

## City of Marlborough Contributory Retirement System

March 25, 2025

Meeting Materials

- 1. Economic and Market Update as of February 28, 2025**
- 2. Performance Update as of December 31, 2024**
- 3. Current Issues**
  - Manager Due Diligence Agenda
  - Fund of Funds Private Equity RFP Respondent Review
  - Small Cap RFP Respondent Review
  - Asset Allocation Update
- 4. Appendix**
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# **Economic and Market Update**

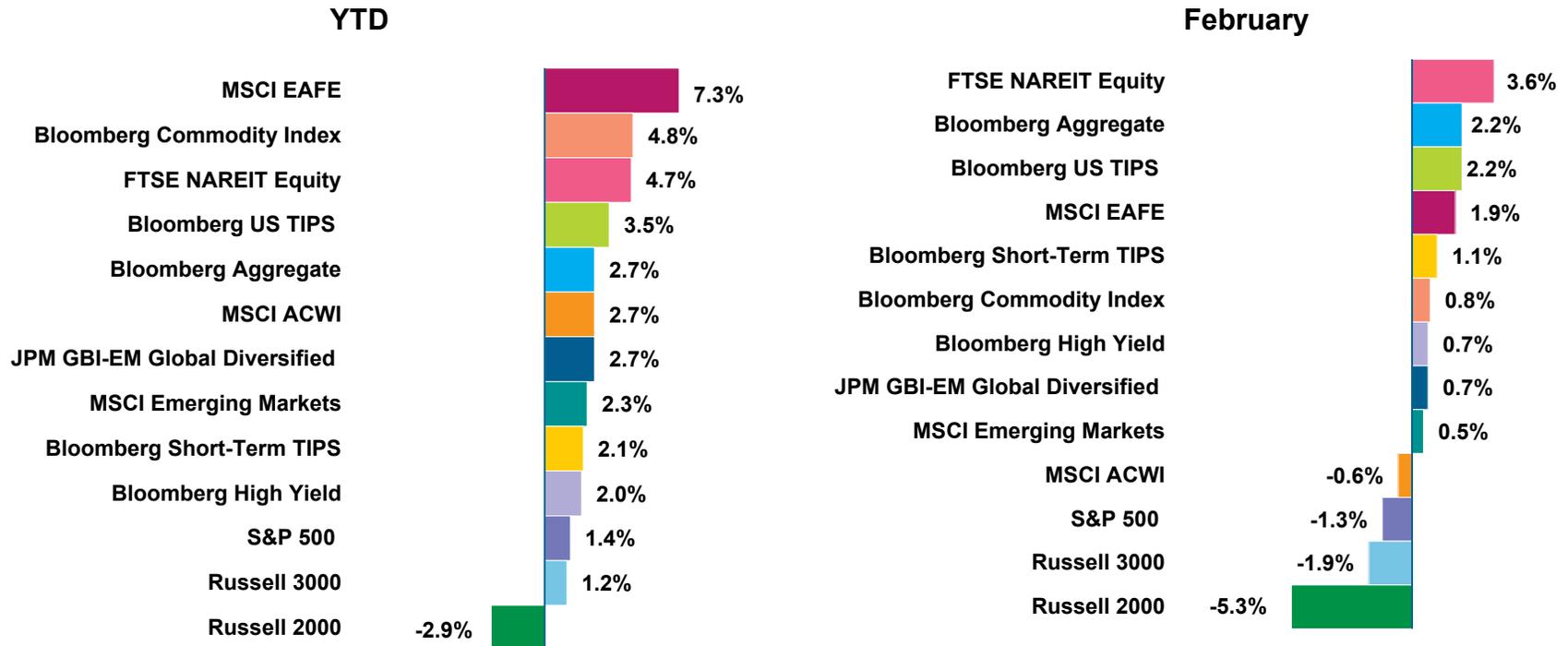
## Data as of February 28, 2025

## Commentary

**After a positive start to 2025, stock and bond markets had mixed returns in February with investors largely rotating away from US equities.**

- Domestic equity markets (Russell 3000) fell -1.9% in February, with value outperforming growth.
- Non-US developed market stocks (MSCI EAFE +1.9%) continued to outperform US markets, supported by rate cuts from the ECB, EU planned increases in defense spending, and a weakening US dollar.
- Emerging market equities returned +0.5% for the month, underperforming non-US developed markets given tariff risks from the US. However, Chinese stocks rose an impressive +11.8% in February on DeepSeek AI enthusiasm.
- The Federal Reserve held policy rates steady at the end of January as inflation remained above the target level and the labor market was relatively healthy.
- Most fixed income markets posted positive returns, with TIPS (+2.2%) and the US bond market (+2.2%) outperforming most other fixed income sectors.
- Looking ahead, uncertainty related to the Trump Administration's policies and their impact on the economy, inflation, and Fed policy will be key. The path of China's economy and concerns over elevated valuations and technology-driven concentration in the US equity market will also be important focuses of 2025.

### Index Returns<sup>1</sup>



- On a year-to-date basis most major markets remain in positive territory.
- In February, non-US equities outperformed US equities as markets re-priced their outlook for US stocks in 2025 while fixed income markets benefited from cooling inflation and economic growth.

<sup>1</sup> Source: Bloomberg. Data is as of February 28, 2025.

## Domestic Equity Returns<sup>1</sup>

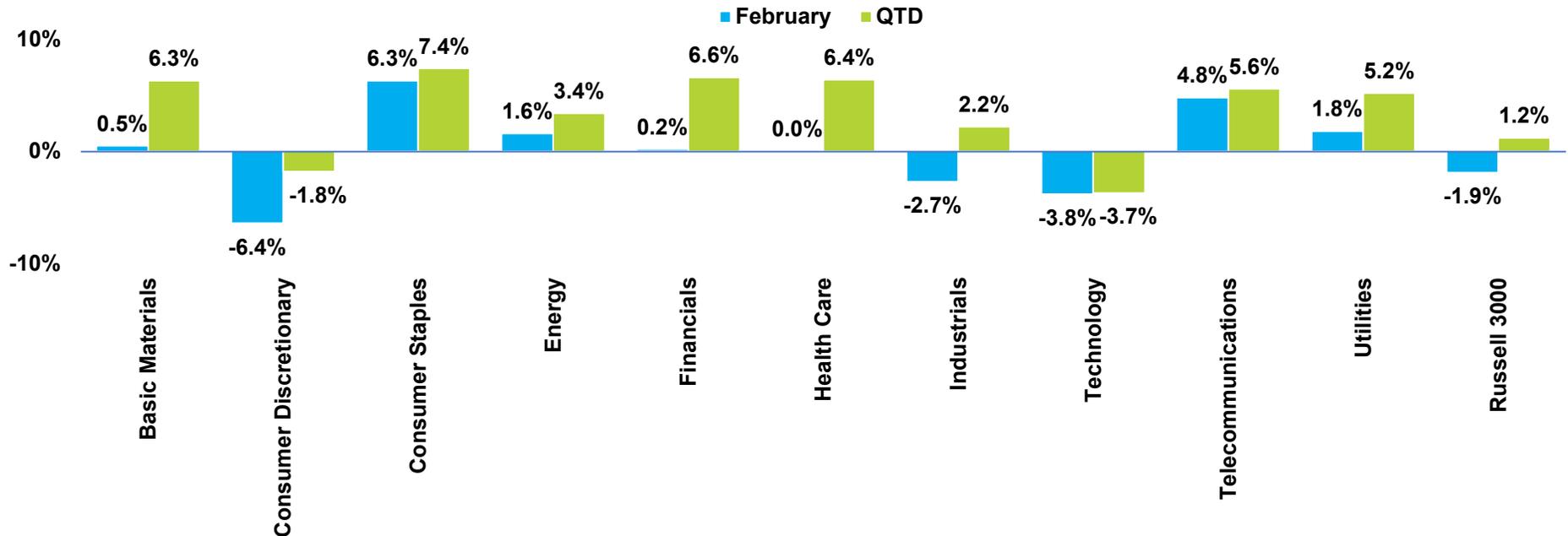
Domestic Equity	February (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	-1.3	1.4	18.4	12.5	16.8	13.0
Russell 3000	-1.9	1.2	17.5	11.6	16.1	12.3
Russell 1000	-1.7	1.4	18.1	12.1	16.5	12.7
Russell 1000 Growth	-3.6	-1.7	19.7	14.8	19.7	16.0
Russell 1000 Value	0.4	5.1	15.8	8.6	12.5	8.9
Russell MidCap	-2.8	1.3	12.2	7.2	12.4	9.3
Russell MidCap Growth	-5.7	0.3	14.5	9.5	12.9	11.0
Russell MidCap Value	-1.8	1.6	11.7	6.1	11.7	8.0
Russell 2000	-5.3	-2.9	6.7	3.3	9.4	7.2
Russell 2000 Growth	-6.8	-3.8	5.8	3.6	7.9	7.2
Russell 2000 Value	-3.8	-1.9	7.6	2.8	10.3	6.9

### US Equities: The Russell 3000 fell -1.9% in February, bringing the year-to-date return to +1.2%.

- After approaching record highs in early February, US stocks finished the month lower. Investors grew concerned over tariff policies, a potentially weakening consumer, and the sustainability of earnings growth from tech stocks.
- Consumer discretionary stocks (-6.4%) were hardest hit among sectors in February. Tesla was the largest detractor in the Russell 3000 index as the stock dropped ~27% during the month. Other “Magnificent 7” names were among the largest detractors, such as Alphabet (-16%), Amazon (-11%), and Microsoft (-4%).
- Value stocks outperformed growth stocks during February, continuing the trend from January. This dynamic was most pronounced in the large cap space, where the Russell 1000 Value index was 6.8% ahead of the Russell 1000 Growth index year to date. Small cap stocks declined more than large cap stocks for the month due to weakening growth expectations.

<sup>1</sup> Source: Bloomberg. Data is as of February 28, 2025.

### Russell 3000 Sector Returns<sup>1</sup>



- Sector results were mixed in February with defensive sector consumer staples (+6.3%) leading the way and cyclical consumer discretionary stocks (-6.4%) suffering the largest decline. The drop in consumer discretionary stocks was largely driven by slowing European sales weighing on Tesla's share price.
- Technology stocks, a previous bright spot, declined in January and in February, with NVIDIA, Broadcom, Microsoft, and Apple driving results.
- Industrial stocks declined in February amid concerns regarding the sustainability of economic growth, but remain positive for the year so far.

<sup>1</sup> Source: Bloomberg. Data is as of February 28, 2025.

### Foreign Equity Returns<sup>1</sup>

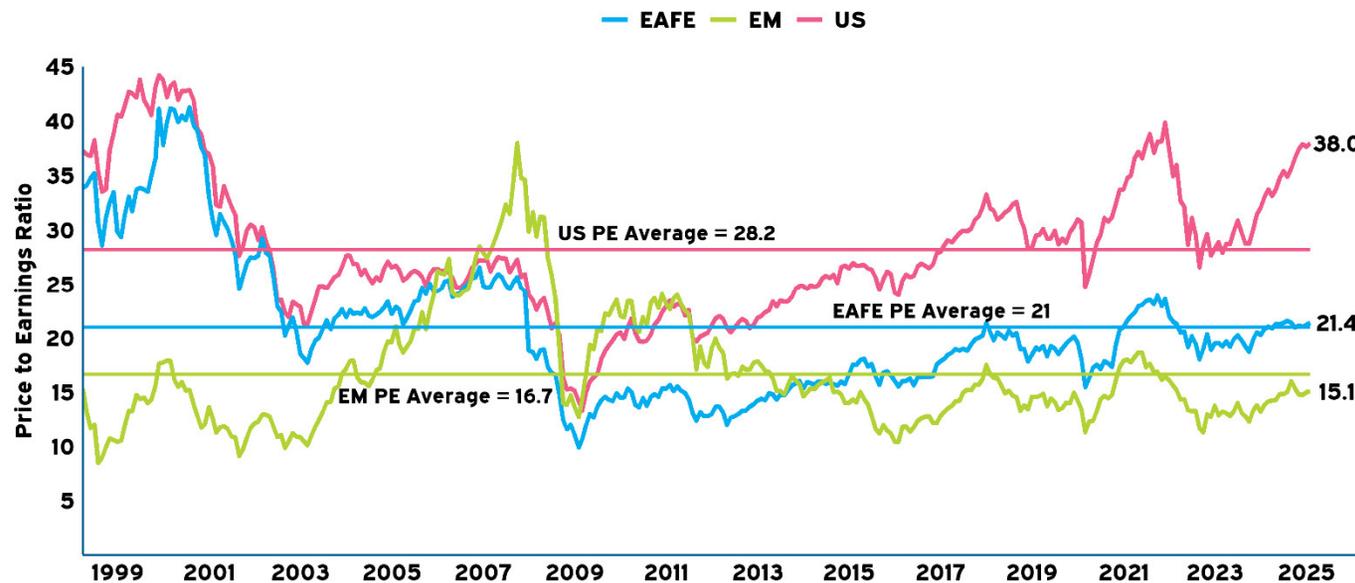
Foreign Equity	February (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI Ex US	1.4	5.5	9.7	4.6	7.5	4.8
MSCI EAFE	1.9	7.3	8.8	6.4	8.7	5.3
MSCI EAFE (Local Currency)	0.9	5.8	11.4	10.5	10.9	6.8
MSCI EAFE Small Cap	-0.3	3.1	6.4	0.7	5.7	5.2
MSCI Emerging Markets	0.5	2.3	10.1	0.5	4.3	3.5
MSCI Emerging Markets (Local Currency)	0.7	2.3	14.1	3.9	6.5	5.7
MSCI EM ex China	-3.8	-1.8	0.8	0.9	6.9	4.2
MSCI China	11.8	12.8	39.0	0.0	-0.3	2.5

**Foreign Equity: Developed international equities (MSCI EAFE) returned 1.4% in February and emerging market equities (MSCI Emerging Markets) rose 0.5%.**

- Developed markets saw modest gains in February, due in part to a weaker USD, outperforming US peers. Eurozone equities were the top performer among developed markets, boosted by continued strength in European financials, a growing focus on defense spending, and the prospect of a ceasefire in Ukraine. The UK followed shortly behind, with a similar story of large banks, defense, and health care driving returns. Japanese stocks fell, with sentiment driven by namely uncertainty surrounding US trade policies.
- Emerging markets rose slightly in February, with gains driven by China, the top performer globally. China continues to benefit from excitement around DeepSeek, stimulus efforts, and the prospect of a more favorable regulatory environment following meetings between Xi Jinping and major business leaders. South Korea saw slight negative returns following a downgraded GDP growth forecast. Indian equities fell by over 7% amid continued signs of a growth slowdown and stretched valuations.

<sup>1</sup> Source: Bloomberg. Data is as of February 28, 2025.

**Equity Cyclically Adjusted P/E Ratios<sup>1</sup>**



- Valuations in US stocks remained at a significant premium to non-US developed and emerging market stocks at the end of February.
- US equities, priced at 38.0 times earnings, continued to trade well above their long-run P/E average of 28.2.
- Non-US developed market valuations (21.4 times) are trading near their long-term average. Emerging market valuations (15.1 times) are below their long-run average.

<sup>1</sup> US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E Source: Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years. Data is as of February 2025. The average line is the long-term average of the US, EM, and EAFE PE values from April 1998 to the recent month-end, respectively.

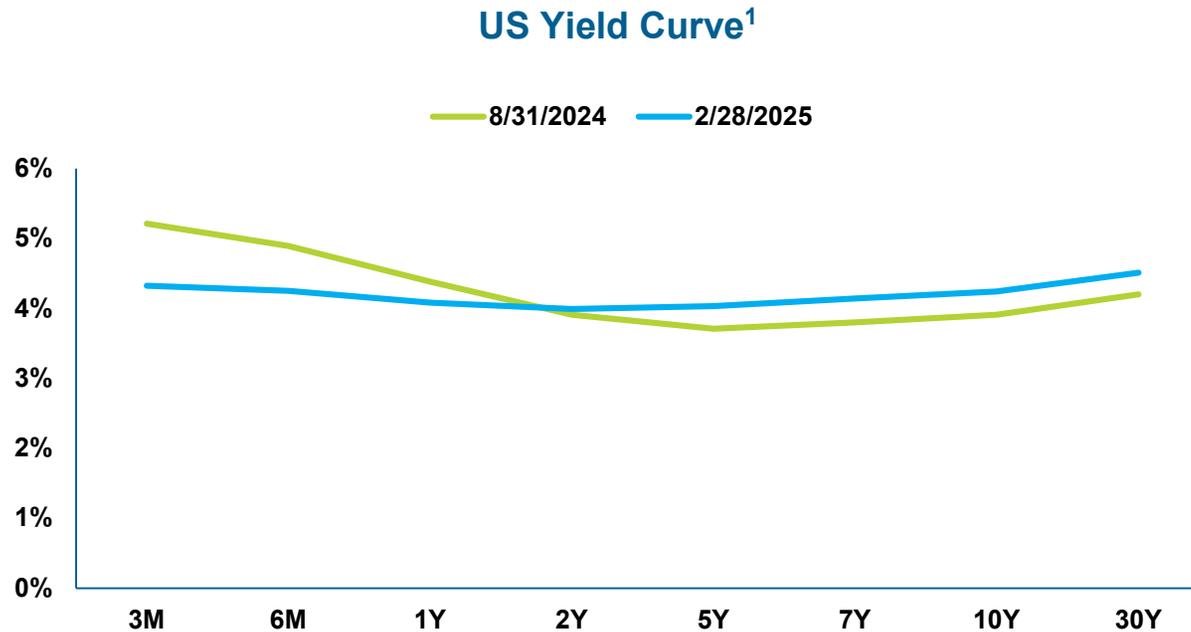
## Fixed Income Returns<sup>1</sup>

Fixed Income	February (%)	YTD (%)	1 Yr (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	2.1	2.7	6.3	0.1	-0.1	1.9	4.8	6.0
Bloomberg Aggregate	2.2	2.7	5.8	-0.4	-0.5	1.5	4.6	6.2
Bloomberg US TIPS	2.2	3.5	6.4	-0.8	1.9	2.4	4.3	6.9
Bloomberg Short-term TIPS	1.1	2.1	6.6	2.6	3.6	2.7	4.2	2.5
Bloomberg US Long Treasury	5.2	5.6	3.4	-8.6	-6.6	-0.4	4.5	15.1
Bloomberg High Yield	0.7	2.0	10.1	4.9	4.9	5.1	7.1	3.3
JPM GBI-EM Global Diversified (USD)	0.7	2.7	2.4	1.7	-0.4	0.8	--	--

### Fixed Income: The Bloomberg Universal index rose 2.1% in February.

- Investors sought the safety of high-quality bonds in February given policy uncertainty in the US and weakening economic data particularly related to the consumer. Corporate bonds did not perform as well in this risk adverse environment.
- The broad US bond market (Bloomberg Aggregate) rose 2.2% for the month, along with the broad US TIPS index. Long-term Treasuries performed particularly well in the declining interest rate environment.
- High yield bonds experienced less demand from investors, and emerging market debt fell.

<sup>1</sup> Source: Bloomberg. Data is as of February 28, 2025. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration, respectively. JPM GBI-EM data is from J.P. Morgan. Current yield and duration data is not available.

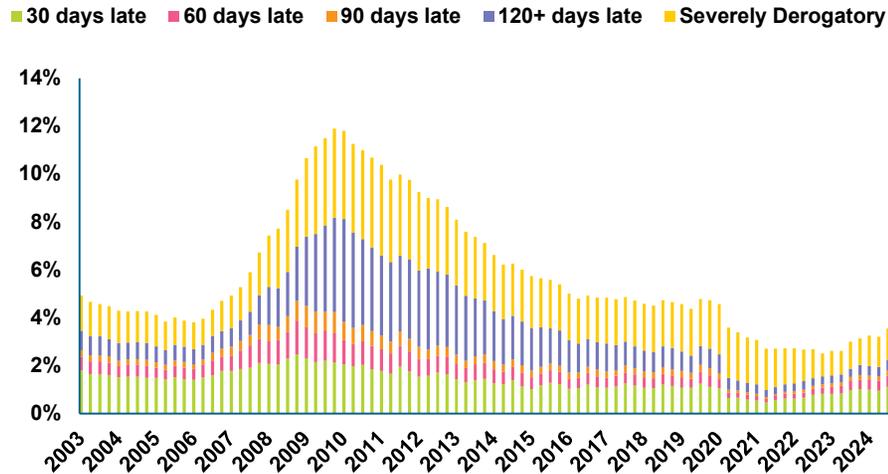


- US Treasury yields declined significantly over the month, as investors expressed concern about the potential policies of the new US administration, economic data related to consumers weakened, and overall growth expectations fell.
- The more policy sensitive 2-year Treasury yield fell from 4.20% to 3.99%, while the 10-year Treasury yield declined from 4.54% to 4.24%.
- After the Fed started reducing interest rates in September 2024, the yield curve stopped being inverted (short-term interest rates higher than long-term interest rates) given expectations for inflation to continue to decline and policy rates to continue lower.

