of the ACERA disclosure Policy regarding its RA investments. The investment of the ACERA Fund is a matter of legitimate public interest; however, the Legislature has determined that the public interest requires that certain information regarding privately placed funds remain exempt from disclosure. (Cal. Gov. Code §6254.26.) Therefore, regarding RA investments, it shall be the policy of ACERA to disclose only those records described in California Government Code Section 6254.26, subdivision (b). Specifically, ACERA will disclose the following categories of documents:

- ~~1. The name, address, and vintage year of each RA investment;~~
- ~~2. The dollar amount of the commitment made to each RA investment vehicle by ACERA since inception;~~
- ~~3. The dollar amount of cash contributions made by ACERA to each RA investment vehicle since inception;~~
- ~~4. The dollar amount, on a fiscal year-end basis, of cash distributions received by ACERA from each RA investment vehicle;~~
- ~~5. The dollar amount, on a fiscal year-end basis, of cash distributions received by ACERA plus remaining value of fund assets (or interest in) attributable to ACERA's investment in each RA investment vehicle;~~
- ~~6. The net internal rate of return of each RA investment vehicle since inception;~~
- ~~7. The investment multiple of each RA investment vehicle since inception;~~
- ~~8. The dollar amount of the total management fees and costs paid on an annual fiscal year-end basis, by~~

~~ACERA to each RA investment vehicle; and~~

~~9. The dollar amount of cash profit received by ACERA from each RA investment vehicle on a fiscal year-end basis.~~

~~All other records regarding such RA investments shall be exempt from disclosure to the fullest extent permitted under applicable law. Notwithstanding the preceding, ACERA reserves the right to withhold any record on the basis that the public interest in disclosure is clearly outweighed by the public interest in withholding the record (Cal. Gov. Code §6255).~~

### **XIII. TABLE OF AMENDMENT DATES**

March 17, 2016

October 18, 2018

May 15, 2019<sup>2</sup>

December 17, 2020

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<sup>2</sup> This amendment reflects the updated “Natural Resources” index in the Real Assets Portfolio benchmark composite (see Section X Performance Evaluation Criteria) from the “S&P Global LargeMidCap Natural Resources Index” to the “S&P Global LargeMidCap Commodity and Resources Index” as reported to the Investment Committee on May 15, 2019.

## Appendix I

### List of Reports Required for Each Investment Recommendation/Approval

Name of Report	Source
Recommendation/Approval memo	Staff
Recommendation/Approval memo	Consultant
Executive Summary of the Fund <del>prepared)</del>	Consultant/ <del>*Staff and Staff (separately</del>
Compliance Checklist	Staff
Comprehensive Due Diligence Report ( <del>a</del> Available to Trustees upon request <del>due</del> owing to confidentiality)	Consultant
Manager Pitchbook	<u>Investment</u> Manager

**\*Note: Staff will provide an abbreviated Executive Summary Report that is available for review upon request by the Trustees.**

# Appendix II

## Executive Summary Report Template

Fund Name

### Section I: General Information

Fund Name; Total AUM of the Firm; Current Target Fund Size; Previous Fund Size; Fund Focus; etc.

### Section II: Investment Management

Organizational Structure; Management Group; Experience; Personnel Turnover; etc.

### Section III: Investment Strategy

Investment Philosophy; Investment Strategy; Investment Process; Investment Objective; etc.

### Section IV: Risk Management

Risk Control Methodology; Exit Strategy; etc.

### Section V: Investment Rationale

### Section VI: Investment Concerns

### Section VII: Performance (example)

Benchmark:

Net Returns (%):

Period Ending Dates	YTD	1Year	3Years	5Years	Since Inception
Gross Fund/Account Results					
Net Fund/Account Results					
Benchmark					
Relative Performance: Account—Benchmark					
Gross Fund/Account—Benchmark					
Net Fund/Account—Benchmark					

2

### Section VIII: Key Terms

Fund Term; Preferred Return; Investment Period; Management Fee; Other Fees; Fee Discounts; General Partner Carry; GP Commitment; Advisory Board; Clawbacks; No-Fault Divorce; Key-Person Events; Closing Schedule; Drawdown Schedule; etc.





**RA Policy**

**Investment Fund**

**In Compliance**

**4. Portfolio Diversification**

<p>By sub-asset class: <del>among commodities n</del> Natural resources, <del>and</del> infrastructure, <del>and debt-related/special situations</del>.</p> <p>By vintage year: roughly equal amounts of new funding may be committed in each calendar year with deviations permitted.</p> <p><del>By investment manager: ≤ 20% of the target allocation to the RA asset class may be committed to any one private investment manager.</del></p> <p>By <del>i</del>Investment <del>f</del>Fund: <del>←≤</del>21% of the target allocation to <del>the total</del> RA asset class may be committed to any one illiquid private investment <del>fund</del>vehicle.</p> <p>By geography: commitments to funds located and/or investing both inside and outside of the U.S.</p> <p><del>By sector/industry: commitments to funds that will diversify the RA portfolio within sector/industry.</del></p>	<p><i>Specific investment type.</i></p> <p><i>Specific vintage year.</i></p> <p><i>Specific investment manager.</i></p> <p><i>Specific commitments to the Investment Fund.</i></p> <p><i>Specific location.</i></p> <p><i>Sector/Industry diversification</i></p>	<p><i>Yes, No, or N/A</i></p> <p><i>Yes, No, or N/A</i></p> <p><i>Yes, No, or N/A</i></p> <p><i>Yes, No, or N/A</i></p> <p><i>Yes, No, or N/A</i></p> <p><i>Yes, No, or N/A</i></p>
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**5. Return Expectation**

<p><del>Custom Benchmark or Blend (see Primary Benchmark in Policy)</del>67% S&amp;P Global Infrastructure Index/33% S&amp;P Global LargeMidCap Commodity &amp; Resources Index + 100 basis points (net of all fees) in aggregate.</p> <p><del>Infrastructure Investments: S&amp;P Global Infrastructure Index</del></p> <p><del>Natural Resources Investments: S&amp;P Global LargeMidCap Commodity &amp; Resources Index</del></p>	<p><i>Specific return target(s).</i></p>	<p><i>Yes, No, or N/A</i></p>
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**6. Investment Allocations**

<p>RA Portfolio: <del>target 6%, range 03%-95%</del> of the total Fund. <del>Liquid Pool (publicly-traded): range 10%-100%</del></p> <p><del>Commodities: range 0%-10%</del> Natural Resources: <del>range 5%-35%</del></p> <p><del>Infrastructure: 5%-55%</del></p>	<p><i>Expected allocations to the RA Portfolio and to the underlying portfolios including specific commitment to the Investment Fund.</i></p>	<p><i>Yes, No, or N/A</i></p>
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<p><u>Private Investments<sup>4</sup>:</u></p> <p><u>Natural Resources: 13% - 53% of the RA portfolio</u></p> <p><u>Infrastructure: 47% - 87% of the RA portfolio</u></p> <p><del>Liquid Pool (privately placed): range 0-90%</del>  <del>Natural Resources: range 0-30%</del>  <del>Infrastructure: range 0-60%</del></p>	<p><u>Proposed investment is within the sub-class-allocation range.</u></p>	<p><u>Yes, No, or N/A</u></p>
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**RA Investment Plan for YEARS**

Approved: *DATE*

**Investment Fund**

**In compliance**

<p>Specific Investment Plan.</p>	<p><i>Specific commitment to the Investment Fund.</i></p>	<p><i>Yes, No, or N/A</i></p>
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<sup>4</sup> See RA Policy Addendum for interim sub-asset class target ranges for private and liquid/publicly traded investments.

## APPENDIX IV

### Details of Disclosure Policy For Real Assets Investments (“RA Funds”)

1. Upon request, ACERA shall disclose : (i) the name, address and vintage year of each RA Fund; (ii) the dollar amount of capital committed to each RA Fund by ACERA since inception; (iii) the dollar amount of cash contributions made to each RA Fund by ACERA since inception; (iv) the dollar amount of distributions received by ACERA from each RA Fund on a fiscal yearend basis; (v) the market value of ACERA’s investment in each RA Fund on a fiscal yearend basis; (vi) each RA Fund’s net internal rate of return (“IRR”) since inception; (vii) the investment multiple of each RA Fund since inception; (viii) the dollar amount of total management fees and expenses paid on an annual fiscal yearend basis, by ACERA to each RA Fund; and (ix) the dollar amount of cash profit received by ACERA from the RA Fund on a fiscal yearend basis. (*See* Cal. Govt. Code § ~~7928.710(c)~~~~6254.26(b).~~)

2. ACERA shall disclose at least once annually in a report presented at a meeting open to the public : (i) the fees and expenses that ACERA pays directly to the RA Fund, the RA Fund manager or related parties; (ii) ACERA’s pro rata share of fees and expenses not included in (i) that are paid from the RA Fund to the RA Fund manager or related parties; (iii) ACERA’s pro rata share of carried interest distributed by the RA Fund to the RA Fund manager or related parties; (iv) ACERA’s pro rata share of aggregate fees and expenses paid by all of the portfolio companies held by the RA Fund to the RA Fund manager or related parties; (v) the information outlined in Section 1, above, and (vi) the gross and net IRR of the RA Fund, since inception. (*See* Cal. Govt. Code § 7514.7.)

All other records regarding such ~~RA Absolute Return~~ investments shall be exempt from disclosure to the fullest extent permitted under applicable law.

Notwithstanding the preceding, or anything else in this Policy, ACERA reserves the right to withhold any record when “on the facts of the particular case the public interest served by not disclosing the record clearly outweighs the public interest served by disclosure of the record.” (*See* Cal. Govt. Code § ~~7922.0006255(a).~~) This weighing process contemplates a case-by-case balancing test between competing public interests based on the facts presented as the statute has been interpreted by the courts.<sup>3</sup>

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<sup>3</sup> *Michaelis, Montanari & Johnson v Superior Court*, 38 Cal.4th 1065, 1071 (2006).

# ADDENDUM

## Interim Asset Allocation Ranges (Expected 5-8 Years)

### For Real Assets Portfolio

On July 18, 2024, the ACERA Board adopted a new Total Fund asset allocation that calls for the RA asset class to be 100% invested in private natural resources and infrastructure investments. However, prior to the adoption of this asset-allocation change, the RA portfolio was comprised of 56% liquid/publicly traded investments and 44% private natural resources and infrastructure investments and its aggregate market value was close to its 6% target weighting in the Total Fund. If ACERA immediately adopted an RA portfolio allocation of 100% private investments and divested its liquid/publicly traded investments, the RA portfolio would be significantly underweight its current 6% target in the Total Fund as it would divest 56% of its market value. In addition, it takes time to build out a portfolio of private investments as these investments must first be committed to, then, investors' committed capital is called into these investments and invested over multiple years during these investments' investment periods (typically 4 – 6 years). Moreover, it is prudent to achieve vintage-year diversification in building out private portfolios so all of the private capital will not be committed to private investments in a single year and will instead be committed over a multi-year period.

As a result, To maintain the market-value weighting of the RA portfolio close to its target weighting in the total Fund while continuing to build out the portfolio's private investments, the RA portfolio will temporarily invest, over the medium term, in liquid/publicly traded equities in the natural resources and infrastructure sectors. These equities will be passively managed in an existing separate account that will be comprised of two passive funds that seek to replicate the S&P Global LargeMidCap Commodity and Resources Index and the S&P Global Infrastructure Index in the same weightings, 33% and 67%, respectively, as the RA portfolio's target weightings to private natural resources (33%) and private infrastructure (67%). This existing separate account is known as the "Liquid Pool" and will serve as a temporary proxy for the private natural resources and infrastructure investments that are being built out over a multi-year period. By temporarily investing in these publicly-traded investments, the RA portfolio can maintain its 6% weighting in the Total Fund while achieving a risk/return posture that is similar to a 100% private RA portfolio.

Over time, as more commitments are made to private investments and capital is called to be invested into them, the private component of the RA portfolio will approach its 100% target. While this happens, the Liquid Pool will be used as a draw-down vehicle to fund the capital calls of the private investments dollar for dollar and will approach its intended 0% target in the RA portfolio.

This addendum and the below Interim Asset Allocation Ranges are meant to allow for the RA portfolio's transition from one that is a mix between liquid/publicly-traded and private investments to one that is completely private investments and do so while maintaining the RA portfolio's target weighting in the Total Fund with a risk/return posture that will approximate the risk/return posture of a 100% private portfolio along the way. facilitate the rapid transition of the Real Assets Portfolio from one that is highly exposed to exchange-traded commodities into an investment fulfillment structure that has a better expected return profile and is better aligned with the target RA Asset Allocation and the asset class's purpose, the RA portfolio will adopt an interim asset allocation range. This interim asset allocation range temporarily accommodates higher than target capital to the Liquid Pool, which can be invested in immediately, and lower than target capital to the Illiquid Pool, which takes time to allocate capital to. The Illiquid Pool (75% of the RA Asset Allocation target) is comprised of illiquid, privately placed

investment vehicles that typically cannot be invested in all at once. These vehicles must first be committed to, then, over their investment periods (typically 3—7 years), they call investors' capital to fund investors' long-term commitments. As a result, it is expected that the process of building out the Illiquid Pool with these vehicles will take several years.

In the meantime, to rapidly alter the RA Portfolio's investment exposure from one that is highly exchange-traded commodity focused into one that is better aligned with the asset class's purpose and objectives, the Liquid Pool will temporarily (over the next 5—8 years) be over allocated to. This over allocation to the Liquid Pool will, over time, be reduced as the Illiquid Pool is built out and rises towards its asset allocation target.

As commitments are made to the illiquid, privately placed vehicles in the Illiquid Pool and the associated capital is called, the Liquid Pool will be used as a draw-down vehicle to fund the Illiquid Pool capital calls dollar for dollar. Over time, as this process plays out, both the Liquid and Illiquid Pools will increasingly move towards their target asset allocation until finally reaching them in approximately 8 years. This addendum and the below Interim Asset Allocation Ranges demonstrate the wide ranges these sub-asset classes are expected to assume during this process and over the interim period:

<b>RA Asset Sub-Class</b>	<b>Interim Asset Allocation Ranges</b>
<b>Liquid Pool (publicly-traded)</b>	<b>10%-100%</b>
<b>Commodities</b>	<b>0%-10%</b>
<b>Natural Resources</b>	<b>5%-35%</b>
<b>Infrastructure</b>	<b>5%-55%</b>
<b>Private Investments Illiquid Pool (privately-placed)</b>	<b>0%-90%</b>
<b>Natural Resources</b>	<b>0-30%</b>
<b>Infrastructure</b>	<b>0-60%</b>

<b>RA Portfolio</b>	<b>Interim Min./Max. Ranges</b>
<b>Private Investments</b>	<b>30% to 100%</b>
-Private Infrastructure	25% - 87%
-Private Natural Resources	0% - 53%
<b>Liquid Pool</b>	<b>0% - 70%</b>
-Publicly Traded Infrastructure	0% - 47%
-Publicly Traded Natural Resources	0% - 23%



# 2025 CAPITAL MARKET ASSUMPTIONS

ALAMEDA COUNTY EMPLOYEES'  
RETIREMENT ASSOCIATION

MARCH 5, 2025

Sam Austin, Partner

Dan Hennessy, Senior Consultant



# ASSET CLASS ASSUMPTIONS

- Introduction 3
- Macroeconomic 12
- Public Equity 17
- Fixed Income 22
- Real Assets 28
- Alternative Assets 33
- Appendix 39





# INTRODUCTION

# CAPITAL MARKET ASSUMPTION PRINCIPLES

## HOW SHOULD RETURN ASSUMPTIONS BE INTERPRETED

- **NEPC return assumptions are meant to reflect a nominal return expectation for a buy-and-hold investor, net of fees, over a 10-year and 30-year investment horizon**
- **With this in mind, NEPC asset class return assumptions look to include all sources of return that flow to an asset class over time**
  - Each major contributing source of return is a building block in our models
- **NEPC's asset class models are designed to be forward-looking and not to replicate the past, which requires both model scrutiny and iteration**
- **Forecasting asset class returns, requires forward-looking assumptions about building block contributors and how they evolve over time**
- **Developing market trends require scrutiny and time to analyze data and research market shifts to understand whether they are cyclical or structural inputs contributing to an asset class's building blocks**

# ASSET CLASS ASSUMPTIONS

## DEVELOPMENT

- **Capital market assumptions are published for over 70 core asset classes and over 30 composites**
- **Market data as of 12/31/2024**
- **NEPC proprietary models used to develop return forecasts based on a building block approach**
- **The 10-year return outlook is intended to support strategic asset allocation analysis**
- **30-year return assumptions are used for actuarial inputs and long-term planning**

## Asset Allocation Process

1. Finalize list of new asset classes
2. Calculate asset class volatility and correlation assumptions
3. Set model terminal values, growth, and inflation inputs
4. Model data updated at quarter-end
5. Review model outputs and produce asset class return assumptions
6. Assumptions released on the 15<sup>th</sup> calendar day after quarter-end

# ASSET CLASS BUILDING BLOCKS

## METHODOLOGY

- **Asset models reflect current and forecasted market data to inform expected returns**
- **Systematic inputs are paired with a long-term trend to terminal values**
- **Model inputs are aggregated to capture key return drivers for each asset class**
- **Building block inputs will differ across asset class categories**

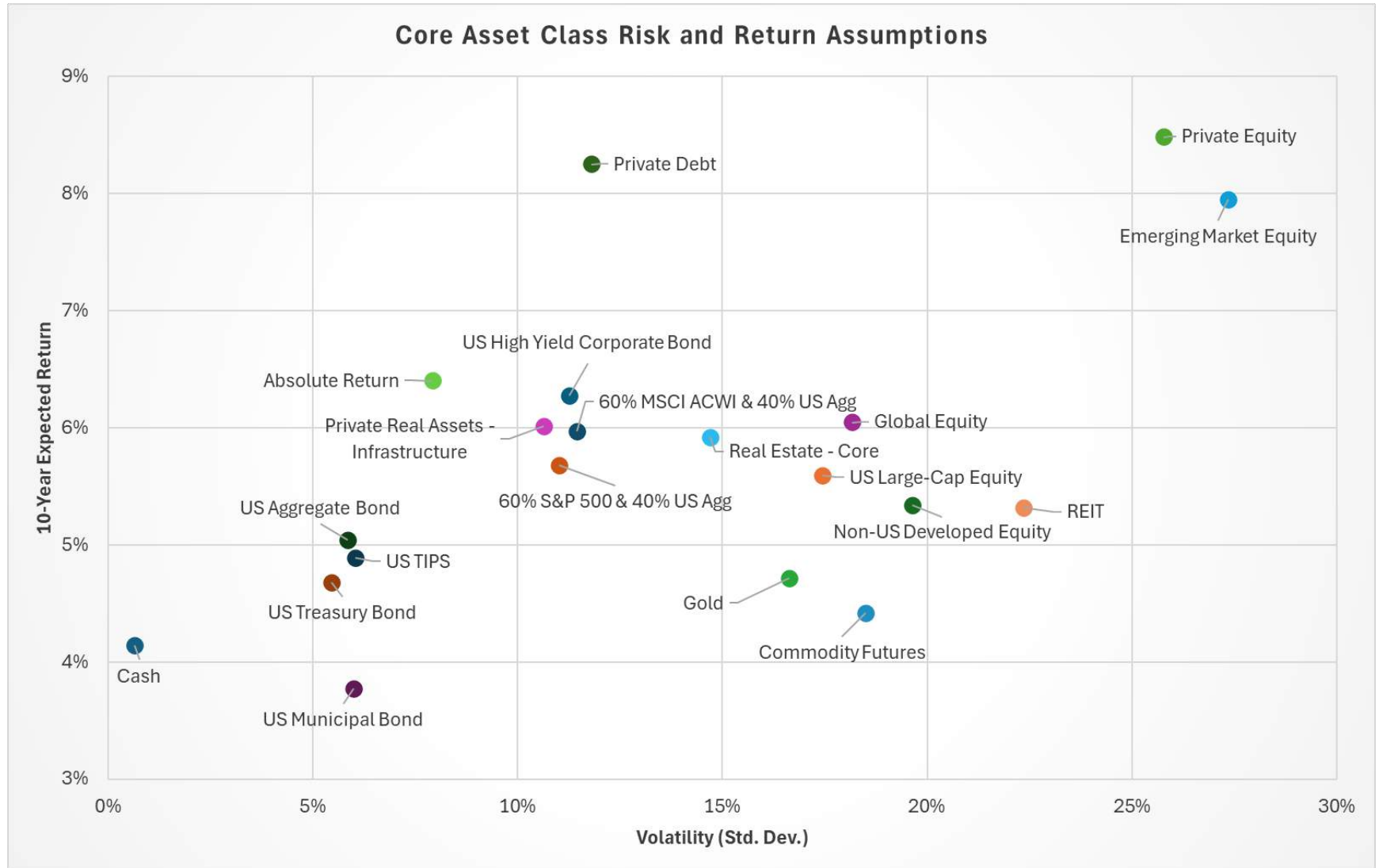


# CORE ASSET CLASS RETURN ASSUMPTIONS

	Asset Class	12/31/2024 10-Year Return	12/31/2023 10-Year Return	Delta
	Cash	4.1%	3.9%	+0.2%
	U.S. Inflation	2.6%	2.6%	-
Equity	U.S. Large-Cap Equity	5.6%	4.4%	+1.2%
	Non-U.S. Developed Equity	5.3%	4.6%	+0.7%
	Emerging Market Equity	8.0%	8.6%	-0.6%
	Global Equity*	6.1%	5.4%	+0.7%
	Private Equity*	8.5%	9.0%	-0.5%
Fixed Income	U.S. Treasury Bond	4.7%	4.2%	+0.5%
	U.S. Municipal Bond	3.8%	3.5%	+0.3%
	U.S. Aggregate Bond*	5.0%	4.6%	+0.4%
	U.S. TIPS	4.9%	4.6%	+0.3%
	U.S. High Yield Corporate Bond	6.3%	6.1%	+0.2%
	Private Debt*	8.3%	8.3%	-
Real Assets	Commodity Futures	4.4%	4.6%	-0.2%
	REIT	5.3%	6.0%	-0.7%
	Gold	4.7%	4.9%	-0.2%
	Real Estate - Core	5.9%	5.4%	+0.5%
	Private Real Assets - Infrastructure	6.0%	6.8%	-0.8%
Multi-Asset	60% S&P 500 & 40% U.S. Aggregate	5.7%	4.8%	+0.9%
	60% MSCI ACWI & 40% U.S. Agg.	6.0%	5.4%	+0.6%
	Absolute Return*	6.4%	6.1%	+0.3%

\*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

# CORE ASSET CLASS RISK AND RETURN ASSUMPTIONS



# CORE ASSET CLASS CORRELATION ASSUMPTIONS

Asset Class	Cash	US Large-Cap Equity	Non-US Developed Equity	Emerging Market Equity	Global Equity	Private Equity	US TIPS	US Treasury Bond	US Aggregate Bond	US High Yield Corporate Bond	US Municipal Bond	Private Debt	Commodity Futures	REIT	Gold	Real Estate - Core	Private Real Assets - Infrastructure	Absolute Return
Cash	1.00																	
US Large-Cap Equity	0.03	1.00																
Non-US Developed Equity	0.00	0.84	1.00															
Emerging Market Equity	(0.04)	0.71	0.80	1.00														
Global Equity	0.01	0.97	0.93	0.83	1.00													
Private Equity	(0.01)	0.91	0.85	0.76	0.94	1.00												
US TIPS	0.28	(0.09)	(0.11)	(0.13)	(0.11)	(0.14)	1.00											
US Treasury Bond	0.16	(0.10)	(0.11)	(0.13)	(0.12)	(0.14)	0.98	1.00										
US Aggregate Bond	0.15	0.13	0.13	0.09	0.13	0.10	0.91	0.93	1.00									
US High Yield Corporate Bond	(0.03)	0.67	0.68	0.65	0.72	0.71	(0.03)	(0.02)	0.27	1.00								
US Municipal Bond	0.08	0.16	0.18	0.13	0.17	0.16	0.62	0.64	0.75	0.37	1.00							
Private Debt	(0.01)	0.61	0.64	0.59	0.66	0.67	(0.16)	(0.16)	0.13	0.91	0.30	1.00						
Commodity Futures	0.03	0.35	0.45	0.47	0.42	0.40	(0.11)	(0.12)	(0.00)	0.38	(0.00)	0.43	1.00					
REIT	(0.01)	0.62	0.60	0.51	0.65	0.68	0.07	0.08	0.27	0.64	0.31	0.61	0.28	1.00				
Gold	(0.01)	0.05	0.18	0.26	0.12	0.10	0.24	0.26	0.30	0.15	0.17	0.10	0.38	0.15	1.00			
Real Estate - Core	(0.02)	0.52	0.51	0.44	0.54	0.56	0.04	0.04	0.22	0.60	0.27	0.56	0.25	0.74	0.12	1.00		
Private Real Assets - Infrastructure	0.01	0.51	0.55	0.51	0.56	0.56	(0.02)	(0.02)	0.14	0.54	0.16	0.54	0.66	0.67	0.27	0.52	1.00	
Absolute Return	0.11	0.61	0.65	0.63	0.67	0.68	(0.06)	(0.07)	0.15	0.65	0.23	0.73	0.50	0.45	0.20	0.41	0.49	1.00

# ACERA RETURN AND RISK EXPECTATIONS

	10 Year		30 Year	
	12/31/2023	12/31/2024	12/31/2023	12/31/2024
<b>Expected Return</b>	6.5%	6.8%	7.7%	8.0%
<b>Expected Volatility</b>	14.2%	14.0%	14.2%	14.0%
<b>Sharpe Ratio</b>	0.18	0.19	0.30	0.31

<b>Probabilities using December 31, 2024 Assumptions</b>	
<b>Probability of 1-Year Return Under 0.00%</b>	31.4%
<b>Probability of 10 Year Return Under 0.00%</b>	6.2%
<b>Probability of 10 Year Return Under 7.00%</b>	51.6%
<b>Probability of 30-Year Return Under 7.00%</b>	35.3%

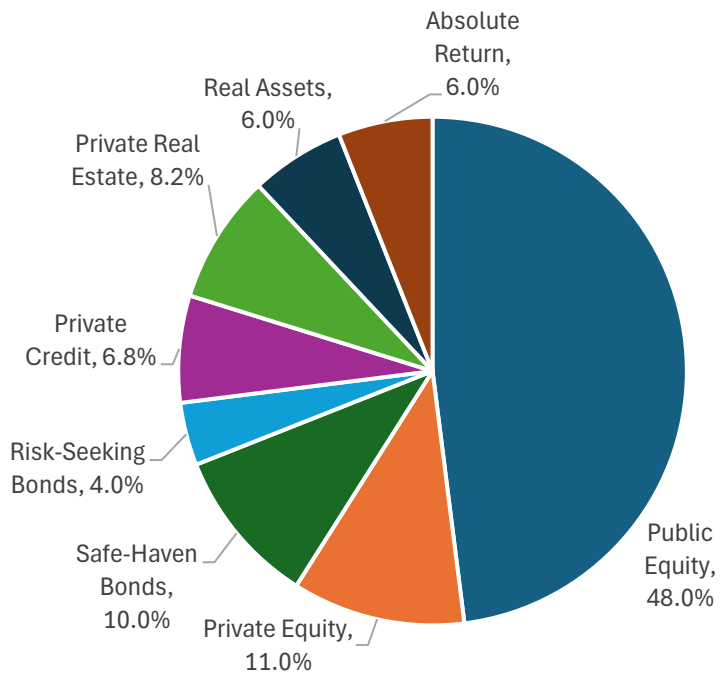
Expectations are based on NEPC's capital market assumptions as of 12/31/23 and 12/31/24 using ACERA's target asset allocation as of 1/1/25.



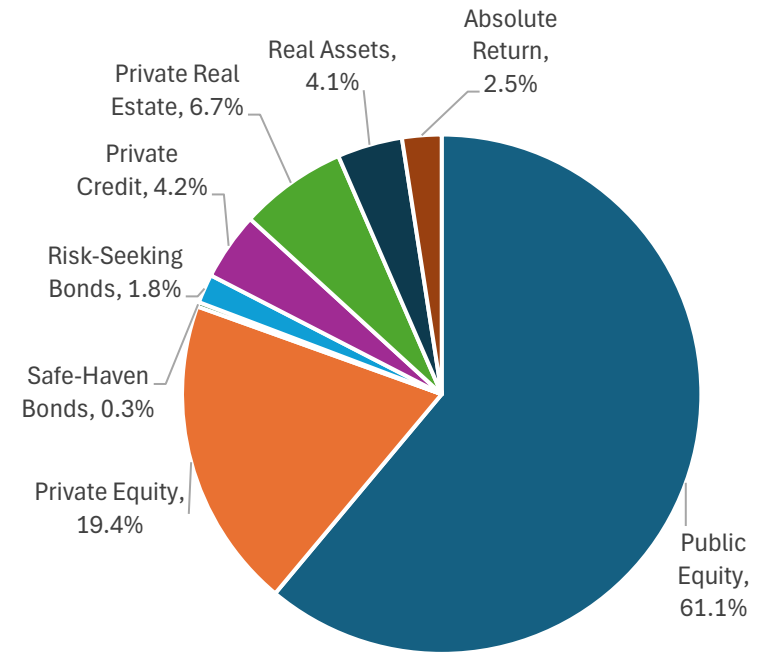


# ACERA CAPITAL VERSUS RISK ALLOCATION

## Capital Allocation



## Risk Allocation



Based on NEPC's capital market assumptions as of 12/31/24 and ACERA's target asset allocation as of 1/1/25.





# MACROECONOMIC

# U.S. INFLATION ASSUMPTIONS

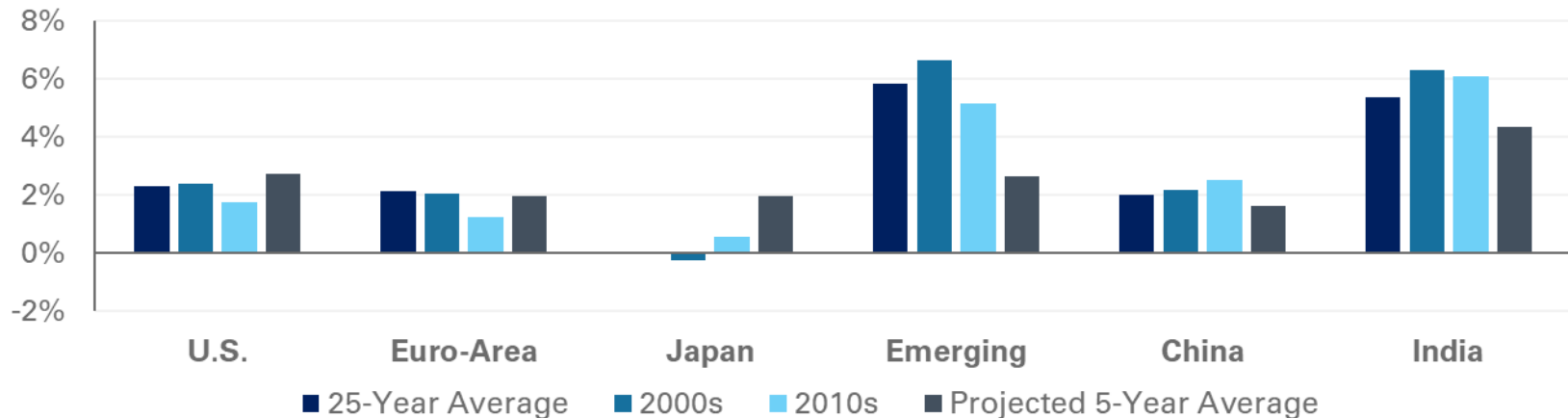
## OVERVIEW

- Inflation is a key building block to develop asset class assumptions
- Inflation assumptions are model-driven and informed by multiple inputs for both the U.S. and global assets
- NEPC's inflation assumption forecasts near-term paths for major Consumer Price Index (CPI) components including food, energy, core services, and shelter costs
  - CPI is expected to converge with breakeven inflation forecast over the long-term
- The composite inflation assumption reflects a blend of NEPC's inflation forecast and market-implied breakeven inflation rates

U.S. Inflation Assumption		
Time Horizon	Current	12-Month Change
10-Year	2.6%	—
30-Year	2.7%	+0.1%

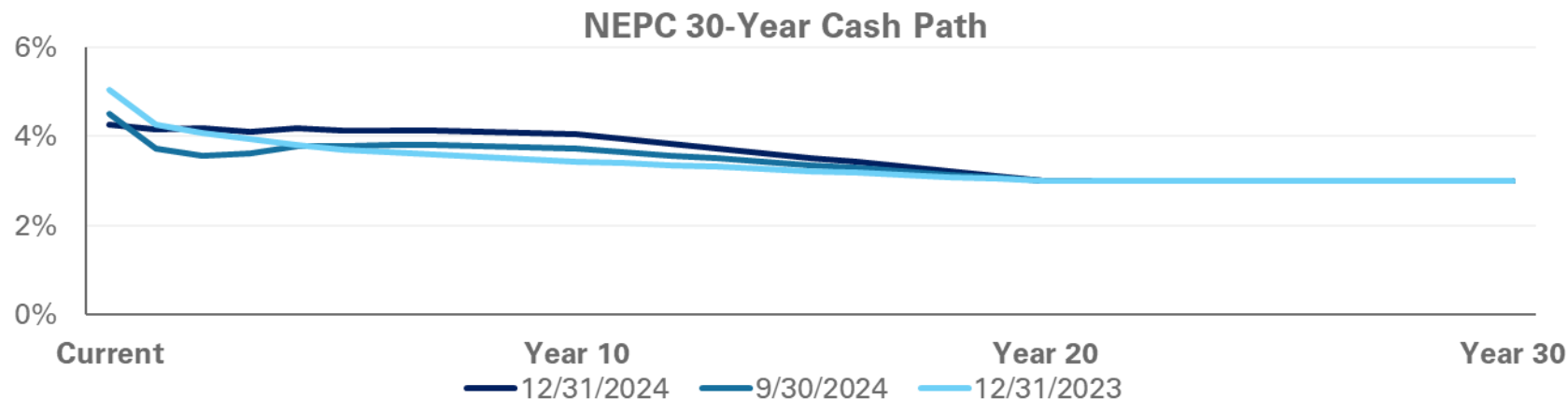
# GLOBAL INFLATION

## HISTORICAL INFLATION



- **Non-U.S. forecasts are guided by IMF forecasts, local consumer and producer price indices, and global interest rate curves**
- **Near-term inflation levels for developed markets are projected to be higher relative to history**
  - Long-term inflation assumptions reflect NEPC's path and central bank targets
  - The expected inflation differential between emerging and developed markets has narrowed significantly

# U.S. CASH EXPECTATIONS



- **Cash is a foundational input for all asset class return expectations that reflects forward expectations of inflation and real interest rates**
  - Cash + risk premia is an input for long-term asset class return projections
- **The composite cash assumption is built from a blend of NEPC’s cash forecast and market forward pricing of short-term interest rates**

Time Horizon	Current	12-Month Change
10-Year	4.1%	+0.2%
30-Year	3.6%	+0.2%

Sources: Bloomberg, FactSet, NEPC.

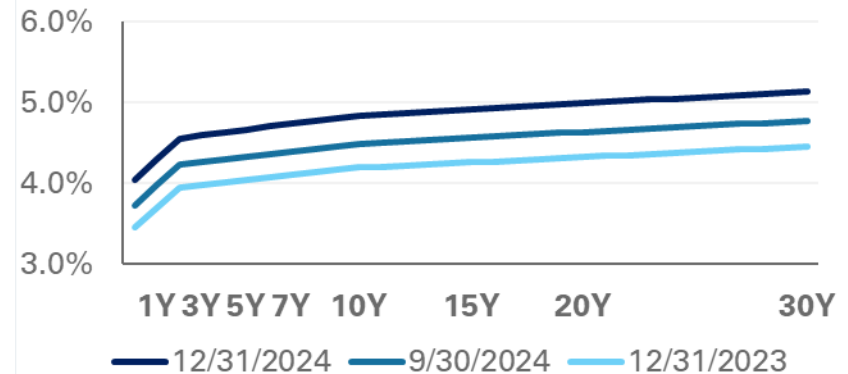


# GLOBAL INTEREST RATES

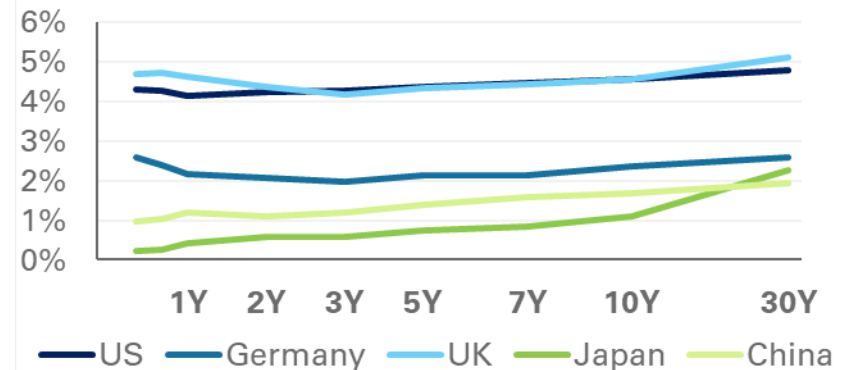
## EXPECTATIONS

- **NEPC's outlook on forward U.S. interest rates has remained consistent over the past few years, generally higher than market expectations**
- **Market expectations shifted substantially higher in Q4 2024, contributing to a higher return outlook for fixed income**
- **The outlook is less attractive for non-U.S. developed markets due to the nominal yield differential relative to the U.S.**
  - Differing regional growth and inflation conditions have led to diverging central bank actions

### NEPC 10-Year Forward U.S. Treasury Curve



### Global Yield Curves



Sources: FactSet, NEPC





# PUBLIC EQUITY



# PUBLIC EQUITY ASSUMPTIONS

## BUILDING BLOCKS

<b>Illiquidity Premium</b>	The return expected for assets with illiquidity risk
<b>Valuation</b>	Represents P/E multiple contraction or expansion relative to long-term trend
<b>Inflation</b>	Market-specific inflation based on country-level revenue exposure
<b>Real Earnings Growth</b>	Market-specific real growth based on a weighted-average of country revenue exposure and GDP growth
<b>Shareholder Yield</b>	Income distributed to shareholders via dividend distributions and net share repurchases

Asset Class	12/31/24 10-Yr Return	12-Month Change
U.S. Large-Cap Equity	5.6%	+1.2%
U.S. Small/Mid-Cap Equity	5.8%	-0.2%
Non-U.S. Developed Equity	5.3%	+0.7%
Non-U.S. Developed Small-Cap Equity	6.7%	+0.3%
Emerging Market Equity	8.0%	-0.6%
Emerging Market Small-Cap Equity	7.1%	-0.8%
Hedge Fund - Equity	5.8%	+0.3%
Global Equity*	6.1%	+0.7%
Private Equity*	8.5%	-0.5%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

Source: NEPC



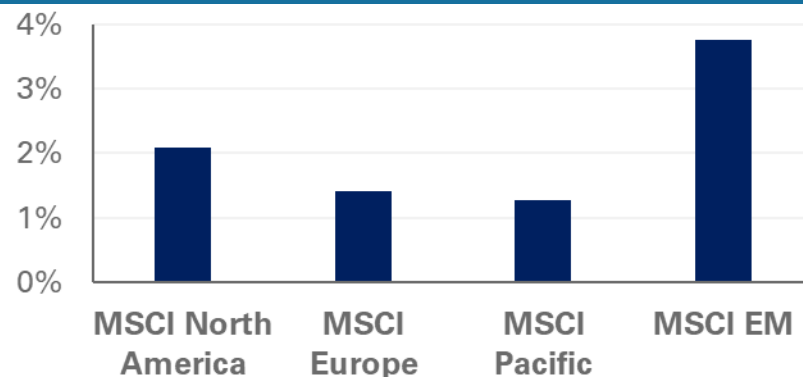


# PUBLIC EQUITY

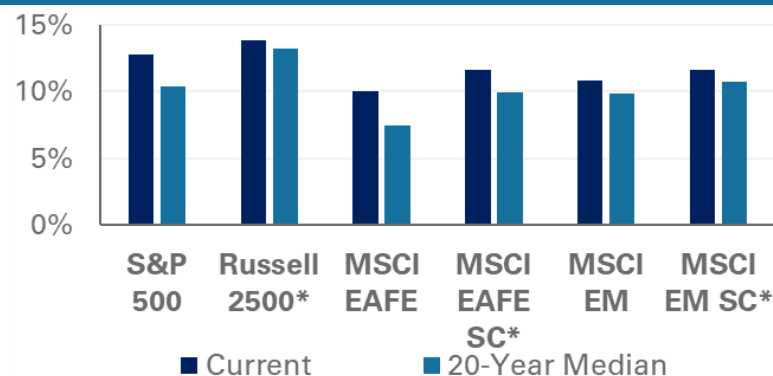
## REAL EARNINGS GROWTH

- U.S. equities benefit from higher sales growth forecasts, reflecting the resiliency and consistency of the U.S. consumer**
  - Relative to other markets, U.S. large cap companies have global revenue exposure that benefits from global growth rates
- Cyclically-high profit margin levels temper real earnings growth forecasts given expectations for normalization**
  - Profit margin assumptions reflect a path towards long-term targets that consider the shift in index composition through time

Expected 5-Year Real Growth



Profit Margins Relative Median

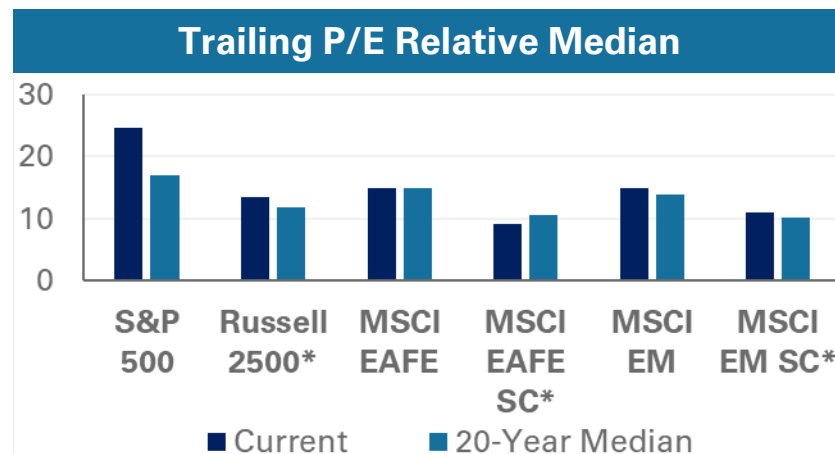
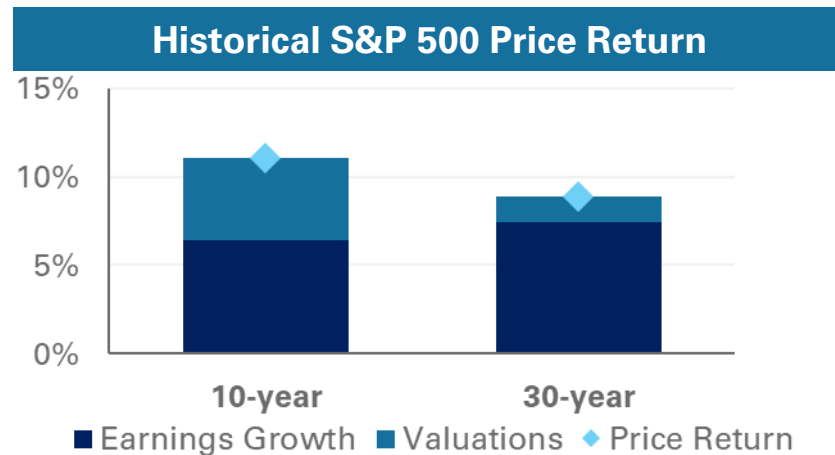


Note: \*Small cap indices margins based on EBITDA margins  
Sources: S&P, Russell, MSCI, FactSet, NEPC

# PUBLIC EQUITY

## VALUATION

- **Valuations have a large influence on short- to medium-term returns, but earnings growth is the driver of long-term returns**
- **U.S. large-cap valuations are elevated relative to long-term target levels**
  - U.S. large-cap valuations represent the largest drag on returns across the equity complex
- **Non-U.S. Developed valuations remain close to fair value**
  - Lower long-term valuation targets reflect expectations of a more challenged economic profile



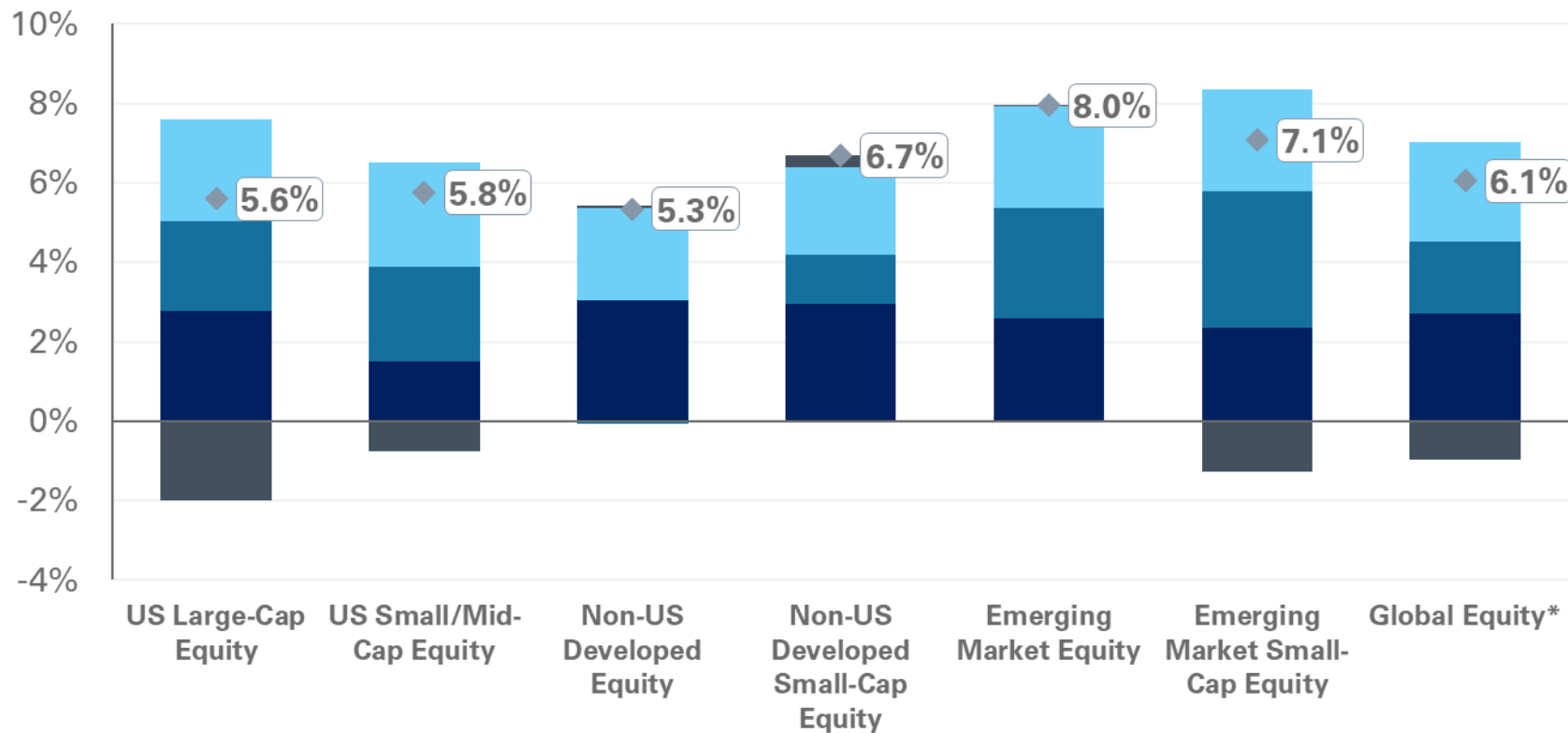
Note: \*Small cap indices valuations based on EV/EBITDA multiples

Sources: S&P, Shiller, Russell, MSCI, FactSet, NEPC; Shiller PE long-term average beginning in 1924



# PUBLIC EQUITY

## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



■ Shareholder Yield ■ Real Earnings Growth ■ Inflation ■ Valuation ◆ Total Return

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

Source: NEPC



# FIXED INCOME

# FIXED INCOME ASSUMPTIONS

## BUILDING BLOCKS

<b>Illiquidity Premium</b>	The return expected for assets with illiquidity risk
<b>Government Rates Price Change</b>	Change due to shifts in current yields relative to forecasted rates
<b>Credit Deterioration</b>	The average loss for credit assets due to defaults and recovery rates
<b>Spread Price Change</b>	Valuation change due to changes in credit spreads relative to long-term targets
<b>Credit Spread</b>	Yield premium provided by securities with credit risk
<b>Government Rates</b>	The yield attributed to sovereign bonds that do not have credit risk

Asset Class	09/30/24 10-Yr Return	12-Month Change
U.S. TIPS	4.9%	+0.3%
U.S. Treasury Bond	4.7%	+0.5%
U.S. Corporate Bond	5.7%	+0.4%
U.S. MBS	4.9%	+0.5%
U.S. High Yield Corporate	6.3%	+0.2%
U.S. Leveraged Loan	7.3%	+0.1%
EMD External Debt*	6.9%	-0.2%
EMD Local Currency Debt	6.7%	+0.6%
Non-U.S. Govt. Bond	2.5%	+0.1%
U.S. Muni Bond (1-10 Year)	3.4%	+0.5%
U.S. High Yield Muni Bond	4.3%	-0.2%
Hedge Fund – Credit	6.9%	+0.3%
U.S. Aggregate Bond*	5.0%	+0.4%
Private Debt*	8.3%	-

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

Source: NEPC

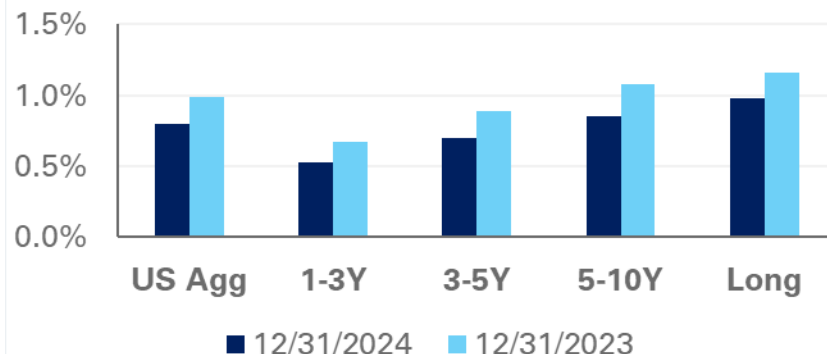


# FIXED INCOME

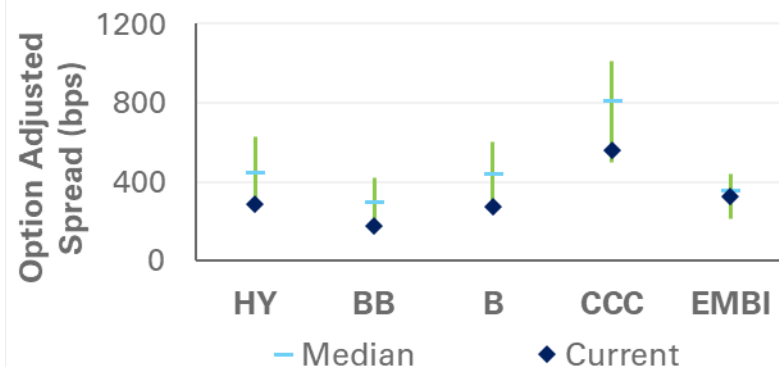
## CREDIT SPREADS

- **Credit spreads have tightened and are broadly below median levels**
  - BB and B spreads have fallen near historical lows
- **Lower spread levels weigh on future return expectations given less overall carry return**
- **Credit spread assumptions reflect a path towards long term medians**
- **Default and recovery rate assumptions are informed by long-term history**

### U.S. Corporate OAS by Maturity



### Return-Seeking Credit Spreads

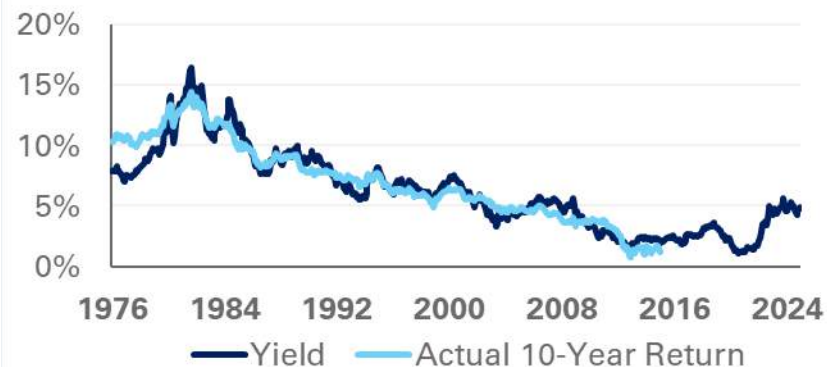


# FIXED INCOME

## GOVERNMENT RATES

- **Government rates price change reflects shifts in interest rates, the yield curve, and roll down**
  - Roll down refers to the price change due to the aging of a bond along the yield curve
- **U.S. Treasury yield curve has steepened substantially over the past 12 months - closer to what we would consider a normal, upward-sloping yield curve**
- **A normal, upward-sloping yield curve provides optimal return potential for fixed income**

### Barclays U.S. Aggregate Bond

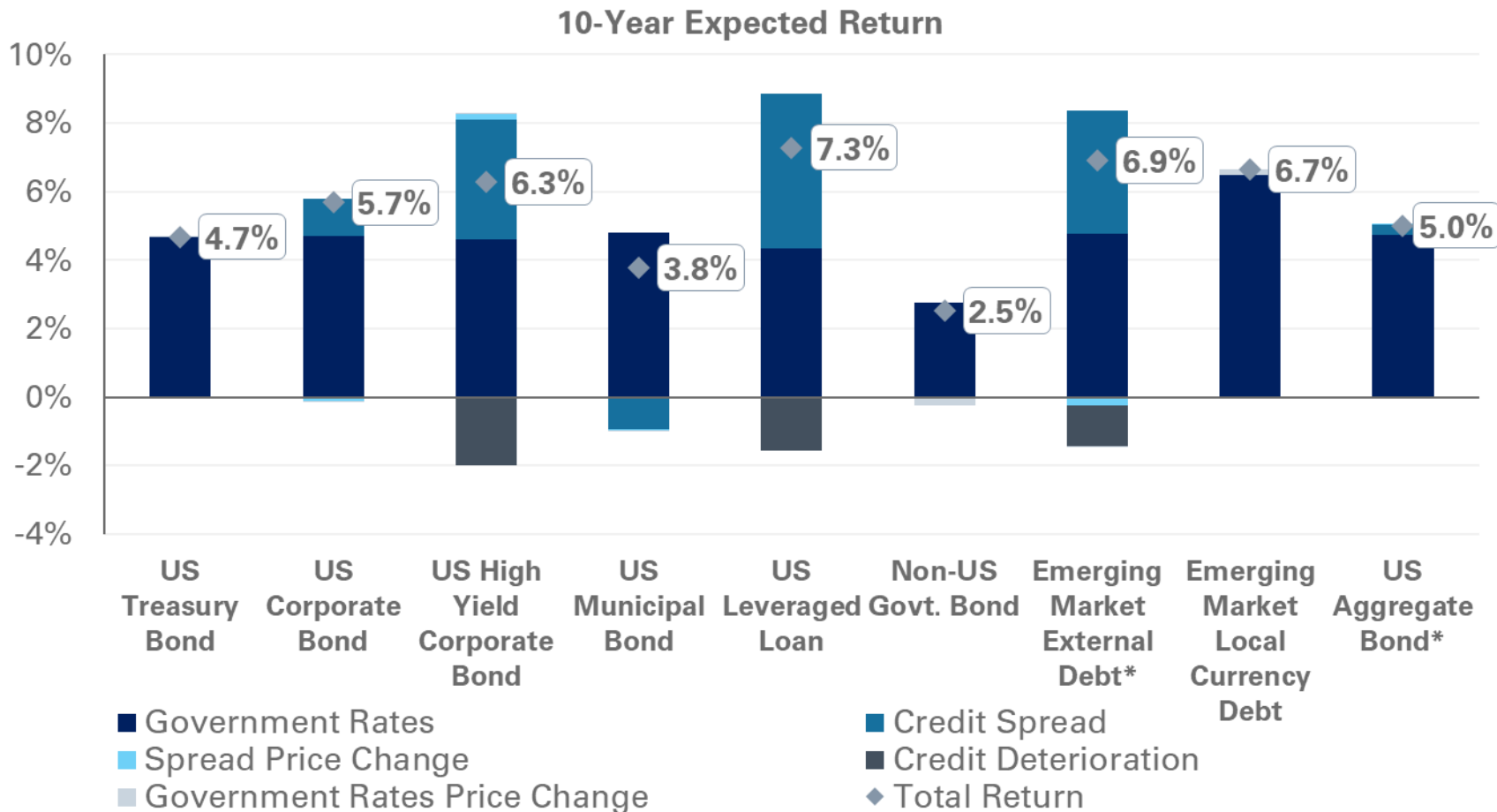


### Annual Change in Treasury Yields



# FIXED INCOME

## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

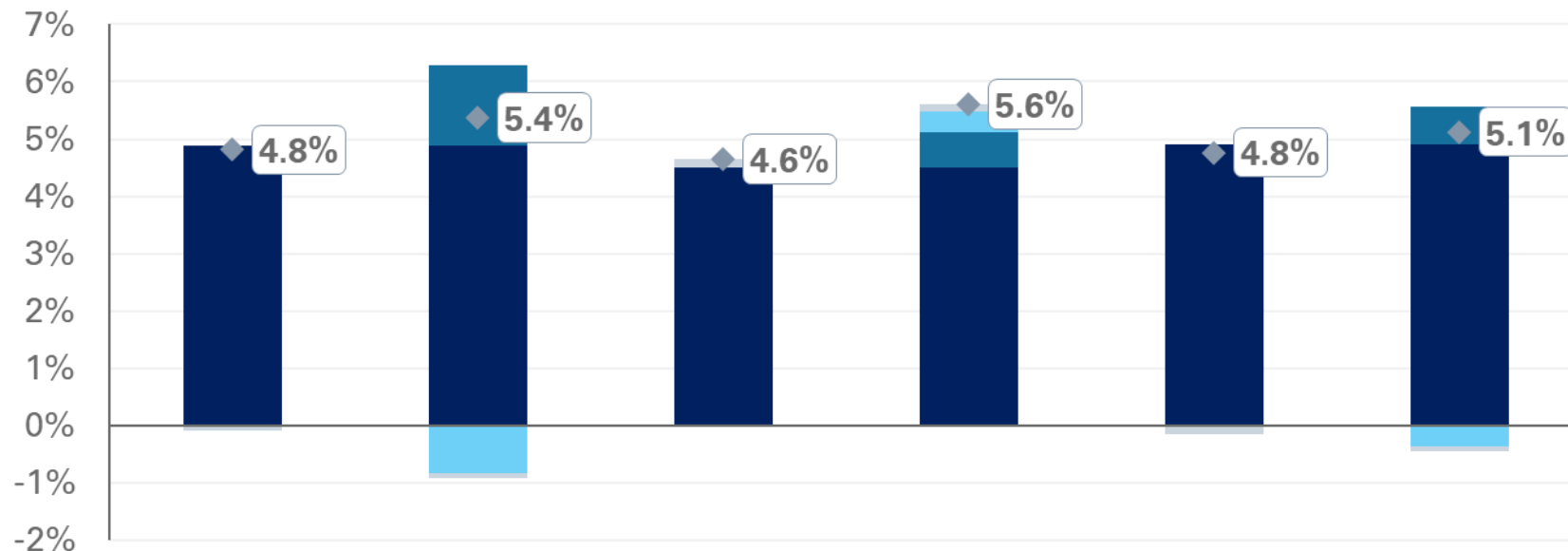
Source: NEPC





# FIXED INCOME

## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



US Long-Term Treasury Bond    US Long-Term Corporate Bond    US Short-Term Treasury Bond    US Short-Term Corporate Bond    20+ Year US Treasury STRIPS    US Long-Term Govt/Credit\*

- Government Rates
- Credit Spread
- Spread Price Change
- Credit Deterioration
- Government Rates Price Change
- ◆ Total Return

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

Source: NEPC





# REAL ASSETS



# REAL ASSET ASSUMPTIONS

## BUILDING BLOCKS

<b>Illiquidity Premium</b>	The return expected for assets with illiquidity risk
<b>Valuation</b>	The change in price of the asset moving to a terminal value or real average level
<b>Inflation</b>	Based on the inflation path as defined by breakeven-inflation rates and NEPC assumptions
<b>Growth</b>	Market-specific real growth based on a weighted-average of country-level revenue exposure and GDP growth
<b>Real Income</b>	The inflation-adjusted income produced by the asset

Asset Class	12/31/24 10-Yr Return	12-Month Change
Commodity Futures	4.4%	-0.2%
Midstream Energy	4.6%	-0.9%
REIT	5.3%	-0.7%
Global Infrastructure Equity	5.4%	-1.2%
Global Nat Resource Equity	7.0%	+0.8%
Gold	4.7%	-0.2%
Real Estate - Core	5.9%	+0.5%
Real Estate – Non-Core	7.6%	+0.5%
Private Debt - Real Estate	6.5%	+0.2%
Private Real Assets - Natural Resources	8.2%	-
Private Real Assets - Infrastructure	6.0%	-0.8%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

Source: NEPC

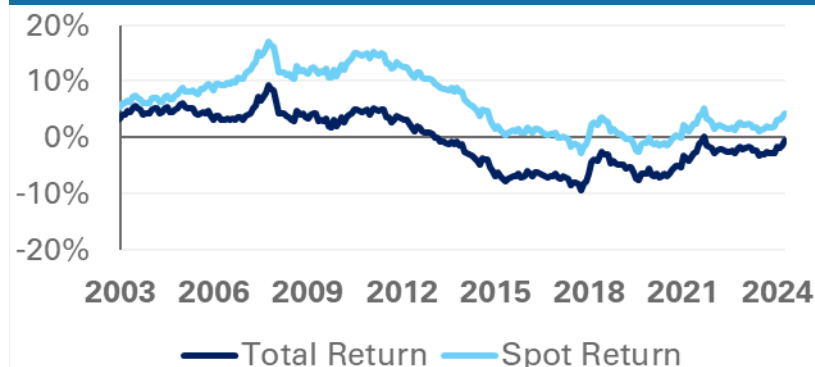


# REAL ASSET

## REAL INCOME

- **Equity: Real income is inflation-adjusted dividend yield**
  - Includes public infrastructure, REITS, midstream energy, and natural resource equity
- **Real Estate: Real income is net operating income (NOI)**
  - NOI growth tracks the business cycle and economic regimes
- **Commodity Futures: Real income reflects collateral return and the futures roll yield**
  - Collateral is based on a cash proxy over the time horizon and has increased in-line with cash rates

**Commodities Rolling 10-Year Returns**



**Real Asset Yields**

	12/31/24	12/31/23
Midstream Energy	3.1%	5.9%
Real Estate - Core	3.1%	2.6%
U.S. REITs	4.3%	4.2%
Global Infrastructure Equities	3.6%	3.7%
Natural Resource Equities	3.7%	3.7%
U.S. 10-Year Breakeven Inflation	2.3%	2.2%
Commodity Index Roll Yield	-0.9%	-0.9%

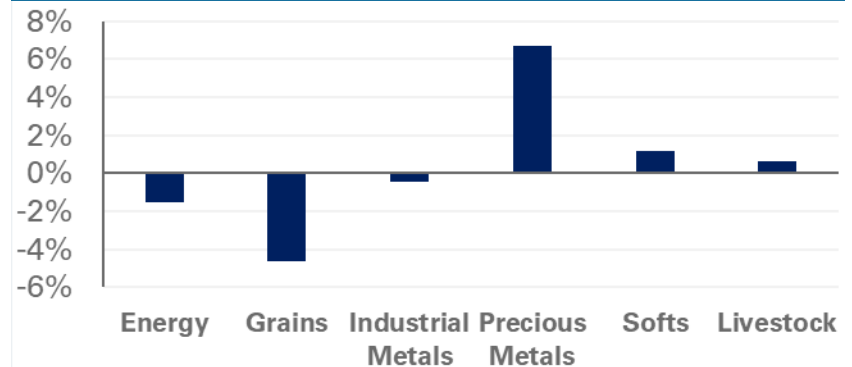
Note: \*Commodity Index Roll Yield represents a proprietary calculation methodology  
Sources: Bloomberg, NCREIF, Alerian, NAREIT, S&P, FactSet, NEPC

# REAL ASSET

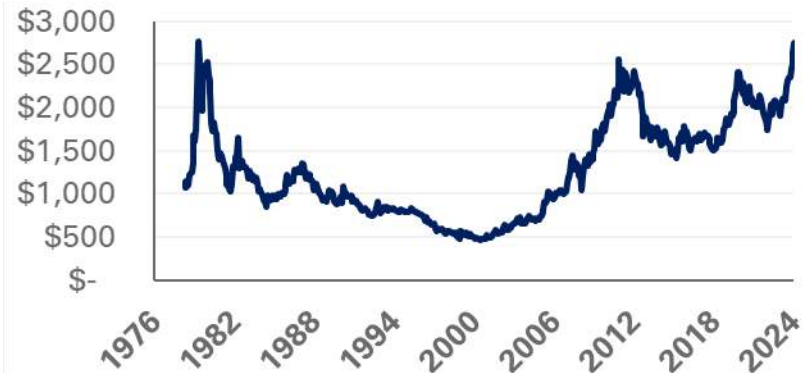
## VALUATION

- **Commodity valuation inputs reflect the long-term average of spot prices**
  - Energy and grains prices are trading at a large discount to long-term real averages
- **Valuation assumptions for other real assets are based on asset-specific valuation inputs**
  - Capitalization rates are used for core real estate, price-to-earnings for global infrastructure and global natural resources equity
  - Gold’s valuation incorporates the asset’s historical risk premia and the impact of the macroeconomic market regime

Discount/Premium to 10-Year Real Average



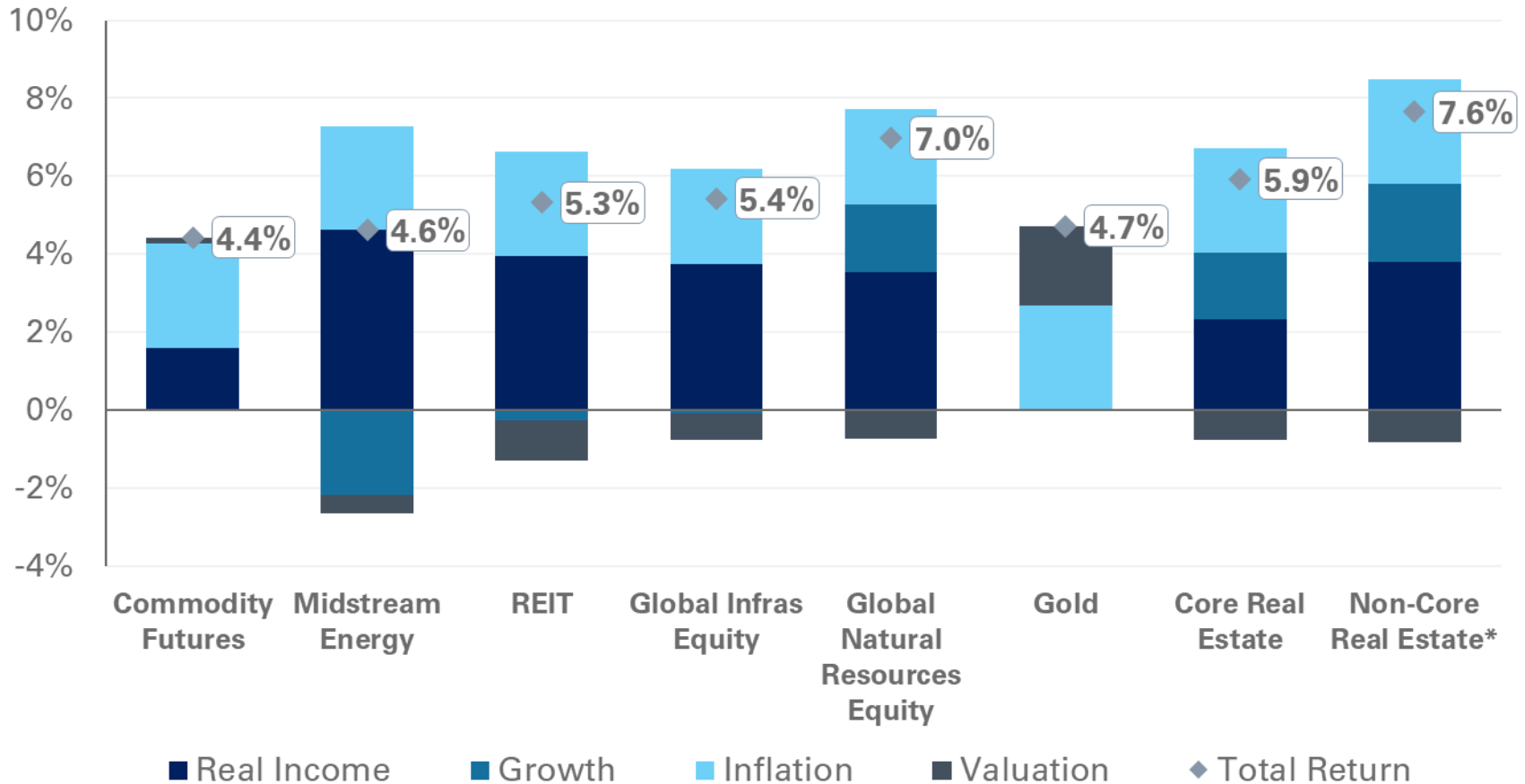
Real Price of Gold



Sources: FactSet, NEPC

# REAL ASSET

## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

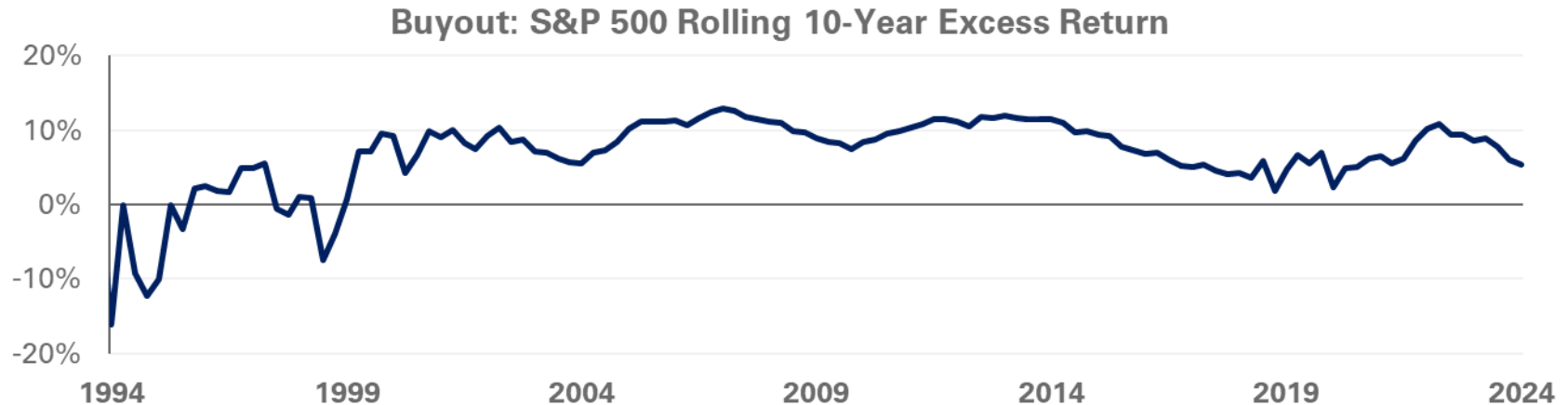
Source: NEPC



# ALTERNATIVE ASSETS

# ALTERNATIVE ASSETS

## METHODOLOGY

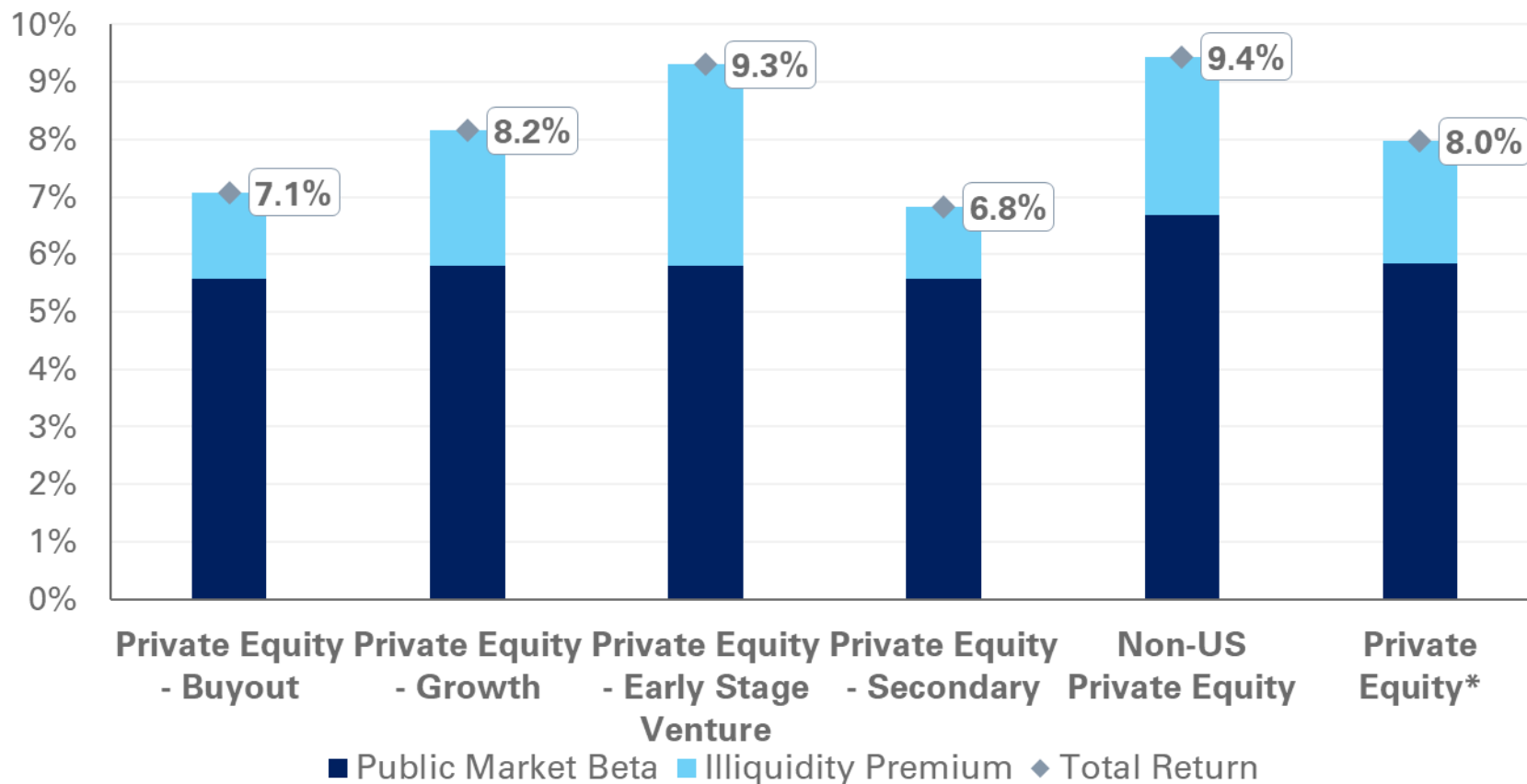


- **Private market assumptions are constructed from public market betas with an added illiquidity premia**
  - Historically, the observed illiquidity premium has been a significant component driving private market returns
- **Hedge fund assumptions are constructed from betas to public markets with an added alpha assumption**



# PRIVATE EQUITY

## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN

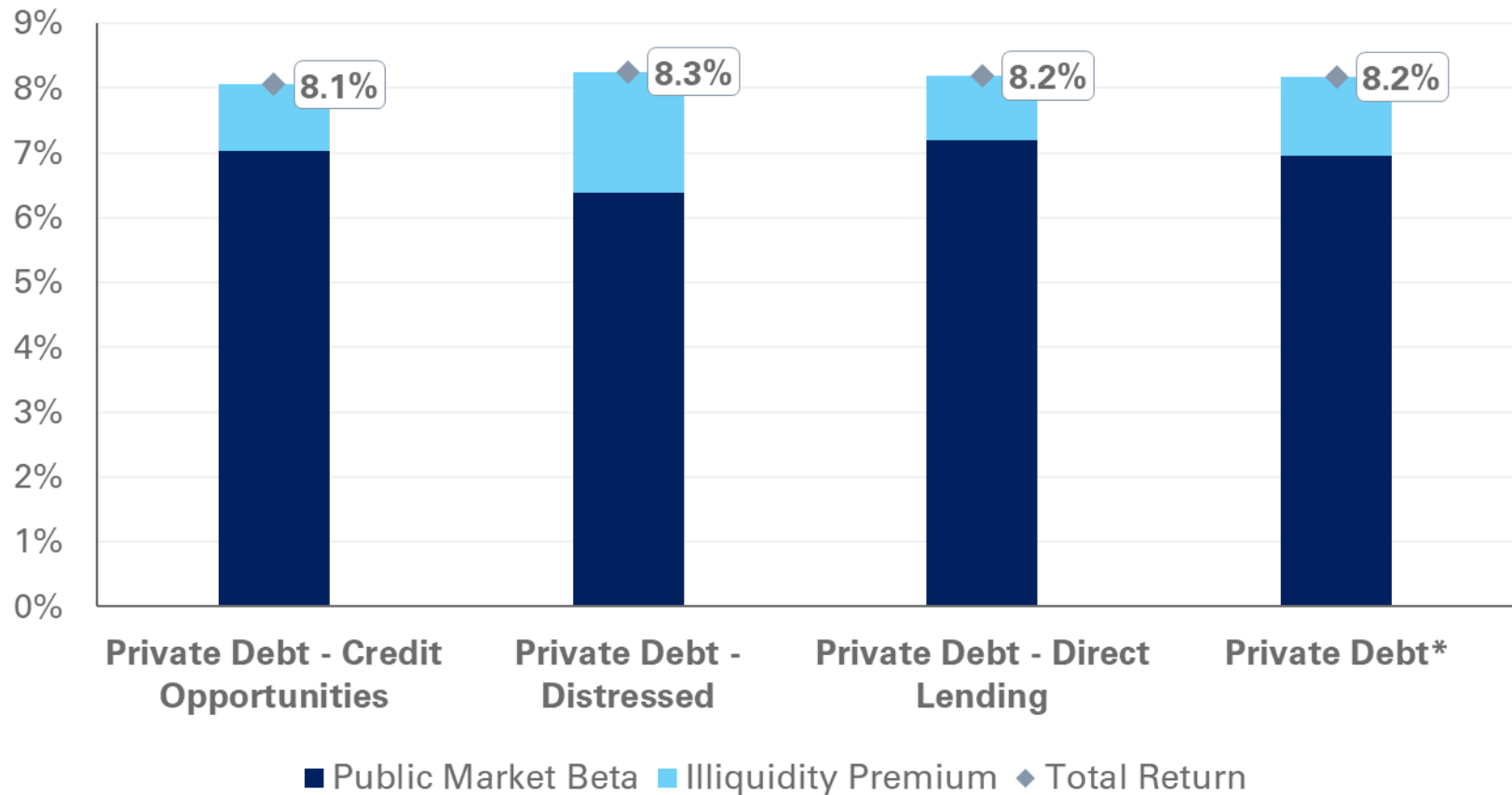


Note: \*Private Equity is a derived composite of 34% U.S. Buyout, 34% U.S. Growth, 8.5% U.S. Secondary, 8.5% U.S. Venture, 15% Non-U.S. PE. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time. Source: NEPC



# PRIVATE DEBT

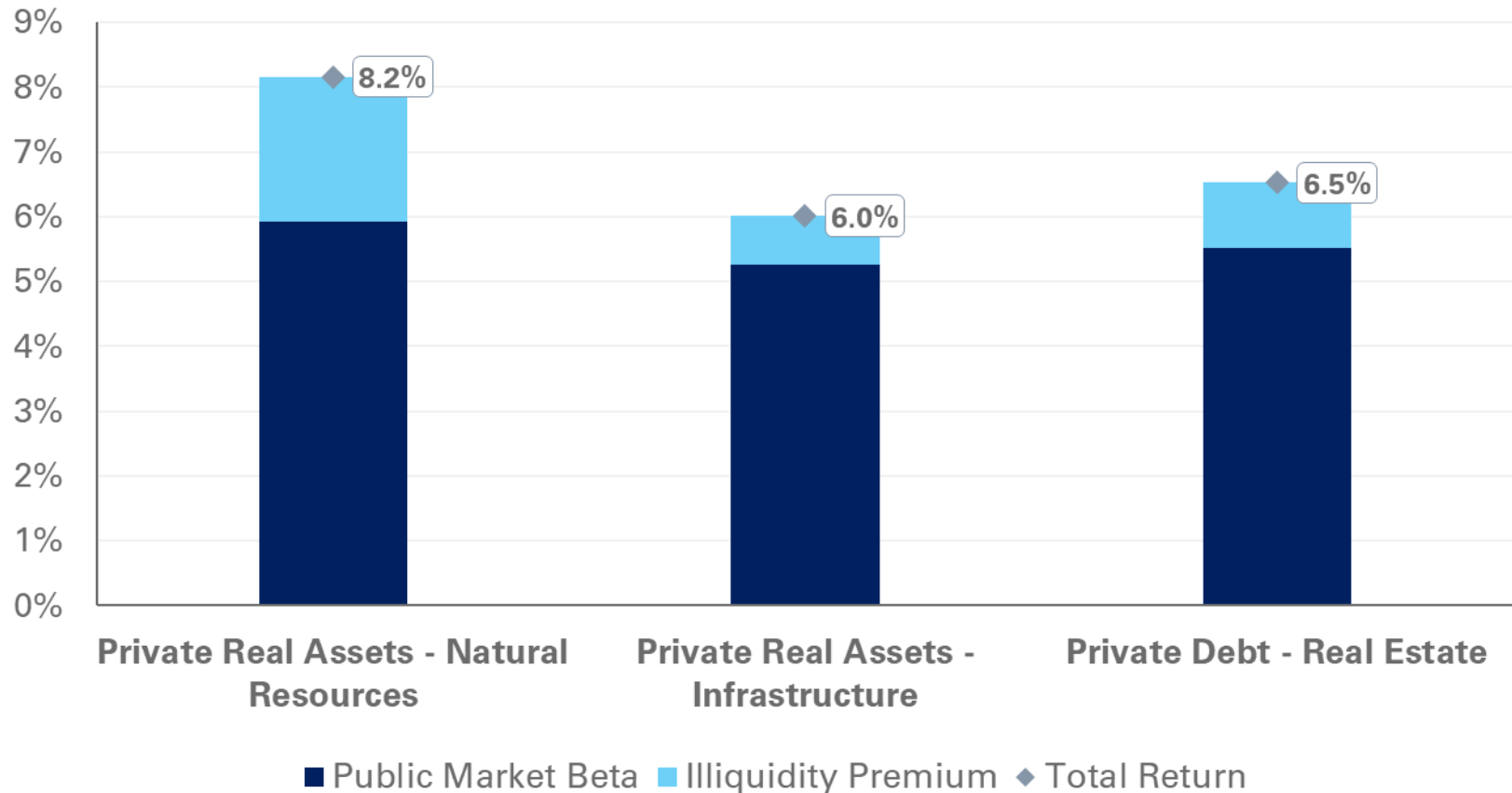
## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Note: \*Private Debt is a derived composite of 25% Credit Opportunities, 25% Distressed, 50% Direct Lending. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time. Source: NEPC

# PRIVATE REAL ASSET

## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN

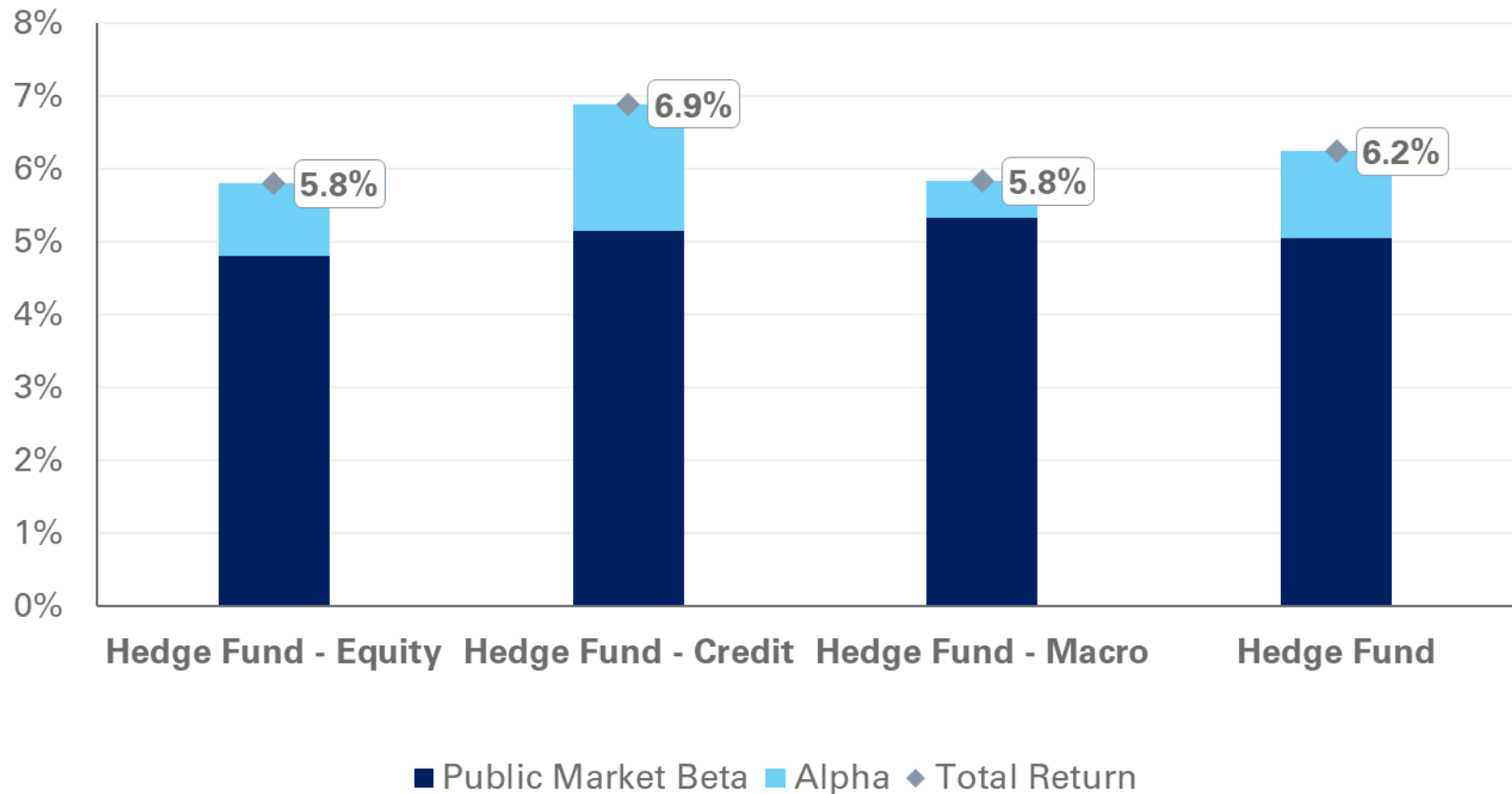


Note: NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

Source: NEPC

# HEDGE FUND

## BUILDING BLOCKS: 10-YEAR EXPECTED RETURN



Note: \*Hedge Funds is a derived composite of 40% Long/Short, 40% Credit, 20% Macro. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

Source: NEPC



# APPENDIX

# PRIVATE MARKETS COMPOSITES

## PUBLIC MARKET BETA INPUTS FOR PRIVATE MARKETS

### PRIVATE EQUITY

**Buyout:** 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

**Secondary:** 25% U.S. Large Cap, 75% U.S. Small/Mid Cap

**Growth:** 100% U.S. Small/Mid Cap

**Early-Stage Venture:** 100% U.S. Small/Mid Cap

**Non-U.S.:** 70% International Small Cap, 30% Emerging Small Cap

**Composite:** 34% Buyout, 34% Growth, 15 % Non-U.S., 8.5% Secondary, 8.5% Early Venture

### PRIVATE DEBT

**Direct Lending:** 100% Bank Loans

**Distressed:** 20% U.S. Small/Mid Cap, 60% U.S. High Yield, 20% Bank Loans

**Credit Opportunities:** 34% High Yield Securitized, 33% U.S. High Yield, 33% Bank Loans

**Composite:** 50% Direct Lending, 25% Credit Opportunities, 25% Distressed

### PRIVATE REAL ASSETS

**Energy:** 30% Comm., 35% Midstream, 35% Public Resource Equity

**Infra/Land:** 30% Commodities, 70% Public Infrastructure

**Private Real Estate Debt:** 50% CMBS, 50% Real Estate - Core



# 10-YEAR RETURN FORECASTS

## EQUITY

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
U.S. Large-Cap Equity	5.6%	4.4%	+1.2%
U.S. Small/Mid-Cap Equity	5.8%	6.0%	-0.2%
Non-U.S. Developed Equity	5.3%	4.6%	+0.7%
Non-U.S. Developed Equity (USD Hedge)	5.6%	4.8%	+0.8%
Non-U.S. Developed Small-Cap Equity	6.7%	6.4%	+0.3%
Emerging Market Equity	8.0%	8.6%	-0.6%
Emerging Market Small-Cap Equity	7.1%	7.9%	-0.8%
Hedge Fund - Equity	5.8%	5.5%	+0.3%
Private Equity - Buyout	7.1%	7.4%	-0.3%
Private Equity - Growth	8.2%	8.7%	-0.5%
Private Equity - Early Stage Venture	9.3%	9.8%	-0.5%
Private Equity - Secondary	6.8%	6.9%	-0.1%
Non-U.S. Private Equity	9.4%	10.3%	-0.9%
China Equity	8.3%	9.9%	-1.6%
Global Equity*	6.1%	5.4%	+0.7%
Private Equity*	8.5%	9.0%	-0.5%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# 10-YEAR RETURN FORECASTS

## FIXED INCOME

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
Cash	4.1%	3.9%	+0.2%
US TIPS	4.9%	4.6%	+0.3%
US Treasury Bond	4.7%	4.2%	+0.5%
US Corporate Bond	5.7%	5.3%	+0.4%
US Corporate Bond - AAA	5.0%	4.4%	+0.6%
US Corporate Bond - AA	5.2%	4.6%	+0.6%
US Corporate Bond - A	5.5%	5.1%	+0.4%
US Corporate Bond - BBB	5.9%	5.6%	+0.3%
US Mortgage-Backed Securities	4.9%	4.4%	+0.5%
US Securitized Bond	5.4%	5.2%	+0.2%
US Collateralized Loan Obligation	5.7%	5.5%	+0.2%
US Municipal Bond	3.8%	3.5%	+0.3%
US Municipal Bond (1-10 Year)	3.4%	2.9%	+0.5%
US Taxable Municipal Bond	5.6%	5.3%	+0.3%

Note: NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.