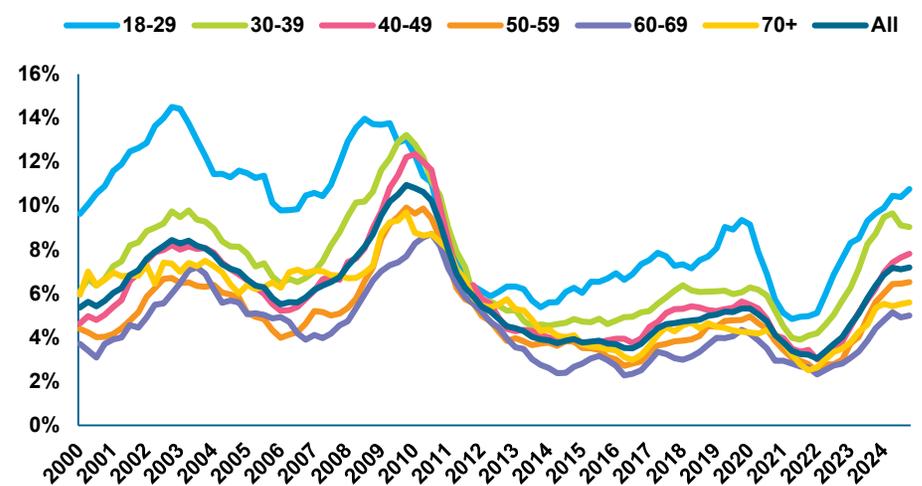
<sup>1</sup> Source: Bloomberg. Data is as of February 28, 2025. The August 2024 Treasury yields are shown as a reference before the first interest rate cut.

### Stress is Building on US Consumers

**Total Balance by Delinquency Status<sup>1</sup>**



**Transition into Serious Delinquency for Credit Cards by Age<sup>2</sup>**

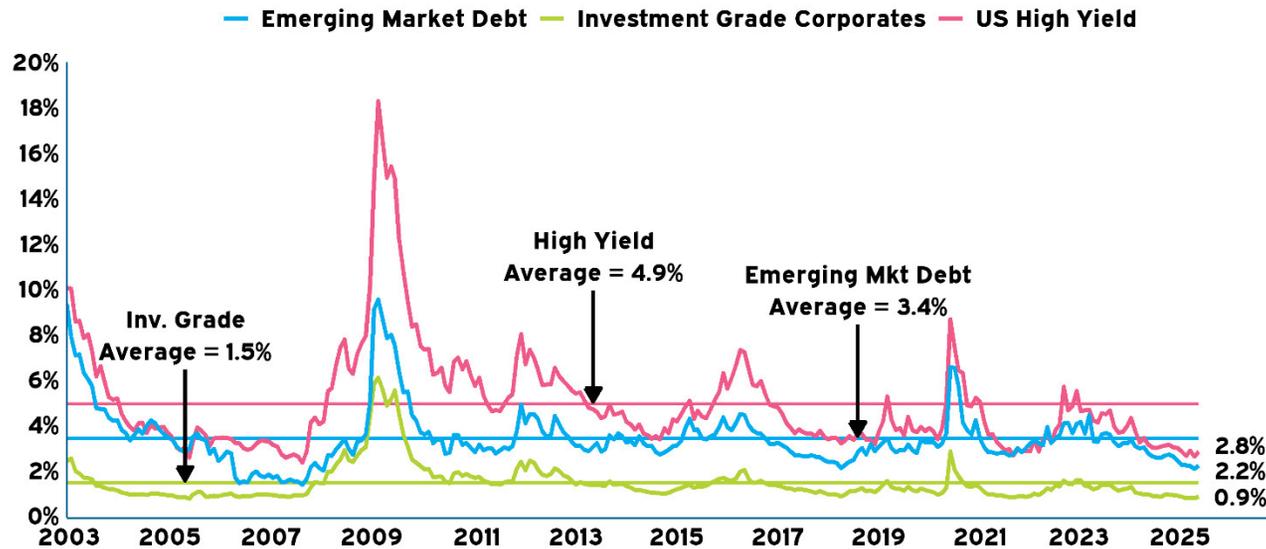


- Some signs of stress on the US consumer have started to emerge given persistently higher prices and interest rates.
- After falling to historic lows during the pandemic, loan delinquencies recently started rising.
- While some segments of the credit market have started to show signs of stress, total delinquencies remain well below pre-pandemic levels.
- While total delinquency rates are below pre-pandemic rates, the credit card segment is showing more signs of distress where borrowers are subject to variable and higher borrowing costs.
- Credit card delinquencies are rising rapidly, especially for borrowers under the age of 40.

<sup>1</sup> Source: New York Federal Reserve, Quarterly Household Debt and Credit Report, February 2025. See also FRED. Data is as of February 28, 2025.

<sup>2</sup> Source: FRED. Data is as of February 28, 2025.

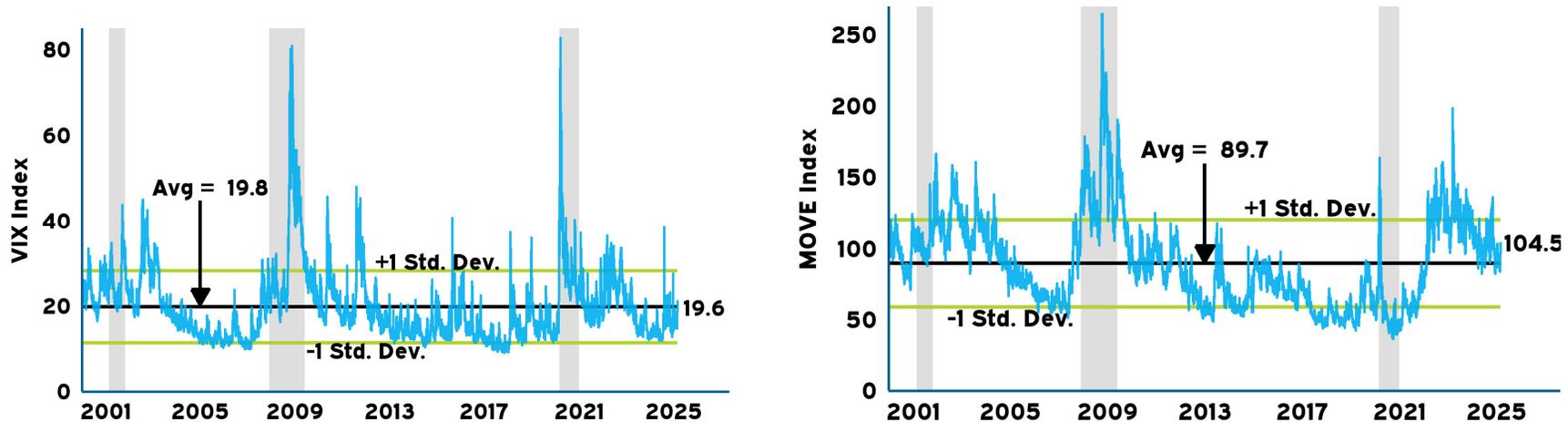
**Credit Spreads vs. US Treasury Bonds<sup>1</sup>**



- Spreads (the yield above a comparable maturity Treasury) widened slightly in February for riskier bonds and were stable for investment grade issues.
- All yield spreads remained below their respective long-run averages, particularly high yield (2.8% versus 4.9%).
- Although spreads are tight, absolute yields remain at above-average levels compared to the last two decades.

<sup>1</sup> Source: Bloomberg. Data is as February 28, 2025. Average lines denote the average of the investment grade, high yield, and emerging market spread values from September 2002 to the recent month-end, respectively.

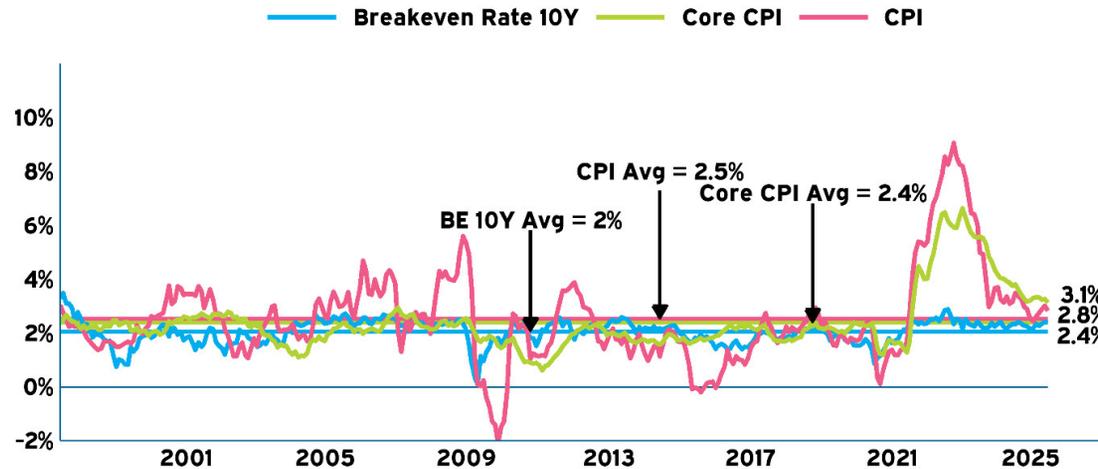
**Equity and Fixed Income Volatility<sup>1</sup>**



- Bond and equity volatility rose in February mainly driven by policy and trade uncertainty.
- Volatility levels (VIX) in the US stock market finished February below its long-run average, while volatility in the bond market (MOVE) finished the month above its long-run average.

<sup>1</sup> Equity Volatility – Source: FRED. Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of February 28, 2025. The average line indicated is the average of the VIX and MOVE values between January 2000 and February 2025.

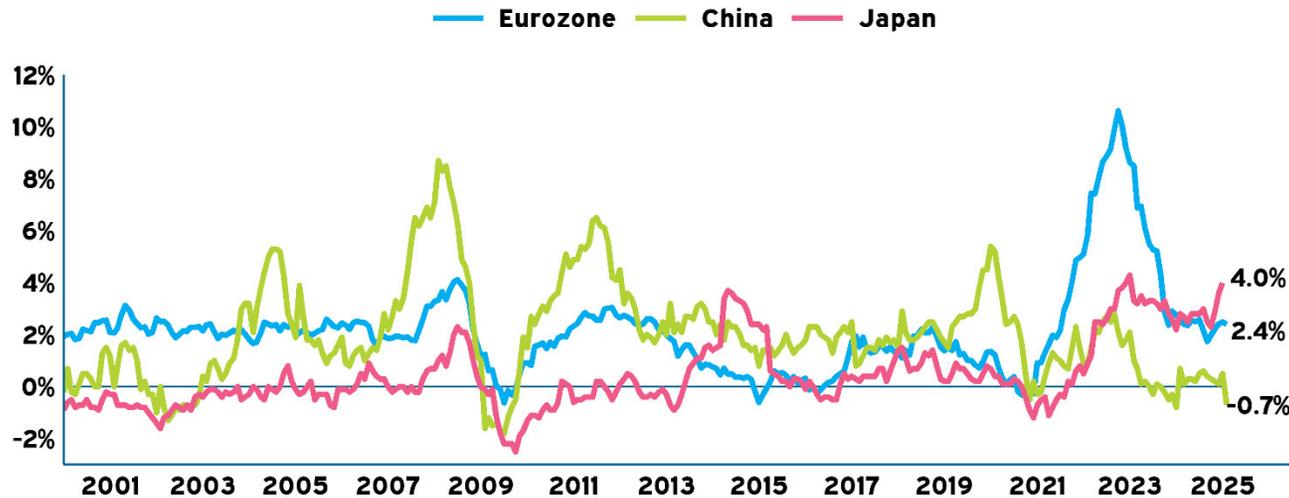
**US Ten-Year Breakeven Inflation and CPI<sup>1</sup>**



- In February, inflation came in slightly below expectations, month-over-month (0.2% versus 0.3%) and fell compared to the January level of 0.5%; headline inflation rose 2.8% over the past twelve months, also a decline from the prior reading and below expectations of 2.9%.
- Shelter continued to drive both headline and core inflation in February, with the shelter index rising 0.3% month-over-month and accounting for nearly half of the headline inflation for the month.
- Core inflation rose 0.2% month-over-month in February and increased 3.1% year-on-year (both below expectations and below the January readings). Owners’ equivalent rent rose 4.2% over the last 12 months, while vehicle insurance (11.1%), medical care (2.9%), and education (3.7%) also contributed to core inflation.
- Inflation expectations (breakevens) fell slightly over the month as concerns related to the potential inflationary impacts of the new US administration’s policies shifted to concerns over economic growth.

<sup>1</sup> Source: FRED. Data is as of February 2025. The CPI and 10 Year Breakeven average lines denote the average values from February 1997 to the present month-end, respectively. Breakeven values represent month-end values for comparative purposes.

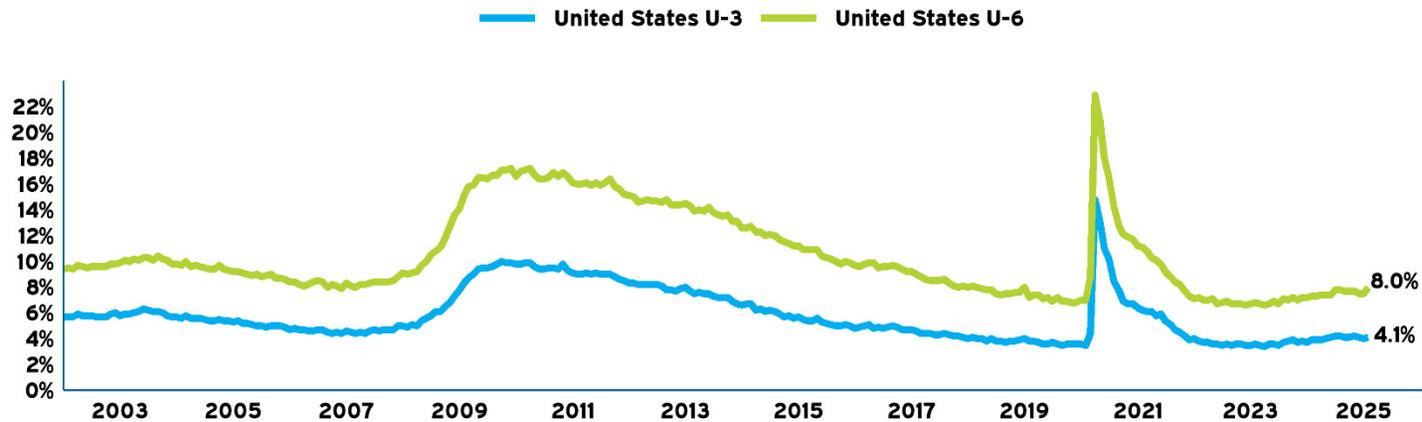
**Global Inflation (CPI Trailing Twelve Months)<sup>1</sup>**



- After four monthly increases, inflation in the eurozone declined slightly (2.5% to 2.4%) in February, but levels remain below the US. The increase from the lows was driven by last year’s significant fall in energy prices no longer being included in the calculation.
- The latest reading of inflation in Japan rose from 3.6% to 4.0% due in part to an increase in food prices and the end of energy subsidies driving electricity and gas prices higher.
- In China, despite record policy stimulus consumer prices fell in February by 0.7% (exceeding the expectations of a 0.5% decline). Despite years of policy stimulus to counter the real estate crisis, the Chinese consumer has remained weak; contributing to the first negative inflation print since January 2024.

<sup>1</sup> Source: Bloomberg. Data is as February 2025, except Japan which is as of January 2025.

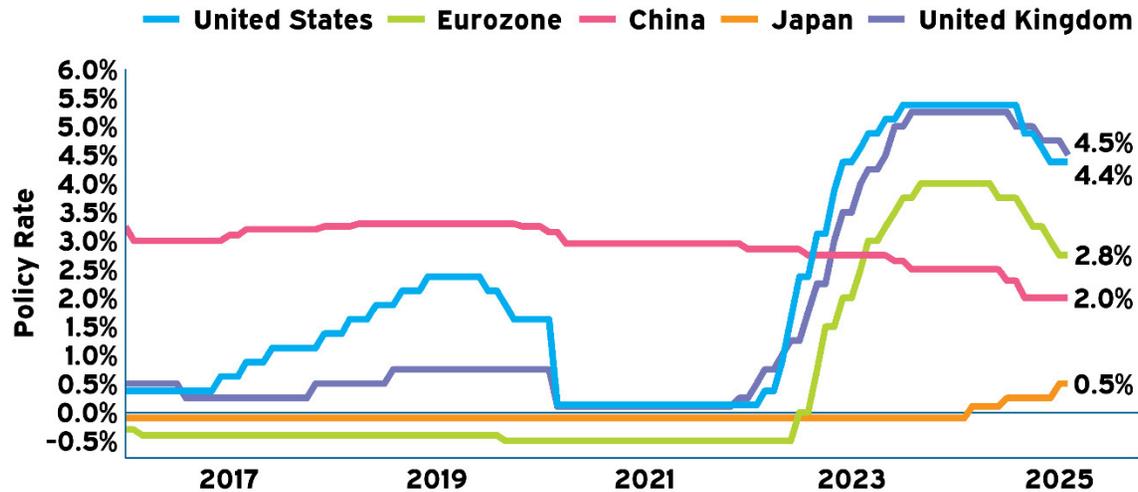
### US Unemployment<sup>1</sup>



- The US economy added 151,000 jobs in February below expectations for 160,000 new jobs with the unemployment rate rising slightly from 4.0% to 4.1%, with 7.1 million jobseekers looking for work (little changed from the prior reading).
- A broader measure of total unemployed (U-6) that includes those marginally attached to the labor force and employed part-time for economic reasons, rose slightly to 8.0%, the highest level since late 2021.
- Health care, financial activities, transport/warehouse, and social assistance sectors added jobs in February while the Federal government lost 10,000 jobs in the month.
- The last reading of job openings came in at around 7.7 million, a level well below the pandemic highs (>12 million); the number of openings exceeds the number of unemployed workers looking for work (7.1 million).
- Separations (5.3 million) and hires (5.4 million) remained steady and average hourly wages continued to grow at approximately 4.0% a year.

<sup>1</sup> Source: FRED and BLS. Data is as of February 28, 2025.

### Policy Rates<sup>1</sup>



- The Fed kept US interest rates steady at their January meeting after reducing rates by 0.25% twice over the final quarter of 2024 to a range of 4.25% to 4.50%. Given growing concerns about growth, markets recently increased expectations for the amount of rate cuts in 2025 to between two and three.
- In February, the Bank of England cut interest rates for the third time by 0.25% to 4.5%, and after month-end the European Central Bank cut rates by another 0.25% to 2.5%. The People's Bank of China also continues to maintain measures to try to stimulate the economy with increasing debt issuance and defending the yuan.
- In contrast to many other central banks, the Bank of Japan increased interest rates in January to 0.5%, in the face of persistent inflation. Rate cutting by other major central banks are complicating prospects for further policy rate hikes in Japan.

<sup>1</sup> Source: Bloomberg. Data is as of February 28, 2025. United States rate is the mid-point of the Federal Funds Target Rate range. Eurozone rate is the ECB Deposit Facility Announcement Rate. Japan rate is the Bank of Japan Unsecured Overnight Call Rate Expected. China rate is the China Central Bank 1-Year Medium Term Interest Rate. UK rate is the UK Bank of England Official Bank Rate.

US Dollar vs. Broad Currencies<sup>1</sup>



- After largely strengthening through 2024 the US dollar recently started to weaken.
- Concerns over slower growth in the US and corresponding lower yields have recently weighed on the value of the dollar.

<sup>1</sup> Source: Bloomberg. Data as of February 28, 2025.

## Summary

### Key Trends:

- According to the International Monetary Fund's (IMF) January report, global growth in 2025 is expected to be slightly higher than 2024 (3.3% versus 3.2%). Growth forecast in the US (+2.7%) and China (+4.6%) are lower for this year compared to last, while growth in the EU (+1.0%) is projected to be slightly higher in 2025.
- Questions remain about what policies will be implemented by the new administration in the US, with particularly concerns about tariffs' potential impact on growth. Although deregulation and tax cuts could support growth, these policies, along with higher tariffs and restrictive immigration, could fan inflation. This will likely lead to additional uncertainty regarding the timing and pace of interest rate cuts in the coming year.
- Signs of pressure have started to emerge on the US consumer with sentiment weakening. Overall risk to economic growth and to inflation from tariffs, as well as elevated borrowing costs, could put further pressure on consumers and lead to a weaker job market.
- US equities have recently come under pressure. A focus going forward will be whether earnings can remain resilient if growth slows. Also, the future paths of the large technology companies that have driven market gains will continue to be important.
- We have started to see divergence in monetary policies. The Fed is likely to cut interest rates at a much slower pace than previously expected in 2025. On the other hand, additional rate cuts are expected from the European Central Bank and the Bank of England, while the Bank of Japan has increased interest rates. This disparity will likely influence capital flows and currencies.
- China appears to have shifted focus to more policy support for the economy/asset prices with a suite of fiscal and financial policy stimulus measures. Advances in AI technologies have also contributed to optimism. Despite the policy support consumer spending remains weak and issues remain in the real estate sector. It is not clear what the long-term economic impact of these policies will be, and if policy makers will remain committed to these efforts.

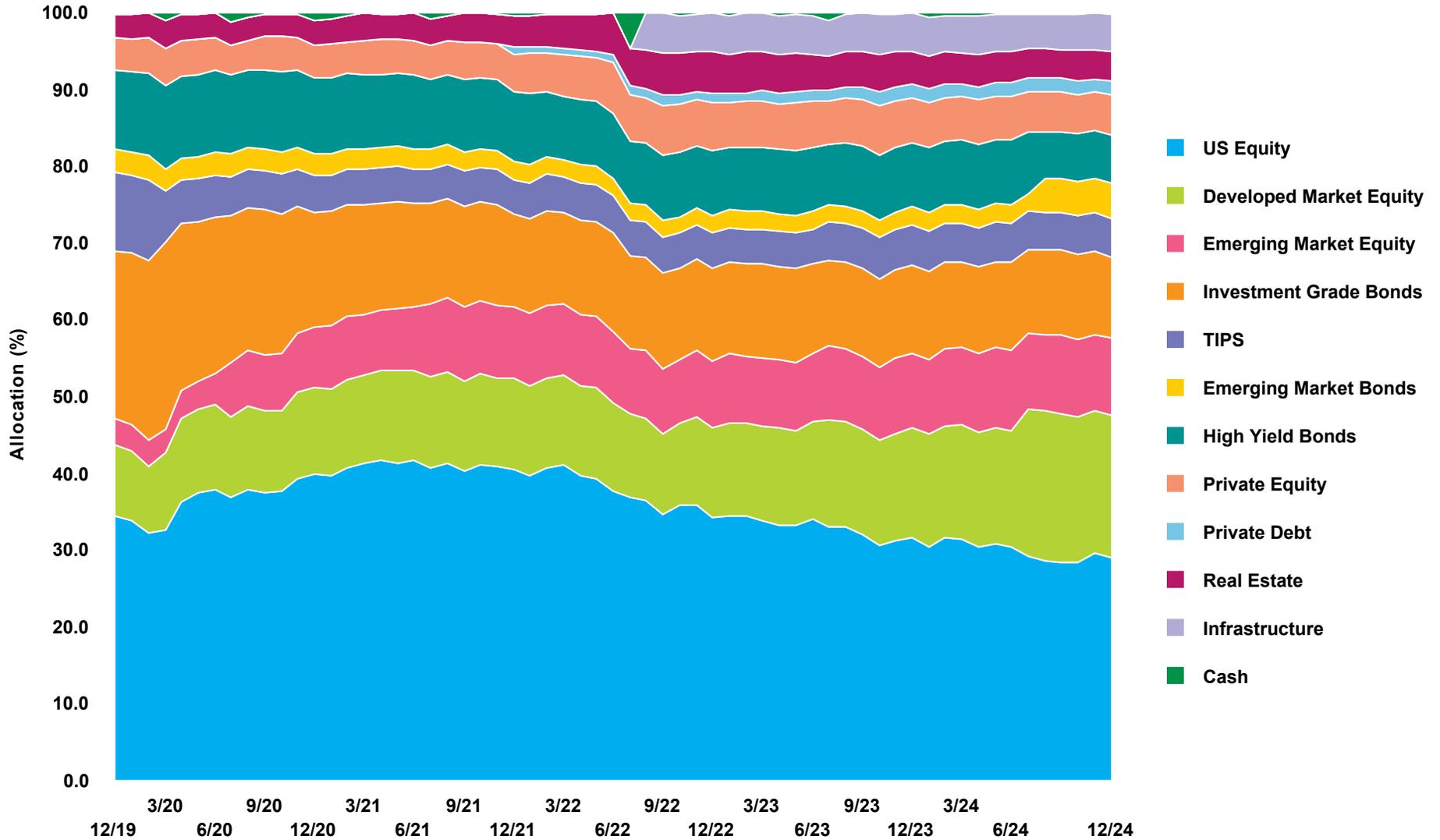
**Performance Update  
as of December 31, 2024**

Total Retirement System | As of December 31, 2024

The Endowment Allocation vs. Targets and Policy				
	Current Balance	Current Allocation (%)	Policy (%)	Policy Range (%)
US Equity	\$69,592,767	29.0	20.0	10.0 - 30.0
Developed Market Equity	\$44,589,826	18.6	20.0	8.0 - 28.0
Emerging Market Equity	\$24,019,828	10.0	10.0	5.0 - 15.0
Investment Grade Bonds	\$25,305,737	10.6	5.0	3.0 - 10.0
TIPS	\$11,928,046	5.0	5.0	3.0 - 10.0
Emerging Market Bonds	\$10,905,109	4.5	5.0	2.0 - 8.0
High Yield Bonds	\$15,295,461	6.4	5.0	2.0 - 8.0
Private Equity	\$12,331,702	5.1	15.0	10.0 - 20.0
Private Debt	\$4,414,902	1.8	5.0	0.0 - 10.0
Real Estate	\$9,095,719	3.8	5.0	2.0 - 8.0
Infrastructure	\$11,848,904	4.9	5.0	0.0 - 10.0
Cash	\$376,181	0.2	0.0	0.0 - 5.0
<b>Total</b>	<b>\$239,704,182</b>	<b>100.0</b>	<b>100.0</b>	

Percentages may not sum to 100% due to rounding.

#### Asset Allocation 5 Years Ending December 31, 2024



### Asset Allocation & Performance | As of December 31, 2024

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Since Inception	Inception Date
<b>Total Retirement System</b>	<b>239,704,182</b>	<b>100.0</b>	<b>-2.5</b>	<b>7.3</b>	<b>2.1</b>	<b>6.7</b>	<b>6.7</b>	<b>6.5</b>	<b>7.6</b>	<b>Jul-88</b>
<i>Marlborough RS Actual Allocation Benchmark</i>			-2.0	9.9	2.3	7.3	7.2	6.7	--	
<i>Marlborough RS Policy Benchmark<sup>1</sup></i>			-2.2	7.6	2.7	7.1	7.5	7.7	--	
<b>Domestic Equity Assets</b>	<b>69,592,767</b>	<b>29.0</b>	<b>0.4</b>	<b>15.9</b>	<b>6.1</b>	<b>11.1</b>	<b>10.5</b>	<b>--</b>	<b>9.2</b>	<b>Oct-06</b>
<i>Russell 3000 Index</i>			2.6	23.8	8.0	13.9	12.5	--	10.4	
<b>International Developed Markets Equity Assets</b>	<b>44,589,826</b>	<b>18.6</b>	<b>-8.1</b>	<b>3.9</b>	<b>1.9</b>	<b>4.9</b>	<b>5.4</b>	<b>--</b>	<b>3.6</b>	<b>Oct-06</b>
<i>MSCI EAFE</i>			-8.1	3.8	1.6	4.7	5.2	--	3.8	
<b>International Emerging Markets Equity Assets</b>	<b>24,019,828</b>	<b>10.0</b>	<b>-6.3</b>	<b>7.9</b>	<b>-0.4</b>	<b>4.1</b>	<b>5.2</b>	<b>--</b>	<b>5.2</b>	<b>Jan-15</b>
<i>MSCI Emerging Markets</i>			-8.0	7.5	-1.9	1.7	3.6	--	3.6	
<b>Investment Grade Bonds Assets</b>	<b>25,305,737</b>	<b>10.6</b>	<b>-3.0</b>	<b>1.3</b>	<b>-2.5</b>	<b>-0.4</b>	<b>1.3</b>	<b>3.0</b>	<b>5.2</b>	<b>Jul-88</b>
<i>Blmbg. U.S. Aggregate Index</i>			-3.1	1.3	-2.4	-0.3	1.3	3.0	5.3	
<b>High Yield Bond Assets</b>	<b>15,295,461</b>	<b>6.4</b>	<b>0.4</b>	<b>7.1</b>	<b>3.1</b>	<b>3.9</b>	<b>4.8</b>	<b>5.9</b>	<b>6.1</b>	<b>Sep-03</b>
<i>Blmbg. U.S. Corp: High Yield Index</i>			0.2	8.2	2.9	4.2	5.2	6.4	7.0	
<b>TIPS Assets</b>	<b>11,928,046</b>	<b>5.0</b>	<b>-2.9</b>	<b>1.9</b>	<b>-2.4</b>	<b>1.8</b>	<b>2.2</b>	<b>--</b>	<b>3.2</b>	<b>Oct-05</b>
<i>Blmbg. U.S. TIPS Index</i>			-2.9	1.8	-2.3	1.9	2.2	--	3.3	

Marlborough RS Actual Allocation Benchmark comprised of the following indices: Russell 3000 Index, MSCI EAFE, MSCI Emerging Markets Index, Bloomberg U.S. Aggregate Index, Bloomberg U.S. Corporate High Yield Index, Bloomberg U.S. TIPS Index, JPM EMBI Global Diversified, NCREIF ODCE (Gross) (Monthly), NCREIF ODCE (Gross) (Monthly), S&P LSTA Leveraged Loan +2%, Prequin Private Equity 1Q Lagged, CPI +3% (Unadjusted) (Arithmetic).

<sup>1</sup>Russell 2000 Index (Net): 10.00%, S&P 500 Index (Net): 10.00%, MSCI Emerging Markets (Net): 10.00%, MSCI EAFE Small Cap Index: 5.00%, MSCI EAFE (Net): 15.00%, Prequin Private Equity 1Q Lagged: 15.00%, NCREIF ODCE (Net): 5.00%, Blmbg. U.S. Corp: High Yield Index: 5.00%, Blmbg. U.S. Aggregate Index: 5.00%, Blmbg. U.S. TIPS Index: 5.00%, JPM EMBI Global Diversified: 5.00%, S&P LSTA Leveraged Loan +2%: 5.00%, CPI +3% (Unadjusted): 5.00%

### Asset Allocation & Performance | As of December 31, 2024

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Since Inception	Inception Date
<b>Emerging Market Debt Assets</b>	<b>10,905,109</b>	<b>4.5</b>	<b>-0.9</b>	<b>8.0</b>	<b>0.1</b>	<b>0.8</b>	<b>3.4</b>	<b>--</b>	<b>3.4</b>	<b>Jan-15</b>
<i>JPM EMBI Global Diversified</i>			<i>-1.9</i>	<i>6.5</i>	<i>-0.9</i>	<i>0.1</i>	<i>3.1</i>	<i>--</i>	<i>3.1</i>	
<b>Open-Ended Real Estate</b>	<b>5,539,888</b>	<b>2.3</b>	<b>1.9</b>	<b>-3.4</b>	<b>-4.0</b>	<b>2.2</b>	<b>5.9</b>	<b>5.7</b>	<b>7.1</b>	<b>Oct-95</b>
<i>NCREIF ODCE (VW) (Monthly)</i>			<i>1.2</i>	<i>-1.4</i>	<i>-2.3</i>	<i>2.9</i>	<i>5.9</i>	<i>6.5</i>	<i>8.0</i>	
<b>Total Closed End Real Estate</b>	<b>3,555,831</b>	<b>1.5</b>	<b>-10.1</b>	<b>-19.5</b>	<b>-8.2</b>	<b>-3.5</b>	<b>-2.3</b>	<b>--</b>	<b>0.6</b>	<b>Jan-13</b>
<i>NCREIF ODCE (VW) (Monthly)</i>			<i>1.2</i>	<i>-1.4</i>	<i>-2.3</i>	<i>2.9</i>	<i>5.9</i>	<i>--</i>	<i>7.1</i>	
<b>Private Equity Assets</b>	<b>12,331,702</b>	<b>5.1</b>	<b>1.4</b>	<b>4.5</b>	<b>5.5</b>	<b>15.0</b>	<b>10.1</b>	<b>--</b>	<b>8.0</b>	<b>Oct-06</b>
<b>Private Debt Assets</b>	<b>4,414,902</b>	<b>1.8</b>	<b>3.2</b>	<b>13.5</b>	<b>12.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>12.3</b>	<b>Jan-22</b>
<b>Infrastructure</b>	<b>11,848,904</b>	<b>4.9</b>	<b>2.5</b>	<b>6.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>8.1</b>	<b>Aug-22</b>
<b>Cash</b>	<b>376,181</b>	<b>0.2</b>								

## Asset Allocation & Performance | As of December 31, 2024

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Since Inception	Inception Date
<b>Total Retirement System</b>	<b>239,704,182</b>	<b>100.0</b>	<b>-2.5</b>	<b>7.3</b>	<b>2.1</b>	<b>6.7</b>	<b>6.7</b>	<b>6.5</b>	<b>7.6</b>	<b>Jul-88</b>
<i>Marlborough RS Actual Allocation Benchmark</i>			<i>-2.0</i>	<i>9.9</i>	<i>2.3</i>	<i>7.3</i>	<i>7.2</i>	<i>6.7</i>	<i>--</i>	
<i>Marlborough RS Policy Benchmark</i>			<i>-2.2</i>	<i>7.6</i>	<i>2.7</i>	<i>7.1</i>	<i>7.5</i>	<i>7.7</i>	<i>--</i>	
<i>InvMetrics Public DB \$50mm-\$250mm Median</i>			<i>-0.8</i>	<i>11.1</i>	<i>2.7</i>	<i>7.0</i>	<i>7.1</i>	<i>6.4</i>	<i>8.3</i>	
<b>Domestic Equity Assets</b>	<b>69,592,767</b>	<b>29.0</b>	<b>0.4</b>	<b>15.9</b>	<b>6.1</b>	<b>11.1</b>	<b>10.5</b>	<b>--</b>	<b>9.2</b>	<b>Oct-06</b>
<i>Russell 3000 Index</i>			<i>2.6</i>	<i>23.8</i>	<i>8.0</i>	<i>13.9</i>	<i>12.5</i>	<i>--</i>	<i>10.4</i>	
RhumbLine S&P 500 Index	22,520,810	9.4	2.4	25.0	8.9	14.5	13.1	10.4	8.2	Mar-99
<i>S&amp;P 500 Index</i>			<i>2.4</i>	<i>25.0</i>	<i>8.9</i>	<i>14.5</i>	<i>13.1</i>	<i>10.4</i>	<i>8.2</i>	
<i>eV US Passive S&amp;P 500 Equity Median</i>			<i>2.4</i>	<i>24.9</i>	<i>8.9</i>	<i>14.4</i>	<i>13.0</i>	<i>10.3</i>	<i>8.1</i>	
Frontier Capital Appreciation	27,270,803	11.4	-1.0	10.0	3.8	9.3	8.8	--	10.9	Feb-13
<i>Russell 2500 Growth Index</i>			<i>2.4</i>	<i>13.9</i>	<i>0.0</i>	<i>8.1</i>	<i>9.5</i>	<i>--</i>	<i>11.0</i>	
<i>eV US Small-Mid Cap Growth Equity Median</i>			<i>2.3</i>	<i>12.8</i>	<i>-1.1</i>	<i>9.3</i>	<i>9.9</i>	<i>--</i>	<i>11.2</i>	
RhumbLine HEDI	19,801,155	8.3	0.1	14.1	5.7	--	--	--	13.2	Nov-20
<i>Russell 1000 High Effic. Defensive Moderate Index</i>			<i>0.3</i>	<i>18.9</i>	<i>7.2</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>14.4</i>	
<i>eV US Large Cap Core Equity Median</i>			<i>1.6</i>	<i>22.0</i>	<i>7.4</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>15.4</i>	
<b>International Developed Markets Equity Assets</b>	<b>44,589,826</b>	<b>18.6</b>	<b>-8.1</b>	<b>3.9</b>	<b>1.9</b>	<b>4.9</b>	<b>5.4</b>	<b>--</b>	<b>3.6</b>	<b>Oct-06</b>
<i>MSCI EAFE</i>			<i>-8.1</i>	<i>3.8</i>	<i>1.6</i>	<i>4.7</i>	<i>5.2</i>	<i>--</i>	<i>3.8</i>	
RhumbLine MSCI EAFE Index	44,589,826	18.6	-8.1	3.9	1.9	4.9	5.4	--	4.4	Aug-14
<i>MSCI EAFE</i>			<i>-8.1</i>	<i>3.8</i>	<i>1.6</i>	<i>4.7</i>	<i>5.2</i>	<i>--</i>	<i>4.2</i>	
<i>eV EAFE All Cap Equity Median</i>			<i>-7.4</i>	<i>4.5</i>	<i>1.7</i>	<i>4.7</i>	<i>5.3</i>	<i>--</i>	<i>4.4</i>	
<b>International Emerging Markets Equity Assets</b>	<b>24,019,828</b>	<b>10.0</b>	<b>-6.3</b>	<b>7.9</b>	<b>-0.4</b>	<b>4.1</b>	<b>5.2</b>	<b>--</b>	<b>5.2</b>	<b>Jan-15</b>
<i>MSCI Emerging Markets</i>			<i>-8.0</i>	<i>7.5</i>	<i>-1.9</i>	<i>1.7</i>	<i>3.6</i>	<i>--</i>	<i>3.6</i>	
DFA Emerging Markets	12,719,240	5.3	-6.9	7.3	1.2	4.5	4.8	--	4.8	Jan-15
<i>MSCI Emerging Markets</i>			<i>-8.0</i>	<i>7.5</i>	<i>-1.9</i>	<i>1.7</i>	<i>3.6</i>	<i>--</i>	<i>3.6</i>	
<i>eV Emg Mkts All Cap Equity Median</i>			<i>-7.0</i>	<i>7.0</i>	<i>-2.1</i>	<i>2.3</i>	<i>4.2</i>	<i>--</i>	<i>4.2</i>	
Driehaus Emerging Market Equity	11,300,588	4.7	-5.6	8.5	-2.0	3.5	5.5	--	5.5	Jan-15
<i>MSCI Emerging Markets</i>			<i>-8.0</i>	<i>7.5</i>	<i>-1.9</i>	<i>1.7</i>	<i>3.6</i>	<i>--</i>	<i>3.6</i>	
<i>eV Emg Mkts All Cap Equity Median</i>			<i>-7.0</i>	<i>7.0</i>	<i>-2.1</i>	<i>2.3</i>	<i>4.2</i>	<i>--</i>	<i>4.2</i>	

### Asset Allocation & Performance | As of December 31, 2024

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Since Inception	Inception Date
<b>Investment Grade Bonds Assets</b>	<b>25,305,737</b>	<b>10.6</b>	<b>-3.0</b>	<b>1.3</b>	<b>-2.5</b>	<b>-0.4</b>	<b>1.3</b>	<b>3.0</b>	<b>5.2</b>	<b>Jul-88</b>
<i>Blmbg. U.S. Aggregate Index</i>			<i>-3.1</i>	<i>1.3</i>	<i>-2.4</i>	<i>-0.3</i>	<i>1.3</i>	<i>3.0</i>	<i>5.3</i>	
SSgA U.S. Aggregate Bond Index	25,305,737	10.6	-3.0	1.3	-2.5	-0.4	1.3	3.0	3.6	May-01
<i>Blmbg. U.S. Aggregate Index</i>			<i>-3.1</i>	<i>1.3</i>	<i>-2.4</i>	<i>-0.3</i>	<i>1.3</i>	<i>3.0</i>	<i>3.6</i>	
<i>eV US Core Fixed Inc Median</i>			<i>-3.0</i>	<i>1.7</i>	<i>-2.2</i>	<i>0.0</i>	<i>1.6</i>	<i>3.3</i>	<i>3.8</i>	
<b>High Yield Bond Assets</b>	<b>15,295,461</b>	<b>6.4</b>	<b>0.4</b>	<b>7.1</b>	<b>3.1</b>	<b>3.9</b>	<b>4.8</b>	<b>5.9</b>	<b>6.1</b>	<b>Sep-03</b>
<i>Blmbg. U.S. Corp: High Yield Index</i>			<i>0.2</i>	<i>8.2</i>	<i>2.9</i>	<i>4.2</i>	<i>5.2</i>	<i>6.4</i>	<i>7.0</i>	
Shenkman Capital	15,295,461	6.4	0.4	7.1	3.2	4.0	4.8	--	6.0	Apr-06
<i>Blmbg. U.S. Corp: High Yield Index</i>			<i>0.2</i>	<i>8.2</i>	<i>2.9</i>	<i>4.2</i>	<i>5.2</i>	<i>--</i>	<i>6.6</i>	
<i>eV US High Yield Fixed Inc Median</i>			<i>0.2</i>	<i>7.7</i>	<i>3.0</i>	<i>3.9</i>	<i>4.7</i>	<i>--</i>	<i>6.0</i>	
<b>TIPS Assets</b>	<b>11,928,046</b>	<b>5.0</b>	<b>-2.9</b>	<b>1.9</b>	<b>-2.4</b>	<b>1.8</b>	<b>2.2</b>	<b>--</b>	<b>3.2</b>	<b>Oct-05</b>
<i>Blmbg. U.S. TIPS Index</i>			<i>-2.9</i>	<i>1.8</i>	<i>-2.3</i>	<i>1.9</i>	<i>2.2</i>	<i>--</i>	<i>3.3</i>	
SSgA TIPS Index-NL	11,928,046	5.0	-2.9	1.9	-2.4	1.8	2.2	--	3.2	Oct-05
<i>Blmbg. U.S. TIPS Index</i>			<i>-2.9</i>	<i>1.8</i>	<i>-2.3</i>	<i>1.9</i>	<i>2.2</i>	<i>--</i>	<i>3.3</i>	
<i>eV US TIPS / Inflation Fixed Inc Median</i>			<i>-2.9</i>	<i>2.0</i>	<i>-2.2</i>	<i>1.9</i>	<i>2.2</i>	<i>--</i>	<i>3.2</i>	
<b>Emerging Market Debt Assets</b>	<b>10,905,109</b>	<b>4.5</b>	<b>-0.9</b>	<b>8.0</b>	<b>0.1</b>	<b>0.8</b>	<b>3.4</b>	<b>--</b>	<b>3.4</b>	<b>Jan-15</b>
<i>JPM EMBI Global Diversified</i>			<i>-1.9</i>	<i>6.5</i>	<i>-0.9</i>	<i>0.1</i>	<i>3.1</i>	<i>--</i>	<i>3.1</i>	
Payden Emerging Market Bond	10,905,109	4.5	-0.9	8.0	0.1	0.8	3.4	--	3.4	Jan-15
<i>JPM EMBI Global Diversified</i>			<i>-1.9</i>	<i>6.5</i>	<i>-0.9</i>	<i>0.1</i>	<i>3.1</i>	<i>--</i>	<i>3.1</i>	
<i>Emerging Markets Bond Median</i>			<i>-1.7</i>	<i>6.7</i>	<i>0.1</i>	<i>0.6</i>	<i>2.9</i>	<i>--</i>	<i>2.9</i>	