# 10-YEAR RETURN FORECASTS

## FIXED INCOME

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
Non-US Government Bond	2.5%	2.4%	+0.1%
Non-US Government Bond (USD Hedge)	2.8%	2.6%	+0.2%
Non-US Inflation-Linked Bond (USD Hedge)	3.6%	3.2%	+0.4%
US Short-Term TIPS (1-3 Year)	4.8%	4.7%	+0.1%
US Short-Term Treasury Bond (1-3 Year)	4.6%	4.4%	+0.2%
US Short-Term Corporate Bond (1-3 Year)	5.6%	5.4%	+0.2%
US Intermediate-Term TIPS (3-10 Year)	4.9%	4.6%	+0.3%
US Intermediate-Term Treasury Bond (3-10 Year)	4.6%	4.2%	+0.4%
US Intermediate-Term Corporate Bond (3-10 Year)	5.9%	5.6%	+0.3%
US Long-Term TIPS (10-30 Year)	5.3%	4.5%	+0.8%
US Long-Term Treasury Bond (10-30 Year)	4.8%	3.7%	+1.1%
US Long-Term Corporate Bond (10-30 Year)	5.4%	4.7%	+0.7%
20+ Year US Treasury STRIPS	4.8%	3.3%	+1.5%
10 Year US Treasury Bond	4.8%	4.2%	+0.6%
10 Year Non-US Government Bond (USD Hedge)	2.4%	2.1%	+0.3%
US Aggregate Bond*	5.0%	4.6%	+0.4%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# 10-YEAR RETURN FORECASTS

## FIXED INCOME

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
US High Yield Corporate Bond	6.3%	6.1%	+0.2%
US Corporate Bond - BB	6.9%	6.8%	+0.1%
US Corporate Bond - B	6.6%	6.3%	+0.3%
US Corporate Bond - CCC/Below	-0.2%	1.4%	-1.6%
US Short-Term High Yield Corporate Bond (1-3 Year)	5.7%	5.5%	+0.2%
US Leveraged Loan	7.3%	7.2%	+0.1%
Emerging Market Investment Grade External Debt	5.7%	5.0%	+0.7%
Emerging Market High Yield External Debt	7.8%	9.0%	-1.2%
Emerging Market Local Currency Debt	6.7%	6.1%	+0.6%
US High Yield Securitized Bond	9.3%	8.7%	+0.6%
US High Yield Collateralized Loan Obligation	7.8%	7.8%	-
US High Yield Municipal Bond	4.3%	4.5%	-0.2%
Hedge Fund - Credit	6.9%	6.6%	+0.3%
Private Debt - Credit Opportunities	8.1%	7.8%	+0.3%
Private Debt - Distressed	8.3%	8.6%	-0.3%
Private Debt - Direct Lending	8.2%	8.1%	+0.1%
Private Debt*	8.3%	8.3%	-

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# 10-YEAR RETURN FORECASTS

## REAL ASSETS

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
Commodity Futures	4.4%	4.6%	-0.2%
Midstream Energy	4.6%	5.5%	-0.9%
REIT	5.3%	6.0%	-0.7%
Global Infrastructure Equity	5.4%	6.6%	-1.2%
Global Natural Resources Equity	7.0%	6.2%	+0.8%
Gold	4.7%	4.9%	-0.2%
Real Estate - Core	5.9%	5.4%	+0.5%
Real Estate – Value-Add	7.1%	6.6%	+0.5%
Real Estate - Opportunistic	8.1%	7.6%	+0.5%
Private Debt - Real Estate	6.5%	6.3%	+0.2%
Private Real Assets - Natural Resources	8.2%	8.2%	-
Private Real Assets - Infrastructure	6.0%	6.8%	-0.8%

Note: NEPC’s capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor’s realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# 30-YEAR RETURN FORECASTS

## EQUITY

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
U.S. Large-Cap Equity	7.1%	6.7%	+0.4%
U.S. Small/Mid-Cap Equity	7.2%	7.4%	-0.2%
Non-U.S. Developed Equity	6.7%	6.4%	+0.3%
Non-U.S. Developed Equity (USD Hedge)	6.9%	6.6%	+0.3%
Non-U.S. Developed Small-Cap Equity	7.8%	7.5%	+0.3%
Emerging Market Equity	9.1%	9.2%	-0.1%
Emerging Market Small-Cap Equity	8.5%	9.1%	-0.6%
Hedge Fund - Equity	6.3%	6.0%	+0.3%
Private Equity - Buyout	9.3%	8.8%	+0.5%
Private Equity - Growth	10.3%	9.7%	+0.6%
Private Equity - Early Stage Venture	11.2%	10.6%	+0.6%
Private Equity - Secondary	8.7%	8.2%	+0.5%
Non-U.S. Private Equity	10.5%	10.8%	-0.3%
China Equity	9.0%	9.5%	-0.5%
Global Equity*	7.5%	7.3%	+0.2%
Private Equity*	10.5%	10.1%	+0.4%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

# 30-YEAR RETURN FORECASTS

## FIXED INCOME

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
Cash	3.6%	3.4%	+0.2%
US TIPS	5.0%	4.7%	+0.3%
US Treasury Bond	4.8%	4.3%	+0.5%
US Corporate Bond	6.3%	5.9%	+0.4%
US Corporate Bond - AAA	5.7%	5.1%	+0.6%
US Corporate Bond - AA	5.5%	5.1%	+0.4%
US Corporate Bond - A	6.0%	5.5%	+0.5%
US Corporate Bond - BBB	6.5%	6.1%	+0.4%
US Mortgage-Backed Securities	5.0%	4.6%	+0.4%
US Securitized Bond	5.6%	5.4%	+0.2%
US Collateralized Loan Obligation	5.1%	4.9%	+0.2%
US Municipal Bond	4.1%	3.8%	+0.3%
US Municipal Bond (1-10 Year)	3.8%	3.5%	+0.3%
US Taxable Municipal Bond	6.4%	6.0%	+0.4%

Note: NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# 30-YEAR RETURN FORECASTS

## FIXED INCOME

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
Non-US Government Bond	3.1%	2.9%	+0.2%
Non-US Government Bond (USD Hedge)	3.3%	3.2%	+0.1%
Non-US Inflation-Linked Bond (USD Hedge)	3.6%	3.3%	+0.3%
US Short-Term TIPS (1-3 Year)	4.6%	4.4%	+0.2%
US Short-Term Treasury Bond (1-3 Year)	4.4%	4.2%	+0.2%
US Short-Term Corporate Bond (1-3 Year)	5.5%	5.2%	+0.3%
US Intermediate-Term TIPS (3-10 Year)	5.0%	4.7%	+0.3%
US Intermediate-Term Treasury Bond (3-10 Year)	4.8%	4.4%	+0.4%
US Intermediate-Term Corporate Bond (3-10 Year)	6.4%	6.0%	+0.4%
US Long-Term TIPS (10-30 Year)	5.4%	4.8%	+0.6%
US Long-Term Treasury Bond (10-30 Year)	5.1%	4.3%	+0.8%
US Long-Term Corporate Bond (10-30 Year)	6.6%	6.0%	+0.6%
20+ Year US Treasury STRIPS	5.3%	4.2%	+1.1%
10 Year US Treasury Bond	5.3%	4.8%	+0.5%
10 Year Non-US Government Bond (USD Hedge)	3.2%	2.8%	+0.4%
US Aggregate Bond*	5.3%	4.9%	+0.4%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# 30-YEAR RETURN FORECASTS

## FIXED INCOME

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
US High Yield Corporate Bond	7.4%	7.1%	+0.3%
US Corporate Bond - BB	7.8%	7.7%	+0.1%
US Corporate Bond - B	7.3%	7.1%	+0.2%
US Corporate Bond - CCC/Below	1.3%	1.9%	-0.6%
US Short-Term High Yield Corporate Bond (1-3 Year)	5.9%	5.6%	+0.3%
US Leveraged Loan	6.7%	6.6%	+0.1%
Emerging Market Investment Grade External Debt	6.4%	5.0%	+1.4%
Emerging Market High Yield External Debt	8.3%	9.0%	-0.7%
Emerging Market Local Currency Debt	5.8%	5.5%	+0.3%
US High Yield Securitized Bond	8.8%	8.3%	+0.5%
US High Yield Collateralized Loan Obligation	7.5%	7.3%	+0.2%
US High Yield Municipal Bond	5.1%	4.9%	+0.2%
Hedge Fund - Credit	7.2%	7.0%	+0.2%
Private Debt - Credit Opportunities	8.9%	8.4%	+0.5%
Private Debt - Distressed	9.7%	9.3%	+0.4%
Private Debt - Direct Lending	8.9%	8.9%	-
Private Debt*	9.2%	9.0%	+0.2%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# 30-YEAR RETURN FORECASTS

## REAL ASSETS

Geometric Expected Return			
Asset Class	12/31/2024	12/31/2023	Delta
Commodity Futures	3.9%	3.9%	-
Midstream Energy	6.3%	6.6%	-0.3%
REIT	7.1%	7.3%	-0.2%
Global Infrastructure Equity	6.5%	7.0%	-0.5%
Global Natural Resources Equity	7.5%	7.1%	+0.4%
Gold	4.8%	4.8%	-
Real Estate - Core	6.5%	6.1%	+0.4%
Real Estate – Value-Add	7.8%	7.3%	+0.5%
Real Estate - Opportunistic	8.7%	8.2%	+0.5%
Private Debt - Real Estate	6.9%	6.6%	+0.3%
Private Real Assets - Natural Resources	8.9%	8.7%	+0.2%
Private Real Assets - Infrastructure	6.8%	7.1%	-0.3%

Note: NEPC’s capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor’s realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.





# VOLATILITY FORECASTS

## EQUITY

Volatility			
Asset Class	12/31/2024	12/31/2023	Delta
U.S. Large-Cap Equity	17.4%	17.2%	+0.2%
U.S. Small/Mid-Cap Equity	21.4%	21.0%	+0.4%
Non-U.S. Developed Equity	19.6%	19.7%	-0.1%
Non-U.S. Developed Equity (USD Hedge)	17.4%	17.7%	-0.3%
Non-U.S. Developed Small-Cap Equity	23.3%	24.2%	-0.9%
Emerging Market Equity	27.4%	28.1%	-0.7%
Emerging Market Small-Cap Equity	30.6%	31.4%	-0.8%
Hedge Fund - Equity	10.9%	11.0%	-0.1%
Private Equity - Buyout	20.7%	20.0%	+0.7%
Private Equity - Growth	30.8%	31.5%	-0.7%
Private Equity - Early Stage Venture	48.0%	46.5%	+1.5%
Private Equity - Secondary	20.4%	20.4%	-
Non-U.S. Private Equity	29.0%	32.0%	-3.0%
China Equity	30.4%	30.6%	-0.2%
Global Equity*	18.2%	18.2%	-
Private Equity*	25.8%	25.9%	-0.1%

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.

# VOLATILITY FORECASTS

## FIXED INCOME

Volatility			
Asset Class	12/31/2024	12/31/2023	Delta
Cash	0.6%	0.6%	-
US TIPS	6.0%	6.0%	-
US Treasury Bond	5.5%	5.4%	+0.1%
US Corporate Bond	7.9%	7.7%	+0.2%
US Corporate Bond - AAA	7.0%	6.8%	+0.2%
US Corporate Bond - AA	6.7%	6.6%	+0.1%
US Corporate Bond - A	7.7%	7.6%	+0.1%
US Corporate Bond - BBB	8.6%	8.4%	+0.2%
US Mortgage-Backed Securities	6.5%	6.5%	-
US Securitized Bond	7.9%	8.0%	-0.1%
US Collateralized Loan Obligation	6.5%	7.7%	-1.2%
US Municipal Bond	6.0%	6.0%	-
US Municipal Bond (1-10 Year)	4.5%	4.5%	-
US Taxable Municipal Bond	7.5%	7.5%	-

Note: NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# VOLATILITY FORECASTS

## FIXED INCOME

Volatility			
Asset Class	12/31/2024	12/31/2023	Delta
Non-US Government Bond	9.8%	9.5%	+0.3%
Non-US Government Bond (USD Hedge)	4.1%	4.1%	-
Non-US Inflation-Linked Bond (USD Hedge)	6.7%	6.7%	-
US Short-Term TIPS (1-3 Year)	3.3%	3.3%	-
US Short-Term Treasury Bond (1-3 Year)	2.3%	2.3%	-
US Short-Term Corporate Bond (1-3 Year)	2.8%	2.8%	-
US Intermediate-Term TIPS (3-10 Year)	5.8%	6.0%	-0.2%
US Intermediate-Term Treasury Bond (3-10 Year)	5.4%	5.9%	-0.5%
US Intermediate-Term Corporate Bond (3-10 Year)	7.4%	7.1%	+0.3%
US Long-Term TIPS (10-30 Year)	12.6%	12.4%	+0.2%
US Long-Term Treasury Bond (10-30 Year)	12.3%	11.8%	+0.5%
US Long-Term Corporate Bond (10-30 Year)	12.4%	11.9%	+0.5%
20+ Year US Treasury STRIPS	21.0%	20.7%	+0.3%
10 Year US Treasury Bond	7.6%	7.5%	+0.1%
10 Year Non-US Government Bond (USD Hedge)	4.9%	5.0%	-0.1%
US Aggregate Bond*	5.8%	5.8%	-

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# VOLATILITY FORECASTS

## FIXED INCOME

Volatility			
Asset Class	12/31/2024	12/31/2023	Delta
US High Yield Corporate Bond	11.3%	11.2%	+0.1%
US Corporate Bond - BB	9.7%	9.7%	-
US Corporate Bond - B	11.7%	11.6%	+0.1%
US Corporate Bond - CCC/Below	20.4%	20.3%	+0.1%
US Short-Term High Yield Corporate Bond (1-3 Year)	8.2%	8.2%	-
US Leveraged Loan	6.1%	9.1%	-3.0%
Emerging Market Investment Grade External Debt	8.7%	8.7%	-
Emerging Market High Yield External Debt	17.5%	17.5%	-
Emerging Market Local Currency Debt	12.6%	12.7%	-0.1%
US High Yield Securitized Bond	13.0%	11.2%	+1.8%
US High Yield Collateralized Loan Obligation	15.9%	10.4%	+5.5%
US High Yield Municipal Bond	12.0%	12.0%	-
Hedge Fund - Credit	9.7%	9.9%	-0.2%
Private Debt - Credit Opportunities	14.3%	14.5%	-0.2%
Private Debt - Distressed	13.9%	14.4%	-0.5%
Private Debt - Direct Lending	11.0%	11.0%	-
Private Debt*	11.8%	11.8%	-

Note: \*Calculated as a blend of other asset classes. NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# VOLATILITY FORECASTS

## REAL ASSETS

Volatility			
Asset Class	12/31/2024	12/31/2023	Delta
Commodity Futures	18.5%	18.5%	-
Midstream Energy	27.7%	28.2%	-0.5%
REIT	22.4%	21.8%	+0.6%
Global Infrastructure Equity	19.3%	19.4%	-0.1%
Global Natural Resources Equity	22.9%	23.3%	-0.4%
Gold	16.6%	16.4%	+0.2%
Real Estate - Core	14.7%	15.0%	-0.3%
Real Estate – Value-Add	23.0%	23.4%	-0.4%
Real Estate - Opportunistic	27.3%	25.8%	+1.5%
Private Debt - Real Estate	11.9%	11.9%	-
Private Real Assets - Natural Resources	32.5%	32.3%	+0.2%
Private Real Assets - Infrastructure	10.6%	12.4%	-1.8%

Note: NEPC's capital market assumptions reflect proprietary forecasts for expected returns, volatility, and correlations. Return expectations may differ from an investor's realized returns after accounting for fees, taxes, or other aspects that can influence actual returns. Return forecasts and methodology are reviewed on an ongoing basis and are subject to change over time.



# INFORMATION DISCLAIMER

Past performance is no guarantee of future results.

The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.

Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

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# QUARTERLY PERFORMANCE REPORT

ALAMEDA COUNTY EMPLOYEES'  
RETIREMENT ASSOCIATION

DECEMBER 31, 2024

Sam Austin, Partner

Rose Dean, CFA, Partner

Dan Hennessy, CFA, CAIA, Senior Consultant





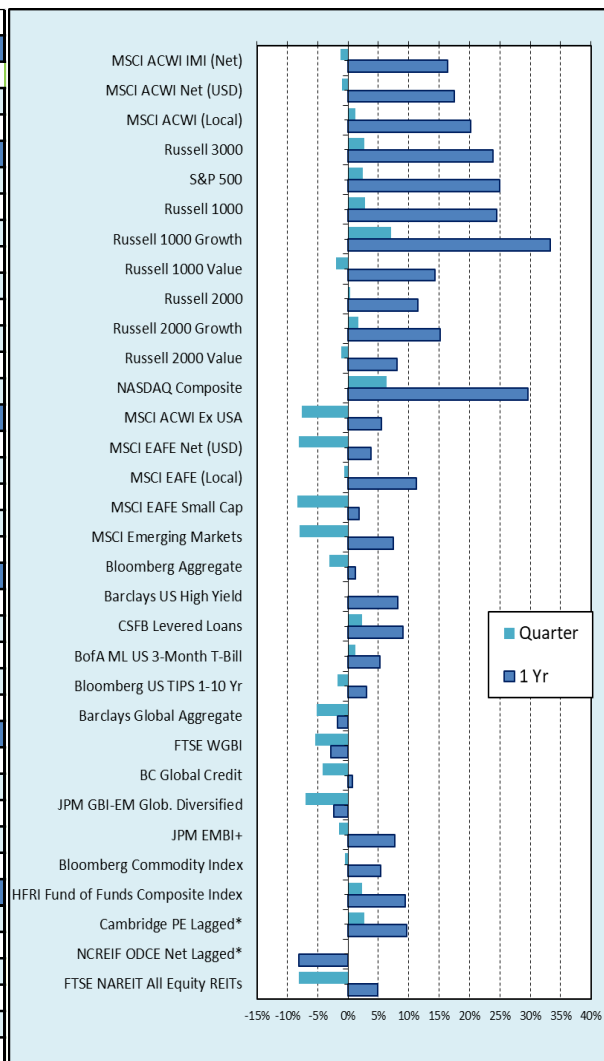
# MARKET ENVIRONMENT



# MARKET ENVIRONMENT

## Q4 2024 OVERVIEW

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>World Equity Benchmarks</b>						
MSCI ACWI IMI (Net)	World with Small Cap	-1.24%	16.37%	4.90%	9.67%	9.00%
MSCI ACWI Net (USD)	World W/O Small Cap	-0.99%	17.49%	5.43%	10.06%	9.23%
MSCI ACWI (Local)	World (Local Currency)	1.26%	20.21%	7.09%	11.14%	10.08%
<b>Domestic Equity Benchmarks</b>						
Russell 3000	Domestic All Cap	2.63%	23.81%	8.01%	13.86%	12.54%
S&P 500	Large Core	2.41%	25.02%	8.94%	14.52%	13.10%
Russell 1000	Large Core	2.75%	24.51%	8.41%	14.28%	12.87%
Russell 1000 Growth	Large Growth	7.07%	33.36%	10.47%	18.96%	16.77%
Russell 1000 Value	Large Value	-1.98%	14.37%	5.63%	8.68%	8.49%
Russell 2000	Small Core	0.33%	11.54%	1.24%	7.40%	7.82%
Russell 2000 Growth	Small Growth	1.70%	15.15%	0.21%	6.86%	8.09%
Russell 2000 Value	Small Value	-1.06%	8.05%	1.94%	7.29%	7.14%
NASDAQ Composite	Large Growth	6.35%	29.57%	8.13%	17.49%	16.20%
<b>International Equity Benchmarks</b>						
MSCI ACWI Ex USA	World ex-US	-7.60%	5.53%	0.82%	4.10%	4.80%
MSCI EAFE Net (USD)	Int'l Developed	-8.11%	3.82%	1.64%	4.73%	5.20%
MSCI EAFE (Local)	Int'l Developed (Local Currency)	-0.62%	11.28%	6.33%	7.55%	7.14%
MSCI EAFE Small Cap	Small Cap Int'l	-8.36%	1.82%	-3.25%	2.30%	5.52%
MSCI Emerging Markets	Emerging Equity	-8.01%	7.50%	-1.92%	1.70%	3.64%
<b>Domestic Fixed Income Benchmarks</b>						
Bloomberg Aggregate	Core Bonds	-3.06%	1.25%	-2.41%	-0.33%	1.35%
Barclays US High Yield	High Yield	0.17%	8.19%	2.92%	4.21%	5.17%
CSFB Levered Loans	Bank Loans	2.29%	9.05%	6.85%	5.73%	5.13%
BofA ML US 3-Month T-Bill	Cash	1.17%	5.25%	3.89%	2.46%	1.77%
Bloomberg US TIPS 1-10 Yr	Inflation	-1.75%	3.09%	-0.10%	2.69%	2.53%
<b>Global Fixed Income Benchmarks</b>						
Barclays Global Aggregate	Global Core Bonds	-5.10%	-1.69%	-4.52%	-1.96%	0.15%
FTSE WGBI	World Gov. Bonds	-5.44%	-2.87%	-5.83%	-3.08%	-0.56%
BC Global Credit	Global Bonds	-4.22%	0.71%	-2.97%	-0.55%	1.29%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local Currency)	-6.98%	-2.38%	-0.96%	-1.86%	0.43%
JPM EMBI+	Em. Mkt. Bonds	-1.46%	7.66%	-3.65%	-1.78%	1.65%
<b>Alternative Benchmarks</b>						
Bloomberg Commodity Index	Commodities	-0.45%	5.38%	4.05%	6.77%	1.28%
HFRI Fund of Funds Composite Index	Fund of Hedge Funds	2.30%	9.40%	3.19%	5.28%	3.81%
Cambridge PE Lagged*	Private Equity	2.68%	9.61%	6.41%	14.79%	13.10%
NCREIF ODCE Net Lagged*	Real Estate	0.02%	-8.04%	-1.04%	2.05%	5.16%
FTSE NAREIT All Equity REITs	REIT	-8.15%	4.92%	-4.28%	3.29%	5.83%
CPI + 2%	Inflation/Real Assets	1.45%	4.95%	6.28%	6.28%	5.07%

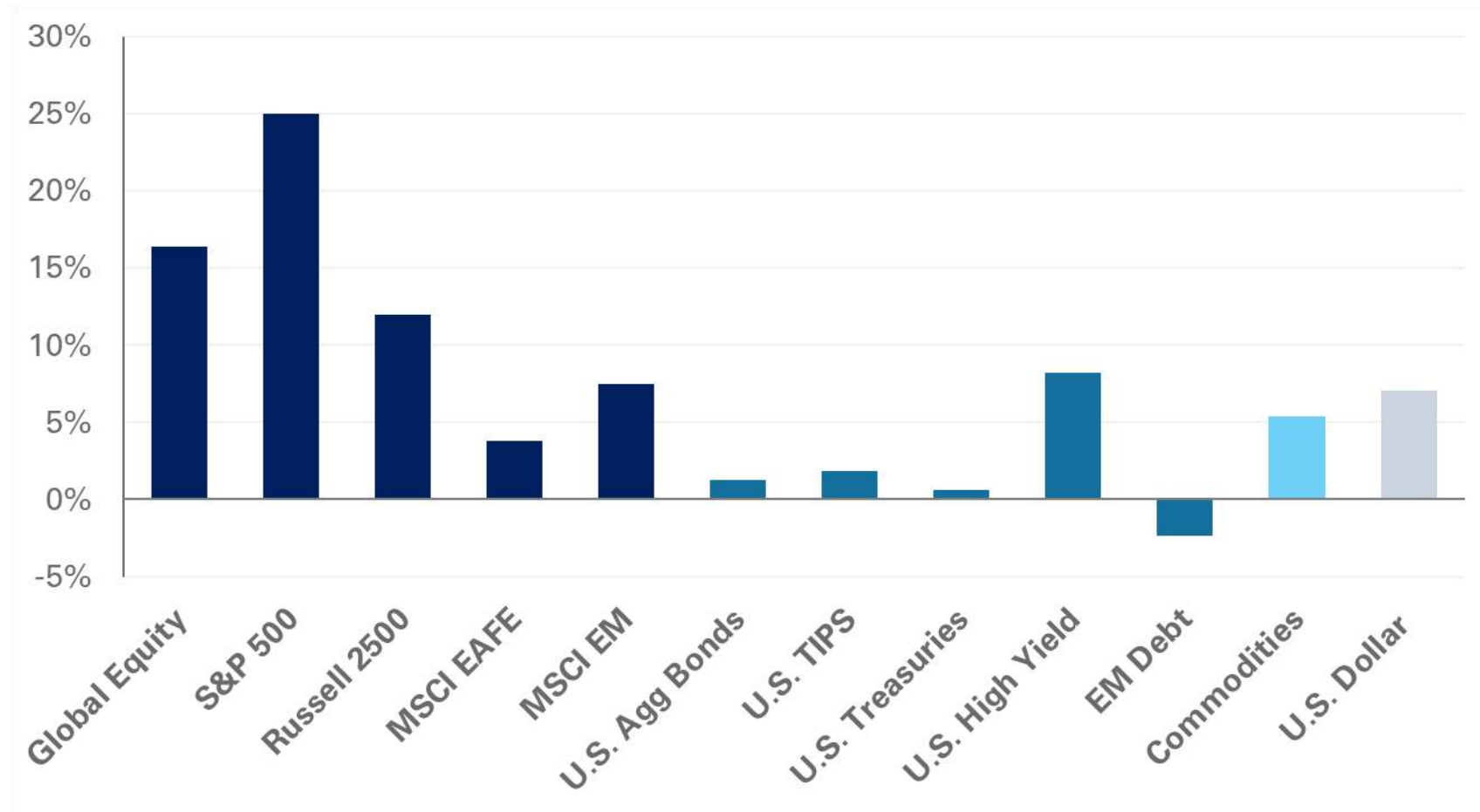


\* As of 9/30/2024



# INVESTORS HAD LITTLE TO COMPLAIN ABOUT IN 2024

## 2024 ANNUAL ASSET CLASS RETURNS

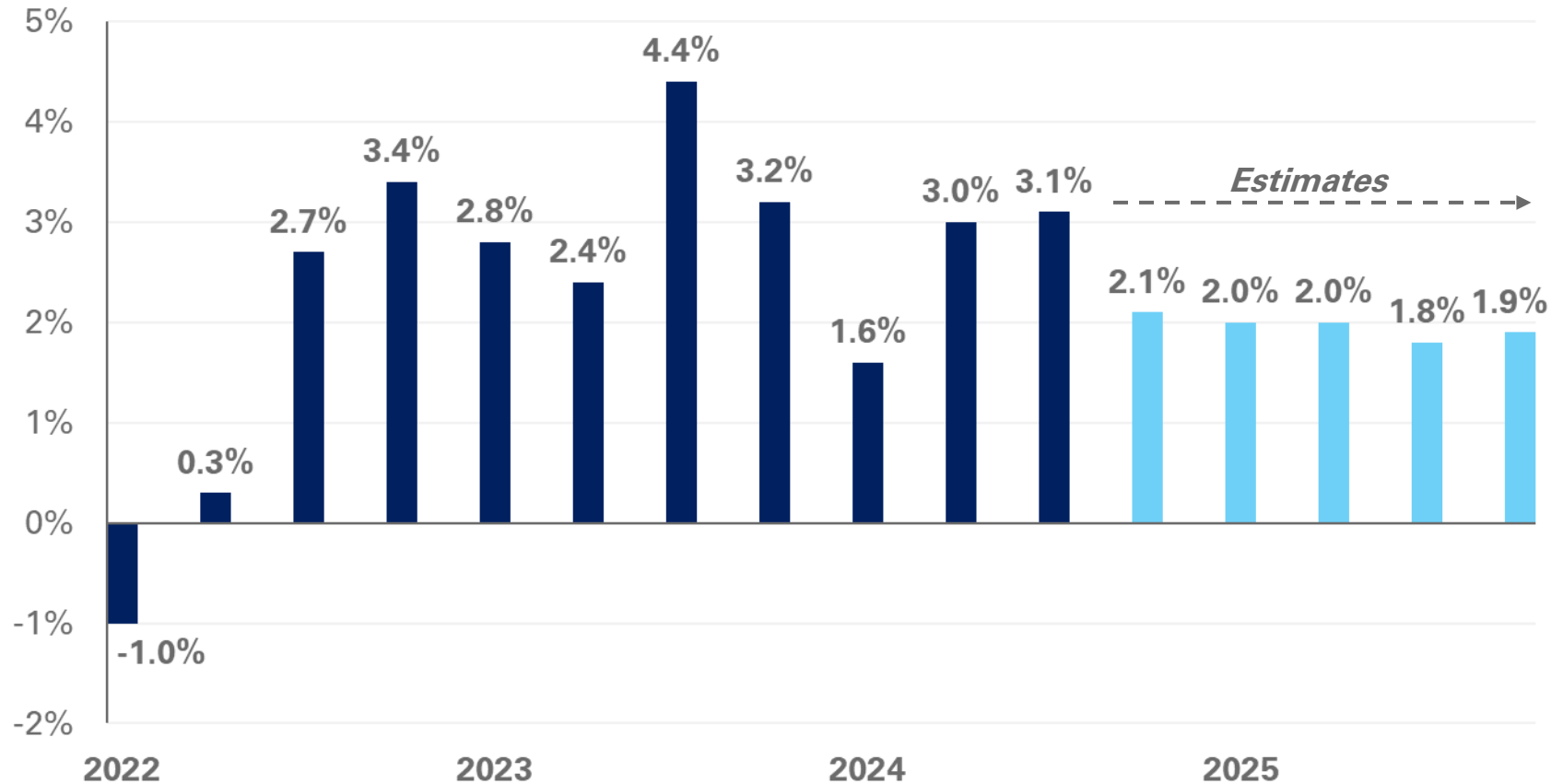


Notes: Global equity: MSCI ACWI IMI, EM Debt: JPM GBI-EM Global Diversified Index, U.S. Dollar Index: DXY Index.  
Sources: MSCI, S&P, Russell, MSCI, Bloomberg, JPM, FactSet



# THE U.S. ECONOMY OUTPACED EXPECTATIONS

## U.S. REAL GDP GROWTH (%)

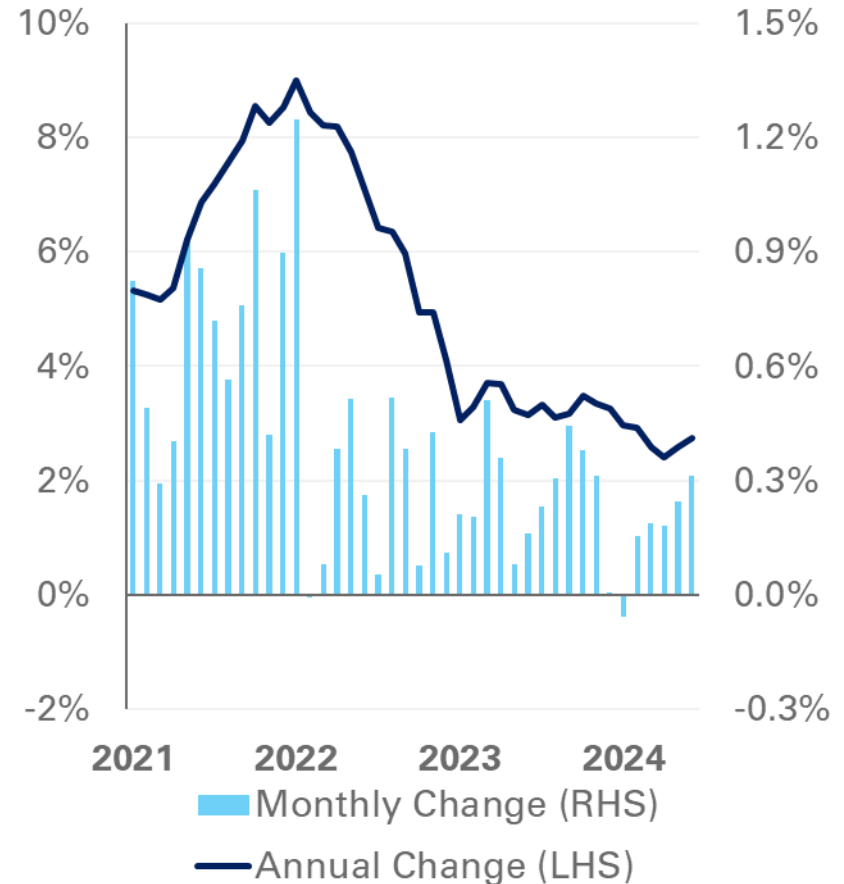
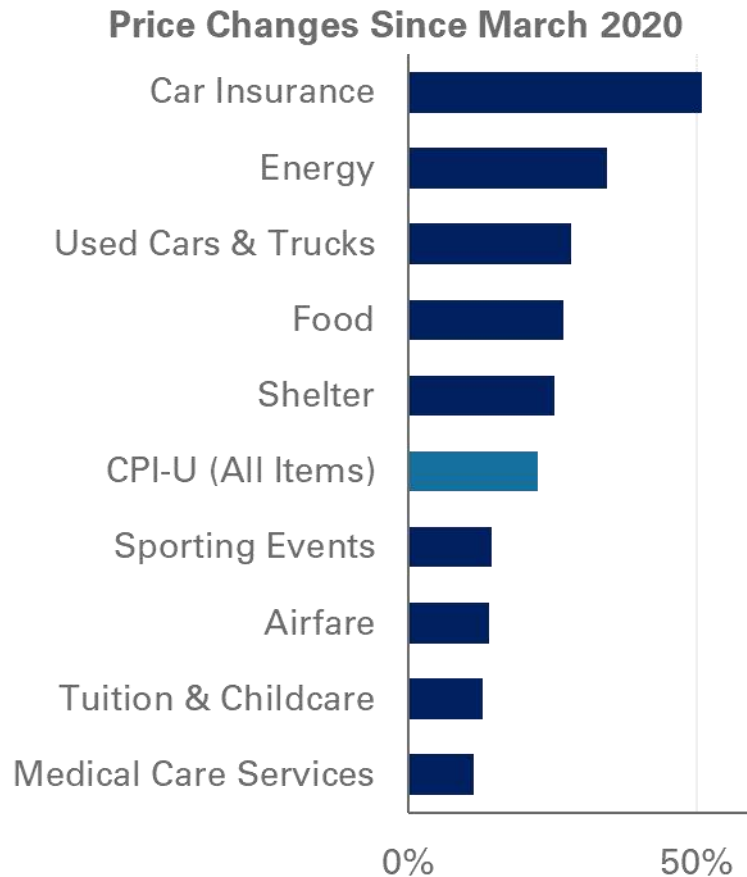


Note: Estimates reflect FactSet Economic Estimates  
Sources: U.S. Bureau of Economic Analysis, FactSet, NEPC



# INFLATION SLOWED, BUT PRICES STILL ELEVATED

## U.S. CONSUMER PRICE INDEX



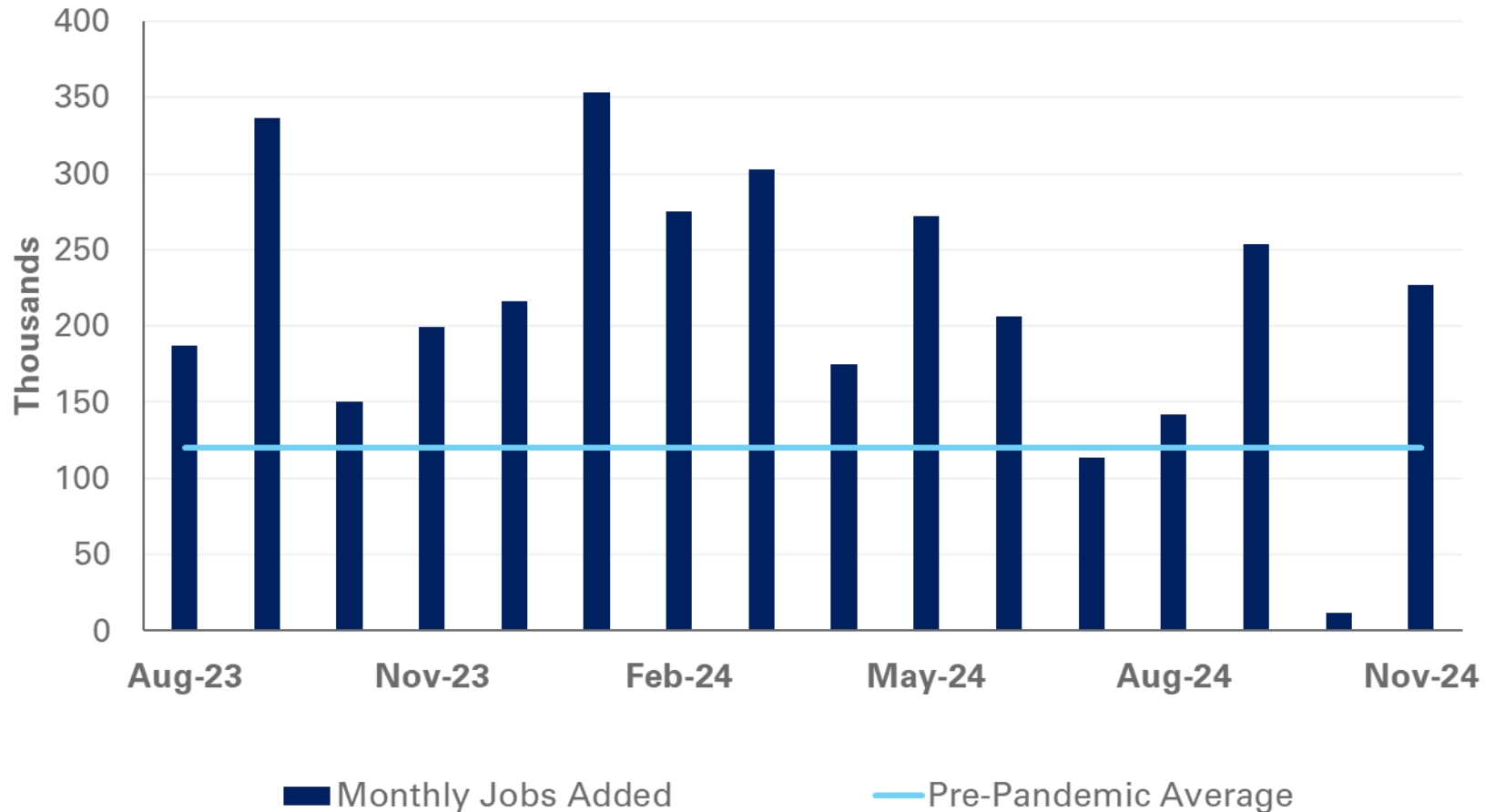
Note: Data as of 11/30/2024

Sources: Bureau of Labor Statistics, FactSet, NEPC



# THE LABOR MARKET CONTINUED TO NORMALIZE

## U.S. NONFARM PAYROLLS – MONTHLY JOBS ADDED

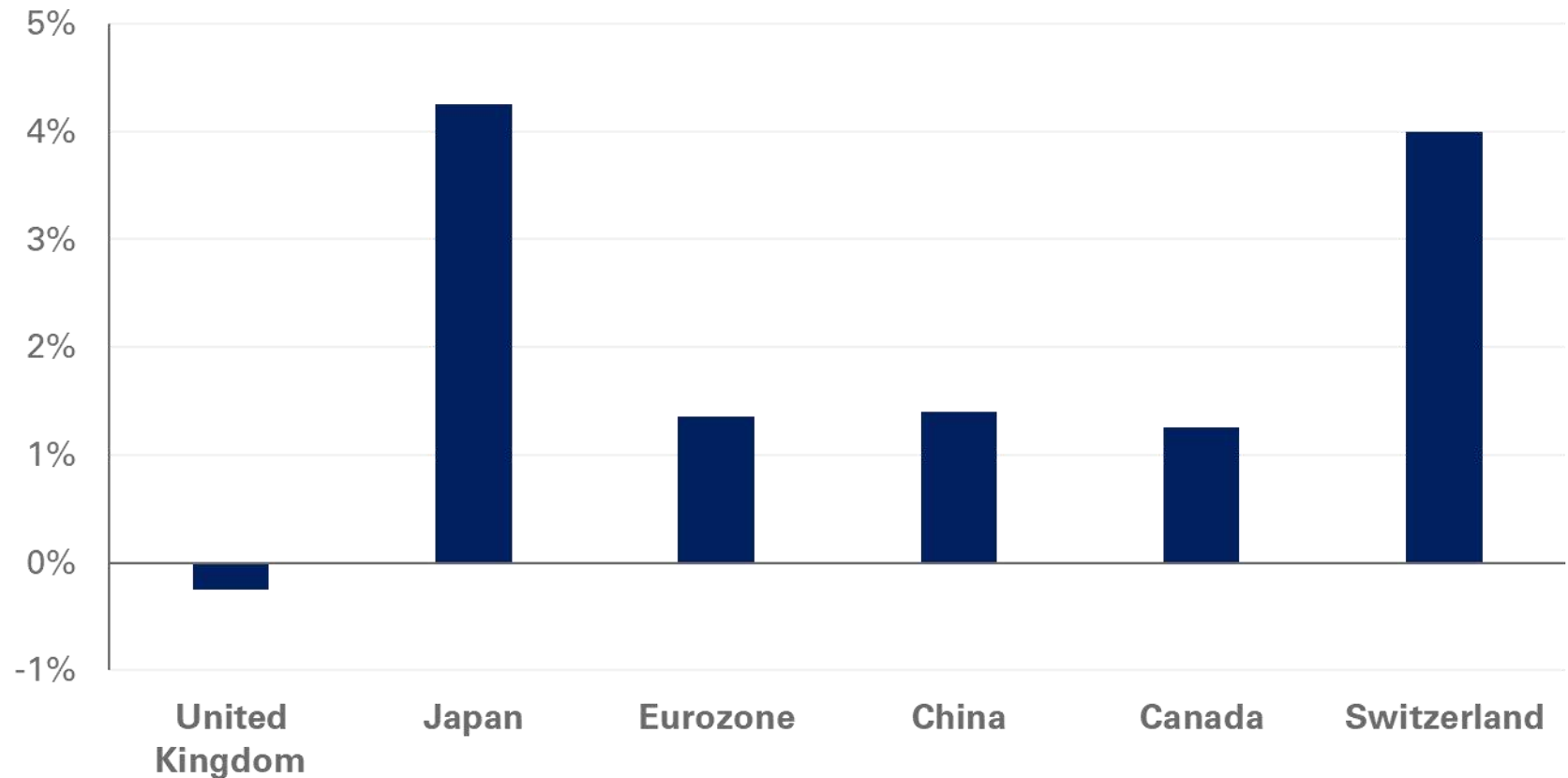


Note: Pre-pandemic average calculated 1965-2019  
Sources: U.S. Department of Labor, FactSet



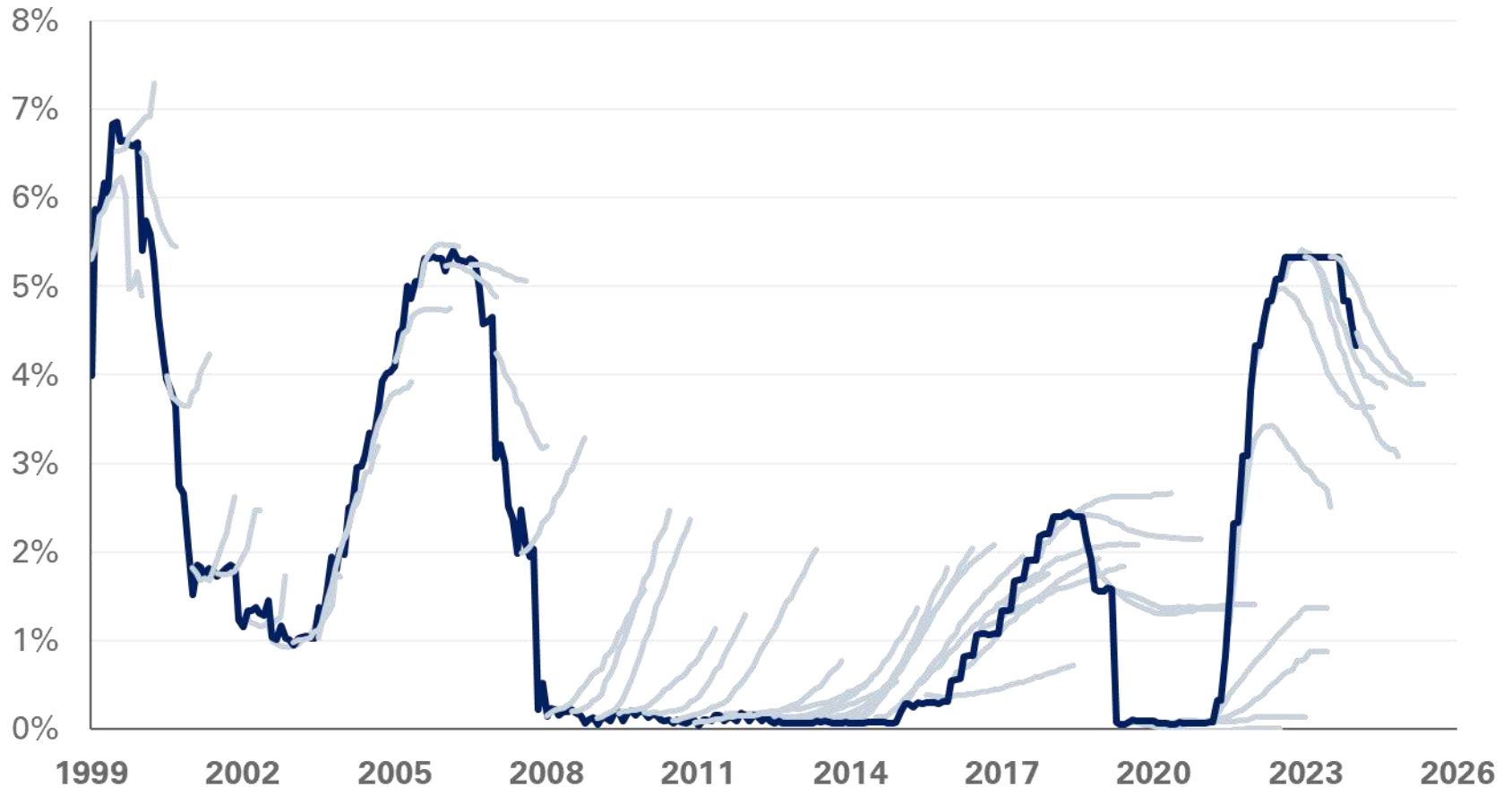
# RATE DIFFERENTIALS SUPPORTED THE DOLLAR

## U.S. VERSUS GLOBAL POLICY RATE DIFFERENTIALS



# MARKETS REMAIN BIASED TO LOWER RATES

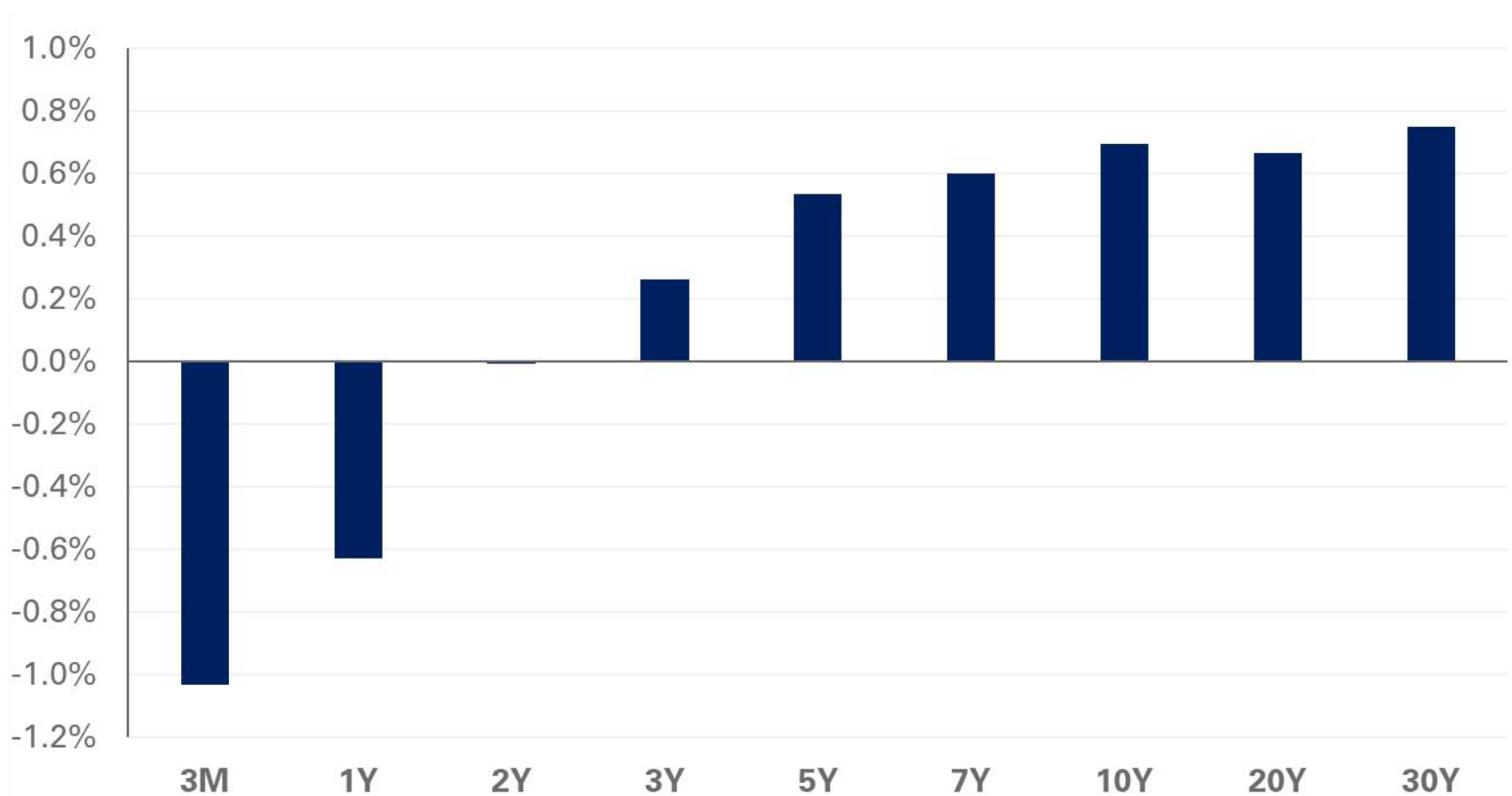
## FED FUNDS RATE AND FED FUNDS FUTURES EXPECTATIONS



Source: FactSet

# THE U.S. YIELD CURVE STEEPENED

2024 ANNUAL CHANGE IN THE U.S. TREASURY YIELD CURVE

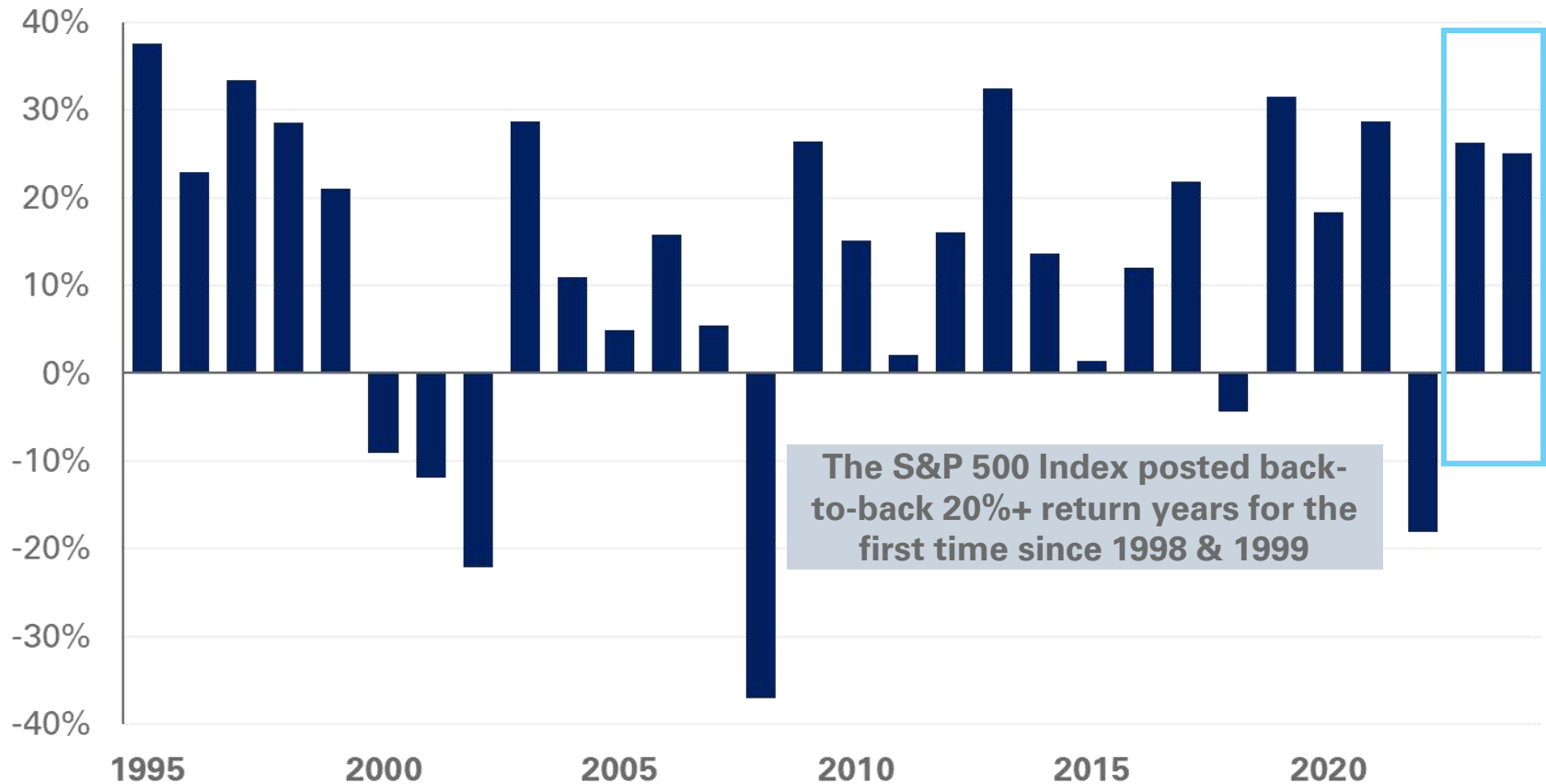


Source: FactSet



# STRONG EQUITY RETURNS ECHO THE LATE-90S

## S&P 500 CALENDAR YEAR RETURNS



Sources: S&P, FactSet

# THE MAG-7 NOW REPRESENT OVER 30% OF THE S&P 500 INDEX

## MAGNIFICENT 7 WEIGHT IN THE S&P 500 INDEX



Sources: S&P, FactSet



# TOTAL FUND

# EXECUTIVE SUMMARY - GROSS RETURNS\*

	Market Value (\$)	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	15 Yrs (%)	20 Yrs (%)	25 Yrs (%)	Inception (%)	Inception Date
<b>Total Fund (Gross)</b>	<b>12,011,836,837</b>	<b>-1.32 (72)</b>	<b>6.68 (19)</b>	<b>9.51 (34)</b>	<b>2.99 (46)</b>	<b>7.44 (34)</b>	<b>7.69 (23)</b>	<b>8.64 (17)</b>	<b>7.88 (14)</b>	<b>7.47 (4)</b>	<b>9.36</b>	<b>Oct-85</b>
<i>Policy Index (Gross)</i>		-1.39 (75)	6.71 (17)	9.27 (42)	3.02 (46)	7.47 (33)	7.75 (21)	8.71 (13)	8.16 (6)	7.50 (4)	9.61	
<i>Allocation Index</i>		-1.30 (72)	7.02 (12)	9.98 (27)	2.76 (57)	7.22 (40)	7.56 (25)	8.43 (29)	7.82 (17)	7.26 (11)		
<i>IM Public DB &gt; \$1 Billion (Gross)</i>		-0.86	5.92	8.85	2.80	7.02	6.97	7.85	7.27	6.54		
Population		65	170	64	61	60	58	51	124	28		

- The Fund's performance over the five-year period was 7.44%, ranking in the second quartile of the peer universe. The Fund's risk-adjusted returns ranked in the second quartile over this period, with the Sharpe Ratio and Sortino Ratio ranking in the 39th and 41st percentiles, respectively.

- Over the past three years, the Fund returned 2.99% per annum, ranking in the second quartile of the peer universe. The Fund's Sharpe and Sortino Ratios also both ranked in the second quartile.

- Over the last year, the Fund returned 9.51%, ranking in the 34th percentile of its peer group. The Fund's assets totaled \$12.0 billion as of 12/31/24.

3 Years Ending December 31, 2024					
	3 Years Return	3 Years Standard Deviation	3 Years Sharpe Ratio	3 Years Sortino Ratio	3 Years Tracking Error
<b>Total Fund (Gross)</b>	<b>2.99 (46)</b>	<b>9.83 (53)</b>	<b>-0.04 (46)</b>	<b>-0.06 (46)</b>	<b>1.26 (1)</b>
<i>Policy Index (Gross)</i>	3.02 (46)	10.12 (56)	-0.03 (42)	-0.05 (42)	0.00
<i>Allocation Index</i>	2.76 (57)	10.53 (64)	-0.05 (49)	-0.07 (48)	0.55 (1)
<i>IM Public DB &gt; \$1 Billion (Gross) Median</i>	2.80	9.71	-0.06	-0.07	2.60
Population	61	61	61	61	61

5 Years Ending December 31, 2024					
	5 Years Return	5 Years Standard Deviation	5 Years Sharpe Ratio	5 Years Sortino Ratio	5 Years Tracking Error
<b>Total Fund (Gross)</b>	<b>7.44 (34)</b>	<b>11.09 (65)</b>	<b>0.48 (39)</b>	<b>0.69 (41)</b>	<b>2.14 (18)</b>
<i>Policy Index (Gross)</i>	7.47 (33)	10.92 (60)	0.49 (34)	0.72 (36)	0.00
<i>Allocation Index</i>	7.22 (40)	11.35 (74)	0.45 (45)	0.67 (45)	0.70 (1)
<i>IM Public DB &gt; \$1 Billion (Gross) Median</i>	7.02	10.67	0.44	0.64	2.78
Population	60	60	60	60	60



\*Net returns are shown on the following page.

**EXECUTIVE SUMMARY - NET RETURNS**

	Market Value (\$)	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	15 Yrs (%)	20 Yrs (%)	25 Yrs (%)	Inception (%)	Inception Date
<b>Total Fund (Net)</b>	<b>12,011,836,837</b>	<b>-1.39 (78)</b>	<b>6.53 (21)</b>	<b>9.23 (40)</b>	<b>2.81 (52)</b>	<b>7.26 (37)</b>	<b>7.47 (23)</b>	<b>8.38 (15)</b>	<b>7.59 (19)</b>	<b>7.18 (9)</b>	<b>9.17</b>	<b>Oct-85</b>
<i>Policy Index (Net)</i>		-1.44 (80)	6.57 (21)	9.01 (50)	2.94 (48)	7.41 (33)	7.73 (15)	8.69 (8)	8.15 (2)	7.49 (3)	9.60	
<i>Allocation Index</i>		-1.30 (73)	7.02 (12)	9.98 (24)	2.76 (53)	7.22 (37)	7.57 (18)	8.43 (11)	7.82 (8)	7.26 (7)		
<i>IM Public DB &gt; \$1 Billion (Net)</i>		-0.85	5.89	9.00	2.86	6.90	6.92	7.74	7.09	6.38		
Population		103	168	102	98	96	91	84	112	49		

**3 Years Ending December 31, 2024**

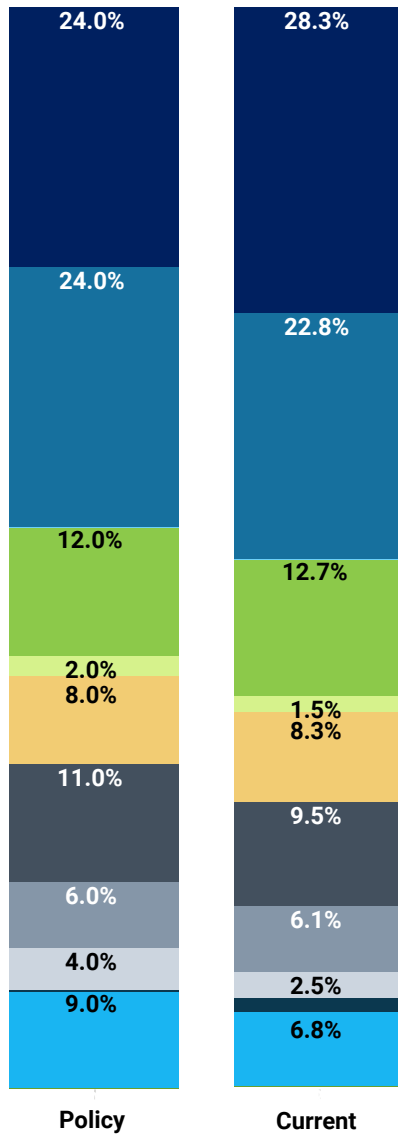
	3 Years Return	3 Years Standard Deviation	3 Years Sharpe Ratio	3 Years Sortino Ratio	3 Years Tracking Error
<b>Total Fund (Net)</b>	<b>2.81 (52)</b>	<b>9.83 (64)</b>	<b>-0.06 (48)</b>	<b>-0.08 (48)</b>	<b>1.27 (1)</b>
<i>Policy Index (Net)</i>	2.94 (48)	10.11 (67)	-0.04 (42)	-0.06 (42)	0.00
<i>Allocation Index</i>	2.76 (53)	10.53 (72)	-0.05 (44)	-0.07 (44)	0.57 (1)
<i>IM Public DB &gt; \$1 Billion (Net) Median</i>	2.86	9.15	-0.07	-0.09	2.61
Population	98	98	98	98	98

**5 Years Ending December 31, 2024**

	5 Years Return	5 Years Standard Deviation	5 Years Sharpe Ratio	5 Years Sortino Ratio	5 Years Tracking Error
<b>Total Fund (Net)</b>	<b>7.26 (37)</b>	<b>11.09 (69)</b>	<b>0.47 (47)</b>	<b>0.67 (47)</b>	<b>2.14 (15)</b>
<i>Policy Index (Net)</i>	7.41 (33)	10.91 (66)	0.48 (41)	0.71 (39)	0.00
<i>Allocation Index</i>	7.22 (37)	11.35 (75)	0.45 (51)	0.67 (48)	0.71 (1)
<i>IM Public DB &gt; \$1 Billion (Net) Median</i>	6.90	10.05	0.46	0.65	2.81
Population	96	96	96	96	96

# ASSET ALLOCATION VS. POLICY

## Asset Allocation vs. Target

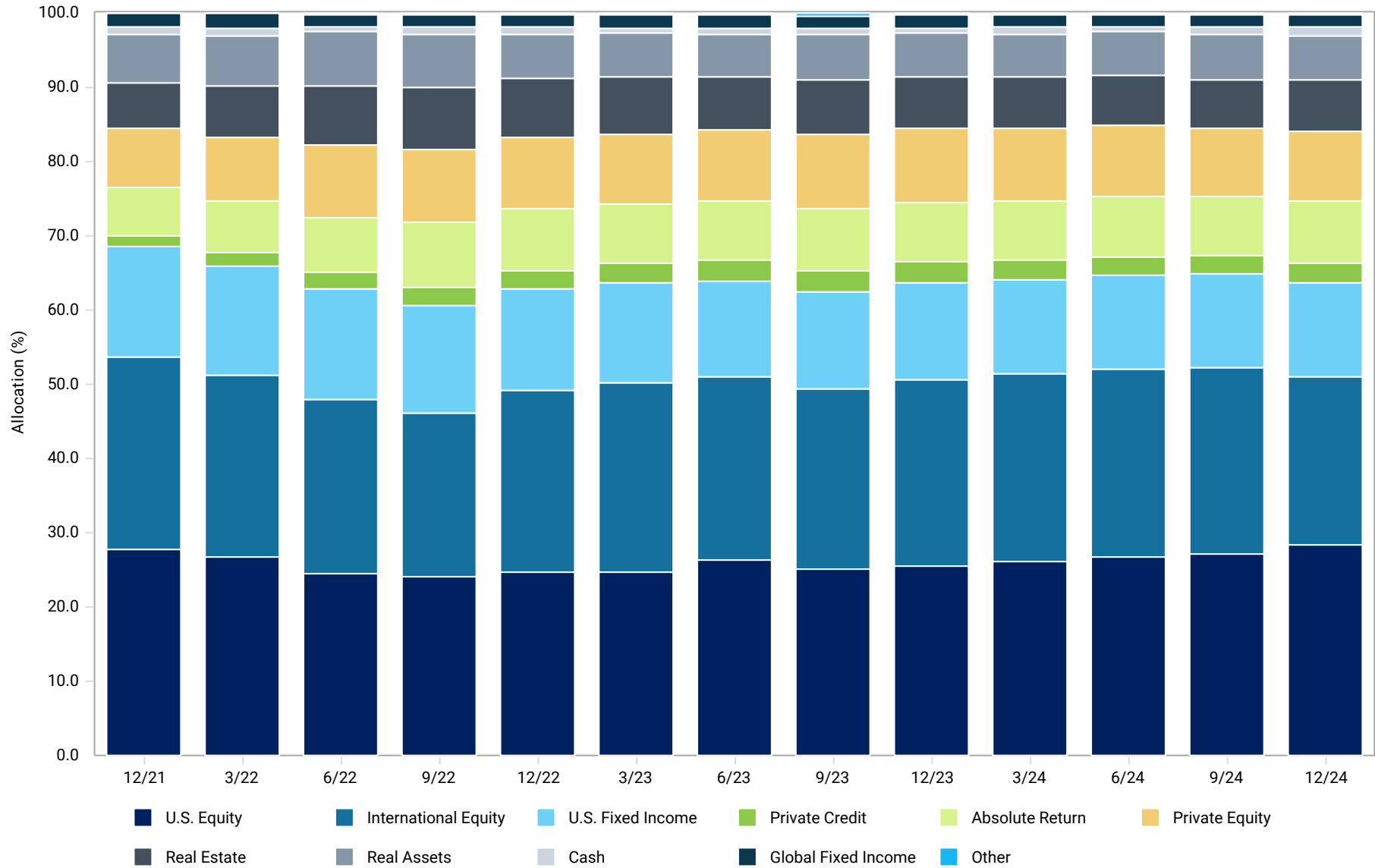


	Current (\$)	Current (%)	Policy (%)	Differences* (%)	Within Range
US Equity	3,398,229,194	28.3	24.0	4.3	Yes
International Equity	2,738,306,826	22.8	24.0	-1.2	Yes
Intl Transition	6,235	0.0	0.0	0.0	Yes
US Fixed Income	1,521,392,968	12.7	12.0	0.7	Yes
Global Fixed Income	178,258,205	1.5	2.0	-0.5	Yes
Absolute Return	1,000,260,625	8.3	8.0	0.3	Yes
Private Equity	1,145,601,924	9.5	11.0	-1.5	Yes
Real Assets	732,743,418	6.1	6.0	0.1	Yes
Private Credit	305,034,614	2.5	4.0	-1.5	Yes
Cash	144,571,576	1.2	0.0	1.2	Yes
Real Estate	814,329,200	6.8	9.0	-2.2	Yes
Overlay	33,108,288	0.3	0.0	0.3	Yes
<b>Total Fund</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>	

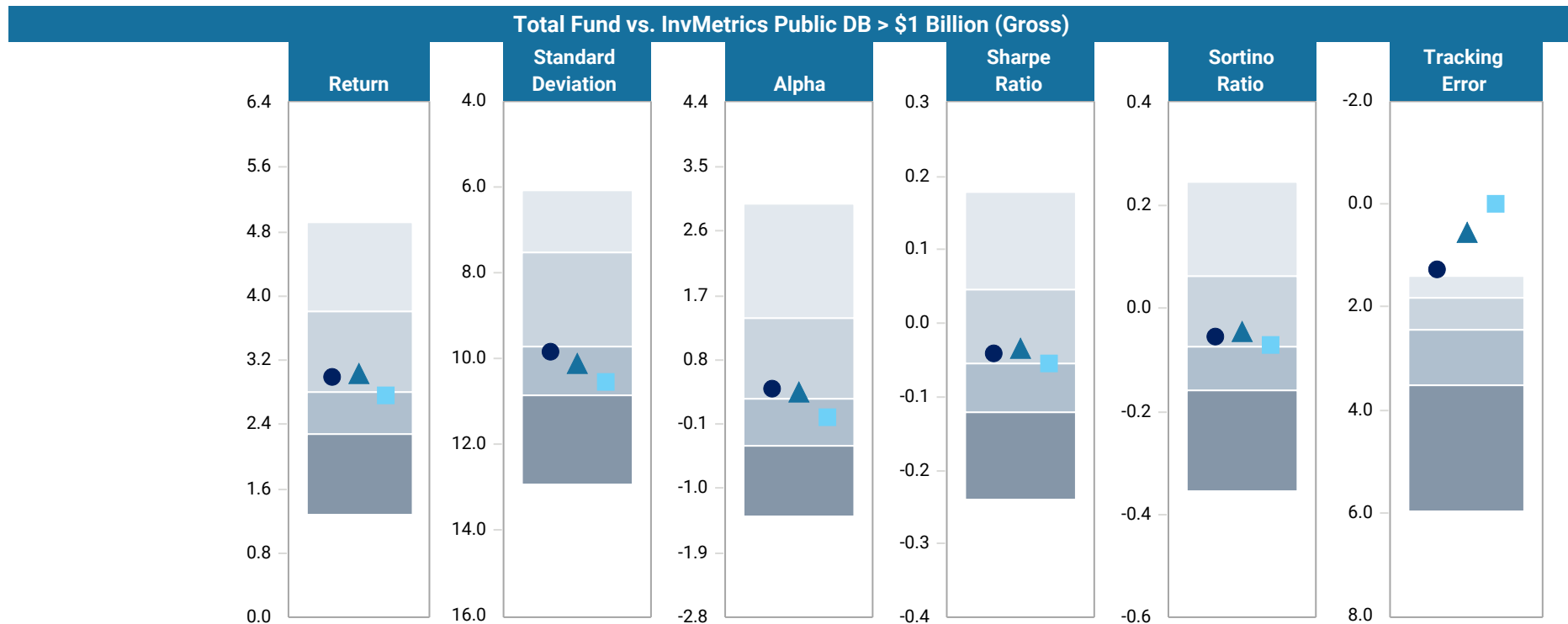
\*Difference between Policy and Current Allocation