### Asset Allocation & Performance | As of December 31, 2024

	Market Value \$	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Since Inception	Inception Date
<b>Open-Ended Real Estate</b>	<b>5,539,888</b>	<b>2.3</b>	<b>1.9</b>	<b>-3.4</b>	<b>-4.0</b>	<b>2.2</b>	<b>5.9</b>	<b>5.7</b>	<b>7.1</b>	<b>Oct-95</b>
<i>NCREIF ODCE (VW) (Monthly)</i>			<i>1.2</i>	<i>-1.4</i>	<i>-2.3</i>	<i>2.9</i>	<i>5.9</i>	<i>6.5</i>	<i>8.0</i>	
Clarion Partners	5,539,888	2.3	1.9	-3.4	-4.0	2.2	5.9	5.7	6.2	Oct-02
<i>NCREIF ODCE (VW) (Monthly)</i>			<i>1.2</i>	<i>-1.4</i>	<i>-2.3</i>	<i>2.9</i>	<i>5.9</i>	<i>6.5</i>	<i>6.9</i>	
<b>Total Closed End Real Estate</b>	<b>3,555,831</b>	<b>1.5</b>	<b>-10.1</b>	<b>-19.5</b>	<b>-8.2</b>	<b>-3.5</b>	<b>-2.3</b>	<b>--</b>	<b>0.6</b>	<b>Jan-13</b>
<i>NCREIF ODCE (VW) (Monthly)</i>			<i>1.2</i>	<i>-1.4</i>	<i>-2.3</i>	<i>2.9</i>	<i>5.9</i>	<i>--</i>	<i>7.1</i>	
Rockwood Capital Real Estate Partners Fund XI, L.P.	3,555,831	1.5	-10.1	-19.5	-8.2	-2.4	--	--	-2.4	Dec-19
<i>NCREIF ODCE (VW) (Monthly)</i>			<i>1.2</i>	<i>-1.4</i>	<i>-2.3</i>	<i>2.9</i>	<i>--</i>	<i>--</i>	<i>3.1</i>	
<b>Private Equity Assets</b>	<b>12,331,702</b>	<b>5.1</b>								
North American Strategic Partners 2006										
Ironsides Partnership Fund IV										
Ironsides Direct Investment Fund IV										
Ironsides Partnership Fund V, L.P.										
Ironsides Direct Investment Fund V, L.P.										
HarbourVest 2019 Global Fund										
<b>Private Debt Assets</b>	<b>4,414,902</b>	<b>1.8</b>	<b>3.2</b>	<b>13.5</b>	<b>12.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>12.3</b>	<b>Jan-22</b>
NB Private Debt Fund IV	4,414,902	1.8	3.2	13.5	12.3	--	--	--	12.3	Jan-22
<b>Infrastructure</b>	<b>11,848,904</b>	<b>4.9</b>	<b>2.5</b>	<b>6.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>8.1</b>	<b>Aug-22</b>
IFM Global Infrastructure	11,848,904	4.9	2.5	6.3	--	--	--	--	8.1	Aug-22
<i>CPI +3% (Unadjusted)</i>			<i>0.8</i>	<i>6.0</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>5.7</i>	
<b>Cash</b>	<b>376,181</b>	<b>0.2</b>								

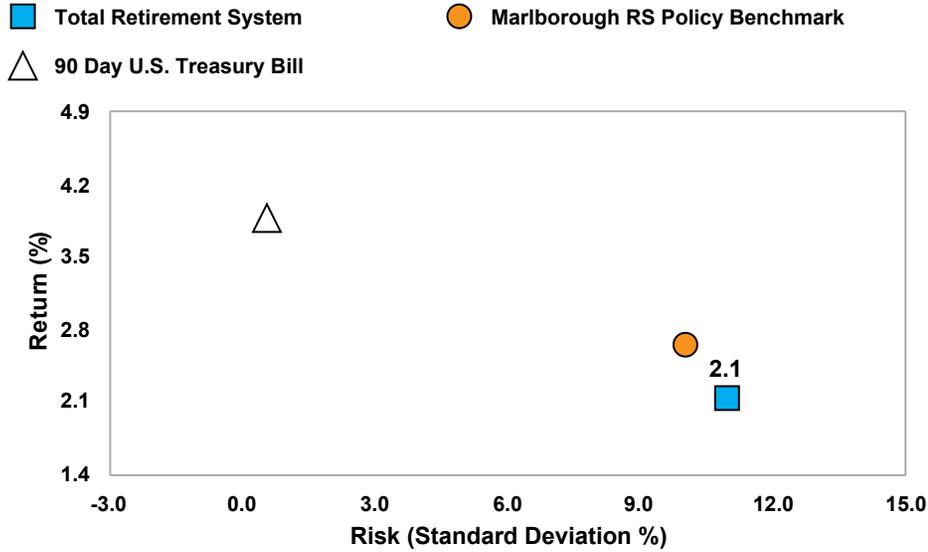
Closed End Real Estate, Private Equity, and Private Debt market values are as of June 30th, 2024 and adjusted for subsequent flows.

North American Strategic Partners market value is cash adjusted as of December 31, 2023. The fund is currently in the liquidation process and will only be reported on annually (as of December 31).

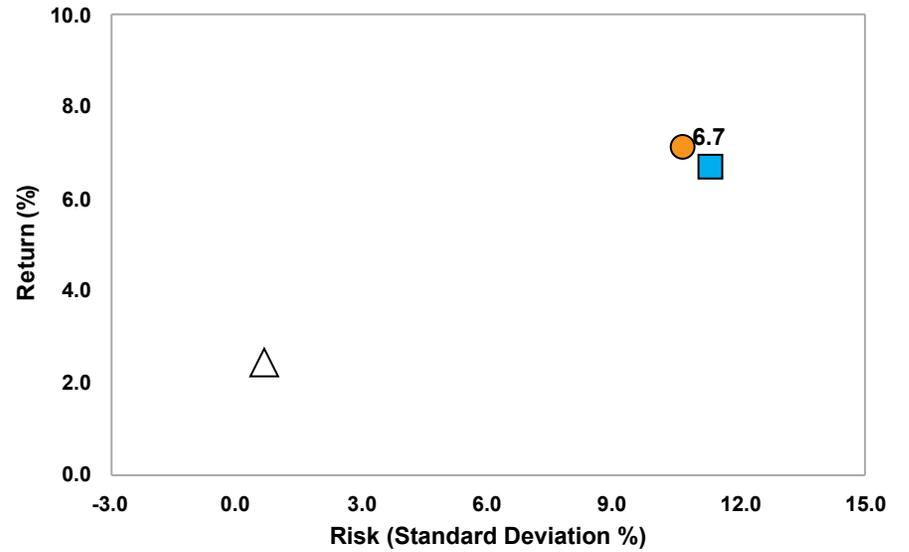
	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)
<b>Total Retirement System</b>	<b>13.6</b>	<b>-12.5</b>	<b>13.8</b>	<b>14.2</b>	<b>17.5</b>	<b>-4.5</b>	<b>13.0</b>	<b>8.7</b>	<b>-0.2</b>	<b>6.3</b>
<i>Marlborough RS Actual Allocation Benchmark</i>	<i>14.0</i>	<i>-14.5</i>	<i>14.2</i>	<i>16.0</i>	<i>18.2</i>	<i>-3.6</i>	<i>13.8</i>	<i>8.5</i>	<i>0.0</i>	<i>7.3</i>
<i>Marlborough RS Policy Benchmark</i>	<i>12.2</i>	<i>-10.4</i>	<i>15.1</i>	<i>13.3</i>	<i>17.0</i>	<i>-3.3</i>	<i>16.7</i>	<i>9.8</i>	<i>0.4</i>	<i>5.3</i>
<b>Domestic Equity Assets</b>	<b>24.0</b>	<b>-16.9</b>	<b>24.8</b>	<b>13.4</b>	<b>27.6</b>	<b>-6.9</b>	<b>20.1</b>	<b>14.6</b>	<b>-1.6</b>	<b>13.1</b>
<i>Russell 3000 Index</i>	<i>26.0</i>	<i>-19.2</i>	<i>25.7</i>	<i>20.9</i>	<i>31.0</i>	<i>-5.2</i>	<i>21.1</i>	<i>12.7</i>	<i>0.5</i>	<i>12.6</i>
RhumbLine S&P 500 Index	26.2	-18.1	28.6	18.3	31.4	-4.4	21.8	11.9	1.4	13.6
<i>S&amp;P 500 Index</i>	<i>26.3</i>	<i>-18.1</i>	<i>28.7</i>	<i>18.4</i>	<i>31.5</i>	<i>-4.4</i>	<i>21.8</i>	<i>12.0</i>	<i>1.4</i>	<i>13.7</i>
Frontier Capital Appreciation	23.9	-18.0	18.2	18.1	28.9	-13.9	19.1	20.5	-6.5	12.4
<i>Russell 2500 Growth Index</i>	<i>18.9</i>	<i>-26.2</i>	<i>5.0</i>	<i>40.5</i>	<i>32.7</i>	<i>-7.5</i>	<i>24.5</i>	<i>9.7</i>	<i>-0.2</i>	<i>7.1</i>
RhumbLine HEDI	22.2	-15.2	25.5	--	--	--	--	--	--	--
<i>Russell 1000 High Effic. Defensive Moderate Index</i>	<i>22.1</i>	<i>-15.1</i>	<i>25.5</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>
<b>International Developed Markets Equity Assets</b>	<b>18.5</b>	<b>-14.2</b>	<b>11.5</b>	<b>7.9</b>	<b>22.3</b>	<b>-13.5</b>	<b>24.9</b>	<b>1.4</b>	<b>-0.8</b>	<b>-8.7</b>
<i>MSCI EAFE</i>	<i>18.2</i>	<i>-14.5</i>	<i>11.3</i>	<i>7.8</i>	<i>22.0</i>	<i>-13.8</i>	<i>25.0</i>	<i>1.0</i>	<i>-0.8</i>	<i>-4.9</i>
RhumbLine MSCI EAFE Index	18.5	-14.2	11.5	7.9	22.3	-13.5	24.9	1.4	-0.8	--
<i>MSCI EAFE</i>	<i>18.2</i>	<i>-14.5</i>	<i>11.3</i>	<i>7.8</i>	<i>22.0</i>	<i>-13.8</i>	<i>25.0</i>	<i>1.0</i>	<i>-0.8</i>	<i>--</i>
<b>International Emerging Markets Equity Assets</b>	<b>13.6</b>	<b>-19.3</b>	<b>2.3</b>	<b>21.1</b>	<b>20.7</b>	<b>-15.4</b>	<b>39.7</b>	<b>9.4</b>	<b>-12.7</b>	<b>--</b>
<i>MSCI Emerging Markets</i>	<i>9.8</i>	<i>-20.1</i>	<i>-2.5</i>	<i>18.3</i>	<i>18.4</i>	<i>-14.6</i>	<i>37.3</i>	<i>11.2</i>	<i>-14.9</i>	<i>--</i>
DFA Emerging Markets	15.5	-16.4	5.8	13.9	16.0	-15.2	36.6	12.4	-14.9	--
<i>MSCI Emerging Markets</i>	<i>9.8</i>	<i>-20.1</i>	<i>-2.5</i>	<i>18.3</i>	<i>18.4</i>	<i>-14.6</i>	<i>37.3</i>	<i>11.2</i>	<i>-14.9</i>	<i>--</i>
Driehaus Emerging Market Equity	11.6	-22.4	-1.5	28.0	25.3	-15.6	43.0	6.5	-10.6	--
<i>MSCI Emerging Markets</i>	<i>9.8</i>	<i>-20.1</i>	<i>-2.5</i>	<i>18.3</i>	<i>18.4</i>	<i>-14.6</i>	<i>37.3</i>	<i>11.2</i>	<i>-14.9</i>	<i>--</i>
<b>Investment Grade Bonds Assets</b>	<b>5.6</b>	<b>-13.2</b>	<b>-1.6</b>	<b>7.5</b>	<b>8.7</b>	<b>0.0</b>	<b>3.6</b>	<b>2.6</b>	<b>0.6</b>	<b>6.0</b>
<i>Blmbg. U.S. Aggregate Index</i>	<i>5.5</i>	<i>-13.0</i>	<i>-1.5</i>	<i>7.5</i>	<i>8.7</i>	<i>0.0</i>	<i>3.5</i>	<i>2.6</i>	<i>0.5</i>	<i>6.0</i>
SSgA U.S. Aggregate Bond Index	5.6	-13.2	-1.6	7.5	8.7	0.0	3.6	2.6	0.6	6.0
<i>Blmbg. U.S. Aggregate Index</i>	<i>5.5</i>	<i>-13.0</i>	<i>-1.5</i>	<i>7.5</i>	<i>8.7</i>	<i>0.0</i>	<i>3.5</i>	<i>2.6</i>	<i>0.5</i>	<i>6.0</i>
<b>High Yield Bond Assets</b>	<b>12.4</b>	<b>-8.9</b>	<b>4.0</b>	<b>6.3</b>	<b>14.0</b>	<b>-1.8</b>	<b>6.5</b>	<b>12.6</b>	<b>-2.3</b>	<b>2.9</b>
<i>Blmbg. U.S. Corp: High Yield Index</i>	<i>13.4</i>	<i>-11.2</i>	<i>5.3</i>	<i>7.1</i>	<i>14.3</i>	<i>-2.1</i>	<i>7.5</i>	<i>17.1</i>	<i>-4.5</i>	<i>2.5</i>
Shenkman Capital	12.4	-8.8	4.0	6.3	14.0	-1.8	6.5	12.6	-2.3	2.9
<i>Blmbg. U.S. Corp: High Yield Index</i>	<i>13.4</i>	<i>-11.2</i>	<i>5.3</i>	<i>7.1</i>	<i>14.3</i>	<i>-2.1</i>	<i>7.5</i>	<i>17.1</i>	<i>-4.5</i>	<i>2.5</i>

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)	2014 (%)
<b>TIPS Assets</b>	<b>3.8</b>	<b>-12.1</b>	<b>5.8</b>	<b>10.9</b>	<b>8.4</b>	<b>-1.4</b>	<b>3.0</b>	<b>4.7</b>	<b>-1.4</b>	<b>3.6</b>
<i>Bloomberg U.S. TIPS Index</i>	<i>3.9</i>	<i>-11.8</i>	<i>6.0</i>	<i>11.0</i>	<i>8.4</i>	<i>-1.3</i>	<i>3.0</i>	<i>4.7</i>	<i>-1.4</i>	<i>3.6</i>
SSgA TIPS Index-NL	3.8	-12.1	5.8	10.9	8.4	-1.4	3.0	4.7	-1.4	3.6
<i>Bloomberg U.S. TIPS Index</i>	<i>3.9</i>	<i>-11.8</i>	<i>6.0</i>	<i>11.0</i>	<i>8.4</i>	<i>-1.3</i>	<i>3.0</i>	<i>4.7</i>	<i>-1.4</i>	<i>3.6</i>
<b>Emerging Market Debt Assets</b>	<b>12.4</b>	<b>-17.4</b>	<b>-2.4</b>	<b>6.2</b>	<b>16.5</b>	<b>-7.0</b>	<b>12.0</b>	<b>11.5</b>	<b>-0.8</b>	<b>--</b>
<i>JPM EMBI Global Diversified</i>	<i>11.1</i>	<i>-17.8</i>	<i>-1.8</i>	<i>5.3</i>	<i>15.0</i>	<i>-4.3</i>	<i>10.3</i>	<i>10.2</i>	<i>1.2</i>	<i>--</i>
Payden Emerging Market Bond	12.4	-17.4	-2.4	6.2	16.5	-7.0	12.0	11.5	-0.8	--
<i>JPM EMBI Global Diversified</i>	<i>11.1</i>	<i>-17.8</i>	<i>-1.8</i>	<i>5.3</i>	<i>15.0</i>	<i>-4.3</i>	<i>10.3</i>	<i>10.2</i>	<i>1.2</i>	<i>--</i>
<b>Open-Ended Real Estate</b>	<b>-16.5</b>	<b>9.6</b>	<b>23.4</b>	<b>2.2</b>	<b>7.3</b>	<b>8.6</b>	<b>7.9</b>	<b>9.1</b>	<b>15.7</b>	<b>13.2</b>
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>-12.0</i>	<i>7.5</i>	<i>22.2</i>	<i>1.2</i>	<i>5.3</i>	<i>8.3</i>	<i>7.6</i>	<i>8.8</i>	<i>15.0</i>	<i>12.5</i>
Clarion Partners	-16.5	9.6	23.4	2.2	7.3	8.6	7.9	9.1	15.7	13.2
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>-12.0</i>	<i>7.5</i>	<i>22.2</i>	<i>1.2</i>	<i>5.3</i>	<i>8.3</i>	<i>7.6</i>	<i>8.8</i>	<i>15.0</i>	<i>12.5</i>
<b>Total Closed End Real Estate</b>	<b>-12.7</b>	<b>10.2</b>	<b>14.3</b>	<b>-5.3</b>	<b>-38.2</b>	<b>-1.8</b>	<b>15.1</b>	<b>9.5</b>	<b>23.8</b>	<b>13.4</b>
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>-12.0</i>	<i>7.5</i>	<i>22.2</i>	<i>1.2</i>	<i>5.3</i>	<i>8.3</i>	<i>7.6</i>	<i>8.8</i>	<i>15.0</i>	<i>12.5</i>
Rockwood Capital Real Estate Partners Fund XI, L.P.	-12.7	10.2	14.3	0.0	--	--	--	--	--	--
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>-12.0</i>	<i>7.5</i>	<i>22.2</i>	<i>1.2</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>
<b>Private Equity Assets</b>										
North American Strategic Partners 2006										
Ironsides Partnership Fund IV										
Ironsides Direct Investment Fund IV										
Ironsides Partnership Fund V, L.P.										
Ironsides Direct Investment Fund V, L.P.										
HarbourVest 2019 Global Fund										
<b>Private Debt Assets</b>	<b>12.7</b>	<b>10.8</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
NB Private Debt Fund IV	12.7	10.8	--	--	--	--	--	--	--	--
<b>Infrastructure</b>	<b>8.8</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
IFM Global Infrastructure	8.8	--	--	--	--	--	--	--	--	--
<i>CPI +3% (Unadjusted)</i>	<i>6.4</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>--</i>
<b>Cash</b>										

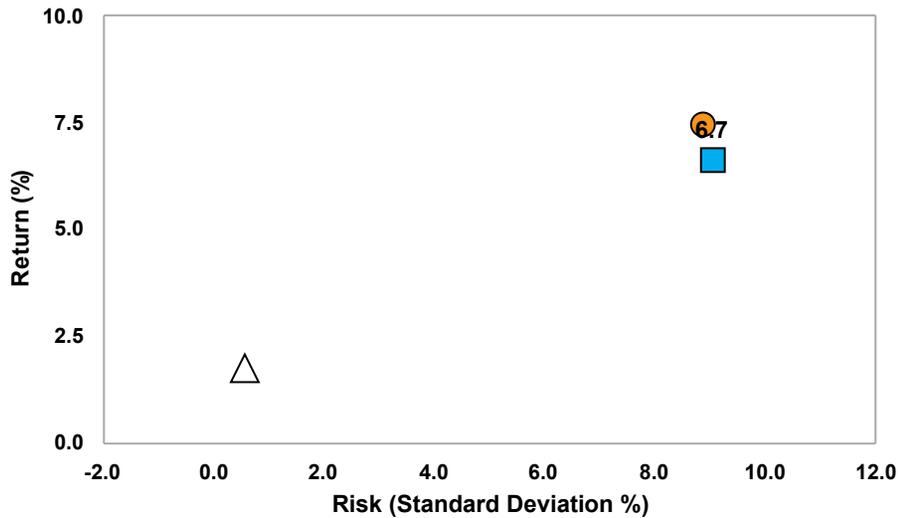
3 Years Ending December 31, 2024



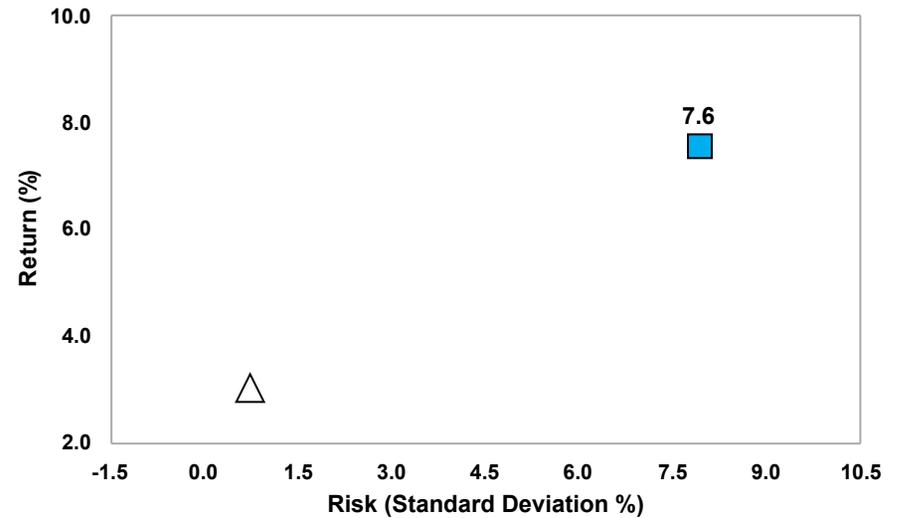
5 Years Ending December 31, 2024

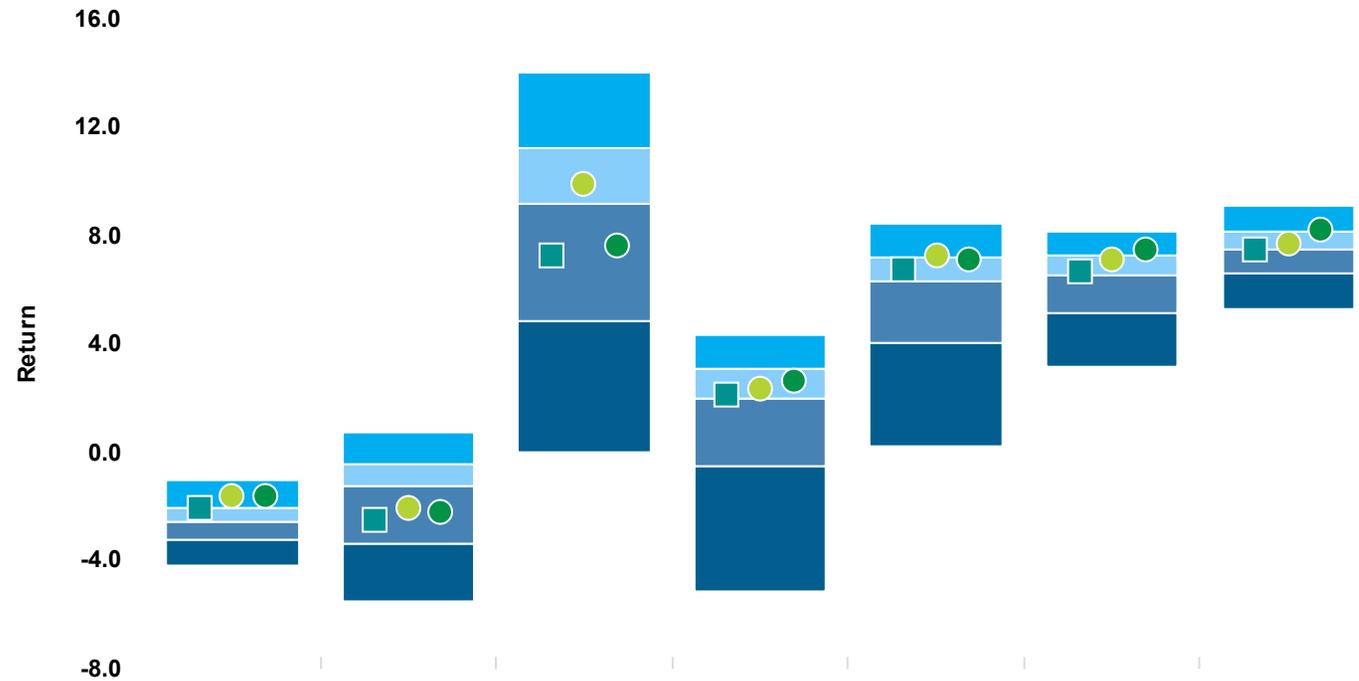


10 Years Ending December 31, 2024



Since Inception Ending December 31, 2024





	1 Mo (%)	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	15 Yrs (%)
Total Retirement System	-2.1 (28)	-2.5 (70)	7.3 (65)	2.1 (47)	6.7 (39)	6.7 (46)	7.5 (50)
Marlborough RS Actual Allocation Benchmark	-1.6 (12)	-2.0 (66)	9.9 (44)	2.3 (43)	7.3 (23)	7.2 (30)	7.7 (38)
Marlborough RS Policy Benchmark	-1.6 (12)	-2.2 (68)	7.6 (63)	2.7 (34)	7.1 (27)	7.5 (18)	8.2 (24)
5th Percentile	-1.1	0.8	14.0	4.3	8.5	8.1	9.1
1st Quartile	-2.0	-0.4	11.3	3.1	7.2	7.3	8.1
Median	-2.6	-1.2	9.2	2.0	6.3	6.6	7.4
3rd Quartile	-3.2	-3.4	4.9	-0.5	4.0	5.2	6.6
95th Percentile	-4.2	-5.5	0.0	-5.2	0.2	3.2	5.3
Population	571	566	559	530	505	446	342

Peer group is "Taft Hartley DB Plans." Parentheses contain percentile rankings.  
Calculation based on monthly periodicity.

	5-year risk statistics					
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Tracking Error	Information Ratio	Beta
Total Retirement System	6.73	11.30	0.42	1.27	-0.38	1.00
<i>Marlborough RS Actual Allocation Benchmark</i>	<i>7.26</i>	<i>11.23</i>	<i>0.46</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
<i>Marlborough RS Policy Benchmark</i>	<i>7.14</i>	<i>10.65</i>	<i>0.47</i>	<i>2.55</i>	<i>-0.07</i>	<i>0.92</i>
Equity Assets	8.37	18.04	0.40	4.28	-1.19	0.94
<i>Russell 3000 Index</i>	<i>13.86</i>	<i>18.67</i>	<i>0.66</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Domestic Equity Assets	11.06	19.52	0.51	3.33	-0.70	1.03
<i>Russell 3000 Index</i>	<i>13.86</i>	<i>18.67</i>	<i>0.66</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
RhumbLine S&P 500 Index	14.46	18.03	0.71	0.05	-1.31	1.00
<i>S&amp;P 500 Index</i>	<i>14.53</i>	<i>18.06</i>	<i>0.71</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Frontier Capital Appreciation	9.30	26.49	0.38	9.06	0.22	1.06
<i>Russell 2500 Growth Index</i>	<i>8.08</i>	<i>23.45</i>	<i>0.35</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
RhumbLine HEDI	-	-	-	-	-	-
<i>Russell 1000 High Effic. Defensive Moderate Index</i>	<i>12.90</i>	<i>16.90</i>	<i>0.66</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
International Developed Markets Equity Assets	4.92	17.58	0.22	0.29	0.56	0.99
<i>MSCI EAFE</i>	<i>4.73</i>	<i>17.70</i>	<i>0.21</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
RhumbLine MSCI EAFE Index	4.92	17.58	0.22	0.29	0.56	0.99
<i>MSCI EAFE</i>	<i>4.73</i>	<i>17.70</i>	<i>0.21</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
International Emerging Markets Equity Assets	4.14	17.27	0.18	3.63	0.61	0.92
<i>MSCI Emerging Markets</i>	<i>1.70</i>	<i>18.35</i>	<i>0.05</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
DFA Emerging Markets	4.53	18.67	0.20	4.07	0.70	0.99
<i>MSCI Emerging Markets</i>	<i>1.70</i>	<i>18.35</i>	<i>0.05</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>

RhumbLine HEDI funded on 10/5/2020. Statistics will be reflected after first full five calendar years.

## Fund Summary| As of December 31, 2024

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Tracking Error	Information Ratio	Beta
Driehaus Emerging Market Equity	3.45	16.53	0.14	5.76	0.24	0.86
<i>MSCI Emerging Markets</i>	<i>1.70</i>	<i>18.35</i>	<i>0.05</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Investment Grade Bonds Assets	-0.38	6.38	-0.41	0.16	-0.33	1.00
<i>Blmbg. U.S. Aggregate Index</i>	<i>-0.33</i>	<i>6.37</i>	<i>-0.41</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
SSgA U.S. Aggregate Bond Index	-0.38	6.38	-0.41	0.16	-0.32	1.00
<i>Blmbg. U.S. Aggregate Index</i>	<i>-0.33</i>	<i>6.37</i>	<i>-0.41</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
High Yield Bond Assets	3.94	8.13	0.22	1.32	-0.28	0.87
<i>Blmbg. U.S. Corp: High Yield Index</i>	<i>4.21</i>	<i>9.26</i>	<i>0.23</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Shenkman Capital	3.96	8.12	0.22	1.32	-0.26	0.87
<i>Blmbg. U.S. Corp: High Yield Index</i>	<i>4.21</i>	<i>9.26</i>	<i>0.23</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
TIPS Assets	1.76	6.27	-0.08	0.19	-0.54	1.00
<i>Blmbg. U.S. TIPS Index</i>	<i>1.87</i>	<i>6.27</i>	<i>-0.06</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
SSgA TIPS Index-NL	1.76	6.27	-0.08	0.19	-0.54	1.00
<i>Blmbg. U.S. TIPS Index</i>	<i>1.87</i>	<i>6.27</i>	<i>-0.06</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Emerging Market Debt Assets	0.79	12.79	-0.06	2.11	0.40	1.10
<i>JPM EMBI Global Diversified</i>	<i>0.12</i>	<i>11.52</i>	<i>-0.14</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Payden Emerging Market Bond	0.79	12.79	-0.06	2.11	0.40	1.10
<i>JPM EMBI Global Diversified</i>	<i>0.12</i>	<i>11.52</i>	<i>-0.14</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Open-Ended Real Estate	2.20	8.66	0.01	2.38	-0.23	1.12
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>2.87</i>	<i>7.51</i>	<i>0.09</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Clarion Partners	2.20	8.66	0.01	2.38	-0.23	1.12
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>2.87</i>	<i>7.51</i>	<i>0.09</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>

## Fund Summary| As of December 31, 2024

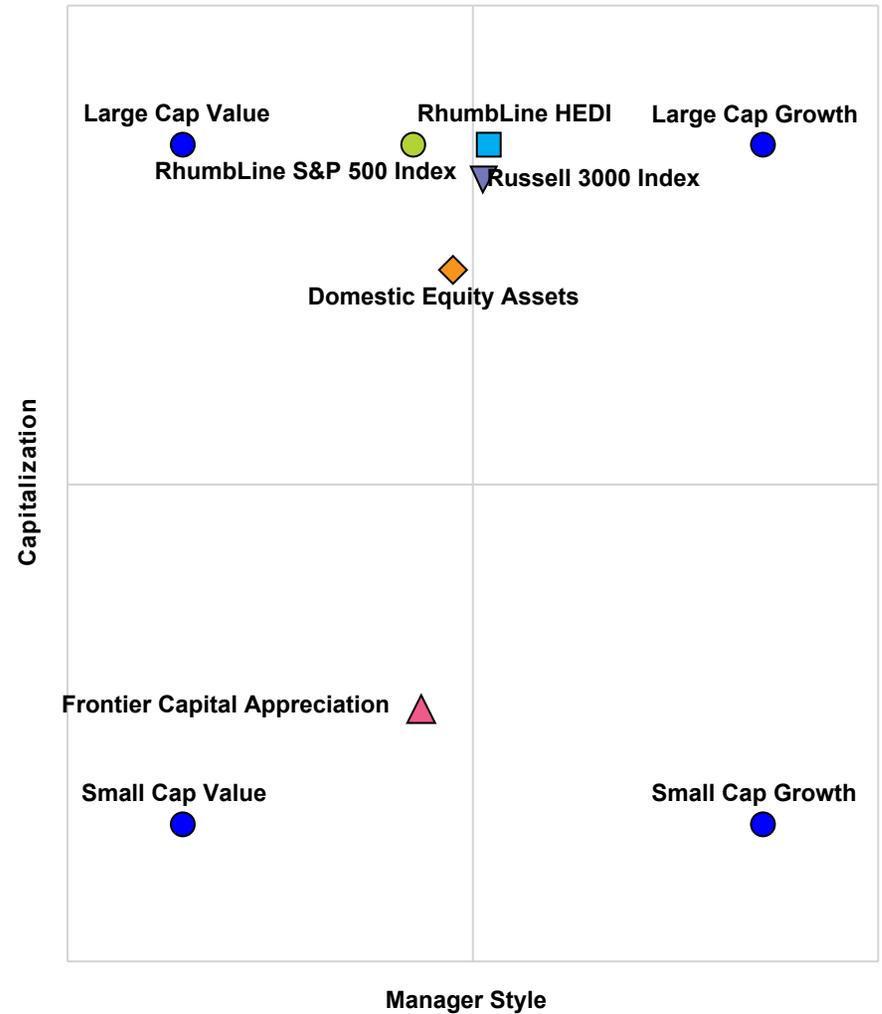
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Tracking Error	Information Ratio	Beta
Total Closed End Real Estate	-3.48	9.01	-0.60	7.68	-0.81	0.70
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>2.87</i>	<i>7.51</i>	<i>0.09</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
Rockwood Capital Real Estate Partners Fund XI, L.P.	-2.42	8.92	-0.49	7.58	-0.68	0.70
<i>NCREIF ODCE (VW) (Monthly)</i>	<i>2.87</i>	<i>7.51</i>	<i>0.09</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
IFM Global Infrastructure	-	-	-	-	-	-
<i>CPI +3% (Unadjusted)</i>	<i>7.31</i>	<i>1.35</i>	<i>2.74</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>
EB Temporary Investment Fund	4.66	4.48	0.52	4.30	0.52	2.27
<i>ICE BofA 3 Month U.S. T-Bill</i>	<i>2.46</i>	<i>0.67</i>	<i>-</i>	<i>0.00</i>	<i>-</i>	<i>1.00</i>

Rockwood Capital XI and IFM Global Infrastructure statistics will be reflected after first full five calendar years.

## Retirement System Detail

	Total Fund	
	\$	%
Frontier Capital Appreciation	27,270,803	39.19
RhumbLine HEDI	19,801,155	28.45
RhumbLine S&P 500 Index	22,520,810	32.36
<b>Domestic Equity Assets</b>	<b>69,592,767</b>	<b>100.00</b>

### Domestic Equity Style Map 3 Years Ending December 31, 2024



### Domestic Equity | As of December 31, 2024

#### Domestic Equity Characteristics

	Dec-2024	Sep-2024
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##### Wtd. Avg. Mkt. Cap \$M

Domestic Equity Assets	1.1	1.0
Russell 3000 Index	1.0	0.9

##### Median Mkt. Cap \$M

Domestic Equity Assets	-	-
Russell 3000 Index	-	-

##### Price/Earnings ratio

Domestic Equity Assets	27.0	28.0
Russell 3000 Index	26.2	26.9

##### Current Yield

Domestic Equity Assets	1.3	1.3
Russell 3000 Index	1.3	1.3

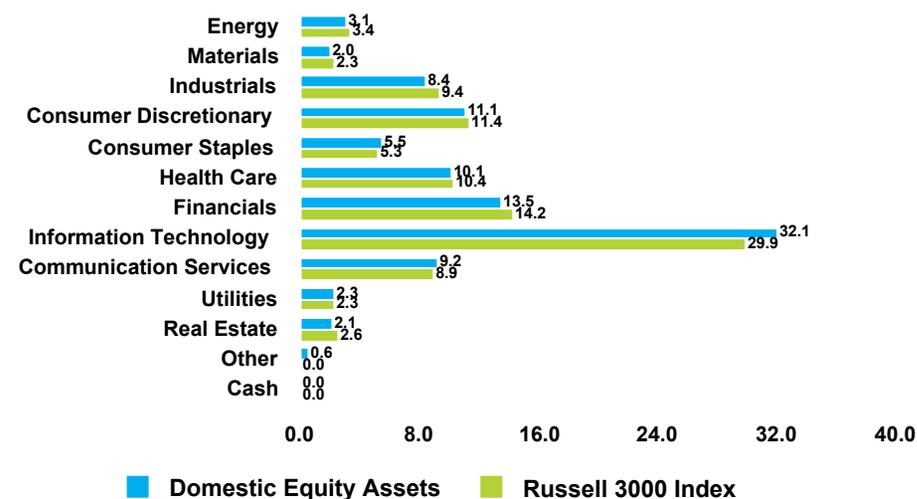
##### 5 Yr. EPS Growth Rate

Domestic Equity Assets	20.9	18.9
Russell 3000 Index	20.1	18.4

##### Price/Book ratio

Domestic Equity Assets	5.1	5.1
Russell 3000 Index	4.7	4.7

#### Sector Weights (%)

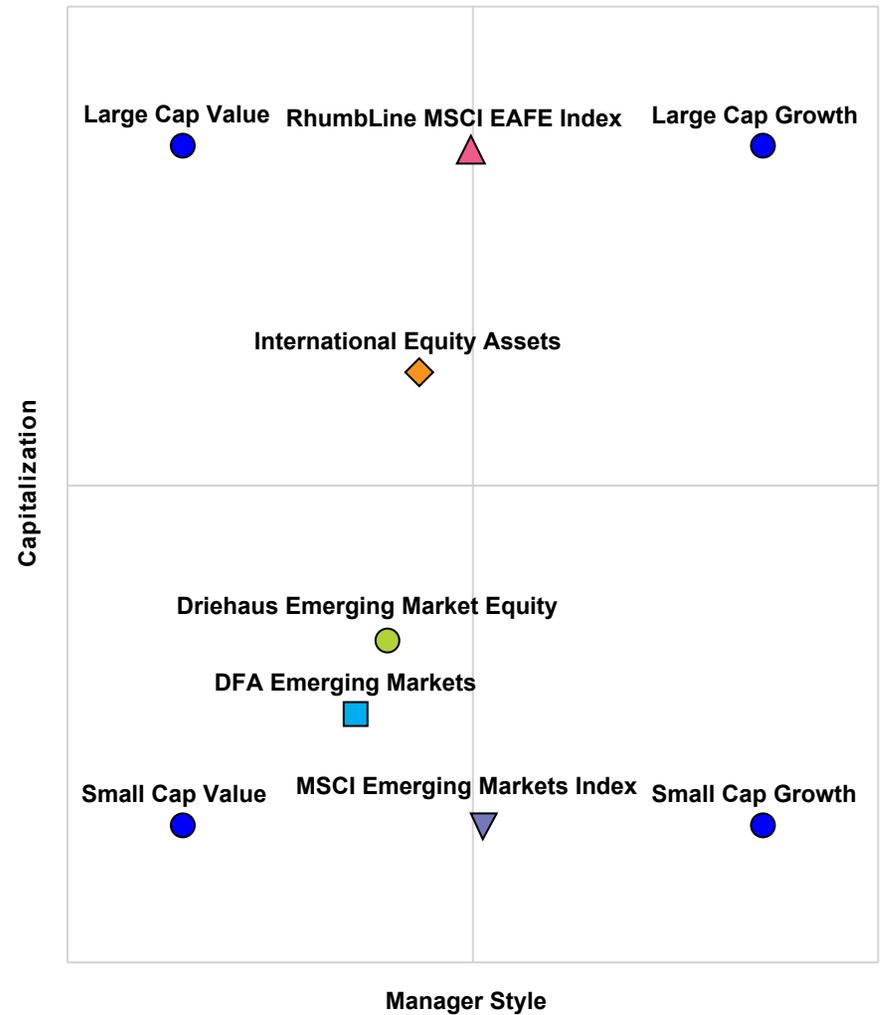


#### Domestic Equity Assets

	Weight %
Apple Inc	7.5
NVIDIA Corporation	6.5
Microsoft Corp	6.2
Amazon.com Inc	4.0
Meta Platforms Inc	2.5
Tesla Inc	2.2
Alphabet Inc Class A	2.2
Broadcom Inc	2.1
Alphabet Inc Class C	1.8
Berkshire Hathaway Inc	1.6

	Total Fund	
	\$	%
DFA Emerging Markets	12,719,240	18.54
Driehaus Emerging Market Equity	11,300,588	16.47
RhumbLine MSCI EAFE Index	44,589,826.36	64.99
<b>International Equity Assets</b>	<b>68,609,654</b>	<b>100.00</b>

### International Equity Assets Style Map 3 Years Ending December 31, 2024

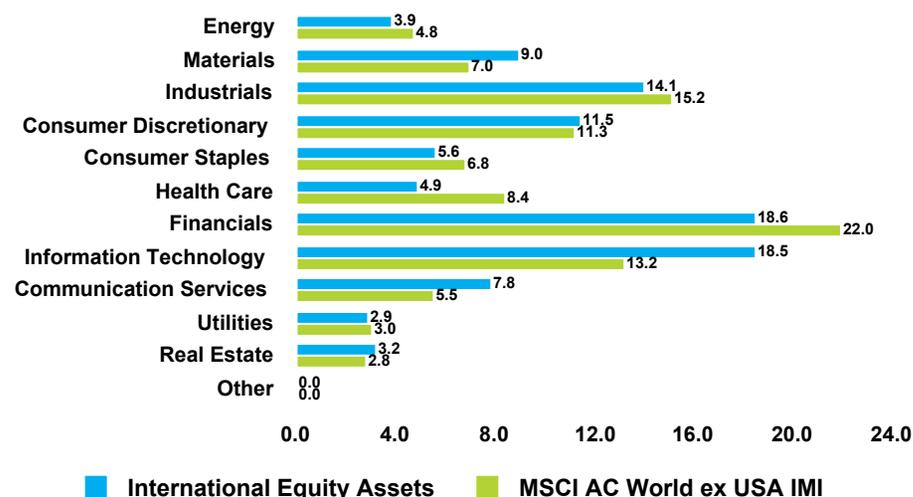


### International Equity | As of December 31, 2024

#### International Equity Characteristics

	Dec-2024	Sep-2024
<b>Wtd. Avg. Mkt. Cap \$M</b>		
International Equity Assets	0.1	0.1
MSCI AC World ex USA IMI	0.1	0.1
<b>Median Mkt. Cap \$M</b>		
International Equity Assets	-	-
MSCI AC World ex USA IMI	-	-
<b>Price/Earnings ratio</b>		
International Equity Assets	13.1	13.9
MSCI AC World ex USA IMI	15.6	15.5
<b>Current Yield</b>		
International Equity Assets	2.8	2.7
MSCI AC World ex USA IMI	3.0	2.9
<b>5 Yr. EPS Growth Rate</b>		
International Equity Assets	16.0	15.7
MSCI AC World ex USA IMI	12.1	10.7
<b>Price/Book ratio</b>		
International Equity Assets	2.6	2.6
MSCI AC World ex USA IMI	2.5	2.6

#### Sector Weights (%)



#### International Equity Assets

	Weight %
Taiwan Semiconductor Manufac. COM	4.3
Tencent Holdings LTD	2.8
Taiwan Semiconductor Manufac. ADR	2.0
TECHNO ELECTRIC & ENGINEERIN	1.9
Alibaba Group Holding Ltd	0.9
China Construction Bank Corp	0.8
Softbank Group Corp	0.6
Infosys Ltd	0.6
ICICI Bank Ltd	0.5
Bharti Airtel Ltd	0.5