# ASSET ALLOCATION HISTORY

3 Years Asset Allocation History



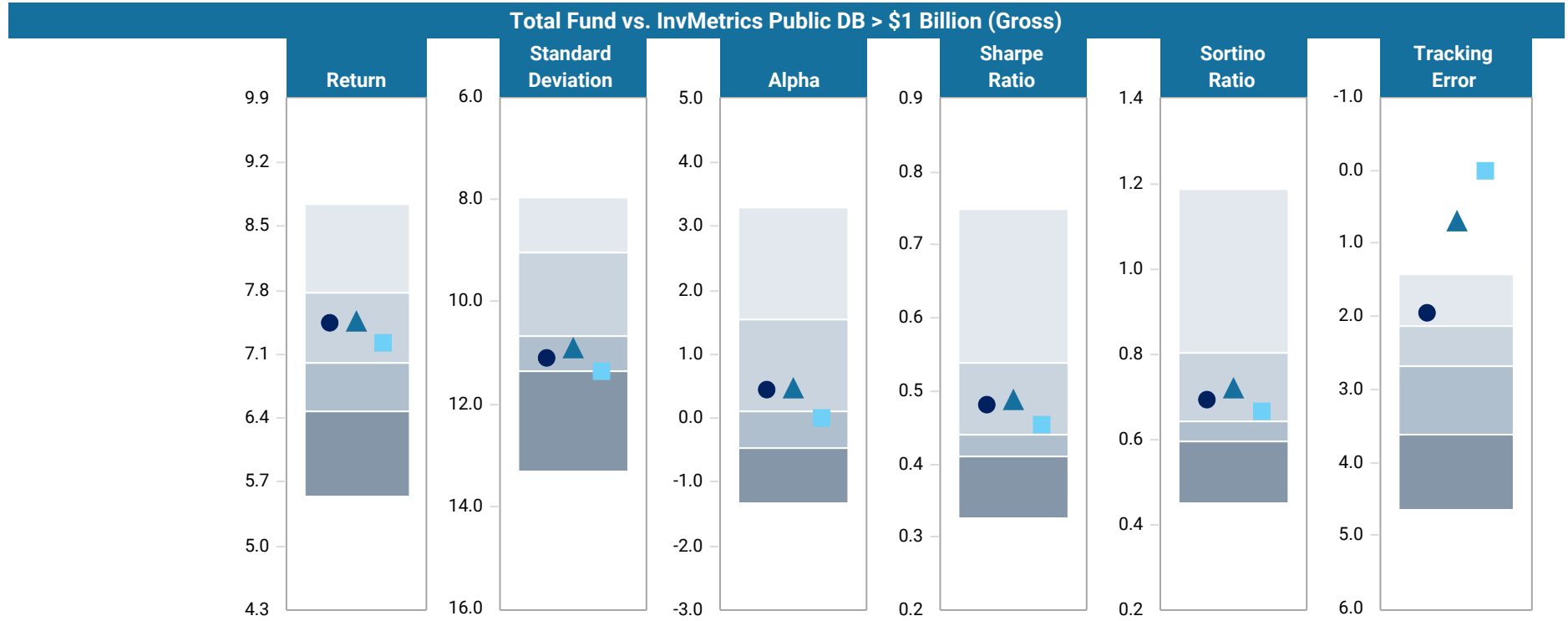
# RISK STATISTICS VS. PEER UNIVERSE



	3 Yrs (%)	3 Yrs (%)	3 Yrs (%)	3 Yrs (%)	3 Yrs (%)	3 Yrs (%)
● Total Fund (Gross)	3.0 (46)	9.8 (53)	0.4 (49)	0.0 (46)	-0.1 (46)	1.3 (1)
▲ Policy Index (Gross)	3.0 (46)	10.1 (56)	0.3 (49)	0.0 (42)	0.0 (42)	0.6 (1)
■ Allocation Index	2.8 (57)	10.5 (64)	0.0 (62)	-0.1 (49)	-0.1 (48)	0.0 (1)
5th Percentile	4.9	6.1	3.0	0.2	0.2	1.4
1st Quartile	3.8	7.5	1.4	0.0	0.1	1.8
Median	2.8	9.7	0.3	-0.1	-0.1	2.4
3rd Quartile	2.3	10.9	-0.4	-0.1	-0.2	3.5
95th Percentile	1.3	12.9	-1.4	-0.2	-0.4	6.0
Population	61	61	61	61	61	61



# RISK STATISTICS VS. PEER UNIVERSE



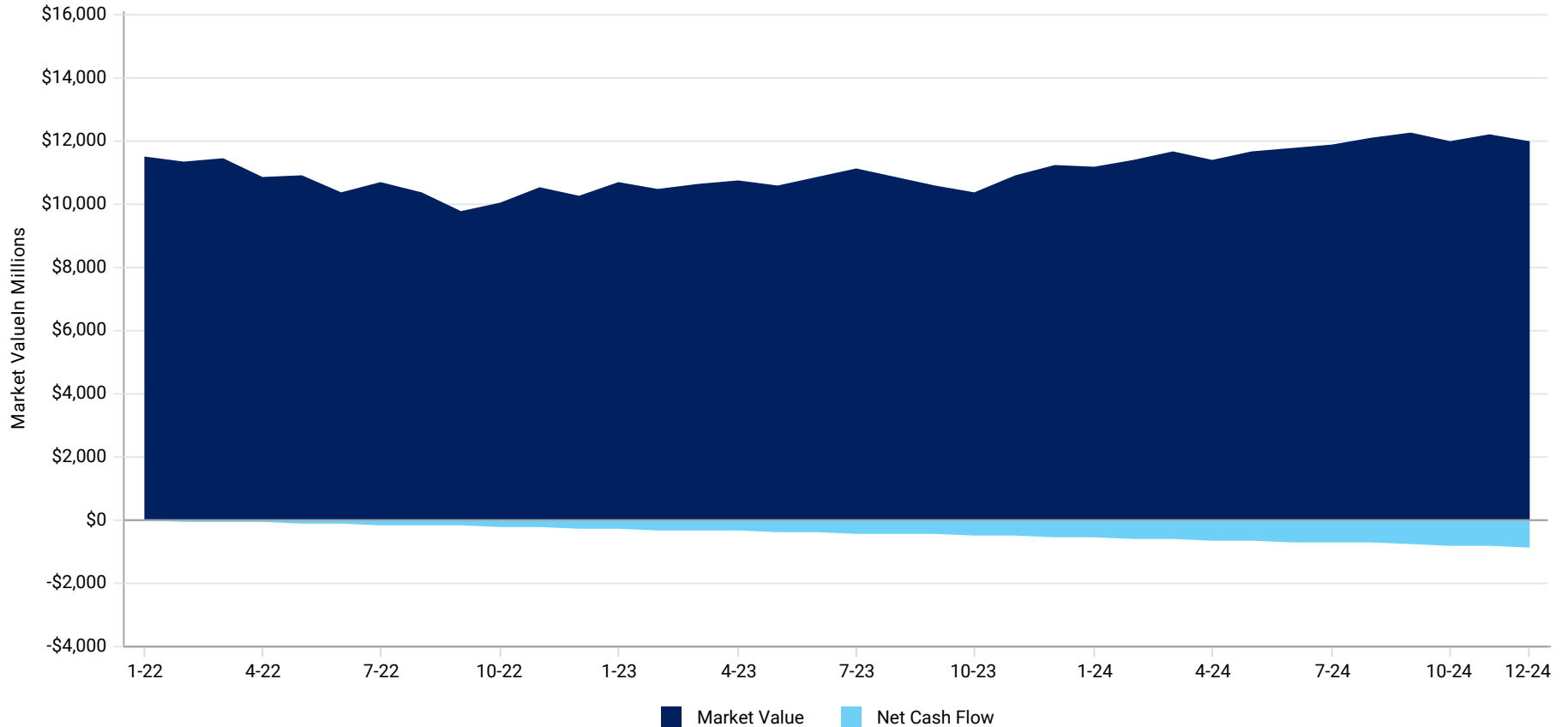
	5 Yrs (%)	5 Yrs (%)	5 Yrs (%)	5 Yrs (%)	5 Yrs (%)	5 Yrs (%)
● Total Fund (Gross)	7.4 (34)	11.1 (65)	0.5 (39)	0.5 (39)	0.7 (41)	2.0 (15)
▲ Policy Index (Gross)	7.5 (33)	10.9 (60)	0.5 (38)	0.5 (34)	0.7 (36)	0.7 (1)
■ Allocation Index	7.2 (40)	11.4 (74)	0.0 (57)	0.5 (45)	0.7 (45)	0.0 (1)
5th Percentile	8.7	8.0	3.3	0.7	1.2	1.4
1st Quartile	7.8	9.1	1.5	0.5	0.8	2.1
Median	7.0	10.7	0.1	0.4	0.6	2.7
3rd Quartile	6.5	11.4	-0.5	0.4	0.6	3.6
95th Percentile	5.6	13.3	-1.3	0.3	0.5	4.6

Population                      60                      60                      60                      60                      60                      60



# ASSET GROWTH SUMMARY

3 Years Ending December 31, 2024



	Last Three Months	1 Year	3 Years
Beginning Market Value	12,264,689,671	11,249,924,621	11,886,130,847
Net Cash Flow	-91,431,783	-308,900,965	-848,429,104
Net Investment Change	-161,421,050	1,070,813,181	974,135,094
<b>Ending Market Value</b>	<b>12,011,836,837</b>	<b>12,011,836,837</b>	<b>12,011,836,837</b>
Net Change	-252,852,833	761,912,216	125,705,991



**CASH FLOW SUMMARY BY MANAGER**

	1 Quarter Ending December 31, 2024			
	Beginning Market Value	Net Cash Flows	Net Investment Change	Ending Market Value
Absolute Return	\$974,899,806	-\$833,794	\$26,194,613	\$1,000,260,625
Applied Research Investments	\$26,042	-	-\$1,853	\$24,190
AQR	\$1,435,810	-	-\$105,474	\$1,330,336
Arga Investment Management	\$82,545,141	-\$77,514,119	-\$4,784,319	\$246,703
Aristotle	\$197,945,328	-\$190,270	-\$7,834,807	\$189,920,251
Baird Advisors	\$1,259,072,524	-\$207,472	-\$36,869,808	\$1,221,995,245
Bivium Cash	\$729,506	\$5,307,199	-\$5,268,139	\$768,566
BlackRock MSCI Emerging Mkts Free Fd	\$425,575,169	-	-\$33,230,710	\$392,344,459
BlackRock MSCI World ex-US Index Fd A	\$967,004,756	-\$120,000,000	-\$71,515,211	\$775,489,545
BlackRock Russell 1000 Index Fund	\$2,577,413,250	-	\$70,803,716	\$2,648,216,966
Brandywine	\$197,543,337	-\$152,329	-\$19,132,802	\$178,258,205
Capital Group	\$451,860,002	-\$166,626	-\$40,295,615	\$411,397,760
Cash Account	\$117,115,052	\$26,478,946	\$977,577	\$144,571,576
Cedar Street	\$11,509,670	-\$105	-\$885,320	\$10,624,244
Channing Global Advisors, LLC	-	\$77,818,511	\$329,544	\$78,148,055
Denali Advisors	\$69,956,860	\$13,479,505	-\$4,066,090	\$79,370,275
Dundas Partners	\$82,399,075	\$2,937,853	-\$7,329,267	\$78,007,660
Global Alpha Capital Management	\$11,748,576	-	-\$1,281,776	\$10,466,799
Haven Global Partners	\$59,880,060	\$22,851,731	-\$4,288,522	\$78,443,270
Huber	\$1,651	-	-	\$1,651
Kennedy	\$176,205,511	-\$350,827	\$444,438	\$176,299,122
Loomis Sayles	\$302,326,090	-\$238,680	-\$2,689,687	\$299,397,723
Mondrian	\$3,985,123	-	-\$289,074	\$3,696,048
Newton Emerging Mkt	\$10	-	-	\$10
Parametric Portfolio Overlay	\$37,300,746	-\$30,000	-\$4,162,458	\$33,108,288
Promethos Capital	\$60,850,978	\$20,863,366	-\$3,254,142	\$78,460,202
Private Credit	\$306,177,031	-\$8,194,774	\$7,052,357	\$305,034,614
Private Equity	\$1,132,867,526	-\$12,232,255	\$24,966,653	\$1,145,601,924
Radin Capital Partners	\$13,858	-	-\$1,019	\$12,839

**CASH FLOW SUMMARY BY MANAGER**

	Beginning Market Value	Net Cash Flows	Net Investment Change	Ending Market Value
Redwood	\$1,793	-\$66	-\$569	\$1,157
Redwood DM	\$68,699,866	-\$65,743,962	-\$2,885,497	\$70,407
RVX Asset Management	\$17	-\$17	-	-
Real Assets	\$747,554,015	-\$551,742	-\$14,258,855	\$732,743,418
Real Estate	\$790,575,343	\$25,749,623	-\$1,995,766	\$814,329,200
TCW	\$198,200,758	-\$192,900	\$11,074,814	\$209,082,672
Templeton	\$309,869,467	-	-\$28,282,438	\$281,587,029
Intl Transition	\$6,585	-	-\$350	\$6,235
William Blair Emerging Mkts Growth	\$474,138,893	-	-\$16,327,858	\$457,811,036
William Blair Small Cap Growth	\$167,254,447	-\$318,578	\$7,772,663	\$174,708,532
<b>Total</b>	<b>\$12,264,689,670</b>	<b>-\$91,431,783</b>	<b>-\$161,421,050</b>	<b>\$12,011,836,837</b>

# CASH FLOW SUMMARY BY MANAGER (BIVIUM)

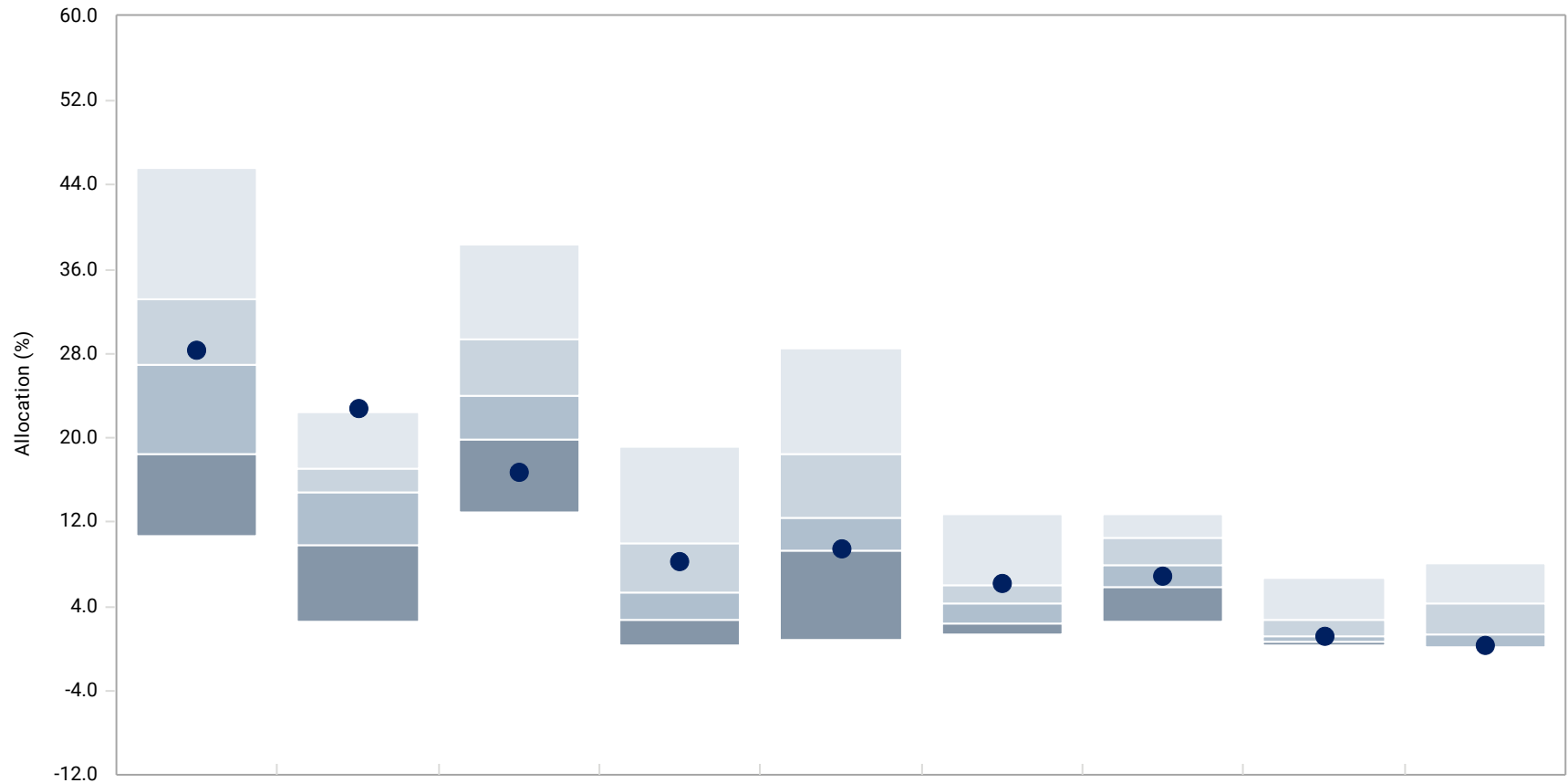
1 Quarter Ending December 31, 2024				
	Beginning Market Value	Net Cash Flows	Net Investment Change	Ending Market Value
Huber	\$1,651	-	-	\$1,651
<b>Total</b>	<b>\$1,651</b>	<b>-</b>	<b>-</b>	<b>\$1,651</b>

# CASH FLOW SUMMARY BY MANAGER (BIVIUM)

1 Quarter Ending December 31, 2024				
	Beginning Market Value	Net Cash Flows	Net Investment Change	Ending Market Value
Applied Research Investments	\$26,042	-	-\$1,853	\$24,190
Arga Investment Management	\$82,545,141	-\$77,514,119	-\$4,784,319	\$246,703
Cedar Street	\$11,509,670	-\$105	-\$885,320	\$10,624,244
Channing Global Advisors, LLC	-	\$77,818,511	\$329,544	\$78,148,055
Denali Advisors	\$69,956,860	\$13,479,505	-\$4,066,090	\$79,370,275
Dundas Partners	\$82,399,075	\$2,937,853	-\$7,329,267	\$78,007,660
Global Alpha Capital Management	\$11,748,576	-	-\$1,281,776	\$10,466,799
Haven Global Partners	\$59,880,060	\$22,851,731	-\$4,288,522	\$78,443,270
Promethos Capital	\$60,850,978	\$20,863,366	-\$3,254,142	\$78,460,202
Radin Capital Partners	\$13,858	-	-\$1,019	\$12,839
Redwood DM	\$68,699,866	-\$65,743,962	-\$2,885,497	\$70,407
Redwood	\$1,793	-\$66	-\$569	\$1,157
RVX Asset Management	\$17	-\$17	-	-
Bivium Cash	\$729,506	\$5,307,199	-\$5,268,139	\$768,566
<b>Total</b>	<b>\$448,361,442</b>	<b>-\$105</b>	<b>-\$33,716,969</b>	<b>\$414,644,368</b>

# ALLOCATIONS VS. PEER UNIVERSE

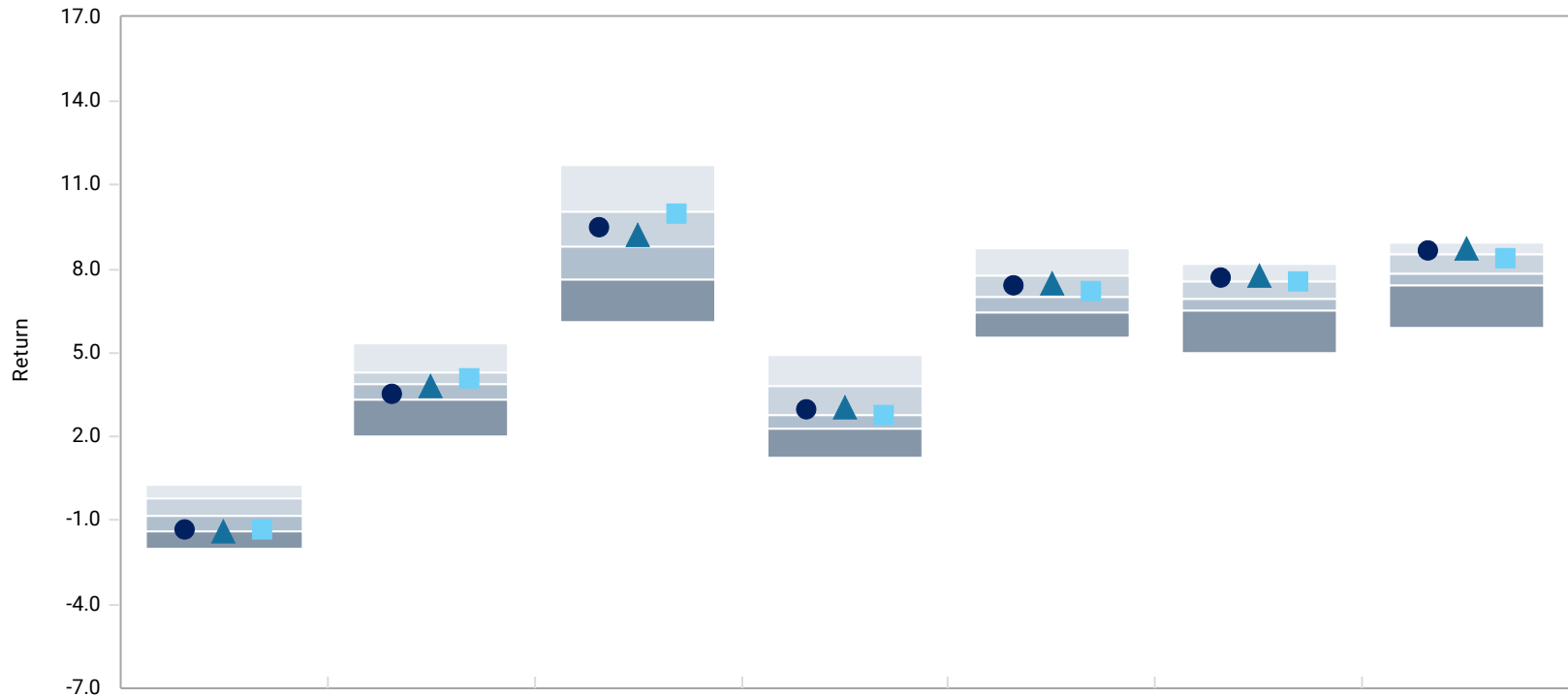
Total Fund Allocation vs. InvMetrics Public DB > \$1 Billion (Gross)



	US Equity	Global ex-US Equity	Total Fixed Income	Hedge Funds	Private Equity	Real Assets/Commod	Total Real Estate	Cash & Equivalents	Other
● Total Fund (Gross)	28.3 (48)	22.8 (5)	16.7 (91)	8.3 (37)	9.5 (74)	6.1 (25)	6.8 (63)	1.2 (50)	0.3 (69)
5th Percentile	45.7	22.4	38.4	19.2	28.4	12.8	12.7	6.7	8.0
1st Quartile	33.2	17.1	29.4	10.0	18.4	6.1	10.5	2.6	4.3
Median	26.9	14.9	24.0	5.3	12.4	4.2	7.9	1.2	1.4
3rd Quartile	18.5	9.8	19.9	2.6	9.3	2.3	5.9	0.6	0.2
95th Percentile	10.7	2.6	12.8	0.2	0.8	1.4	2.5	0.3	0.1
Population	59	61	64	28	56	41	57	60	8

# RETURN SUMMARY VS. PEER UNIVERSE

Total Fund (Gross) vs. InvMetrics Public DB > \$1 Billion (Gross)



	3 Mo	6 Mo	1 Year	3 Years	5 Years	10 Years	15 Yrs
● Total Fund (Gross)	-1.3 (72)	3.5 (67)	9.5 (34)	3.0 (46)	7.4 (34)	7.7 (23)	8.6 (17)
▲ Policy Index (Gross)	-1.4 (75)	3.8 (55)	9.3 (42)	3.0 (46)	7.5 (33)	7.8 (21)	8.7 (13)
■ Allocation Index	-1.3 (72)	4.1 (33)	10.0 (27)	2.8 (57)	7.2 (40)	7.6 (25)	8.4 (29)
5th Percentile	0.3	5.4	11.7	4.9	8.7	8.2	9.0
1st Quartile	-0.2	4.3	10.1	3.8	7.8	7.5	8.5
Median	-0.9	3.9	8.8	2.8	7.0	7.0	7.9
3rd Quartile	-1.4	3.3	7.7	2.3	6.5	6.5	7.5
95th Percentile	-2.0	2.0	6.1	1.3	5.6	5.0	5.9
Population	65	64	64	61	60	58	51



# Alameda County Employees' Retirement Association

## ATTRIBUTION ANALYSIS

December 31, 2024

### Attribution Effects 1 Quarter Ending December 31, 2024



### Attribution Summary 1 Quarter Ending December 31, 2024

	Wtd. Actual Return (%)	Wtd. Index Return (%)	Excess Return (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Total Effects (%)
US Equity	2.5	2.6	-0.2	0.0	0.1	0.0	0.1
International Equity	-7.3	-7.6	0.3	0.1	0.0	0.0	0.0
Total Fixed Income	-3.3	-3.9	0.6	0.1	0.0	0.0	0.1
Absolute Return	2.7	2.0	0.7	0.1	0.0	0.0	0.1
Private Equity	2.2	2.6	-0.4	0.0	-0.1	0.0	-0.1
Real Assets	-1.9	-5.4	3.4	0.2	0.0	0.0	0.2
Private Credit	2.3	2.7	-0.4	0.0	-0.1	0.0	-0.1
Cash	1.2	1.2	0.0	0.0	0.0	0.0	0.0
Real Estate	-0.2	1.2	-1.4	-0.1	-0.1	0.0	-0.2
Overlay	-11.2	0.0	-11.2	0.0	0.0	0.0	0.0
<b>Total Fund (Gross)</b>	<b>-1.3</b>	<b>-1.4</b>	<b>0.1</b>	<b>0.2</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.1</b>

\*Total Actual and Index returns are weighted average calculations.



# Alameda County Employees' Retirement Association

## ATTRIBUTION ANALYSIS

December 31, 2024

### Attribution Effects 1 Year Ending December 31, 2024



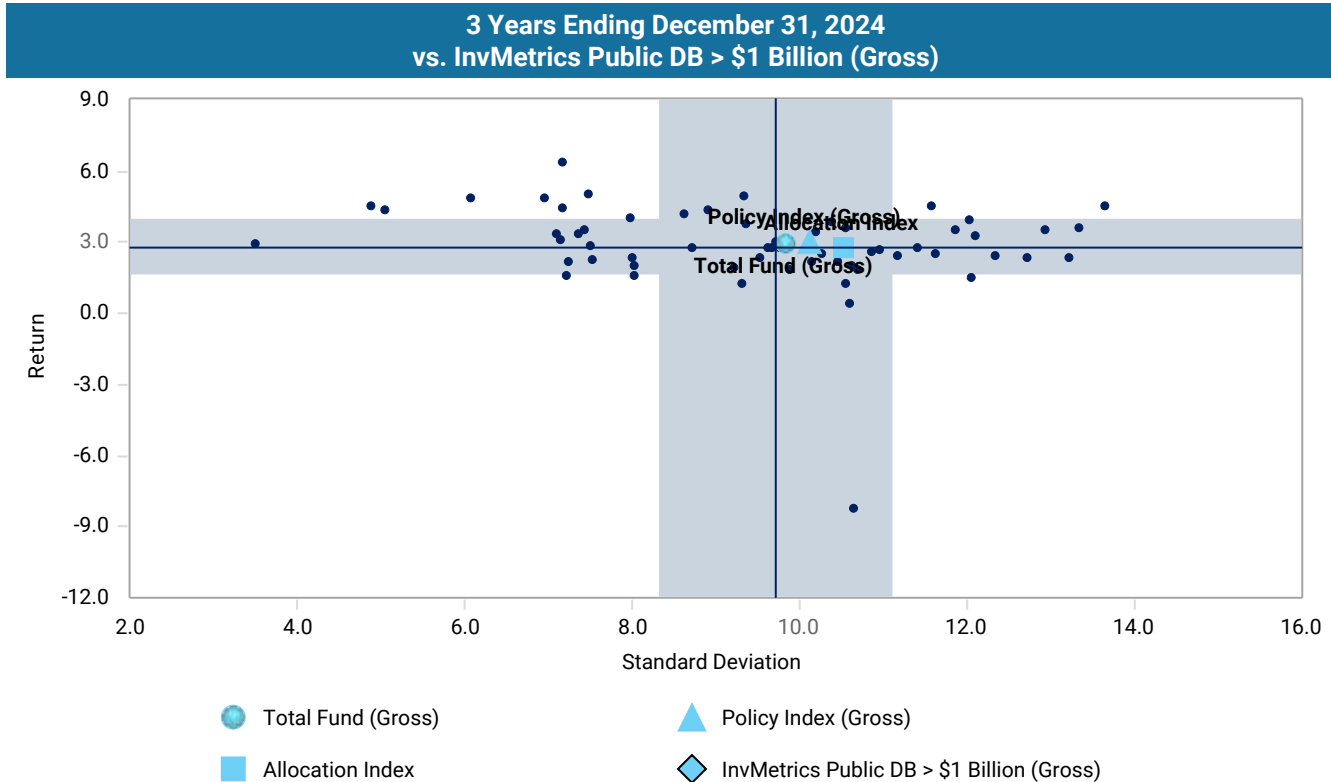
### Attribution Summary 1 Year Ending December 31, 2024

	Wtd. Actual Return (%)	Wtd. Index Return (%)	Excess Return (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Total Effects (%)
US Equity	22.9	23.8	-0.9	-0.2	0.3	0.0	0.1
International Equity	4.5	5.2	-0.7	-0.2	0.0	0.0	-0.2
Total Fixed Income	1.7	0.0	1.6	0.2	-0.1	0.0	0.2
Absolute Return	11.3	9.1	2.2	0.2	0.0	0.0	0.2
Private Equity	9.5	7.6	2.0	0.2	0.0	0.0	0.2
Real Assets	9.0	7.1	1.9	0.1	0.0	0.0	0.1
Private Credit	9.7	10.8	-1.1	0.0	0.0	0.0	-0.1
Cash	5.2	5.3	-0.1	0.0	0.0	0.0	0.0
Real Estate	-5.3	-1.4	-3.8	-0.4	0.2	0.1	-0.1
Overlay	24.1	0.0	24.1	0.0	0.0	0.0	0.0
<b>Total Fund (Gross)</b>	<b>9.5</b>	<b>9.1</b>	<b>0.4</b>	<b>-0.1</b>	<b>0.4</b>	<b>0.1</b>	<b>0.4</b>

\*Total Actual and Index returns are weighted average calculations.

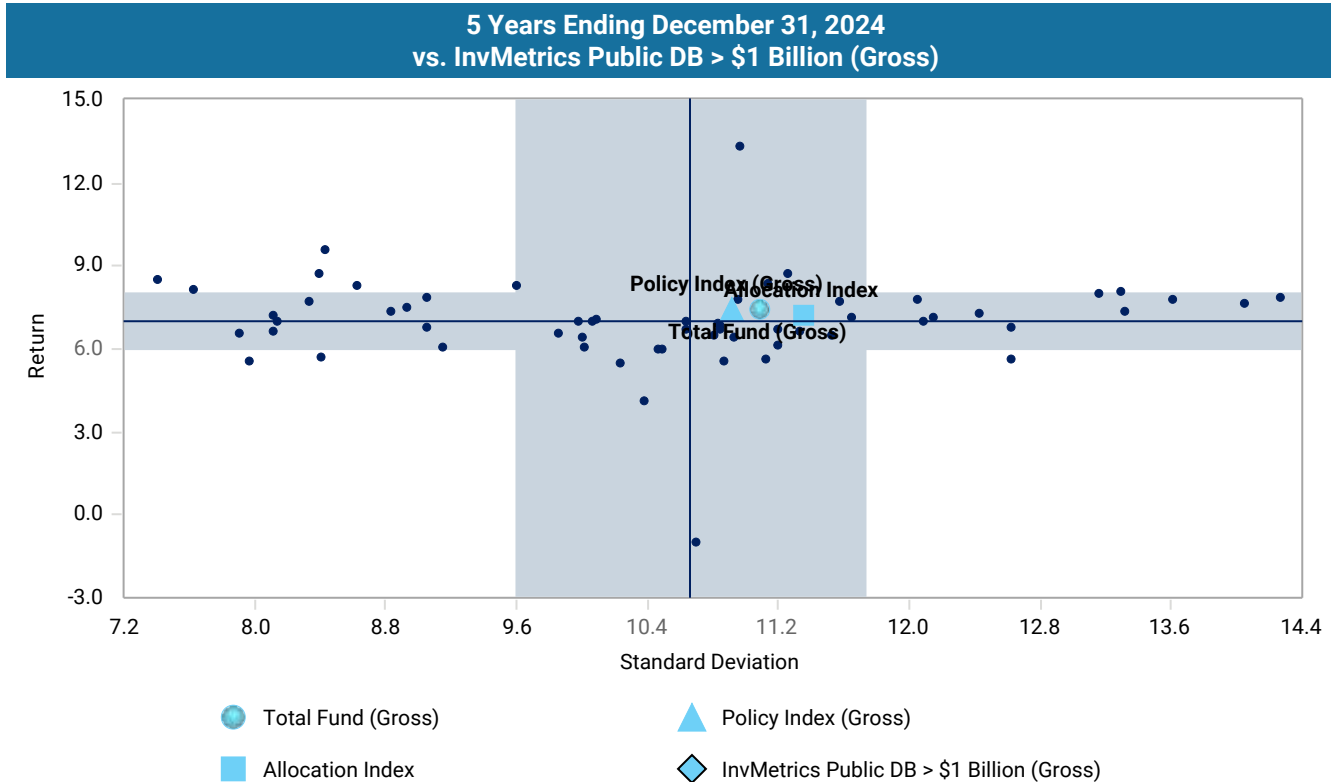


# RISK VS. RETURN



<b>Statistics Summary 5 Years Ending December 31, 2024</b>						
	<b>3 Years Return</b>	<b>3 Years Standard Deviation</b>	<b>3 Years Sharpe Ratio</b>	<b>3 Years Information Ratio</b>	<b>3 Years Tracking Error</b>	
<b>Total Fund (Gross)</b>	<b>3.0 (46)</b>	<b>9.8 (53)</b>	<b>0.0 (46)</b>	<b>0.0 (45)</b>	<b>1.3 (1)</b>	
<i>Policy Index (Gross)</i>	3.0 (46)	10.1 (56)	0.0 (42)		0.0	
<i>Allocation Index</i>	2.8 (57)	10.5 (64)	-0.1 (49)	-0.4 (78)	0.6 (1)	
<i>InvMetrics Public DB &gt; \$1 Billion (Gross) Median</i>	2.8	9.7	-0.1	-0.1	2.6	
Population	61	61	61	61	61	

# RISK VS. RETURN



<b>Statistics Summary 5 Years Ending December 31, 2024</b>						
	5 Years Return	5 Years Standard Deviation	5 Years Sharpe Ratio	5 Years Information Ratio	5 Years Tracking Error	
<b>Total Fund (Gross)</b>	<b>7.4 (34)</b>	<b>11.1 (65)</b>	<b>0.5 (39)</b>	<b>0.0 (35)</b>	<b>2.1 (18)</b>	
<i>Policy Index (Gross)</i>	7.5 (33)	10.9 (60)	0.5 (34)		0.0	
<i>Allocation Index</i>	7.2 (40)	11.4 (74)	0.5 (45)	-0.3 (59)	0.7 (1)	
<i>InvMetrics Public DB &gt; \$1 Billion (Gross) Median</i>	7.0	10.7	0.4	-0.2	2.8	
Population	60	60	60	60	60	

# COMPOSITE PERFORMANCE DETAIL

	Allocation		Performance (%)									
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	15 Yrs (%)	20 Yrs (%)	25 Yrs (%)	
<b>Total Fund (Gross)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>-1.3</b>	<b>5.8</b>	<b>9.5</b>	<b>3.0</b>	<b>7.4</b>	<b>7.7</b>	<b>8.6</b>	<b>7.7</b>	<b>7.1</b>	
<i>Policy Index (Gross)</i>			-1.4	5.2	9.3	3.0	7.5	7.8	8.7	7.9	7.1	
<i>Allocation Index</i>			-1.3	5.6	10.0	2.8	7.2	7.6	8.4	7.6	6.9	
<b>Total Fund w/o Overlay (Gross)</b>	<b>11,978,728,550</b>	<b>99.7</b>										
<b>US Equity (Gross)</b>	<b>3,398,229,194</b>	<b>28.3</b>	<b>2.5</b>	<b>13.2</b>	<b>22.9</b>	<b>7.6</b>	<b>13.6</b>	<b>12.6</b>	<b>13.6</b>	<b>10.0</b>	<b>8.2</b>	
<i>Russell 3000*</i>			2.6	13.6	23.8	8.0	13.9	12.5	13.6	10.2	7.8	
<b>Large Cap Active Equity (Gross)</b>	<b>399,004,574</b>	<b>3.3</b>										
<b>Small Cap Equity (Gross)</b>	<b>351,007,654</b>	<b>2.9</b>										
<b>International Equity (Gross)</b>	<b>2,738,306,826</b>	<b>22.8</b>	<b>-7.3</b>	<b>5.8</b>	<b>4.5</b>	<b>-0.1</b>	<b>4.4</b>	<b>5.9</b>	<b>5.8</b>	<b>6.9</b>	<b>5.9</b>	
<i>MSCI ACWI ex USA IMI*</i>			-7.6	5.3	5.2	0.8	4.5	5.4	5.2	6.3	5.1	
<b>Bivium Intl Equity (Gross)</b>	<b>414,644,368</b>	<b>3.5</b>	<b>-7.5</b>	<b>3.6</b>	<b>2.7</b>	<b>0.1</b>	<b>4.8</b>					
<i>MSCI World ex USA*</i>			-7.4	5.0	4.7	1.1	4.4					
<b>Total Fixed Income (Gross)</b>	<b>1,699,651,173</b>	<b>14.1</b>	<b>-3.3</b>	<b>-0.7</b>	<b>1.7</b>	<b>-1.9</b>	<b>0.9</b>	<b>2.5</b>	<b>4.2</b>	<b>4.8</b>	<b>5.5</b>	
<i>Fixed Income Blend</i>			-3.4	-1.2	0.9	-2.7	-0.5	1.3	2.3	3.2	4.1	
<b>US Fixed Income (Gross)</b>	<b>1,521,392,968</b>	<b>12.7</b>										
<b>Global Fixed Income (Gross)</b>	<b>178,258,205</b>	<b>1.5</b>										
<b>Absolute Return (Gross)</b>	<b>1,000,260,625</b>	<b>8.3</b>	<b>2.7</b>	<b>6.3</b>	<b>11.3</b>	<b>8.0</b>	<b>7.6</b>	<b>4.6</b>				
<i>Absolute Return Blend</i>			2.0	4.9	9.1	3.1	5.2	4.5				
<b>Private Equity (Gross)</b>	<b>1,145,601,924</b>	<b>9.5</b>	<b>2.2</b>	<b>5.4</b>	<b>9.5</b>	<b>5.5</b>	<b>14.7</b>	<b>14.2</b>	<b>14.4</b>			
<i>Private Equity Blend</i>			2.6	3.8	7.6	2.4	13.7	13.3	15.0			
<b>Real Assets (Gross)</b>	<b>732,743,418</b>	<b>6.1</b>	<b>-1.9</b>	<b>4.2</b>	<b>9.0</b>	<b>6.9</b>	<b>7.7</b>	<b>2.3</b>				
<i>Real Asset Blend</i>			-5.4	3.2	7.1	5.4	6.3	6.6				
<b>Private Credit (Gross)</b>	<b>305,034,614</b>	<b>2.5</b>	<b>2.3</b>	<b>4.6</b>	<b>9.7</b>	<b>8.4</b>	<b>7.7</b>					
<i>S&amp;P/LSTA Leveraged Loan Index +1.75%</i>			2.7	5.3	10.8	8.9	7.7					
<b>Cash (Gross)</b>	<b>144,571,576</b>	<b>1.2</b>	<b>1.2</b>	<b>2.4</b>	<b>5.2</b>	<b>4.0</b>	<b>2.6</b>	<b>1.8</b>	<b>1.2</b>	<b>1.6</b>	<b>1.9</b>	
<i>90 Day U.S. Treasury Bill</i>			1.2	2.6	5.3	3.9	2.5	1.8	1.2	1.5	1.9	
<b>Real Estate (Gross)</b>	<b>814,329,200</b>	<b>6.8</b>	<b>-0.2</b>	<b>-4.9</b>	<b>-5.3</b>	<b>-3.4</b>	<b>2.3</b>	<b>6.0</b>	<b>8.4</b>	<b>7.0</b>	<b>7.2</b>	
<i>Real Estate Blend</i>			1.2	-2.8	-1.4	-2.3	2.9	5.9	8.2	7.7	8.2	
<b>Overlay (Gross)</b>	<b>33,108,288</b>	<b>0.3</b>										

# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
<b>Total Fund (Gross)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>-1.32 (72)</b>	<b>6.68 (19)</b>	<b>9.51 (34)</b>	<b>2.99 (46)</b>	<b>7.44 (34)</b>	<b>7.69 (23)</b>	<b>9.36</b>	<b>Oct-85</b>	
Policy Index (Gross)			-1.39 (75)	6.71 (17)	9.27 (42)	3.02 (46)	7.47 (33)	7.75 (21)	9.61		
Allocation Index			-1.30 (72)	7.02 (12)	9.98 (27)	2.76 (57)	7.22 (40)	7.56 (25)			
IM Public DB > \$1 Billion (Gross)			-0.86	5.92	8.85	2.80	7.02	6.97			
<b>Total Fund w/o Overlay (Gross)</b>	<b>11,978,728,550</b>	<b>99.7</b>								<b>Oct-85</b>	
<b>US Equity (Gross)</b>	<b>3,398,229,194</b>	<b>28.3</b>	<b>2.48 (19)</b>	<b>9.17 (32)</b>	<b>22.94 (23)</b>	<b>7.57 (42)</b>	<b>13.63 (28)</b>	<b>12.55 (13)</b>	<b>12.03</b>	<b>Oct-85</b>	
Russell 3000*			2.63 (12)	9.65 (12)	23.81 (7)	8.01 (26)	13.87 (11)	12.55 (13)	11.64		
InvMetrics Public DB US Equity (Gross)			1.79	8.59	21.59	7.37	12.99	11.73			
BlackRock Russell 1000 Index Fund (Gross)	2,648,216,966	22.0	2.75 (25)	9.87 (32)	24.54 (38)	8.44 (45)	14.31 (38)		14.41 (36)	May-18	
Russell 1000 Index			2.75 (25)	9.87 (32)	24.51 (38)	8.41 (46)	14.28 (39)		14.37 (37)		
eV US Large Cap Core Equity (Gross)			1.61	8.81	22.47	7.99	13.62		13.85		
<b>Large Cap Active Equity (Gross)</b>	<b>399,004,574</b>	<b>3.3</b>								<b>Apr-00</b>	
Aristotle (Gross)	189,920,251	1.6	-3.96 (94)	4.91 (78)	8.27 (92)	3.78 (95)			12.52 (91)	Nov-20	
Russell 1000 Value Index			-1.98 (66)	7.06 (44)	14.37 (56)	5.63 (73)			14.18 (72)		
eV US Large Cap Value Equity (Gross)			-1.41	6.65	15.30	7.12			15.83		
TCW (Gross)	209,082,672	1.7	5.59 (41)	9.37 (51)	31.32 (43)	7.06 (66)	16.57 (51)	15.44 (48)	9.59 (46)	Jul-99	
Russell 1000 Growth Index			7.07 (21)	11.79 (18)	33.36 (28)	10.47 (23)	18.96 (16)	16.78 (13)	8.44 (82)		
eV US Large Cap Growth Equity (Gross)			5.16	9.37	29.69	8.32	16.58	15.23	9.43		
<b>Small Cap Equity (Gross)</b>	<b>351,007,654</b>	<b>2.9</b>								<b>Aug-85</b>	
Kennedy (Gross)	176,299,122	1.5	0.24 (48)	5.01 (57)	10.86 (55)	1.19 (92)	8.95 (69)	8.04 (76)	11.01 (59)	Oct-10	
Russell 2000 Value Index			-1.06 (73)	6.14 (43)	8.05 (74)	1.94 (89)	7.29 (89)	7.14 (94)	9.40 (93)		
eV US Small Cap Value Equity (Gross)			-0.05	5.48	11.34	4.73	9.85	8.86	11.21		
William Blair Small Cap Growth (Gross)	174,708,532	1.5	4.66 (19)	7.93 (25)	20.92 (21)	4.36 (12)	12.86 (16)		13.72 (19)	Nov-19	
Russell 2000 Growth Index			1.70 (44)	5.25 (55)	15.15 (52)	0.21 (47)	6.86 (87)		8.29 (86)		
eV US Small Cap Growth Equity (Gross)			1.13	5.69	15.49	-0.34	9.21		10.56		

# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)									
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date		
<b>International Equity (Gross)</b>	<b>2,738,306,826</b>	<b>22.8</b>	<b>-7.28 (43)</b>	<b>7.89 (46)</b>	<b>4.50 (64)</b>	<b>-0.15 (77)</b>	<b>4.36 (59)</b>	<b>5.88 (42)</b>	<b>7.75</b>	<b>Jan-91</b>		
<i>MSCI ACWI ex USA IMI*</i>			-7.61 (48)	9.17 (23)	5.23 (44)	0.84 (45)	4.52 (58)	5.35 (74)	6.13			
<i>InvMetrics Public DB Dev Mkt ex-US Eq (Gross)</i>			-7.70	7.72	4.81	0.75	4.64	5.83				
<b>Bivium Intl Equity (Gross)</b>	<b>414,644,368</b>	<b>3.5</b>	<b>-7.52 (60)</b>	<b>6.17 (73)</b>	<b>2.70 (72)</b>	<b>0.14 (74)</b>	<b>4.80 (62)</b>		<b>7.03 (46)</b>	<b>Nov-18</b>		
<i>MSCI World ex USA*</i>			-7.43 (58)	7.11 (62)	4.70 (55)	1.06 (66)	4.43 (69)		6.36 (63)			
<i>eV EAFE All Cap Equity (Gross)</i>			-7.21	7.70	5.15	2.22	5.35		6.88			
BlackRock MSCI World ex-US Index Fd A (Gross)	775,489,545	6.5	-7.60 (52)	7.40 (54)	4.83 (48)	2.26 (41)	5.49 (47)		7.29 (50)	Jun-19		
<i>BlackRock MSCI Custom Benchmark</i>			-7.43 (48)	7.11 (60)	4.70 (49)	2.28 (41)	5.53 (45)		7.33 (50)			
<i>eV All EAFE Equity (Gross)</i>			-7.58	7.65	4.57	1.68	5.31		7.25			
Capital Group (Gross)	411,397,760	3.4	-8.92 (83)	2.70 (91)	-0.51 (80)	-4.66 (85)	2.35 (94)	6.00 (84)	7.86	Jan-91		
<i>MSCI World ex US Net*</i>			-7.43 (62)	7.11 (31)	4.70 (53)	0.90 (25)	4.33 (79)	5.17 (96)	6.09			
<i>MSCI AC World ex USA Growth</i>			-7.84 (67)	7.90 (29)	5.38 (51)	-2.37 (69)	3.75 (88)	5.70 (88)				
<i>eV ACWI ex-US Large Cap Growth Eq (Gross)</i>			-6.92	5.59	5.94	-1.47	5.65	7.36				
Templeton (Gross)	281,587,029	2.3	-9.13 (88)	8.22 (55)	-1.20 (81)	-3.46 (63)	2.11 (91)	4.70 (97)	4.99 (100)	May-11		
<i>Franklin Templeton Custom Benchmark</i>			-7.66 (75)	9.62 (35)	3.36 (60)	-1.14 (49)	4.67 (57)	6.05 (80)	4.78 (100)			
<i>MSCI AC World ex USA Small Value</i>			-7.99 (77)	10.50 (31)	4.27 (50)	2.28 (29)	5.26 (51)	6.10 (80)	4.92 (100)			
<i>eV ACWI ex-US Small Cap Equity (Gross)</i>			-6.05	8.55	4.23	-1.38	5.30	7.55	6.97			
BlackRock MSCI Emerging Mkts Free Fd (Gross)	392,344,459	3.3	-7.81 (72)	13.76 (29)	7.16 (58)				11.97 (63)	Oct-23		
<i>MSCI Emerging Markets Custom Benchmark</i>			-8.01 (75)	14.16 (24)	7.50 (54)				12.63 (54)			
<i>eV Emg Mkts Equity (Gross)</i>			-6.94	12.26	7.80				12.95			
William Blair Emerging Mkts Growth (Gross)	457,811,036	3.8	-3.44 (12)	10.61 (68)	11.68 (21)				9.14 (50)	Dec-22		
<i>MSCI Emerging Markets Custom Benchmark</i>			-8.01 (75)	14.16 (24)	7.50 (54)				7.80 (65)			
<i>eV Emg Mkts Equity (Gross)</i>			-6.94	12.26	7.80				8.92			

# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)								Inception Date
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)		
<b>Total Fixed Income (Gross)</b>	<b>1,699,651,173</b>	<b>14.1</b>	<b>-3.34 (95)</b>	<b>5.94 (8)</b>	<b>1.66 (89)</b>	<b>-1.93 (82)</b>	<b>0.89 (59)</b>	<b>2.45 (46)</b>	<b>6.45</b>	<b>Oct-86</b>	
Fixed Income Blend			-3.35 (95)	5.43 (47)	0.92 (96)	-2.71 (98)	-0.54 (98)	1.32 (100)	5.48		
InvMetrics Public DB Fixed Income (Gross)			-2.03	5.41	3.22	-0.52	1.14	2.38			
<b>US Fixed Income (Gross)</b>	<b>1,521,392,968</b>	<b>12.7</b>								<b>Oct-86</b>	
Baird Advisors (Gross)	1,221,995,245	10.2	-2.93 (55)	5.69 (20)	2.17 (43)	-1.78 (44)	0.43 (43)	2.16 (21)	4.14 (21)	Nov-01	
Blmbg. U.S. Aggregate Index			-3.06 (77)	5.26 (80)	1.25 (95)	-2.41 (91)	-0.33 (96)	1.35 (99)	3.31 (99)		
eV US Core Fixed Inc (Gross)			-2.90	5.48	2.04	-1.88	0.36	1.91	3.87		
Loomis Sayles (Gross)	299,397,723	2.5	-0.89 (3)	6.95 (4)	6.58 (3)	0.32 (7)	3.39 (1)	4.15 (3)	7.16 (1)	Jan-01	
Blmbg. U.S. Credit: BAA Bond			-2.79 (57)	5.86 (39)	2.70 (56)	-1.89 (75)	0.58 (74)	2.75 (31)	5.25 (20)		
eV US Core Plus Fixed Inc (Gross)			-2.72	5.77	2.79	-1.51	0.87	2.44	4.83		
<b>Global Fixed Income (Gross)</b>	<b>178,258,205</b>	<b>1.5</b>								<b>Dec-01</b>	
Brandywine (Gross)	178,258,205	1.5	-9.69 (97)	6.05 (43)	-8.62 (99)	-6.21 (94)	-2.33 (90)	0.41 (75)	5.27 (31)	Jan-02	
Brandywine Custom Benchmark			-5.44 (70)	5.26 (70)	-2.87 (84)	-4.90 (85)	-2.20 (88)	0.03 (82)	3.16 (91)		
eV All Global Fixed Inc (Gross)			-1.71	5.80	3.76	-0.45	1.44	2.33	4.28		



# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
<b>Absolute Return (Gross)</b>	<b>1,000,260,625</b>	<b>8.3</b>	<b>2.69 (62)</b>	<b>5.21 (14)</b>	<b>11.27 (67)</b>	<b>7.99 (20)</b>	<b>7.56 (51)</b>	<b>4.61</b>	<b>4.75</b>	<b>Oct-11</b>	
<i>Absolute Return Blend</i>			2.03 (83)	2.65 (53)	9.10 (73)	3.10 (83)	5.23 (81)	4.47	4.40		
<i>HFRI Fund of Funds Composite Index</i>			2.03 (83)	2.65 (53)	9.10 (73)	3.10 (83)	5.23 (81)	3.79	4.10		
<i>InvMetrics Public DB Hedge Funds (Gross)</i>			3.08	3.19	13.30	5.85	7.56				
<b>Private Equity (Gross)</b>	<b>1,145,601,924</b>	<b>9.5</b>	<b>2.21</b>	<b>4.32</b>	<b>9.54</b>	<b>5.49</b>	<b>14.68</b>	<b>14.22</b>	<b>7.28</b>	<b>Dec-08</b>	
<i>Private Equity Blend</i>			2.59	2.40	7.56	2.41	13.70	13.29	16.03		
<i>CJA Global All PE (Qtr Lag)</i>			2.59	2.40	7.56	2.83	13.12	12.08	10.74		
<b>Real Assets (Gross)</b>	<b>732,743,418</b>	<b>6.1</b>	<b>-1.91</b>	<b>9.15</b>	<b>9.01</b>	<b>6.91</b>	<b>7.65</b>	<b>2.29</b>	<b>0.04</b>	<b>Oct-11</b>	
<i>Real Asset Blend</i>			-5.35	11.68	7.10	5.39	6.34	6.56	6.09		
<b>Private Credit (Gross)</b>	<b>305,034,614</b>	<b>2.5</b>	<b>2.31</b>	<b>4.71</b>	<b>9.71</b>	<b>8.36</b>	<b>7.72</b>		<b>7.43</b>	<b>Nov-19</b>	
<i>S&amp;P/LSTA Leveraged Loan Index +1.75%</i>			2.71	4.88	10.85	8.92	7.73		7.98		
<b>Cash (Gross)</b>	<b>144,571,576</b>	<b>1.2</b>	<b>1.16</b>	<b>2.75</b>	<b>5.20</b>	<b>4.03</b>	<b>2.62</b>	<b>1.81</b>	<b>3.07</b>	<b>Oct-85</b>	
<i>90 Day U.S. Treasury Bill</i>			1.17	2.71	5.25	3.89	2.46	1.76	3.26		
<b>Real Estate (Gross)</b>	<b>814,329,200</b>	<b>6.8</b>	<b>-0.24 (78)</b>	<b>-2.22 (89)</b>	<b>-5.27 (76)</b>	<b>-3.44 (75)</b>	<b>2.33 (64)</b>	<b>6.05 (40)</b>	<b>6.47</b>	<b>Apr-86</b>	
<i>Real Estate Blend</i>			1.16 (32)	-0.20 (52)	-1.43 (37)	-2.32 (52)	2.87 (57)	5.88 (51)	7.20		
<i>NCREIF ODCE</i>			1.16 (32)	-0.20 (52)	-1.43 (37)	-2.32 (52)	2.87 (57)	5.88 (51)	6.69		
<i>InvMetrics Public DB Real Estate Public &amp; Private (Gross)</i>			0.66	-0.09	-2.07	-2.17	3.06	5.91			

# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
<b>Total Fund (Gross)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>-1.32 (72)</b>	<b>6.68 (19)</b>	<b>9.51 (34)</b>	<b>2.99 (46)</b>	<b>7.44 (34)</b>	<b>7.69 (23)</b>	<b>9.36</b>	<b>Oct-85</b>	
<b>Total Fund (Net)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>-1.39 (75)</b>	<b>6.53 (21)</b>	<b>9.23 (40)</b>	<b>2.81 (48)</b>	<b>7.26 (33)</b>	<b>7.47 (23)</b>	<b>9.17</b>	<b>Oct-85</b>	
Policy Index (Gross)			-1.39 (75)	6.71 (18)	9.27 (40)	3.02 (46)	7.47 (29)	7.75 (16)	9.61		
Allocation Index			-1.30 (68)	7.02 (12)	9.98 (24)	2.76 (49)	7.22 (36)	7.56 (20)			
<b>Total Fund w/o Overlay (Gross)</b>	<b>11,978,728,550</b>	<b>99.7</b>								<b>Oct-85</b>	
<b>Total Fund w/o Overlay (Net)</b>	<b>11,978,728,550</b>	<b>99.7</b>								<b>Oct-85</b>	
<b>US Equity (Gross)</b>	<b>3,398,229,194</b>	<b>28.3</b>	<b>2.48 (19)</b>	<b>9.17 (32)</b>	<b>22.94 (23)</b>	<b>7.57 (42)</b>	<b>13.63 (28)</b>	<b>12.55 (13)</b>	<b>12.03</b>	<b>Oct-85</b>	
<b>US Equity (Net)</b>	<b>3,398,229,194</b>	<b>28.3</b>	<b>2.45 (21)</b>	<b>9.10 (36)</b>	<b>22.78 (28)</b>	<b>7.42 (46)</b>	<b>13.48 (35)</b>	<b>12.33 (13)</b>		<b>Oct-85</b>	
Russell 3000*			2.63 (12)	9.65 (11)	23.81 (6)	8.01 (23)	13.87 (10)	12.55 (9)	11.64		
BlackRock Russell 1000 Index Fund (Gross)	2,648,216,966	22.0	2.75 (25)	9.87 (32)	24.54 (38)	8.44 (45)	14.31 (38)		14.41 (36)	May-18	
BlackRock Russell 1000 Index Fund (Net)	2,648,216,966	22.0	2.75 (23)	9.87 (27)	24.53 (35)	8.43 (39)	14.30 (30)		14.40 (23)	May-18	
Russell 1000 Index			2.75 (23)	9.87 (27)	24.51 (35)	8.41 (40)	14.28 (31)		14.37 (23)		
<b>Large Cap Active Equity (Gross)</b>	<b>399,004,574</b>	<b>3.3</b>								<b>Apr-00</b>	
<b>Large Cap Active Equity (Net)</b>	<b>399,004,574</b>	<b>3.3</b>								<b>Apr-00</b>	
Aristotle (Gross)	189,920,251	1.6	-3.96 (94)	4.91 (78)	8.27 (92)	3.78 (95)			12.52 (91)	Nov-20	
Aristotle (Net)	189,920,251	1.6	-4.05 (93)	4.72 (75)	7.87 (91)	3.32 (91)			12.07 (87)	Nov-20	
Russell 1000 Value Index			-1.98 (61)	7.06 (40)	14.37 (50)	5.63 (61)			14.18 (63)		
TCW (Gross)	209,082,672	1.7	5.59 (41)	9.37 (51)	31.32 (43)	7.06 (66)	16.57 (51)	15.44 (48)	9.59 (46)	Jul-99	
TCW (Net)	209,082,672	1.7	5.49 (39)	9.16 (45)	30.83 (38)	6.60 (64)	16.08 (45)	14.99 (39)		Jul-99	
Russell 1000 Growth Index			7.07 (19)	11.79 (13)	33.36 (23)	10.47 (17)	18.96 (10)	16.78 (6)	8.44 (58)		
<b>Small Cap Equity (Gross)</b>	<b>351,007,654</b>	<b>2.9</b>								<b>Aug-85</b>	
<b>Small Cap Equity (Net)</b>	<b>351,007,654</b>	<b>2.9</b>								<b>Aug-85</b>	
Kennedy (Gross)	176,299,122	1.5	0.24 (48)	5.01 (57)	10.86 (55)	1.19 (92)	8.95 (69)	8.04 (76)	11.01 (59)	Oct-10	
Kennedy (Net)	176,299,122	1.5	0.05 (44)	4.61 (56)	10.04 (53)	0.39 (94)	8.11 (64)	7.16 (73)	10.14 (57)	Oct-10	
Russell 2000 Value Index			-1.06 (69)	6.14 (33)	8.05 (69)	1.94 (85)	7.29 (79)	7.14 (74)	9.40 (75)		
William Blair Small Cap Growth (Gross)	174,708,532	1.5	4.66 (19)	7.93 (25)	20.92 (21)	4.36 (12)	12.86 (16)		13.72 (19)	Nov-19	
William Blair Small Cap Growth (Net)	174,708,532	1.5	4.46 (17)	7.54 (23)	20.06 (23)	3.56 (12)	12.00 (16)		12.89 (17)	Nov-19	
Russell 2000 Growth Index			1.70 (39)	5.25 (50)	15.15 (44)	0.21 (33)	6.86 (74)		8.29 (72)		

# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)								Inception Date
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)		
<b>International Equity (Gross)</b>	<b>2,738,306,826</b>	<b>22.8</b>	<b>-7.28 (43)</b>	<b>7.89 (46)</b>	<b>4.50 (64)</b>	<b>-0.15 (77)</b>	<b>4.36 (59)</b>	<b>5.88 (42)</b>	<b>7.75</b>	<b>Jan-91</b>	
<b>International Equity (Net)</b>	<b>2,738,306,826</b>	<b>22.8</b>	<b>-7.34 (43)</b>	<b>7.75 (47)</b>	<b>4.22 (69)</b>	<b>-0.44 (74)</b>	<b>4.06 (51)</b>	<b>5.54 (48)</b>		<b>Jan-91</b>	
<i>MSCI ACWI ex USA IMI*</i>			<i>-7.61 (47)</i>	<i>9.17 (19)</i>	<i>5.23 (41)</i>	<i>0.84 (39)</i>	<i>4.52 (48)</i>	<i>5.35 (50)</i>	<i>6.13</i>		
<b>Bivium Intl Equity (Gross)</b>	<b>414,644,368</b>	<b>3.5</b>	<b>-7.52 (60)</b>	<b>6.17 (73)</b>	<b>2.70 (72)</b>	<b>0.14 (74)</b>	<b>4.80 (62)</b>		<b>7.03 (46)</b>	<b>Nov-18</b>	
<b>Bivium Intl Equity (Net)</b>	<b>414,644,368</b>	<b>3.5</b>	<b>-7.68 (56)</b>	<b>5.82 (72)</b>	<b>2.01 (69)</b>	<b>-0.83 (77)</b>	<b>4.00 (62)</b>		<b>6.32 (46)</b>	<b>Nov-18</b>	
<i>MSCI World ex USA*</i>			<i>-7.43 (52)</i>	<i>7.11 (55)</i>	<i>4.70 (48)</i>	<i>1.06 (58)</i>	<i>4.43 (56)</i>		<i>6.36 (45)</i>		
BlackRock MSCI World ex-US Index Fd A (Gross)	775,489,545	6.5	-7.60 (52)	7.40 (54)	4.83 (48)	2.26 (41)	5.49 (47)		7.29 (50)	Jun-19	
BlackRock MSCI World ex-US Index Fd A (Net)	775,489,545	6.5	-7.61 (48)	7.39 (46)	4.80 (43)	2.24 (35)	5.47 (32)		7.27 (33)	Jun-19	
<i>BlackRock MSCI Custom Benchmark</i>			<i>-7.43 (45)</i>	<i>7.11 (53)</i>	<i>4.70 (44)</i>	<i>2.28 (35)</i>	<i>5.53 (31)</i>		<i>7.33 (32)</i>		
Capital Group (Gross)	411,397,760	3.4	-8.92 (83)	2.70 (91)	-0.51 (80)	-4.66 (85)	2.35 (94)	6.00 (84)	7.86	Jan-91	
Capital Group (Net)	411,397,760	3.4	-8.95 (80)	2.62 (90)	-0.65 (77)	-4.80 (82)	2.16 (93)	5.77 (73)		Jan-91	
<i>MSCI World ex US Net*</i>			<i>-7.43 (55)</i>	<i>7.11 (29)</i>	<i>4.70 (49)</i>	<i>0.90 (17)</i>	<i>4.33 (61)</i>	<i>5.17 (87)</i>	<i>6.09</i>		
<i>MSCI AC World ex USA Growth</i>			<i>-7.84 (64)</i>	<i>7.90 (27)</i>	<i>5.38 (47)</i>	<i>-2.37 (54)</i>	<i>3.75 (72)</i>	<i>5.70 (75)</i>			
Templeton (Gross)	281,587,029	2.3	-9.13 (88)	8.22 (55)	-1.20 (81)	-3.46 (63)	2.11 (91)	4.70 (97)	4.99 (100)	May-11	
Templeton (Net)	281,587,029	2.3	-9.27 (85)	7.92 (53)	-1.77 (80)	-4.05 (63)	1.50 (87)	4.04 (94)	4.31 (98)	May-11	
<i>Franklin Templeton Custom Benchmark</i>			<i>-7.66 (72)</i>	<i>9.62 (33)</i>	<i>3.36 (53)</i>	<i>-1.14 (48)</i>	<i>4.67 (48)</i>	<i>6.05 (57)</i>	<i>4.78 (87)</i>		
<i>MSCI AC World ex USA Small Value</i>			<i>-7.99 (73)</i>	<i>10.50 (28)</i>	<i>4.27 (44)</i>	<i>2.28 (27)</i>	<i>5.26 (41)</i>	<i>6.10 (57)</i>	<i>4.92 (84)</i>		
BlackRock MSCI Emerging Mkts Free Fd (Gross)	392,344,459	3.3	-7.81 (72)	13.76 (29)	7.16 (58)				11.97 (63)	Oct-23	
BlackRock MSCI Emerging Mkts Free Fd (Net)	392,344,459	3.3	-7.82 (70)	13.73 (24)	7.09 (49)				11.91 (56)	Oct-23	
<i>MSCI Emerging Markets Custom Benchmark</i>			<i>-8.01 (73)</i>	<i>14.16 (19)</i>	<i>7.50 (44)</i>				<i>12.63 (46)</i>		
William Blair Emerging Mkts Growth (Gross)	457,811,036	3.8	-3.44 (12)	10.61 (68)	11.68 (21)				9.14 (50)	Dec-22	
William Blair Emerging Mkts Growth (Net)	457,811,036	3.8	-3.57 (11)	10.34 (64)	11.13 (20)				8.64 (49)	Dec-22	
<i>MSCI Emerging Markets Custom Benchmark</i>			<i>-8.01 (73)</i>	<i>14.16 (19)</i>	<i>7.50 (44)</i>				<i>7.80 (57)</i>		

# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)									
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date		
<b>Total Fixed Income (Gross)</b>	<b>1,699,651,173</b>	<b>14.1</b>	<b>-3.34 (95)</b>	<b>5.94 (8)</b>	<b>1.66 (89)</b>	<b>-1.93 (82)</b>	<b>0.89 (59)</b>	<b>2.45 (46)</b>	<b>6.45</b>	<b>Oct-86</b>		
<b>Total Fixed Income (Net)</b>	<b>1,699,651,173</b>	<b>14.1</b>	<b>-3.37 (96)</b>	<b>5.87 (7)</b>	<b>1.52 (90)</b>	<b>-2.07 (84)</b>	<b>0.73 (62)</b>	<b>2.27 (45)</b>		<b>Oct-86</b>		
<i>Fixed Income Blend</i>			<i>-3.35 (95)</i>	<i>5.43 (39)</i>	<i>0.92 (96)</i>	<i>-2.71 (98)</i>	<i>-0.54 (98)</i>	<i>1.32 (100)</i>	<i>5.48</i>			
<b>US Fixed Income (Gross)</b>	<b>1,521,392,968</b>	<b>12.7</b>								<b>Oct-86</b>		
<b>US Fixed Income (Net)</b>	<b>1,521,392,968</b>	<b>12.7</b>								<b>Oct-86</b>		
Baird Advisors (Gross)	1,221,995,245	10.2	-2.93 (55)	5.69 (20)	2.17 (43)	-1.78 (44)	0.43 (43)	2.16 (21)	4.14 (21)	Nov-01		
Baird Advisors (Net)	1,221,995,245	10.2	-2.94 (46)	5.65 (11)	2.11 (31)	-1.85 (24)	0.36 (25)	2.09 (8)	4.05 (5)	Nov-01		
<i>Blmbg. U.S. Aggregate Index</i>			<i>-3.06 (62)</i>	<i>5.26 (61)</i>	<i>1.25 (82)</i>	<i>-2.41 (75)</i>	<i>-0.33 (84)</i>	<i>1.35 (83)</i>	<i>3.31 (82)</i>			
Loomis Sayles (Gross)	299,397,723	2.5	-0.89 (3)	6.95 (4)	6.58 (3)	0.32 (7)	3.39 (1)	4.15 (3)	7.16 (1)	Jan-01		
Loomis Sayles (Net)	299,397,723	2.5	-0.97 (4)	6.78 (4)	6.25 (5)	-0.02 (7)	3.05 (2)	3.82 (4)	6.82 (1)	Jan-01		
<i>Blmbg. U.S. Credit: BAA Bond</i>			<i>-2.79 (48)</i>	<i>5.86 (26)</i>	<i>2.70 (36)</i>	<i>-1.89 (53)</i>	<i>0.58 (49)</i>	<i>2.75 (15)</i>	<i>5.25 (12)</i>			
<b>Global Fixed Income (Gross)</b>	<b>178,258,205</b>	<b>1.5</b>								<b>Dec-01</b>		
<b>Global Fixed Income (Net)</b>	<b>178,258,205</b>	<b>1.5</b>								<b>Dec-01</b>		
Brandywine (Gross)	178,258,205	1.5	-9.69 (97)	6.05 (43)	-8.62 (99)	-6.21 (94)	-2.33 (90)	0.41 (75)	5.27 (31)	Jan-02		
Brandywine (Net)	178,258,205	1.5	-9.76 (97)	5.89 (42)	-8.89 (99)	-6.49 (96)	-2.63 (92)	0.11 (78)	4.96 (29)	Jan-02		
<i>Brandywine Custom Benchmark</i>			<i>-5.44 (72)</i>	<i>5.26 (61)</i>	<i>-2.87 (84)</i>	<i>-4.90 (86)</i>	<i>-2.20 (88)</i>	<i>0.03 (78)</i>	<i>3.16 (81)</i>			

# TOTAL FUND PERFORMANCE DETAIL

	Allocation		Performance (%)								
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date	
<b>Absolute Return (Gross)</b>	<b>1,000,260,625</b>	<b>8.3</b>	<b>2.69 (62)</b>	<b>5.21 (14)</b>	<b>11.27 (67)</b>	<b>7.99 (20)</b>	<b>7.56 (51)</b>	<b>4.61</b>	<b>4.75</b>	<b>Oct-11</b>	
<b>Absolute Return (Net)</b>	<b>1,000,260,625</b>	<b>8.3</b>	<b>2.68 (59)</b>	<b>5.16 (14)</b>	<b>11.20 (63)</b>	<b>7.97 (13)</b>	<b>7.54 (45)</b>	<b>4.61</b>	<b>4.74</b>	<b>Oct-11</b>	
<i>Absolute Return Blend</i>			2.03 (79)	2.65 (53)	9.10 (71)	3.10 (80)	5.23 (79)	4.47	4.40		
<i>HFRI Fund of Funds Composite Index</i>			2.03 (79)	2.65 (53)	9.10 (71)	3.10 (80)	5.23 (79)	3.79	4.10		
<b>Private Equity (Gross)</b>	<b>1,145,601,924</b>	<b>9.5</b>	<b>2.21</b>	<b>4.32</b>	<b>9.54</b>	<b>5.49</b>	<b>14.68</b>	<b>14.22</b>	<b>7.28</b>	<b>Dec-08</b>	
<b>Private Equity (Net)</b>	<b>1,145,601,924</b>	<b>9.5</b>	<b>2.00</b>	<b>4.05</b>	<b>9.04</b>	<b>5.33</b>	<b>14.57</b>	<b>14.17</b>	<b>7.25</b>	<b>Dec-08</b>	
<i>Private Equity Blend</i>			2.59	2.40	7.56	2.41	13.70	13.29	16.03		
<i>CIA Global All PE (Qtr Lag)</i>			2.59	2.40	7.56	2.83	13.12	12.08	10.74		
<b>Real Assets (Gross)</b>	<b>732,743,418</b>	<b>6.1</b>	<b>-1.91</b>	<b>9.15</b>	<b>9.01</b>	<b>6.91</b>	<b>7.65</b>	<b>2.29</b>	<b>0.04</b>	<b>Oct-11</b>	
<b>Real Assets (Net)</b>	<b>732,743,418</b>	<b>6.1</b>	<b>-1.99</b>	<b>8.60</b>	<b>8.35</b>	<b>6.63</b>	<b>7.43</b>	<b>2.18</b>	<b>-0.04</b>	<b>Oct-11</b>	
<i>Real Asset Blend</i>			-5.35	11.68	7.10	5.39	6.34	6.56	6.09		
<b>Private Credit (Gross)</b>	<b>305,034,614</b>	<b>2.5</b>	<b>2.31</b>	<b>4.71</b>	<b>9.71</b>	<b>8.36</b>	<b>7.72</b>	<b>7.43</b>	<b>7.43</b>	<b>Nov-19</b>	
<b>Private Credit (Net)</b>	<b>305,034,614</b>	<b>2.5</b>	<b>2.19</b>	<b>4.21</b>	<b>9.06</b>	<b>8.15</b>	<b>7.59</b>	<b>7.31</b>	<b>7.31</b>	<b>Nov-19</b>	
<i>S&amp;P/LSTA Leveraged Loan Index +1.75%</i>			2.71	4.88	10.85	8.92	7.73	7.98			
<b>Cash (Gross)</b>	<b>144,571,576</b>	<b>1.2</b>	<b>1.16</b>	<b>2.75</b>	<b>5.20</b>	<b>4.03</b>	<b>2.62</b>	<b>1.81</b>	<b>3.07</b>	<b>Oct-85</b>	
<b>Cash (Net)</b>	<b>144,571,576</b>	<b>1.2</b>	<b>1.16</b>	<b>2.75</b>	<b>5.20</b>	<b>4.03</b>	<b>2.62</b>	<b>1.81</b>	<b>3.07</b>	<b>Oct-85</b>	
<i>90 Day U.S. Treasury Bill</i>			1.17	2.71	5.25	3.89	2.46	1.76	3.26		
<b>Real Estate (Gross)</b>	<b>814,329,200</b>	<b>6.8</b>	<b>-0.24 (78)</b>	<b>-2.22 (89)</b>	<b>-5.27 (76)</b>	<b>-3.44 (75)</b>	<b>2.33 (64)</b>	<b>6.05 (40)</b>	<b>6.47</b>	<b>Apr-86</b>	
<b>Real Estate (Net)</b>	<b>814,329,200</b>	<b>6.8</b>	<b>-0.43 (77)</b>	<b>-2.41 (91)</b>	<b>-5.72 (79)</b>	<b>-3.60 (72)</b>	<b>2.23 (59)</b>	<b>5.80 (32)</b>	<b>5.55</b>	<b>Apr-86</b>	
<i>Real Estate Blend</i>			1.16 (27)	-0.20 (41)	-1.43 (21)	-2.32 (46)	2.87 (40)	5.88 (31)	7.20		
<i>NCREIF ODCE</i>			1.16 (27)	-0.20 (41)	-1.43 (21)	-2.32 (46)	2.87 (40)	5.88 (31)	6.69		

# PERFORMANCE DETAIL

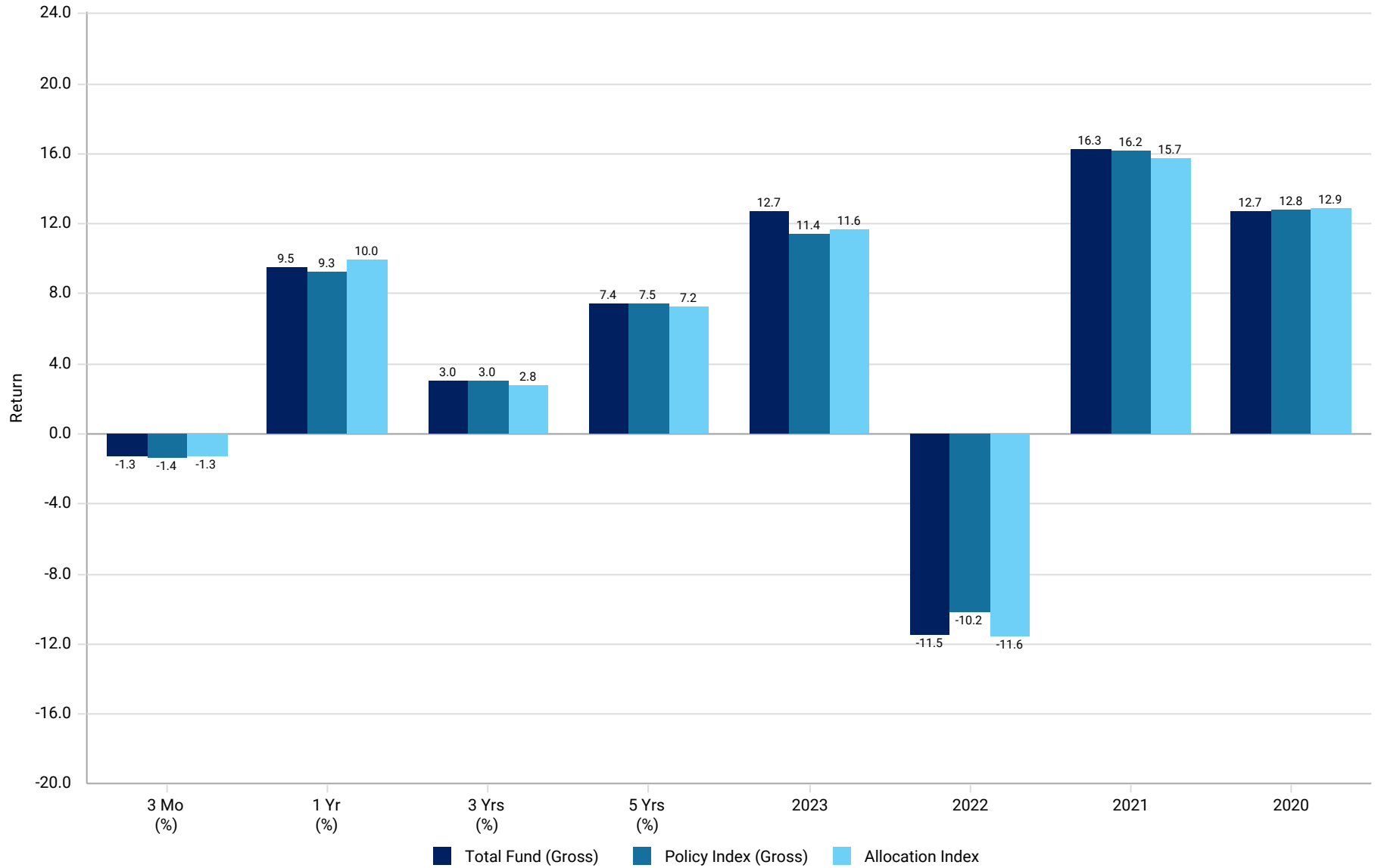
	Allocation		Performance (%)										
	Market Value (\$)	% of Portfolio	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
<b>Total Fund (Gross)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>9.5 (34)</b>	<b>12.7 (26)</b>	<b>-11.5 (65)</b>	<b>16.3 (45)</b>	<b>12.7 (37)</b>	<b>18.6 (24)</b>	<b>-4.1 (74)</b>	<b>19.5 (2)</b>	<b>7.5 (69)</b>	<b>0.4 (40)</b>	<b>4.7 (86)</b>
Policy Index (Gross)			9.3 (42)	11.4 (50)	-10.2 (48)	16.2 (46)	12.8 (33)	18.3 (29)	-4.0 (72)	18.6 (5)	9.0 (16)	0.3 (41)	6.6 (39)
InvMetrics Public DB > \$1 Billion (Gross)			8.8	11.4	-10.4	15.9	11.7	17.3	-3.2	15.8	8.1	0.1	6.0
<b>Total Fund (Net)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>9.2 (40)</b>	<b>12.6 (24)</b>	<b>-11.6 (66)</b>	<b>16.1 (44)</b>	<b>12.5 (34)</b>	<b>18.4 (22)</b>	<b>-4.3 (73)</b>	<b>19.2 (3)</b>	<b>7.2 (72)</b>	<b>0.0 (47)</b>	<b>4.3 (85)</b>
InvMetrics Public DB > \$1 Billion (Net)			9.0	11.3	-10.3	15.7	11.3	16.8	-3.5	15.5	7.6	-0.1	5.7
<b>US Equity (Gross)</b>	<b>3,398,229,194</b>	<b>28.3</b>	<b>22.9 (23)</b>	<b>25.8 (17)</b>	<b>-19.5 (88)</b>	<b>26.5 (40)</b>	<b>20.3 (27)</b>	<b>31.9 (12)</b>	<b>-4.6 (13)</b>	<b>23.3 (9)</b>	<b>9.8 (94)</b>	<b>1.1 (18)</b>	<b>9.5 (79)</b>
Russell 3000*			23.8 (7)	26.0 (13)	-19.2 (82)	25.7 (60)	20.9 (21)	31.0 (27)	-5.3 (30)	21.1 (41)	12.8 (56)	0.5 (40)	12.6 (16)
InvMetrics Public DB US Equity (Gross)			21.6	23.7	-17.7	26.0	18.4	30.3	-6.0	20.7	13.0	0.2	11.0
<b>International Equity (Gross)</b>	<b>2,738,306,826</b>	<b>22.8</b>	<b>4.5 (64)</b>	<b>17.2 (33)</b>	<b>-18.7 (86)</b>	<b>8.1 (64)</b>	<b>15.1 (21)</b>	<b>24.6 (36)</b>	<b>-13.3 (35)</b>	<b>31.5 (18)</b>	<b>5.0 (10)</b>	<b>-4.0 (96)</b>	<b>-3.9 (44)</b>
MSCI ACWI ex USA IMI*			5.2 (44)	16.2 (47)	-16.2 (48)	9.0 (54)	11.6 (43)	22.2 (66)	-14.4 (64)	28.4 (37)	4.9 (10)	-4.2 (96)	-3.5 (38)
InvMetrics Public DB Dev Mkt ex-US Eq (Gross)			4.8	15.9	-16.6	9.3	10.0	23.4	-14.1	27.2	1.2	-0.4	-4.2
<b>Total Fixed Income (Gross)</b>	<b>1,699,651,173</b>	<b>14.1</b>	<b>1.7 (89)</b>	<b>7.3 (49)</b>	<b>-13.5 (93)</b>	<b>-1.3 (83)</b>	<b>12.3 (3)</b>	<b>9.6 (35)</b>	<b>-1.2 (85)</b>	<b>8.3 (7)</b>	<b>6.2 (36)</b>	<b>-2.2 (81)</b>	<b>7.6 (7)</b>
Fixed Income Blend			0.9 (96)	6.4 (68)	-14.2 (97)	-2.3 (99)	8.2 (41)	8.7 (59)	-0.4 (61)	5.0 (57)	4.0 (66)	-0.9 (63)	4.3 (59)
InvMetrics Public DB Fixed Income (Gross)			3.2	7.2	-11.5	-0.4	7.9	9.2	-0.1	5.4	5.1	-0.4	5.0
<b>Absolute Return (Gross)</b>	<b>1,000,260,625</b>	<b>8.3</b>	<b>11.3 (67)</b>	<b>6.7 (74)</b>	<b>6.1 (11)</b>	<b>15.0 (22)</b>	<b>-0.6 (92)</b>	<b>1.8 (93)</b>	<b>-2.2 (51)</b>	<b>3.3 (96)</b>	<b>5.4 (16)</b>	<b>0.7 (36)</b>	<b>6.7 (9)</b>
Absolute Return Blend			9.1 (73)	6.1 (76)	-5.3 (47)	6.2 (83)	10.9 (31)	8.4 (52)	-4.0 (70)	5.9 (58)	4.5 (23)	4.2 (4)	4.2 (57)
InvMetrics Public DB Hedge Funds (Gross)			13.3	9.3	-6.3	9.4	7.3	8.4	-2.0	7.3	2.6	-1.7	4.5
<b>Private Equity (Gross)</b>	<b>1,145,601,924</b>	<b>9.5</b>	<b>9.5</b>	<b>9.3</b>	<b>-2.0</b>	<b>51.4</b>	<b>11.6</b>	<b>9.8</b>	<b>17.6</b>	<b>13.7</b>	<b>9.3</b>	<b>18.8</b>	<b>21.7</b>
Private Equity Blend			7.6	3.8	-3.8	50.7	17.4	9.2	16.6	21.0	15.5	3.0	15.3
<b>Real Estate (Gross)</b>	<b>814,329,200</b>	<b>6.8</b>	<b>-5.3 (76)</b>	<b>-10.8 (67)</b>	<b>6.6 (59)</b>	<b>22.4 (44)</b>	<b>1.8 (27)</b>	<b>6.5 (62)</b>	<b>7.9 (48)</b>	<b>9.0 (32)</b>	<b>8.4 (56)</b>	<b>18.1 (1)</b>	<b>13.5 (39)</b>
Real Estate Blend			-1.4 (37)	-12.0 (73)	7.5 (49)	22.2 (46)	1.2 (44)	5.3 (72)	8.3 (43)	7.6 (74)	8.8 (47)	15.0 (30)	12.5 (66)
InvMetrics Public DB Real Estate Public & Private (Gross)			-2.1	-8.7	7.3	21.6	0.7	7.0	7.8	8.6	8.6	13.6	13.1
<b>Real Assets (Gross)</b>	<b>732,743,418</b>	<b>6.1</b>	<b>9.0</b>	<b>4.3</b>	<b>7.5</b>	<b>17.8</b>	<b>0.4</b>	<b>4.3</b>	<b>-7.3</b>	<b>-0.1</b>	<b>9.2</b>	<b>-17.8</b>	<b>-13.8</b>
Real Asset Blend			7.1	3.2	5.9	17.7	-1.3	18.6	-9.6	16.4	7.5	3.4	4.6
<b>Private Credit (Gross)</b>	<b>305,034,614</b>	<b>2.5</b>	<b>9.7</b>	<b>10.1</b>	<b>5.3</b>	<b>10.2</b>	<b>3.4</b>						
S&P/LSTA Leveraged Loan Index +1.75%			10.8	15.3	1.1	7.0	4.9						
Dow Jones Industrial Average (TR)			15.0	16.2	-6.9	20.9	9.7	25.3	-3.5	28.1	16.5	0.2	10.0
S&P 500 Index			25.0	26.3	-18.1	28.7	18.4	31.5	-4.4	21.8	12.0	1.4	13.7
NASDAQ Composite Index			29.6	44.6	-32.5	22.2	44.9	36.7	-2.8	29.6	8.9	7.0	14.7
CPI - All Urban Consumers (Unadjusted)			2.9	3.4	6.5	7.0	1.4	2.3	1.9	2.1	2.1	0.7	0.8

# PERFORMANCE DETAIL

	Allocation		Performance (%)											
	Market Value (\$)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	2 Yrs (%)	3 Yrs (%)	4 Yrs (%)	5 Yrs (%)	10 Yrs (%)	15 Yrs (%)	20 Yrs (%)	25 Yrs (%)	
<b>Total Fund (Gross)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>-1.3 (72)</b>	<b>6.7 (19)</b>	<b>9.5 (34)</b>	<b>11.1 (29)</b>	<b>3.0 (46)</b>	<b>6.2 (38)</b>	<b>7.4 (34)</b>	<b>7.7 (23)</b>	<b>8.6 (17)</b>	<b>7.9 (14)</b>	<b>7.5 (4)</b>	
<i>Policy Index (Gross)</i>			-1.4 (75)	6.7 (17)	9.3 (42)	10.3 (47)	3.0 (46)	6.2 (38)	7.5 (33)	7.8 (21)	8.7 (13)	8.2 (6)	7.5 (4)	
<i>InvMetrics Public DB &gt; \$1 Billion (Gross)</i>			-0.9	5.9	8.8	10.1	2.8	5.9	7.0	7.0	7.9	7.3	6.5	
<b>Total Fund (Net)</b>	<b>12,011,836,837</b>	<b>100.0</b>	<b>-1.4 (75)</b>	<b>6.5 (21)</b>	<b>9.2 (40)</b>	<b>10.9 (31)</b>	<b>2.8 (48)</b>	<b>6.0 (38)</b>	<b>7.3 (33)</b>	<b>7.5 (23)</b>	<b>8.4 (19)</b>	<b>7.6 (19)</b>	<b>7.2 (5)</b>	
<i>InvMetrics Public DB &gt; \$1 Billion (Net)</i>			-0.9	5.9	9.0	10.2	2.7	5.8	6.9	6.8	7.7	7.1	6.3	
<b>US Equity (Gross)</b>	<b>3,398,229,194</b>	<b>28.3</b>	<b>2.5 (19)</b>	<b>9.2 (32)</b>	<b>22.9 (23)</b>	<b>24.4 (13)</b>	<b>7.6 (42)</b>	<b>12.0 (40)</b>	<b>13.6 (28)</b>	<b>12.6 (13)</b>	<b>13.6 (10)</b>	<b>10.5</b>	<b>8.7</b>	
<i>Russell 3000*</i>			2.6 (12)	9.6 (12)	23.8 (7)	24.9 (6)	8.0 (26)	12.2 (36)	13.9 (11)	12.5 (13)	13.6 (11)	10.6	8.4	
<i>InvMetrics Public DB US Equity (Gross)</i>			1.8	8.6	21.6	22.4	7.4	11.6	13.0	11.7	12.9			
<b>International Equity (Gross)</b>	<b>2,738,306,826</b>	<b>22.8</b>	<b>-7.3 (43)</b>	<b>7.9 (46)</b>	<b>4.5 (64)</b>	<b>10.7 (56)</b>	<b>-0.1 (77)</b>	<b>1.8 (72)</b>	<b>4.4 (59)</b>	<b>5.9 (42)</b>	<b>5.8</b>	<b>7.2</b>	<b>6.1</b>	
<i>MSCI ACWI ex USA IMI*</i>			-7.6 (48)	9.2 (23)	5.2 (44)	10.6 (57)	0.8 (45)	2.8 (55)	4.5 (58)	5.4 (74)	5.2	6.7	5.3	
<i>InvMetrics Public DB Dev Mkt ex-US Eq (Gross)</i>			-7.7	7.7	4.8	11.2	0.7	3.1	4.6	5.8				
<b>Total Fixed Income (Gross)</b>	<b>1,699,651,173</b>	<b>14.1</b>	<b>-3.3 (95)</b>	<b>5.9 (8)</b>	<b>1.7 (89)</b>	<b>4.4 (61)</b>	<b>-1.9 (82)</b>	<b>-1.8 (85)</b>	<b>0.9 (59)</b>	<b>2.5 (46)</b>	<b>4.2 (24)</b>	<b>4.9</b>	<b>5.8</b>	
<i>Fixed Income Blend</i>			-3.4 (95)	5.4 (47)	0.9 (96)	3.6 (93)	-2.7 (98)	-2.6 (98)	-0.5 (98)	1.3 (100)	2.3 (100)	3.3	4.3	
<i>InvMetrics Public DB Fixed Income (Gross)</i>			-2.0	5.4	3.2	5.1	-0.5	-0.6	1.1	2.4	3.1			
<b>Absolute Return (Gross)</b>	<b>1,000,260,625</b>	<b>8.3</b>	<b>2.7 (62)</b>	<b>5.2 (14)</b>	<b>11.3 (67)</b>	<b>9.0 (71)</b>	<b>8.0 (20)</b>	<b>9.7 (34)</b>	<b>7.6 (51)</b>	<b>4.6</b>				
<i>Absolute Return Blend</i>			2.0 (83)	2.6 (53)	9.1 (73)	7.6 (75)	3.1 (83)	3.9 (84)	5.2 (81)	4.5				
<i>InvMetrics Public DB Hedge Funds (Gross)</i>			3.1	3.2	13.3	11.4	5.9	8.0	7.6					
<b>Private Equity (Gross)</b>	<b>1,145,601,924</b>	<b>9.5</b>	<b>2.2</b>	<b>4.3</b>	<b>9.5</b>	<b>9.4</b>	<b>5.5</b>	<b>15.5</b>	<b>14.7</b>	<b>14.2</b>	<b>14.4</b>			
<i>Private Equity Blend</i>			2.6	2.4	7.6	5.7	2.4	12.8	13.7	13.3	15.0			
<b>Real Estate (Gross)</b>	<b>814,329,200</b>	<b>6.8</b>	<b>-0.2 (78)</b>	<b>-2.2 (89)</b>	<b>-5.3 (76)</b>	<b>-8.1 (72)</b>	<b>-3.4 (75)</b>	<b>2.5 (76)</b>	<b>2.3 (64)</b>	<b>6.0 (40)</b>	<b>8.4</b>	<b>6.8</b>	<b>7.2</b>	
<i>Real Estate Blend</i>			1.2 (32)	-0.2 (52)	-1.4 (37)	-6.9 (58)	-2.3 (52)	3.3 (57)	2.9 (57)	5.9 (51)	8.2	7.5	8.6	
<i>InvMetrics Public DB Real Estate Public &amp; Private (Gross)</i>			0.7	-0.1	-2.1	-6.2	-2.2	3.6	3.1	5.9				
<b>Real Assets (Gross)</b>	<b>732,743,418</b>	<b>6.1</b>	<b>-1.9</b>	<b>9.1</b>	<b>9.0</b>	<b>6.6</b>	<b>6.9</b>	<b>9.5</b>	<b>7.7</b>	<b>2.3</b>				
<i>Real Asset Blend</i>			-5.4	11.7	7.1	5.1	5.4	8.3	6.3	6.6				
<b>Private Credit (Gross)</b>	<b>305,034,614</b>	<b>2.5</b>	<b>2.3</b>	<b>4.7</b>	<b>9.7</b>	<b>9.9</b>	<b>8.4</b>	<b>8.8</b>	<b>7.7</b>					
<i>S&amp;P/LSTA Leveraged Loan Index +1.75%</i>			2.7	4.9	10.8	13.0	8.9	8.4	7.7					
Dow Jones Industrial Average (TR)			0.9	7.3	15.0	15.6	7.6	10.8	10.6	11.6	12.4	10.1	8.3	
S&P 500 Index			2.4	10.4	25.0	25.7	8.9	13.6	14.5	13.1	13.9	10.7	8.2	
NASDAQ Composite Index			6.3	11.5	29.6	36.9	8.1	11.5	17.5	16.2	16.5	13.1	8.8	
CPI - All Urban Consumers (Unadjusted)			0.1	1.0	2.9	3.1	4.2	4.9	4.2	3.0	2.6	2.6	2.6	

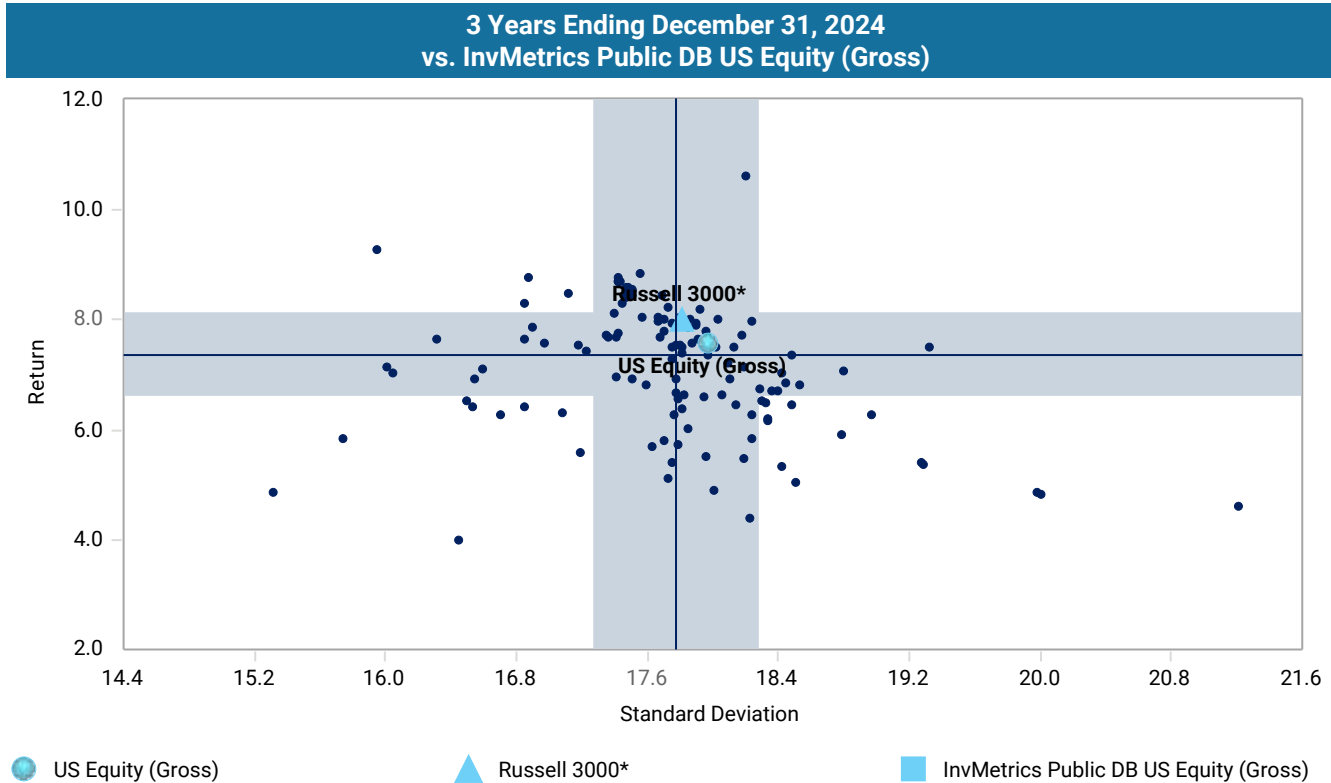
# RETURN SUMMARY

## Return Summary (gross of fees)



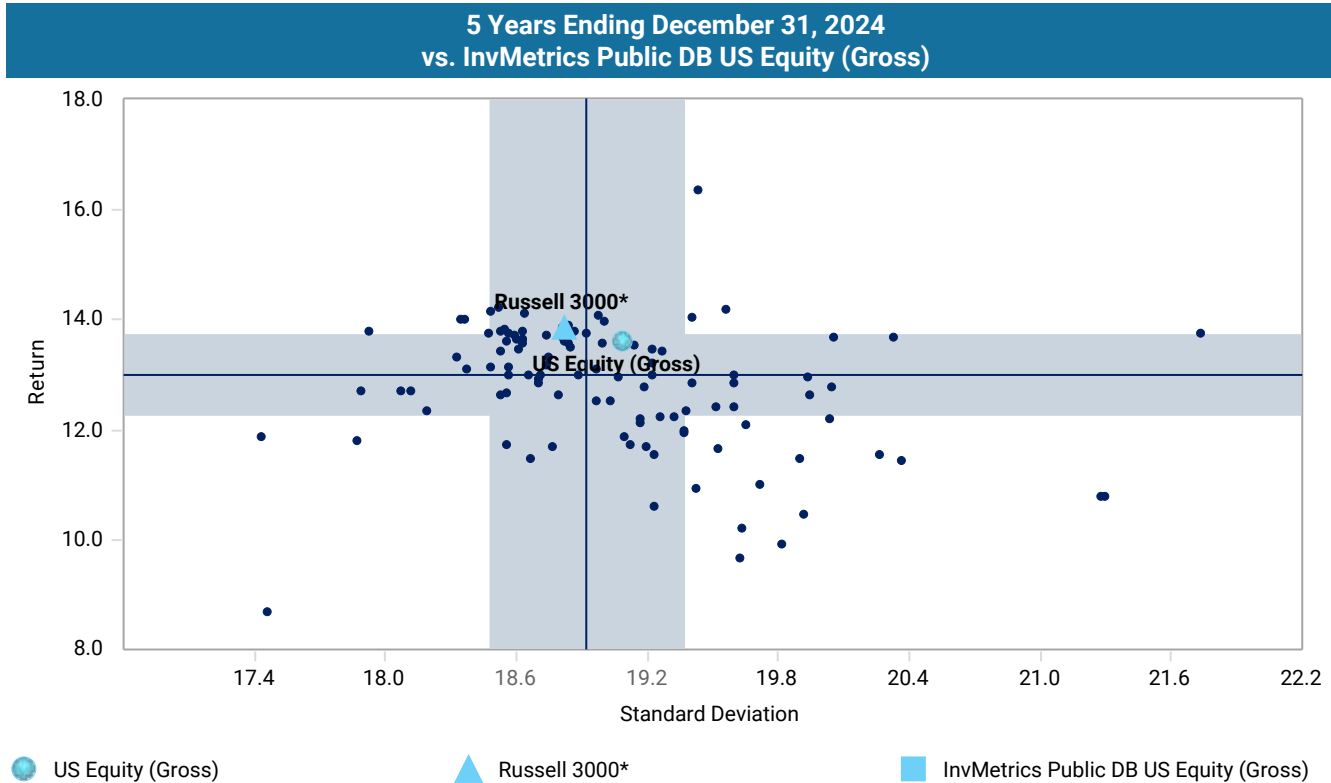


# RISK VS. RETURN



<b>Statistics Summary 3 Years Ending December 31, 2024</b>						
	<b>3 Years Return</b>	<b>3 Years Standard Deviation</b>	<b>3 Years Sharpe Ratio</b>	<b>3 Years Information Ratio</b>	<b>3 Years Tracking Error</b>	
<b>US Equity (Gross)</b>	<b>7.6 (42)</b>	<b>18.0 (69)</b>	<b>0.3 (44)</b>	<b>-0.7 (87)</b>	<b>0.5 (6)</b>	
<i>Russell 3000*</i>	8.0 (26)	17.8 (58)	0.3 (25)		0.0	
<i>InvMetrics Public DB US Equity (Gross) Median</i>	7.4	17.8	0.3	-0.4	2.1	
Population	127	127	127	127	127	

# RISK VS. RETURN

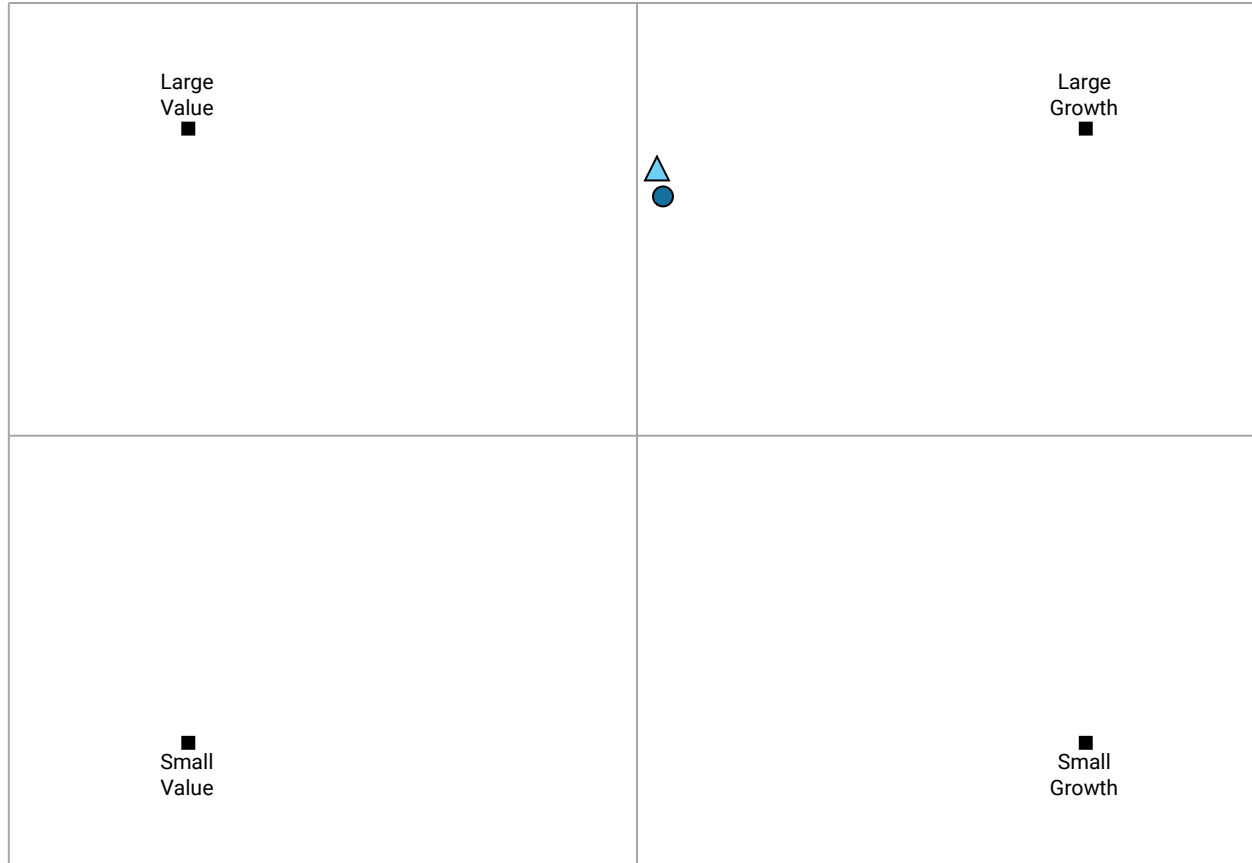


Statistics Summary 5 Years Ending December 31, 2024					
	5 Years Return	5 Years Standard Deviation	5 Years Sharpe Ratio	5 Years Information Ratio	5 Years Tracking Error
<b>US Equity (Gross)</b>	<b>13.6 (28)</b>	<b>19.1 (57)</b>	<b>0.6 (32)</b>	<b>-0.2 (34)</b>	<b>0.8 (6)</b>
<i>Russell 3000*</i>	<i>13.9 (11)</i>	<i>18.8 (43)</i>	<i>0.7 (15)</i>		<i>0.0</i>
<i>InvMetrics Public DB US Equity (Gross) Median</i>	<i>13.0</i>	<i>18.9</i>	<i>0.6</i>	<i>-0.4</i>	<i>2.1</i>
Population	107	107	107	107	107

# US EQUITY (GROSS)

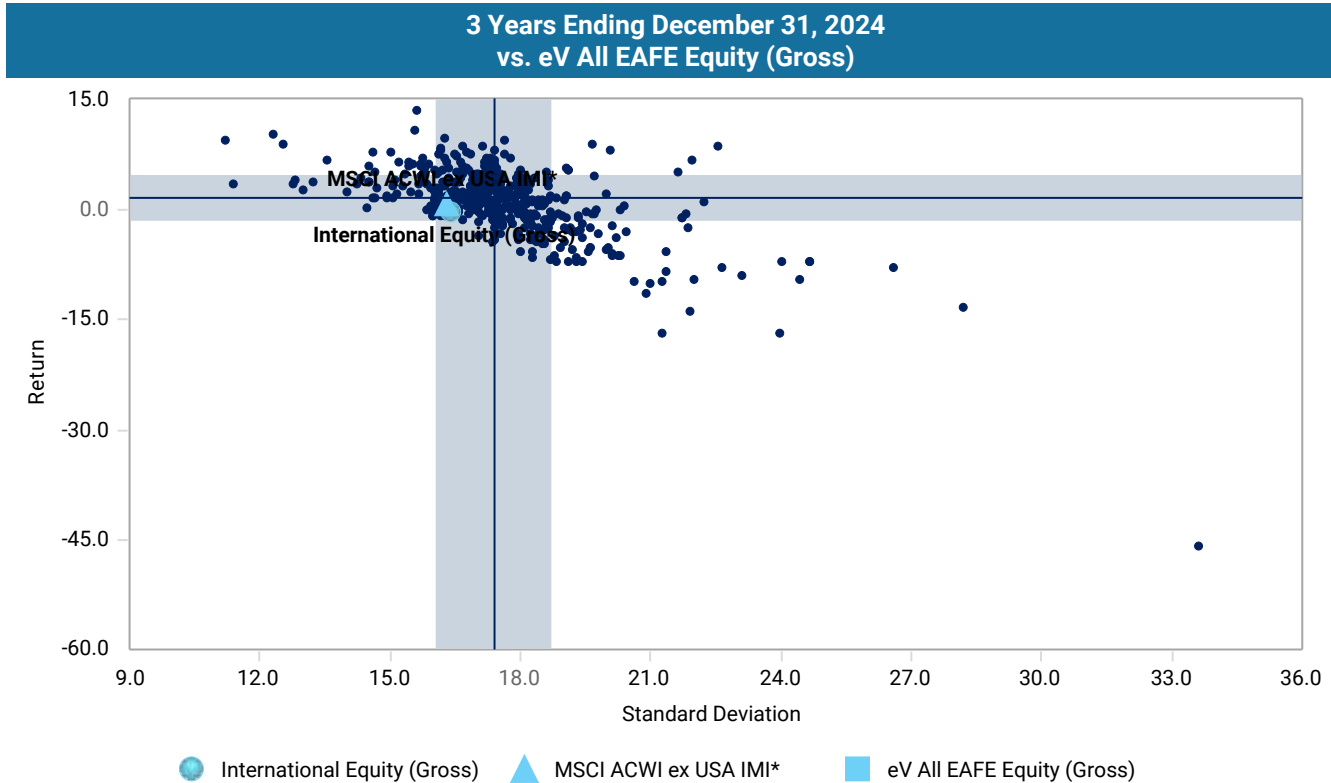
US Equity (Gross)

Style Map: (3 Years)



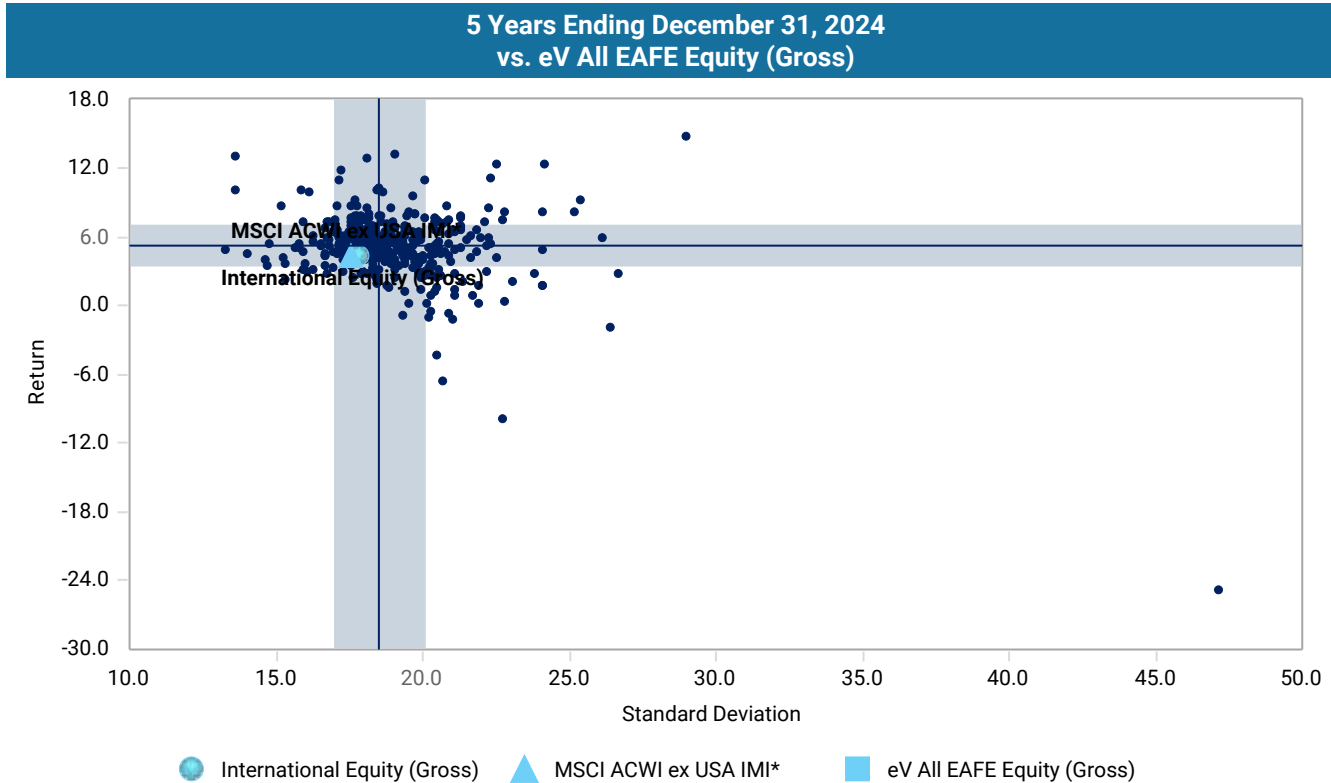
● US Equity (Gross) ▲ Russell 3000 Index

# RISK VS. RETURN



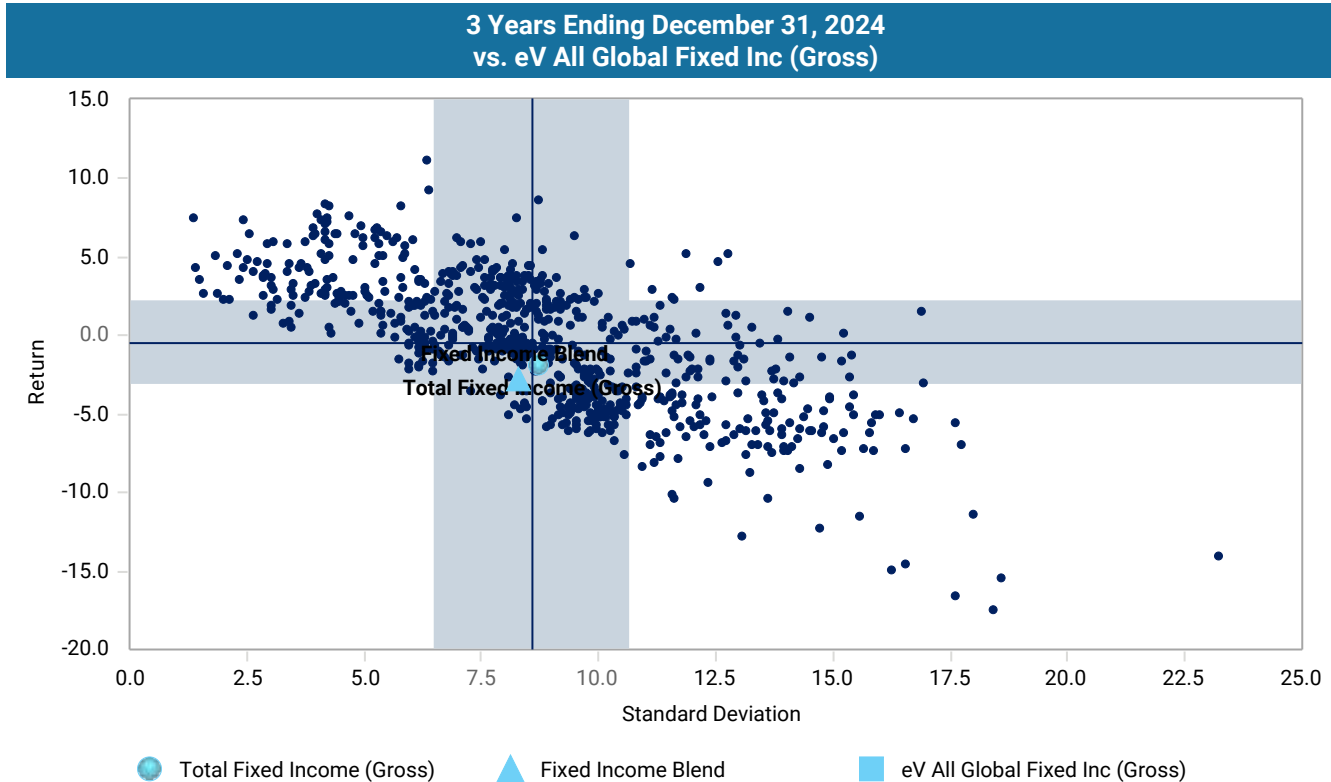
<b>Statistics Summary 5 Years Ending December 31, 2024</b>					
	<b>3 Years Return</b>	<b>3 Years Standard Deviation</b>	<b>3 Years Sharpe Ratio</b>	<b>3 Years Information Ratio</b>	<b>3 Years Tracking Error</b>
<b>International Equity (Gross)</b>	<b>-0.1 (70)</b>	<b>16.4 (20)</b>	<b>-0.2 (74)</b>	<b>-0.5 (86)</b>	<b>2.0 (1)</b>
<i>MSCI ACWI ex USA IMI*</i>	<i>0.8 (62)</i>	<i>16.3 (17)</i>	<i>-0.1 (65)</i>		<i>0.0</i>
<i>eV All EAFE Equity (Gross) Median</i>	<i>1.7</i>	<i>17.4</i>	<i>0.0</i>	<i>0.2</i>	<i>5.4</i>
Population	444	444	444	444	444

# RISK VS. RETURN



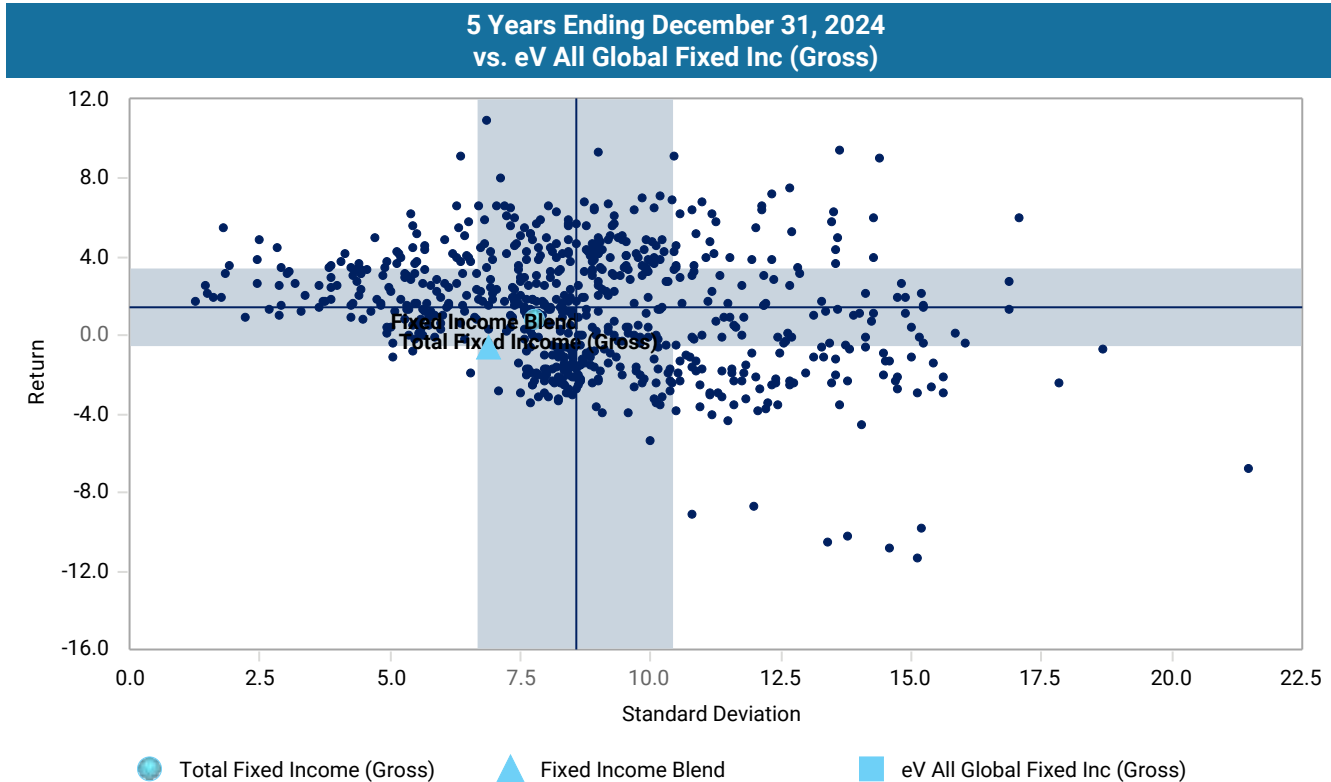
<b>Statistics Summary 5 Years Ending December 31, 2024</b>					
	5 Years Return	5 Years Standard Deviation	5 Years Sharpe Ratio	5 Years Information Ratio	5 Years Tracking Error
<b>International Equity (Gross)</b>	<b>4.4 (73)</b>	<b>17.8 (26)</b>	<b>0.2 (74)</b>	<b>-0.1 (80)</b>	<b>1.8 (1)</b>
<i>MSCI ACWI ex USA IMI*</i>	4.5 (71)	17.5 (17)	0.2 (70)		0.0
<i>eV All EAFE Equity (Gross) Median</i>	5.3	18.5	0.2	0.2	5.7
Population	414	414	414	414	414

# RISK VS. RETURN



<b>Statistics Summary 5 Years Ending December 31, 2024</b>					
	<b>3 Years Return</b>	<b>3 Years Standard Deviation</b>	<b>3 Years Sharpe Ratio</b>	<b>3 Years Information Ratio</b>	<b>3 Years Tracking Error</b>
<b>Total Fixed Income (Gross)</b>	<b>-1.9 (66)</b>	<b>8.7 (51)</b>	<b>-0.6 (69)</b>	<b>0.8 (47)</b>	<b>1.1 (1)</b>
<i>Fixed Income Blend</i>	<i>-2.7 (71)</i>	<i>8.3 (44)</i>	<i>-0.8 (83)</i>		<i>0.0</i>
<i>eV All Global Fixed Inc (Gross) Median</i>	<i>-0.4</i>	<i>8.6</i>	<i>-0.5</i>	<i>0.7</i>	<i>4.7</i>
Population	763	763	763	763	763

# RISK VS. RETURN



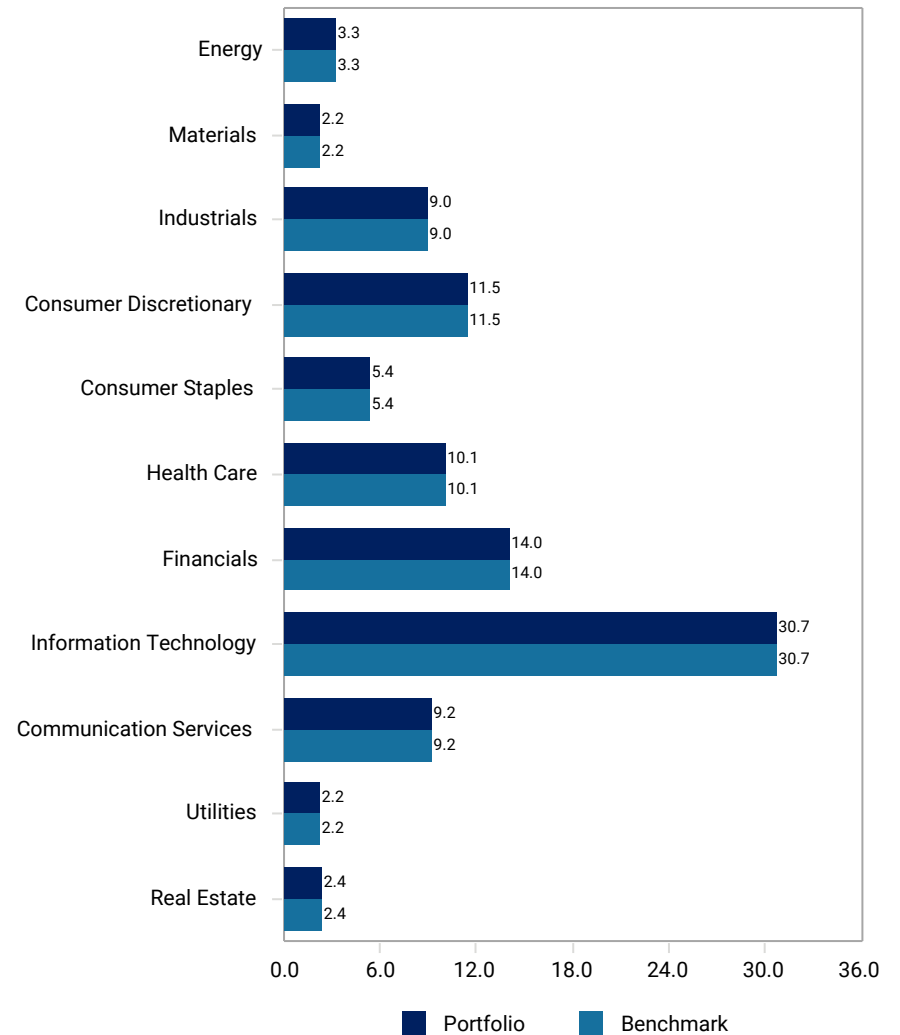
<b>Statistics Summary 5 Years Ending December 31, 2024</b>					
	<b>5 Years Return</b>	<b>5 Years Standard Deviation</b>	<b>5 Years Sharpe Ratio</b>	<b>5 Years Information Ratio</b>	<b>5 Years Tracking Error</b>
<b>Total Fixed Income (Gross)</b>	<b>0.9 (59)</b>	<b>7.8 (33)</b>	<b>-0.2 (59)</b>	<b>0.7 (21)</b>	<b>2.0 (2)</b>
<i>Fixed Income Blend</i>	-0.5 (72)	6.9 (22)	-0.4 (84)		0.0
<i>eV All Global Fixed Inc (Gross) Median</i>	1.4	8.6	-0.1	0.5	5.6
Population	696	696	696	696	696

# BLACKROCK RUSSELL 1000 INDEX FUND

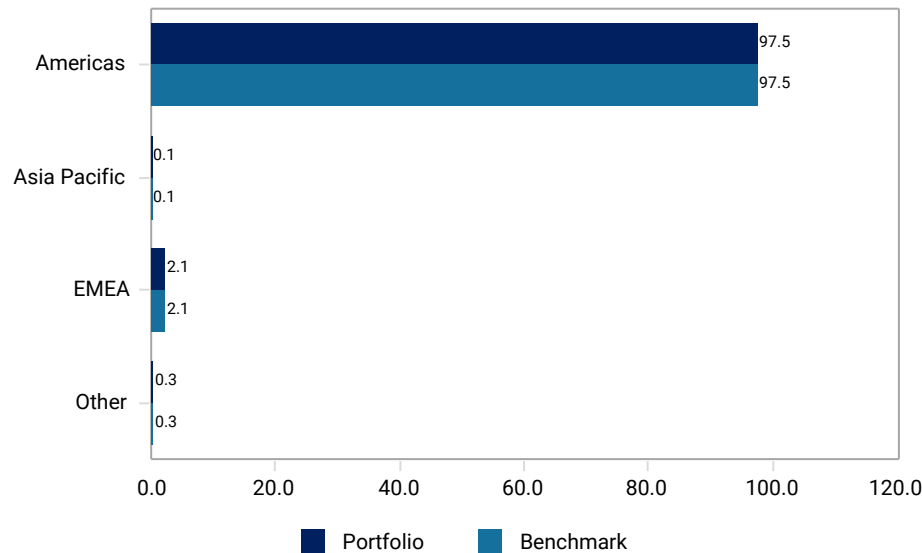
## BlackRock Russell 1000 Index Fund vs. Russell 1000 Index

Characteristics	BlackRock Russell 1000 Index Fund vs. Russell 1000 Index	
	Portfolio	Benchmark
Number of Stocks	1,008	1,007
Wtd. Avg. Mkt. Cap \$B	998.3	998.3
Median Mkt. Cap \$B	15.1	15.2
Price/Earnings ratio	26.6	26.6
Price/Book ratio	4.9	4.9
Return on Equity (%)	8.7	8.6
Current Yield (%)	1.3	1.3
Beta (5 Years, Monthly)	1.0	1.0
R-Squared (5 Years, Monthly)	1.0	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)





**BLACKROCK RUSSELL 1000 INDEX FUND****BlackRock Russell 1000 Index Fund vs. Russell 1000 Index**

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
Apple Inc	6.6	7.6	Tesla Inc	0.0	54.4	Eli Lilly and Co	0.0	-12.7
NVIDIA Corporation	5.8	10.6	Amazon.com Inc	0.0	17.7	UnitedHealth Group Incorporated	0.0	-13.2
Microsoft Corp	5.8	-1.8	NVIDIA Corporation	0.0	10.6	Advanced Micro Devices	0.0	-26.4
Amazon.com Inc	3.8	17.7	Broadcom Inc	0.0	34.7	Microsoft Corp	0.0	-1.8
Meta Platforms Inc	2.4	2.4	Apple Inc	0.0	7.6	Exxon Mobil Corp	0.0	-7.5
Tesla Inc	2.1	54.4	Alphabet Inc Cl A	0.0	14.3	Johnson & Johnson	0.0	-10.0
Alphabet Inc Cl A	2.1	14.3	Alphabet Inc Cl A	0.0	14.3	Thermo Fisher Scientific Inc	0.0	-15.8
Broadcom Inc	2.0	34.7	Alphabet Inc Cl C	0.0	14.0	Coca-Cola Co (The)	0.0	-12.7
Alphabet Inc Cl C	1.7	14.0	JPMorgan Chase & Co	0.0	14.4	Regeneron Pharmaceuticals Inc	0.0	-32.2
Berkshire Hathaway Inc	1.5	-1.5	Netflix Inc	0.0	25.7	Elevance Health Inc	0.0	-28.8
			Palantir Technologies Inc	0.0	103.3			

**Equity Sector Attribution**

	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.0	0.0	0.0	0.0	-0.7	-0.7	3.4	3.4
Materials	0.0	0.0	0.0	0.0	-11.4	-11.4	2.6	2.6
Industrials	0.0	0.0	0.0	0.0	-2.2	-2.2	9.4	9.4
Consumer Discretionary	0.0	0.0	0.0	0.0	12.9	12.9	10.4	10.4
Consumer Staples	0.0	0.0	0.0	0.0	-3.0	-3.0	5.7	5.7
Health Care	0.0	0.0	0.0	0.0	-9.9	-9.9	11.5	11.5
Financials	0.0	0.0	0.0	0.0	7.9	7.9	13.4	13.4
Information Technology	0.0	0.0	0.0	0.0	5.8	5.8	29.8	29.8
Communication Services	0.0	0.0	0.0	0.0	9.0	9.0	8.7	8.7
Utilities	0.0	0.0	0.0	0.0	-5.4	-5.4	2.4	2.4
Real Estate	0.0	0.0	0.0	0.0	-7.8	-7.8	2.7	2.7
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>2.7</b>	<b>2.7</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	BlackRock Russell 1000 Index Fund	Russell 1000 Index
Canada	0.1	0.1
United States	97.3	97.3
<b>Americas</b>	<b>97.4</b>	<b>97.4</b>
Australia	0.1	0.1
Hong Kong	0.0	0.0
Japan	0.0	0.0
New Zealand	0.0	0.0
Singapore	0.0	0.0
<b>Asia Pacific</b>	<b>0.1</b>	<b>0.1</b>
Austria	0.0	0.0
Belgium	0.0	0.0
Denmark	0.0	0.0
Finland	0.0	0.0
France	0.0	0.0
Germany	0.0	0.0
Ireland	1.2	1.2
Israel	0.0	0.0
Italy	0.0	0.0
Netherlands	0.0	0.0
Norway	0.0	0.0
Portugal	0.0	0.0
Spain	0.0	0.0
Sweden	0.0	0.0
Switzerland	0.3	0.3
United Kingdom	0.5	0.5
<b>EMEA</b>	<b>2.1</b>	<b>2.1</b>
<b>Developed Markets</b>	<b>99.6</b>	<b>99.6</b>

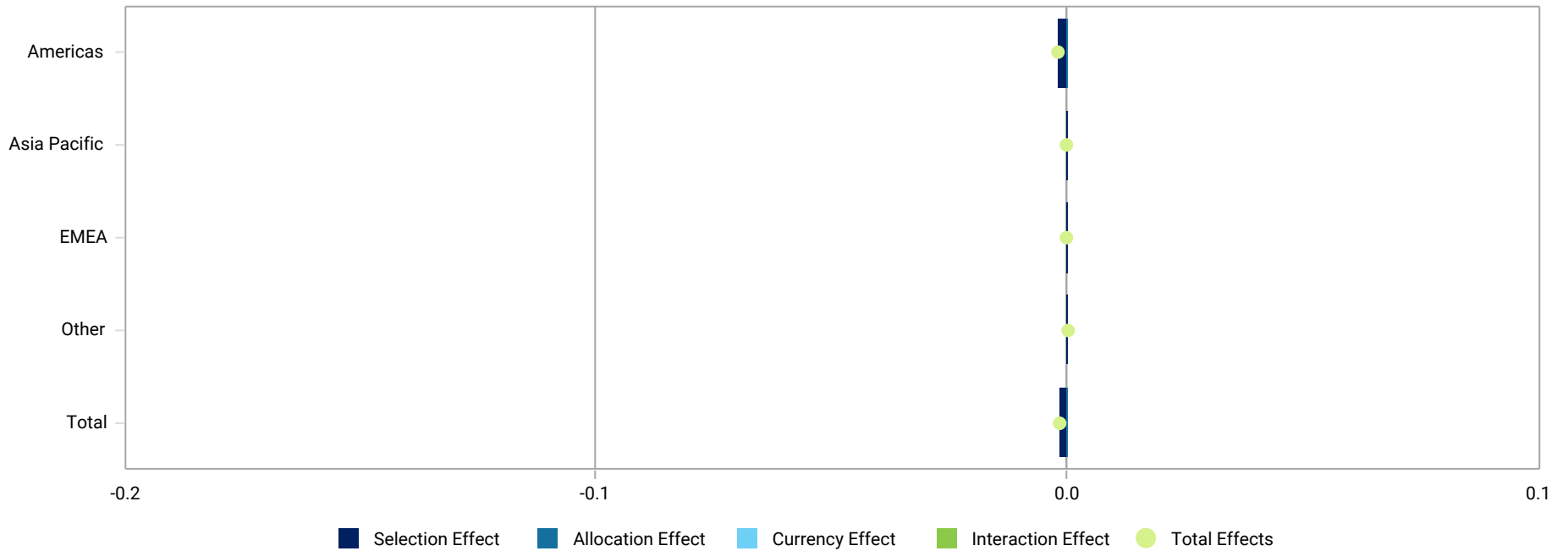
	BlackRock Russell 1000 Index Fund	Russell 1000 Index
Brazil	0.1	0.1
Chile	0.0	0.0
Colombia	0.0	0.0
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.1</b>	<b>0.1</b>
China	0.0	0.0
India	0.0	0.0
Indonesia	0.0	0.0
Korea	0.0	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.0	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.0</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>0.1</b>	<b>0.1</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	BlackRock Russell 1000 Index Fund	Russell 1000 Index
Cash	0.0	0.0
Other	0.3	0.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# BLACKROCK RUSSELL 1000 INDEX FUND

BlackRock Russell 1000 Index Fund vs. Russell 1000 Index



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	2.8	2.8	97.4	97.4	0.0	0.0	0.0	0.0	0.0
Asia Pacific	53.3	53.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
EMEA	-2.4	-2.4	2.2	2.3	0.0	0.0	0.0	0.0	0.0
Other	3.2	3.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>2.7</b>	<b>2.7</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Totals</b>									
Developed Markets	2.8	2.8	99.6	99.6	0.0	0.0	0.0	0.0	0.0
Emerging Markets	-24.1	-24.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Other	3.2	3.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# BLACKROCK RUSSELL 1000 INDEX FUND

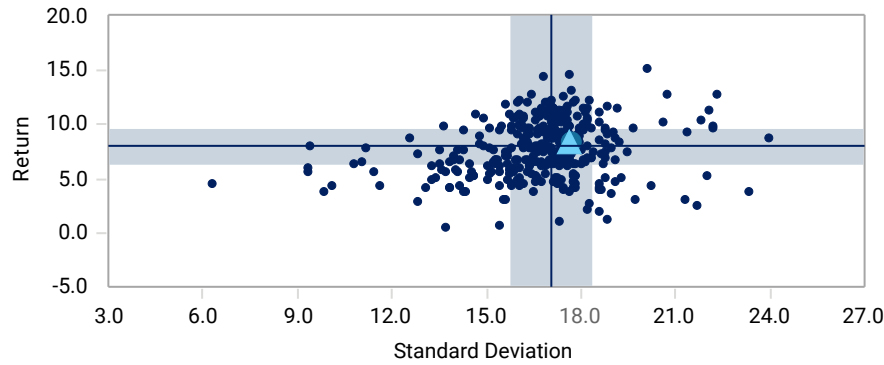
BlackRock Russell 1000 Index Fund  
Style Map: (3 Years)



● BlackRock Russell 1000 Index Fund ▲ Russell 1000 Index

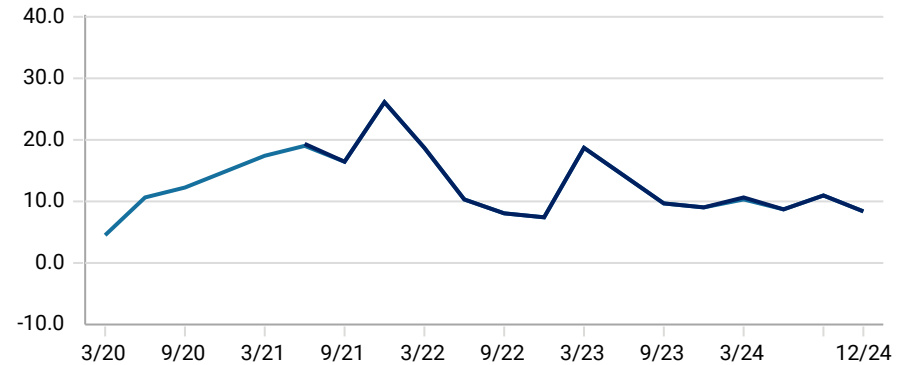
# BLACKROCK RUSSELL 1000 INDEX FUND

3 Years Annualized Return vs. Annualized Standard Deviation



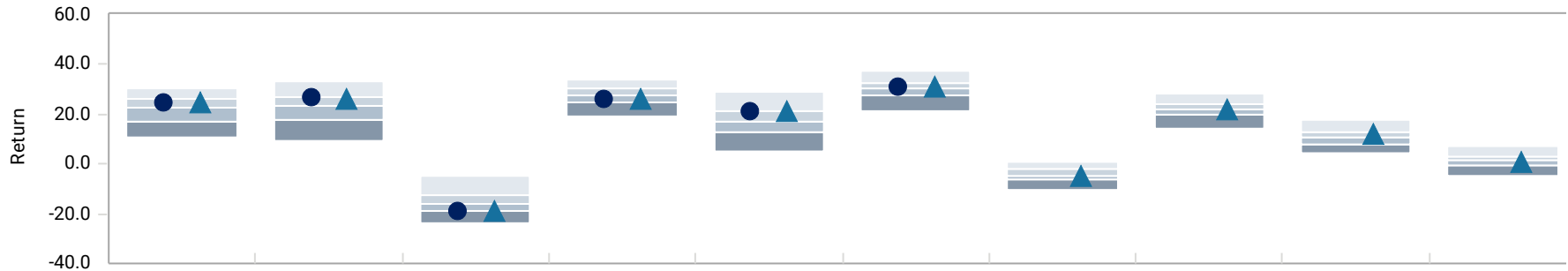
- BlackRock Russell 1000 Index Fund
- ▲ Russell 1000 Index

Rolling 3 Years Annualized Return (%)



- BlackRock Russell 1000 Index Fund
- Russell 1000 Index

eV US Large Cap Core Equity



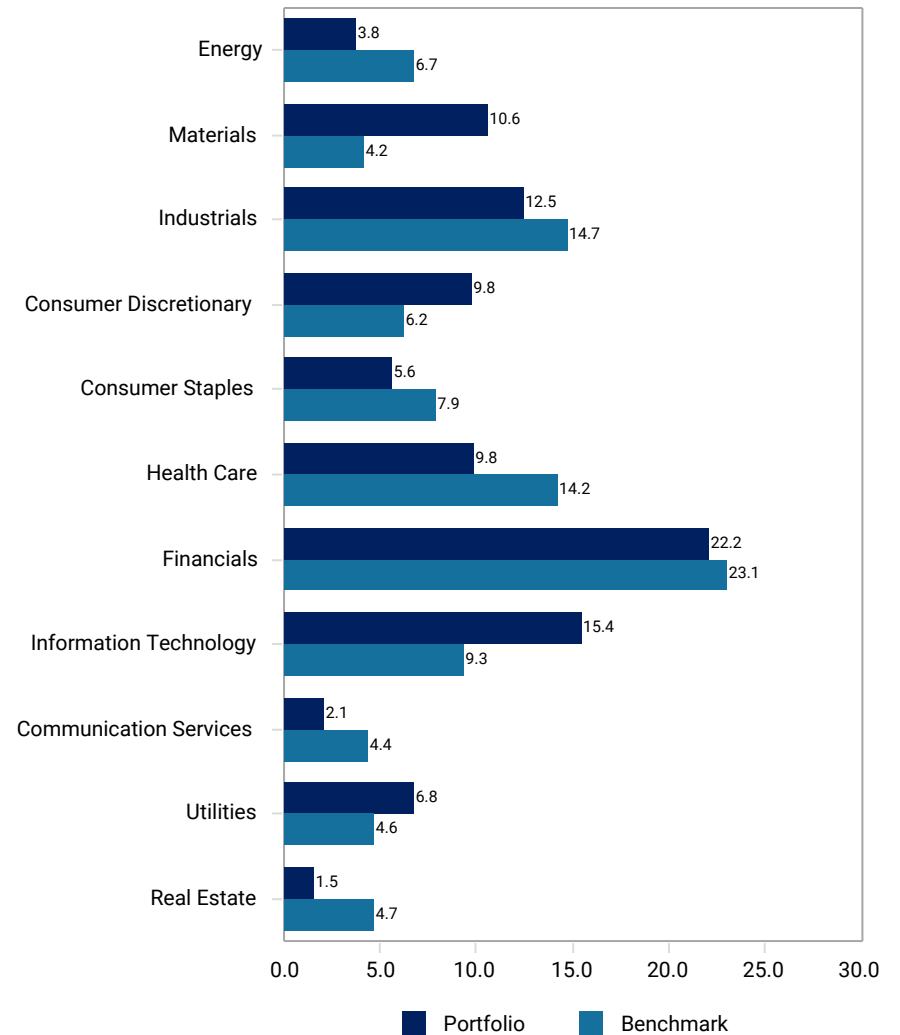
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	24.5 (38)	26.6 (30)	-19.1 (78)	26.5 (63)	21.0 (29)	31.5 (38)				
▲ Benchmark	24.5 (38)	26.5 (30)	-19.1 (78)	26.5 (63)	21.0 (29)	31.4 (38)	-4.8 (53)	21.7 (56)	12.1 (34)	0.9 (55)
5th Percentile	30.7	33.2	-4.6	33.9	29.3	37.3	1.2	28.4	17.9	6.9
1st Quartile	26.1	27.1	-12.5	30.2	21.6	32.8	-2.3	24.4	12.7	3.2
Median	22.5	23.3	-16.3	27.9	17.3	30.1	-4.6	22.2	10.5	1.3
3rd Quartile	17.0	17.4	-18.8	24.8	12.8	27.7	-6.4	19.8	8.0	-0.8
95th Percentile	11.0	9.3	-23.5	19.2	5.4	20.9	-10.4	14.3	4.2	-4.5
Population	385	416	438	450	466	484	500	507	510	522

# ARISTOTLE

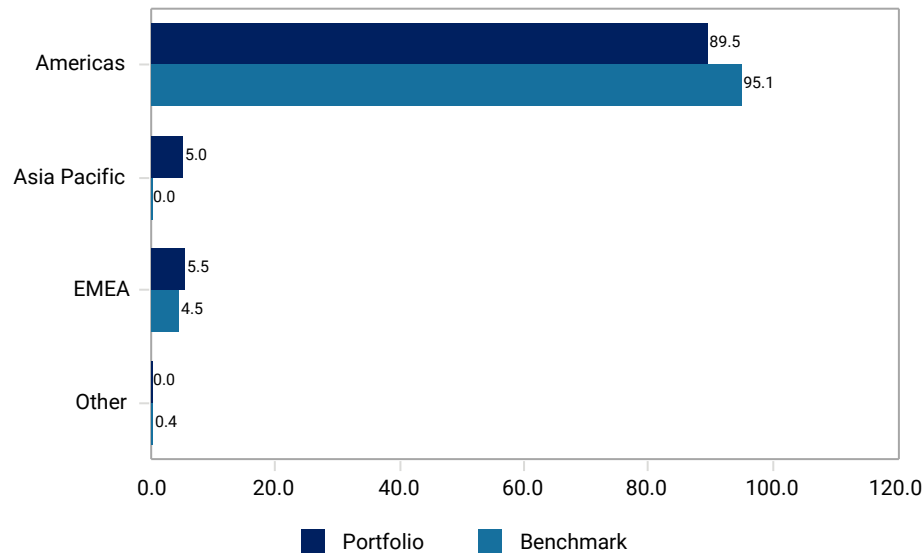
## Aristotle vs. Russell 1000 Value Index

Characteristics	Aristotle vs. Russell 1000 Value Index	
	Portfolio	Benchmark
Number of Stocks	44	869
Wtd. Avg. Mkt. Cap \$B	203.3	171.9
Median Mkt. Cap \$B	66.4	14.1
Price/Earnings ratio	21.7	19.9
Price/Book ratio	2.7	2.7
Return on Equity (%)	5.0	3.0
Current Yield (%)	2.0	2.1
Beta (3 Years, Monthly)	1.0	1.0
R-Squared (3 Years, Monthly)	0.9	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)



# ARISTOTLE

## Aristotle vs. Russell 1000 Value Index

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
Parker-Hannifin Corp	4.7	0.9	Capital One Financial Corp	0.6	19.5	Lennar Corp	-1.1	-27.1
Ameriprise Financial Inc	4.2	13.7	Ameriprise Financial Inc	0.6	13.7	Microchip Technology Inc	-0.7	-28.1
Microsoft Corp	3.8	-1.8	Cullen/Frost Bankers Inc	0.3	20.8	Danaher Corp	-0.3	-17.3
Capital One Financial Corp	3.3	19.5	Blackstone Inc	0.4	13.2	Adobe Inc	-0.4	-14.1
Corteva Inc	3.0	-2.8	Mitsubishi UFJ Financial	0.3	15.1	CIE Generale Des Etablissements Michelin SA	-0.4	-19.1
Lennar Corp	3.0	-27.1	Sony Group Corporation	0.3	9.6	Alcon Inc	-0.3	-15.2
Martin Marietta	2.9	-3.9	Honeywell International Inc	0.2	9.8	Xylem Inc	-0.3	-13.8
Sony Group Corporation	2.9	9.6	ANSYS Inc	0.2	5.9	Coca-Cola Co (The)	-0.2	-12.7
Adobe Inc	2.7	-14.1	U.S. Bancorp	0.2	5.7	General Dynamics Corp	-0.2	-12.4
ANSYS Inc	2.6	5.9	Coterra Energy Inc	0.2	7.5	TotalEnergies SE	-0.3	-14.4

## Equity Sector Attribution

	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	-0.1	-0.2	0.0	0.1	-4.1	-1.6	4.2	6.7
Materials	0.3	0.4	-0.7	0.6	-3.3	-11.5	11.6	4.6
Industrials	-0.2	-0.2	0.0	0.0	-3.5	-2.1	13.7	14.7
Consumer Discretionary	-1.3	-0.7	0.0	-0.6	-13.1	-2.7	11.9	6.3
Consumer Staples	-0.5	-0.6	0.0	0.1	-9.8	-2.7	6.6	7.9
Health Care	0.2	-0.6	0.5	0.2	-14.1	-10.4	9.3	15.5
Financials	0.9	1.2	-0.2	-0.1	12.9	7.1	18.8	21.2
Information Technology	-1.1	-0.6	0.1	-0.6	-7.2	-0.3	17.6	9.1
Communication Services	-0.4	-0.5	-0.1	0.2	-9.6	2.3	2.5	4.2
Utilities	0.3	0.5	0.1	-0.2	3.4	-6.0	2.2	4.8
Real Estate	0.2	0.0	0.2	0.0	-6.0	-6.8	1.7	4.9
<b>Total</b>	<b>-1.7</b>	<b>-1.2</b>	<b>-0.1</b>	<b>-0.4</b>	<b>-3.7</b>	<b>-2.0</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.



# COUNTRY AND REGION ALLOCATION

	Aristotle	Russell 1000 Value Index
Canada	0.0	0.0
United States	89.5	95.1
<b>Americas</b>	<b>89.5</b>	<b>95.1</b>
Australia	0.0	0.0
Hong Kong	0.0	0.0
Japan	5.0	0.0
New Zealand	0.0	0.0
Singapore	0.0	0.0
<b>Asia Pacific</b>	<b>5.0</b>	<b>0.0</b>
Austria	0.0	0.0
Belgium	0.0	0.0
Denmark	0.0	0.0
Finland	0.0	0.0
France	3.5	0.0
Germany	0.0	0.0
Ireland	0.0	2.6
Israel	0.0	0.0
Italy	0.0	0.0
Netherlands	0.0	0.0
Norway	0.0	0.0
Portugal	0.0	0.0
Spain	0.0	0.0
Sweden	0.0	0.0
Switzerland	2.0	0.7
United Kingdom	0.0	1.2
<b>EMEA</b>	<b>5.5</b>	<b>4.5</b>
<b>Developed Markets</b>	<b>100.0</b>	<b>99.6</b>

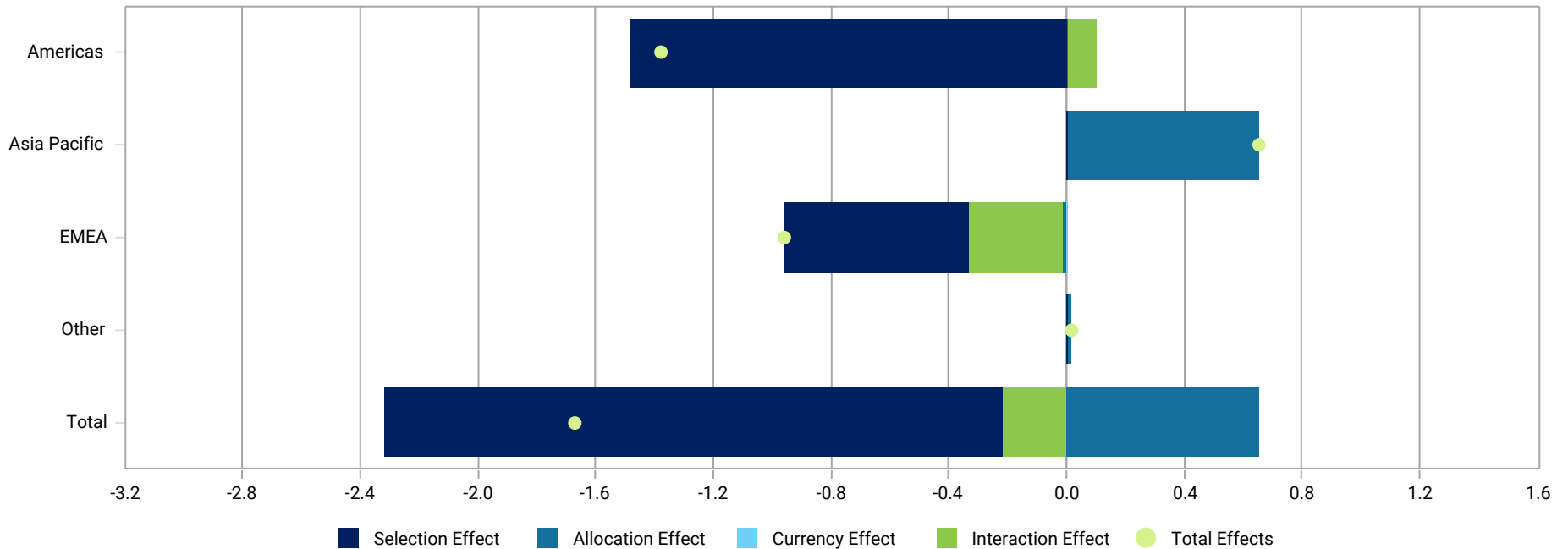
	Aristotle	Russell 1000 Value Index
Brazil	0.0	0.0
Chile	0.0	0.0
Colombia	0.0	0.0
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.0</b>	<b>0.0</b>
China	0.0	0.0
India	0.0	0.0
Indonesia	0.0	0.0
Korea	0.0	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.0	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.0</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>0.0</b>	<b>0.0</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	Aristotle	Russell 1000 Value Index
Cash	0.0	0.0
Other	0.0	0.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# ARISTOTLE

Aristotle vs. Russell 1000 Value Index

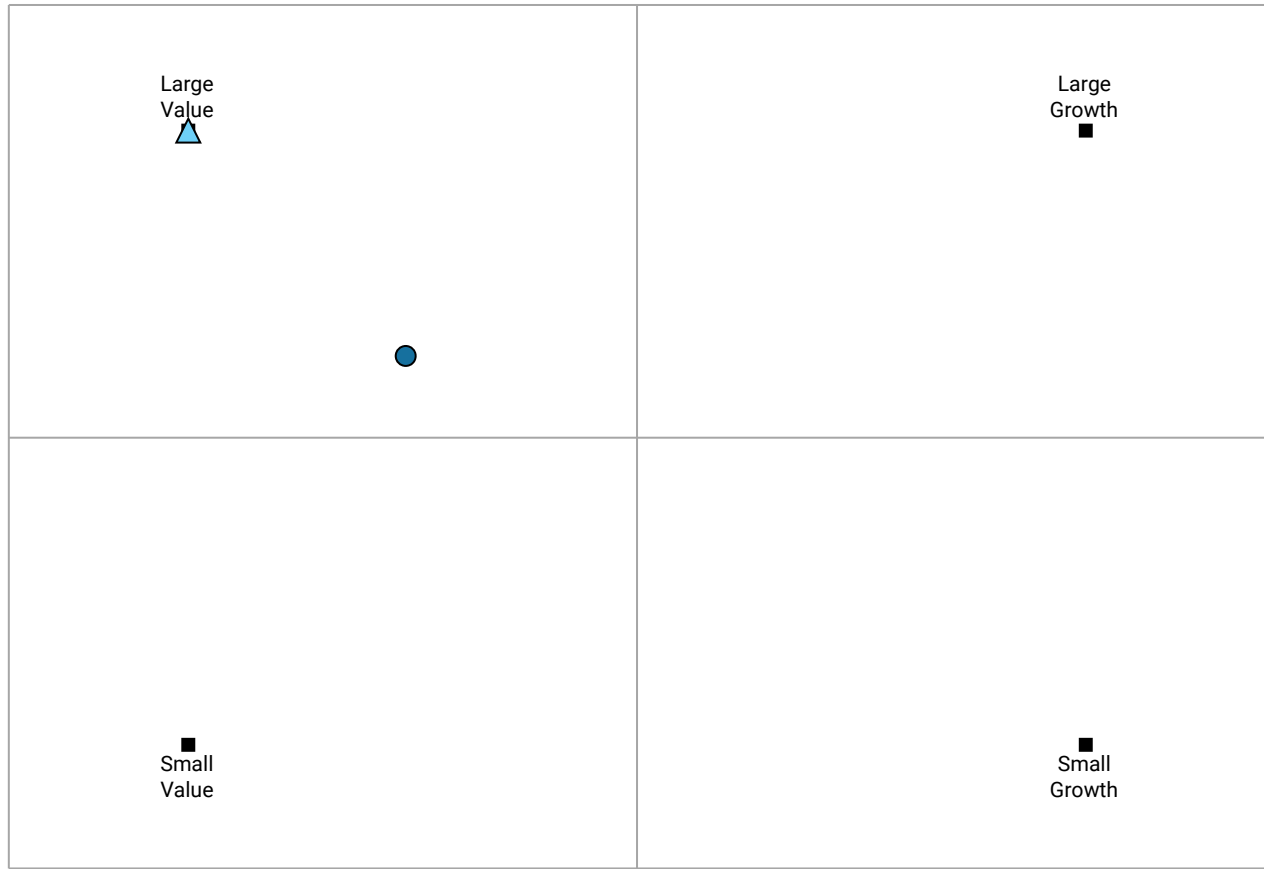


	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	-3.5	-1.9	88.4	95.0	-1.5	0.0	0.0	0.1	-1.4
Asia Pacific	11.9		4.7	0.0	0.0	0.7	0.0	0.0	0.7
EMEA	-16.2	-2.5	6.9	4.6	-0.6	0.0	0.0	-0.3	-1.0
Other		-6.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>-3.7</b>	<b>-2.0</b>	<b>100.0</b>	<b>100.0</b>	<b>-2.1</b>	<b>0.7</b>	<b>0.0</b>	<b>-0.2</b>	<b>-1.7</b>
<b>Totals</b>									
Developed Markets	-3.7	-2.0	100.0	99.6	-1.7	0.0	0.0	0.0	-1.7
Other		-6.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# ARISTOTLE

Aristotle  
Style Map: (2.25 Years)

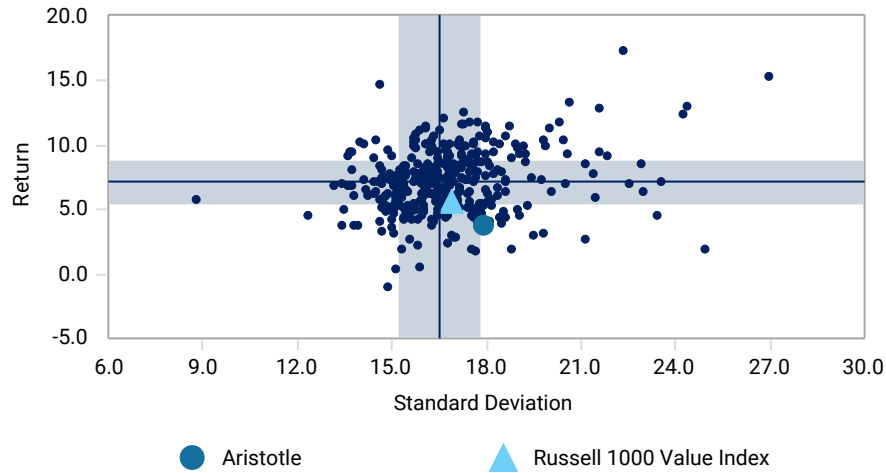


● Aristotle

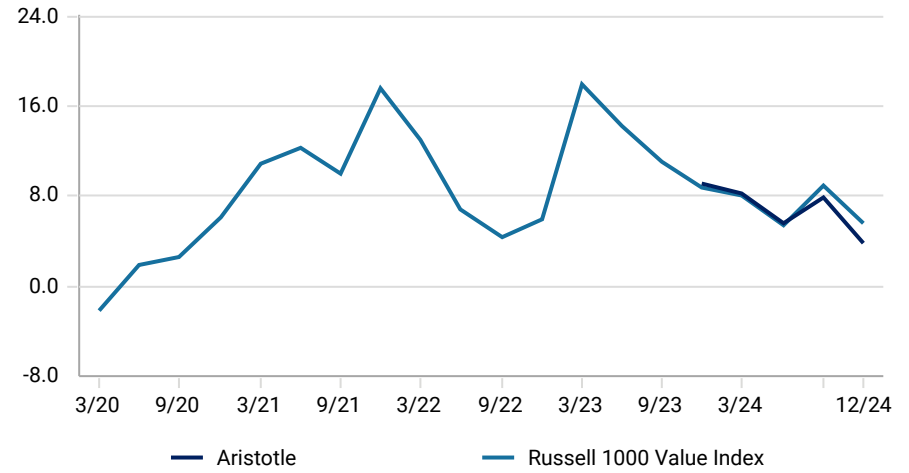
▲ Russell 1000 Value Index

# ARISTOTLE

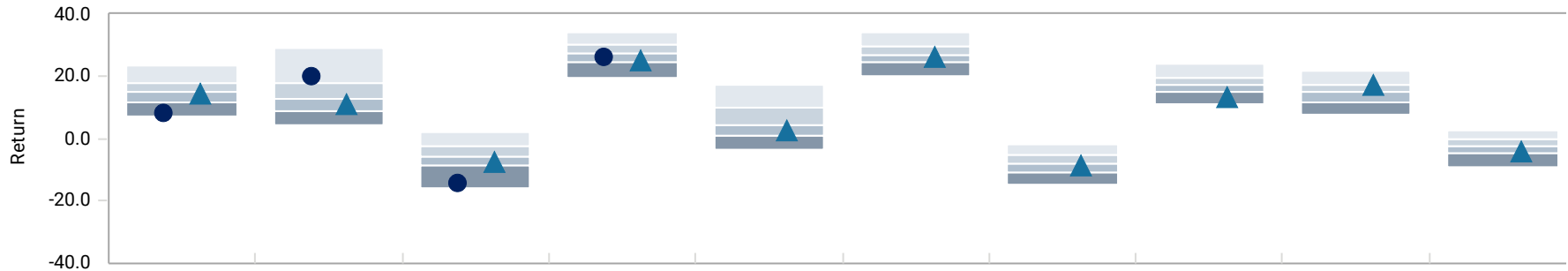
3 Years Annualized Return vs. Annualized Standard Deviation



Rolling 3 Years Annualized Return (%)



eV US Large Cap Value Equity



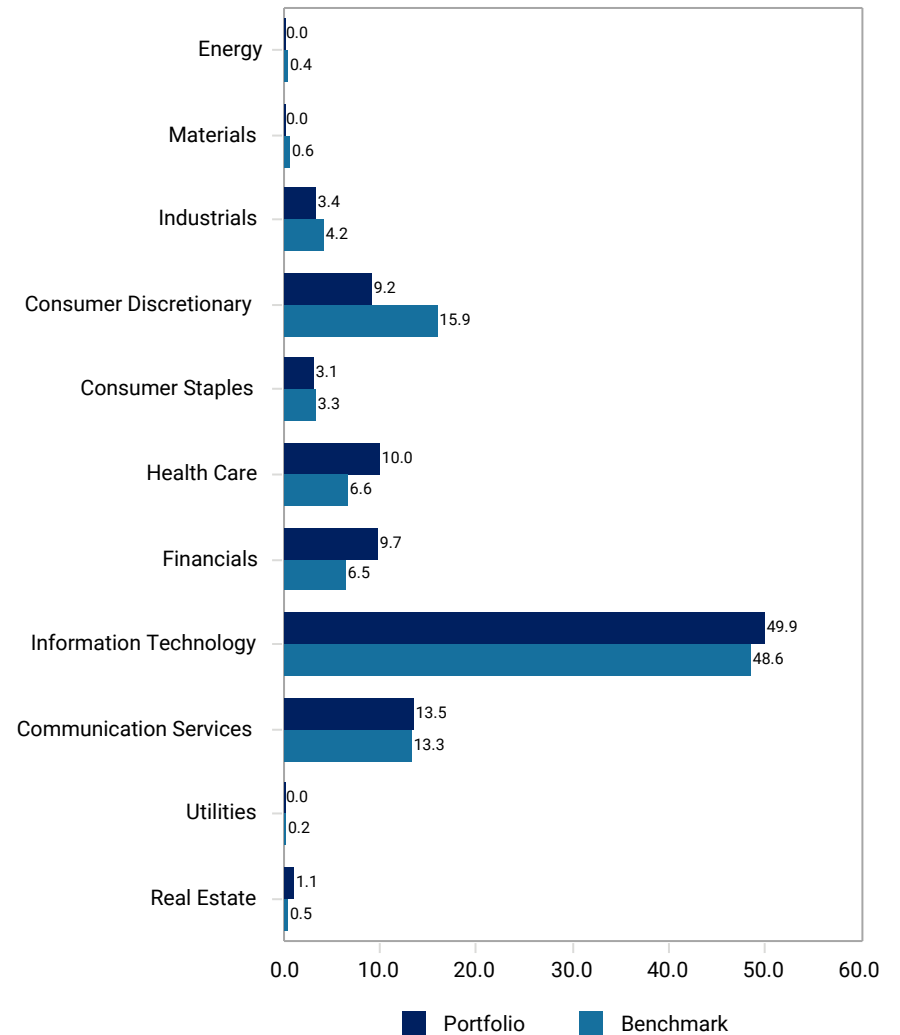
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	8.3 (92)	20.3 (17)	-14.2 (93)	26.2 (63)						
▲ Benchmark	14.4 (56)	11.5 (62)	-7.5 (68)	25.2 (72)	2.8 (65)	26.5 (57)	-8.3 (54)	13.7 (88)	17.3 (26)	-3.8 (70)
5th Percentile	23.6	29.3	2.3	34.3	17.6	34.3	-1.7	24.0	22.1	2.7
1st Quartile	18.2	18.1	-2.4	30.2	10.1	29.9	-5.0	19.9	17.4	-0.2
Median	15.3	12.9	-5.4	27.6	4.7	27.2	-8.1	17.5	14.9	-2.2
3rd Quartile	12.1	9.3	-8.5	24.7	1.3	24.7	-10.7	15.4	12.0	-4.7
95th Percentile	7.3	4.3	-16.0	19.6	-3.5	20.4	-14.7	11.2	7.6	-9.0
Population	372	411	421	426	433	459	481	492	505	523