## City of Marlborough Contributory Retirement System

### International Equity | As of December 31, 2024

	International Equity Assets	MSCI AC World ex USA IMI
Canada	0.1	7.9
United States	0.3	0.3
<b>Americas</b>	<b>0.3</b>	<b>8.3</b>
Australia	0.4	4.6
Hong Kong	2.9	1.7
Japan	3.5	15.6
New Zealand	0.0	0.2
Singapore	0.4	1.2
<b>Asia Pacific</b>	<b>7.2</b>	<b>23.4</b>
Austria	0.0	0.2
Belgium	0.1	0.5
Denmark	0.2	1.7
Finland	0.1	0.6
France	0.5	5.7
Germany	0.5	5.2
Ireland	0.4	0.7
Israel	0.2	0.8
Italy	0.1	1.7
Netherlands	0.3	3.1
Norway	0.1	0.5
Portugal	0.0	0.1
Spain	0.1	1.6
Sweden	0.3	2.1
Switzerland	0.5	5.7
United Kingdom	0.6	8.8
<b>EMEA</b>	<b>4.0</b>	<b>39.0</b>
<b>Developed Markets</b>	<b>11.5</b>	<b>70.7</b>

	International Equity Assets	MSCI AC World ex USA IMI
Brazil	3.5	1.1
Chile	0.4	0.1
Colombia	0.1	0.0
Mexico	1.7	0.5
Peru	0.1	0.1
<b>Americas</b>	<b>5.8</b>	<b>1.9</b>
China	19.9	6.6
India	21.2	6.5
Indonesia	1.5	0.5
Korea	7.0	2.7
Malaysia	1.6	0.5
Philippines	0.6	0.2
Taiwan	18.3	5.9
Thailand	1.3	0.5
<b>Asia Pacific</b>	<b>71.4</b>	<b>23.3</b>
Czech Republic	0.1	0.0
Egypt	0.0	0.0
Greece	0.4	0.1
Hungary	0.2	0.1
Kuwait	0.3	0.2
Poland	0.8	0.2
Qatar	0.7	0.2
Saudi Arabia	3.5	1.2
South Africa	2.6	0.9
Turkey	1.0	0.3
United Arab Emirates	1.5	0.4
<b>EMEA</b>	<b>11.2</b>	<b>3.7</b>
<b>Emerging Markets</b>	<b>88.3</b>	<b>28.9</b>

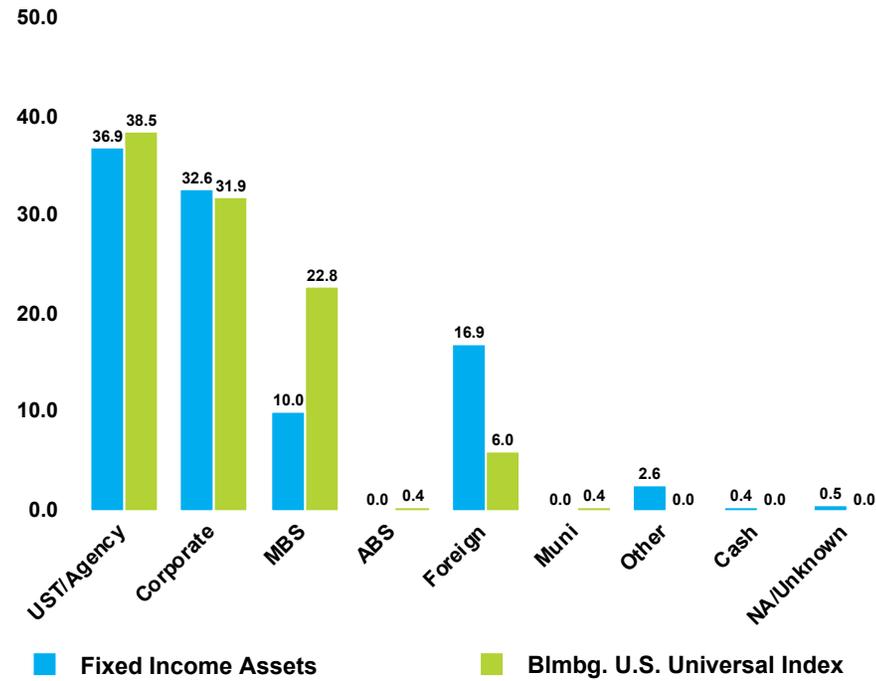
	International Equity Assets	MSCI AC World ex USA IMI
Argentina	0.0	0.0
Mauritius	0.0	0.0
<b>Frontier Markets</b>	<b>0.0</b>	<b>0.0</b>
Other	0.1	0.4
<b>Total</b>	<b>100.0</b>	<b>100.0</b>

Fixed Income | As of December 31, 2024

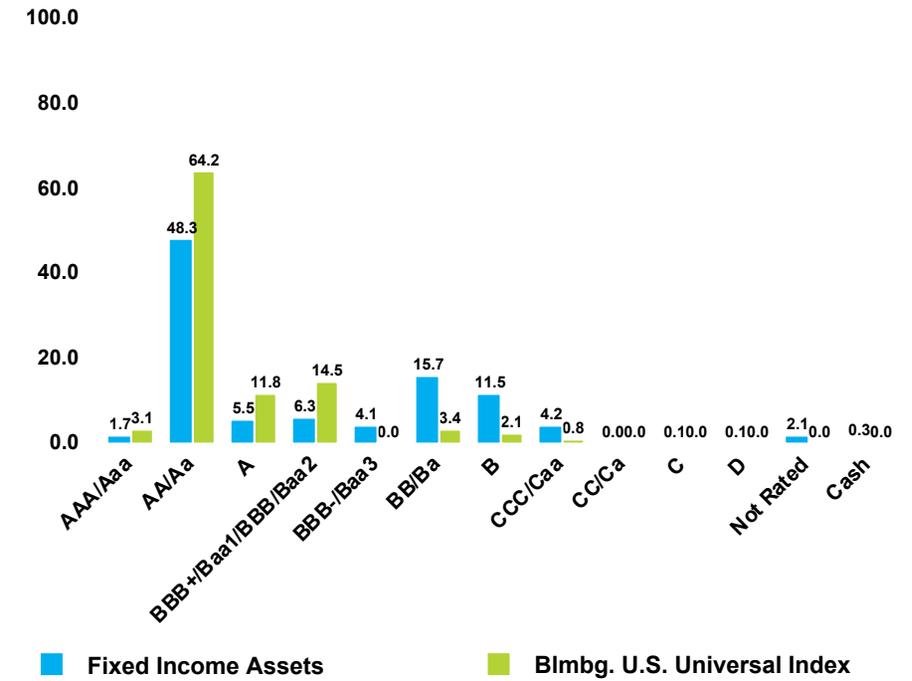
	Total Fund	
	\$	%
Payden Emerging Market Bond	10,905,109	17.19
Shenkman Capital	15,295,461	24.11
SSgA TIPS Index-NL	11,928,046	18.80
SSgA U.S. Aggregate Bond Index	25,305,737	39.89
<b>Fixed Income Assets</b>	<b>63,434,353</b>	<b>100.00</b>

	Portfolio	Benchmark
	Yield To Maturity (%)	5.9
Average Duration	5.0	6.0
Avg. Quality	A	A
Weighted Average Maturity (Days)	7.7	8.2

### Sector Distribution (%)



### Credit Quality Distribution (%)



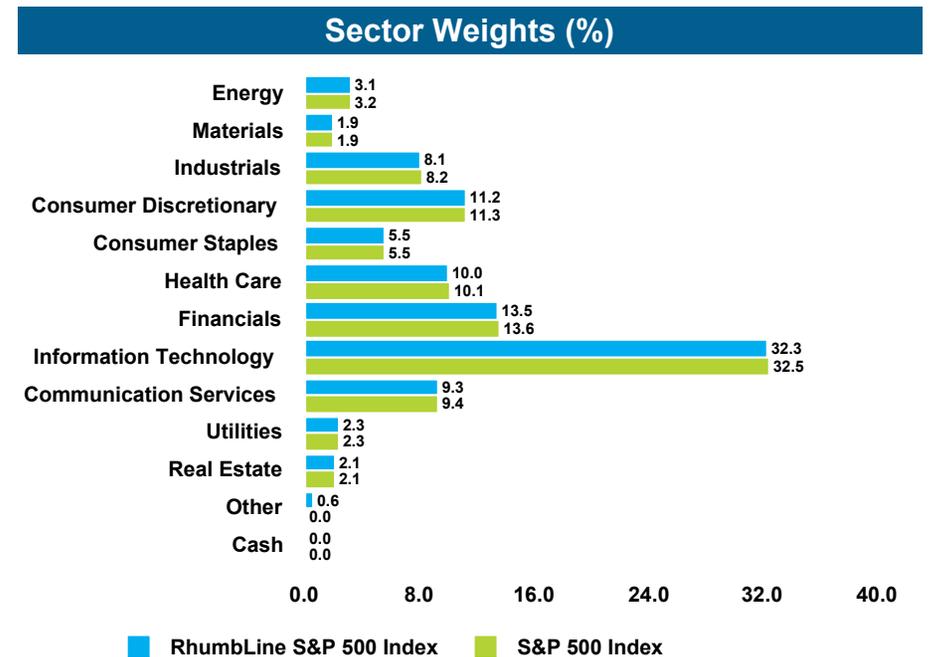
## Portfolio Reviews

Top Holdings	
Apple Inc	7.6
NVIDIA Corporation	6.6
Microsoft Corp	6.3
Amazon.com Inc	4.1
Meta Platforms Inc	2.5
Tesla Inc	2.2
Alphabet Inc Class A	2.2
Broadcom Inc	2.2
Alphabet Inc Class C	1.8
Berkshire Hathaway Inc	1.7
<b>% of Portfolio</b>	<b>37.2</b>

Account Information	
Account Name	RhumbLine S&P 500 Index
Account Structure	Commingled Fund
Inception Date	02/28/1999
Asset Class	US Equity
Benchmark	S&P 500 Index
Peer Group	eV US Passive S&P 500 Equity

Equity Characteristics vs S&P 500 Index		
	Portfolio	Benchmark
Number of Holdings	505	503
Wtd. Avg. Mkt. Cap \$B	1,101.2	1,104.2
Median Mkt. Cap \$B	37.2	37.1
P/E Ratio	27.1	27.1
Yield (%)	1.3	1.3
EPS Growth - 5 Yrs. (%)	20.9	20.9
Price to Book	5.1	5.1

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
RhumbLine S&P 500 Index	2.4	25.0	8.9	14.5	13.1	8.2	03/01/1999
S&P 500 Index	2.4	25.0	8.9	14.5	13.1	8.2	

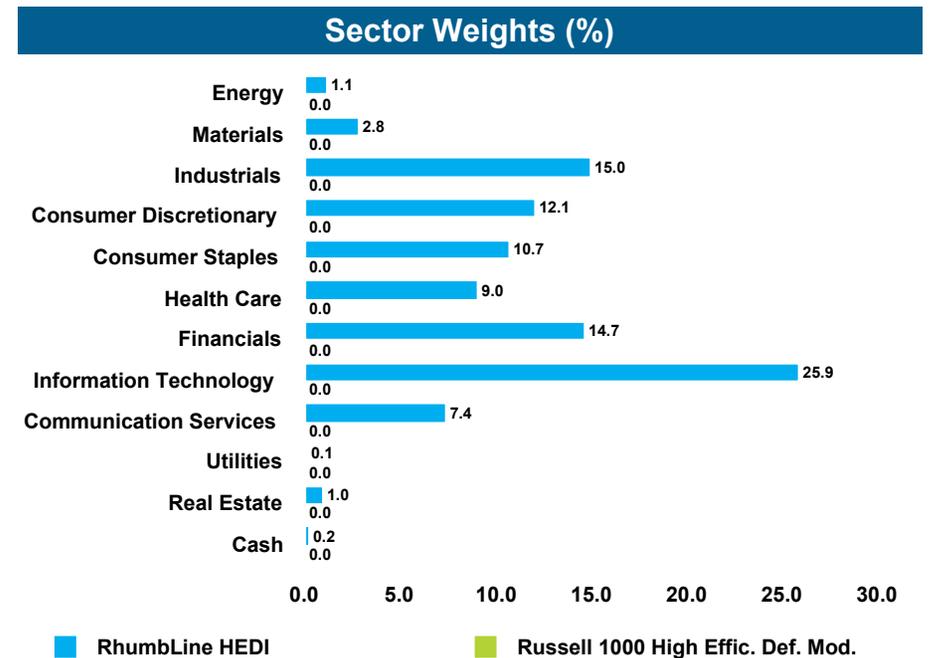


Top Holdings	
Apple Inc	7.0
Microsoft Corp	6.3
NVIDIA Corporation	4.9
Amazon.com Inc	3.6
Alphabet Inc Class C	2.2
Alphabet Inc Class A	2.2
Berkshire Hathaway Inc	1.8
Meta Platforms Inc	1.8
Mastercard Inc	1.4
Visa Inc	1.3
<b>% of Portfolio</b>	<b>32.5</b>

Account Information	
Account Name	RhumbLine HEDI
Account Structure	Separate Account
Inception Date	10/05/2020
Asset Class	US Equity
Benchmark	Russell 1000 High Effic. Defensive Moderate Index
Peer Group	eV US Large Cap Core Equity

Equity Characteristics vs Russell 1000 High Effic. Def. Mod.		
	Portfolio	Benchmark
Number of Holdings	225	0
Wtd. Avg. Mkt. Cap \$B	963.5	-
Median Mkt. Cap \$B	39.9	-
P/E Ratio	26.9	-
Yield (%)	1.3	-
EPS Growth - 5 Yrs. (%)	17.9	-
Price to Book	5.6	-

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
RhumbLine HEDI	0.1	14.1	5.7	-	-	13.2	11/01/2020
Russell 1000 High Effic. Def. Mod.	0.3	18.9	7.2	12.9	13.3	14.4	



Russell 1000 HEDI benchmark characteristic data is unavailable.

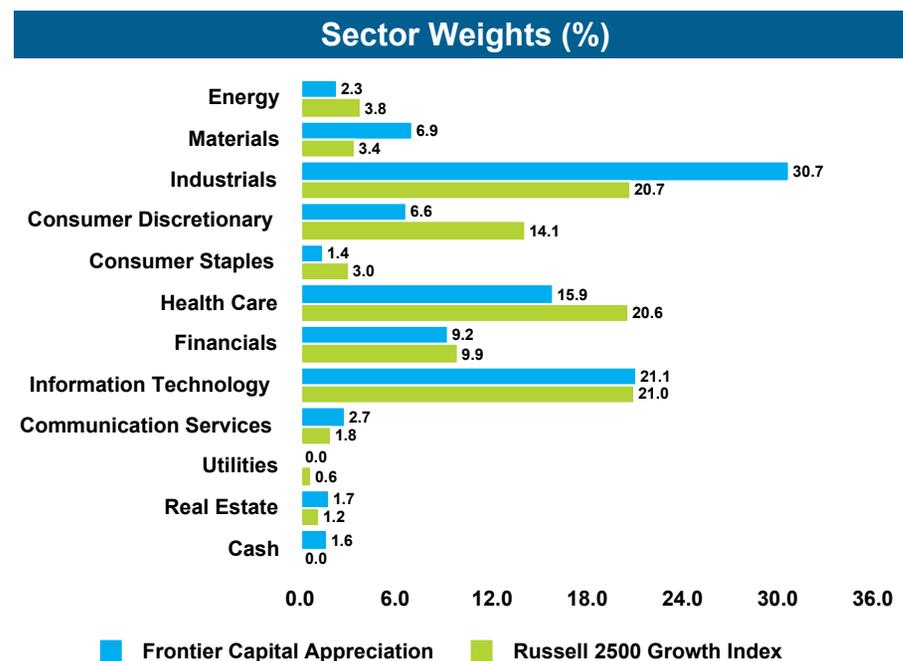
### Frontier Capital Appreciation | As of December 31, 2024

Top Holdings	
FTAI Aviation Ltd	2.6
Carpenter Technology Corp	1.9
ATI Inc	1.8
MRC Global Inc	1.8
Jabil Inc	1.7
Beacon Roofing Supply Inc	1.7
XPO Inc	1.6
Granite Construction Inc	1.6
Alaska Air Group Inc	1.4
Flex Ltd	1.4
<b>% of Portfolio</b>	<b>17.5</b>

Account Information	
Account Name	Frontier Capital Appreciation
Account Structure	Commingled Fund
Inception Date	02/01/2013
Asset Class	US Equity
Benchmark	Russell 2500 Growth Index
Peer Group	eV US Small-Mid Cap Growth Equity

Equity Characteristics vs Russell 2500 Growth Index		
	Portfolio	Benchmark
Number of Holdings	142	1,292
Wtd. Avg. Mkt. Cap \$B	10.0	7.0
Median Mkt. Cap \$B	7.1	1.5
P/E Ratio	22.5	27.1
Yield (%)	0.7	0.6
EPS Growth - 5 Yrs. (%)	14.6	19.6
Price to Book	2.9	5.0

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
Frontier Capital Appreciation	-1.0	10.0	3.8	9.3	8.8	10.9	02/01/2013
Russell 2500 Growth Index	2.4	13.9	0.0	8.1	9.5	11.0	

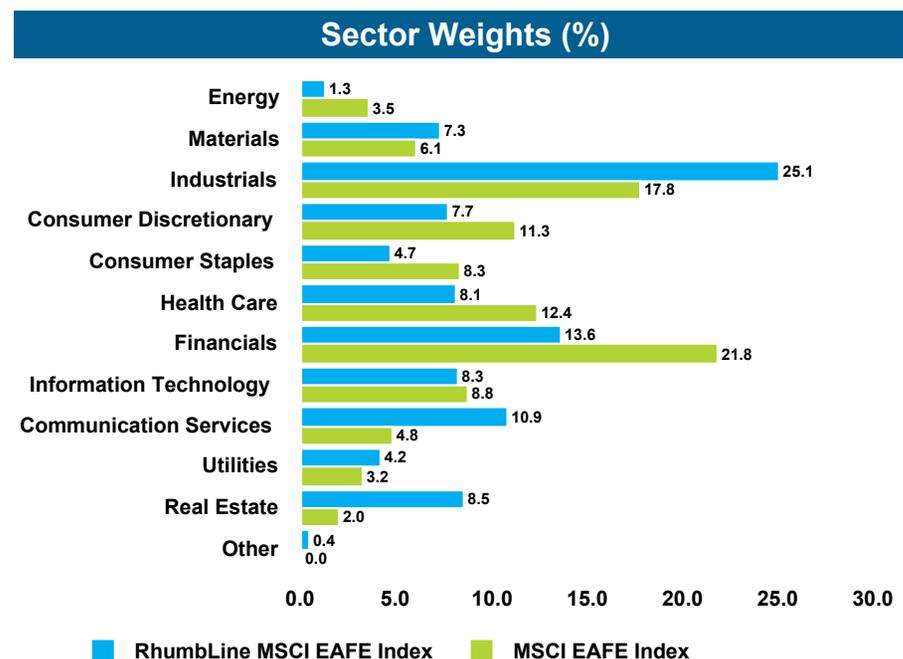


Top Holdings	
Softbank Group Corp	7.4
Hikari Tsushin Inc	4.4
Toyota Industries Corp	3.6
Japan Real Estate Investment Corp	3.5
Nippon Building Fund Inc	3.0
Nippon Steel Corp	2.5
Smc Corp	1.6
United Utilities Group PLC	1.3
ASML Holding NV	1.2
Novo Nordisk A/S	1.2
<b>% of Portfolio</b>	<b>29.7</b>

Account Information	
Account Name	RhumbLine MSCI EAFE Index
Account Structure	Commingled Fund
Inception Date	07/21/2014
Asset Class	International Equity
Benchmark	MSCI EAFE (Net)
Peer Group	eV EAFE All Cap Equity

Equity Characteristics vs MSCI EAFE Index		
	Portfolio	Benchmark
Number of Holdings	697	722
Wtd. Avg. Mkt. Cap \$B	58.4	85.9
Median Mkt. Cap \$B	14.4	14.5
P/E Ratio	12.6	16.4
Yield (%)	2.8	3.1
EPS Growth - 5 Yrs. (%)	11.1	10.6
Price to Book	2.4	2.5

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
RhumbLine MSCI EAFE Index	-8.1	3.9	1.9	4.9	5.4	4.4	08/01/2014
MSCI EAFE Index	-8.1	4.3	2.2	5.2	5.7	4.7	