# TCW

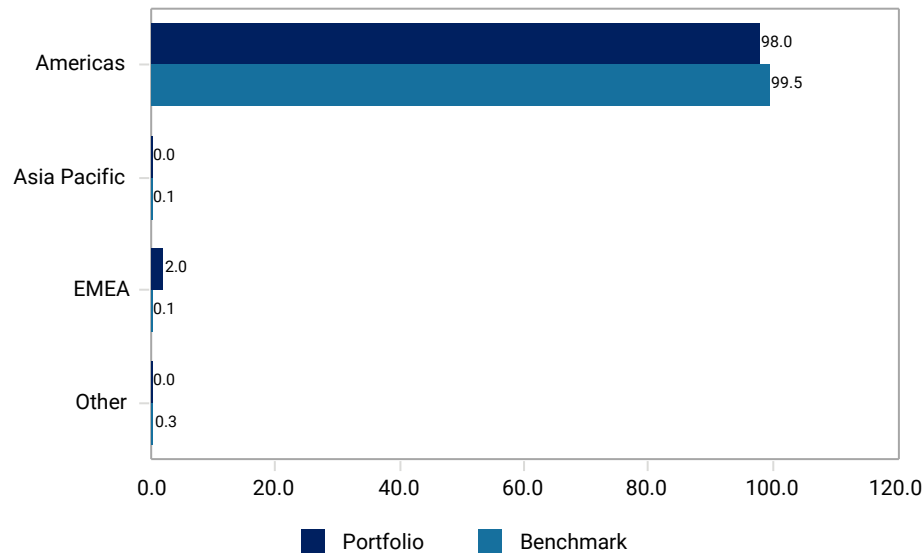
## TCW vs. Russell 1000 Growth Index

Characteristics	TCW vs. Russell 1000 Growth Index	
	Portfolio	Benchmark
Number of Stocks	30	396
Wtd. Avg. Mkt. Cap \$B	1,291.3	1,688.1
Median Mkt. Cap \$B	180.5	20.1
Price/Earnings ratio	45.4	36.7
Price/Book ratio	12.6	12.7
Return on Equity (%)	10.8	13.3
Current Yield (%)	0.4	0.6
Beta (5 Years, Monthly)	1.0	1.0
R-Squared (5 Years, Monthly)	0.9	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)



# TCW

## TCW vs. Russell 1000 Growth Index

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
NVIDIA Corporation	14.0	10.6	NVIDIA Corporation	0.1	10.6	ASML Holding NV	-0.5	-16.6
Microsoft Corp	10.3	-1.8	ServiceNow Inc	0.7	18.5	Zoetis Inc	-0.4	-16.4
ServiceNow Inc	7.1	18.5	Amazon.com Inc	0.0	17.7	UnitedHealth Group Incorporated	-0.5	-13.2
Amazon.com Inc	7.0	17.7	Alphabet Inc Cl C	0.2	14.0	American Tower Corp	-0.3	-19.8
Alphabet Inc Cl C	6.9	14.0	Shopify Inc	0.5	32.7	Adobe Inc	-0.3	-14.1
Meta Platforms Inc	4.6	2.4	Visa Inc	0.2	15.2	GE Aerospace	-0.3	-11.4
Visa Inc	3.8	15.2	CrowdStrike Holdings Inc	0.3	22.0	Microsoft Corp	0.1	-1.8
Mastercard Inc	3.3	6.8	SALESFORCE INC	0.1	22.3	S&P Global Inc	-0.3	-3.4
Costco Wholesale Corp	3.1	3.5	Cadence Design Systems Inc	0.1	10.9	Gartner Inc	-0.2	-4.4
Intuitive Surgical Inc	2.7	6.2	Mastercard Inc	0.0	6.8	Waste Connections Inc.	-0.2	-3.9

## Equity Sector Attribution

	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.0	0.0	0.0	0.0	0.0	13.4	0.0	0.4
Materials	0.1	0.0	0.1	0.0	0.0	-10.5	0.0	0.7
Industrials	-0.1	-0.2	0.1	0.0	-7.3	-2.6	3.6	4.6
Consumer Discretionary	-1.3	-1.2	-0.5	0.3	10.8	19.1	10.4	14.2
Consumer Staples	0.3	0.3	0.0	0.0	3.5	-3.6	3.3	3.6
Health Care	0.2	0.6	-0.6	0.2	-1.9	-9.0	11.3	7.8
Financials	-0.2	-0.2	0.1	-0.1	6.9	10.1	9.9	6.3
Information Technology	0.5	0.5	0.0	0.0	7.9	6.9	47.6	48.8
Communication Services	-0.2	-0.2	0.0	0.0	9.2	11.0	12.4	12.8
Utilities	0.0	0.0	0.0	0.0	0.0	7.9	0.0	0.2
Real Estate	-0.3	0.0	-0.2	0.0	-19.8	-15.3	1.5	0.6
<b>Total</b>	<b>-1.1</b>	<b>-0.6</b>	<b>-0.9</b>	<b>0.4</b>	<b>6.0</b>	<b>7.1</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	TCW	Russell 1000 Growth Index
Canada	4.2	0.2
United States	93.8	99.2
<b>Americas</b>	<b>98.0</b>	<b>99.4</b>
Australia	0.0	0.1
Hong Kong	0.0	0.0
Japan	0.0	0.0
New Zealand	0.0	0.0
Singapore	0.0	0.0
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.1</b>
Austria	0.0	0.0
Belgium	0.0	0.0
Denmark	0.0	0.0
Finland	0.0	0.0
France	0.0	0.0
Germany	0.0	0.0
Ireland	0.0	0.1
Israel	0.0	0.0
Italy	0.0	0.0
Netherlands	2.0	0.0
Norway	0.0	0.0
Portugal	0.0	0.0
Spain	0.0	0.0
Sweden	0.0	0.0
Switzerland	0.0	0.0
United Kingdom	0.0	0.0
<b>EMEA</b>	<b>2.0</b>	<b>0.1</b>
<b>Developed Markets</b>	<b>100.0</b>	<b>99.6</b>

	TCW	Russell 1000 Growth Index
Brazil	0.0	0.1
Chile	0.0	0.0
Colombia	0.0	0.0
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.0</b>	<b>0.1</b>
China	0.0	0.0
India	0.0	0.0
Indonesia	0.0	0.0
Korea	0.0	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.0	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.0</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>0.0</b>	<b>0.1</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

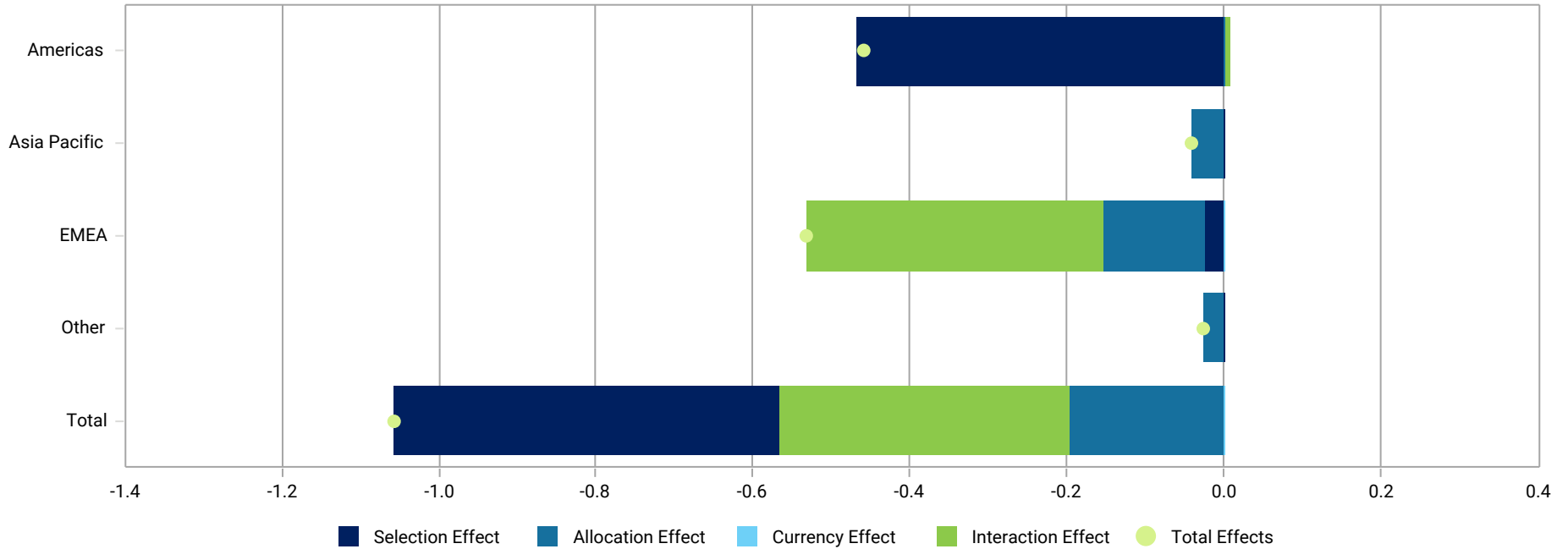


# COUNTRY AND REGION ALLOCATION

	TCW	Russell 1000 Growth Index
Cash	0.0	0.0
Other	0.0	0.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# TCW

TCW vs. Russell 1000 Growth Index



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	6.5	7.0	97.7	99.5	-0.5	0.0	0.0	0.0	-0.5
Asia Pacific		53.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0
EMEA	-16.6	1.0	2.3	0.1	0.0	-0.1	0.0	-0.4	-0.5
Other		18.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>6.0</b>	<b>7.1</b>	<b>100.0</b>	<b>100.0</b>	<b>-0.5</b>	<b>-0.2</b>	<b>0.0</b>	<b>-0.4</b>	<b>-1.1</b>
<b>Totals</b>									
Developed Markets	6.0	7.1	100.0	99.6	-1.1	0.0	0.0	0.0	-1.1
Emerging Markets		-24.1	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Other		18.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# TCW

## TCW Style Map: (3 Years)

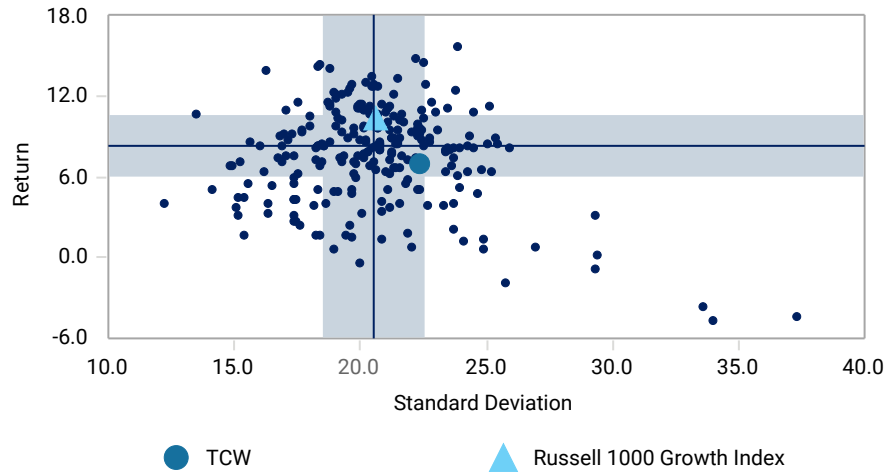


● TCW

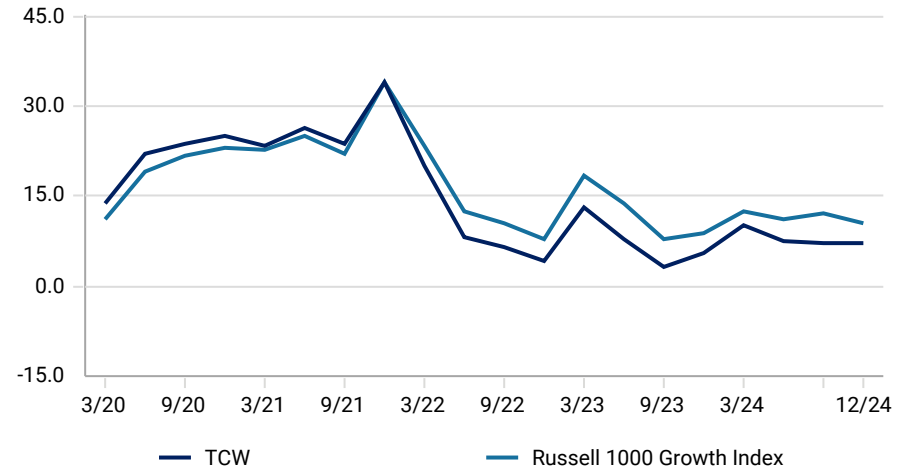
▲ Russell 1000 Growth Index

# TCW

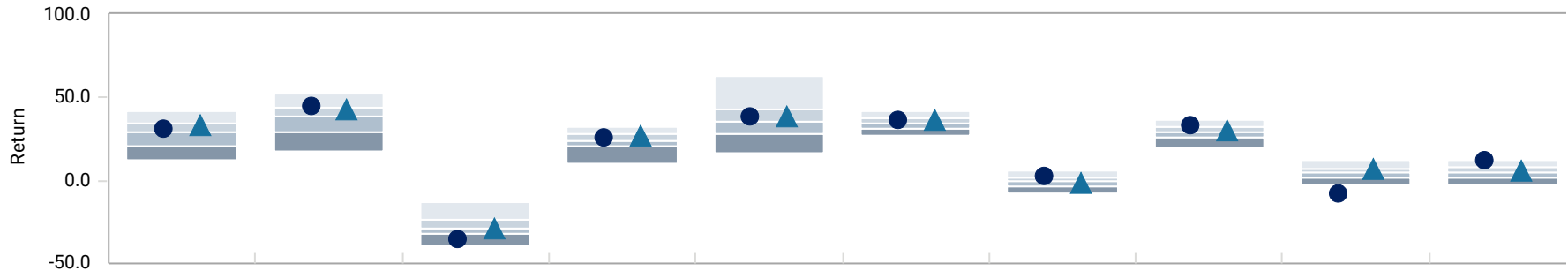
3 Years Annualized Return vs. Annualized Standard Deviation



Rolling 3 Years Annualized Return (%)



eV US Large Cap Growth Equity



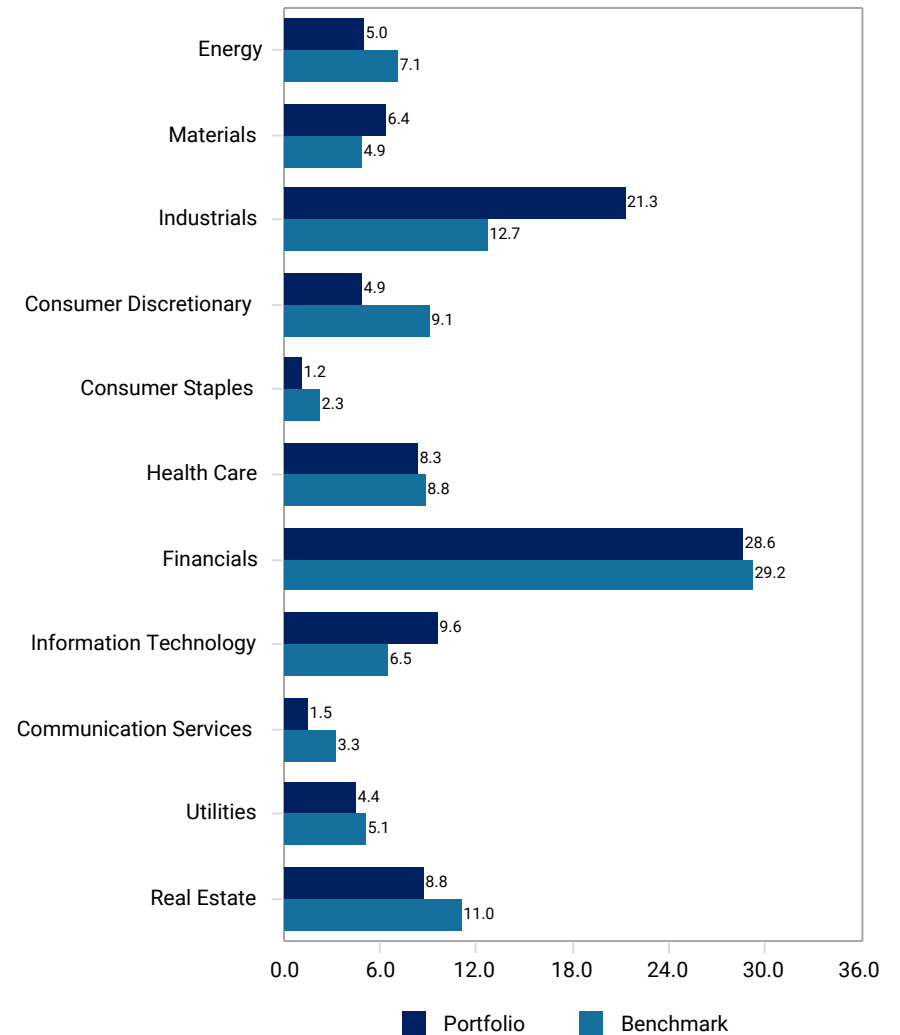
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	31.3 (43)	44.9 (20)	-35.5 (86)	26.4 (36)	38.8 (35)	36.9 (29)	2.7 (20)	33.1 (21)	-7.5 (100)	12.8 (4)
▲ Benchmark	33.4 (28)	42.7 (31)	-29.1 (52)	27.6 (29)	38.5 (35)	36.4 (32)	-1.5 (59)	30.2 (42)	7.1 (27)	5.7 (46)
5th Percentile	42.2	52.8	-13.5	32.5	62.6	41.8	6.2	37.0	12.2	11.9
1st Quartile	34.5	44.1	-23.6	28.4	43.0	37.3	1.8	32.7	7.5	8.2
Median	29.7	38.8	-29.0	24.3	35.3	34.2	-0.6	28.9	4.6	5.1
3rd Quartile	21.1	28.9	-32.5	20.6	28.6	31.5	-3.4	26.2	1.8	2.0
95th Percentile	12.7	18.0	-39.4	10.1	16.6	27.1	-7.8	20.1	-2.5	-2.7
Population	255	280	290	295	308	319	326	330	347	362

# KENNEDY

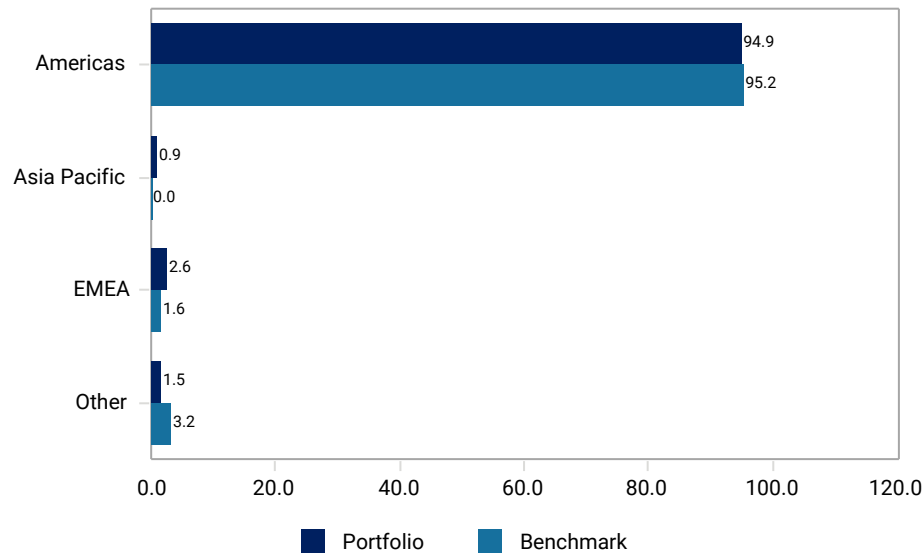
## Kennedy vs. Russell 2000 Value Index

Characteristics	Kennedy vs. Russell 2000 Value Index	
	Portfolio	Benchmark
Number of Stocks	239	1,434
Wtd. Avg. Mkt. Cap \$B	4.1	2.8
Median Mkt. Cap \$B	2.4	0.8
Price/Earnings ratio	17.8	14.4
Price/Book ratio	1.8	1.6
Return on Equity (%)	1.7	5.4
Current Yield (%)	1.6	2.1
Beta (5 Years, Monthly)	1.0	1.0
R-Squared (5 Years, Monthly)	1.0	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)



# KENNEDY

## Kennedy vs. Russell 2000 Value Index

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
Mr. Cooper Group Inc	1.2	4.2	Astera Labs Inc	0.6	152.8	Phathom Pharmaceuticals Inc	-0.3	-55.1
SouthState Corporation	1.2	2.9	Applied Optoelectronics Inc	0.6	157.6	Aspen Aerogels Inc	-0.2	-57.1
Barrett Business Services Inc	1.1	16.0	Scholar Rock Holding Corp	0.4	439.6	Century Communities Inc	-0.2	-28.6
Coastal Financial Corp	1.1	57.3	Coastal Financial Corp	0.4	57.3	ICF International Inc	-0.2	-28.5
Wintrust Financial Corp.	1.0	15.3	Chart Industries Inc	0.3	53.7	Installed Building	-0.2	-28.7
Gates Industrial Corporation plc	1.0	17.2	Summit Materials Inc	0.1	29.6	Constellium SE	-0.2	-36.8
Summit Materials Inc	1.0	29.6	Air Transport Services Group Inc	0.2	35.8	ATI Inc	-0.2	-17.7
Veritex Holdings Inc	1.0	3.9	First Horizon Corp	0.2	30.6	Hudson Pacific Properties Inc	-0.1	-36.6
Casella Waste Systems Inc	0.9	6.4	Barrett Business Services Inc	0.2	16.0	Plymouth Industrial REIT Inc	-0.1	-20.2
Western Alliance Bancorporation	0.9	-3.0	Barnes Group Inc	0.1	17.0	Stoneridge Inc.	-0.1	-44.0

## Equity Sector Attribution

	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.3	0.5	0.0	-0.1	3.7	-2.6	5.0	7.2
Materials	-0.7	-0.5	0.0	-0.1	-13.7	-4.2	6.4	5.1
Industrials	0.7	0.3	0.2	0.2	3.9	1.7	21.1	12.2
Consumer Discretionary	0.1	-0.3	0.3	0.1	-10.2	-7.4	5.9	10.0
Consumer Staples	0.0	0.1	-0.1	0.0	10.5	6.1	1.3	2.3
Health Care	0.0	-0.1	0.1	0.0	-8.4	-7.1	8.0	9.3
Financials	0.7	0.8	0.0	0.0	5.8	3.0	27.3	28.0
Information Technology	0.8	0.3	0.4	0.2	14.5	10.0	9.4	5.8
Communication Services	0.0	-0.1	0.0	0.0	-6.3	-3.8	1.6	3.4
Utilities	0.0	0.0	0.0	0.0	-5.2	-4.6	4.4	5.3
Real Estate	0.2	0.1	0.1	0.0	-4.7	-5.7	9.5	11.5
Cash	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>2.2</b>	<b>1.0</b>	<b>1.1</b>	<b>0.2</b>	<b>1.2</b>	<b>-1.1</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	Kennedy	Russell 2000 Value Index
Canada	0.0	0.1
United States	94.9	95.0
<b>Americas</b>	<b>94.9</b>	<b>95.1</b>
Australia	0.0	0.0
Hong Kong	0.6	0.0
Japan	0.0	0.0
New Zealand	0.0	0.0
Singapore	0.0	0.0
<b>Asia Pacific</b>	<b>0.6</b>	<b>0.0</b>
Austria	0.0	0.0
Belgium	0.0	0.0
Denmark	0.0	0.0
Finland	0.0	0.0
France	0.3	0.0
Germany	0.0	0.0
Ireland	0.4	0.7
Israel	1.2	0.1
Italy	0.0	0.0
Netherlands	0.0	0.0
Norway	0.0	0.0
Portugal	0.0	0.0
Spain	0.0	0.0
Sweden	0.0	0.0
Switzerland	0.0	0.2
United Kingdom	0.7	0.6
<b>EMEA</b>	<b>2.6</b>	<b>1.6</b>
<b>Developed Markets</b>	<b>98.1</b>	<b>96.7</b>

	Kennedy	Russell 2000 Value Index
Brazil	0.0	0.0
Chile	0.0	0.0
Colombia	0.0	0.0
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.0</b>	<b>0.0</b>
China	0.0	0.0
India	0.0	0.0
Indonesia	0.0	0.0
Korea	0.1	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.2	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>0.3</b>	<b>0.0</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>0.3</b>	<b>0.0</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.1</b>

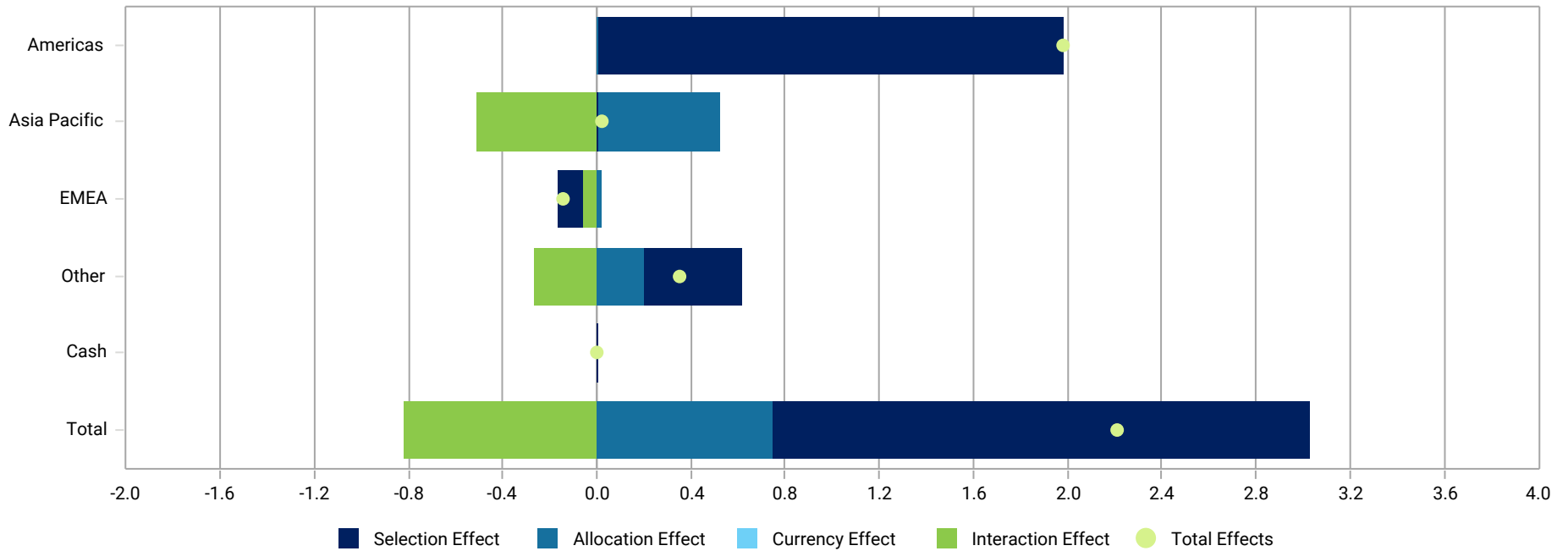
# COUNTRY AND REGION ALLOCATION

	Kennedy	Russell 2000 Value Index
Cash	0.0	0.0
Other	1.5	3.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>



# KENNEDY

Kennedy vs. Russell 2000 Value Index



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	1.3	-0.8	95.3	94.9	2.0	0.0	0.0	0.0	2.0
Asia Pacific	1.2	50.9	1.0	0.0	0.0	0.5	0.0	-0.5	0.0
EMEA	-5.4	1.5	2.4	1.5	-0.1	0.0	0.0	-0.1	-0.1
Other	1.9	-10.0	1.3	3.5	0.4	0.2	0.0	-0.3	0.4
Cash	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>1.2</b>	<b>-1.1</b>	<b>100.0</b>	<b>100.0</b>	<b>2.3</b>	<b>0.7</b>	<b>0.0</b>	<b>-0.8</b>	<b>2.2</b>
<b>Totals</b>									
Developed Markets	1.1	-0.7	98.3	96.3	1.7	0.0	0.0	0.0	1.8
Emerging Markets	21.8	-27.3	0.4	0.1	0.0	-0.1	0.0	0.1	0.1
Frontier Markets		11.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Other	1.9	-10.0	1.3	3.5	0.4	0.2	0.0	-0.3	0.4
Cash	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# KENNEDY

## Kennedy Style Map: (3 Years)

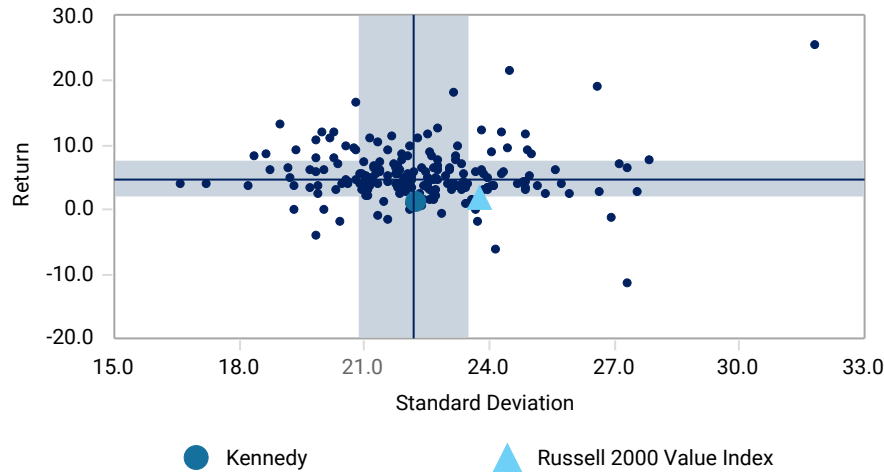


● Kennedy

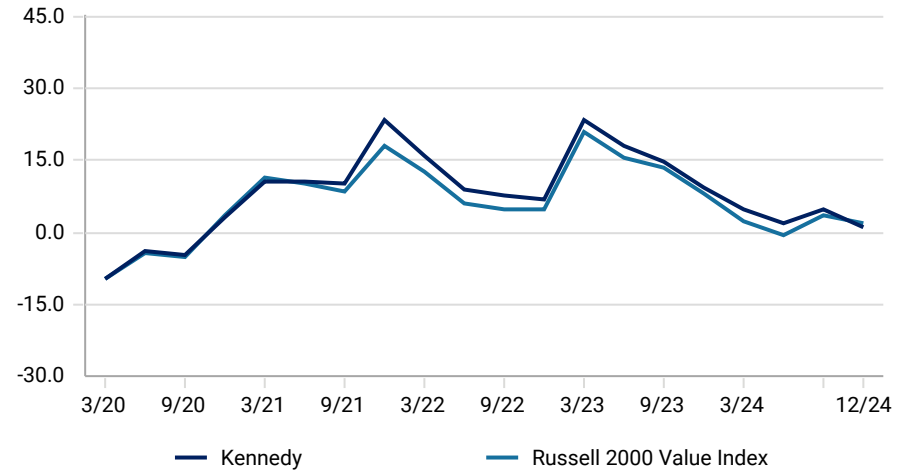
▲ Russell 2000 Value Index

# KENNEDY

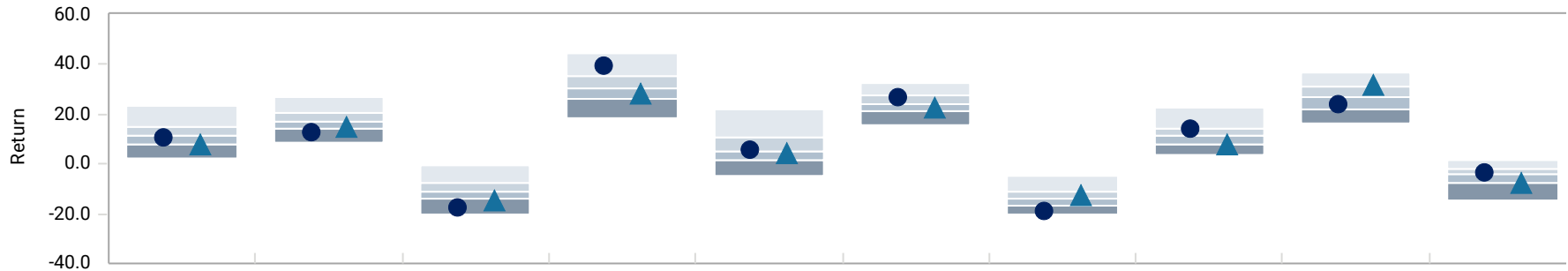
3 Years Annualized Return vs. Annualized Standard Deviation



Rolling 3 Years Annualized Return (%)



eV US Small Cap Value Equity



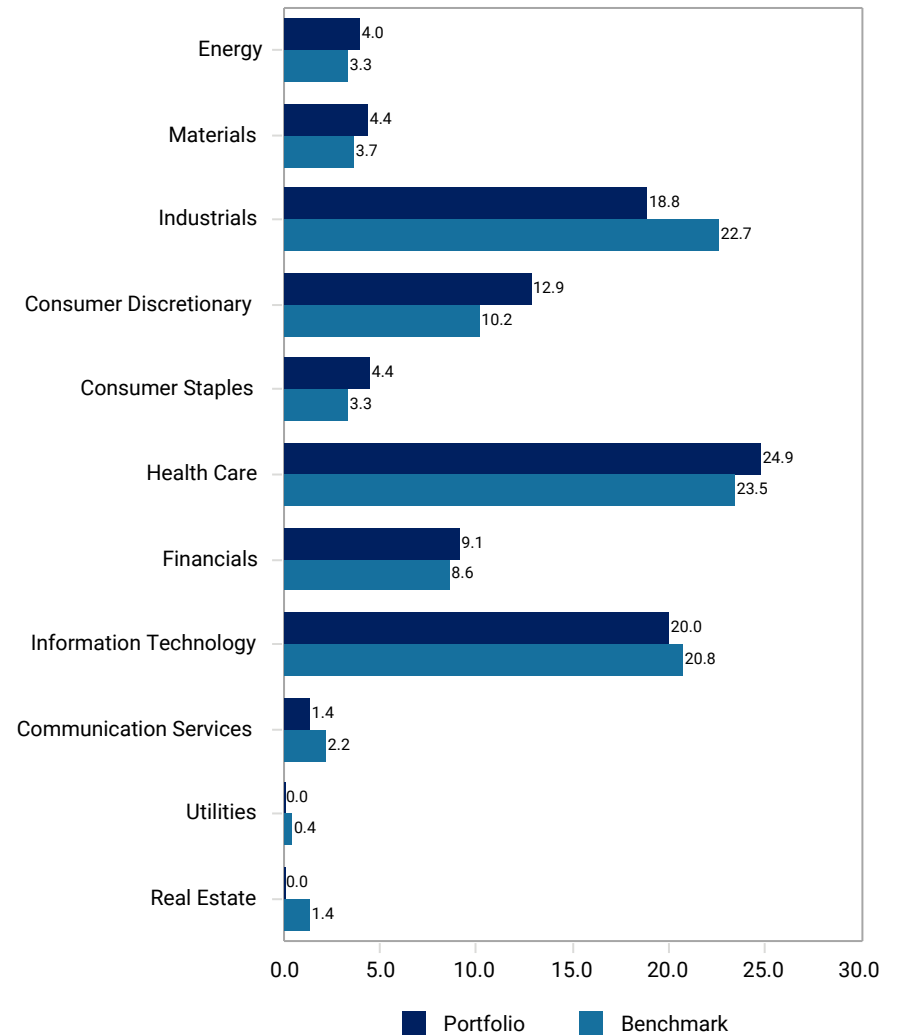
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	10.9 (55)	12.8 (82)	-17.2 (89)	39.9 (13)	5.9 (48)	26.7 (30)	-18.6 (87)	14.0 (26)	24.2 (68)	-3.4 (41)
▲ Benchmark	8.1 (74)	14.6 (71)	-14.5 (79)	28.3 (59)	4.6 (55)	22.4 (70)	-12.9 (42)	7.8 (74)	31.7 (18)	-7.5 (75)
5th Percentile	23.4	26.8	-0.4	44.6	21.7	32.7	-4.6	22.4	36.5	1.9
1st Quartile	15.0	20.7	-7.7	35.4	11.0	27.4	-10.8	14.2	30.9	-2.2
Median	11.3	17.3	-11.0	30.5	5.4	24.4	-13.6	11.2	27.0	-4.4
3rd Quartile	7.6	13.9	-13.9	26.2	1.4	21.6	-16.6	7.7	22.2	-7.5
95th Percentile	2.3	8.8	-20.0	18.4	-4.6	15.8	-20.4	3.7	16.5	-15.0
Population	195	213	221	233	248	256	267	272	274	278

# WILLIAM BLAIR SMALL CAP GROWTH

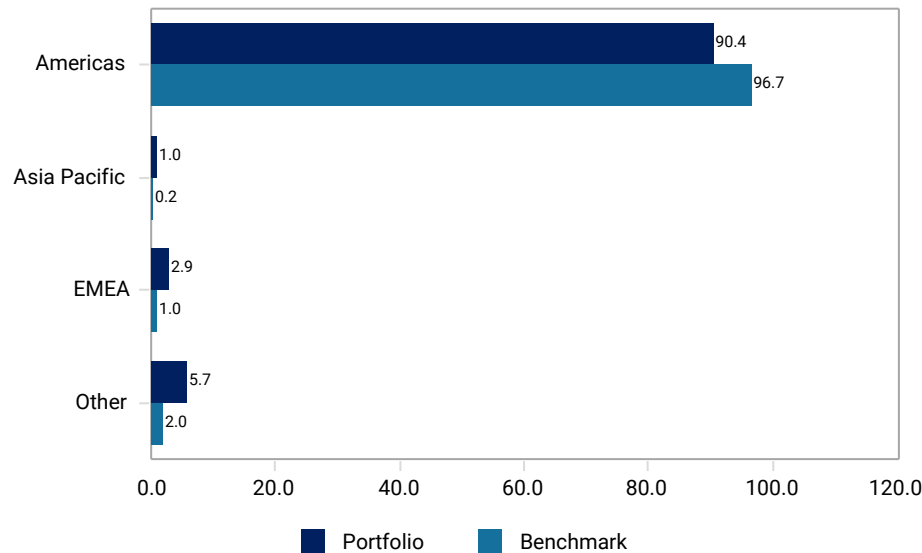
## William Blair Small Cap Growth vs. Russell 2000 Growth Index

Characteristics	Portfolio	
	Portfolio	Benchmark
Number of Stocks	91	1,117
Wtd. Avg. Mkt. Cap \$B	4.8	4.3
Median Mkt. Cap \$B	3.9	1.2
Price/Earnings ratio	32.5	24.0
Price/Book ratio	4.2	4.2
Return on Equity (%)	-0.1	2.8
Current Yield (%)	0.5	0.6
Beta (5 Years, Monthly)	0.9	1.0
R-Squared (5 Years, Monthly)	1.0	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)



# WILLIAM BLAIR SMALL CAP GROWTH

## William Blair Small Cap Growth vs. Russell 2000 Growth Index

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
Casella Waste Systems Inc	2.7	6.4	Credo Technology Group Holding Ltd	0.6	118.2	Zeta Global Holdings Corp	-0.5	-39.7
Doximity Inc	2.0	22.5	Vertex Inc	0.4	38.5	Acadia Healthcare Co Inc	-0.5	-37.5
ACV Auctions Inc	2.0	6.2	Chart Industries Inc	0.2	53.7	Brink's Co (The)	-0.5	-19.6
Mercury Systems Inc	1.8	13.5	United States Lime & Minerals Inc	0.4	36.0	Baldwin Insurance Group Inc (The)	-0.3	-22.2
Brink's Co (The)	1.8	-19.6	Doximity Inc	0.4	22.5	Varonis Systems Inc	-0.2	-21.4
Vericel Corp	1.8	30.0	Workiva Inc	0.3	38.4	Neogen Corp	-0.3	-27.8
Balchem Corp	1.7	-6.9	Vericel Corp	0.3	30.0	Fox Factory Holding Corp	-0.3	-27.1
FTAI Aviation Ltd	1.6	8.6	New Fortress Energy Inc	0.4	66.3	Novanta Inc	-0.2	-14.6
Planet Fitness Inc	1.6	21.7	Confluent Inc	0.4	37.2	ZipRecruiter Inc	-0.2	-23.8
Workiva Inc	1.6	38.4	SiTime Corp	0.2	25.1	Verra Mobility Corp	-0.2	-13.1

	Equity Sector Attribution							
	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.4	0.3	-0.1	0.1	6.3	-2.8	4.6	3.4
Materials	0.4	0.4	0.0	0.0	5.3	-5.3	3.9	3.9
Industrials	-0.8	-0.8	-0.1	0.1	1.9	5.4	18.8	21.8
Consumer Discretionary	0.2	0.1	0.1	0.0	4.9	3.8	12.8	10.1
Consumer Staples	0.5	0.5	0.0	0.0	20.0	5.0	3.5	3.2
Health Care	2.1	2.1	0.0	0.0	0.3	-7.8	25.3	25.6
Financials	-0.4	-0.4	0.0	0.0	-0.1	5.0	7.9	8.2
Information Technology	-0.2	-0.2	0.0	0.0	8.6	9.6	19.3	19.6
Communication Services	-0.3	-0.3	0.0	0.1	-8.1	7.5	1.4	2.0
Utilities	0.0	0.0	0.0	0.0	0.0	-4.7	0.0	0.5
Real Estate	0.0	0.1	-0.1	0.0	-3.8	-8.6	2.5	1.6
<b>Total</b>	<b>2.0</b>	<b>1.8</b>	<b>-0.2</b>	<b>0.4</b>	<b>3.7</b>	<b>1.7</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	William Blair Small Cap Growth	Russell 2000 Growth Index
Canada	1.9	0.2
United States	87.8	96.4
<b>Americas</b>	<b>89.7</b>	<b>96.5</b>
Australia	0.0	0.0
Hong Kong	0.0	0.0
Japan	0.0	0.0
New Zealand	0.0	0.0
Singapore	0.0	0.1
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.1</b>
Austria	0.0	0.0
Belgium	0.0	0.0
Denmark	0.0	0.0
Finland	0.0	0.0
France	0.0	0.1
Germany	0.0	0.0
Ireland	0.0	0.5
Israel	0.3	0.1
Italy	0.0	0.0
Netherlands	0.0	0.0
Norway	0.0	0.0
Portugal	0.0	0.0
Spain	0.0	0.0
Sweden	0.0	0.0
Switzerland	1.2	0.2
United Kingdom	1.3	0.1
<b>EMEA</b>	<b>2.9</b>	<b>1.0</b>
<b>Developed Markets</b>	<b>92.6</b>	<b>97.6</b>

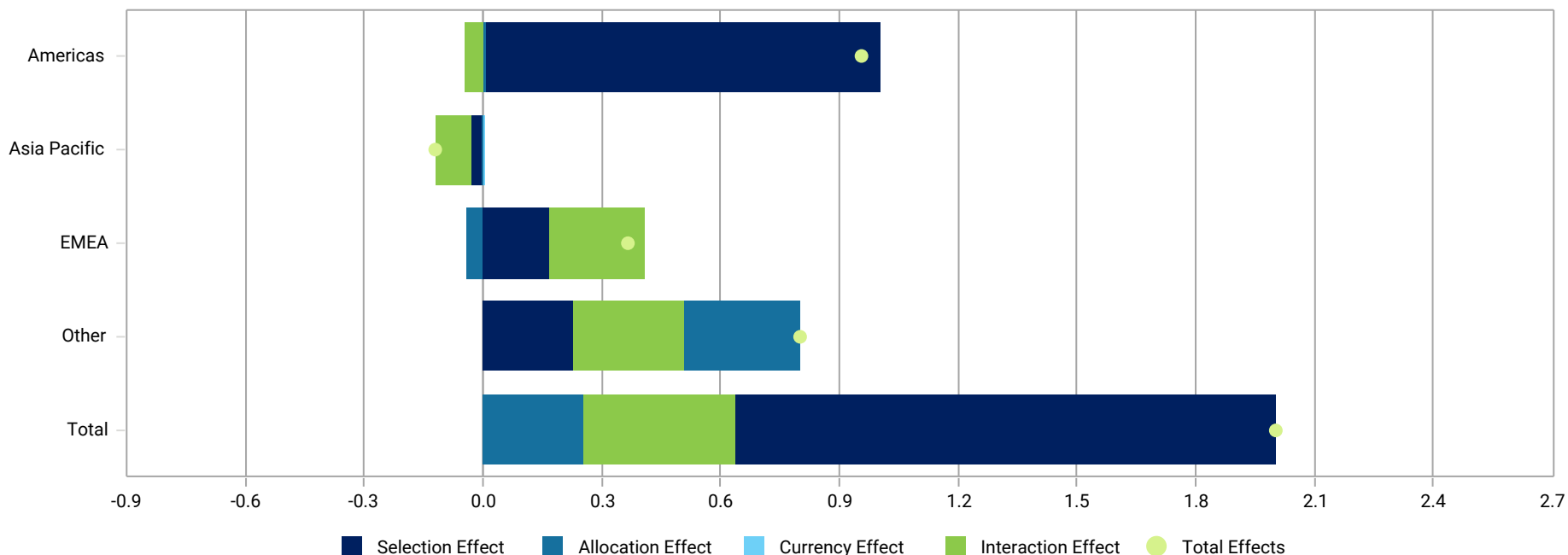
	William Blair Small Cap Growth	Russell 2000 Growth Index
Brazil	0.0	0.0
Chile	0.0	0.0
Colombia	0.7	0.1
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.7</b>	<b>0.2</b>
China	0.0	0.0
India	1.0	0.1
Indonesia	0.0	0.0
Korea	0.0	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.0	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>1.0</b>	<b>0.1</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>1.7</b>	<b>0.3</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	William Blair Small Cap Growth	Russell 2000 Growth Index
Cash	0.0	0.0
Other	5.7	2.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# WILLIAM BLAIR SMALL CAP GROWTH

William Blair Small Cap Growth vs. Russell 2000 Growth Index



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	2.5	1.5	92.5	97.0	1.0	0.0	0.0	0.0	1.0
Asia Pacific	-10.1	1.2	1.0	0.2	0.0	0.0	0.0	-0.1	-0.1
EMEA	14.7	-1.1	2.6	1.1	0.2	0.0	0.0	0.2	0.4
Other	28.2	15.2	3.9	1.7	0.2	0.3	0.0	0.3	0.8
<b>Total</b>	<b>3.7</b>	<b>1.7</b>	<b>100.0</b>	<b>100.0</b>	<b>1.4</b>	<b>0.3</b>	<b>0.0</b>	<b>0.4</b>	<b>2.0</b>
<b>Totals</b>									
Developed Markets	2.6	1.5	93.6	97.9	1.1	0.0	0.0	0.0	1.1
Emerging Markets	5.1	-4.8	2.5	0.4	0.0	-0.1	0.0	0.2	0.1
Other	28.2	15.2	3.9	1.7	0.2	0.3	0.0	0.3	0.8

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.





# WILLIAM BLAIR SMALL CAP GROWTH

William Blair Small Cap Growth

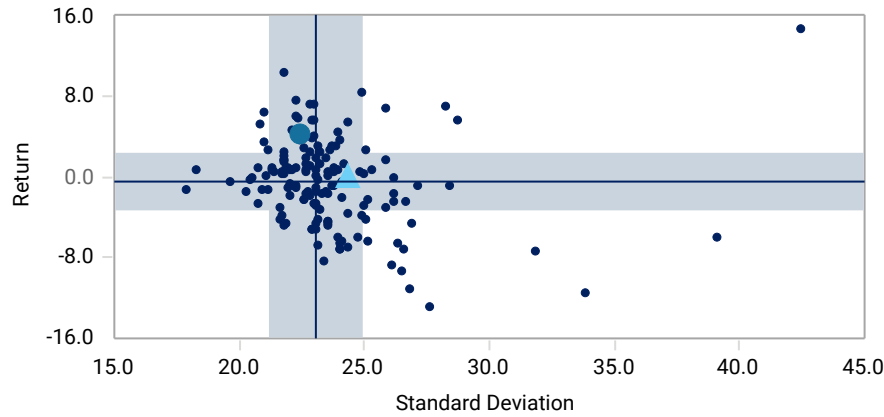
Style Map: (3 Years)



● William Blair Small Cap Growth ▲ Russell 2000 Growth Index

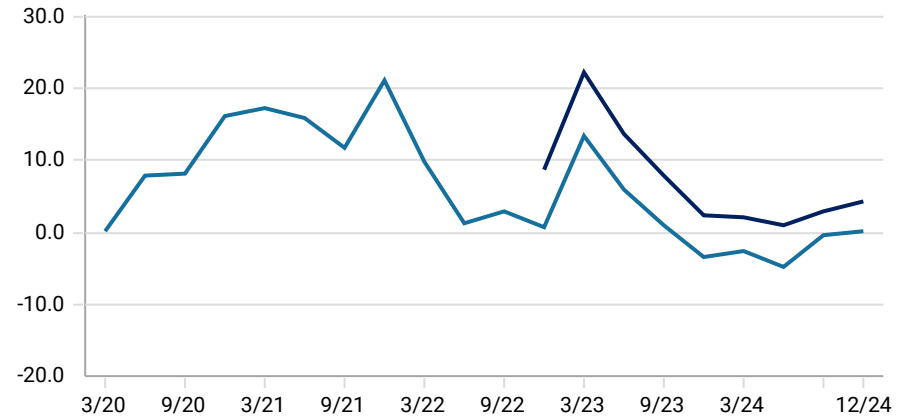
# WILLIAM BLAIR SMALL CAP GROWTH

3 Years Annualized Return vs. Annualized Standard Deviation



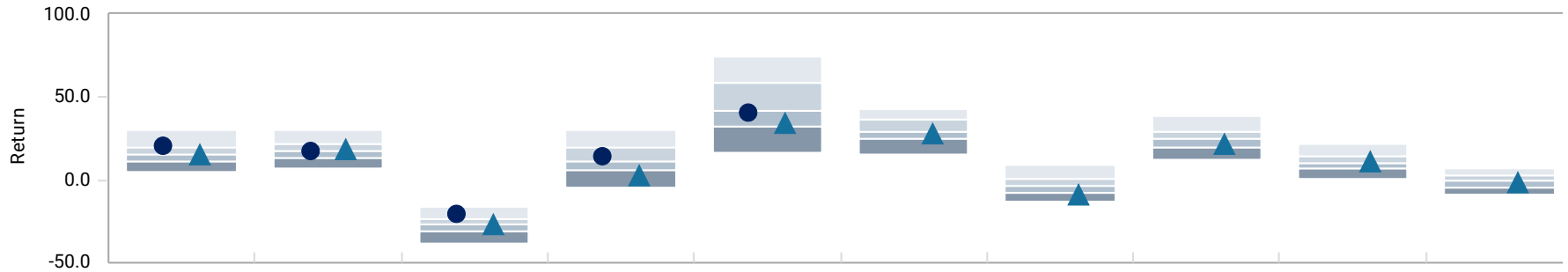
● William Blair Small Cap Growth ▲ Russell 2000 Growth Index

Rolling 3 Years Annualized Return (%)



— William Blair Small Cap Growth — Russell 2000 Growth Index

eV US Small Cap Growth Equity



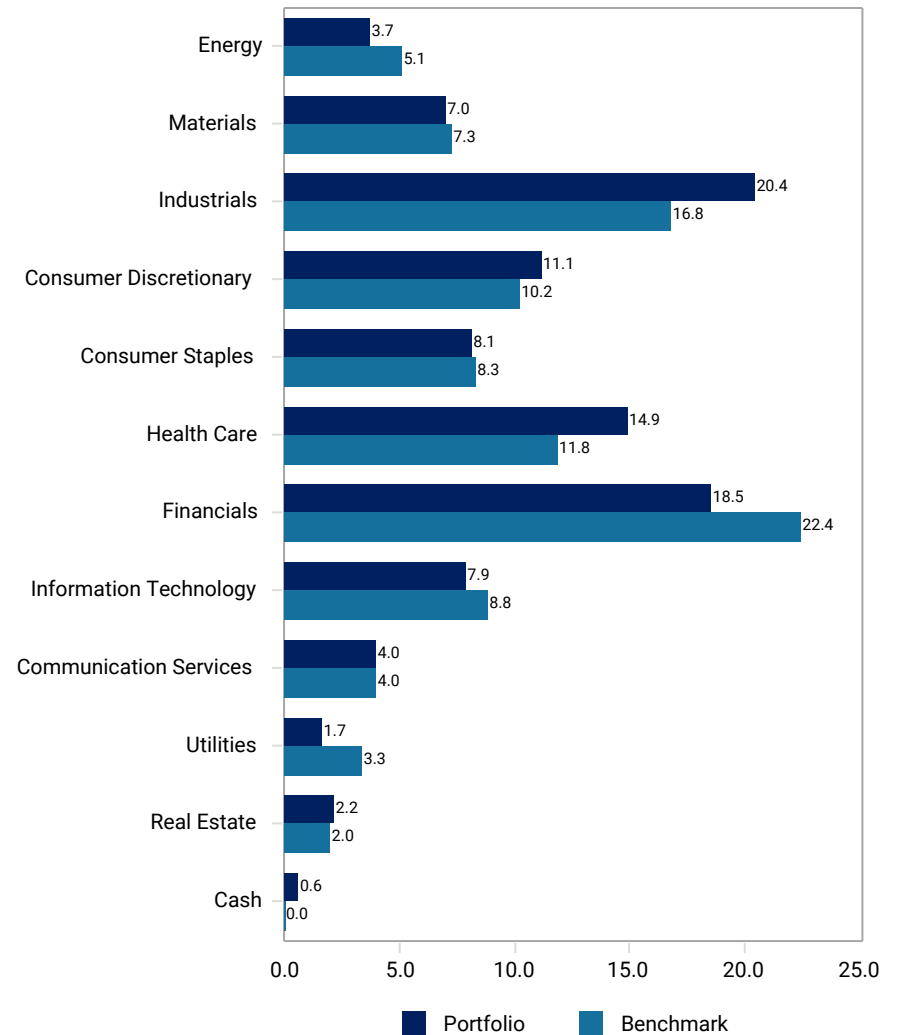
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	20.9 (21)	17.7 (50)	-20.1 (12)	14.5 (43)	40.6 (53)					
▲ Benchmark	15.2 (52)	18.7 (45)	-26.4 (44)	2.8 (85)	34.6 (67)	28.5 (53)	-9.3 (82)	22.2 (62)	11.3 (48)	-1.4 (56)
5th Percentile	29.9	30.2	-16.2	29.8	74.9	42.6	9.6	39.1	21.7	7.0
1st Quartile	19.9	21.3	-23.6	19.3	58.3	36.5	0.7	29.1	14.8	2.5
Median	15.5	17.7	-27.3	11.6	42.2	29.6	-3.7	24.8	10.6	-0.8
3rd Quartile	10.8	13.4	-31.3	5.9	32.0	24.7	-7.5	19.9	6.9	-4.1
95th Percentile	4.9	6.8	-38.4	-4.9	16.5	15.9	-12.5	12.8	0.3	-9.1
Population	152	163	173	183	184	190	194	197	203	215

# BIVIUM INTL EQUITY

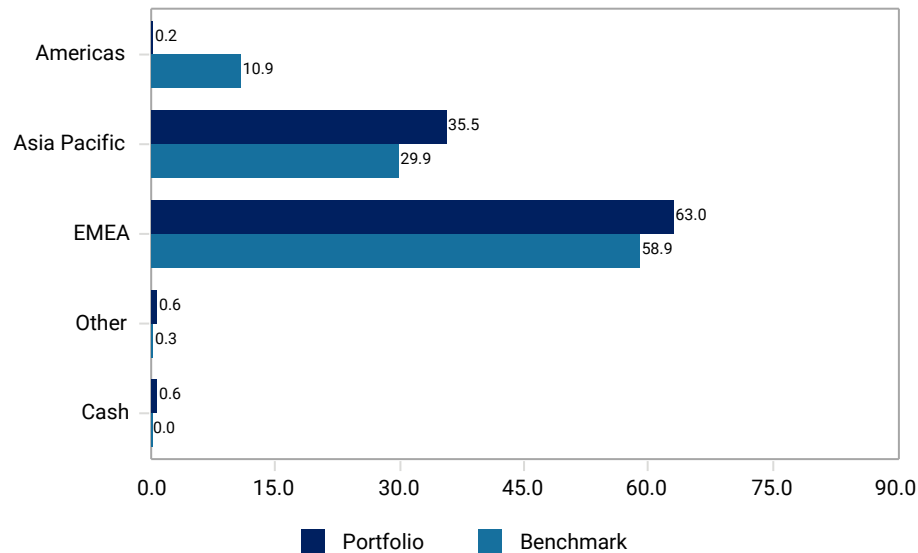
## Bivium Intl Equity vs. MSCI World ex U.S. (Net)

Characteristics	Portfolio	
	Portfolio	Benchmark
Number of Stocks	444	817
Wtd. Avg. Mkt. Cap \$B	61.7	91.9
Median Mkt. Cap \$B	9.8	15.9
Price/Earnings ratio	12.5	15.6
Price/Book ratio	2.4	2.6
Return on Equity (%)	4.4	4.4
Current Yield (%)	3.0	3.0
Beta (5 Years, Monthly)	1.0	1.0
R-Squared (5 Years, Monthly)	1.0	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)



# BIVIUM INTL EQUITY

## Bivium Intl Equity vs. MSCI World ex U.S. (Net)

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
Novo Nordisk A/S	2.8	-18.2	Monotaro Co Ltd	0.2	42.6	Novo Nordisk A/S	-0.2	-18.2
Itochu Corp	1.7	11.3	3I Group PLC	0.1	14.4	Disco Corp	-0.3	-30.7
3I Group PLC	1.6	14.4	DBS Group Holdings Ltd	0.1	14.1	Tokyo Electron Ltd	-0.1	-17.8
Atlas Copco AB (publ)	1.5	3.0	BioMerieux	0.1	26.3	Kering SA	-0.1	-21.0
LVMH Moet Hennessy Louis	1.4	0.5	Itochu Corp	0.0	11.3	Shell Plc	0.0	-8.3
DBS Group Holdings Ltd	1.4	14.1	Koninklijke Ahold Delhaize NV	0.1	19.1	Stellantis NV	0.0	-30.0
LOreal SA	1.4	2.1	Fresenius SE & Co KGaA	0.1	27.9	ASML Holding NV	0.5	-19.3
Sage Group PLC	1.3	-0.1	ZOZO Inc	0.1	47.0	BE Semiconductor Industries NV	-0.1	-24.3
L'Air Liquide SA	1.3	11.9	Prosus NV	0.1	22.9	Subaru Corp	-0.1	-16.7
EssilorLuxottica Societe anonyme	1.2	10.0	Sonova Holding AG	0.1	16.6	Bayerische Motoren	-0.1	-6.7

## Equity Sector Attribution

	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.1	0.0	0.1	0.0	-2.9	-2.1	4.2	5.7
Materials	0.0	0.0	0.0	0.0	10.5	10.9	7.7	7.2
Industrials	0.3	0.2	0.0	0.0	10.2	9.0	19.8	16.5
Consumer Discretionary	0.2	0.2	0.0	0.0	7.3	5.1	10.8	10.6
Consumer Staples	-0.1	-0.1	0.0	0.0	9.0	10.4	7.9	8.1
Health Care	0.2	0.2	-0.1	0.1	6.4	4.6	15.1	12.1
Financials	-0.1	0.1	-0.2	0.0	12.1	11.8	17.4	21.6
Information Technology	0.0	0.0	0.0	0.0	-0.3	-0.4	9.7	9.5
Communication Services	0.0	0.0	0.0	0.0	11.4	11.6	3.4	3.8
Utilities	-0.2	-0.1	-0.1	0.1	11.5	15.2	1.2	3.1
Real Estate	0.0	0.1	0.0	0.0	21.0	17.5	1.7	1.9
Cash	-0.1	0.0	-0.1	0.0	0.0	0.0	1.1	0.0
<b>Total</b>	<b>0.3</b>	<b>0.5</b>	<b>-0.4</b>	<b>0.2</b>	<b>8.1</b>	<b>7.8</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	Bivium Intl Equity	MSCI World ex U.S. (Net)
Canada	0.0	11.5
United States	0.0	0.0
<b>Americas</b>	<b>0.0</b>	<b>11.5</b>
Australia	0.0	6.2
Hong Kong	0.0	1.8
Japan	0.0	20.6
New Zealand	0.0	0.3
Singapore	0.0	1.5
<b>Asia Pacific</b>	<b>0.0</b>	<b>30.3</b>
Austria	0.0	0.2
Belgium	0.0	0.7
Denmark	0.0	2.6
Finland	0.0	0.9
France	0.0	9.1
Germany	0.0	8.1
Ireland	0.0	0.7
Israel	0.0	0.9
Italy	0.0	2.3
Netherlands	0.0	4.9
Norway	0.0	0.5
Portugal	0.0	0.1
Spain	0.0	2.3
Sweden	0.0	2.8
Switzerland	0.0	8.8
United Kingdom	0.0	12.7
<b>EMEA</b>	<b>0.0</b>	<b>57.5</b>
<b>Developed Markets</b>	<b>0.0</b>	<b>99.3</b>

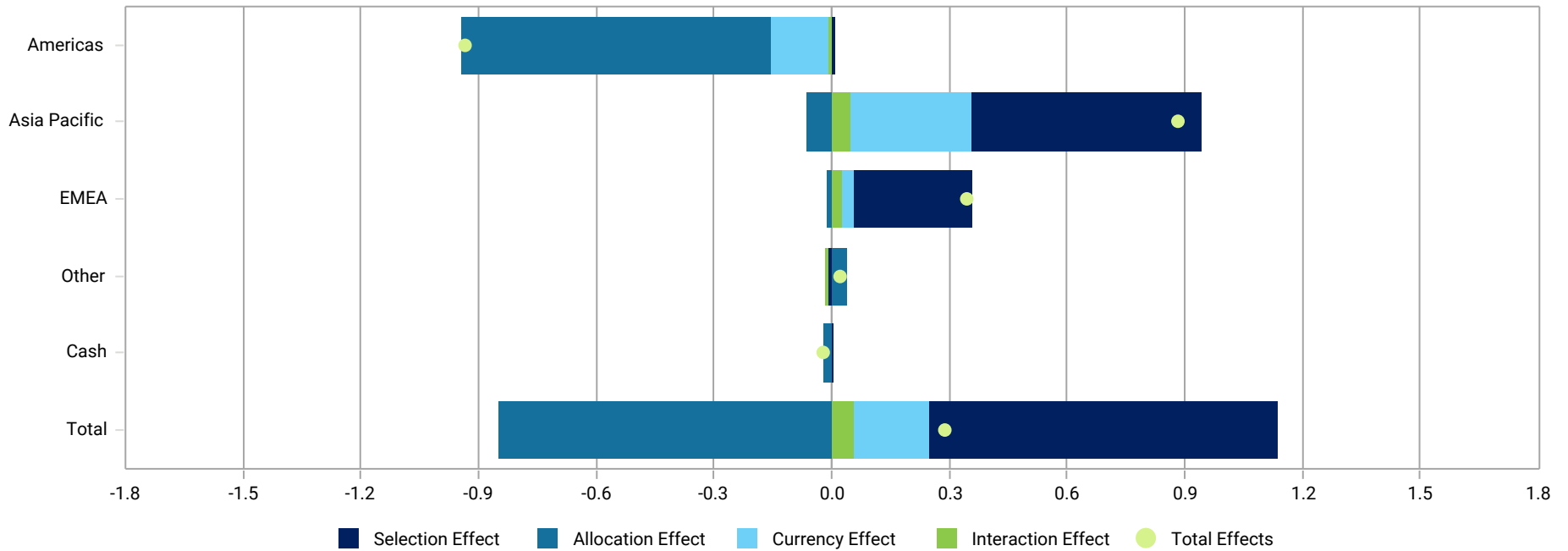
	Bivium Intl Equity	MSCI World ex U.S. (Net)
Brazil	0.0	0.0
Chile	0.0	0.0
Colombia	0.0	0.0
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.0</b>	<b>0.0</b>
China	0.0	0.0
India	0.0	0.0
Indonesia	0.0	0.0
Korea	0.0	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.0	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.0</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>0.0</b>	<b>0.0</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	Bivium Intl Equity	MSCI World ex U.S. (Net)
Cash	0.0	0.0
Other	0.0	0.7
<b>Total</b>	<b>0.0</b>	<b>100.0</b>

# BIVIUM INTL EQUITY

Bivium Intl Equity vs. MSCI World ex U.S. (Net)

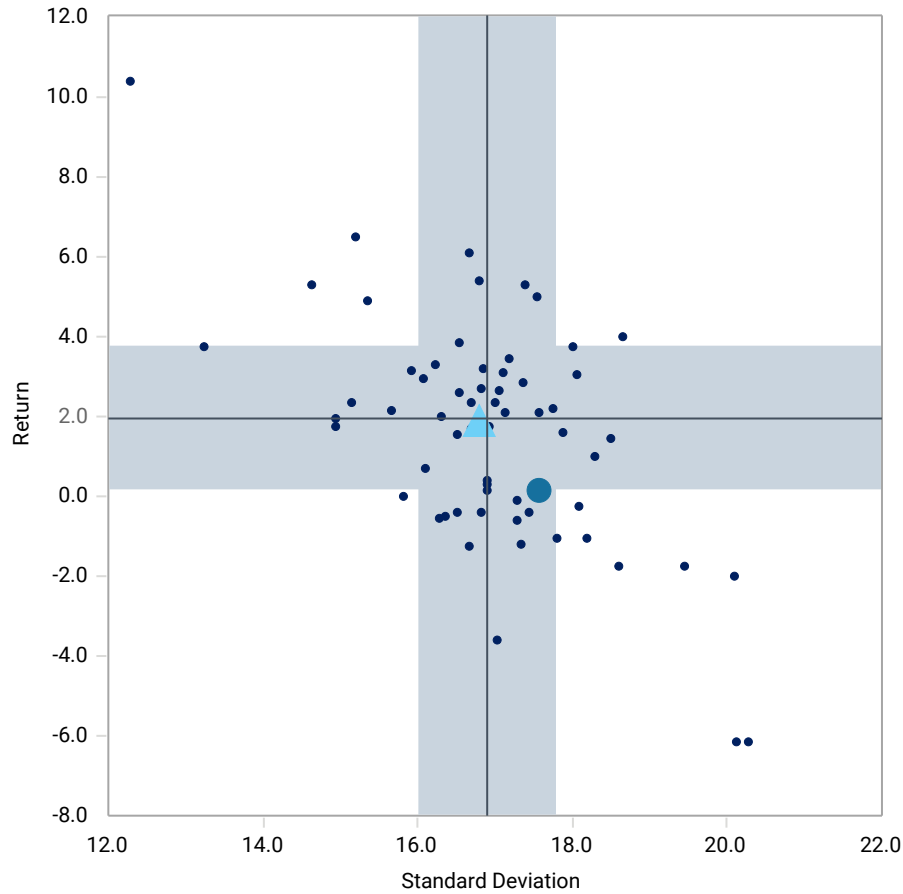


	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	11.0	12.2	1.5	10.5	0.0	-0.8	-0.1	0.0	-0.9
Asia Pacific	10.7	8.4	32.1	29.8	0.6	-0.1	0.3	0.0	0.9
EMEA	6.9	6.7	64.6	59.4	0.3	0.0	0.0	0.0	0.3
Other	11.7	16.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0
Cash	0.0		1.1	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>8.1</b>	<b>7.8</b>	<b>100.0</b>	<b>100.0</b>	<b>0.9</b>	<b>-0.8</b>	<b>0.2</b>	<b>0.1</b>	<b>0.3</b>
<b>Totals</b>									
Developed Markets	8.1	7.8	97.4	99.7	-0.1	0.0	0.2	0.0	0.1
Emerging Markets	20.4		0.9	0.0	0.0	0.1	0.0	0.0	0.2
Other	11.7	16.6	0.6	0.3	0.0	0.0	0.0	0.0	0.0
Cash	0.0		1.1	0.0	0.0	0.0	0.0	0.0	0.0

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# BIVIUM INTL EQUITY

3 Years Return vs. Standard Deviation



Style Map: (3 Years)

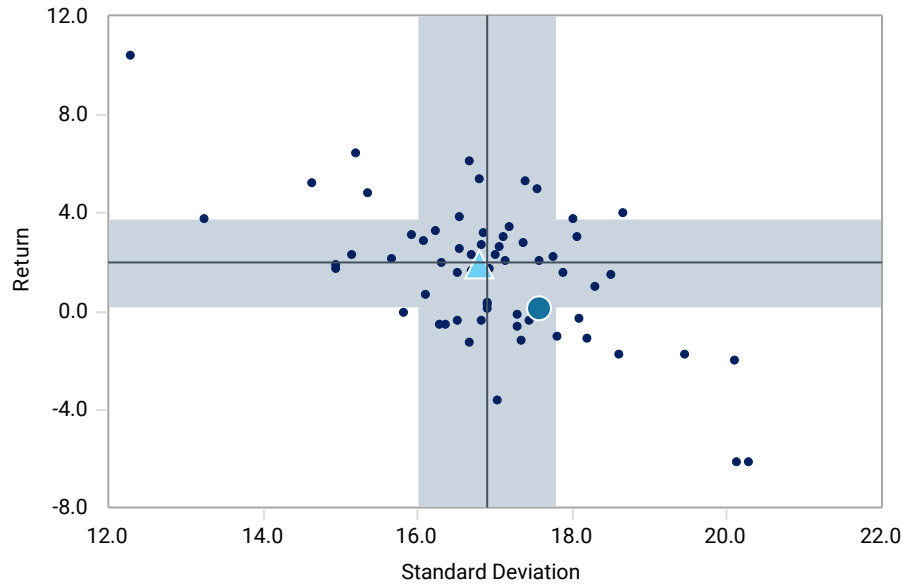


	Return	Standard Deviation
● Bivium Intl Equity	0.1	17.6
▲ MSCI World ex U.S. (Net)	1.9	16.8
— Median	2.0	16.9
Population	62	62



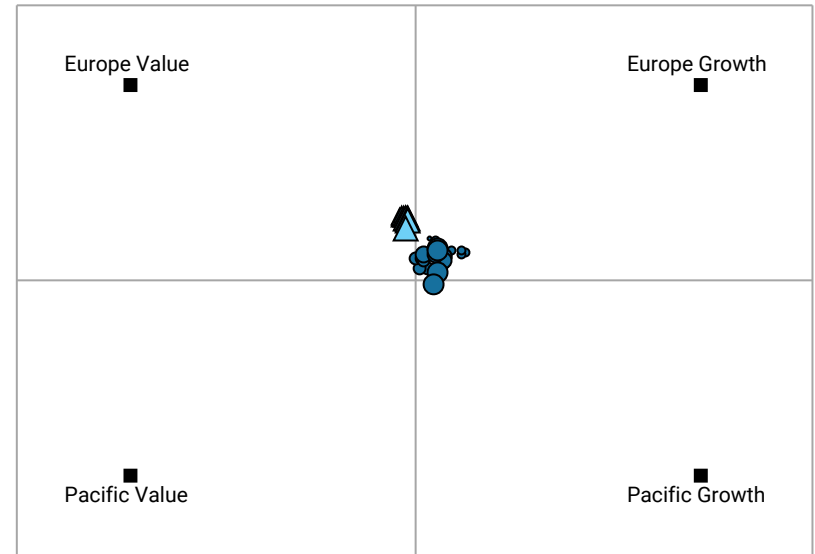
# BIVIUM INTL EQUITY

3 Years Return vs. Standard Deviation

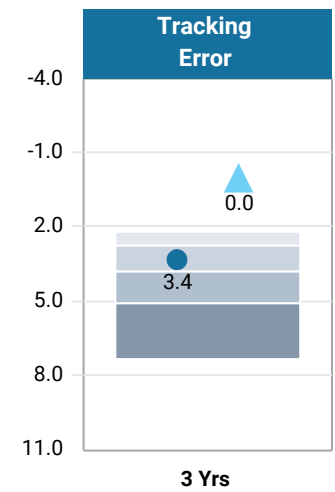
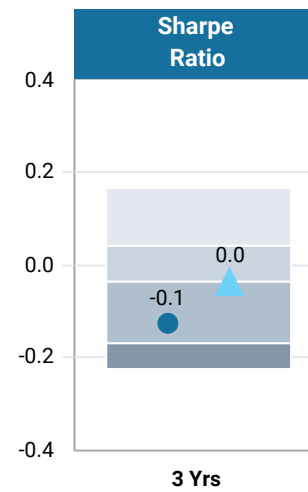
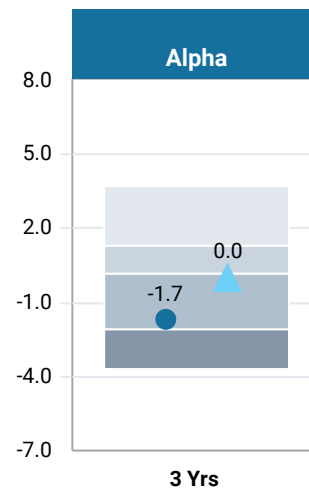
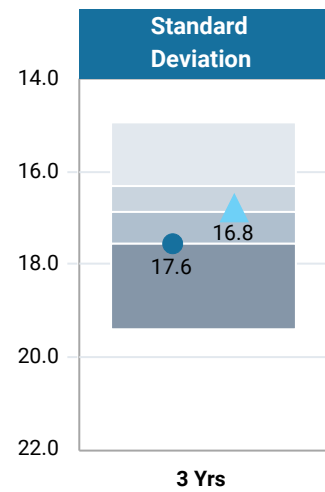
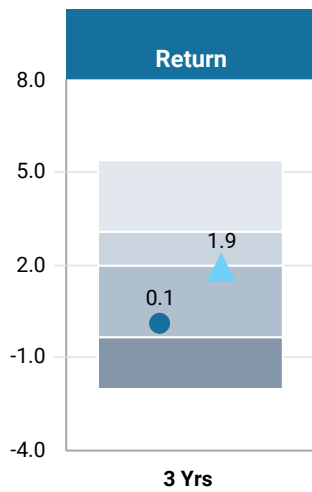


● Bivium Intl Equity    ▲ MSCI World ex U.S. (Net)

Rolling 3 Years Style Map



● Bivium Intl Equity    ▲ MSCI World ex U.S. (Net)



# BIVIUM INTL EQUITY

## Bivium Intl Equity vs. EAFE Map

Style Map: (3 Years)

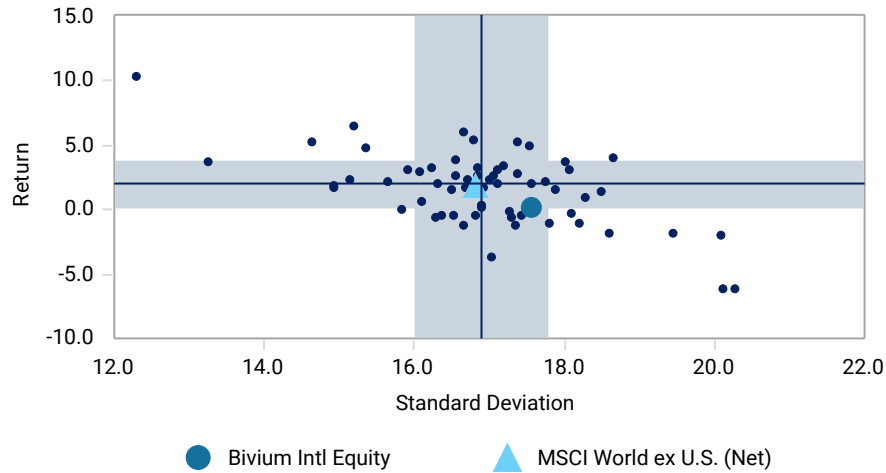


● Bivium Intl Equity

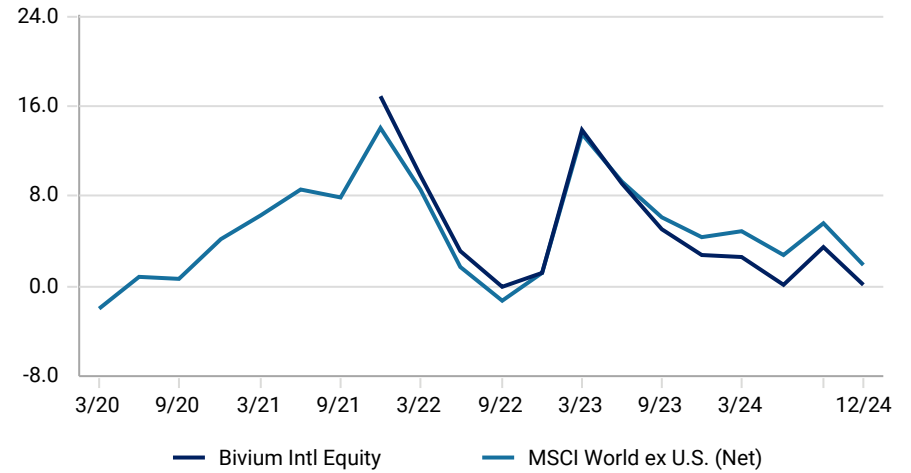
▲ MSCI World ex U.S. (Net)

# BIVIUM INTL EQUITY

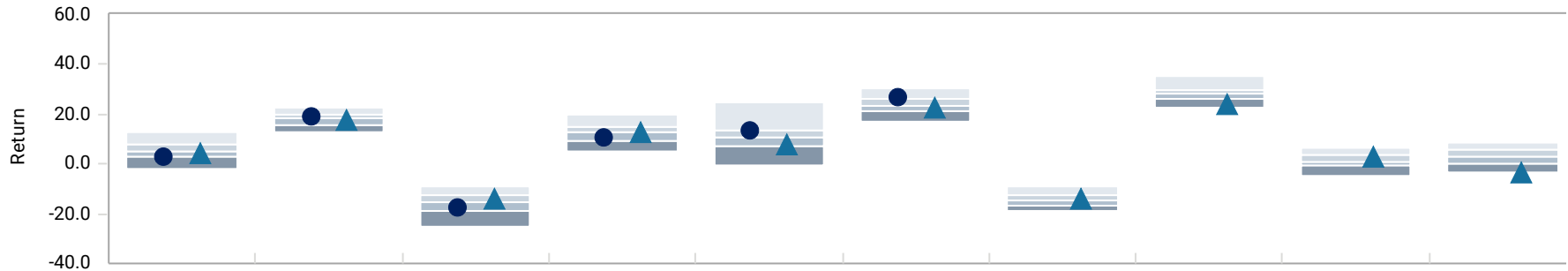
3 Years Annualized Return vs. Annualized Standard Deviation



Rolling 3 Years Annualized Return (%)



eV EAFE All Cap Core



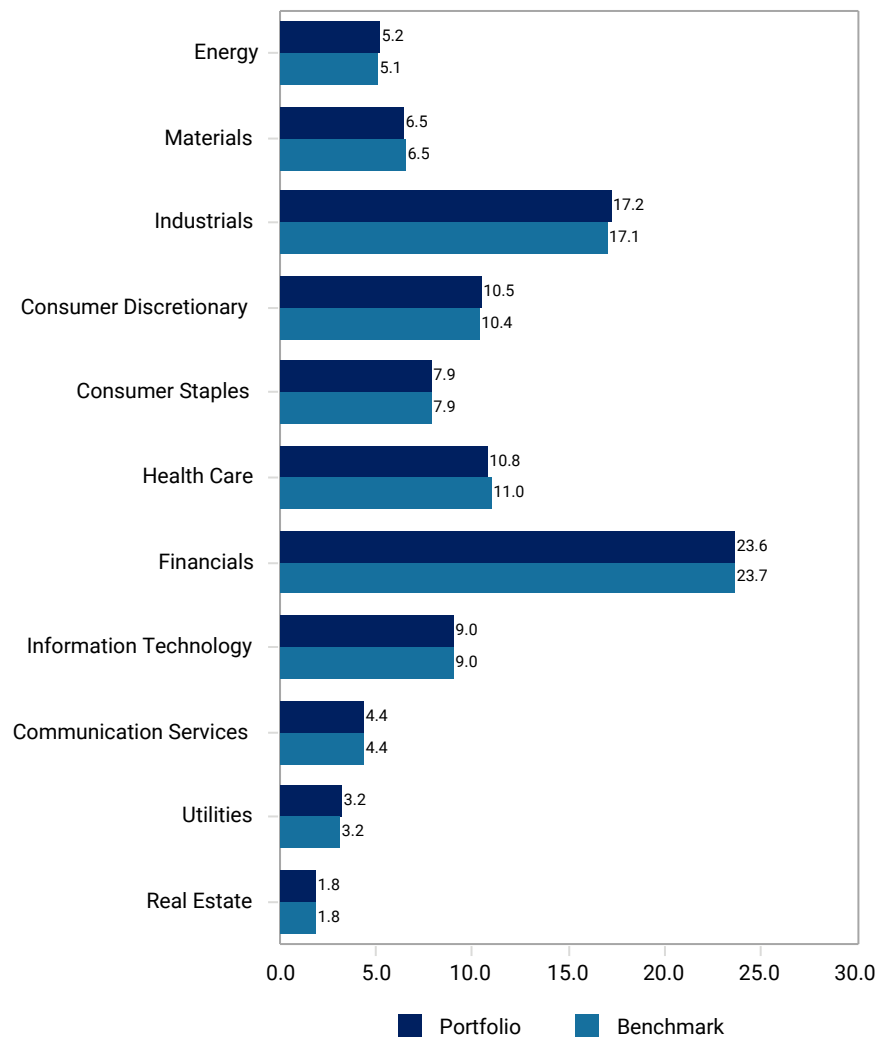
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	2.7 (77)	19.0 (38)	-17.8 (72)	11.0 (67)	13.4 (26)	27.0 (20)				
▲ Benchmark	4.7 (61)	17.9 (56)	-14.3 (39)	12.6 (53)	7.6 (74)	22.5 (62)	-14.1 (43)	24.2 (88)	2.7 (36)	-3.0 (94)
5th Percentile	12.8	22.7	-9.3	19.9	24.5	30.7	-8.9	35.2	6.6	8.6
1st Quartile	7.6	20.1	-12.5	14.8	13.6	26.5	-12.4	30.0	3.4	5.5
Median	5.2	18.1	-15.6	12.9	10.4	23.7	-14.6	28.0	1.2	2.8
3rd Quartile	2.7	15.8	-18.8	9.5	7.4	20.9	-16.6	26.1	-0.8	0.5
95th Percentile	-1.7	13.0	-24.9	5.1	-0.5	16.8	-19.1	22.4	-5.1	-3.6
Population	65	67	70	73	76	81	84	83	80	78

# BLACKROCK MSCI WORLD EX-US INDEX FD A

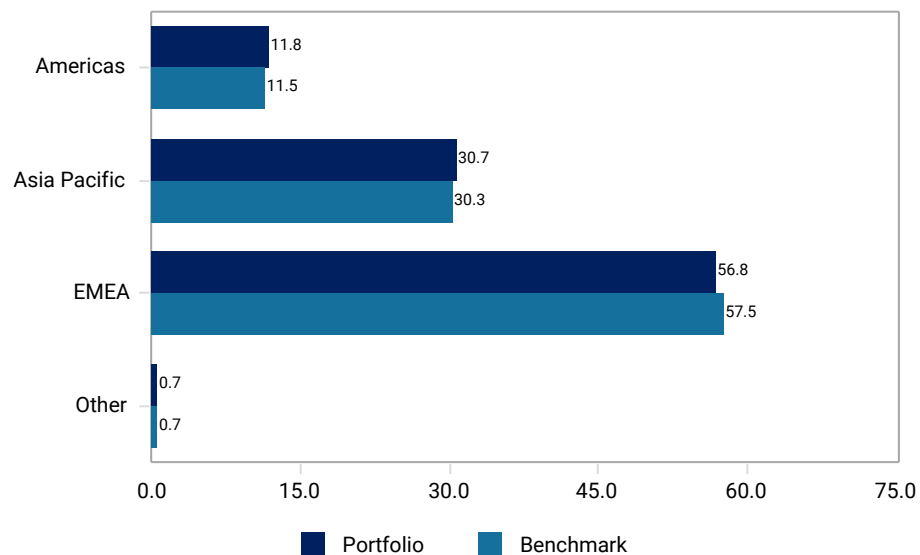
BlackRock MSCI World ex-US Index Fd A vs. MSCI World ex U.S. (Net)

Characteristics	Portfolio	
	Portfolio	Benchmark
Number of Stocks	851	806
Wtd. Avg. Mkt. Cap \$B	82.7	83.1
Median Mkt. Cap \$B	14.9	14.9
Price/Earnings ratio	12.1	16.7
Price/Book ratio	2.7	2.4
Return on Equity (%)	5.0	4.5
Current Yield (%)	1.4	3.1
Beta (5 Years, Monthly)	1.0	1.0
R-Squared (5 Years, Monthly)	1.0	1.0

Equity Sector Allocation (%)



Region Allocation (%)



# BLACKROCK MSCI WORLD EX-US INDEX FD A

## BlackRock MSCI World ex-US Index Fd A vs. MSCI World ex U.S. (Net)

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
ASML Holding NV	1.6	-15.7	Shopify Inc	0.0	32.7	Novo Nordisk A/S	0.0	-26.3
Novo Nordisk A/S	1.5	-26.3	Toyota Motor Corp	0.0	11.3	ASML Holding NV	0.0	-15.7
SAP SE	1.3	7.0	SAP SE	0.0	7.0	Nestle SA, Cham Und Vevey	0.0	-19.3
Toyota Motor Corp	1.1	11.3	Recruit Holdings Co Ltd	0.0	16.5	Astrazeneca PLC	0.0	-15.8
Astrazeneca PLC	1.1	-15.8	Sony Group Corporation	0.0	11.6	BHP Group Ltd	0.0	-20.7
Nestle SA, Cham Und Vevey	1.1	-19.3	HSBC Holdings PLC	0.0	5.8	LVMH Moet Hennessy Louis	0.0	-15.0
Shell Plc	1.0	-8.0	Siemens Energy AG	0.0	41.9	Novartis AG	0.0	-12.9
LVMH Moet Hennessy Louis	1.0	-15.0	DBS Group Holdings Ltd	0.0	14.6	Roche Holding AG	0.0	-12.0
Roche Holding AG	1.0	-12.0	arGEN-X SE	0.0	24.1	LOreal SA	0.0	-22.7
Novartis AG	1.0	-12.9	Sumitomo Mitsui Financial Group Inc	0.0	8.9	TotalEnergies SE	0.0	-15.8

Equity Sector Attribution								
	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.0	0.0	0.0	0.0	-5.3	-5.1	5.2	5.1
Materials	0.1	0.1	0.0	0.0	-14.6	-16.7	7.4	7.3
Industrials	0.3	0.3	0.0	0.0	-4.7	-6.5	16.8	16.8
Consumer Discretionary	0.1	0.1	0.0	0.0	-3.8	-4.3	10.2	10.2
Consumer Staples	0.1	0.1	0.0	0.0	-10.4	-12.0	8.2	8.3
Health Care	0.2	0.2	0.0	0.0	-12.3	-14.2	11.6	11.8
Financials	0.0	0.0	0.0	0.0	-1.8	-1.8	22.5	22.4
Information Technology	0.0	0.0	0.0	0.0	-4.6	-4.8	8.9	8.8
Communication Services	0.0	0.0	0.0	0.0	-4.6	-4.6	4.0	4.0
Utilities	0.1	0.1	0.0	0.0	-9.9	-12.3	3.4	3.3
Real Estate	0.1	0.1	0.0	0.0	-8.7	-13.3	2.0	2.0
<b>Total</b>	<b>1.1</b>	<b>1.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-6.3</b>	<b>-7.4</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	BlackRock MSCI World ex-US Index Fd A	MSCI World ex U.S. (Net)
Canada	11.7	11.5
United States	0.1	0.0
<b>Americas</b>	<b>11.8</b>	<b>11.5</b>
Australia	6.3	6.2
Hong Kong	1.8	1.8
Japan	20.8	20.6
New Zealand	0.3	0.3
Singapore	1.5	1.5
<b>Asia Pacific</b>	<b>30.7</b>	<b>30.3</b>
Austria	0.1	0.2
Belgium	0.7	0.7
Denmark	2.5	2.6
Finland	0.8	0.9
France	9.2	9.1
Germany	7.8	8.1
Ireland	0.6	0.7
Israel	0.9	0.9
Italy	2.3	2.3
Netherlands	5.0	4.9
Norway	0.5	0.5
Portugal	0.1	0.1
Spain	2.4	2.3
Sweden	2.8	2.8
Switzerland	8.2	8.8
United Kingdom	12.9	12.7
<b>EMEA</b>	<b>56.8</b>	<b>57.5</b>
<b>Developed Markets</b>	<b>99.3</b>	<b>99.3</b>

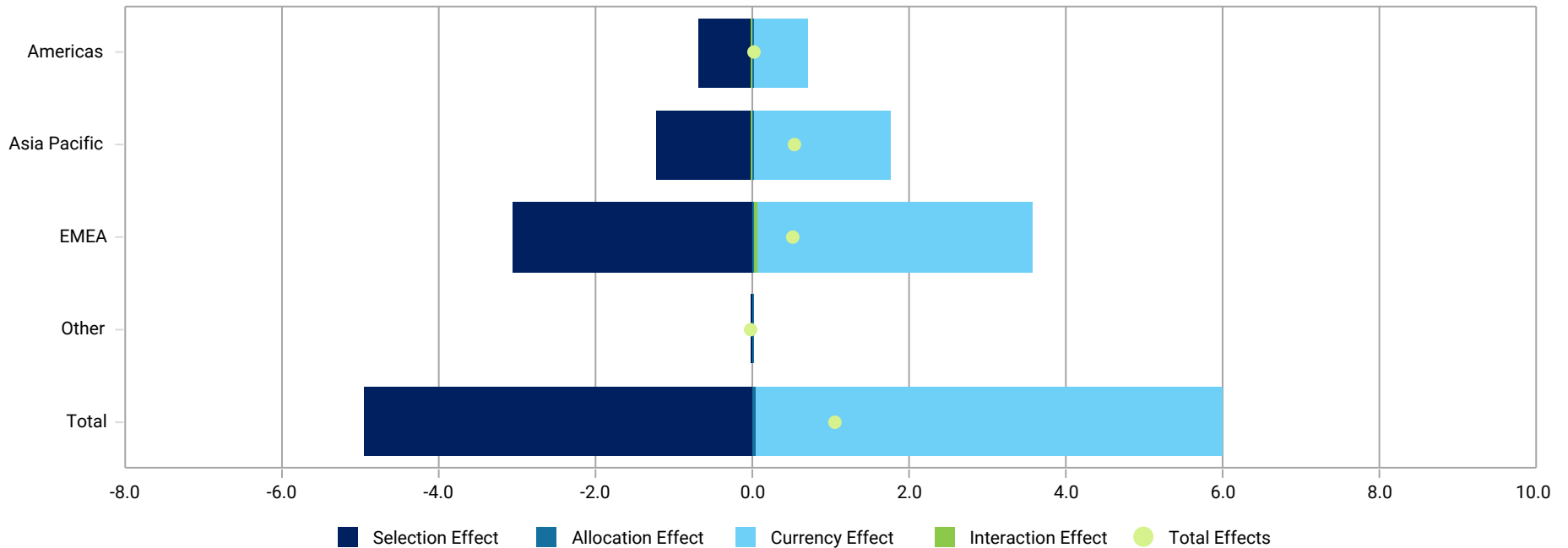
	BlackRock MSCI World ex-US Index Fd A	MSCI World ex U.S. (Net)
Brazil	0.0	0.0
Chile	0.0	0.0
Colombia	0.0	0.0
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.0</b>	<b>0.0</b>
China	0.0	0.0
India	0.0	0.0
Indonesia	0.0	0.0
Korea	0.0	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.0	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.0</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>0.0</b>	<b>0.0</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	BlackRock MSCI World ex-US Index Fd A	MSCI World ex U.S. (Net)
Cash	0.0	0.0
Other	0.7	0.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# BLACKROCK MSCI WORLD EX-US INDEX FD A

BlackRock MSCI World ex-US Index Fd A vs. MSCI World ex U.S. (Net)



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	-1.4	-1.6	11.1	10.9	-0.7	0.0	0.7	0.0	0.0
Asia Pacific	-3.6	-5.5	30.4	29.9	-1.2	0.0	1.7	0.0	0.5
EMEA	-8.7	-9.4	58.2	58.9	-3.1	0.0	3.5	0.0	0.5
Other	-8.0	-2.6	0.3	0.3	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>-6.3</b>	<b>-7.4</b>	<b>100.0</b>	<b>100.0</b>	<b>-5.0</b>	<b>0.0</b>	<b>6.0</b>	<b>0.0</b>	<b>1.1</b>
<b>Totals</b>									
Developed Markets	-6.3	-7.4	99.7	99.7	-4.9	0.0	5.9	0.0	1.1
Other	-8.0	-2.6	0.3	0.3	0.0	0.0	0.0	0.0	0.0

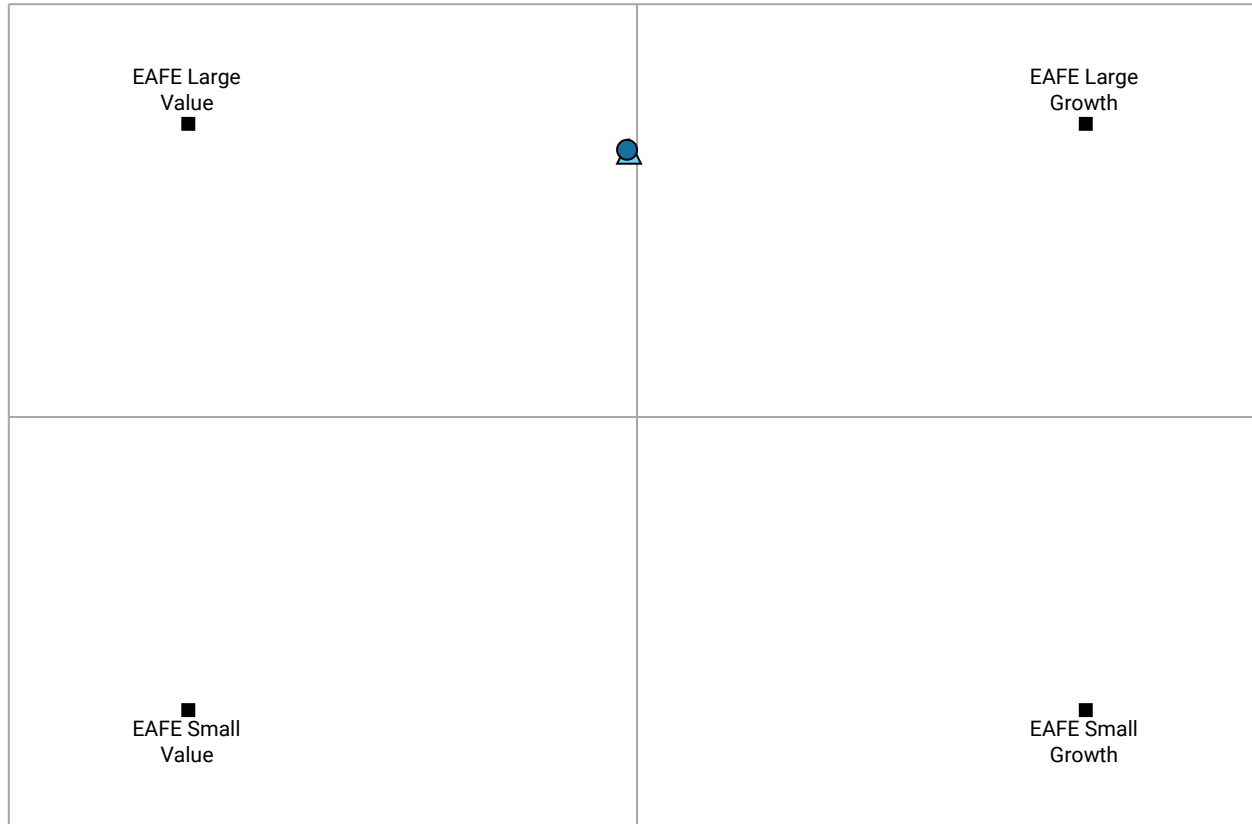
Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.



# BLACKROCK MSCI WORLD EX-US INDEX FD A

BlackRock MSCI World ex-US Index Fd A vs. EAFE Map

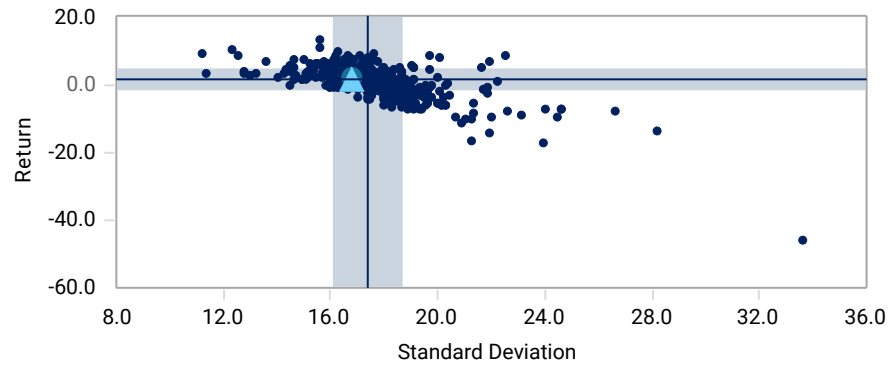
Style Map: (3 Years)



● BlackRock MSCI World ex-US Index Fd A    ▲ MSCI World ex U.S. (Net)

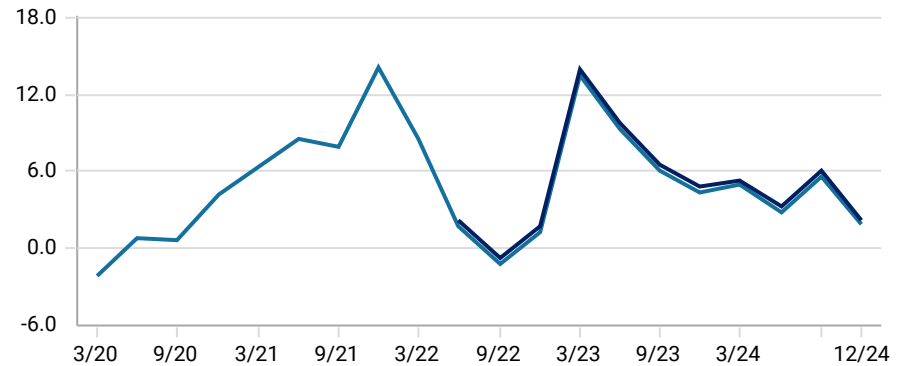
# BLACKROCK MSCI WORLD EX-US INDEX FD A

3 Years Annualized Return vs. Annualized Standard Deviation



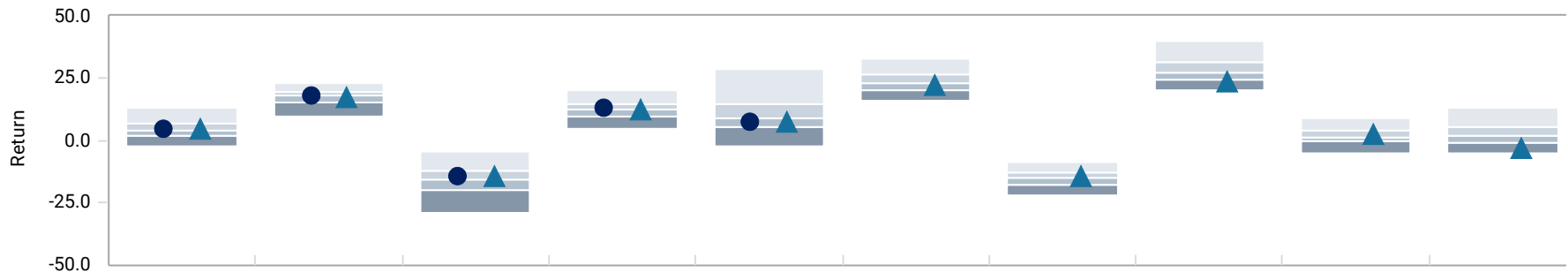
- BlackRock MSCI World ex-US Index Fd A
- ▲ MSCI World ex U.S. (Net)

Rolling 3 Years Annualized Return (%)



- BlackRock MSCI World ex-US Index Fd A
- MSCI World ex U.S. (Net)

eV All EAFE Equity



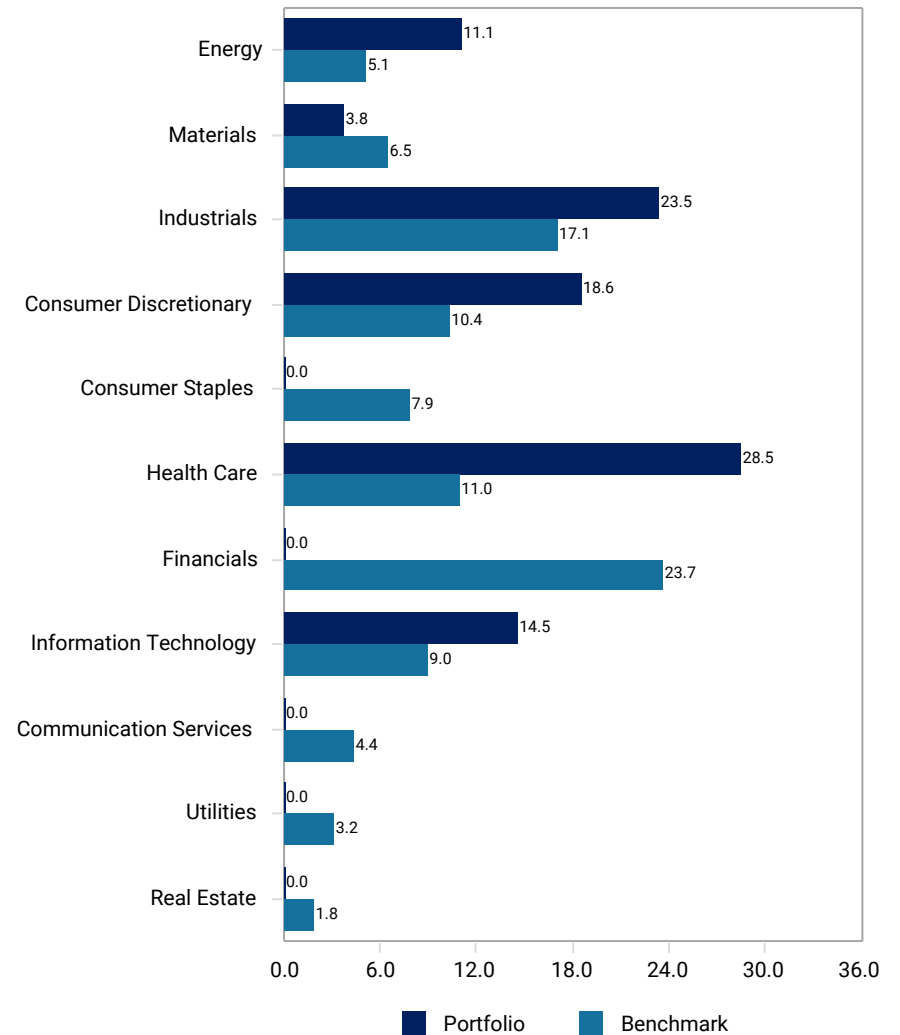
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	4.8 (48)	18.4 (44)	-13.8 (38)	13.1 (44)	8.0 (60)					
▲ Benchmark	4.7 (49)	17.9 (53)	-14.3 (44)	12.6 (51)	7.6 (64)	22.5 (57)	-14.1 (42)	24.2 (79)	2.7 (36)	-3.0 (89)
5th Percentile	13.4	23.4	-4.2	20.2	29.0	32.9	-8.4	40.2	9.5	13.2
1st Quartile	7.4	20.0	-11.8	15.1	15.0	26.8	-12.7	32.0	4.1	5.6
Median	4.6	18.1	-15.2	12.7	9.0	23.3	-15.0	27.8	1.5	1.9
3rd Quartile	1.9	15.2	-19.9	10.1	5.4	20.4	-17.6	24.9	-0.3	-0.8
95th Percentile	-2.3	9.7	-28.6	5.0	-2.2	16.5	-22.1	20.6	-5.0	-5.0
Population	457	476	507	513	522	531	546	541	537	534

# CAPITAL GROUP

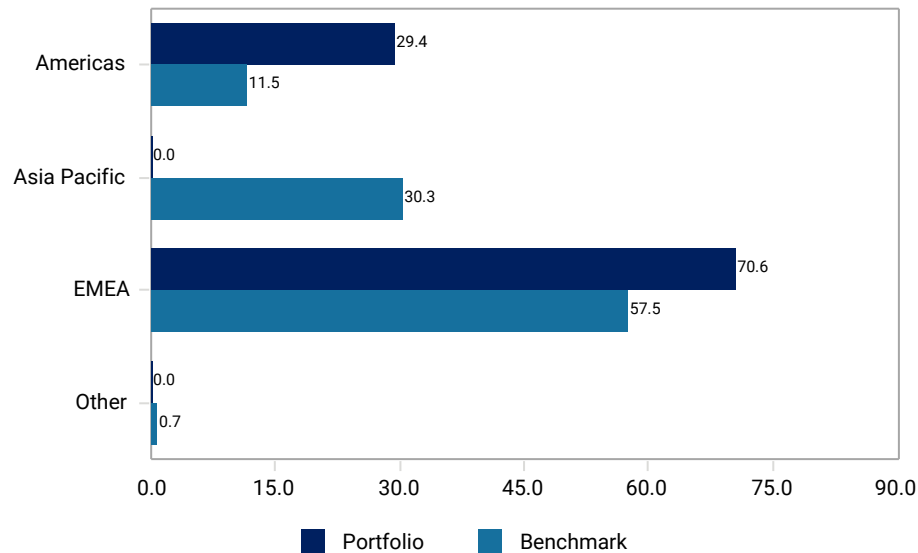
## Capital Group vs. MSCI World ex U.S. (Net)

Characteristics	Capital Group vs. MSCI World ex U.S. (Net)	
	Portfolio	Benchmark
Number of Stocks	162	806
Wtd. Avg. Mkt. Cap \$B	44.4	83.1
Median Mkt. Cap \$B	27.5	14.9
Price/Earnings ratio	8.9	16.7
Price/Book ratio	1.7	2.4
Return on Equity (%)	6.0	4.5
Current Yield (%)	1.0	3.1
Beta (5 Years, Monthly)	1.0	1.0
R-Squared (5 Years, Monthly)	0.9	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)



# CAPITAL GROUP

## Capital Group vs. MSCI World ex U.S. (Net)

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
BioNTech SE	28.5	-4.1	SAP SE	0.4	7.3	Novo Nordisk A/S	-0.6	-26.4
Ryanair Holdings PLC	23.5	-3.5	Airbus SE	0.3	9.4	Capgemini SE	-0.4	-24.3
Flutter Entertainment PLC	18.6	8.9	Recruit Holdings Co Ltd	0.1	16.5	Nestle SA, Cham Und Vevey	-0.1	-18.0
Shopify Inc	14.5	32.7	Shopify Inc	0.0	32.7	TotalEnergies SE	-0.2	-15.4
Cenovus Energy Inc	11.1	-8.7	London Stock Exchange Group PLC	0.3	3.1	Keyence Corp	-0.2	-14.0
Barrick Gold Corp	3.8	-21.6	NatWest Group plc	0.1	9.2	LOreal SA	-0.2	-21.1
ASML Holding NV	0.0		Rheinmetall AG	0.1	17.2	Mitsubishi Corp	-0.2	-19.7
Novo Nordisk A/S	0.0		Melrose Industries PLC	0.1	13.5	Obic Co Ltd	-0.1	-15.4
SAP SE	0.0		Flutter Entertainment PLC	0.1	8.9	Safran SA	0.0	-6.8
Nestle SA, Cham Und Vevey	0.0		DBS Group Holdings Ltd	0.1	9.3	Tokyo Electron Ltd	-0.1	-13.0

## Equity Sector Attribution

	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	-0.4	-0.5	0.0	0.2	-14.5	-5.1	3.5	5.1
Materials	0.2	-0.2	0.3	0.1	-19.3	-16.7	3.7	7.3
Industrials	0.8	0.5	0.1	0.2	-3.7	-6.5	25.1	16.8
Consumer Discretionary	-0.2	-0.1	0.0	0.0	-5.7	-4.3	9.0	10.2
Consumer Staples	-0.5	-0.4	0.0	0.0	-16.7	-12.0	9.1	8.3
Health Care	0.0	0.0	0.0	0.0	-14.1	-14.2	12.3	11.8
Financials	-0.5	0.1	-0.5	0.0	-1.6	-1.8	12.7	22.4
Information Technology	-0.6	-0.4	0.3	-0.4	-9.2	-4.8	19.0	8.8
Communication Services	0.0	0.0	-0.1	0.0	-3.9	-4.6	1.9	4.0
Utilities	0.1	0.1	0.0	0.0	-10.1	-12.3	3.4	3.3
Real Estate	0.1	0.0	0.1	0.0	-13.0	-13.3	0.4	2.0
Cash	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>-1.0</b>	<b>-0.9</b>	<b>0.0</b>	<b>0.0</b>	<b>-8.3</b>	<b>-7.4</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	Capital Group	MSCI World ex U.S. (Net)
Canada	29.4	11.5
United States	0.0	0.0
<b>Americas</b>	<b>29.4</b>	<b>11.5</b>
Australia	0.0	6.2
Hong Kong	0.0	1.8
Japan	0.0	20.6
New Zealand	0.0	0.3
Singapore	0.0	1.5
<b>Asia Pacific</b>	<b>0.0</b>	<b>30.3</b>
Austria	0.0	0.2
Belgium	0.0	0.7
Denmark	0.0	2.6
Finland	0.0	0.9
France	0.0	9.1
Germany	28.5	8.1
Ireland	42.1	0.7
Israel	0.0	0.9
Italy	0.0	2.3
Netherlands	0.0	4.9
Norway	0.0	0.5
Portugal	0.0	0.1
Spain	0.0	2.3
Sweden	0.0	2.8
Switzerland	0.0	8.8
United Kingdom	0.0	12.7
<b>EMEA</b>	<b>70.6</b>	<b>57.5</b>
<b>Developed Markets</b>	<b>100.0</b>	<b>99.3</b>

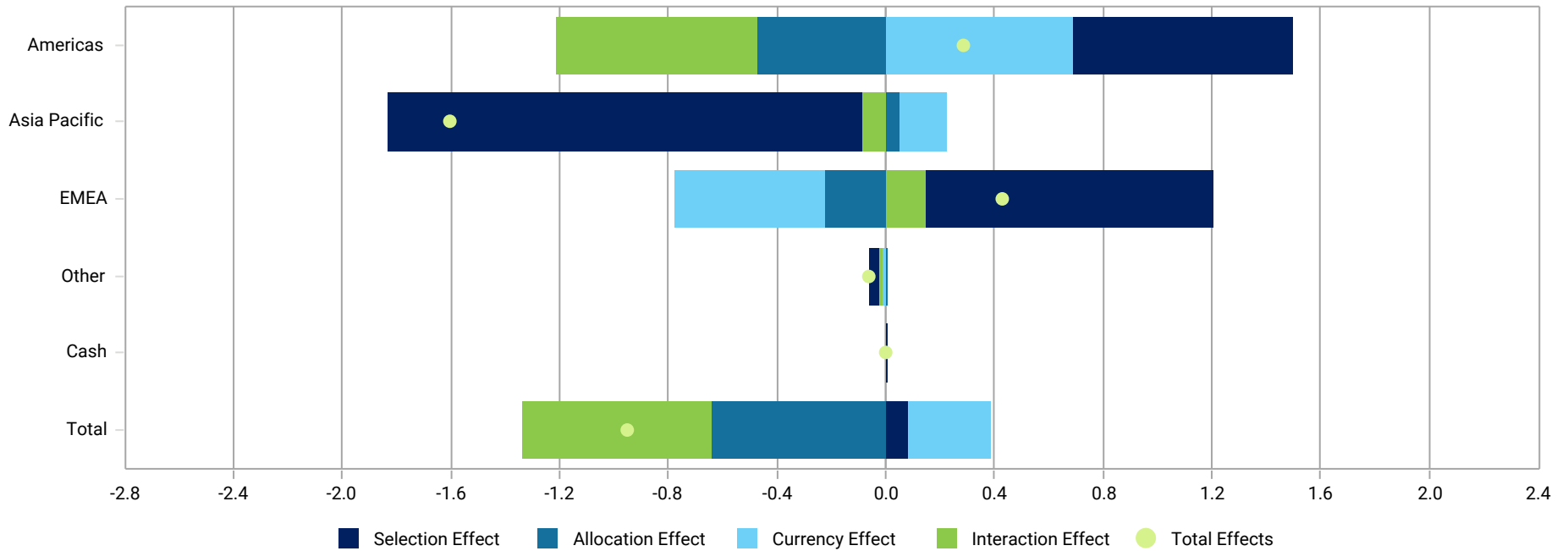
	Capital Group	MSCI World ex U.S. (Net)
Brazil	0.0	0.0
Chile	0.0	0.0
Colombia	0.0	0.0
Mexico	0.0	0.0
Peru	0.0	0.0
<b>Americas</b>	<b>0.0</b>	<b>0.0</b>
China	0.0	0.0
India	0.0	0.0
Indonesia	0.0	0.0
Korea	0.0	0.0
Malaysia	0.0	0.0
Philippines	0.0	0.0
Taiwan	0.0	0.0
Thailand	0.0	0.0
<b>Asia Pacific</b>	<b>0.0</b>	<b>0.0</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.0	0.0
Hungary	0.0	0.0
Kuwait	0.0	0.0
Poland	0.0	0.0
Qatar	0.0	0.0
Saudi Arabia	0.0	0.0
South Africa	0.0	0.0
Turkey	0.0	0.0
United Arab Emirates	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.0</b>
<b>Emerging Markets</b>	<b>0.0</b>	<b>0.0</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	Capital Group	MSCI World ex U.S. (Net)
Cash	0.0	0.0
Other	0.0	0.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# CAPITAL GROUP

Capital Group vs. MSCI World ex U.S. (Net)



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	12.1	-1.6	0.9	10.9	0.8	-0.5	0.7	-0.7	0.3
Asia Pacific	-10.4	-5.5	31.4	29.9	-1.7	0.1	0.2	-0.1	-1.6
EMEA	-7.6	-9.4	67.4	58.9	1.1	-0.2	-0.6	0.2	0.4
Other	-16.2	-2.6	0.4	0.3	0.0	0.0	0.0	0.0	-0.1
Cash	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>-8.3</b>	<b>-7.4</b>	<b>100.0</b>	<b>100.0</b>	<b>0.1</b>	<b>-0.6</b>	<b>0.3</b>	<b>-0.7</b>	<b>-1.0</b>
<b>Totals</b>									
Developed Markets	-8.3	-7.4	99.6	99.7	-1.2	0.0	0.3	0.0	-0.9
Other	-16.2	-2.6	0.4	0.3	0.0	0.0	0.0	0.0	-0.1
Cash	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.



# CAPITAL GROUP

## Capital Group vs. EAFE Map

### Style Map: (3 Years)



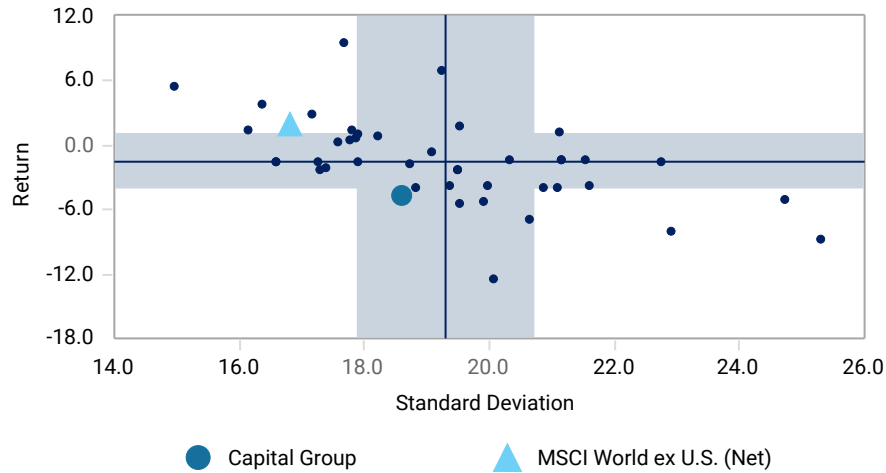
● Capital Group

▲ MSCI World ex U.S. (Net)

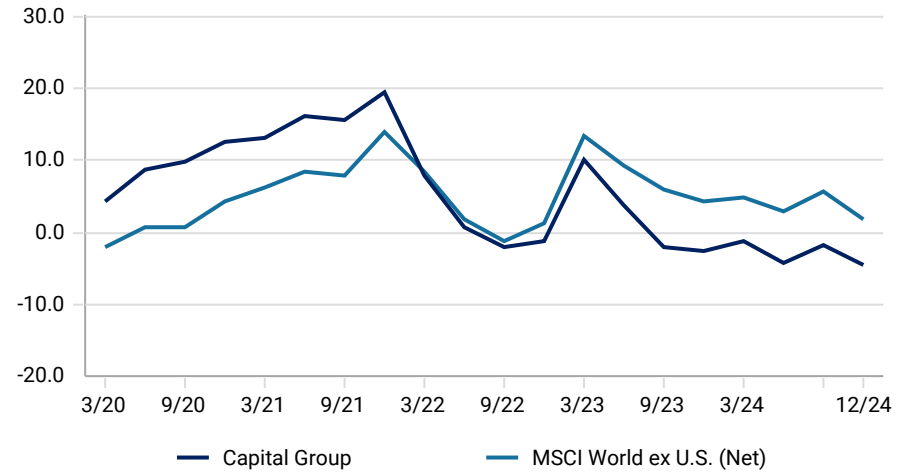


# CAPITAL GROUP

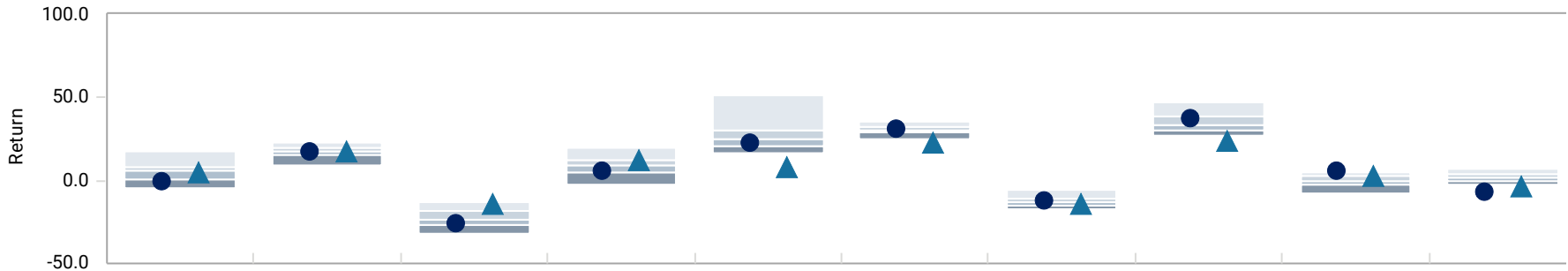
3 Years Annualized Return vs. Annualized Standard Deviation



Rolling 3 Years Annualized Return (%)



eV ACWI ex-US Large Cap Growth Eq



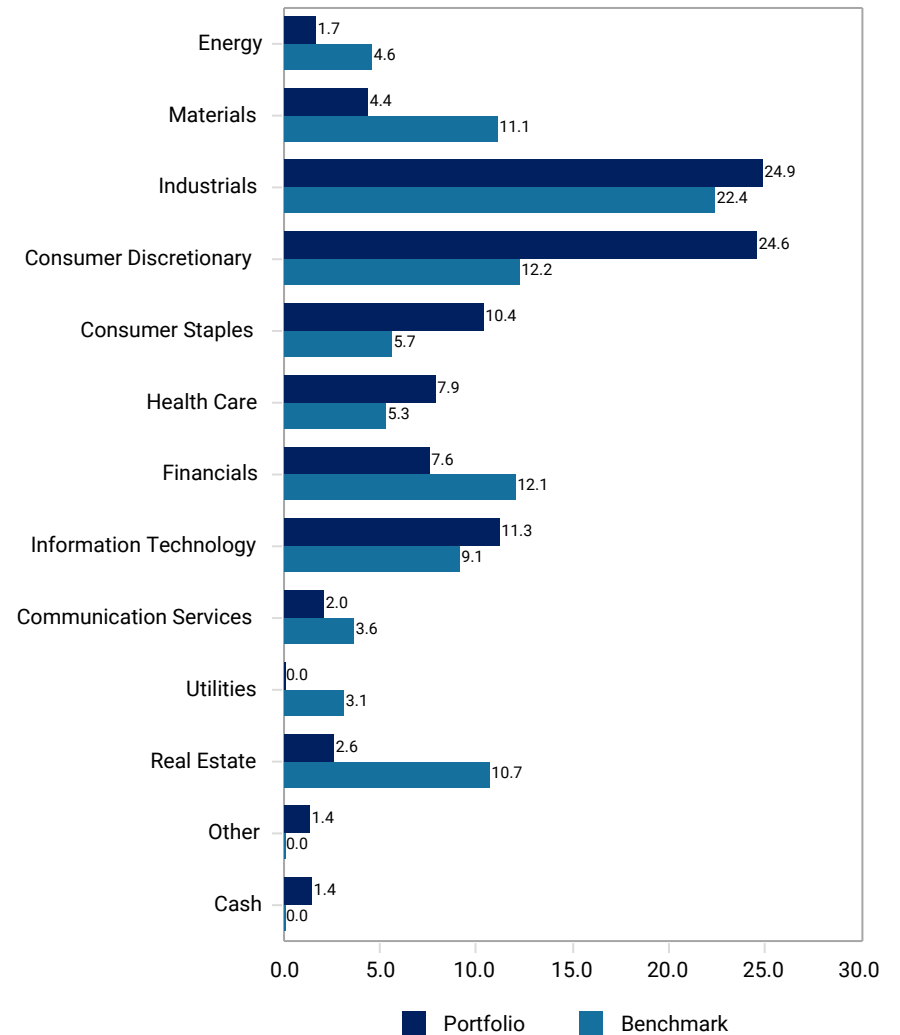
	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	-0.5 (80)	17.4 (61)	-25.8 (65)	5.7 (70)	22.6 (70)	31.6 (39)	-11.5 (32)	37.9 (29)	5.9 (3)	-6.2 (100)
▲ Benchmark	4.7 (53)	17.9 (50)	-14.3 (7)	12.6 (21)	7.6 (100)	22.5 (100)	-14.1 (72)	24.2 (100)	2.7 (24)	-3.0 (98)
5th Percentile	17.2	23.2	-12.6	19.6	51.5	35.2	-5.7	47.1	5.3	6.5
1st Quartile	8.6	20.0	-18.5	12.1	30.4	32.6	-10.4	38.4	2.5	4.3
Median	5.9	17.9	-23.8	9.3	25.0	30.6	-12.9	33.9	-0.2	2.1
3rd Quartile	0.2	15.4	-27.0	4.6	21.1	28.7	-15.3	30.8	-2.9	-0.4
95th Percentile	-4.5	9.5	-31.8	-2.9	16.5	25.1	-17.6	27.3	-7.4	-2.7
Population	43	47	47	48	45	43	42	46	46	42

# TEMPLETON

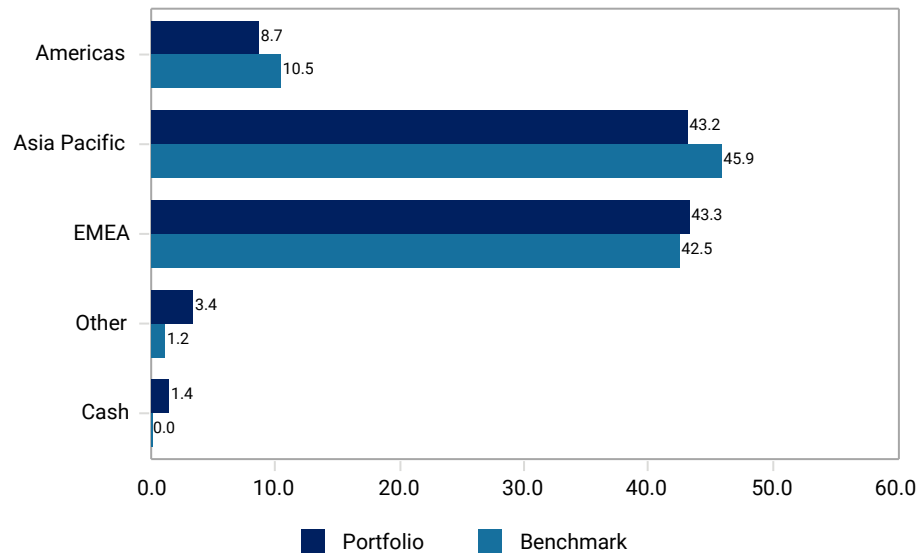
## Templeton vs. MSCI World ex U.S. Small Cap Index (Net)

Characteristics	Templeton vs. MSCI World ex U.S. Small Cap Index (Net)	
	Portfolio	Benchmark
Number of Stocks	118	2,249
Wtd. Avg. Mkt. Cap \$B	2.8	3.1
Median Mkt. Cap \$B	1.4	1.3
Price/Earnings ratio	16.9	14.0
Price/Book ratio	2.4	2.1
Return on Equity (%)	3.4	4.7
Current Yield (%)	2.8	3.2
Beta (5 Years, Monthly)	1.0	1.0
R-Squared (5 Years, Monthly)	0.9	1.0

## Equity Sector Allocation (%)



## Region Allocation (%)



# TEMPLETON

## Templeton vs. MSCI World ex U.S. Small Cap Index (Net)

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
OneSpaWorld Holdings Limited	2.2	20.8	Topcon Corp	0.5	67.2	Dexco SA	-0.5	-38.1
Technogym SPA	2.1	3.4	OneSpaWorld Holdings Limited	0.6	20.8	Montana Aerospace AG	-0.3	-34.2
Tsumura & Co	2.0	-5.0	DO & CO AG	0.2	23.2	Siegfried Holding AG, Zofingen	-0.2	-19.4
ASICS Corporation	1.9	-5.4	IMAX Corp	0.2	24.8	CAMIL Alimentos S/A	-0.3	-39.6
Techtronic Industries	1.9	-13.2	Nayax Ltd	0.3	15.7	Nichiha Corp	-0.2	-23.5
Siegfried Holding AG, Zofingen	1.8	-19.4	Johnson Health Tech Co Ltd	0.3	13.1	Merida Industry Co Ltd	-0.3	-36.6
MAN GROUP PLC	1.7		Century Pacific Food Inc	0.2	6.8	Sanlorenzo Spa	-0.2	-17.3
MEITEC Group Holdings Inc	1.7	-14.9	JNBY Design Ltd	0.1	14.6	Amorepacific Group Inc	-0.2	-33.7
TGS ASA	1.7	7.6	Watches of Switzerland Group plc	0.1	9.8	MEITEC Group Holdings Inc	-0.1	-14.9
Century Pacific Food Inc	1.6	6.8	Canaccord Genuity Group Inc	0.2	6.1	Ckd Corp	-0.2	-19.8

	Equity Sector Attribution							
	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.0	0.2	-0.1	-0.2	0.0	-4.9	1.1	4.3
Materials	-0.2	-1.0	0.2	0.5	-19.9	-11.3	5.1	11.4
Industrials	-0.4	-0.4	0.0	-0.1	-8.8	-7.2	26.2	22.5
Consumer Discretionary	0.4	0.1	0.2	0.1	-5.1	-6.0	24.9	11.9
Consumer Staples	-0.7	-0.3	-0.1	-0.3	-15.2	-9.8	11.2	6.3
Health Care	-0.2	-0.1	-0.1	0.0	-11.7	-10.4	8.7	5.4
Financials	-0.4	-0.1	-0.3	0.0	-1.2	-0.2	8.2	11.7
Information Technology	0.5	0.4	0.0	0.1	-1.6	-6.1	10.9	8.8
Communication Services	0.2	0.4	0.0	-0.2	6.0	-6.2	1.7	3.3
Utilities	0.0	0.0	0.0	0.0	0.0	-9.0	0.0	3.2
Real Estate	0.6	0.1	0.6	-0.1	-13.1	-13.8	1.3	11.1
Cash	0.1	0.0	0.1	0.0	0.0	0.0	0.7	0.0
<b>Total</b>	<b>0.0</b>	<b>-0.7</b>	<b>0.6</b>	<b>0.0</b>	<b>-7.7</b>	<b>-7.6</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	Templeton	MSCI AC World ex USA Small Cap (Net)
Canada	4.8	6.9
United States	1.4	0.2
<b>Americas</b>	<b>6.2</b>	<b>7.1</b>
Australia	0.0	5.9
Hong Kong	3.5	1.6
Japan	20.2	22.5
New Zealand	1.5	0.3
Singapore	1.9	1.5
<b>Asia Pacific</b>	<b>27.1</b>	<b>31.9</b>
Austria	1.1	0.7
Belgium	1.8	0.8
Denmark	0.6	1.2
Finland	2.0	0.7
France	0.6	2.0
Germany	4.1	2.0
Ireland	0.0	0.3
Israel	1.4	2.2
Italy	9.0	1.9
Netherlands	0.0	0.9
Norway	1.7	1.1
Portugal	0.7	0.2
Spain	0.0	1.1
Sweden	3.0	3.2
Switzerland	5.7	2.6
United Kingdom	10.9	8.0
<b>EMEA</b>	<b>42.5</b>	<b>28.8</b>
<b>Developed Markets</b>	<b>75.8</b>	<b>67.8</b>

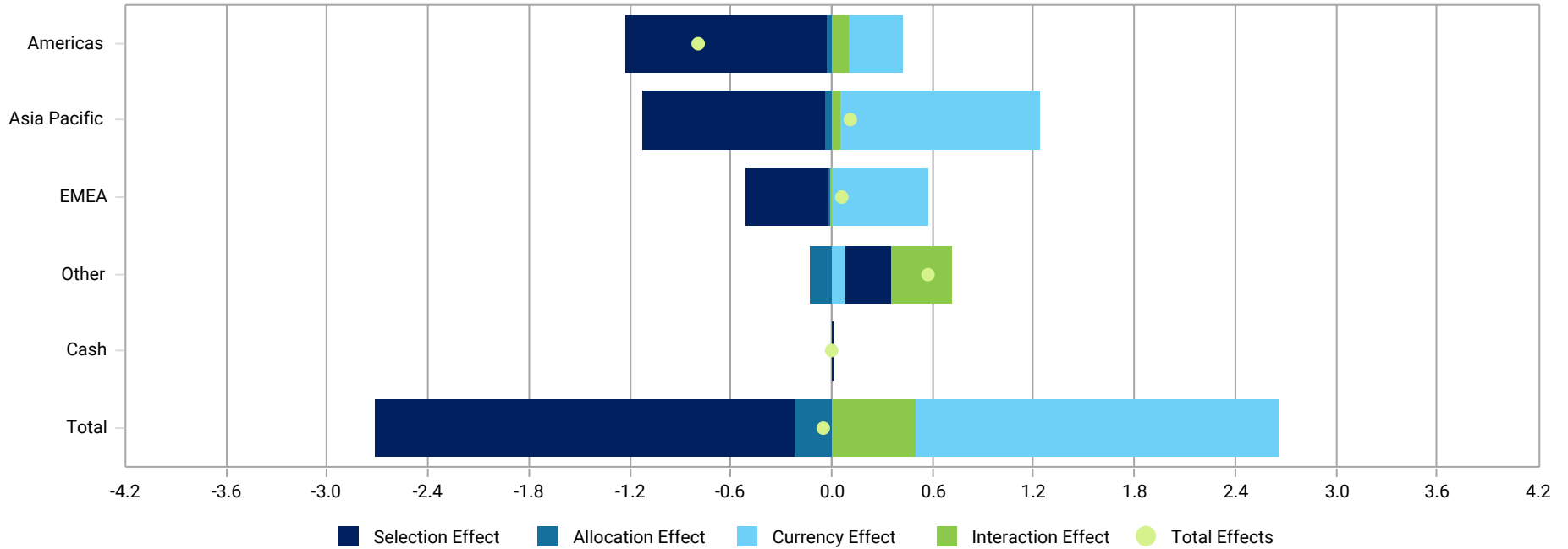
	Templeton	MSCI AC World ex USA Small Cap (Net)
Brazil	2.1	0.9
Chile	0.0	0.2
Colombia	0.0	0.0
Mexico	0.4	0.4
Peru	0.0	0.0
<b>Americas</b>	<b>2.5</b>	<b>1.6</b>
China	1.6	2.2
India	0.0	10.9
Indonesia	0.6	0.6
Korea	3.8	3.1
Malaysia	0.0	0.9
Philippines	2.9	0.2
Taiwan	7.2	6.4
Thailand	0.0	0.9
<b>Asia Pacific</b>	<b>16.1</b>	<b>25.1</b>
Czech Republic	0.0	0.0
Egypt	0.0	0.0
Greece	0.7	0.2
Hungary	0.0	0.0
Kuwait	0.0	0.4
Poland	0.0	0.4
Qatar	0.0	0.2
Saudi Arabia	0.0	1.2
South Africa	0.0	1.3
Turkey	0.0	0.7
United Arab Emirates	0.0	0.3
<b>EMEA</b>	<b>0.7</b>	<b>4.6</b>
<b>Emerging Markets</b>	<b>19.3</b>	<b>31.3</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	Templeton	MSCI AC World ex USA Small Cap (Net)
Cash	1.4	0.0
Other	3.4	0.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# TEMPLETON

Templeton vs. MSCI World ex U.S. Small Cap Index (Net)



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	-11.9	-2.9	9.2	10.1	-1.2	0.0	0.3	0.1	-0.8
Asia Pacific	-7.4	-7.3	43.0	45.1	-1.1	0.0	1.2	0.1	0.1
EMEA	-8.6	-8.9	44.0	43.5	-0.5	0.0	0.6	0.0	0.1
Other	12.7	-13.6	3.1	1.3	0.3	-0.1	0.1	0.4	0.6
Cash	0.0		0.7	0.0	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>-7.7</b>	<b>-7.6</b>	<b>100.0</b>	<b>100.0</b>	<b>-2.5</b>	<b>-0.2</b>	<b>2.2</b>	<b>0.5</b>	<b>0.0</b>
<b>Totals</b>									
Developed Markets	-6.8	-7.6	75.1	98.2	-1.1	0.0	3.2	0.3	2.3
Emerging Markets	-14.0	2.8	21.1	0.4	-0.1	1.9	-1.1	-3.7	-3.0
Frontier Markets		0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Other	12.7	-13.6	3.1	1.3	0.3	-0.1	0.1	0.4	0.6
Cash	0.0		0.7	0.0	0.0	0.0	0.0	0.0	0.0

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.



# TEMPLETON

## Templeton vs. EAFE Map

### Style Map: (3 Years)

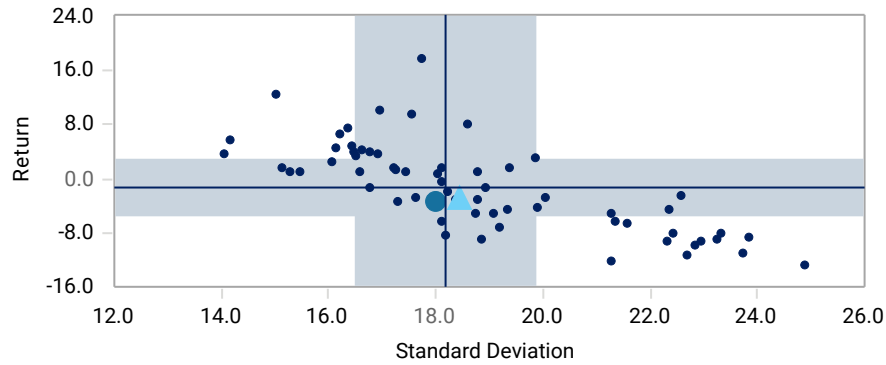


● Templeton

▲ MSCI World ex U.S. Small Cap Index (Net)

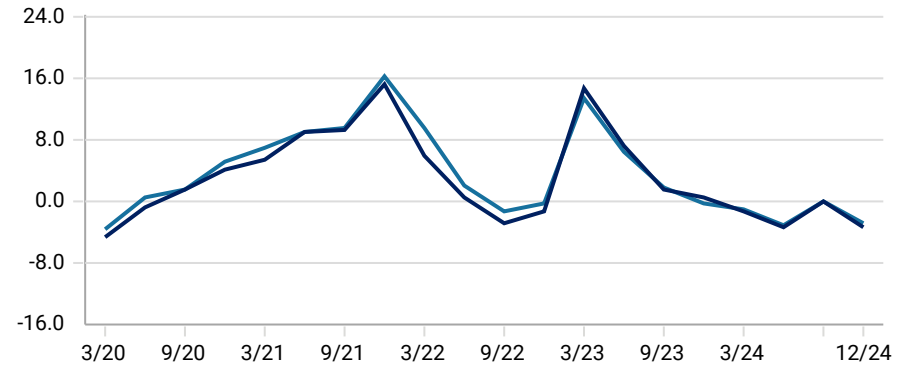
# TEMPLETON

3 Years Annualized Return vs. Annualized Standard Deviation



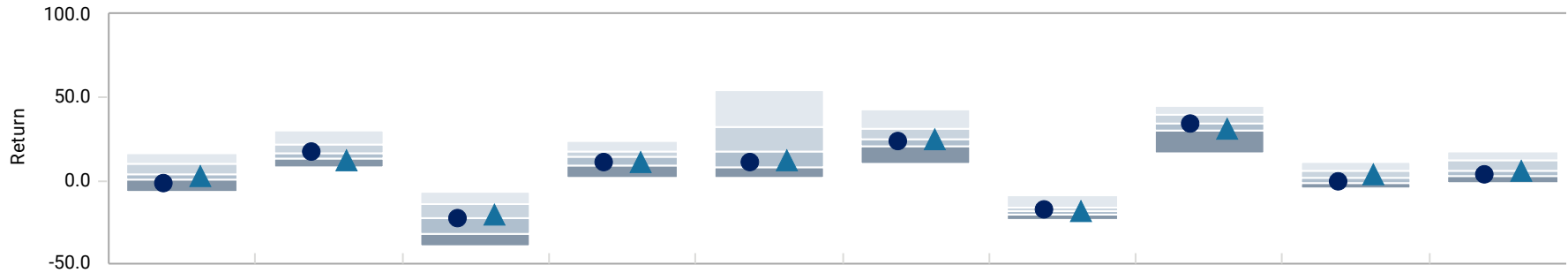
- Templeton
- ▲ MSCI World ex U.S. Small Cap Index (Net)

Rolling 3 Years Annualized Return (%)



- Templeton
- MSCI World ex U.S. Small Cap Index (Net)

eV ACWI ex-US Small Cap Equity



	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	-1.2 (81)	17.1 (47)	-22.3 (47)	11.4 (70)	10.8 (67)	24.2 (52)	-17.8 (41)	34.9 (47)	-0.3 (72)	3.8 (66)
▲ Benchmark	2.8 (63)	12.6 (82)	-20.6 (45)	11.1 (70)	12.8 (61)	25.4 (48)	-18.1 (47)	31.0 (69)	4.3 (38)	5.5 (58)
5th Percentile	16.8	30.3	-7.0	24.0	54.6	43.4	-8.4	45.1	11.1	18.1
1st Quartile	10.4	21.4	-14.5	18.1	32.1	31.3	-16.2	39.7	6.5	11.9
Median	4.2	16.7	-23.0	14.4	17.4	24.5	-18.6	34.2	1.9	6.3
3rd Quartile	0.7	13.5	-32.4	9.0	8.2	20.8	-20.7	30.3	-1.4	2.7
95th Percentile	-7.0	8.0	-39.5	2.1	1.7	10.5	-23.9	16.3	-4.7	-1.6
Population	64	69	73	77	74	68	66	65	63	59



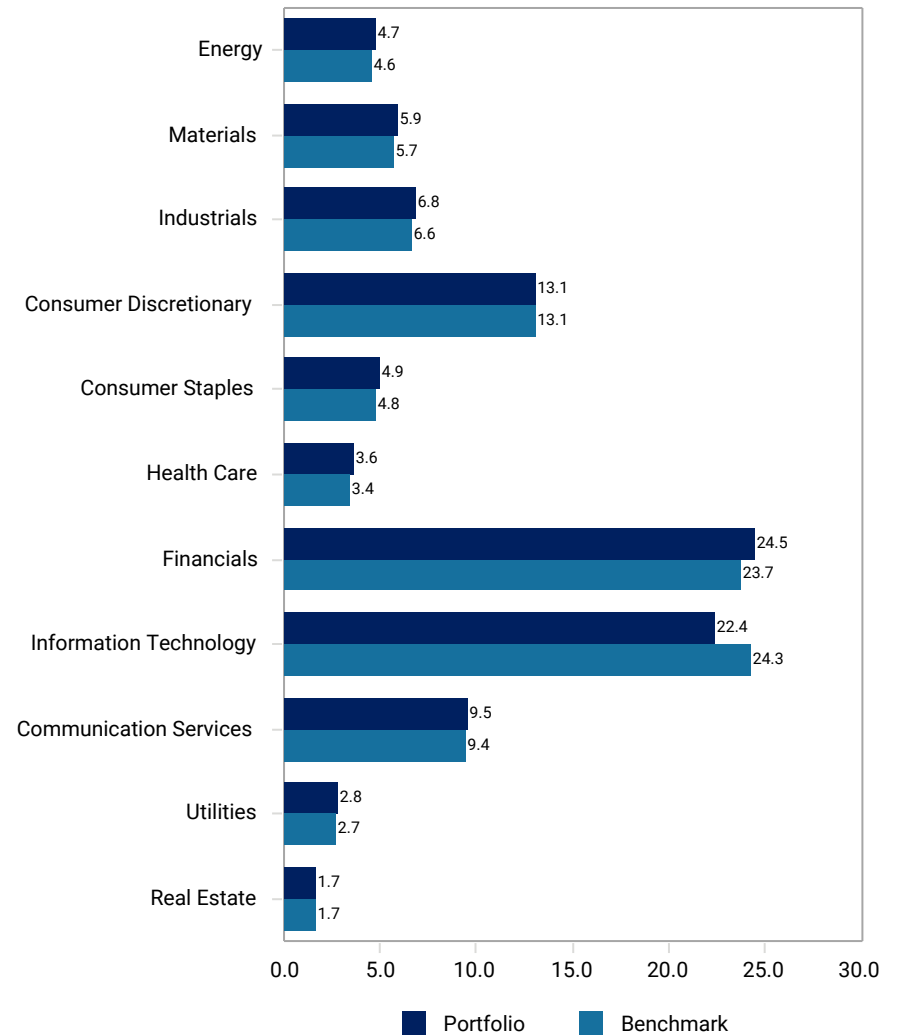


# BLACKROCK MSCI EMERGING MKTS FREE FD

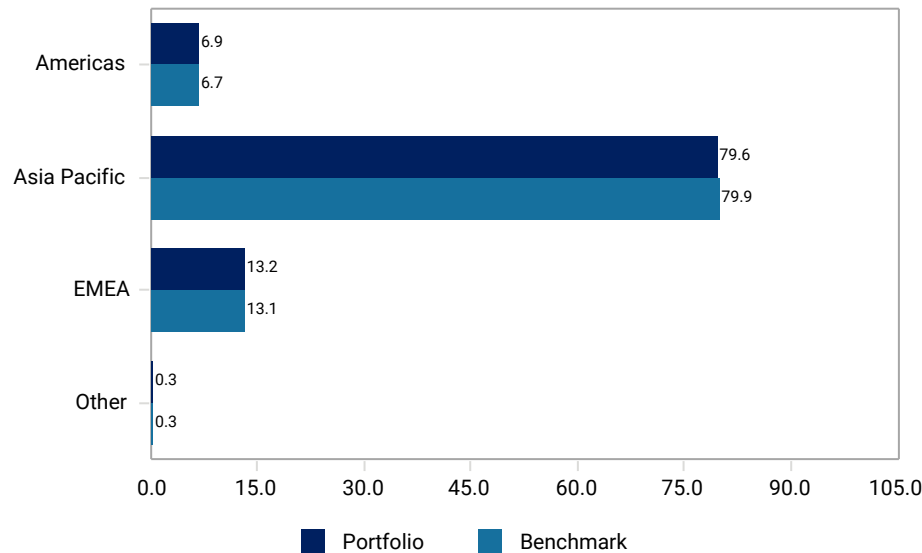
## BlackRock MSCI Emerging Mkts Free Fd vs. MSCI Emerging Markets (Net)

Characteristics	Portfolio	
	Portfolio	Benchmark
Number of Stocks	1,292	1,252
Wtd. Avg. Mkt. Cap \$B	163.2	165.6
Median Mkt. Cap \$B	7.6	7.6
Price/Earnings ratio	12.1	14.0
Price/Book ratio	2.9	2.8
Return on Equity (%)	5.2	5.1
Current Yield (%)	2.4	2.7
Beta		1.0
R-Squared		

## Equity Sector Allocation (%)



## Region Allocation (%)



# BLACKROCK MSCI EMERGING MKTS FREE FD

## BlackRock MSCI Emerging Mkts Free Fd vs. MSCI Emerging Markets (Net)

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
Taiwan Semiconductor	10.7	8.8	Taiwan Semiconductor	0.0	8.8	Alibaba Group Holding Ltd	0.0	-25.1
Tencent Holdings LTD 700	4.6	-4.7	Xiaomi Corporation	0.0	53.3	Samsung Electronics Co	0.0	-23.2
Alibaba Group Holding Ltd	2.2	-22.2	Mediatek Incorporation	0.0	16.2	PDD Holdings Inc	0.0	-28.1
HDFC Bank Limited	1.6	0.2	Emaar Properties	0.0	47.4	Tencent Holdings LTD	0.0	-6.2
Meituan	1.3	-10.5	China Construction	0.0	10.2	Reliance Industries Ltd	0.0	-19.4
Reliance Industries Ltd	1.2	-19.4	Industrial & Commercial Bank of China Ltd	0.0	12.3	Meituan	0.0	-11.8
CHINA CONSTR BANK CORP	1.1		Al Rajhi Bank	0.0	8.3	JD.com Inc	0.0	-18.6
ICICI Bank Ltd	1.1	-1.5	Delta Electronics (Thailand) Public Co Ltd	0.0	34.5	Nu Holdings Ltd	0.0	-24.1
Infosys Ltd	1.0	-0.8	Trip com Group Ltd	0.0	10.0	Vale SA	0.0	-23.6
Hon Hai Precision Industry Co Ltd	0.9	-5.3	Accton Technology Corp	0.0	40.3	POSCO Holdings Inc	0.0	-41.5

Equity Sector Attribution								
	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.0	0.0	0.0	0.0	-12.6	-12.4	4.8	4.8
Materials	0.0	0.0	0.0	0.0	-18.4	-18.5	6.7	6.6
Industrials	0.0	0.0	0.0	0.0	-10.9	-10.8	6.8	6.8
Consumer Discretionary	0.0	0.0	0.0	0.0	-14.5	-14.5	14.0	14.0
Consumer Staples	0.0	0.0	0.0	0.0	-14.2	-14.2	5.3	5.2
Health Care	0.0	0.0	0.0	0.0	-11.4	-11.6	3.7	3.6
Financials	0.0	0.0	0.0	0.0	-5.0	-5.0	22.9	22.8
Information Technology	0.0	0.0	0.0	0.0	1.1	1.2	22.1	22.2
Communication Services	0.0	0.0	0.0	0.0	-8.0	-8.0	9.4	9.4
Utilities	0.0	0.0	0.0	0.0	-14.0	-13.8	3.0	2.9
Real Estate	0.0	0.0	0.0	0.0	-6.5	-6.8	1.5	1.6
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-7.9</b>	<b>-7.9</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	BlackRock MSCI Emerging Mkts Free Fd	MSCI Emerging Markets (Net)
Canada	0.0	0.0
United States	0.3	0.3
<b>Americas</b>	<b>0.3</b>	<b>0.3</b>
Australia	0.0	0.0
Hong Kong	1.7	1.7
Japan	0.0	0.0
New Zealand	0.0	0.0
Singapore	0.6	0.6
<b>Asia Pacific</b>	<b>2.3</b>	<b>2.3</b>
Austria	0.0	0.0
Belgium	0.0	0.0
Denmark	0.0	0.0
Finland	0.0	0.0
France	0.0	0.0
Germany	0.0	0.0
Ireland	0.9	0.9
Israel	0.0	0.0
Italy	0.0	0.0
Netherlands	0.1	0.1
Norway	0.0	0.0
Portugal	0.0	0.0
Spain	0.0	0.0
Sweden	0.0	0.0
Switzerland	0.0	0.0
United Kingdom	0.0	0.0
<b>EMEA</b>	<b>1.0</b>	<b>0.9</b>
<b>Developed Markets</b>	<b>3.6</b>	<b>3.5</b>

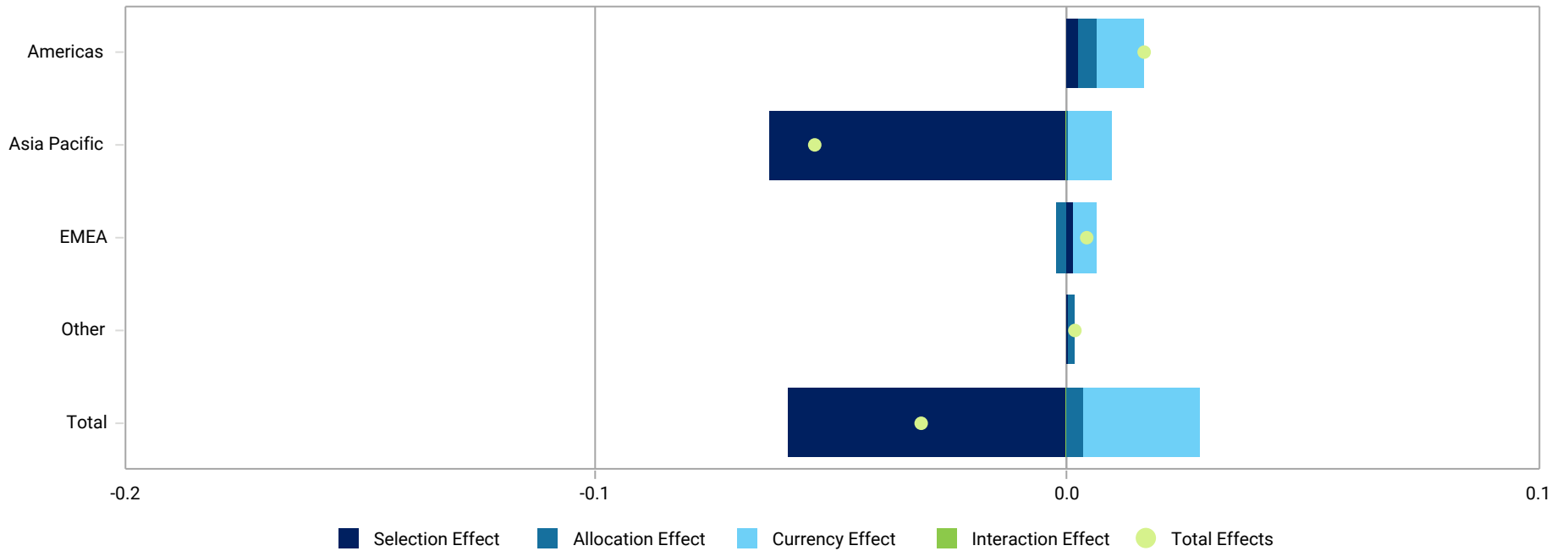
	BlackRock MSCI Emerging Mkts Free Fd	MSCI Emerging Markets (Net)
Brazil	4.1	4.0
Chile	0.4	0.4
Colombia	0.1	0.1
Mexico	1.8	1.8
Peru	0.2	0.2
<b>Americas</b>	<b>6.6</b>	<b>6.4</b>
China	24.7	24.5
India	20.9	19.4
Indonesia	1.5	1.5
Korea	6.6	9.0
Malaysia	1.6	1.5
Philippines	0.5	0.5
Taiwan	20.1	19.7
Thailand	1.5	1.4
<b>Asia Pacific</b>	<b>77.3</b>	<b>77.6</b>
Czech Republic	0.1	0.1
Egypt	0.1	0.1
Greece	0.5	0.5
Hungary	0.3	0.2
Kuwait	0.8	0.7
Poland	0.8	0.8
Qatar	0.9	0.8
Saudi Arabia	4.3	4.2
South Africa	2.6	2.7
Turkey	0.7	0.7
United Arab Emirates	1.4	1.4
<b>EMEA</b>	<b>12.3</b>	<b>12.1</b>
<b>Emerging Markets</b>	<b>96.1</b>	<b>96.2</b>
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>

# COUNTRY AND REGION ALLOCATION

	BlackRock MSCI Emerging Mkts Free Fd	MSCI Emerging Markets (Net)
Cash	0.0	0.0
Other	0.3	0.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# BLACKROCK MSCI EMERGING MKTS FREE FD

BlackRock MSCI Emerging Mkts Free Fd vs. MSCI Emerging Markets (Net)



	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	-15.6	-15.7	7.5	7.6	0.0	0.0	0.0	0.0	0.0
Asia Pacific	-7.4	-7.4	79.5	79.2	-0.1	0.0	0.0	0.0	-0.1
EMEA	-6.0	-6.0	12.7	12.8	0.0	0.0	0.0	0.0	0.0
Other	-25.6	-25.6	0.4	0.4	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>-7.9</b>	<b>-7.9</b>	<b>100.0</b>	<b>100.0</b>	<b>-0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Totals</b>									
Developed Markets	-12.8	-12.8	3.6	3.6	0.0	0.0	0.0	0.0	0.0
Emerging Markets	-7.7	-7.6	96.1	96.0	-0.1	0.0	0.0	0.0	0.0
Other	-25.6	-25.6	0.4	0.4	0.0	0.0	0.0	0.0	0.0

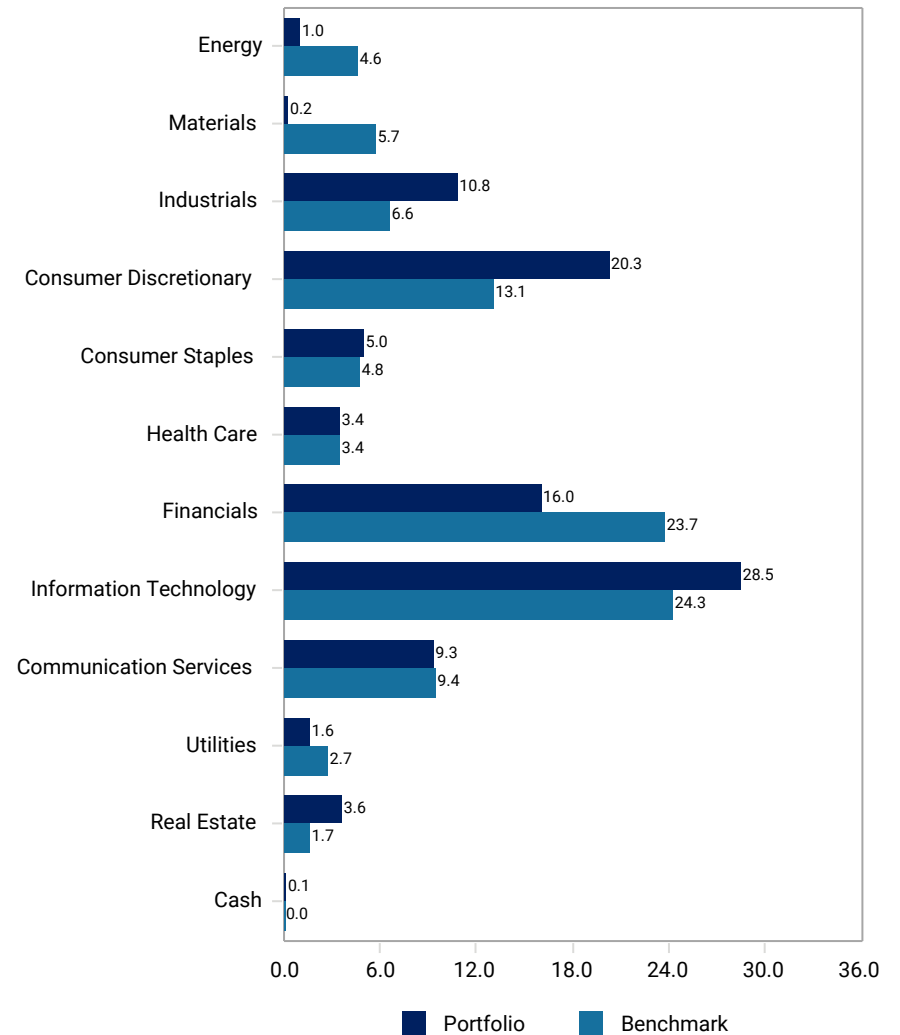
Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# WILLIAM BLAIR EMERGING MKTS GROWTH

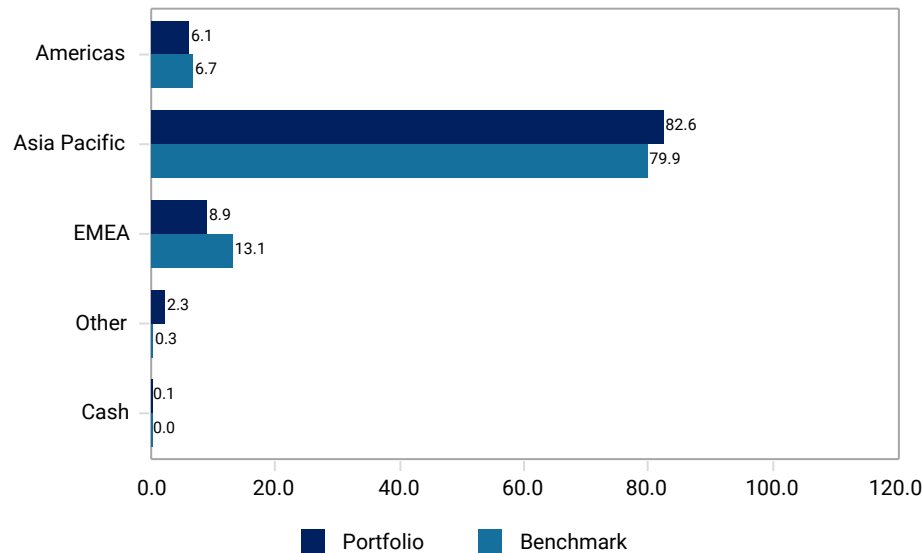
William Blair Emerging Mkts Growth vs. MSCI Emerging Markets (Net)

Characteristics	Portfolio	
	Portfolio	Benchmark
Number of Stocks	138	1,252
Wtd. Avg. Mkt. Cap \$B	175.4	165.6
Median Mkt. Cap \$B	13.1	7.6
Price/Earnings ratio	23.6	14.0
Price/Book ratio	4.6	2.8
Return on Equity (%)	7.1	5.1
Current Yield (%)	1.3	2.7
Beta		1.0
R-Squared		

Equity Sector Allocation (%)



Region Allocation (%)



# WILLIAM BLAIR EMERGING MKTS GROWTH

## William Blair Emerging Mkts Growth vs. MSCI Emerging Markets (Net)

Top Ten Equity Holdings			Top Ten Contributors			Top Ten Detractors		
	Weight (%)	Return (%)		Relative Contribution (%)	Return (%)		Relative Contribution (%)	Return (%)
Taiwan Semiconductor	11.1	14.1	Taiwan Semiconductor	0.1	14.1	Samsung Electronics Co	0.0	-23.2
Tencent Holdings LTD	6.6	-6.2	Dixon Technologies (India) Limited	0.4	27.2	MercadoLibre Inc	-0.3	-17.1
Trip com Group Ltd	3.6	10.0	Indian Hotels Co Ltd	0.3	25.5	NTPC Ltd	-0.3	-25.9
Meituan	3.2	-11.8	Emaar Properties	0.2	47.4	SK Hynix Inc	-0.1	-11.5
SK Hynix Inc	2.5	-11.5	Wiwynn Corporation	0.2	47.5	Tencent Holdings LTD	0.0	-6.2
PT Bank Central Asia TBK	2.5	-11.4	Mediatek Incorporation	0.1	16.2	Reliance Industries Ltd	-0.1	-19.4
MercadoLibre Inc	2.3	-17.1	Accton Technology Corp	0.2	40.3	Meituan	-0.1	-11.8
Taiwan Semiconductor	2.1	8.8	Kaynes Technology India Limited	0.2	33.8	PT Bank Central Asia TBK	-0.1	-11.4
Sea Limited	1.8	12.5	Trip com Group Ltd	0.3	10.0	PDD Holdings Inc	0.0	-28.1
Xiaomi Corporation	1.7	53.3	Lotes Co Ltd	0.2	36.3	Itau Unibanco Holding SA	-0.1	-24.6

## Equity Sector Attribution

	Attribution				Returns		Sector Weights	
	Total Effects (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Portfolio (%)	Benchmark (%)	Portfolio (%)	Benchmark (%)
Energy	0.1	0.0	0.1	0.0	-12.8	-12.4	2.1	4.8
Materials	0.7	0.2	0.7	-0.2	-15.4	-18.5	0.3	6.6
Industrials	0.6	0.4	-0.2	0.4	-4.6	-10.8	13.1	6.8
Consumer Discretionary	1.6	1.4	-0.3	0.4	-4.2	-14.5	18.1	14.0
Consumer Staples	0.3	0.3	-0.1	0.1	-8.5	-14.2	6.6	5.2
Health Care	0.1	0.1	0.0	0.0	-7.9	-11.6	4.2	3.6
Financials	-1.1	-1.3	-0.2	0.5	-10.9	-5.0	15.2	22.8
Information Technology	1.4	1.0	0.3	0.2	5.5	1.2	25.8	22.2
Communication Services	0.3	0.3	0.0	0.0	-4.4	-8.0	8.5	9.4
Utilities	-0.2	-0.3	0.0	0.0	-23.3	-13.8	2.6	2.9
Real Estate	0.4	0.2	0.0	0.2	3.3	-6.8	3.5	1.6
<b>Total</b>	<b>4.2</b>	<b>2.3</b>	<b>0.4</b>	<b>1.5</b>	<b>-3.7</b>	<b>-7.9</b>	<b>100.0</b>	<b>100.0</b>

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.

# COUNTRY AND REGION ALLOCATION

	William Blair Emerging Mkts Growth	MSCI Emerging Markets (Net)
Canada	0.0	0.0
United States	0.0	0.3
<b>Americas</b>	<b>0.0</b>	<b>0.3</b>
Australia	0.0	0.0
Hong Kong	1.9	1.7
Japan	0.0	0.0
New Zealand	0.0	0.0
Singapore	5.3	0.6
<b>Asia Pacific</b>	<b>7.2</b>	<b>2.3</b>
Austria	0.0	0.0
Belgium	0.0	0.0
Denmark	0.0	0.0
Finland	0.0	0.0
France	0.0	0.0
Germany	0.0	0.0
Ireland	0.0	0.9
Israel	0.0	0.0
Italy	0.0	0.0
Netherlands	0.0	0.1
Norway	0.0	0.0
Portugal	0.0	0.0
Spain	0.0	0.0
Sweden	0.0	0.0
Switzerland	0.0	0.0
United Kingdom	0.0	0.0
<b>EMEA</b>	<b>0.0</b>	<b>0.9</b>
<b>Developed Markets</b>	<b>7.2</b>	<b>3.5</b>

	William Blair Emerging Mkts Growth	MSCI Emerging Markets (Net)
Brazil	2.3	4.0
Chile	0.0	0.4
Colombia	0.0	0.1
Mexico	2.1	1.8
Peru	0.3	0.2
<b>Americas</b>	<b>4.7</b>	<b>6.4</b>
China	19.9	24.5
India	22.5	19.4
Indonesia	3.3	1.5
Korea	4.0	9.0
Malaysia	0.8	1.5
Philippines	1.3	0.5
Taiwan	23.5	19.7
Thailand	0.0	1.4
<b>Asia Pacific</b>	<b>75.3</b>	<b>77.6</b>
Czech Republic	0.0	0.1
Egypt	0.0	0.1
Greece	0.9	0.5
Hungary	0.5	0.2
Kuwait	0.0	0.7
Poland	0.0	0.8
Qatar	0.0	0.8
Saudi Arabia	1.4	4.2
South Africa	3.5	2.7
Turkey	0.7	0.7
United Arab Emirates	1.9	1.4
<b>EMEA</b>	<b>8.9</b>	<b>12.1</b>
<b>Emerging Markets</b>	<b>88.9</b>	<b>96.2</b>
<b>Frontier Markets</b>	<b>1.4</b>	<b>0.0</b>

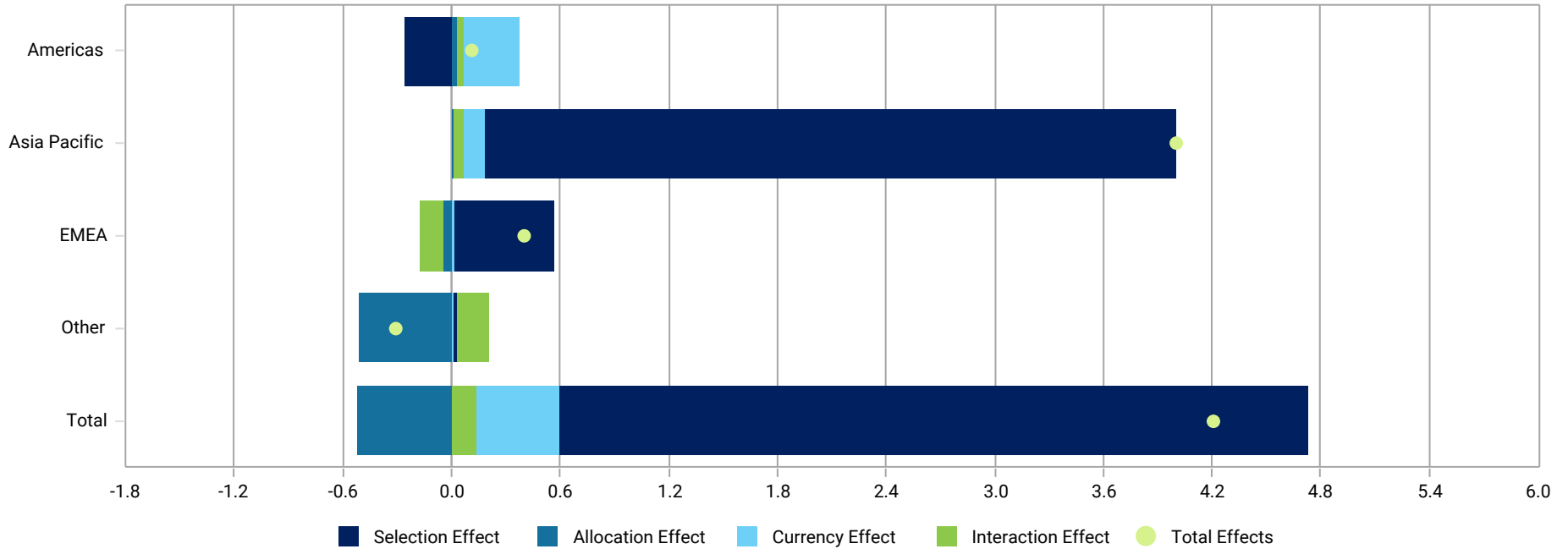


# COUNTRY AND REGION ALLOCATION

	William Blair Emerging Mkts Growth	MSCI Emerging Markets (Net)
Cash	0.1	0.0
Other	2.3	0.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

# WILLIAM BLAIR EMERGING MKTS GROWTH

William Blair Emerging Mkts Growth vs. MSCI Emerging Markets (Net)



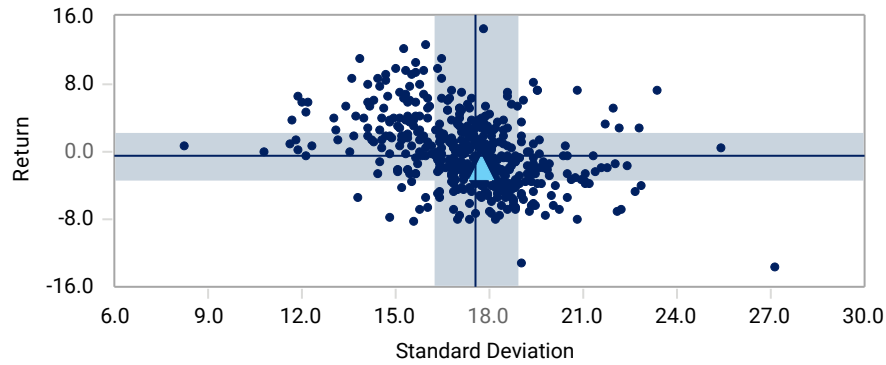
	Returns		Region Weights		Attribution Effects				
	Portfolio Return (%)	Index Return (%)	Portfolio Weight (%)	Index Weight (%)	Selection Effect (%)	Allocation Effect (%)	Currency Effect (%)	Interaction Effect (%)	Total Effect (%)
Americas	-15.6	-15.7	6.6	7.6	-0.3	0.0	0.3	0.0	0.1
Asia Pacific	-2.3	-7.4	80.5	79.2	3.8	0.0	0.1	0.1	4.0
EMEA	-2.4	-6.0	9.8	12.8	0.6	0.0	0.0	-0.1	0.4
Other	-17.1	-25.6	3.0	0.4	0.0	-0.5	0.0	0.2	-0.3
<b>Total</b>	<b>-3.7</b>	<b>-7.9</b>	<b>100.0</b>	<b>100.0</b>	<b>4.1</b>	<b>-0.5</b>	<b>0.5</b>	<b>0.1</b>	<b>4.2</b>
<b>Totals</b>									
Developed Markets	0.4	-12.8	3.8	3.6	0.5	0.0	0.0	0.0	0.5
Emerging Markets	-3.4	-7.6	93.2	96.0	3.7	0.0	0.4	-0.1	4.0
Other	-17.1	-25.6	3.0	0.4	0.0	-0.5	0.0	0.2	-0.3

Due to the quarterly buy/hold strategy holdings-based analytics do not include securities that were bought or sold during the quarter.



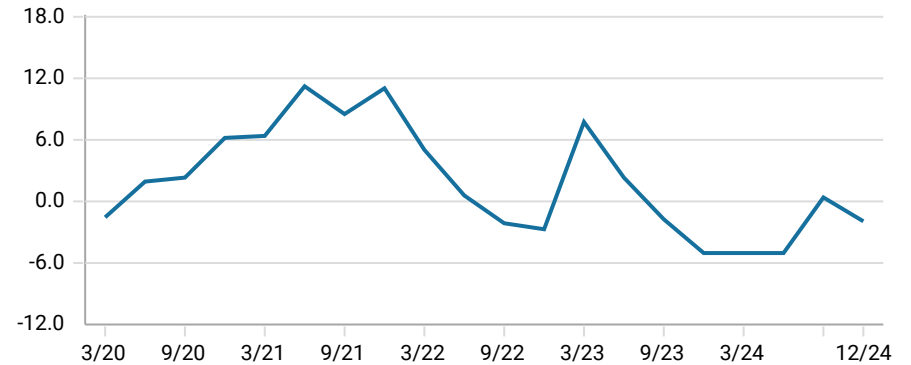
# WILLIAM BLAIR EMERGING MKTS GROWTH

3 Years Annualized Return vs. Annualized Standard Deviation



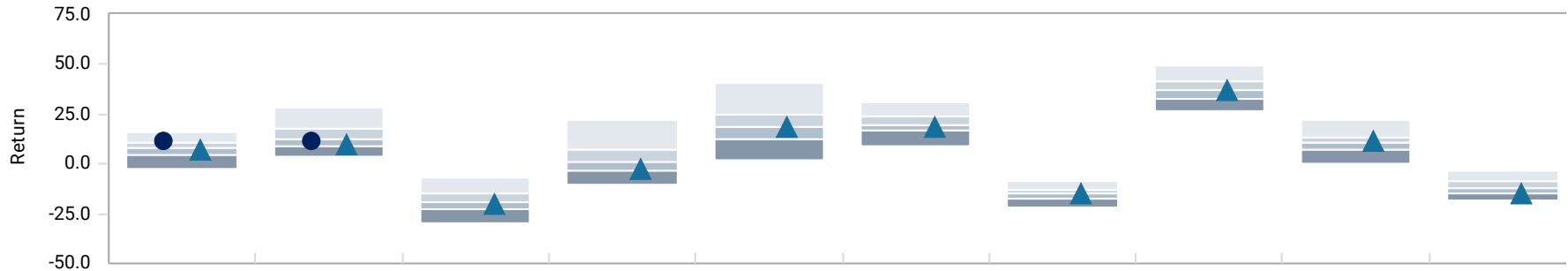
- William Blair Emerging Mkts Growth
- ▲ MSCI Emerging Markets (Net)

Rolling 3 Years Annualized Return (%)



- William Blair Emerging Mkts Growth
- MSCI Emerging Markets (Net)

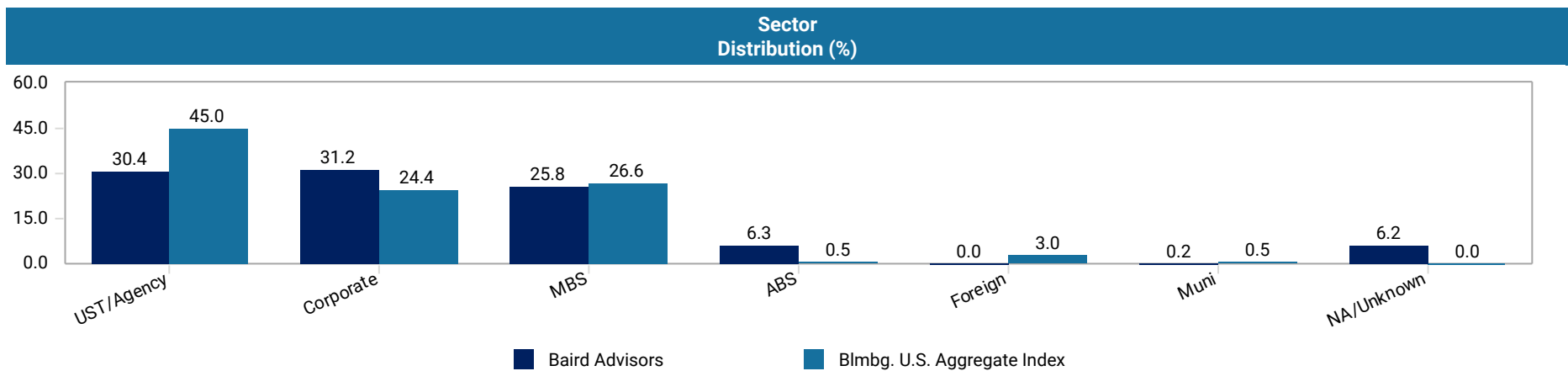
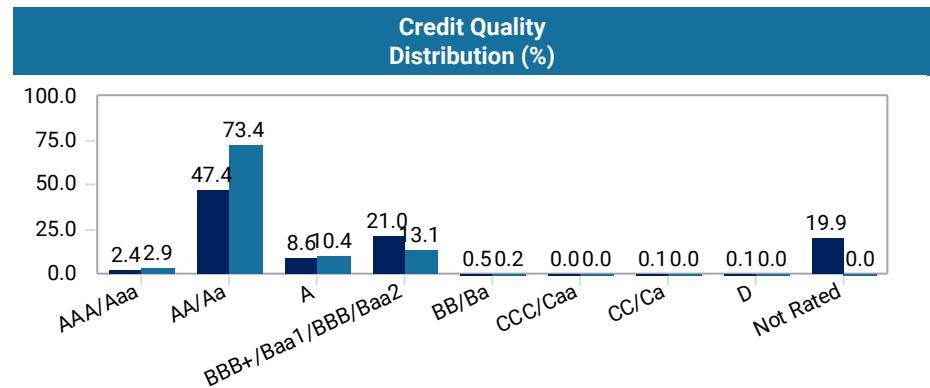
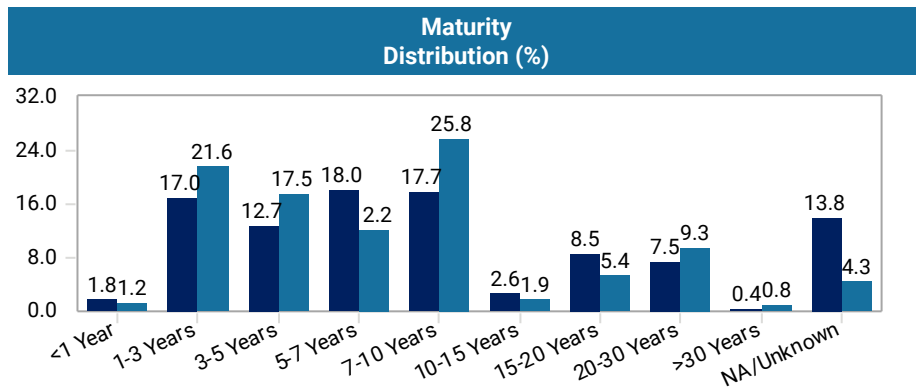
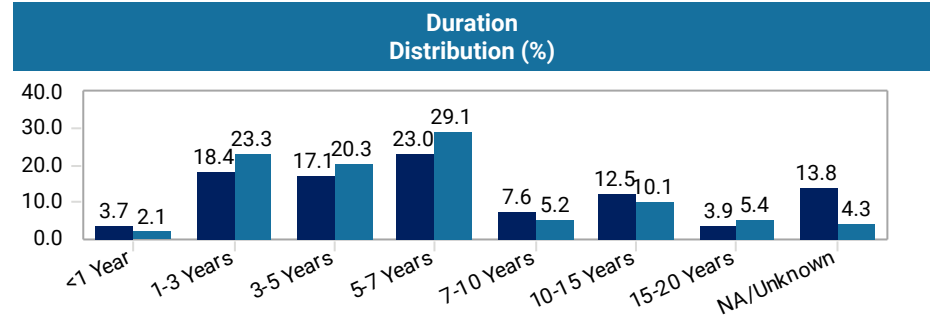
eV Emg Mkts Equity



	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
● Portfolio	11.7 (21)	11.4 (58)								
▲ Benchmark	7.5 (54)	9.8 (66)	-20.1 (57)	-2.5 (72)	18.3 (51)	18.4 (62)	-14.6 (45)	37.3 (50)	11.2 (44)	-14.9 (75)
5th Percentile	16.4	28.7	-6.8	22.1	40.9	31.0	-8.5	49.3	21.9	-3.1
1st Quartile	10.8	17.6	-14.9	6.8	25.1	24.3	-12.7	41.8	13.6	-8.9
Median	7.8	12.6	-19.5	1.0	18.3	19.7	-14.9	37.2	10.4	-12.2
3rd Quartile	4.7	9.0	-22.9	-3.0	12.4	16.6	-17.2	32.4	6.9	-15.0
95th Percentile	-2.2	3.7	-29.7	-10.7	2.1	9.0	-21.9	26.8	-0.1	-18.5
Population	528	553	581	589	586	607	593	574	571	540

# BAIRD ADVISORS

Portfolio Characteristics		
	Portfolio	Benchmark
Holdings Count	404	13,630
Yield To Maturity (%)	5.1	4.9
Effective Duration	6.3	5.9
Modified Duration	6.2	6.0
Avg. Quality	A	AA
Avg. Maturity	8.4	8.4



# BAIRD ADVISORS

## Baird Advisors

### Style Map: (2 Years)

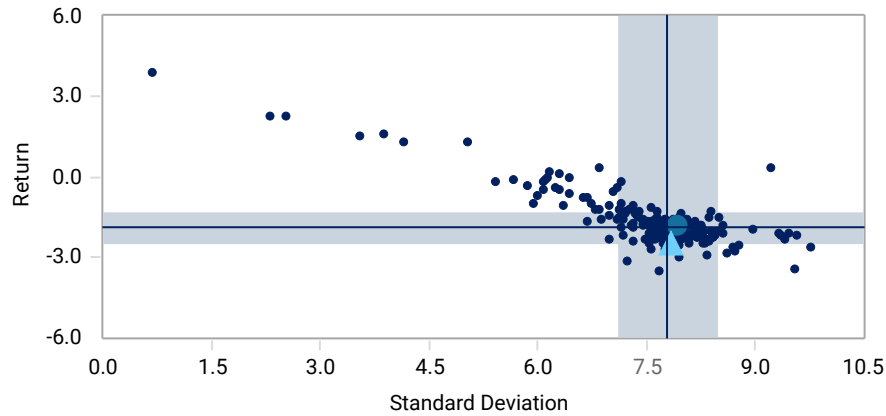


● Baird Advisors

▲ Blmbg. U.S. Aggregate Index

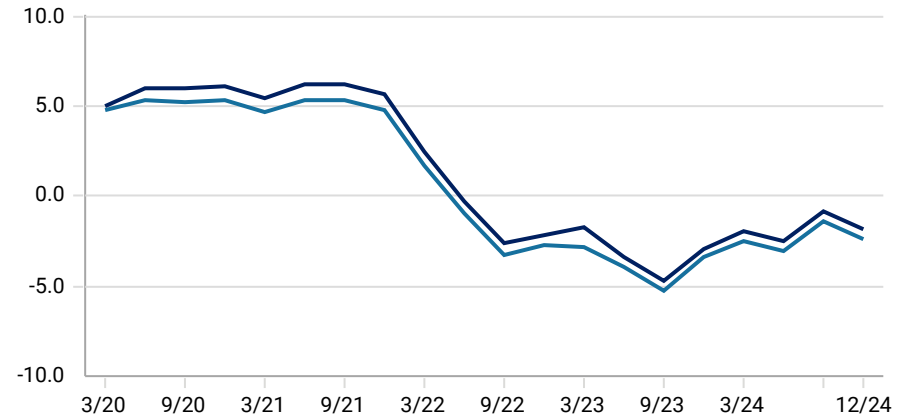
# BAIRD ADVISORS

3 Years Annualized Return vs. Annualized Standard Deviation



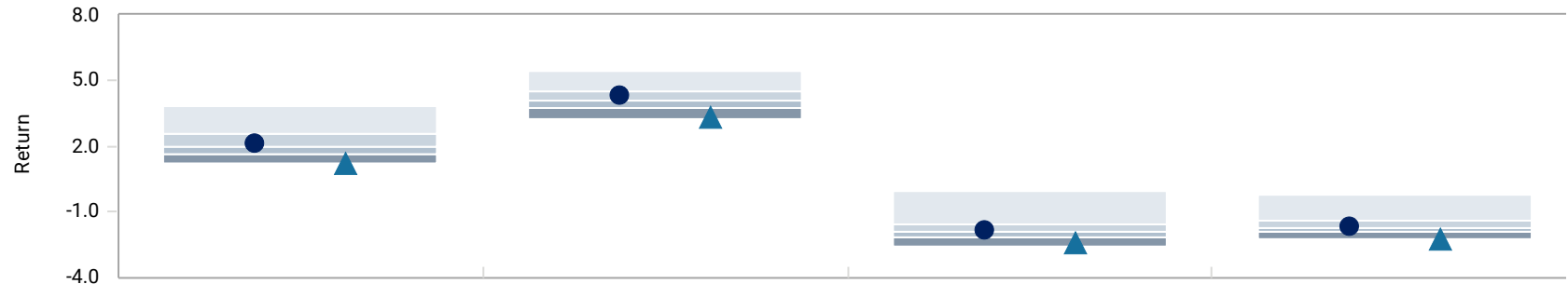
● Baird Advisors ▲ Blmbg. U.S. Aggregate Index

Rolling 3 Years Annualized Return (%)



— Baird Advisors — Blmbg. U.S. Aggregate Index

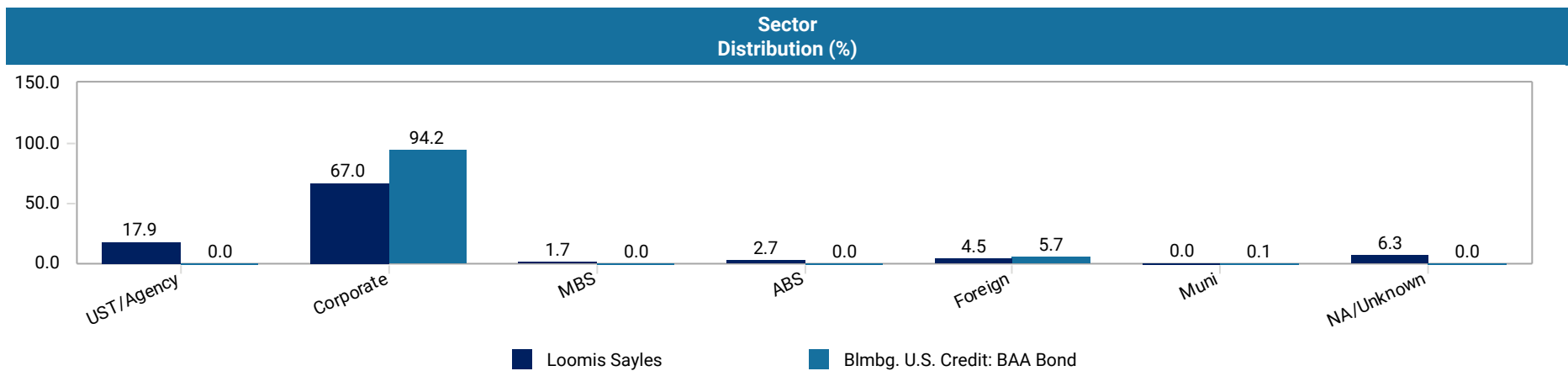
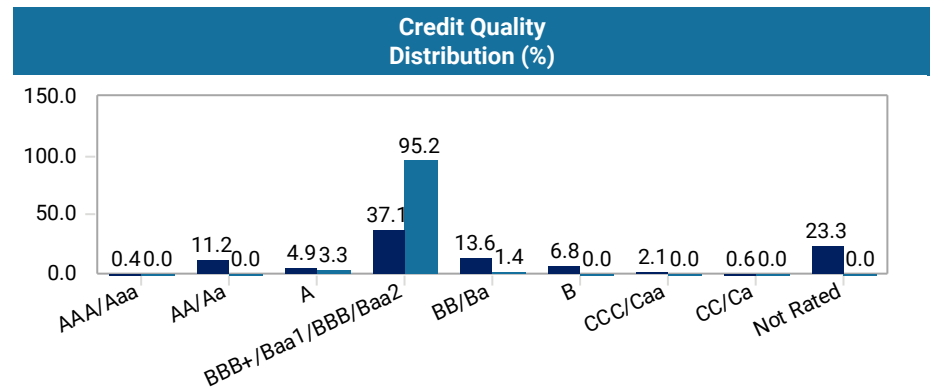
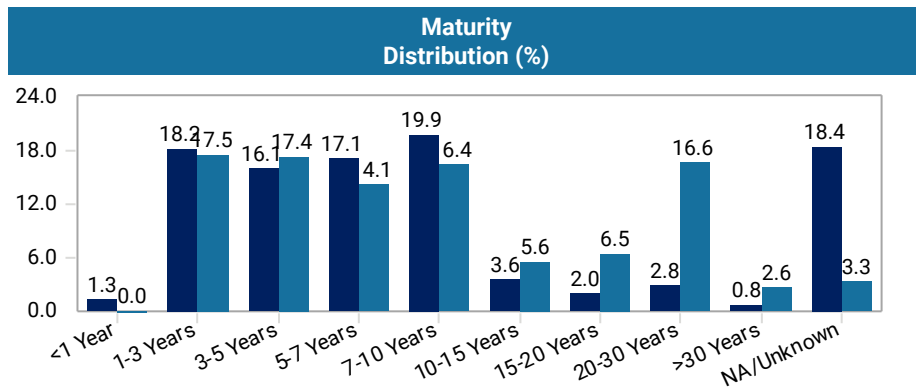
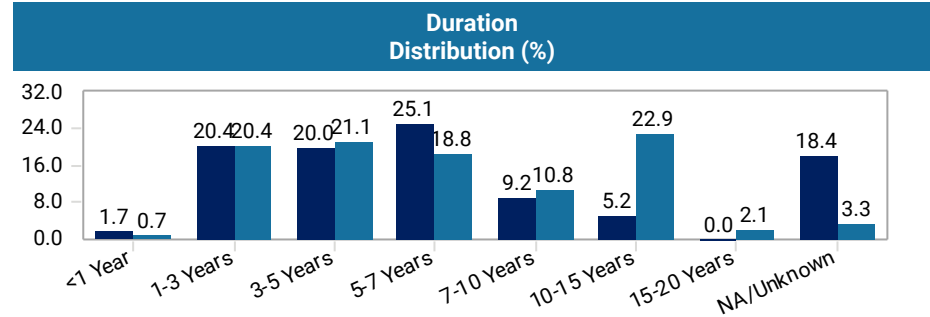
eV US Core Fixed Inc



	1 Yr (%)	2 Yrs (%)	3 Yrs (%)	4 Yrs (%)
● Portfolio	2.2 (42)	4.4 (33)	-1.8 (44)	-1.6 (48)
▲ Benchmark	1.3 (96)	3.4 (94)	-2.4 (91)	-2.2 (93)
5th Percentile	3.9	5.4	0.0	-0.2
1st Quartile	2.6	4.5	-1.5	-1.4
Median	2.0	4.1	-1.9	-1.7
3rd Quartile	1.7	3.8	-2.1	-1.9
95th Percentile	1.3	3.3	-2.5	-2.2
Population	235	234	233	228

# LOOMIS SAYLES

Portfolio Characteristics		
	Portfolio	Benchmark
Holdings Count	537	4,370
Yield To Maturity (%)	8.1	5.5
Effective Duration	4.8	6.7
Modified Duration	4.9	6.7
Avg. Quality	BBB	BBB
Avg. Maturity	6.7	10.5



# LOOMIS SAYLES

Loomis Sayles

Style Map: (2 Years)



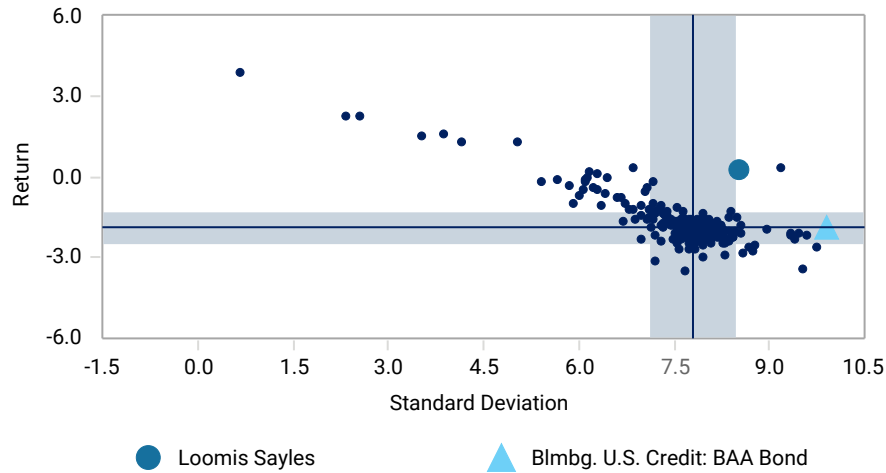
● Loomis Sayles

▲ Blmbg. U.S. Credit: BAA Bond

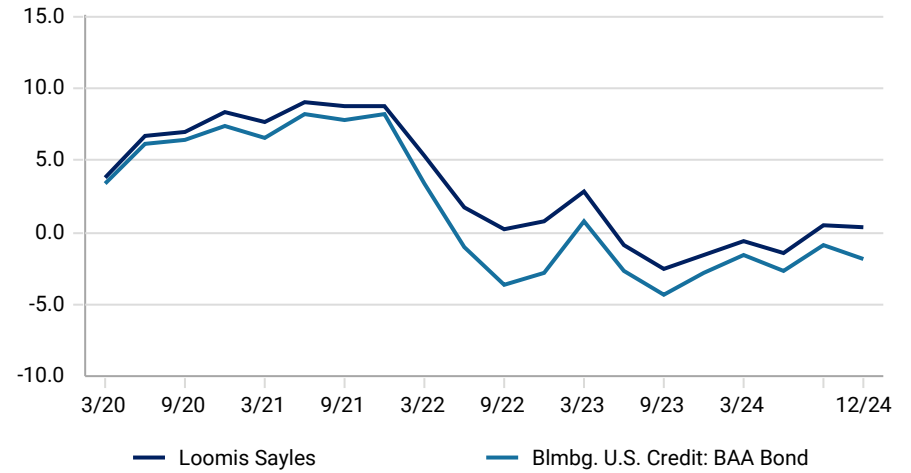


# LOOMIS SAYLES

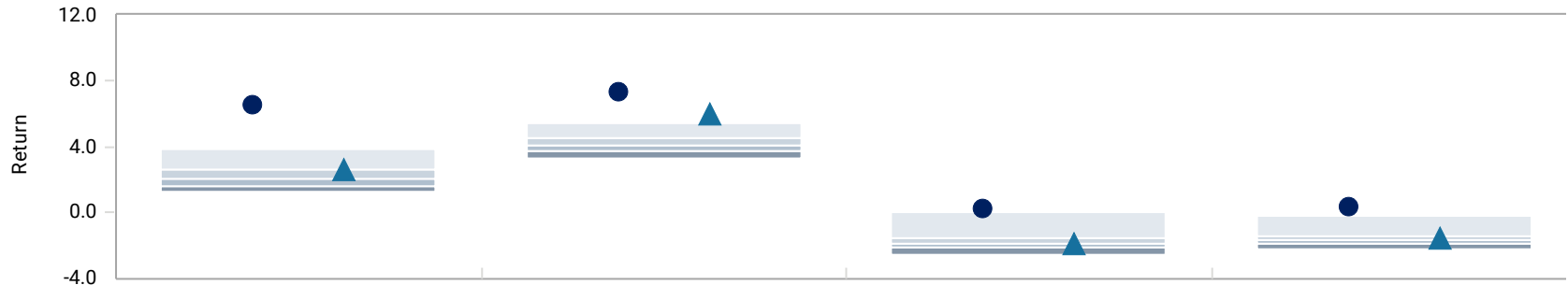
3 Years Annualized Return vs. Annualized Standard Deviation



Rolling 3 Years Annualized Return (%)



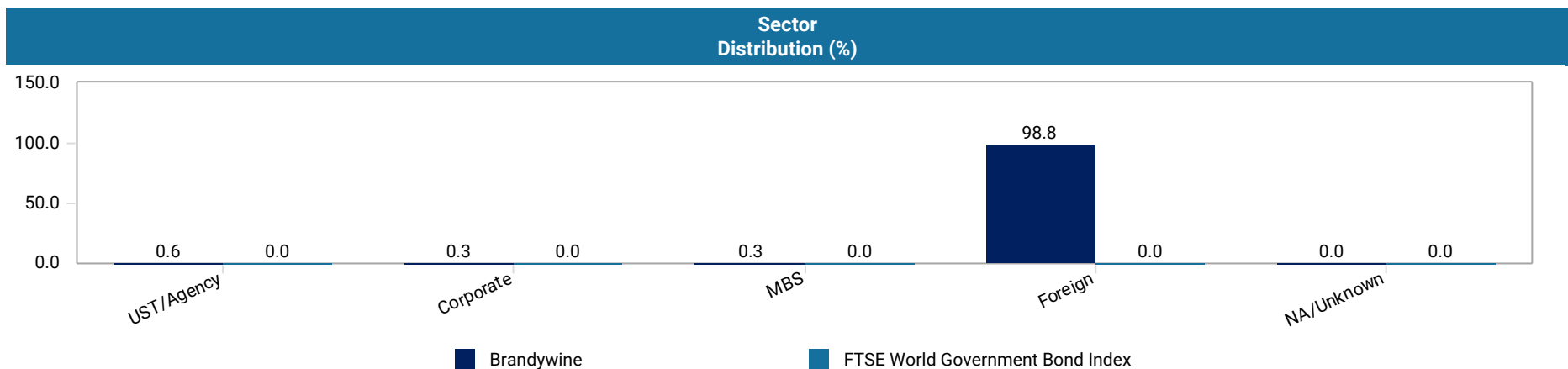
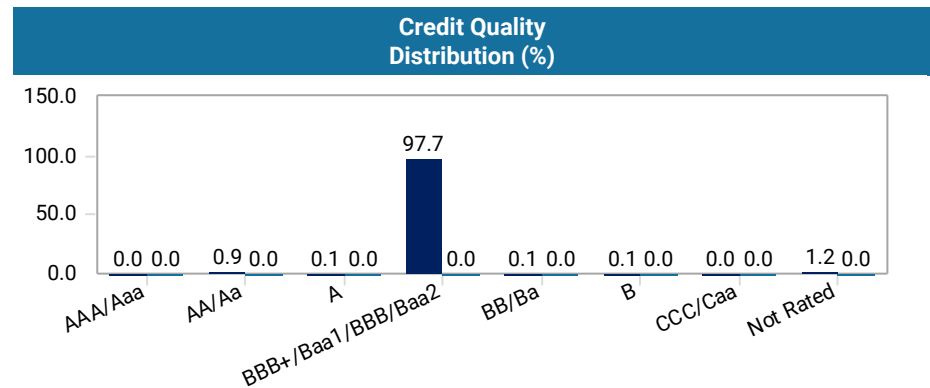
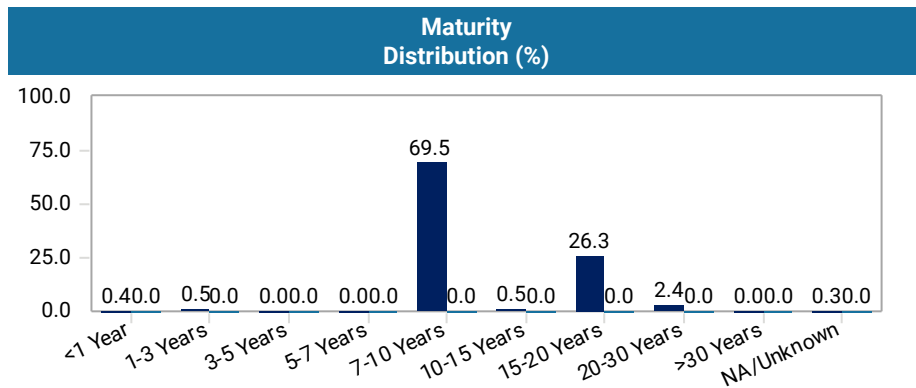
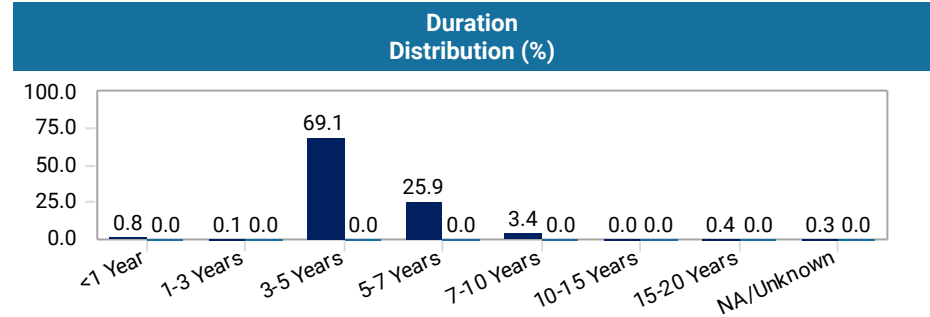
eV US Core Fixed Inc



	1 Yr (%)	2 Yrs (%)	3 Yrs (%)	4 Yrs (%)
● Portfolio	6.6 (1)	7.4 (1)	0.3 (4)	0.4 (3)
▲ Benchmark	2.7 (20)	6.0 (2)	-1.9 (51)	-1.5 (37)
5th Percentile	3.9	5.4	0.0	-0.2
1st Quartile	2.6	4.5	-1.5	-1.4
Median	2.0	4.1	-1.9	-1.7
3rd Quartile	1.7	3.8	-2.1	-1.9
95th Percentile	1.3	3.3	-2.5	-2.2
Population	235	234	233	228

# BRANDYWINE

Portfolio Characteristics		
	Portfolio	Benchmark
Holdings Count	83	
Yield To Maturity (%)	11.4	
Effective Duration	5.4	
Modified Duration	5.5	
Avg. Quality	BBB	
Avg. Maturity	11.0	





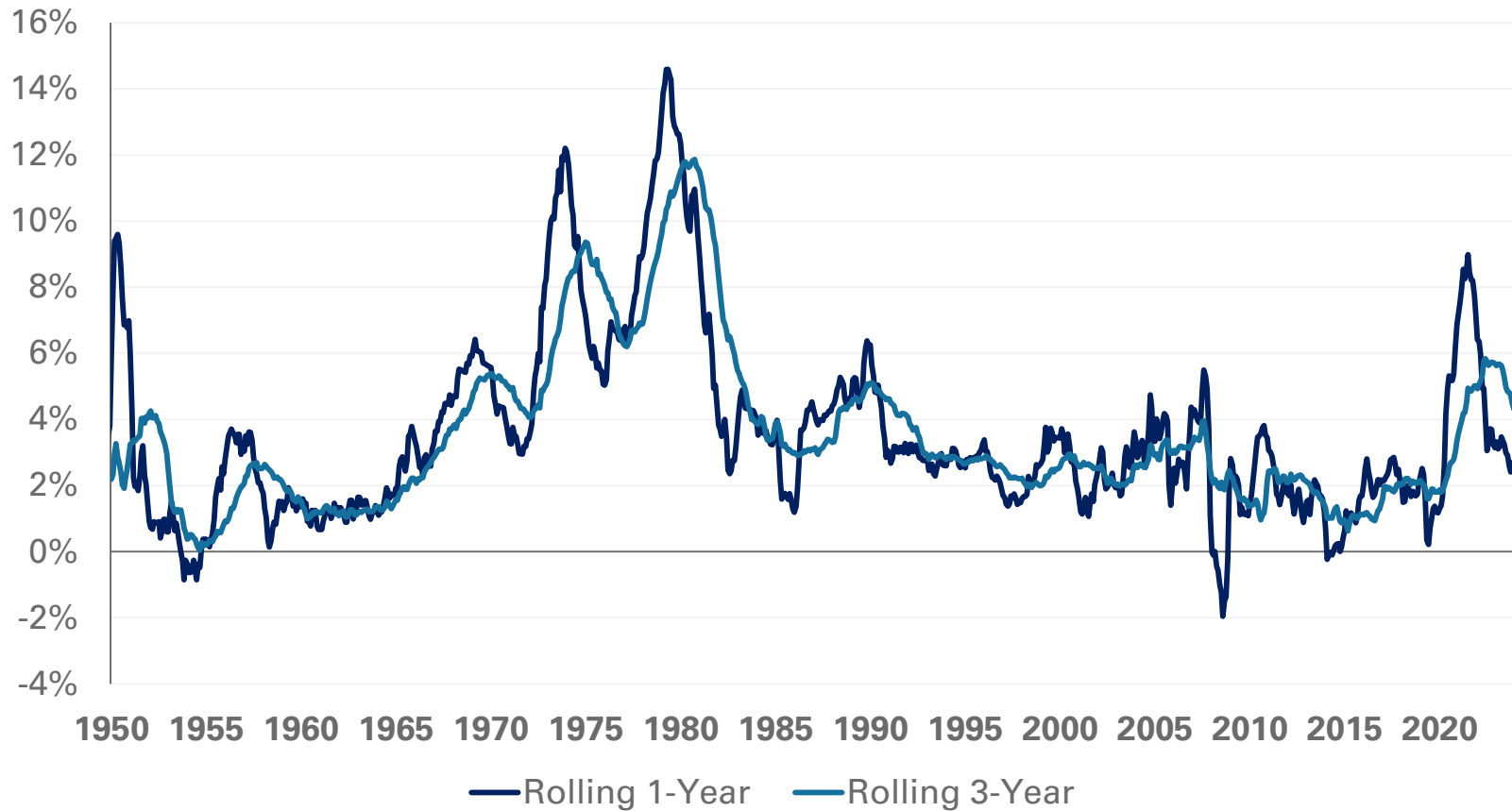
# APPENDIX



# MACRO

# INFLATION

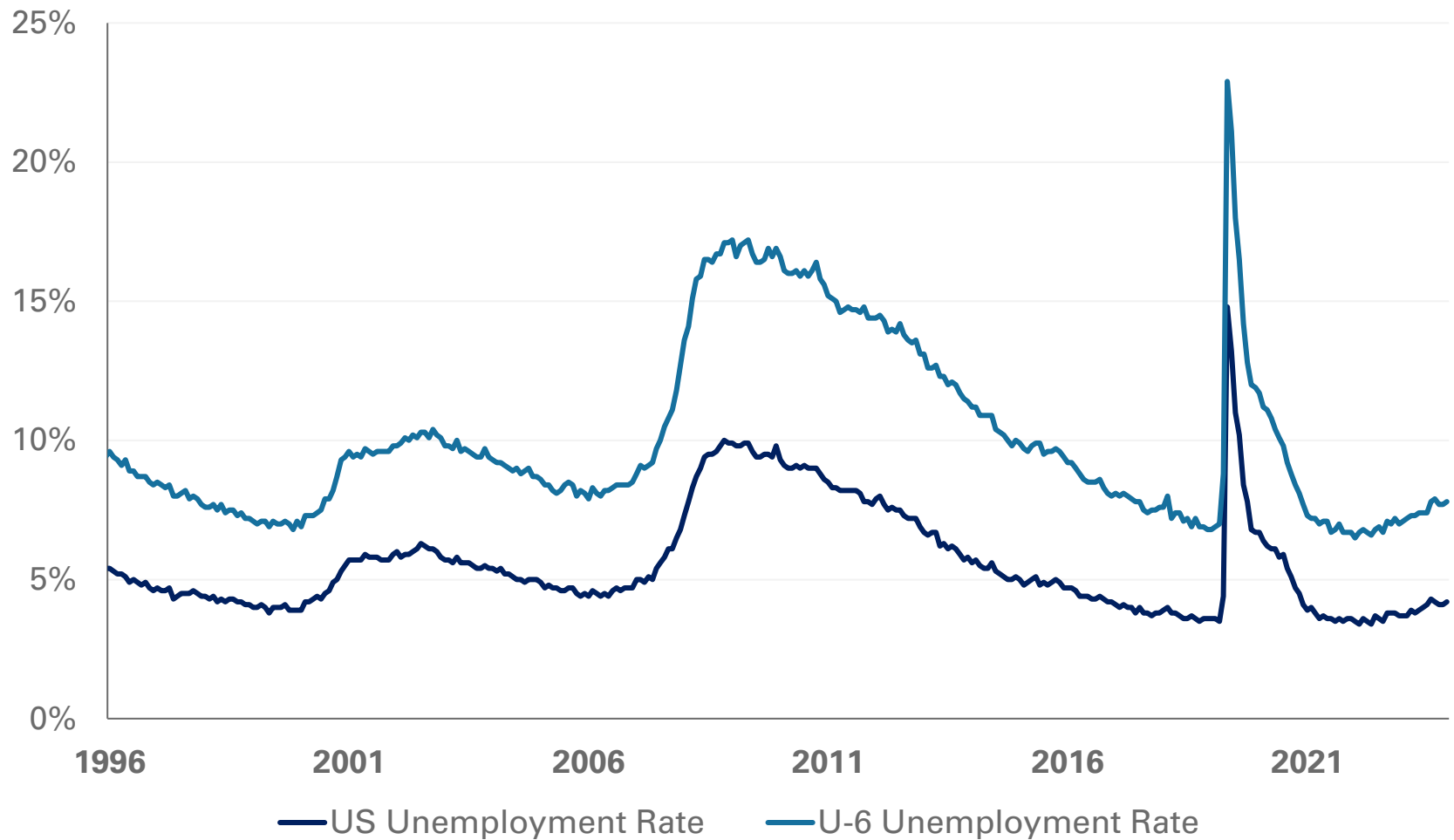
## U.S. CONSUMER PRICE INDEX



Source: Bureau of Labor Statistics, FactSet



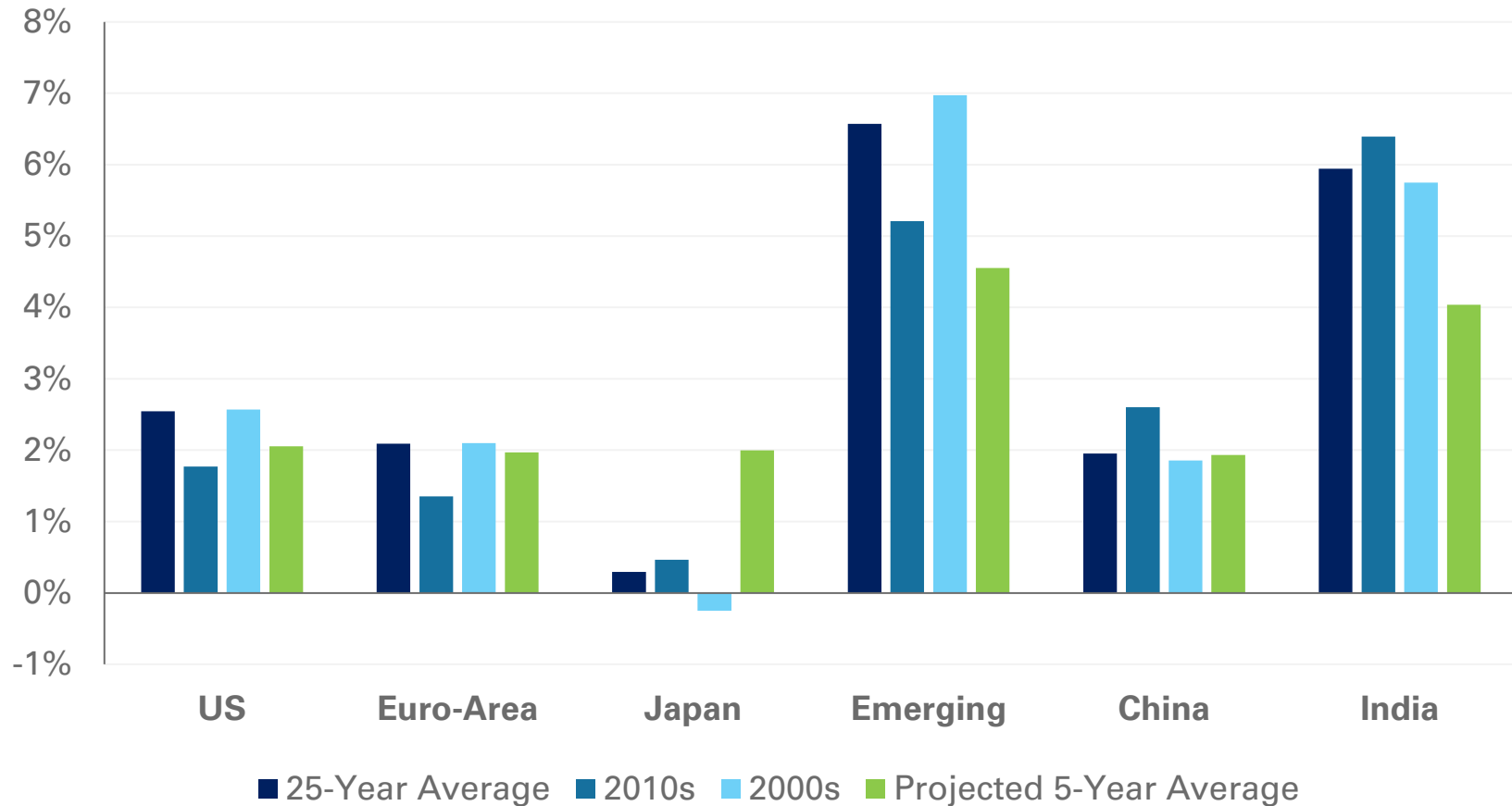
# U.S. UNEMPLOYMENT RATES



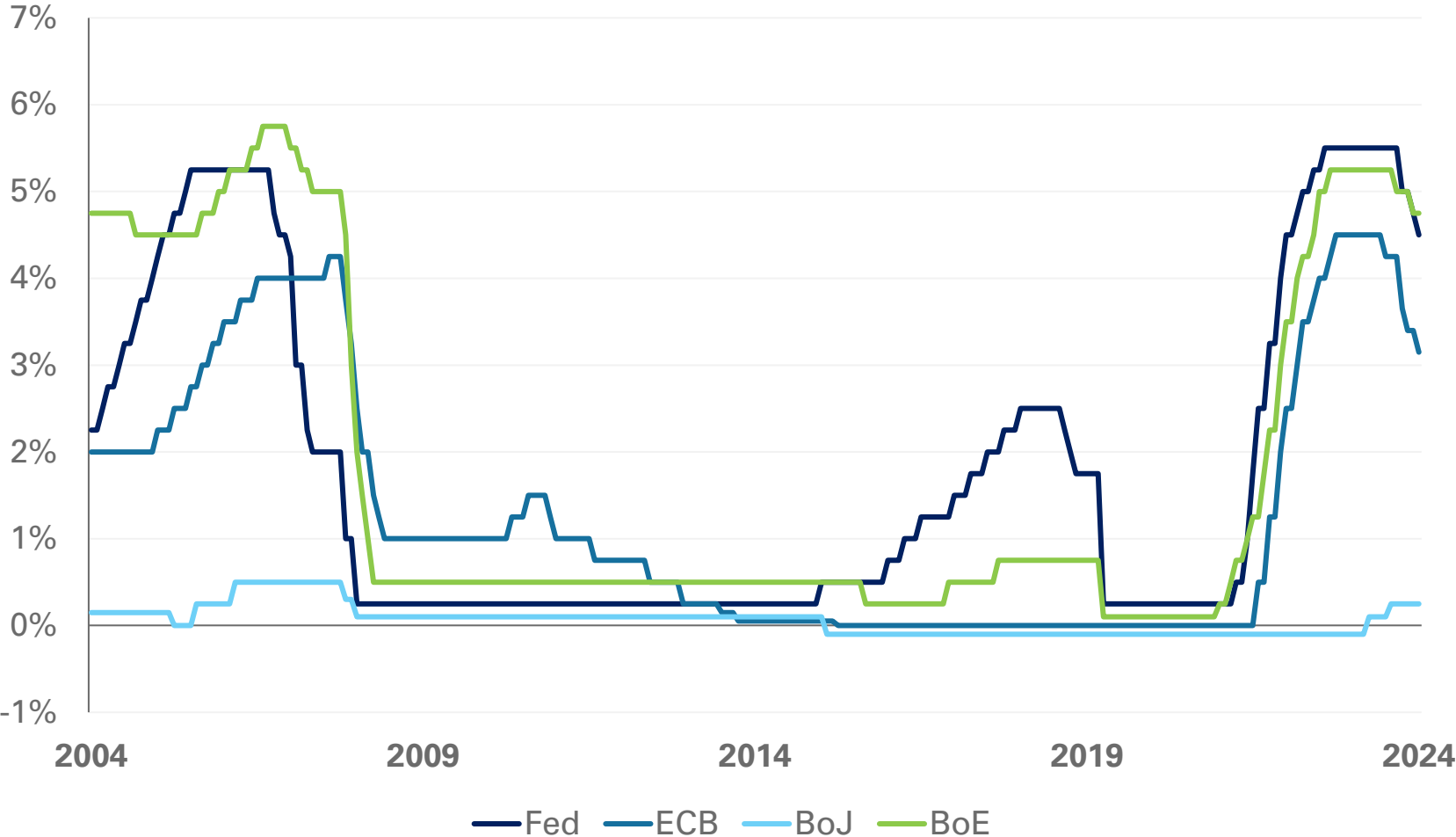
Source: FactSet

# HISTORICAL INFLATION

## IMF PROJECTIONS



# CENTRAL BANK POLICY RATES



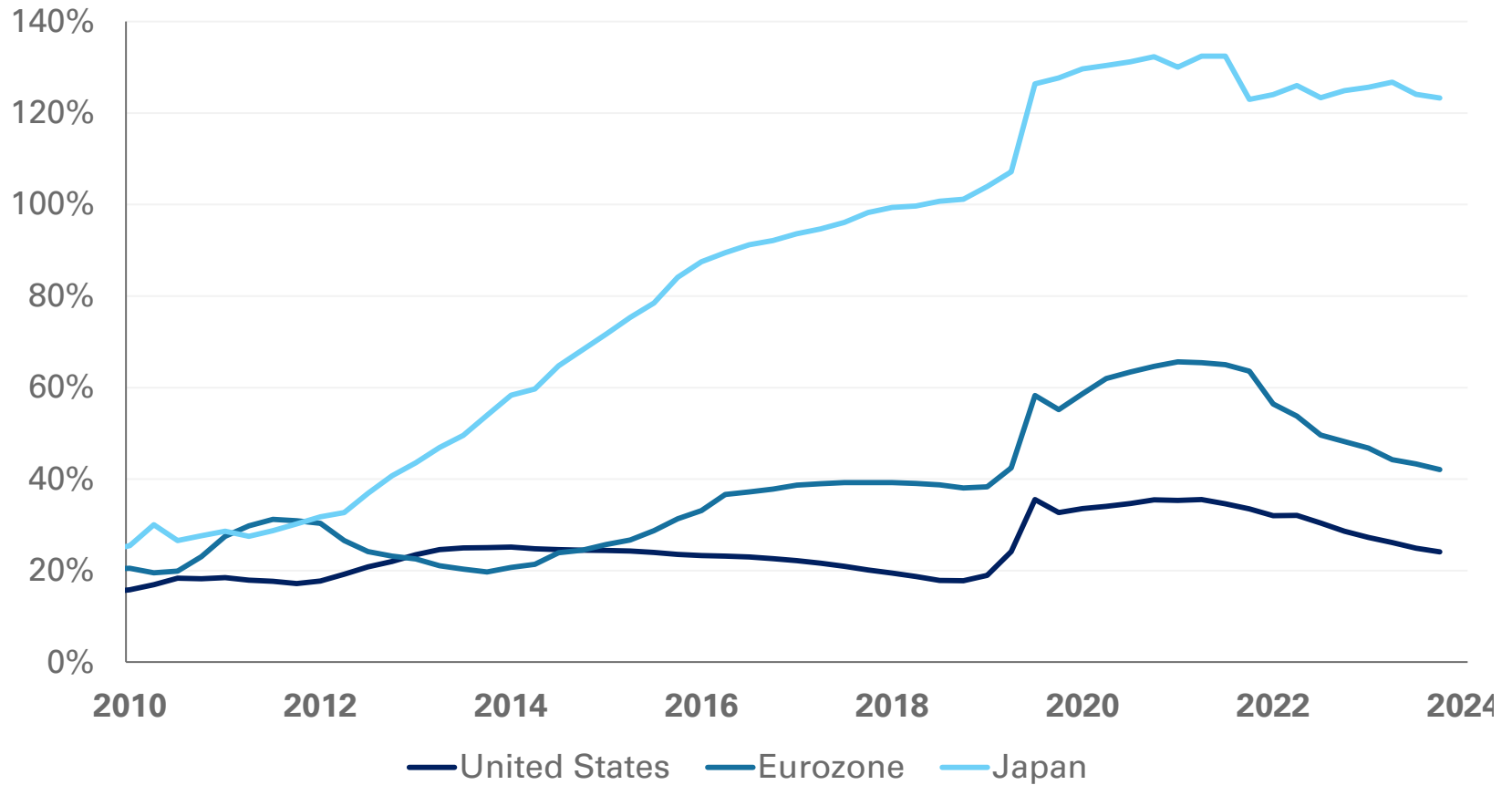
Source: Federal Reserve, ECB, Bank of Japan, Bank of England, FactSet





# CENTRAL BANK BALANCE SHEETS

AS A PERCENTAGE OF GDP



# CURRENCIES

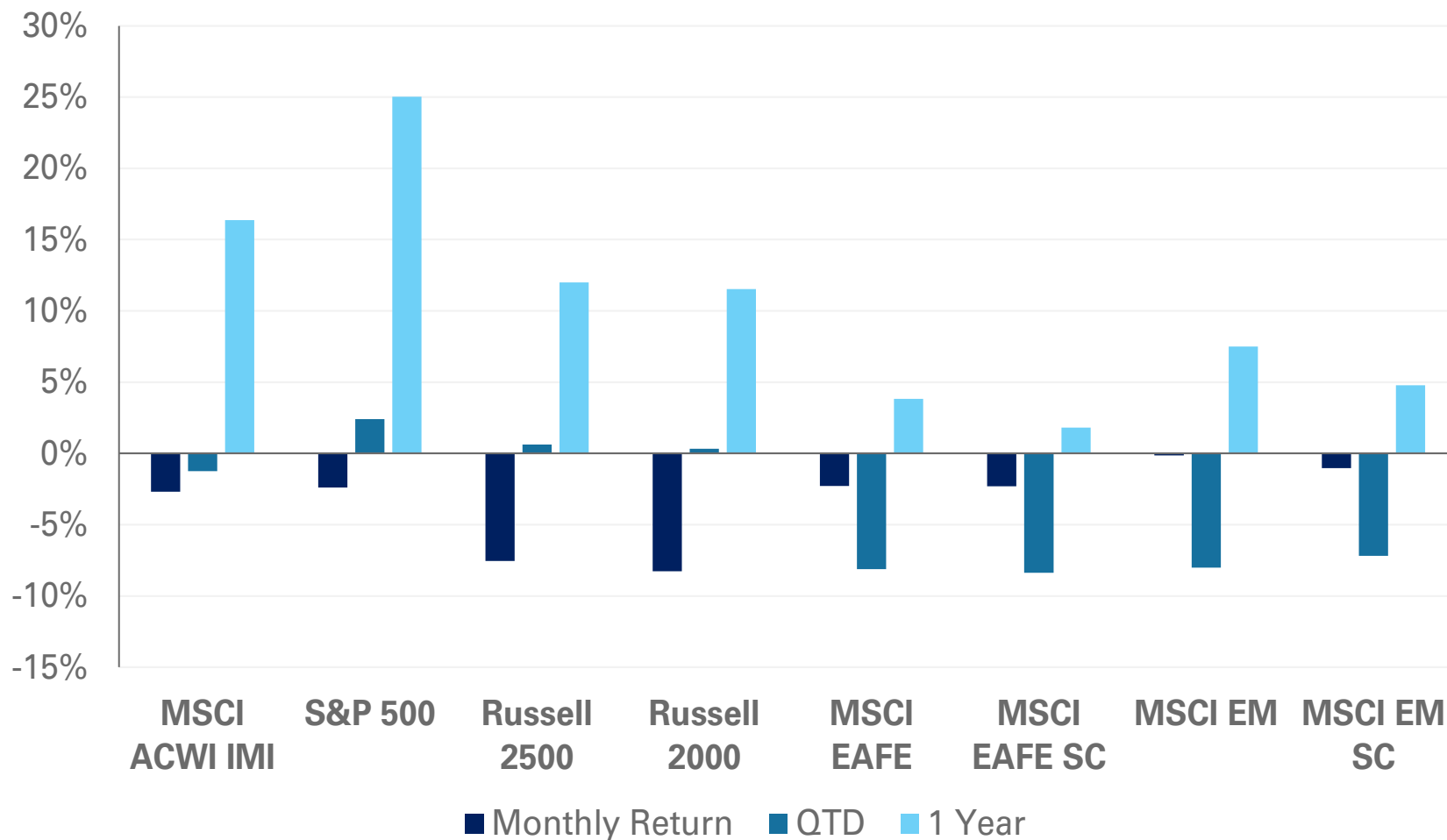
## RELATIVE TO THE U.S. DOLLAR

Currencies	Spot	1 Month	QTD	1 Year
Euro	1.04	-2.0%	-7.2%	-6.3%
British Pound	1.25	-1.5%	-6.6%	-1.8%
Japanese Yen	157.16	-4.4%	-9.0%	-10.3%
Swiss Franc	0.91	-2.8%	-6.9%	-7.1%
Australian Dollar	0.62	-5.0%	-10.8%	-9.3%
New Zealand Dollar	1.78	-5.3%	-11.9%	-11.5%
Canadian Dollar	1.44	-2.6%	-6.1%	-8.3%
Chinese Yuan	7.30	-0.9%	-3.9%	-2.8%
Taiwanese Dollar	32.78	-0.9%	-3.5%	-6.4%
Korean Won	1472	-5.2%	-11.2%	-12.5%
Vietnamese Dong	25485	-0.5%	-3.6%	-4.8%
Thai Baht	34.10	0.6%	-5.6%	0.1%
Philippines Peso	57.85	1.4%	-3.1%	-4.3%
Indian Rupee	85.61	-1.3%	-2.1%	-2.8%
Russian Ruble	109.75	-3.4%	-15.1%	-18.5%
Mexican Peso	20.79	-2.6%	-5.7%	-18.6%
Brazilian Real	6.18	-3.4%	-11.8%	-21.4%
Chilean Peso	0.03	-0.9%	-8.2%	-6.8%
Argentine Peso	1031.00	-2.1%	-5.9%	-21.6%
South African Rand	18.87	-4.3%	-8.7%	-3.1%



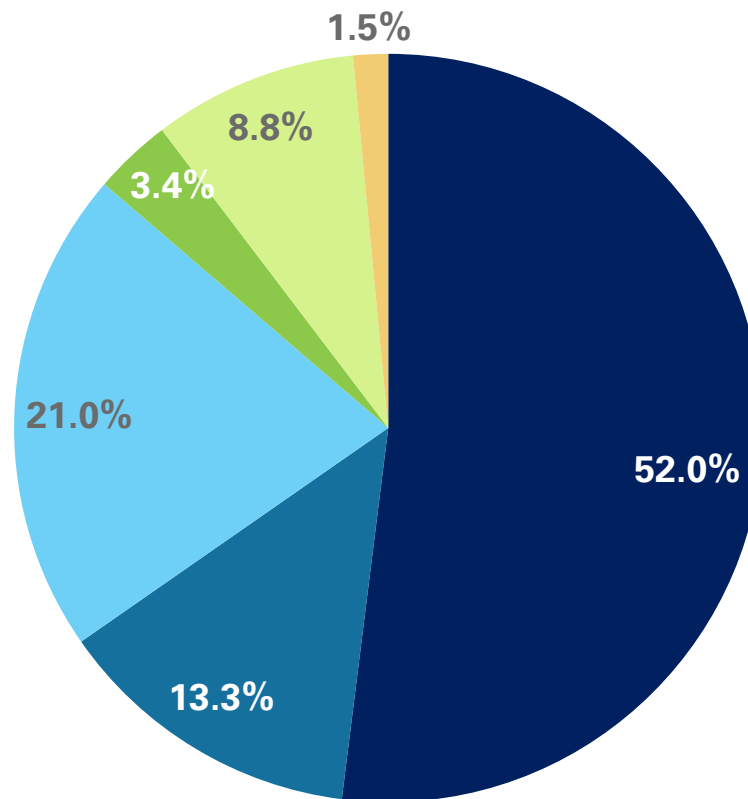
# EQUITY

# EQUITY INDEX PERFORMANCE



Source: MSCI, S&P, Russell, FactSet

# MSCI ACWI IMI WEIGHTS



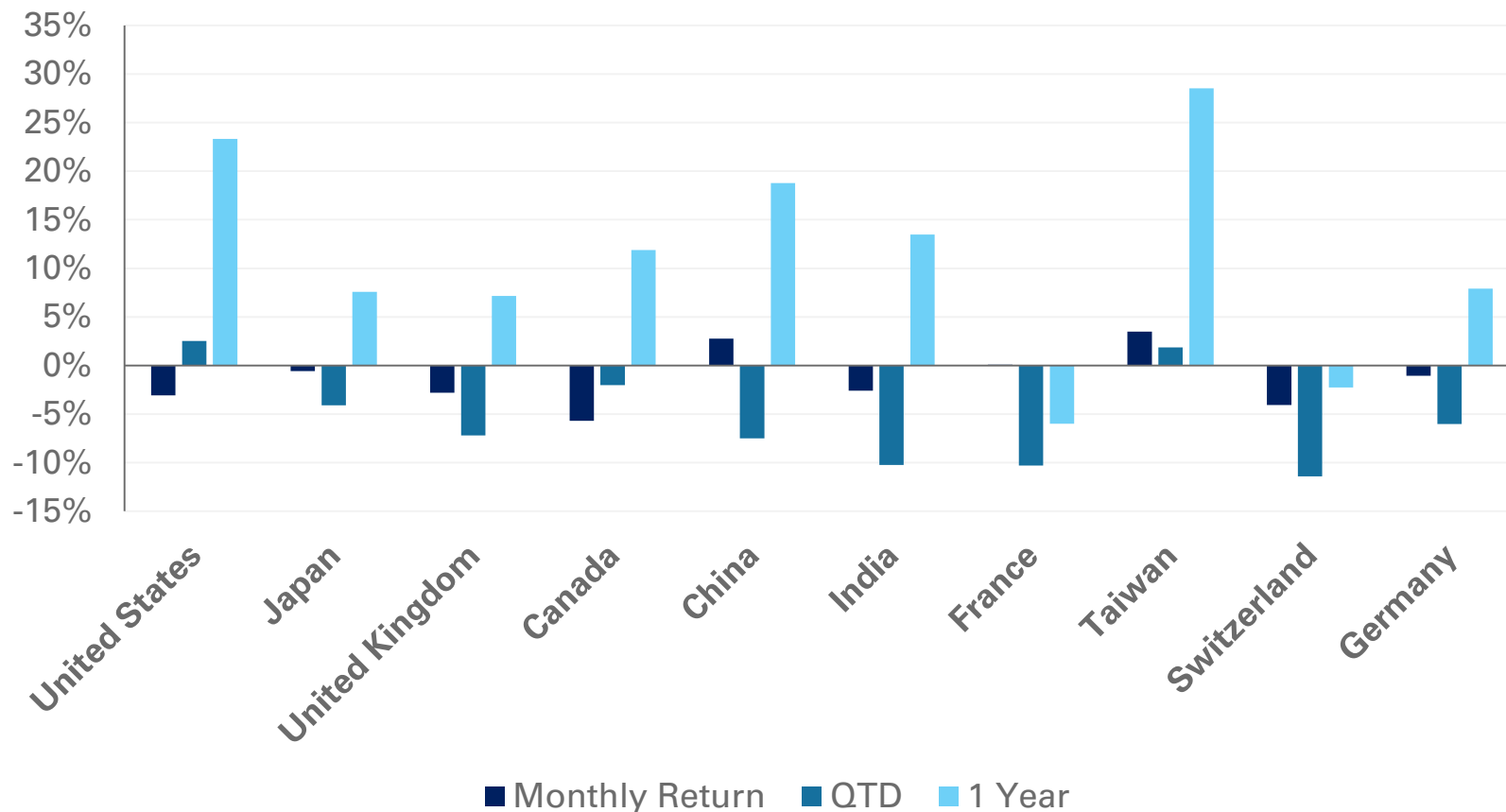
■ US Large Cap ■ US Small Cap ■ EAFE ■ EAFE Small Cap ■ EM ■ EM Small Cap



Source: MSCI, FactSet

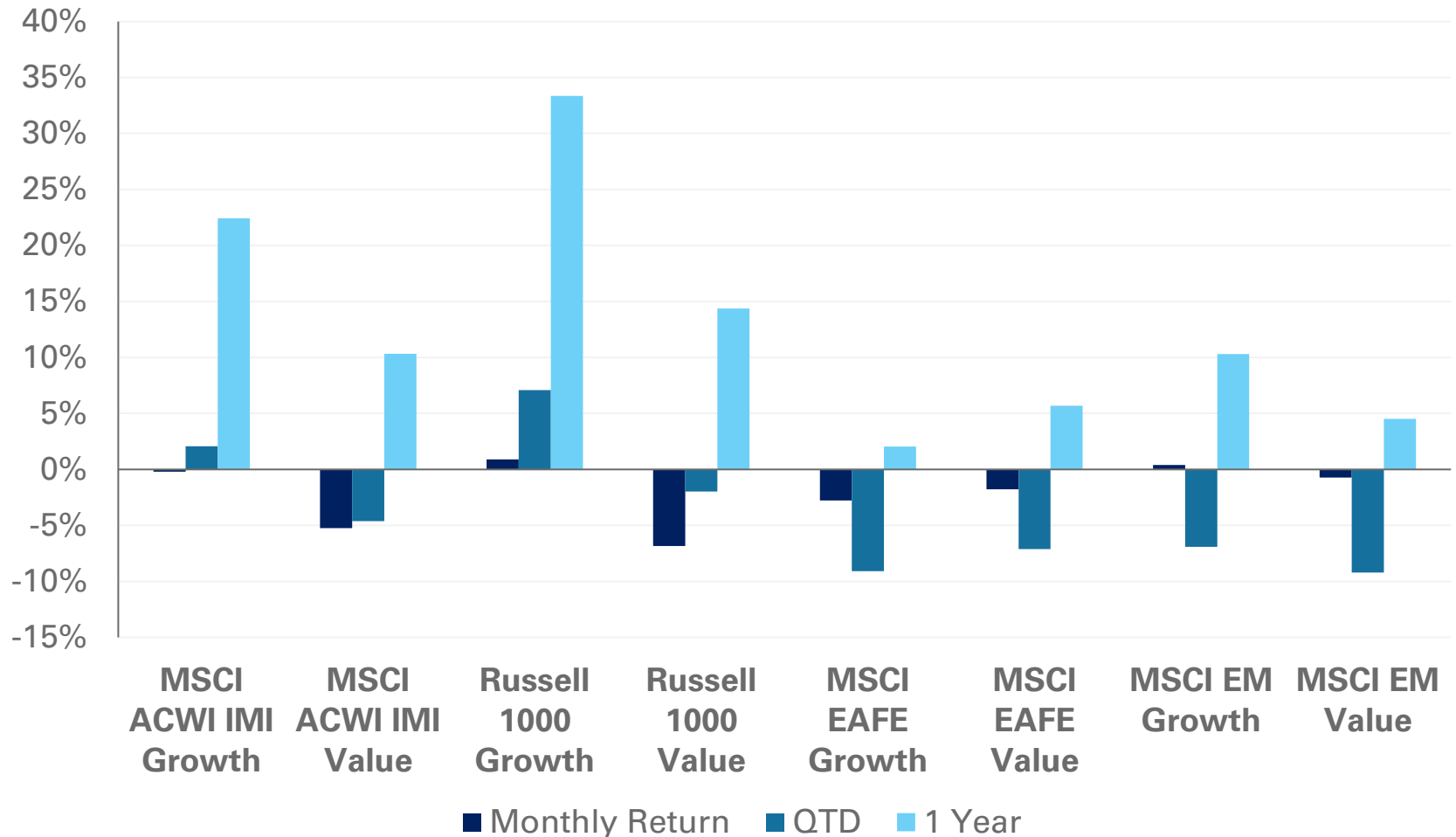
# EQUITY INDEX PERFORMANCE

## TOP 10 COUNTRIES BY MARKET CAP IN MSCI ACWI IMI INDEX



Source: MSCI, FactSet

# STYLE INDEX PERFORMANCE



Source: MSCI, Russell, FactSet

# SECTOR INDEX PERFORMANCE

	Monthly Return	QTD	1 Year	Index Weight
<b>MSCI ACWI IMI</b>	<b>-2.7%</b>	<b>-1.2%</b>	<b>16.4%</b>	<b>100.0%</b>
Communication Services	1.8%	4.5%	30.3%	7.7%
Consumer Discretionary	1.1%	4.2%	18.3%	11.5%
Consumer Staples	-4.2%	-6.9%	4.5%	5.8%
Energy	-6.9%	-3.9%	1.7%	3.8%
Financials	-4.0%	2.7%	24.0%	16.7%
Health Care	-6.0%	-10.9%	1.2%	9.6%
Industrials	-5.8%	-4.6%	12.0%	11.2%
Information Technology	0.8%	4.2%	30.1%	24.5%
Materials	-7.9%	-14.1%	-7.0%	3.9%
Real Estate	-6.8%	-9.5%	1.3%	2.6%
Utilities	-6.2%	-8.6%	11.2%	2.5%

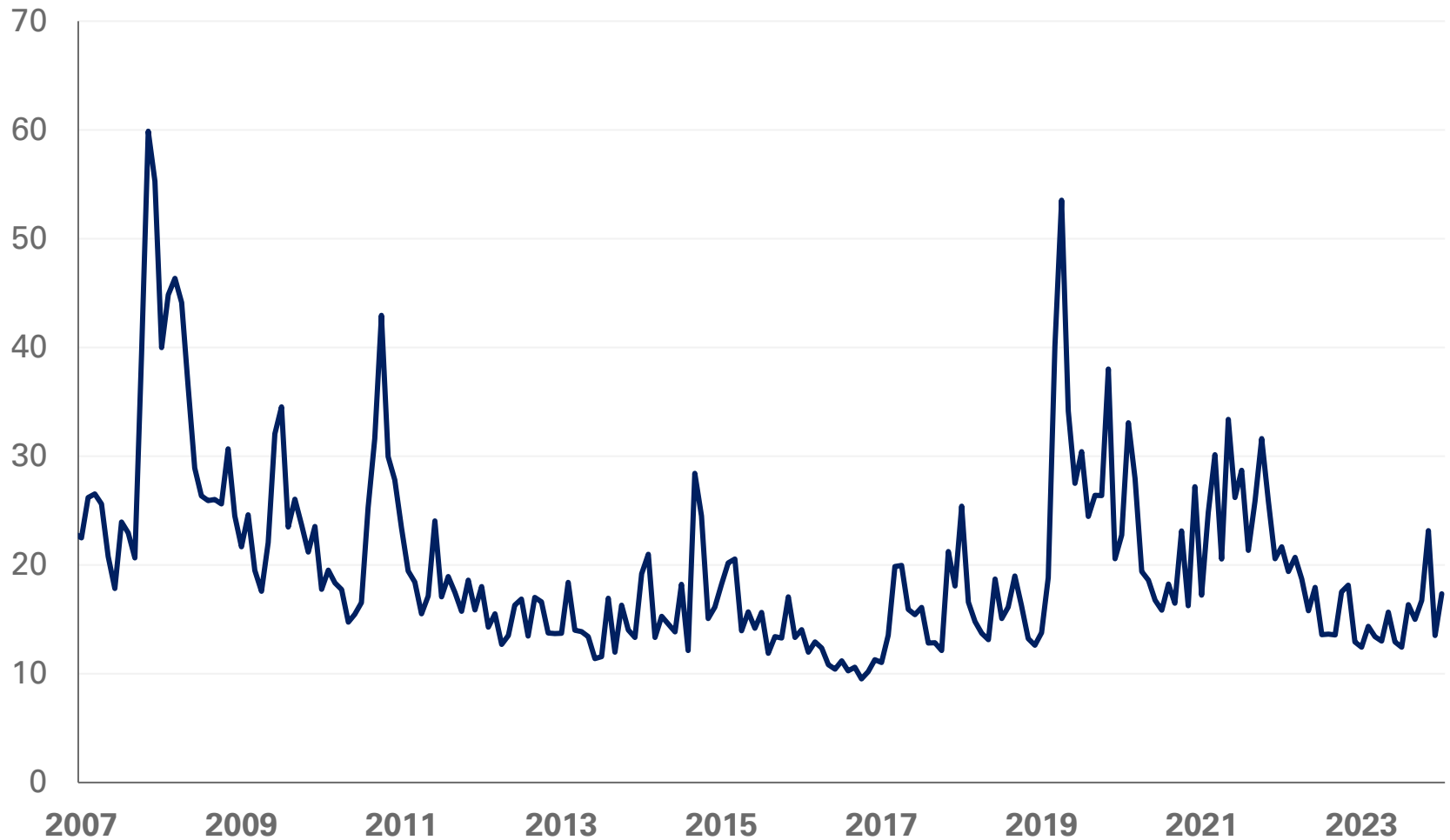
	Monthly Return	QTD	1 Year	Index Weight
<b>S&amp;P 500</b>	<b>-2.4%</b>	<b>2.4%</b>	<b>25.0%</b>	<b>100.0%</b>
Communication Services	3.6%	8.9%	40.2%	9.4%
Consumer Discretionary	2.4%	14.3%	30.1%	11.3%
Consumer Staples	-5.0%	-3.3%	14.9%	5.5%
Energy	-9.5%	-2.4%	5.7%	3.2%
Financials	-5.4%	7.1%	30.6%	13.6%
Health Care	-6.2%	-10.3%	2.6%	10.1%
Industrials	-7.9%	-2.3%	17.5%	8.2%
Information Technology	1.2%	4.8%	36.6%	32.5%
Materials	-10.7%	-12.4%	0.0%	1.9%
Real Estate	-8.6%	-7.9%	5.2%	2.1%
Utilities	-7.9%	-5.5%	23.4%	2.3%

Source (Top): MSCI, FactSet  
Source (Bottom): S&P, FactSet





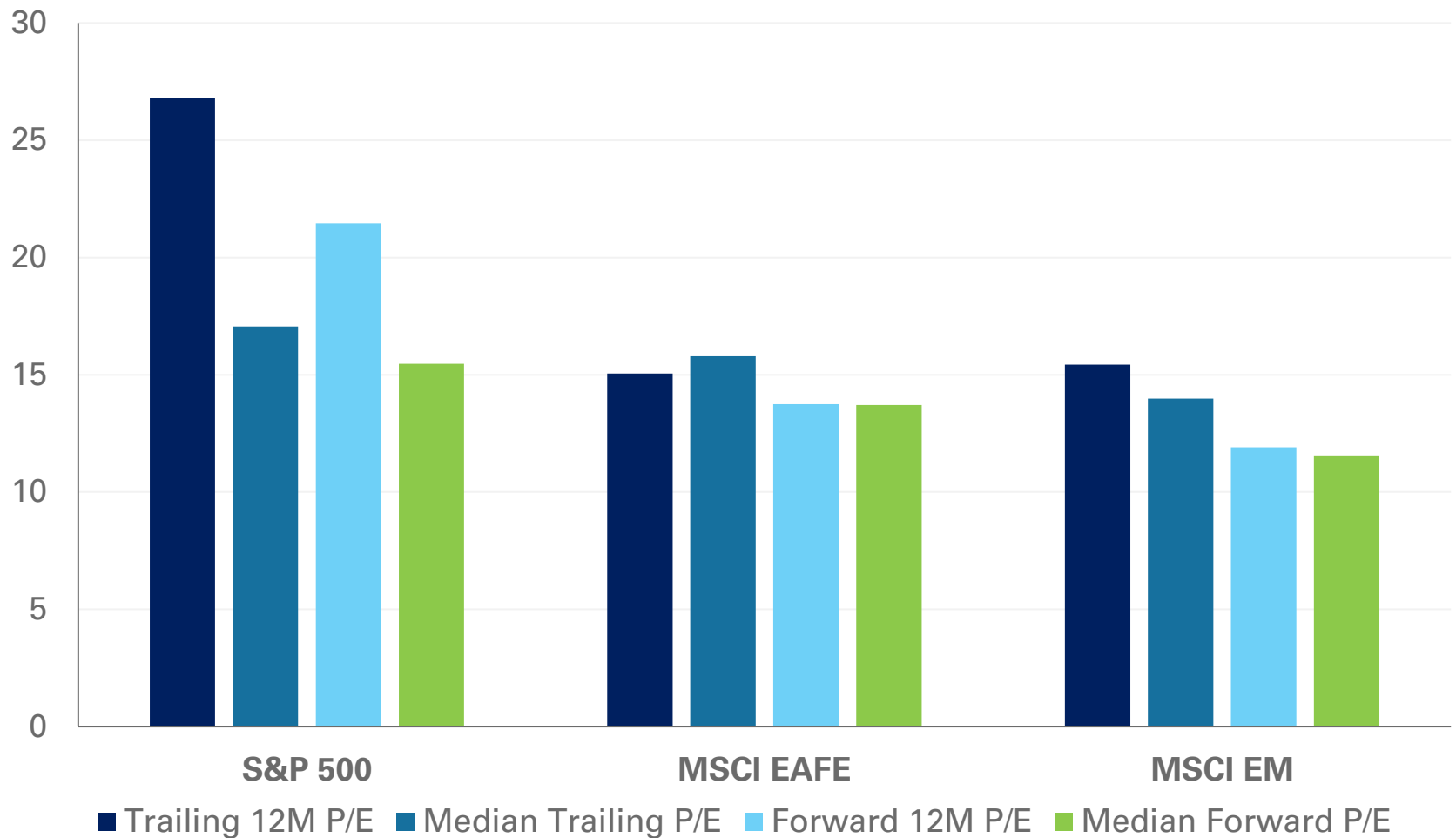
# EQUITY VOLATILITY INDEX (VIX)



Source: CBOE, FactSet



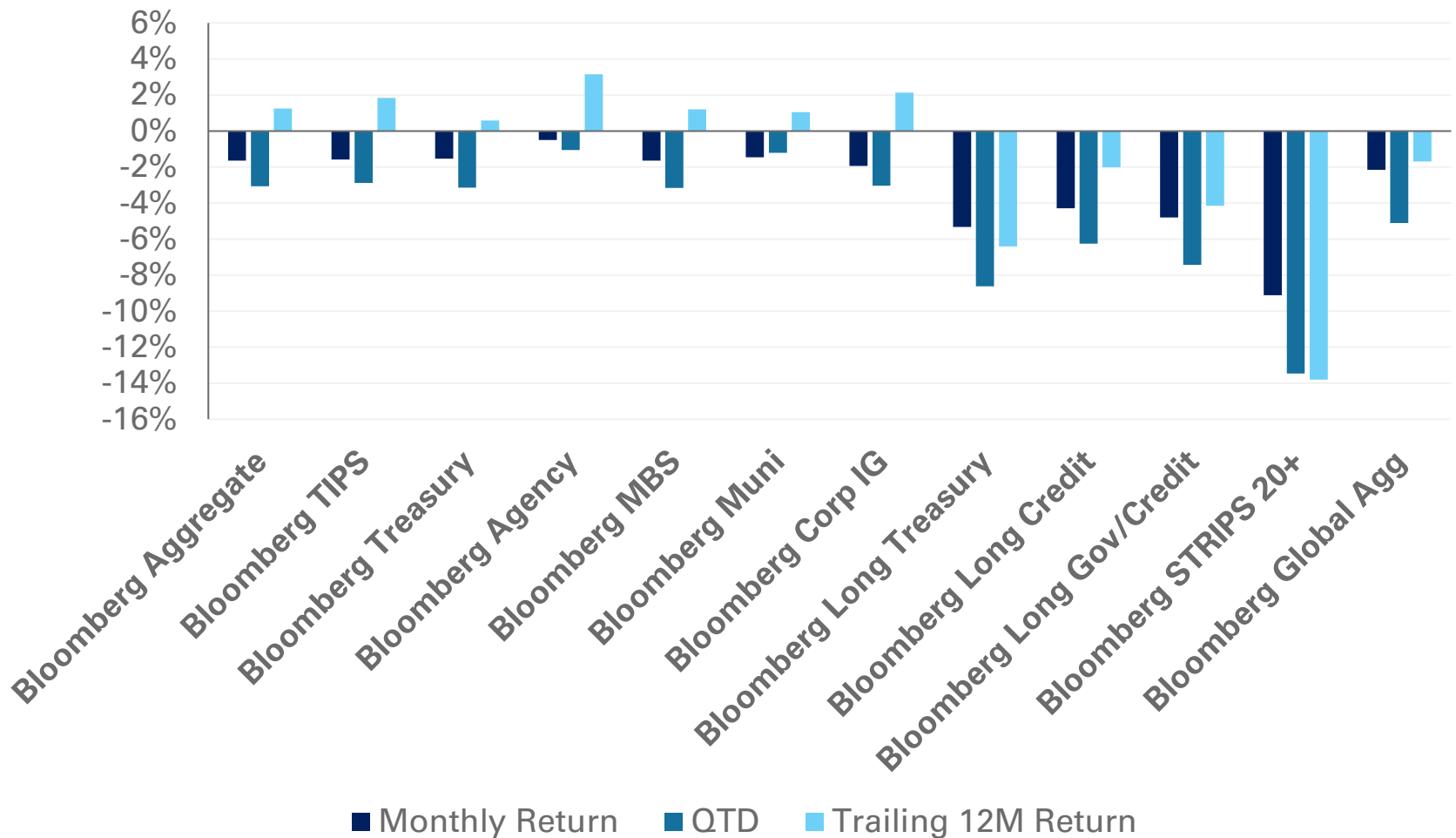
# GLOBAL EQUITY VALUATIONS



Median calculated based on 20-year monthly data  
Source: S&P, MSCI, FactSet

# SAFE-HAVEN FIXED INCOME

# SAFE-HAVEN FIXED INCOME PERFORMANCE



Source: Bloomberg, FactSet

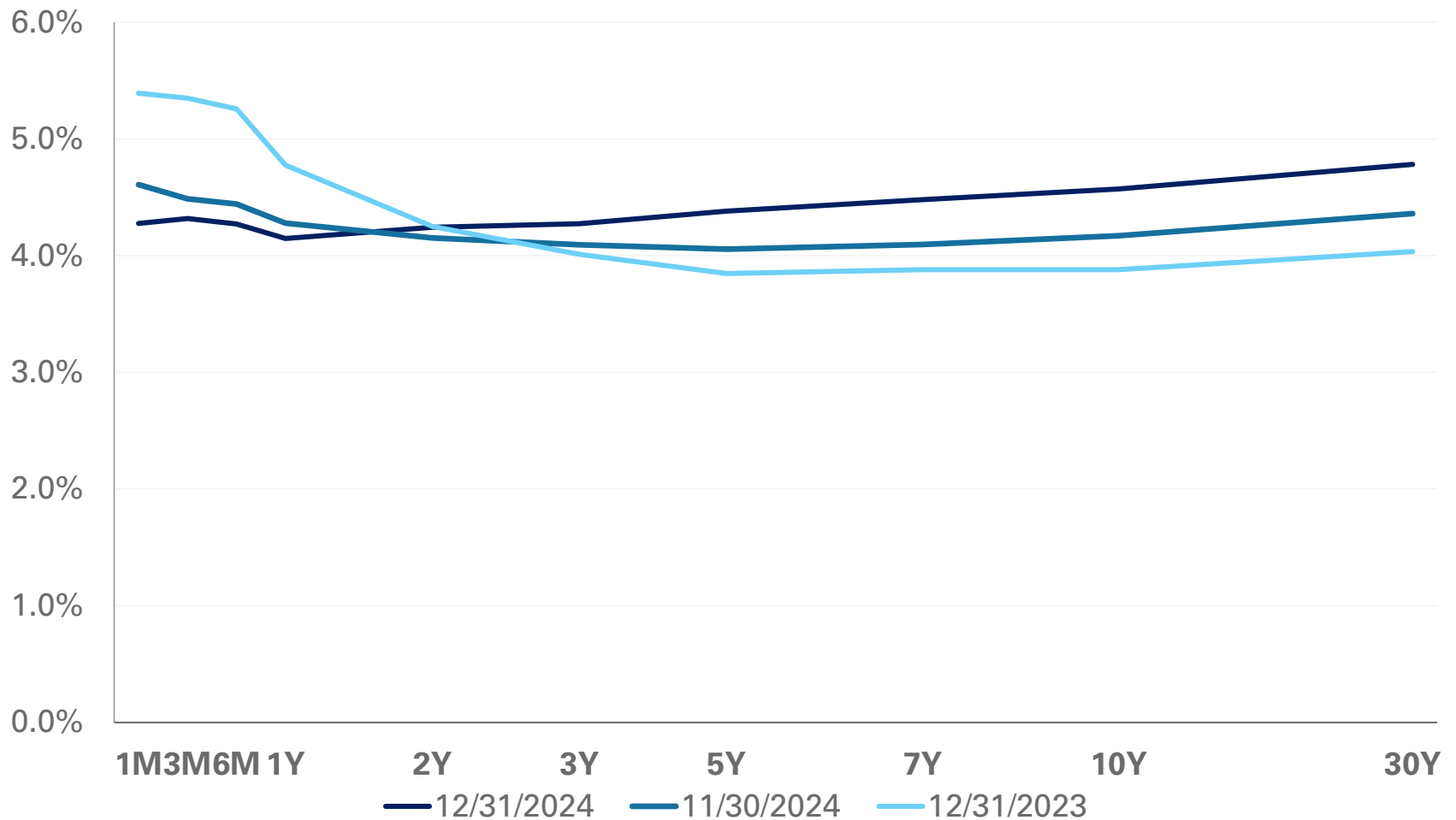
# FIXED INCOME CHARACTERISTICS

	Yield to Worst	Spread (bps)	Duration (Years)
<b>Bloomberg Aggregate</b>	4.91%	34	6.1
<b>Bloomberg TIPS</b>	4.59%	-	4.1
<b>Bloomberg Treasury</b>	4.45%	-	5.8
<b>Bloomberg Agency</b>	4.62%	12	3.3
<b>Bloomberg MBS</b>	5.27%	43	6.2
<b>Bloomberg Muni</b>	3.74%	-	6.2
<b>Bloomberg Corp IG</b>	5.33%	80	6.8
<b>Bloomberg Long Treasury</b>	4.86%	-	14.7
<b>Bloomberg Long Credit</b>	5.81%	100	12.4
<b>Bloomberg Long Gov/Credit</b>	5.34%	50	13.6
<b>Bloomberg STRIPS 20+</b>	4.88%	-	25.2
<b>Bloomberg Global Agg</b>	3.68%	35	6.5



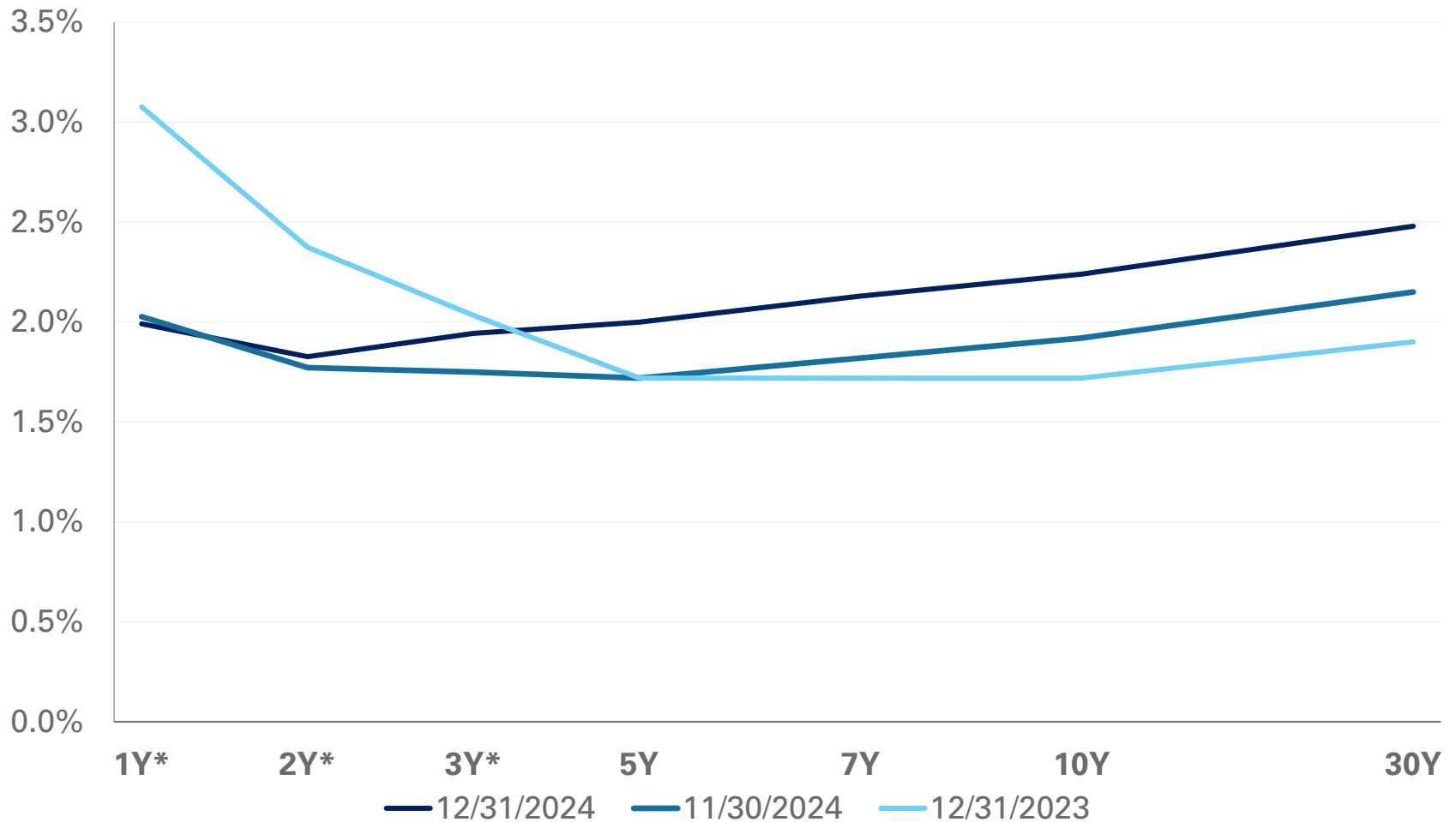
Source: Bloomberg, FactSet

# US TREASURY YIELD CURVE



Source: FactSet

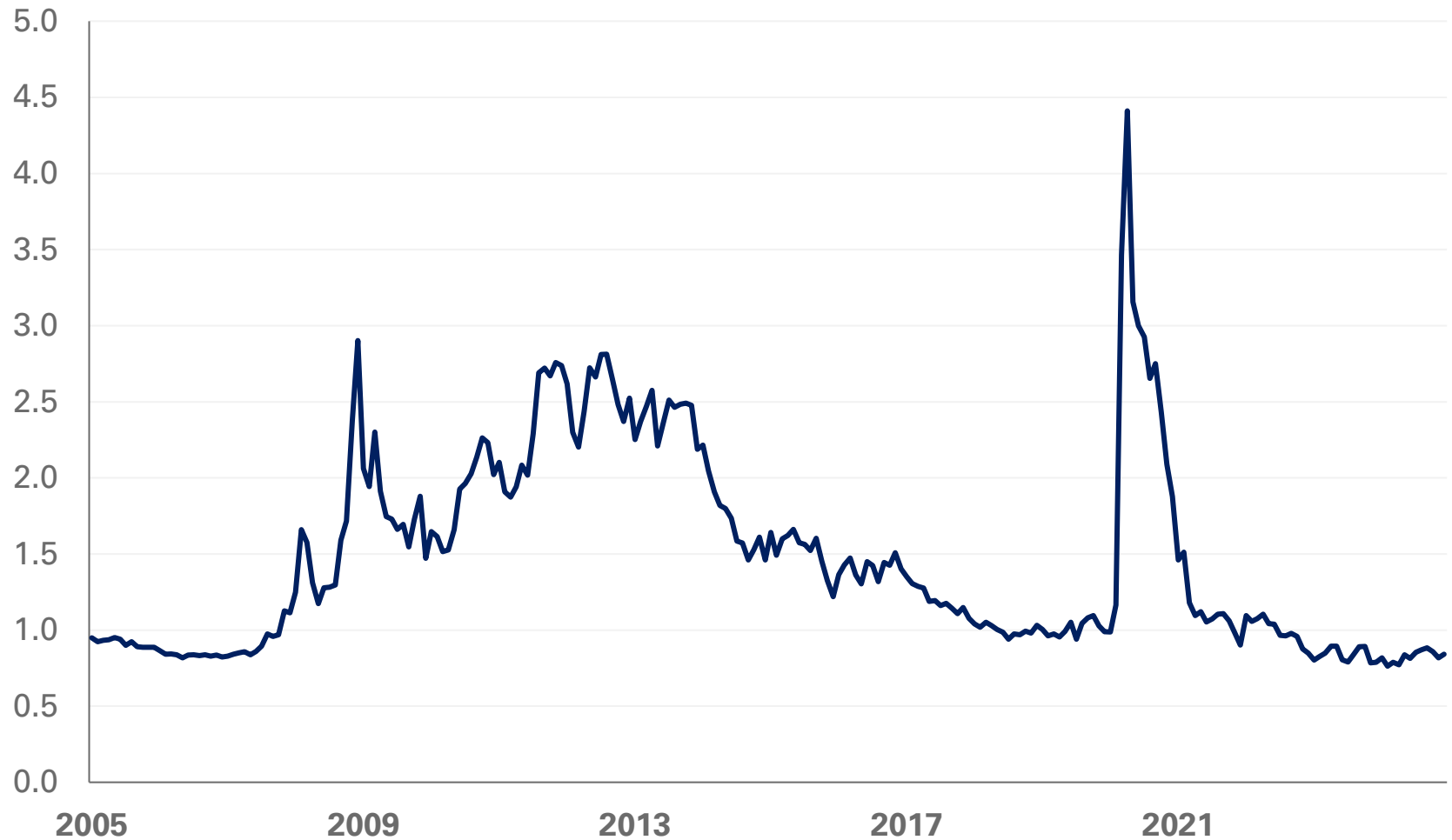
# US TREASURY REAL YIELD CURVE



Notes: \*Real yields are calculated based on a weighted average of select off-the-run TIPS yields  
Source: NEPC, Bloomberg, FactSet



# MUNI -TO-TREASURY RATIO



Numerator represents yield-to-worst for municipal bonds  
Source: Bloomberg, FactSet





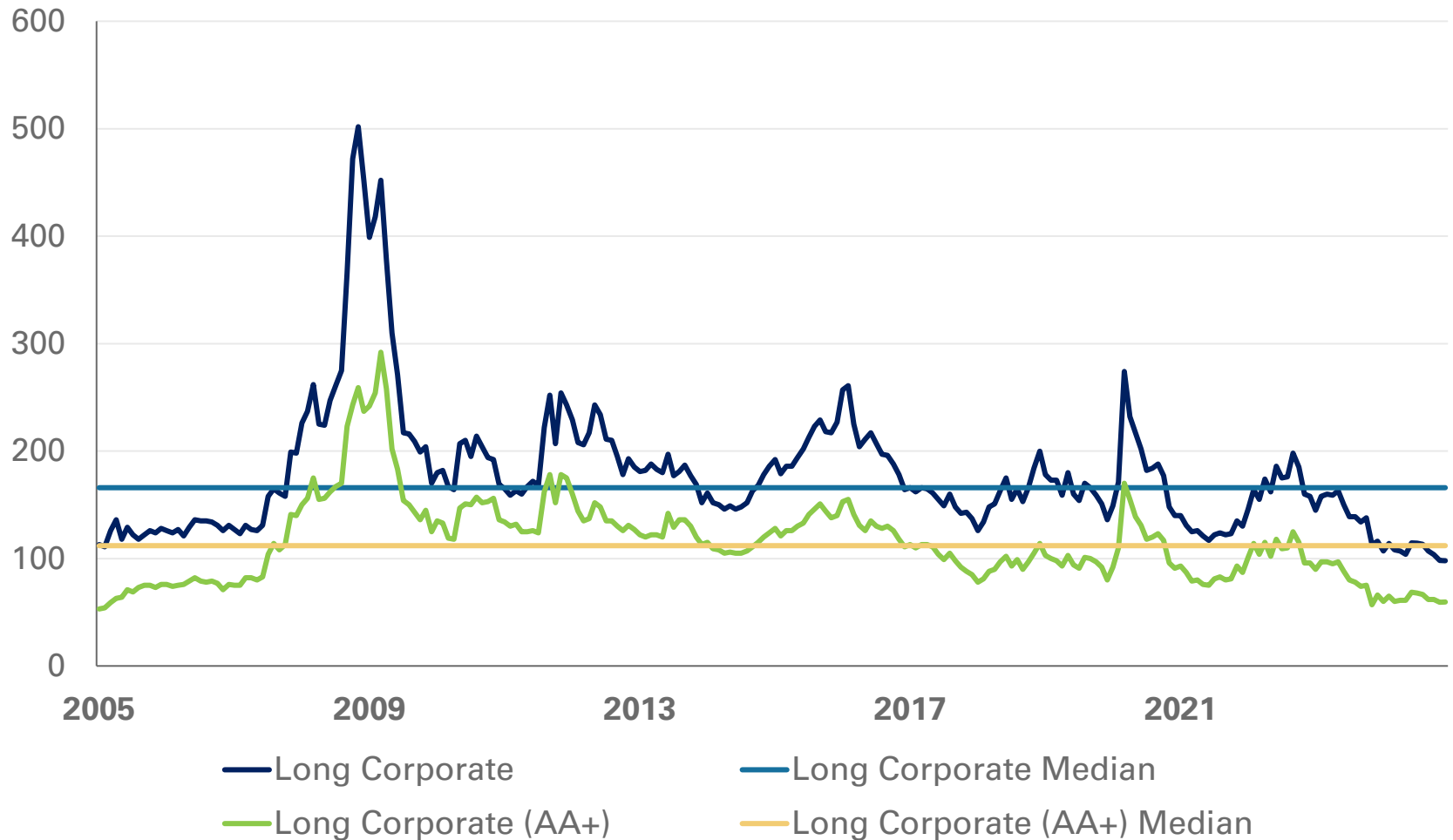
# LONG DURATION YIELDS



Source: Bloomberg, FactSet



# LONG DURATION CORPORATE SPREADS



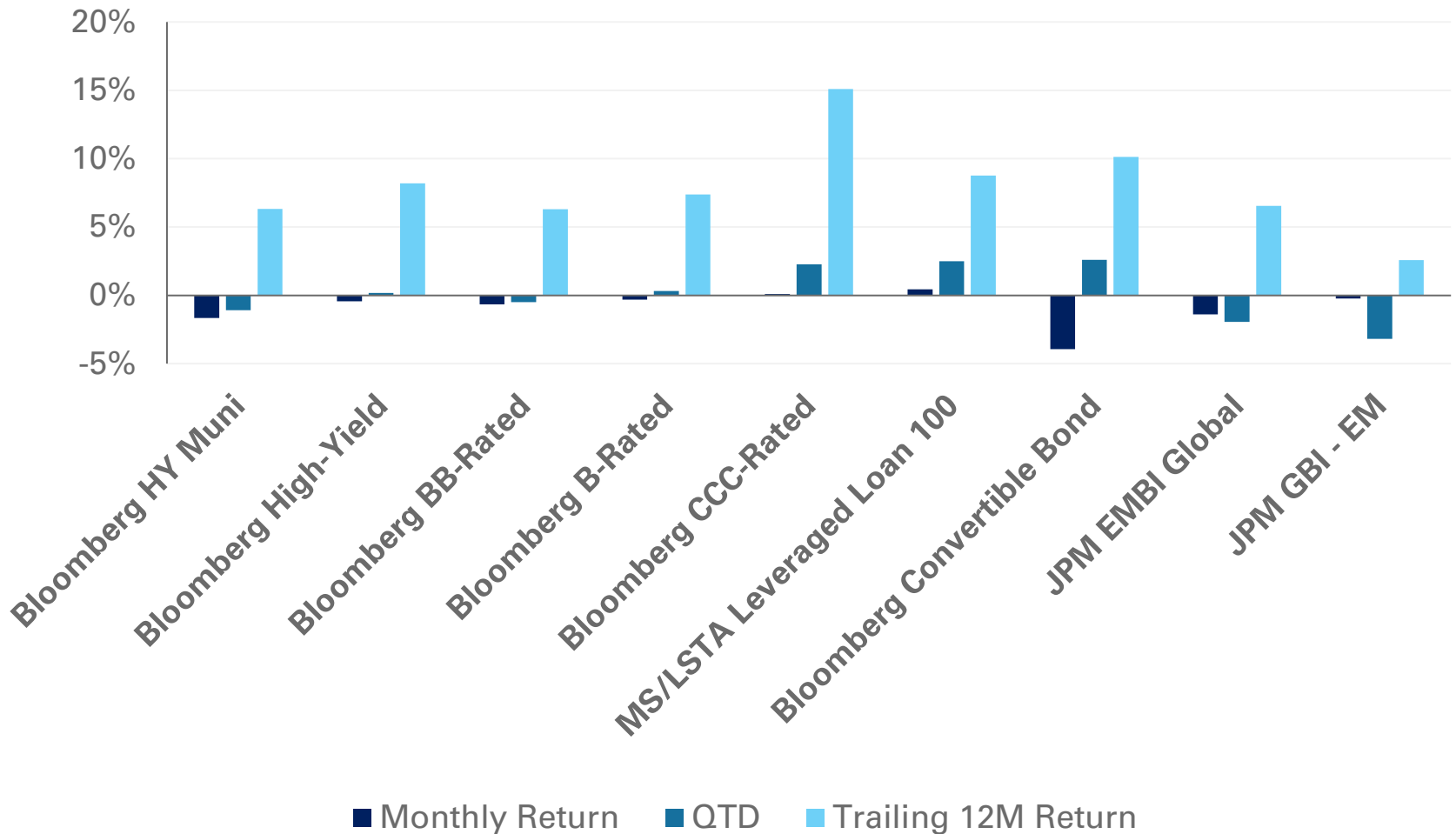
Median calculated based on 20-year of monthly data  
Source: Bloomberg, FactSet





# RETURN-SEEKING CREDIT

# RETURN-SEEKING CREDIT INDEX PERFORMANCE

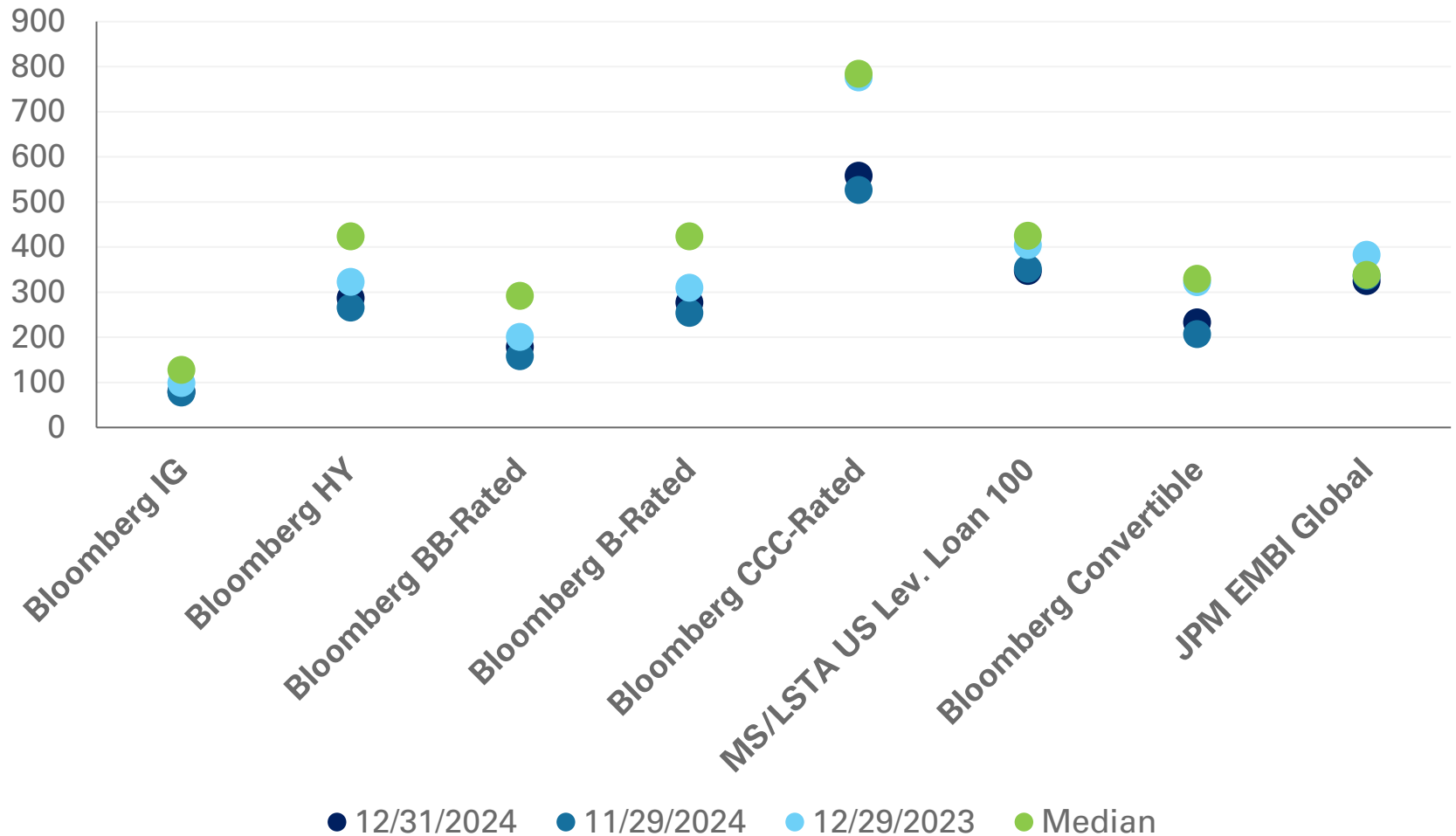


Source: Bloomberg, S&P, JPM, FactSet

# RETURN-SEEKING CREDIT CHARACTERISTICS

	Yield to Worst	Spread (bps)	Duration (Years)
<b>Bloomberg HY Muni</b>	5.52%	-	6.7
<b>Bloomberg High-Yield</b>	7.49%	287	3.1
<b>Bloomberg BB-Rated</b>	6.39%	179	3.3
<b>Bloomberg B-Rated</b>	7.43%	277	2.9
<b>Bloomberg CCC-Rated</b>	10.16%	558	2.9
<b>MS/LSTA Leveraged Loan 100</b>	7.96%	347	-
<b>Bloomberg Convertible Bond</b>	0.88%	233	1.6
<b>JPM EMBI Global</b>	7.87%	325	6.4
<b>JPM GBI - EM</b>	3.59%	-	6.0

# CREDIT SPREADS



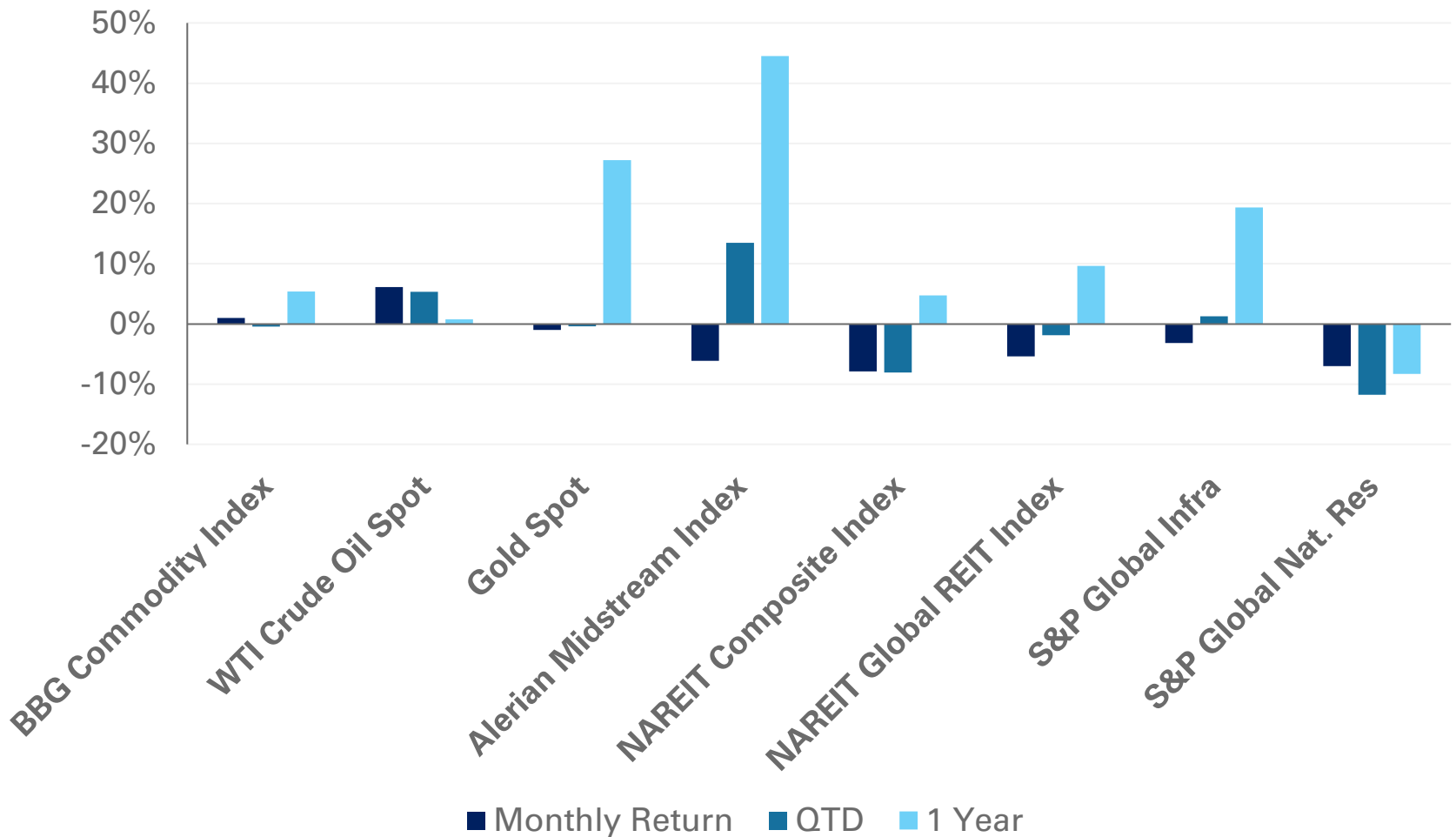
Median calculated based on 20-year of monthly data  
 Source: Bloomberg, S&P, JPM, FactSet





# REAL ASSETS

# REAL ASSETS INDEX PERFORMANCE



Source: Bloomberg, Alerian, NAREIT, S&P, FactSet



# REAL ASSETS INDEX PERFORMANCE

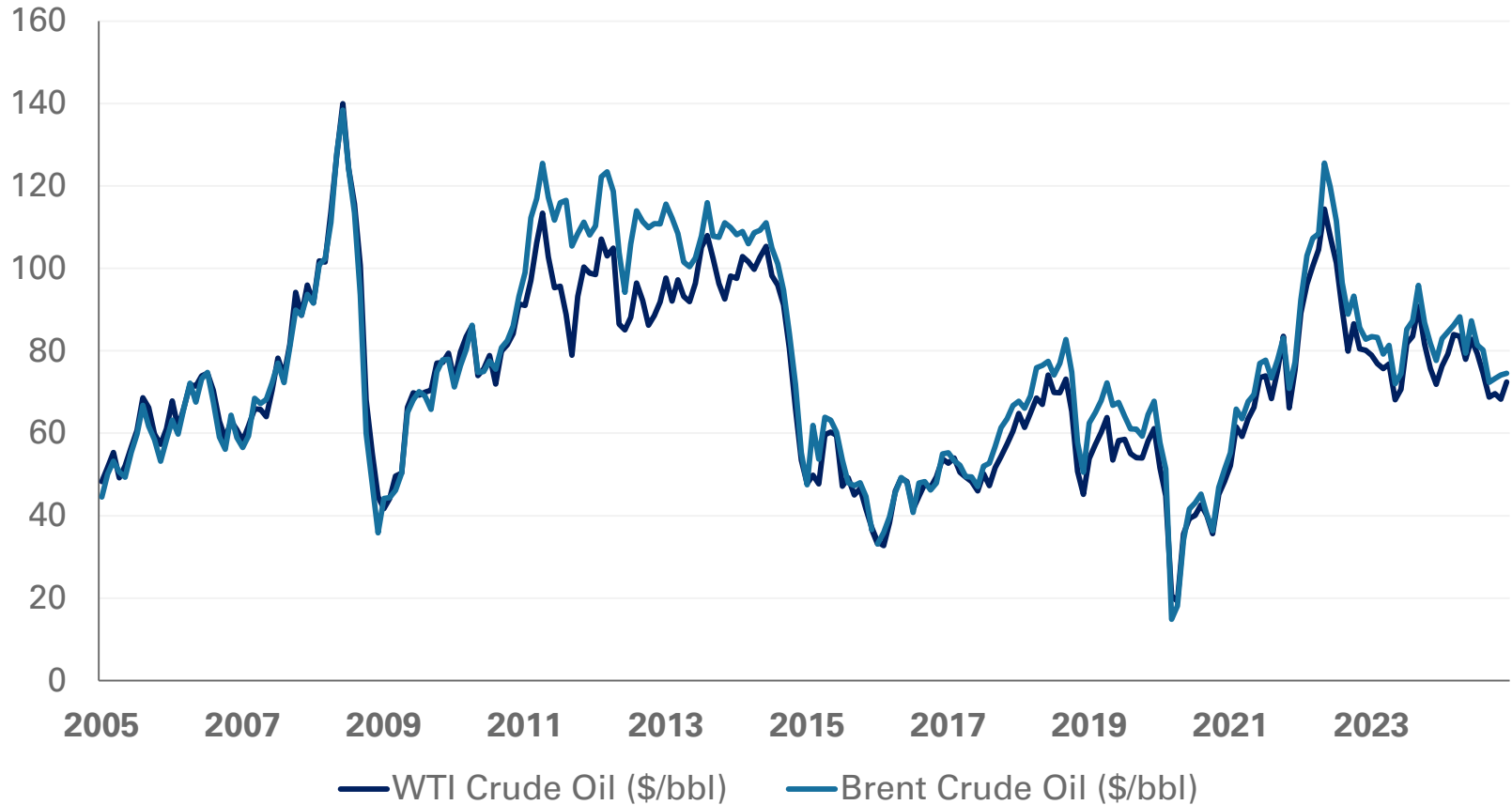
Index	1 Month	3 Month	YTD	1 Year	3 Year	5 Year
<b>Bloomberg Commodity Index</b>	<b>1.0%</b>	<b>-0.4%</b>	<b>5.3%</b>	<b>5.3%</b>	<b>4.0%</b>	<b>6.7%</b>
<b>Bloomberg Sub Agriculture Index</b>	<b>1.2%</b>	<b>-1.2%</b>	<b>-3.9%</b>	<b>-3.9%</b>	<b>2.0%</b>	<b>9.3%</b>
Coffee	0.9%	19.9%	86.3%	86.3%	22.3%	22.0%
Corn	6.3%	6.1%	-10.9%	-10.9%	-3.4%	6.5%
Cotton	-4.5%	-9.1%	-15.9%	-15.9%	-7.4%	4.4%
Soybean	1.9%	-5.5%	-19.2%	-19.2%	2.0%	8.7%
Soybean Oil	-3.5%	-6.4%	-14.9%	-14.9%	-2.9%	9.8%
Sugar	-8.3%	-13.3%	1.6%	1.6%	10.8%	13.0%
Wheat	1.0%	-7.1%	-19.0%	-19.0%	-16.6%	-6.1%
<b>Bloomberg Sub Energy</b>	<b>6.5%</b>	<b>5.5%</b>	<b>1.2%</b>	<b>1.2%</b>	<b>2.6%</b>	<b>-1.2%</b>
Brent Crude	4.8%	6.4%	9.4%	9.4%	15.4%	11.7%
Heating Oil	5.2%	7.0%	-0.1%	-0.1%	23.6%	13.0%
Natural Gas	10.3%	1.2%	-26.1%	-26.1%	-32.6%	-25.6%
Unleaded Gas	5.9%	6.7%	7.3%	7.3%	19.7%	15.0%
WTI Crude Oil	6.1%	8.3%	13.6%	13.6%	11.7%	2.1%
<b>Bloomberg Sub Industrial Metals</b>	<b>-3.0%</b>	<b>-7.7%</b>	<b>3.5%</b>	<b>3.5%</b>	<b>-2.8%</b>	<b>6.8%</b>
Aluminum	-2.1%	-2.6%	5.4%	5.4%	-4.0%	5.0%
Copper	-2.4%	-11.6%	5.5%	5.5%	-1.5%	8.4%
Nickel	-3.7%	-12.8%	-8.3%	-8.3%	-9.2%	1.7%
Zinc	-4.2%	-3.1%	12.1%	12.1%	-1.9%	7.4%
<b>Bloomberg Sub Precious Metals</b>	<b>-2.2%</b>	<b>-2.1%</b>	<b>25.0%</b>	<b>25.0%</b>	<b>11.2%</b>	<b>10.1%</b>
Gold	-1.1%	-0.5%	26.4%	26.4%	12.3%	10.4%
Silver	-5.6%	-7.3%	20.4%	20.4%	7.2%	9.0%
<b>Bloomberg Sub Livestock</b>	<b>-0.7%</b>	<b>4.8%</b>	<b>20.1%</b>	<b>20.1%</b>	<b>8.2%</b>	<b>1.0%</b>
Lean Hogs	-5.5%	6.8%	25.2%	25.2%	3.4%	-1.1%
Live Cattle	2.0%	3.9%	19.6%	19.6%	11.4%	2.6%



Source: Bloomberg, FactSet

# OIL MARKETS

## WTI VERSUS BRENT CRUDE SPOT PRICES



Source: WTI, Brent, FactSet

# GOLD SPOT PRICE



Source: FactSet





# DISCLAIMERS & DISCLOSURES

# POLICY DEFINITIONS

- All data prior to 01/2024 was received from Verus Investments. Performance data from 01/2024 to present is sourced from State Street.
- Policy Index is comprised of 24% Russell 3000, 24% MSCI ACWI ex US IMI, 9% Bloomberg US Aggregate, 1.2% Bloomberg US High Yield, 3.8% FTSE WGBI ex US, 8% HFRI FOF Composite, 11% Cambridge Associates Global All PE 1Q Lagged, 0.3% Bloomberg Commodity, 3.6% S&P Global Infrastructure, 2.1% S&P Global Large Mid Commodity & Resource, 4% S&P/LSTA Leveraged Loan +1.75%, and 9% NCREIF ODCE.
- Allocation Index is calculated using composite level weights and associated benchmarks.
- Russell 3000\* Index is comprised of Russell 3000 effective 01/1992. S&P 500 prior.
- MSCI ACWI ex USA IMI\* Index is comprised of MSCI ACWI ex USA IMI (Net) effective 01/2024. MSCI ACWI ex USA IMI Gross prior.
- MSCI World ex USA\* Index is comprised of MSCI World ex USA (Net) effective 01/2024. It was MSCI World ex USA Gross effective 09/2023, MSCI ACWI ex USA Gross prior.
- BlackRock MSCI Custom Benchmark consists of MSCI World ex U.S. (Net) effective 1/2024. Prior it was MSCI World ex U.S.
- MSCI World ex US Net\* consists of MSCI World ex U.S. (Net) effective 1/2024. Prior it was MSCI AC World ex USA Index.
- Franklin Templeton Custom Benchmark consists of MSCI AC World ex U.S. Small Cap Index (Net) effective 1/2024. Prior, it was MSCI AC World ex USA Small Cap.
- MSCI Emerging Markets Custom Benchmark consists of MSCI Emerging Markets (Net) effective 1/2024. Prior it was MSCI Emerging Markets Index.
- Fixed Income Blend Index is comprised of 75% Bloomberg US Aggregate, 10% Bloomberg US High Yield, and 15% FTSE WGBI ex US effective 07/2021.
- Brandywine Custom Benchmark is comprised of 100% FTSE World Government Bond Index beginning 1/2024. Prior, it was 100% Bloomberg Global Aggregate Index.
- Absolute Return Blend Index is comprised of HFRI Fund of Funds Composite Index effective 10/2017. Libor 1M + 4% prior.
- Private Equity Blend Index is comprised of Cambridge Associate Global All PE 1Q Lagged effective 10/2017. Russell 3000 +2.5% prior.
- Real Asset Blend Index is comprised of 5% Bloomberg Commodity, 60% S&P Global Infrastructure, and 35% S&P Global Large Mid Commodity & Resource.
- Real Estate Blend Index is comprised of NCREIF ODCE effective 10/2011.

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Past performance is no guarantee of future results.

Returns for pooled funds, e.g. mutual funds and collective investment trusts, are collected from third parties; they are not generally calculated by NEPC. Returns for separate accounts, with some exceptions, are calculated by NEPC. Returns are reported net of manager fees unless otherwise noted.

A “since inception” return, if reported, begins with the first full month after funding, although actual inception dates (e.g. the middle of a month) and the timing of cash flows are taken into account in Composite return calculations.

NEPC’s preferred data source is the plan’s custodian bank or record-keeper. If data cannot be obtained from one of the preferred data sources, data provided by investment managers may be used. Information on market indices and security characteristics is received from additional providers. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within. In addition, some index returns displayed in this report or used in calculation of a policy index, allocation index or other custom benchmark may be preliminary and subject to change.

All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.

The opinions presented herein represent the good faith views of NEPC as of the date of this presentation and are subject to change at any time. Neither fund performance nor universe rankings contained in this report should be considered a recommendation by NEPC.

Source of private fund performance benchmark data: Cambridge Associates, via Refinitiv

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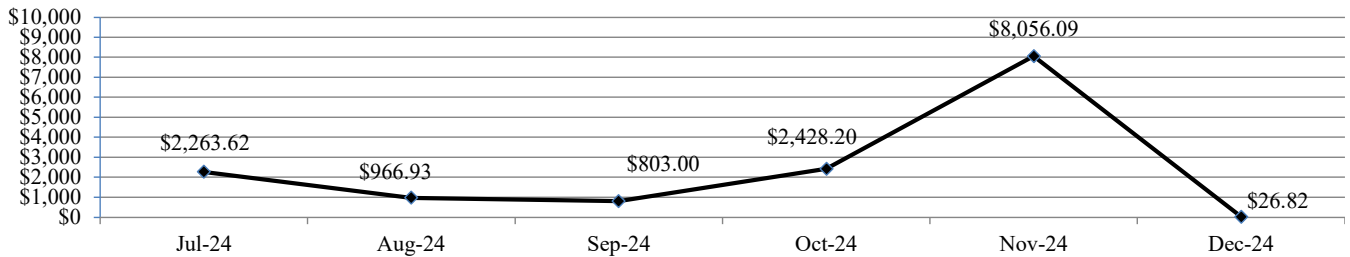


# Alameda County Employees' Retirement Association Semiannual Directed Brokerage Report as of 12/31/2024

## Quarterly Commentary

**In period ending December 31, 2024, the total recaptured dollar amount for ACERA's Directed Brokerage (DB) Program was \$14,240.70.** Since inception<sup>1</sup>, ACERA has recaptured \$2,166,842.69. For the second half of 2024, William Blair Investment Management directed the highest percentage of trading volume at 55.86%. The largest recaptured directed commission for the half was \$9,794.69. Virtue (Knight Securities) received 68.78% of ACERA's directed trades among the network of correspondent brokers. On average the program continues to operate in compliance with ACERA's DB Policy; however, participating active management now make up less than 20% and 25% of domestic equity and international equity asset classes, respectively.

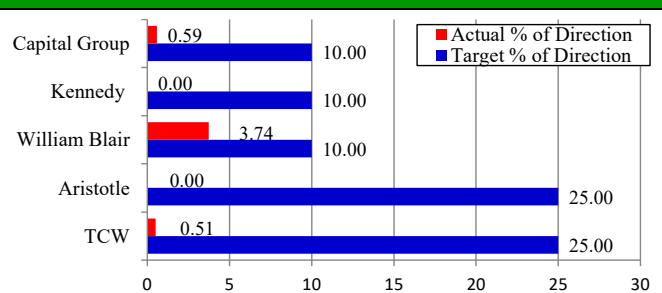
## Monthly Recaptured



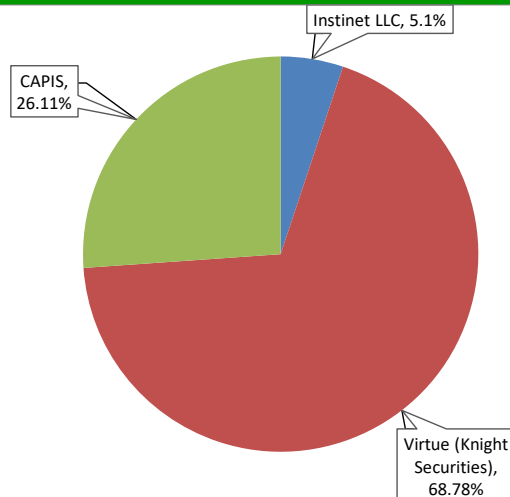
## Directed Commission \$<sup>2</sup>

Manager	2H2024	YTD
Capital Group	693.36	1,371.11
Kennedy	9,794.69	19,011.79
William Blair	3,718.73	5,275.15
Aristotle Capital	0.00	0.00
TCW	33.92	558.96
<b>Total</b>	<b>\$14,240.70</b>	<b>\$26,217.01</b>

## Directed %<sup>3</sup>



## Directed % to Correspondent Brokers<sup>4</sup>



- |                         |                                      |
|-------------------------|--------------------------------------|
| Andes Capital Group     | Instinet LLC                         |
| B. Riley & Co.          | ITG, Inc.                            |
| Barclays (US Algo/DMA)  | LAM Securities                       |
| BIDS Trading            | Liquidnet                            |
| Bley Investment Group   | Mischler Financial Group             |
| BofA Securities (U.S.)  | North South Capital                  |
| Cabrera Capital Markets | O'Neil Securities                    |
| CAPIS                   | Penserra Securities, LLC             |
| CAPIS Step Out          | Pershing, LLC                        |
| CF Global Trading       | Piper Sandler                        |
| Cowen Securities (U.S.) | State Street Global Markets (Europe) |
| Drexel Hamilton         | Virtue America LLC                   |
| HSBC James Capel        |                                      |
| ICAP (U.S.)             |                                      |
| Imperial Capital        |                                      |

**Brokers are selected at the discretion of the Investment Managers, pursuant to Best Execution and ACERA's DB Policy.**

1. ACERA's DB Program began in September 2006. Bivium does not participate in Commission Recapture; Blackrock, Franklin Templeton, William Blair EME CIT are comingled accounts and do not participate.

2. Data provided by CAPIS. Directed Commission \$ - Dollar amount of commissions from directed trades - this amount is split among ACERA (22.75% for 2H2024), CAPIS, & the Correspondent Brokers.

3. Data provided by Zeno Consulting Group (Zeno). Directed % - Calculated by dividing Manager's directed trading volume by its total trading volume and compared to its assigned target. Target percentages are ranges (e.g. up to 25% for TCW).

4. Data provided by CAPIS.



TO: Members of the Investment Committee

FROM: Noe Reynoso – Investment Analyst *Noe Reynoso*

DATE: March 5, 2025

SUBJECT: ACERA’s Investment Products and Services Introductions (IPSI) Program for the semiannual period ending December 31, 2024.

In the semiannual period ending December 31, 2024, Staff received 72 investment products and services inquiries from prospective providers. We met with 29 managers and service providers who presented through the IPSI process.

The purpose of IPSI is to provide prospective vendors an opportunity to gain a better understanding of ACERA’s investment objectives and for Staff to learn about the vendors’ investment products/services through face-to-face meetings, teleconferences, or video conferences. Staff has designated the morning of the second Wednesday of every month as ACERA’s IPSI day. Each introductory session is approximately 45 minutes.

Below please find a chart depicting the types of IPSI sessions that were held in 2024.

ASSET CLASS	Q1 '24	Q2 '24	Q3 '24	Q4'24	TOTAL
<b>U.S. Equities</b>	0	0	1	0	1
<b>Int'l Equities</b>	11	3	1	1	16
<b>Fixed Income</b>	0	0	1	0	1
<b>Real Estate</b>	2	1	1	0	4
<b>Private Equities</b>	1	0	2	0	3
<b>Absolute Return</b>	0	0	0	0	0
<b>Real Assets</b>	1	3	1	3	8
<b>Private Credit</b>	4	7	5	8	24
<b>Other Services</b>	2	1	5	0	8
<b>TOTAL:</b>	21	15	17	12	65



**INVESTMENT MANAGER,  
CONSULTANT, AND CUSTODIAN FEES**

For The Semiannual Period Ending  
December 31, 2024

**INVESTMENT NET ASSET VALUE AND INVESTMENT MANAGER FEES  
FOR THE SEMIANNUAL PERIOD ENDING DECEMBER 31, 2024**

For the Semiannual Period Ending December 31, 2024	NAV <sup>2</sup> (\$) As of 3/31/24	Q1 - Total Fees (\$)	bps of NAV	NAV <sup>2</sup> (\$) As of 6/30/24	Q2 - Total Fees (\$)	bps of NAV	NAV <sup>2</sup> (\$) As of 9/30/24	Q3 - Total Fees (\$)	bps of NAV	NAV <sup>2</sup> (\$) As of 12/31/24	Q4 - Total Fees (\$)	bps of NAV	Total Fees (\$)	Total bps of NAV
Name of Fund														
<b>Domestic Equity<sup>1</sup></b>														
Aristotle Capital	189,027,923	175,246	9.27	186,093,823	179,066	9.62	197,945,328	190,270	9.61	189,920,251	193,904	10.21	544,582	27.51
BlackRock R1000 Index Fund	2,345,779,169	48,927	0.21	2,429,625,742	49,897	0.21	2,577,413,250	53,829	0.21	2,648,216,996	56,128	0.21	152,653	0.59
Kennedy Capital	168,432,748	317,957	18.88	163,697,147	324,032	19.79	176,205,511	350,827	19.91	176,299,122	361,938	20.53	992,816	56.34
Trust Co. of the West	181,563,560	175,245	9.65	195,368,840	181,290	9.28	198,200,758	192,900	9.73	209,082,672	202,017	9.66	549,435	27.72
William Blair Small Cap Growth	155,522,877	283,752	18.25	157,227,728	293,788	18.69	167,254,447	318,578	19.05	174,708,532	331,103	18.95	896,118	53.58
<b>Total Domestic Equity</b>	<b>3,040,326,277</b>	<b>1,001,126</b>	<b>3.29</b>	<b>3,132,013,280</b>	<b>1,028,073</b>	<b>3.28</b>	<b>3,317,019,294</b>	<b>1,106,404</b>	<b>3.34</b>	<b>3,398,227,573</b>	<b>1,145,090</b>	<b>3.37</b>	<b>3,135,604</b>	<b>9.45</b>
<b>International Equity<sup>1</sup></b>														
BlackRock MSCI World ex-US	994,803,796	60,149	0.60	991,124,106	61,510	0.62	967,004,756	61,698	0.64	775,489,545	54,746	0.71	183,357	1.90
BlackRock EMSA Index Fund	374,086,693	63,194	1.69	393,155,095	66,616	1.69	425,575,169	71,422	1.68	392,344,459	69,889	1.78	201,232	4.73
Bivium International Equity	422,313,817	706,948	16.74	418,452,562	722,170	17.26	448,361,442	749,244	16.71	414,644,368	738,028	17.80	2,178,363	48.58
Capital Group	440,302,857	157,770	3.58	430,763,303	161,498	3.75	451,860,002	166,626	3.69	411,397,760	161,012	3.91	485,895	10.75
Franklin Templeton Inv.	286,324,337	417,860	14.59	286,041,513	424,342	14.83	309,869,467	446,090	14.40	281,587,029	437,325	15.53	1,288,292	41.58
William Blair Emerging Market Growth	428,656,393	538,642	12.57	464,526,177	556,997	11.99	474,138,893	581,295	12.26	457,811,036	575,684	12.57	1,676,934	35.37
<b>Total International Equity</b>	<b>2,946,487,893</b>	<b>1,944,562</b>	<b>6.60</b>	<b>2,984,062,756</b>	<b>1,993,134</b>	<b>6.68</b>	<b>3,076,809,729</b>	<b>2,076,376</b>	<b>6.75</b>	<b>2,733,274,197</b>	<b>2,036,684</b>	<b>7.45</b>	<b>6,014,072</b>	<b>19.55</b>
<b>Fixed Income<sup>1</sup></b>														
Baird Advisors	1,191,720,918	200,249	1.68	1,195,555,914	198,919	1.66	1,259,072,524	207,472	1.65	1,221,995,245	208,278	1.70	606,640	4.82
Loomis Sayles	283,126,904	227,166	8.02	283,744,874	226,023	7.97	302,326,090	238,680	7.89	299,397,723	243,931	8.15	691,869	22.88
Brandywine Global FI	186,577,301	140,970	7.56	181,632,482	135,249	7.45	197,543,337	143,206	7.25	178,258,205	141,005	7.91	419,425	21.23
<b>Total Fixed Income</b>	<b>1,661,425,122</b>	<b>568,384</b>	<b>3.42</b>	<b>1,660,933,270</b>	<b>560,191</b>	<b>3.37</b>	<b>1,758,941,951</b>	<b>589,358</b>	<b>3.35</b>	<b>1,699,651,173</b>	<b>593,214</b>	<b>3.49</b>	<b>1,717,933</b>	<b>9.77</b>
<b>Real Estate<sup>4, 5, 6</sup></b>														
Total Real Estate	793,787,708	2,140,166	26.96	792,056,965	2,364,030	29.85	774,806,749	2,055,059	26.52	805,817,375	2,238,337	27.78	6,559,255	84.66
<b>Private Equity<sup>4, 5, 6</sup></b>														
Total Private Equity	1,141,122,037	3,822,077	33.49	1,135,758,867	3,556,668	31.32	1,124,673,963	4,254,085	37.83	984,939,496	3,369,623	34.21	11,632,830	103.43
<b>Absolute Return<sup>4, 5, 6</sup></b>														
Total Absolute Return	928,797,921	1,599,334	17.22	957,428,752	1,671,612	17.46	974,899,806	1,687,728	17.31	854,806,481	1,481,397	17.33	4,958,675	50.86
<b>Real Assets<sup>4, 5, 6</sup></b>														
Total Real Assets	677,471,728	1,187,570	17.53	687,953,805	1,302,024	18.93	735,577,059	1,441,354	19.59	624,494,549	1,166,771	18.68	3,930,948	53.44
<b>Private Credit<sup>4, 5, 6</sup></b>														
Total Private Credit	267,102,021	964,349	36.10	298,270,184	1,180,807	39.59	293,961,609	882,089	30.01	261,954,333	922,949	35.23	3,027,245	102.98
<b>Cash<sup>*</sup></b>	148,449,448			111,854,812			154,422,383			177,679,864 <sup>*</sup>				
<b>TOTAL<sup>7</sup></b>	<b>11,604,970,155</b>	<b>13,257,568</b>	<b>11.42</b>	<b>11,760,332,691</b>	<b>13,686,539</b>	<b>11.64</b>	<b>12,211,112,543</b>	<b>14,122,454</b>	<b>11.57</b>	<b>11,540,845,041</b>	<b>12,954,065</b>	<b>11.22</b>	<b>41,066,561</b>	<b>33.63</b>

Notes:

\*Cash total includes the NAVs for the Parametric Cash Overlay account and the SSGA transition account

1. Domestic, International Equity, and Fixed Income managers' fees are based on staff validated manager invoices.

2. NAVs may use estimates at the time of this report's production.

3. Some accounts contain submanaged funds; the fees shown include all assets in the account.

4. Sometimes fees may be estimates. According to the Limited Partnership Agreements, management fees are based on committed amounts and/or assets under management.

5. Detailed records regarding these investments of public pension funds are exempt from disclosure under California Government Code Section 6254.26

6. As of 1Q 2021, the management fee totals no longer includes estimates for other expenses and carried interest allocations. This additional information will be reported in the annual 7514.7 Alternative Investment Vehicles Information Report presented each December.

7. Previous quarter's amounts may change as estimates are trueed up to actual amounts. Each true up is made using the most recent information.

**CONSULTANT/CUSTODIAN FEES  
FOR THE SEMIANNUAL PERIOD ENDED DECEMBER 31, 2024**

	<b>Q1 - Fees (\$)</b>	<b>Q2 - Fees (\$)</b>	<b>Q3 - Fees (\$)</b>	<b>Q4 - Fees (\$)</b>	<b>Total (\$)</b>
<b>Consultant</b>					
Callan Associates	56,250	56,250	56,250	56,250	225,000
Clearwater Analytics			26,127	70,697	96,824
Institutional Shareholders Services	12,500	12,500	12,500	12,500	50,000
NEPC	187,500	187,500	187,500	187,500	750,000
Verus Advisory, Inc.	129,167	30,000	-	-	159,167
Trading Technologies <sup>2</sup>	11,813	11,813	11,813	11,813	47,251
Sub-total Consultant	397,229	298,063	294,190	338,760	1,328,241
<b>Custodian</b>					
State Street Bank	137,900	141,406	139,968	144,980	564,254
<b>TOTAL OF CONSULTANT / CUSTODIAN FEES <sup>1</sup></b>	<b>535,129</b>	<b>439,469</b>	<b>434,158</b>	<b>483,740</b>	<b>1,892,496</b>

Notes:

1. Previous quarter's amounts may change as estimates are trued up to actual amounts. Each true up is made using the most recent information.

2. Trading Technologies acquired Abel Noser Solutions/Zeno Consulting Group.



To: Members of the Investment Committee
From: Julius Cuaresma, Investment Analyst jcc
Date: March 5, 2025
Subject: Semiannual Report for the Period Ending December 31, 2024 – Rebalancing and Cash Activities

Recommendation:

Not Applicable – this is an informational report. Please note that per the Board-approved December 2024 Information Item “Notice of Change in Distribution Frequency for Informational Reports from Quarterly to Semiannual”, Staff is now providing this ‘Rebalancing and Cash Activities Report’ on a semiannual basis.

Background/Discussion:

- 1. For this semiannual period ending December 31, 2024 (“Period”), there was no Board action required to rebalance the Total Fund. In accordance with ACERA’s General Investment Guidelines, Policies and Procedures, Section V: Asset Allocation and Rebalancing, Schedule IA: Asset Allocation Targets and Schedule IC: Asset Allocation Portfolio Rebalancing, no rebalancing signals were received during the period. The Summary of Rebalancing and Cash Activities is reported to the Investment Committee on a semiannual basis.
2. Regarding significant cash flows for this Period, Staff implemented the following activity to manage excess cash, meet supplemental month-end retiree benefits, administrative payroll, capital calls and provide operating funds:
a. Month-end payroll and Total Fund Withdrawals (Table 1 below): Staff withdrew \$142.0 million (M), on a net basis, from ACERA’s Total Fund Cash Account (HI1A) to supplement month-end payroll. Staff wired out \$177.0 M to ACERA’s JP Morgan Bank account; Fiscal wired in \$35.0 M to HI1A as subsequent employer contributions (these incoming wires are noted because not all employer contributions are received before the month-end administrative payroll.)

Table 1: Summary of cash flows for Staff wired out from SSB (HI1A) and Fiscal wired subsequent employer contributions from Jul-24 to Dec-24, totaling 2H24 Net of 142.0 M.

- b. Capital Calls, Distributions: ACERA wired \$172.3 M in aggregate to meet capital calls and fund ACERA’s privately placed investments. Distributions (e.g., cash, in-kind distributions and return of principal), totaled \$38.5 M (this amount does not include other incidental income from other programs¹). This results in \$133.7 M net outflows.
c. Other Activity: To meet current and future cash flow needs, Staff redeemed \$220.0 M from the International Developed Equity Passive Mandate (MSCI World Ex-US), \$100.0 M in August and \$120.0 M in December. As background, in July the Board approved a new Asset Allocation (“Mix C”) which increases the U.S. Equity target from 24.0% to 29.5% and decreases the International Equity target from 24.0% to 18.5%. To implement Mix C, Staff raised cash from the most overweight asset class, International Equity.

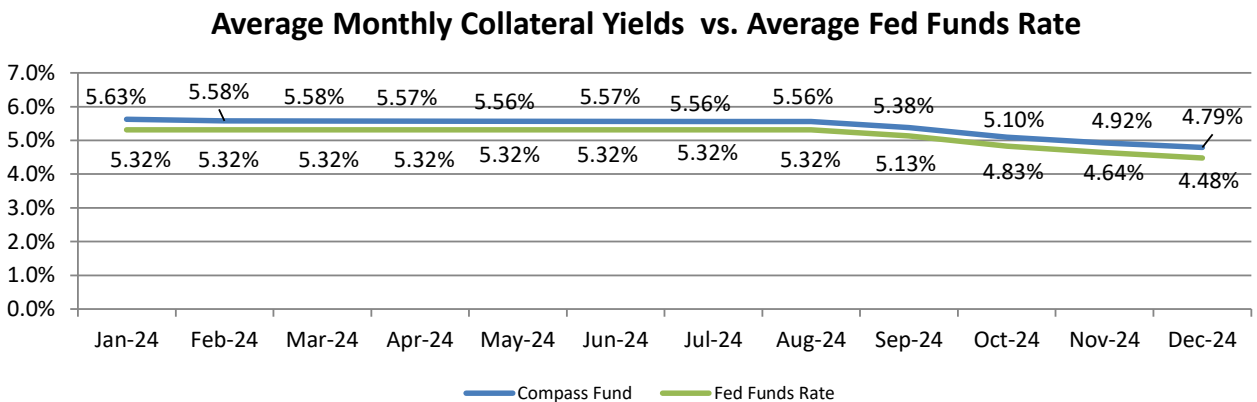
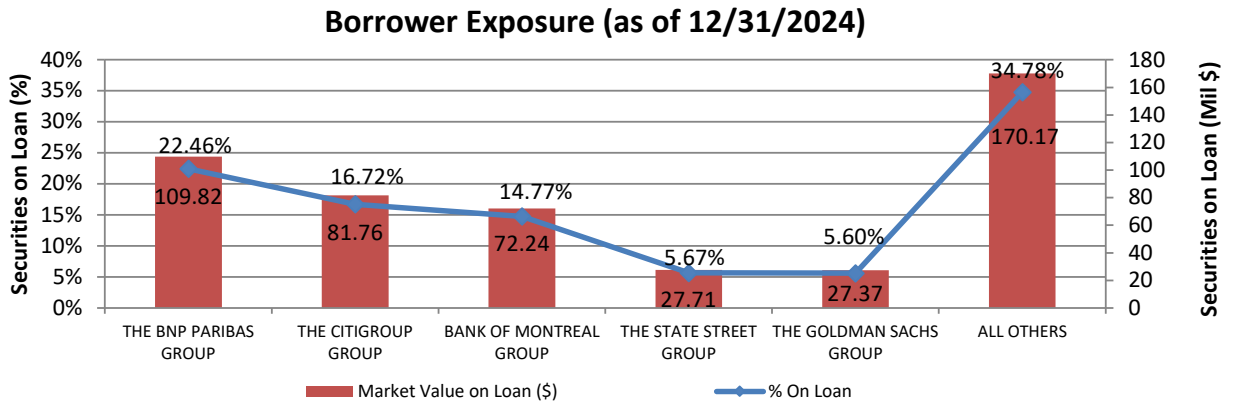
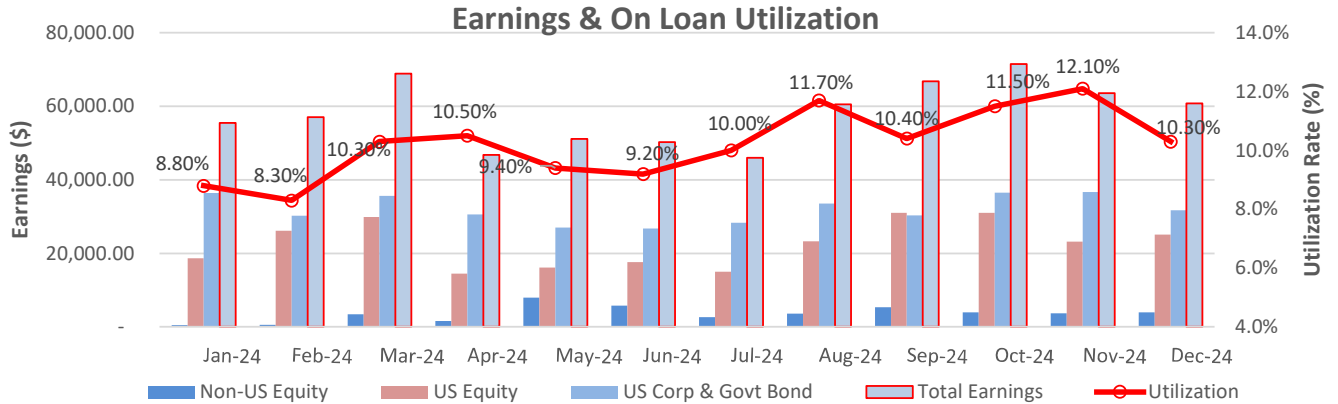
¹ Securities Lending Income, \$367.9 K, Securities Litigation Income, \$187.3K, and Commission Recapture Income, \$3.6 K, totaled \$558.8 K (dividend and interest income from the traditional managed accounts are re-invested and calculated separately as part of the manager’s performance). This quarter-end data may be relatively different across other Staff reports due to the timing of when these actual cash flows occur.

# Alameda County Employees' Retirement Association

## Semiannual Securities Lending Report as of 12/31/2024

### Semiannual Summary

For the period ending December 31, 2024, ACERA's earnings from Securities Lending activities were \$363,001.98. Fixed Income/ Bonds generated the highest earnings of \$197,266.21. The average value of securities on loan was \$283,363,713. The average lendable amount for the same period was \$2.57 billion. The BNP Paribas Group was the largest borrower of ACERA's securities with 22.46% or \$109.82 million.



**Notes:**

- Quality D Liquidity and Quality D Duration Funds are managed by an affiliate of State Street Bank (SSB); these funds are common pools in which many securities lending clients of SSB invest their cash collateral generated from their security lending activities. ACERA invests the cash collateral received from its security lending activities into Quality D Liquidity and Quality D Duration Funds. As of 12/31/2024, ACERA's NAV per unit of the Compass Fund (1.0002). As of 12/31/2024, Compass Fund had 149,259,556.78 units.
- Data represents past performance and is not necessarily indicative of future results.
- Data Source: my.statestreet.com and Securities Finance Business Intelligence
- Securities Lending income will be wired into ACERA's unallocated cash account a few days after months end.

*Securities Lending Report Provided by Staff*



## Proposed Investment Committee Meeting WorkPlan for 2025

March 5, 2025

Action Items	Information Items		
January 8	<ol style="list-style-type: none"> <li>1. Review of Private Equity Policy</li> <li>2. Annual Update for 2024 - ESG</li> <li>3. Proposed Investment Committee Meeting WorkPlan for 2025</li> <li>4. CA Gov. Code § 7514.7 Information Report Update</li> </ol>		
February 5	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>1. Discussion and Possible Motion to Recommend that the Board Adopt the Updated Private Equity Policy</li> </ol> </td> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>1. Report on Private Credit Investment Made Under Delegated Authority – Orchard Global EleanTree Opportunities Fund III (\$60 million)</li> <li>2. 2025 Capital Market Assumptions</li> <li>3. Investment Committee Meeting WorkPlan for 2025</li> </ol> </td> </tr> </table>	<ol style="list-style-type: none"> <li>1. Discussion and Possible Motion to Recommend that the Board Adopt the Updated Private Equity Policy</li> </ol>	<ol style="list-style-type: none"> <li>1. Report on Private Credit Investment Made Under Delegated Authority – Orchard Global EleanTree Opportunities Fund III (\$60 million)</li> <li>2. 2025 Capital Market Assumptions</li> <li>3. Investment Committee Meeting WorkPlan for 2025</li> </ol>
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March 5	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>1. Interview of the four Finalists for ACERA’s Emerging Markets Manager Search – Public Equities and Possible Motion that the Investment Committee Recommends one Finalist to the Board</li> </ol> </td> <td style="width: 50%; vertical-align: top;"> <ol style="list-style-type: none"> <li>1. Review of Real Assets Policy</li> <li>2. Asset Allocation Update</li> <li>3. Semiannual Performance Review for the Period Ending December 2024 – Total Fund Highlighting Public Markets Asset Classes</li> <li>4. <i>Semiannual report on ACERA’s Directed Brokerage from July to December 2024</i></li> <li>5. <i>Semiannual report on ACERA’s Sec Lending from July to December 2024</i></li> <li>6. <i>Semiannual report of ACERA’s investment manager, consultant, and custodian bank fees from July to December 2024</i></li> </ol> </td> </tr> </table>	<ol style="list-style-type: none"> <li>1. Interview of the four Finalists for ACERA’s Emerging Markets Manager Search – Public Equities and Possible Motion that the Investment Committee Recommends one Finalist to the Board</li> </ol>	<ol style="list-style-type: none"> <li>1. Review of Real Assets Policy</li> <li>2. Asset Allocation Update</li> <li>3. Semiannual Performance Review for the Period Ending December 2024 – Total Fund Highlighting Public Markets Asset Classes</li> <li>4. <i>Semiannual report on ACERA’s Directed Brokerage from July to December 2024</i></li> <li>5. <i>Semiannual report on ACERA’s Sec Lending from July to December 2024</i></li> <li>6. <i>Semiannual report of ACERA’s investment manager, consultant, and custodian bank fees from July to December 2024</i></li> </ol>
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## Proposed Investment Committee Meeting WorkPlan for 2025

March 5, 2025

Action Items	Information Items
	<ul style="list-style-type: none"> <li>7. <i>Semiannual Report for the Period Ending December 31, 2024 – Rebalancing and Cash Activities</i></li> <li>8. <i>Semiannual report on Investment Products and Services Introductions (IPSI) from July to December 2024</i></li> <li>9. <i>Semiannual Update of the Investment Committee Meeting WorkPlan for 2025</i></li> </ul>
<p>April 2</p> <ul style="list-style-type: none"> <li>1. Discussion and Possible Motion to Recommend that the Board Approve the Updated Real Assets Policy</li> <li>2. Discussion and Possible Motion to Recommend that the Board Approve the 2025 Real Assets Investment Plan</li> <li>3. Discussion and Possible Motion to Recommend that the Board Approve a Real Assets Investment (Placeholder)</li> <li>4. Discussion and possible motion to recommend that the Board terminate Kennedy Capital Management - Public Equities</li> </ul>	<ul style="list-style-type: none"> <li>1. Report on Investment Made Under Delegated Authority – Private Credit (Placeholder)</li> <li>2. Report on Private Equity Investment Made Under Delegated Authority – Vista Foundation Fund VI \$40- \$60 million</li> <li>3. Proposed Public Equity Restructure (Placeholder)</li> </ul>
<p>May 7</p> <ul style="list-style-type: none"> <li>1. Discussion of and Possible Motion that the Board Approve a Safe Haven Fixed Income Investment Plan (Placeholder)</li> </ul>	<ul style="list-style-type: none"> <li>1. Report on Investment Made Under Delegated Authority – Private Credit (Placeholder)</li> <li>2. Report on Investment Made Under Delegated Authority – Real Assets (Placeholder)</li> <li>3. Education Session: ESG</li> <li>4. Review of the Environmental, Social, and Governance (ESG) Investment Policy</li> <li>5. Review of the Emerging Investment Manager (EIM) Policy</li> </ul>



## Proposed Investment Committee Meeting WorkPlan for 2025

March 5, 2025

	<b>Action Items</b>	<b>Information Items</b>
June 4	<ol style="list-style-type: none"> <li>1. Discussion and Possible Motion to Recommend that the Board Adopt an Investment in ACERA’s Real Estate Portfolio (Placeholder)</li> <li>2. Discussion and Possible Motion to Recommend to the Board to Adopt the Investment Policy Statement Update on the New Policy Benchmark per Approved Asset Allocation (Placeholder)</li> <li>3. Discussion of and Possible Motion to Recommend that the Board Adopt the Amendments to ACERA's Environmental, Social, and Governance (ESG) Investment Policy</li> <li>4. Discussion of and Possible Motion to Recommend that the Board Adopt Amendments to ACERA’s Emerging Investment Manager (EIM) Policy</li> </ol>	<ol style="list-style-type: none"> <li>6. Proposed Investment Policy Statement Update on the New Policy Benchmark per Approved Asset Allocation</li> <li>1. Review of Real Estate Policy</li> <li>2. Semiannual Performance Review for the Period Ending December 31, 2024 – Real Estate</li> <li>3. Semiannual Performance Review for the Period Ending December 31, 2024 – Private Equity</li> <li>4. Semiannual Performance Review for the Period Ending December 31, 2024 – Private Credit</li> <li>5. Semiannual Performance Review for the Period Ending December 31, 2024 – Real Assets</li> <li>6. Semiannual Performance Review for the Period Ending December 31, 2024 – Absolute Return (Placeholder)</li> <li>7. Report on Investment Made Under Delegated Authority – Private Credit (Placeholder)</li> </ol>
July 2	<ol style="list-style-type: none"> <li>1. Discussion and possible motion to recommend to the board to eliminate the Directed Brokerage Policy (Placeholder)</li> <li>2. Discussion and Possible Motion to Recommend that the Board Approve the updated Real Estate Investment Policy</li> <li>3. Discussion and Possible Motion to Recommend that the Board Approve the 2025 Real Estate Investment Plan</li> </ol>	<ol style="list-style-type: none"> <li>1. Review of Absolute Return Policy (Placeholder)</li> </ol>



## Proposed Investment Committee Meeting WorkPlan for 2025

March 5, 2025

	<b>Action Items</b>	<b>Information Items</b>
August 6	1. To Be Determined	
September 3	1. Discussion and Possible Motion to Recommend that the Board Adopt an Investment in ACERA’s Real Estate Portfolio (Placeholder) 2. Discussion and Possible Motion to Recommend that the Board Approve an updated Absolute Return Policy (Placeholder) 3. Discussion and Possible Motion to Recommend that the Board Approve the 2025 Absolute Return Investment Plan (Placeholder)	1. Semiannual Performance Review for the Period Ending June 30, 2025 – Total Fund Highlighting Public Market Asset Classes 2. <i>Semiannual report on ACERA’s Directed Brokerage from January to June 2025 (Placeholder)</i> 3. <i>Semiannual report on ACERA’s Sec Lending from January to June 2025</i> 4. <i>Semiannual report of ACERA’s investment manager, consultant, and custodian bank fees from January to June 2025</i> 5. <i>Semiannual report on ACERA’s rebalancing activities from January to June 2025</i> 6. <i>Semiannual report on Investment Products and Services Introductions (IPSI) from January to June 2025</i> 7. <i>Semiannual Update of the Investment Committee Meeting WorkPlan for 2025</i>
October 1	1. Discussion and Possible Motion to Recommend that the Board to Adopt an Investment in ACERA’s Private Equity Portfolio- (Placeholder)	1. Parametric Presentation & Proposed revisions to Cash Overlay/Rebalance Sections in the General Investment Guidelines, Policies, and Procedures (Placeholder)



## Proposed Investment Committee Meeting WorkPlan for 2025

March 5, 2025

Action Items	Information Items
	<ul style="list-style-type: none"> <li>2. Discussion of Investment Governance and Delegated Authority (Placeholder)</li> <li>3. Report on Investment Made Under Delegated Authority – Private Credit (Placeholder)</li> </ul>
November 5	<ul style="list-style-type: none"> <li>1. To Be Determined</li> <li>2. Annual Update for 2025 – ESG (Placeholder)</li> </ul>
December 3	<ul style="list-style-type: none"> <li>1. Discussion and Possible Motion to Recommend that the Board Approve an Investment in ACERA’s Real Assets Portfolio (Placeholder)</li> <li>2. Discussion of and Possible Motion that the Board Approve the 2026 Private Credit Investment Plan</li> <li>3. Discussion of and Possible Motion that the Board Approve the 2026 Private Equity Investment Plan</li> <li>4. Discussion of and Possible Motion that the Board Approve the 2026 Real Assets Investment Plan</li> <li>1. Semiannual Performance Review for the Period Ending June 30, 2025 – Real Estate</li> <li>2. Semiannual Performance Review for the Period Ending June 30, 2025 – Private Equity</li> <li>3. Semiannual Performance Review for the Period Ending June 30, 2025 – Private Credit</li> <li>4. Semiannual Performance Review for the Period Ending June 30, 2025 – Real Assets</li> <li>5. Semiannual Performance Review for the Period Ending June 30, 2025 – Absolute Return (Placeholder)</li> <li>6. CA Gov. Code § 7514.7 Information Report</li> </ul>