### DFA Emerging Markets | As of December 31, 2024

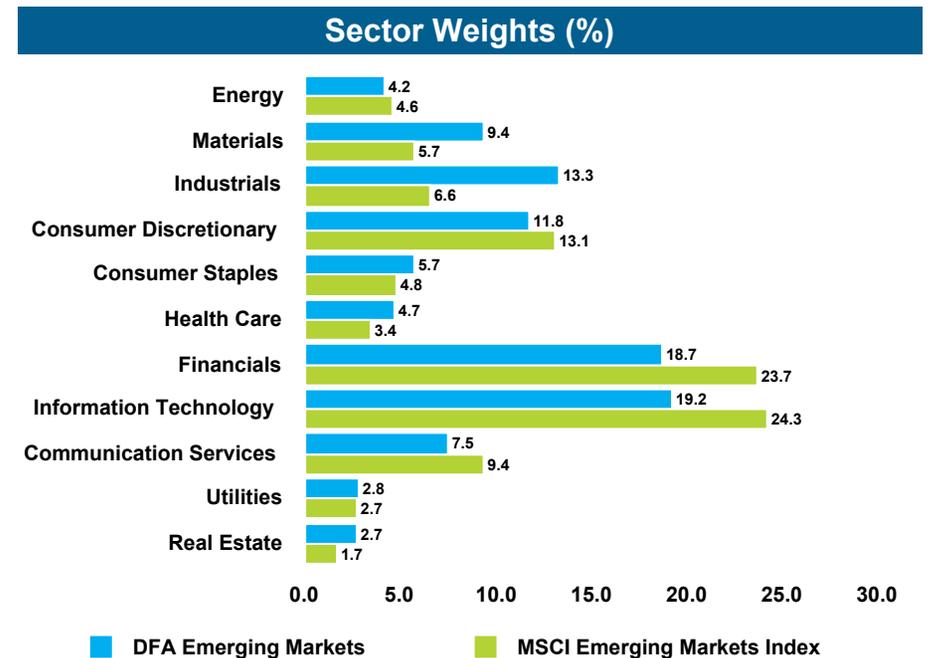
Top Holdings	
Taiwan Semiconductor Manufac. COM	4.8
Tencent Holdings LTD	3.1
TECHNO ELECTRIC & ENGINEERIN	2.1
Taiwan Semiconductor Manufac. ADR	1.9
Alibaba Group Holding Ltd	1.0
China Construction Bank Corp	0.9
Infosys Ltd	0.6
Bharti Airtel Ltd	0.5
Petroleo Brasileiro S.A.- Petrobras	0.5
ICICI Bank Ltd	0.5

**% of Portfolio** **15.9**

Account Information	
Account Name	DFA Emerging Markets
Account Structure	Mutual Fund
Inception Date	12/01/2014
Asset Class	International Equity
Benchmark	MSCI Emerging Markets (Net)
Peer Group	eV Emg Mkts All Cap Equity

Equity Characteristics vs MSCI Emerging Markets Index		
	Portfolio	Benchmark
Number of Holdings	7,328	1,252
Wtd. Avg. Mkt. Cap \$B	96.7	165.6
Median Mkt. Cap \$B	0.8	7.6
P/E Ratio	13.1	14.0
Yield (%)	2.8	2.7
EPS Growth - 5 Yrs. (%)	16.3	16.7
Price to Book	2.6	2.8

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
DFA Emerging Markets	-6.9	7.3	1.2	4.5	4.8	4.8	01/01/2015
MSCI Emerging Markets Index	-7.8	8.1	-1.5	2.1	4.0	4.0	



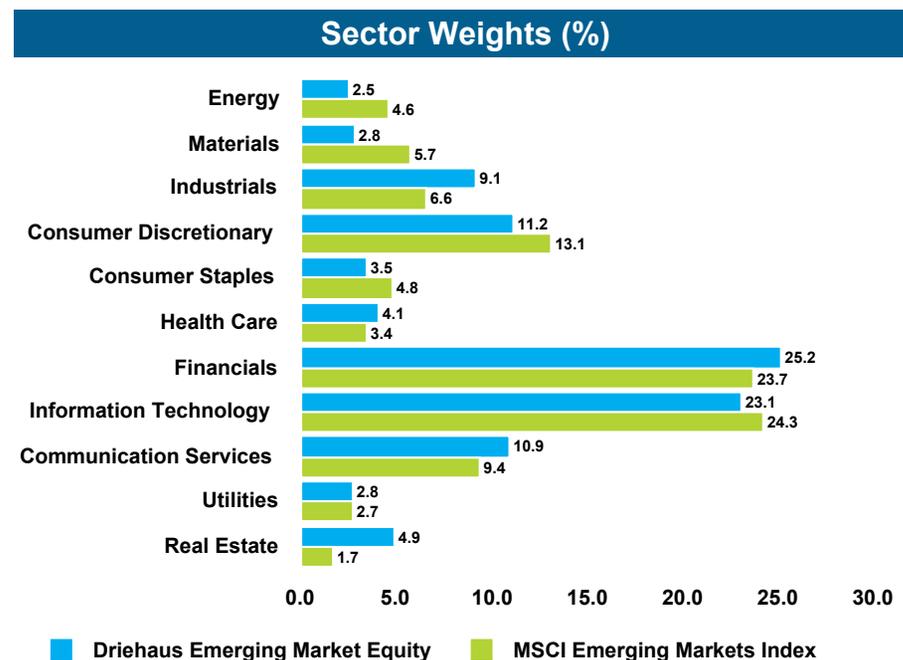
### Driehaus Emerging Market Equity | As of December 31, 2024

Top Holdings	
Taiwan Semiconductor Manufac. ADR	9.1
Tencent Holdings LTD	8.3
Samsung Electronics Co Ltd	3.2
ICICI Bank Ltd	3.0
Hong Kong Exchanges and Clearing Ltd	1.8
Meituan	1.7
Taiwan Semiconductor Manufac. COM	1.6
Delta Electronics Inc	1.5
Teva Pharmaceutical Industries Ltd	1.3
Southern Copper Corporation	1.3
<b>% of Portfolio</b>	<b>32.8</b>

Account Information	
Account Name	Driehaus Emerging Market Equity
Account Structure	Commingled Fund
Inception Date	12/01/2014
Asset Class	International Equity
Benchmark	MSCI Emerging Markets (Net)
Peer Group	eV Emg Mkts All Cap Equity

Equity Characteristics vs MSCI Emerging Markets Index		
	Portfolio	Benchmark
Number of Holdings	117	1,252
Wtd. Avg. Mkt. Cap \$B	171.7	165.6
Median Mkt. Cap \$B	17.9	7.6
P/E Ratio	15.2	14.0
Yield (%)	2.2	2.7
EPS Growth - 5 Yrs. (%)	20.8	16.7
Price to Book	3.2	2.8

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
Driehaus Emerging Market Equity	-5.6	8.5	-2.0	3.5	5.5	5.5	01/01/2015
MSCI Emerging Markets Index	-7.8	8.1	-1.5	2.1	4.0	4.0	

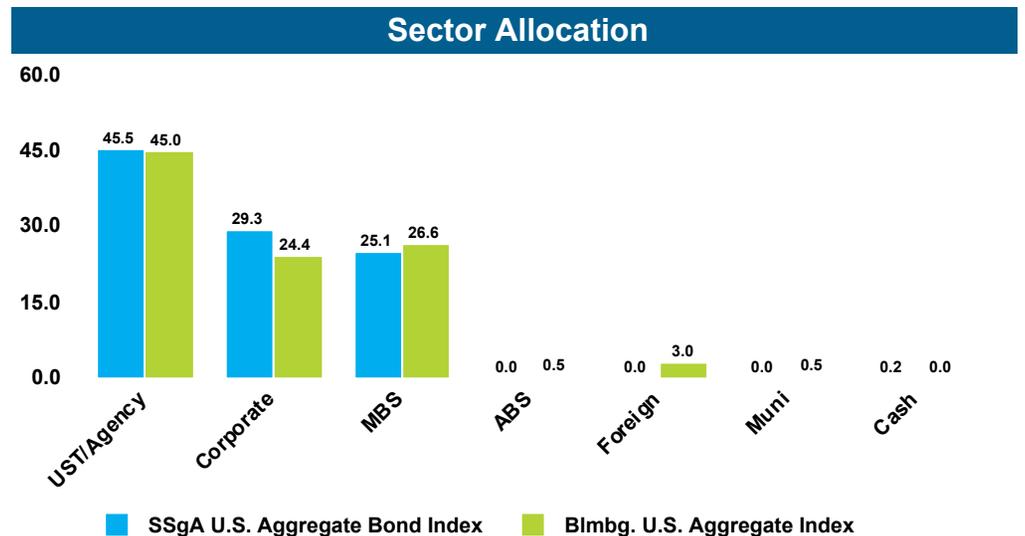
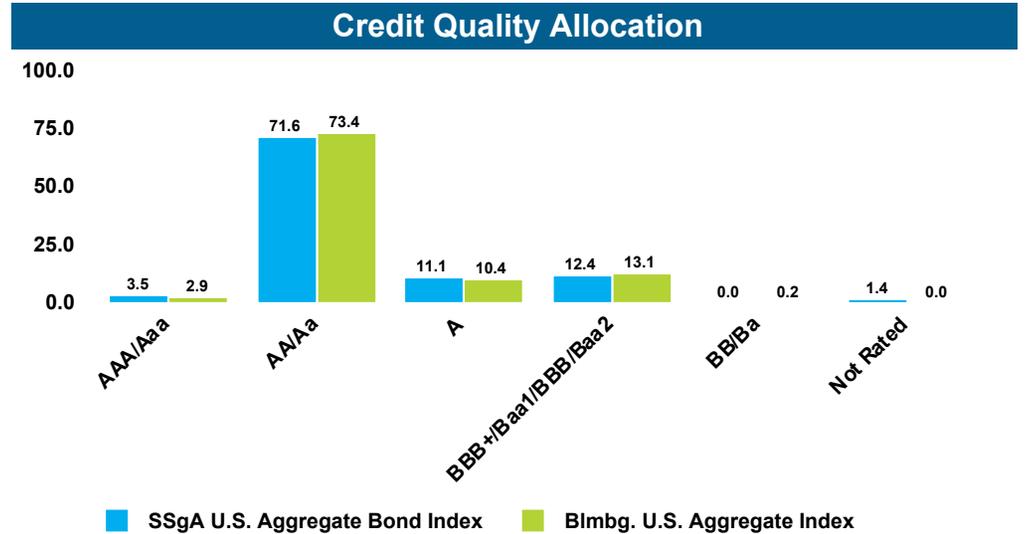


### SSgA U.S. Aggregate Bond | As of December 31, 2024

Account Information	
Account Name	SSgA U.S. Aggregate Bond Index
Account Structure	Commingled Fund
Inception Date	04/01/2001
Asset Class	US Fixed Income
Benchmark	Blmbg. U.S. Aggregate Index
Peer Group	eV US Core Fixed Inc

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
SSgA U.S. Aggregate Bond Index	-3.0	1.3	-2.5	-0.4	1.3	3.6	05/01/2001
Blmbg. U.S. Aggregate Index	-3.1	1.3	-2.4	-0.3	1.3	3.6	

Portfolio Fixed Income Characteristics		
	Q4-24 Portfolio	Q3-24 Portfolio
Yield To Maturity	4.9	4.2
Average Duration	6.2	6.1
Average Quality	AA	AA-
Weighted Average Maturity	8.4	8.4



Shenkman Capital | As of December 31, 2024

### Account Information

Account Name	Shenkman Capital
Account Structure	Commingled Fund
Inception Date	04/01/2006
Asset Class	US Fixed Income
Benchmark	Blmbg. U.S. Corp: High Yield Index
Peer Group	eV US High Yield Fixed Inc

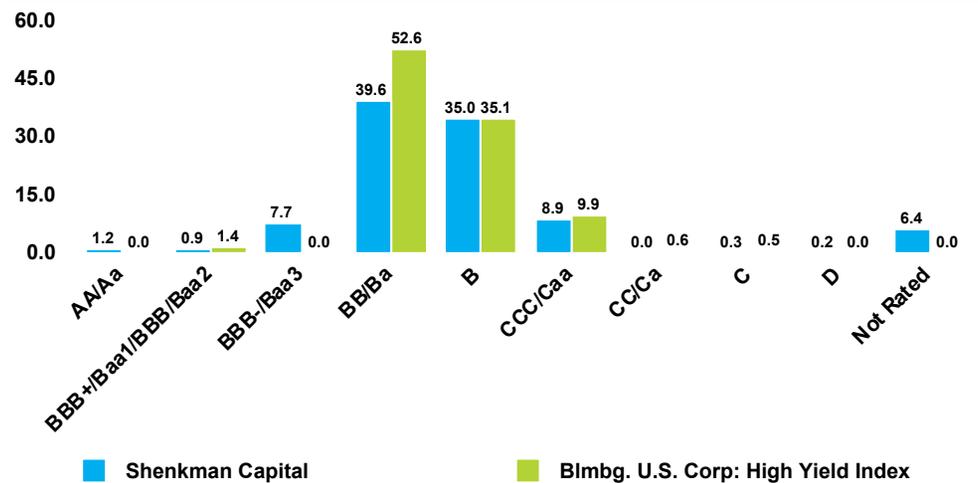
### Portfolio Performance Summary

	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
Shenkman Capital	0.4	7.1	3.2	4.0	4.8	6.0	04/01/2006
Blmbg. U.S. Corp: High Yield Index	0.2	8.2	2.9	4.2	5.2	6.6	

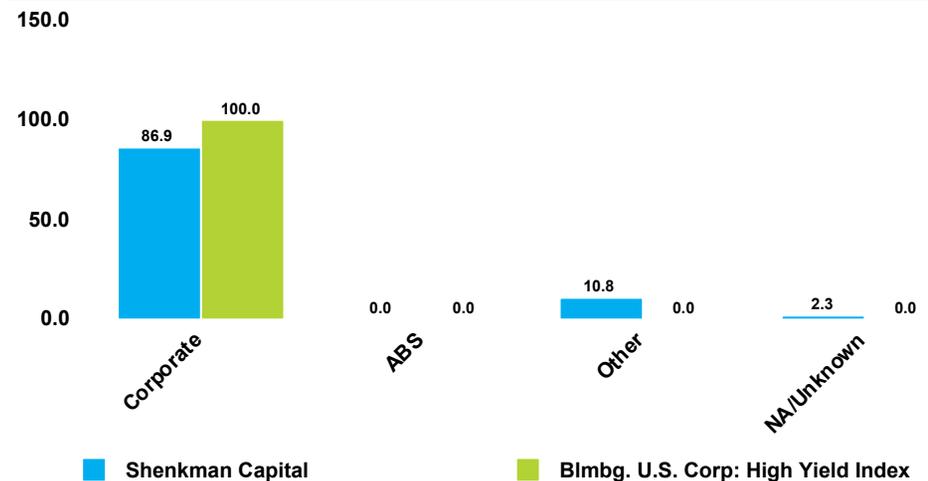
### Portfolio Fixed Income Characteristics

	Q4-24 Portfolio	Q3-24 Portfolio
Yield To Maturity	7.2	6.9
Average Duration	2.8	2.7
Average Quality	BB-	BB-
Weighted Average Maturity	4.7	4.7

### Credit Quality Allocation



### Sector Allocation

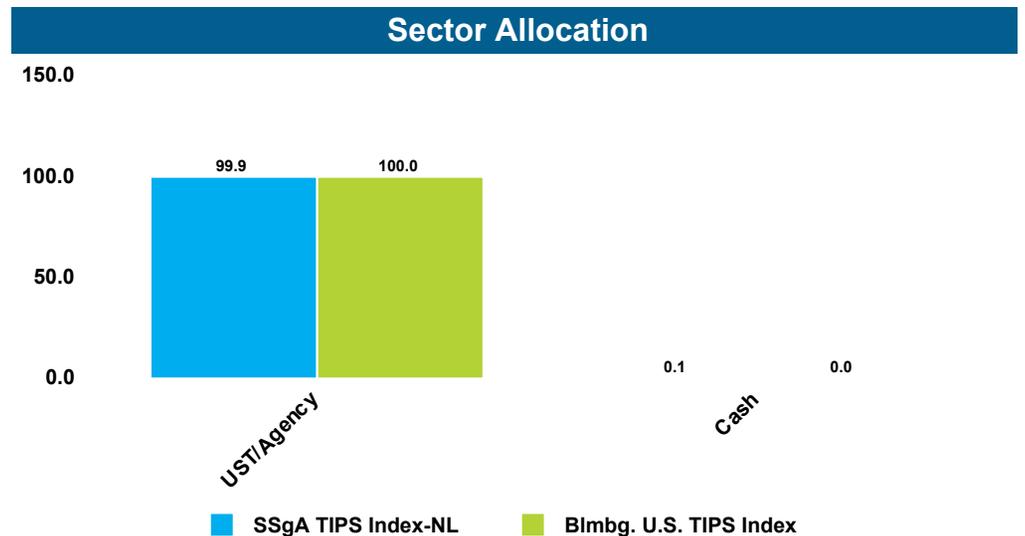
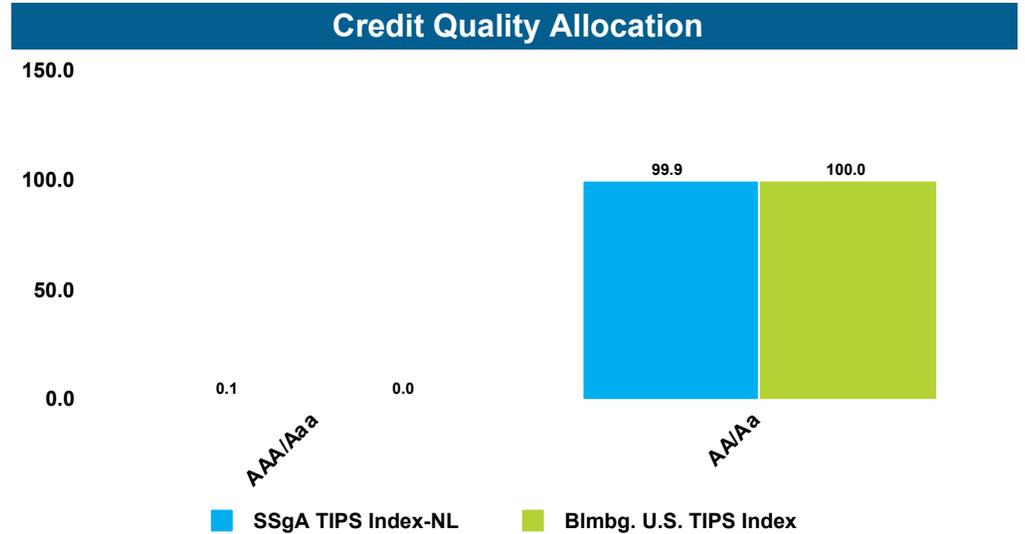


### SSgA TIPS Index-NL | As of December 31, 2024

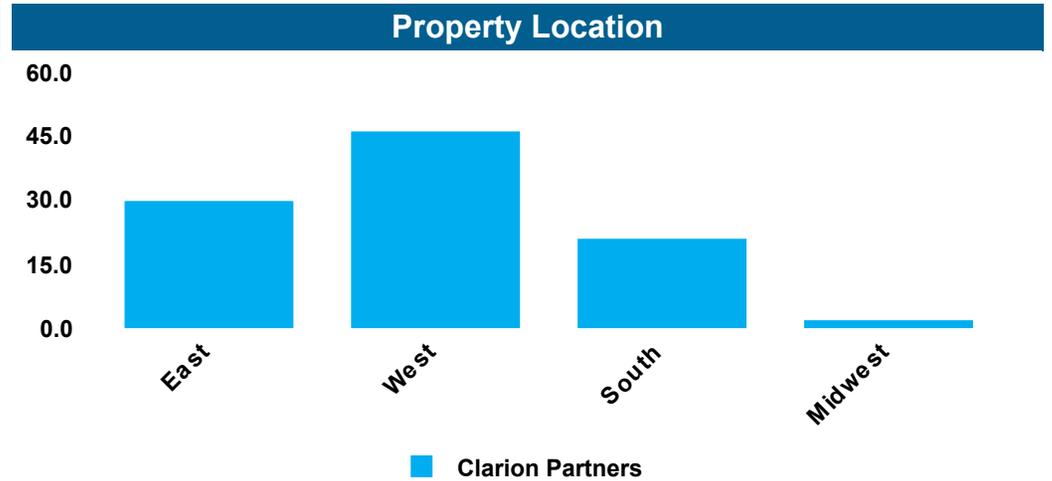
Account Information	
Account Name	SSgA TIPS Index-NL
Account Structure	Commingled Fund
Inception Date	09/30/2005
Asset Class	US Fixed Income
Benchmark	Blmbg. U.S. TIPS Index
Peer Group	eV US TIPS / Inflation Fixed Inc

Portfolio Performance Summary							
	Quarter To Date	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
SSgA TIPS Index-NL	-2.9	1.9	-2.4	1.8	2.2	3.2	10/01/2005
Blmbg. U.S. TIPS Index	-2.9	1.8	-2.3	1.9	2.2	3.3	

Portfolio Fixed Income Characteristics		
	Q4-24 Portfolio	Q3-24 Portfolio
Yield To Maturity	4.5	3.8
Average Duration	4.1	6.6
Average Quality	AA	AA
Weighted Average Maturity	7.1	7.2

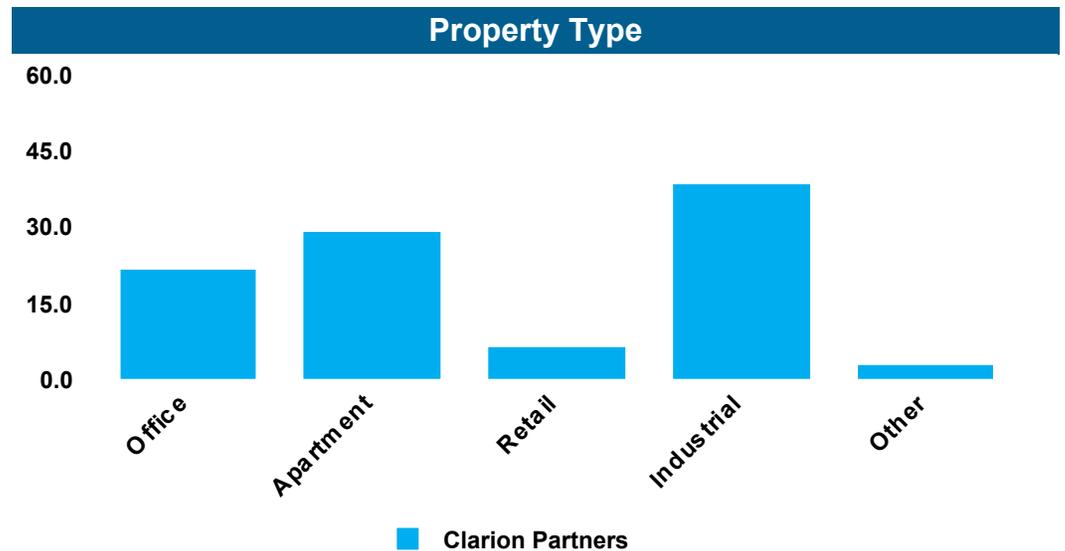


Account Information	
Account Name	Clarion Partners
Account Structure	Commingled Fund
Inception Date	09/01/2002
Asset Class	US Private Real Estate
Benchmark	NCREIF ODCE (VW) (Gross) (Monthly)



### Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
Clarion Partners	1.9	-3.4	-4.0	2.2	5.9	6.2	10/01/2002
NCREIF ODCE (VW) (Gross) (Monthly)	1.2	-1.4	-2.3	2.9	5.9	6.9	

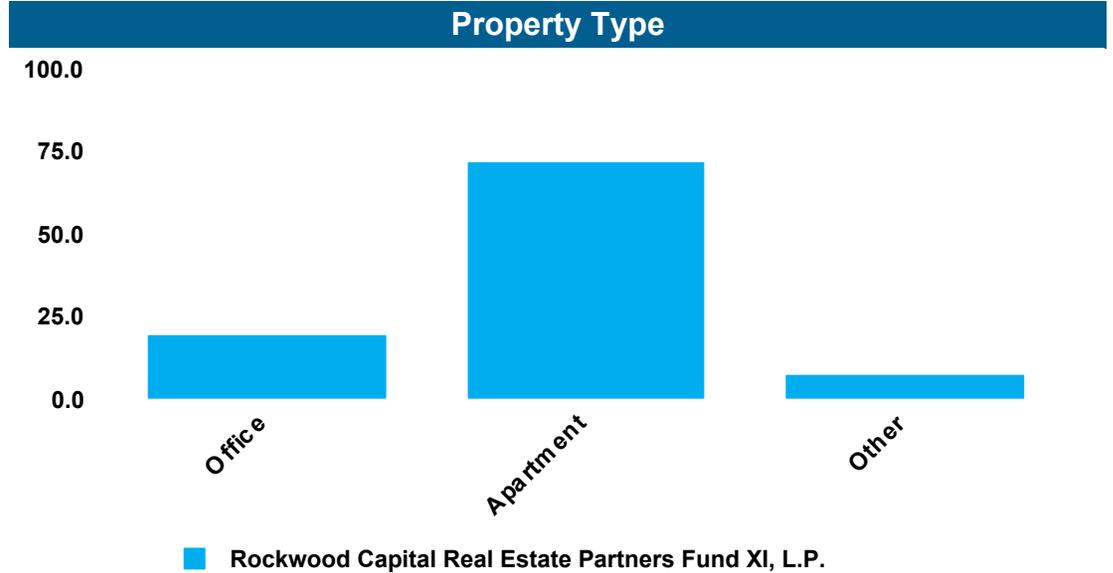


### Rockwood Capital Real Estate Partners Fund XI, L.P. | As of December 31, 2024

Account Information	
Account Name	Rockwood Capital Real Estate Partners Fund XI, L.P.
Account Structure	Separate Account
Inception Date	12/01/2019
Asset Class	US Private Real Estate
Benchmark	NCREIF ODCE (VW) (Gross) (Monthly)



Portfolio Performance Summary							
	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
Rockwood Capital Real Estate	-10.1	-19.5	-8.2	-2.4	-	-2.4	12/01/2019
NCREIF Fund Index-ODCE (VW)	1.2	-1.4	-2.3	2.9	5.9	2.9	



### Private Market Investment Overview | As of December 31, 2024

Private Market Investment Overview						
Partnerships	Vintage Year	Capital Commitment \$	Total Contribution \$	Total Distribution \$	Market Value \$	Since Inception
North American Strategic Partners 2006	2006	4,539,998.0	4,411,658.9	-2,094,251.4	9,272.2	-40.0
Ironsides Direct Investment Fund IV	2015	2,500,000.0	2,419,534.3	3,723,278.7	573,910.8	13.7
Ironsides Direct Investment Fund V, L.P.	2018	2,000,000.0	2,730,291.8	1,118,159.3	2,976,534.9	9.5
Ironsides Partnership Fund IV	2015	2,500,000.0	1,544,323.5	1,975,409.0	2,209,293.8	25.5
Ironsides Partnership Fund V, L.P.	2019	2,000,000.0	1,591,789.4	-	2,459,032.1	15.5
HarbourVest 2019 Global Fund	2019	4,000,000.0	2,927,632.0	665,539.0	4,103,658.0	17.3

Annual Investment Expense Analysis				
	Fee Schedule	Market Value (\$)	Estimated Expense (\$)	Expense Ratio (%)
<b>Equity Assets</b>		<b>138,202,421</b>	<b>426,128</b>	<b>0.31</b>
<b>Domestic Equity Assets</b>		<b>69,592,767</b>	<b>241,104</b>	<b>0.35</b>
RhumbLine S&P 500 Index	0.07 % of First \$25 M 0.05 % of Next \$25 M 0.04 % Thereafter	22,520,810	15,765	0.07
Frontier Capital Appreciation	0.79 % of Assets	27,270,803	215,439	0.79
RhumbLine HEDI	0.05 % of Assets	19,801,155	9,901	0.05
<b>International Equity Assets</b>		<b>68,609,654</b>	<b>185,023</b>	<b>0.27</b>
<b>International Developed Markets Equity Assets</b>		<b>44,589,826</b>	<b>33,713</b>	<b>0.08</b>
RhumbLine MSCI EAFE Index	0.08 % of First \$25 M 0.07 % of Next \$25 M 0.05 % Thereafter	44,589,826	33,713	0.08
<b>International Emerging Markets Equity Assets</b>		<b>24,019,828</b>	<b>151,310</b>	<b>0.63</b>
DFA Emerging Markets	0.39 % of Assets	12,719,240	49,605	0.39
Driehaus Emerging Market Equity	0.90 % of Assets	11,300,588	101,705	0.90
<b>Fixed Income Assets</b>		<b>63,434,353</b>	<b>162,240</b>	<b>0.26</b>
<b>Investment Grade Bonds Assets</b>		<b>25,305,737</b>	<b>10,122</b>	<b>0.04</b>
SSgA U.S. Aggregate Bond Index	0.04 % of Assets	25,305,737	10,122	0.04
<b>High Yield Bond Assets</b>		<b>15,295,461</b>	<b>68,830</b>	<b>0.45</b>
Shenkman Capital	0.45 % of Assets	15,295,461	68,830	0.45
<b>TIPS Assets</b>		<b>11,928,046</b>	<b>4,771</b>	<b>0.04</b>
SSgA TIPS Index-NL	0.04 % of Assets	11,928,046	4,771	0.04
<b>Emerging Market Debt Assets</b>		<b>10,905,109</b>	<b>78,517</b>	<b>0.72</b>
Payden Emerging Market Bond	0.69 % of Assets	10,905,109	78,517	0.72
<b>Real Estate Assets</b>		<b>9,095,719</b>	<b>60,939</b>	<b>0.67</b>
<b>Open-Ended Real Estate</b>		<b>5,539,888</b>	<b>60,939</b>	<b>1.10</b>
Clarion Partners	1.10 % of Assets	5,539,888	60,939	1.10
<b>Total Closed End Real Estate</b>		<b>3,555,831</b>	<b>-</b>	<b>-</b>
Rockwood Capital Real Estate Partners Fund XI, L.P.	1.4% of committed capital during investment period; 1.4% on invested equity thereafter	3,555,831	-	-
<b>Infrastructure</b>		<b>11,848,904</b>	<b>-</b>	<b>-</b>
IFM Global Infrastructure	0.77% Management fee, 8% Preferred Return, 10% Carried Interest	11,848,904	-	-
<b>Cash</b>		<b>376,181</b>	<b>-</b>	<b>-</b>
EB Temporary Investment Fund		376,181	-	-

## Current Issues

**Manager Due Diligence Meetings**  
Tuesday, March 25, 2025

## MARLBOROUGH RETIREMENT SYSTEM

Manager Due Diligence Meetings  
Tuesday, March 25, 2025

### I. Manager Due Diligence Presentations

8:30 – 9:00 a.m.

Manager/Product	Asset Class	Phone Number
<b>Rhumblin</b>	Passive Index	617-330-7376
		Georgette Baxter, Director of Business Development & Client Service
<i>S&amp;P 500 Index</i>		
<i>Russell 1000 HEDI Index</i>		
<i>MSCI EAFE Index</i>		
<b>SSGA</b>	Passive Index	617-893-4265
		Shawn Mahoney, Relationship Manager Patrick Hearne, Vice President
<i>US Aggregate Bond Index</i>		
<i>US TIPS Index</i>		
<b>Payden &amp; Rygel</b>	Emerging Markets Debt	617-807-1994
		Jeff Murphy, Vice President
<i>Emerging Market Bond</i>		
<b>Shenkman Capital</b>	US High Yield Bond	646-931-3860
		Meeting ID: 860 5089 9152
		Passcode: 328308
		Ted Bernhard
<i>Shenkman Capital High Yield Bond</i>		Principal & Senior Vice President

**Private Equity RFP  
Respondent Review**

### Background

- As of December 31, 2024, the City of Marlborough Contributory Retirement System had approximately \$12.3 million (~5% of total portfolio assets) invested in Private Equity. The System has a 15% target to Private Equity.
- In July of last year Meketa issued an RFP for diversified, North American focused, private market equity fund of funds managers, with the intent to commit between \$10 million to \$15 million.
- Seventeen managers responded to the RFP. Three of those managers were rated as highly advantageous.
- A review of all of respondents is on the following pages.

## Manager Search Respondent Reviews

### Manager Respondent Composite Rating Overview

Manager	Score	Rationale
Constitution Capital	Highly Advantageous	Constitution Capital is led by a cohesive senior team with decades of experience executing its strategy focused on North American middle-market buyout and growth equity funds and companies together at Constitution and prior firms. Collectively, the team has established a solid track record overall
HarbourVest	Highly Advantageous	HarbourVest is managed by a well-resourced and experienced global investment team that has implemented a consistent strategy with strong performance.
Mesirow	Highly Advantageous	Mesirow is an experienced private equity fund-of-funds manager with a history implementing a consistent strategy and generating strong returns.
AlpInvest	Advantageous	AlpInvest was established by two large Dutch pension funds to provide a separate platform for their respective private equity investment programs and has been investing in private equity since 2000.
Adams Street	Advantageous	Adams Street is a well-resourced firm capable of generating consistent returns over extended time periods.
Barings	Advantageous	Baring focuses on emerging managers; this is an area that they have a lot of experience with.
Apogem	Advantageous	Apogem Capital is an experienced private markets investor with experience investing in Middle Market private equity extends back to 1991, when New York Life Capital Partners began investing in private equity funds, co-investments, and private credit transactions alongside Middle Market sponsors.
GCM Grosvenor	Advantageous	GCM has a strong network and diverse strategy which is demonstrated in the two vintage year track record.

**Manager Respondent Composite Rating Overview (cont.)**

Manager	Score	Rationale
JP Morgan	Advantageous	JP Morgan has a long track record and well-resourced team in the small to middle market buyout space.
Mueller & Monroe Asset Management	Advantageous	Muller & Monroe has a strong history of investing, especially in MWBE Managers.
Portfolio Advisors	Advantageous	Long track record and strong performance.
RCP	Advantageous	RCP has a long track record of investing in the middle market.
Russell Investment Group	Advantageous	Russell has generated consistent returns across its fund series.
SEI	Advantageous	SEI is a large organization; however their private markets team is small, and their fees are higher than many of their competitors.
Solamere	Advantageous	Solamere has is well recognized and has a differentiated strategy. The investment is small compared to other managers.
50-South	Advantageous	50-South has a long track record and consistently strong returns.
Abbott Capital Management	Advantageous	Abbott is a long-tenured firm with experienced professionals that has maintained a consistent private equity primary fund investment strategy since inception, although fund sizes have varied.

**Constitution Capital Partners, LLC**  
(Ironsides Partnership Fund VII)

Rating Criteria	Score	Rationale
Organization	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Constitution Capital Partners (CCP) was established by Dan Cahill and John Guinee in 2008 after they and other team members departed Standard Life Investments USA, where they previously led the firm’s North America investment activity.</li> <li>→ The Firm currently has \$5.6 billion in AUM.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ The senior team is led by Daniel Cahill (CEO), Robert Hatch (Managing Partner), and Vincent Ramos (Managing Partner). There are 25 experienced professionals on the investment team with five senior leaders that make up the investment committee (26 years working collectively).</li> <li>→ The investment team is supported by several teams including operations and investor relations.</li> <li>→ CCP’s co-founder, John Guinee, recently transitioned to a Senior Advisor role.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The Fund is a continuation of CCP’s private equity program focused on North America middle-market funds and companies.</li> <li>→ Geographically, the fund will focus solely on buyout and growth North American partnership investments in the consumer, healthcare, industrial and business services sectors of the economy.</li> <li>→ The Partnership vehicle will target a total of 15-18 partnership investments in the lower middle market range of \$20-50 million. The fund expects to complete 3-5 investments per year from 2024-2027 with an overall hold period of 9-11 years.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ Performance provided for Funds III through VI is attractive on an absolute basis and relative basis when compared to applicable benchmarks for both multiple and IRR.</li> </ul>
Fees	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Terms: The headline management fee for IPF VI is 0.75% on committed capital during the commitment period, and switches to 0.75% on invested capital thereafter. Meketa clients receive a discounted management fee, equaling 0.375% on commitments during the investment period and 0.375% on invested capital thereafter. There is an 8% preferred return and a 5% carried interest.</li> </ul>

**Constitution Capital Partners Track Record**  
(as of March 31, 2024)

Fund	Vintage Year	Strategy	Committed (\$mm)	Invested (\$mm)	TVPI <sup>1</sup>	Net IRR (%)
Partnership Fund III	2014	N. American Lower Mid-Market Buyouts / Growth	148.7	159.2	2.2x	23.5
Partnership Fund IV	2016	N. American Lower Mid-Market Buyouts / Growth	355.7	366.0	2.0x	27.0
Partnership Fund V	2018	N. American Lower Mid-Market Buyouts / Growth	374.1	331.9	1.5x	20.2
Partnership Fund VI	2021	N. American Lower Mid-Market Buyouts / Growth	360.0	146.9	1.1x	11.0

<sup>1</sup> TVPI: Total Value to Paid-In ratio (a realization ratio). The TVPI is the total of the net asset value and distributions, as compared to contributed capital.

**HarbourVest Partners**  
(HarbourVest 2025 Global Fund)

Rating Criteria	Score	Rationale
Organization	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Having launched its first fund in 1983, HarbourVest is a global, 100% employee-owned private markets investment manager. The Firm is headquartered in Boston, and maintains offices in Toronto, Bogota, Dublin, London, Tel Aviv, Beijing, Seoul, Tokyo, Hong Kong, Singapore, and Frankfurt.</li> <li>→ As of December 31, 2023, HarbourVest had \$125 billion of assets under management across its private equity primary funds-of-funds, secondary funds, direct co-investment funds, as well as its private credit platform.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ As of March 31, 2024, the Firm employs 43 Managing Directors on its investment team, including 13 Managing Directors on its Primary team. The average tenure of these Managing Directors is 17 years at HarbourVest.</li> <li>→ The Firm has had a low turnover with no Managing Directors departing the firm in the last five years. One Principal and two Vice Presidents departed the firm to pursue other opportunities.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ HarbourVest Fund Global Fund 2025 is raising \$1,250 million to construct a diversified portfolio of primary, secondary, and direct co-investments, with a primary focus on North American and European opportunities.</li> <li>→ Global Fund 2025 will commit to approximately 15-20 primary fund managers across buyout (65%-75%), growth equity/venture capital (15%-25%) and special situations (5%-15%).</li> <li>→ The Fund will look to purchase secondary interest in existing partnerships, portfolios, and investments, diversified by stage, strategy, and geography. Global Fund 2025 will further diversify by making direct co-investments alongside other private markets managers whom the Firm has relationships with.</li> </ul>
Performance	Highly Advantageous	<ul style="list-style-type: none"> <li>→ HarbourVest's Global Funds are yearly vehicles and have demonstrated strong and consistent performance figures on both an absolute and relative basis.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Terms: 0.69% average annual management fee based on capital commitments up to \$20 million over the life of the fund; no preferred return; no carried interest on primary fund investments, 12.5% carried interest on secondary investments, subject to an annualized gross IRR of at least 8% on investments, 12.5% carried interest on direct co-investments, subject to an annualized gross IRR of at least 8% on investments.</li> </ul>

**HarbourVest Partners Track Record**  
(as of September 30, 2024)

Fund	Vintage Year	Fund Size (\$mm)	% Called	Net TVPI	Net IRR
2014 Global Fund	2014	380.7	91.0%	2.3x	18.8%
2015 Global Fund	2015	339.6	93.0%	2.0x	17.5%
2016 Global Fund	2016	446.6	85.5%	1.9x	18.5%
2017 Global Fund	2017	589.5	82.0%	1.9x	18.2%
2018 Global Fund	2018	1,030.7	82.5%	1.8x	18.2%
2019 Global Fund	2019	1,358.0	74.0%	1.7x	19.4%
2020 Global Fund	2020	1,484.6	82.0%	1.3x	11.2%
2021 Global Fund	2021	1,696.8	61.6%	1.2x	10.2%
2022 Global Fund	2022	1,584.4	39.5%	1.3x	32.1%
2023 Global Fund	2023	1,067.7	16.0%	1.3x	NM

### Mesirow (Mesirow Financial Private Equity Fund IX)

Rating Criteria	Score	Rationale
Organization	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Mesirow Private Equity (“MPE”) is a wholly owned subsidiary of Mesirow Financial Holdings Inc. and has been making lower middle market buyout investments since 1982.</li> <li>→ In 1999, MPE launched its first private equity fund-of-funds vehicle and has since managed nine flagship private equity funds-of-funds, six direct co-investment vehicles, and inaugural secondary fund.</li> <li>→ MPE operates out of a single office in Chicago, and as of March 31, 2024, had \$7.0 billion of private equity assets under management.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ MPE is led by its five-member senior investment team (CEO, Chairman, Senior Advisor and two Managing Directors). They are supported by one Vice President, two Associates, one Investment Analyst and one Rotational Analyst. The investment team is responsible for the construction, due diligence, and monitoring of MPE’s private equity funds-of-funds as well as its direct co-investment fund portfolios.</li> <li>→ Within the last five years, only one investment professional (pre-MBA) has departed MPE.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ Fund IX is targeting \$900 million in commitments to construct a portfolio of 30 private equity fund partnerships over a three-to-four-year commitment period. Mesirow anticipates investing approximately 70% of fund commitments in primary funds, 15% in direct co-investments, and 15% in secondary fund interests.</li> <li>→ Fund IX aims to diversify geographically, with 70-80% invested in the US and Canada, 15%-25% in Developed Europe, and 5%-10% in other locales.</li> <li>→ From a strategy perspective, approximately 45%-55% will be invested in the US buyout, 20%-25% in venture capital/growth equity, 15%-20% in non-US buyout, and 5%-10% in special situations.</li> </ul>
Performance	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Mesirow’s funds have yielded strong multiples across the fund series, the most recent vintages are still developing.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ 0.75% management fee on committed capital after the seventh anniversary of the Fund’s commencement date, thereafter, reduced annually by 10% of the prior year’s fee; 8% preferred return; 0% carried interested on primary fund investments, 10% carried interest on secondary investments after a return of contributed capital, 10% carried interest on co-investments, increasing to 15% after a 2.0x gross MOIC is achieved on co-investment portfolio.</li> </ul>

**Mesirow Track Record**  
(as of December 31, 2023)

Fund	Vintage Year	Fund Size (\$ mm)	# of Commitments	Invested (\$mm)	TVPI <sup>2</sup>	Net IRR (%)
Fund II	2001	233.3	30	233.3	1.9x	12.0
Fund III	2005	500.0	40	491.9	1.7x	8.0
Fund IV	2006	900.0	51	873.2	1.9x	10.6
Fund V	2009	832.5	55	791.1	2.4x	15.8
Fund VI	2013	649.5	45	649.5	2.6x	19.9
Fund VII-A	2017	623.5	44	518.3	1.7x	15.8
Fund VIII-A	2020	900.0	39	465.6	1.1x	2.9

<sup>2</sup> TVPI: Total Value to Paid-In ratio (a realization ratio). The TVPI is the total of the net asset value and distributions, as compared to contributed capital.

### AlInvest Co-Investment Fund IX (“ACF IX”)

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ AlInvest was established by two large Dutch pension funds to provide a separate platform for their respective private equity investment programs and has been investing in private equity since 2000.</li> <li>→ In 2011, AlInvest was acquired by Carlyle to offer investors broader-based investment management services in private equity which complement Carlyle’s product set. Carlyle, founded in 1987, is one of the world’s largest and most diversified multi-product global investment firms.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ AlInvest’s Co-Investment Team consists of 31 dedicated Co-Investment professionals with diverse backgrounds and profiles, and significant specialized Co-Investment experience. The Team has exhibited strong continuity of leadership as the current fund heads have worked together for over 10 years and the Managing Directors have worked together on average for approximately 14 years</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The Co-Investment Team seeks to construct a diversified portfolio of equity Co-Investments in high-quality companies across geographies, industry sectors and market segments, partnering with top-tier GPs in private equity buyouts, direct equity investments and growth capital transactions.</li> <li>→ AlInvest primarily co-invests alongside GPs with whom they have developed a strong relationship through their Primary and Secondary Investments business, driving strong deal flow on a no-fee and no-carry basis and therefore providing increased fee-efficiency to ACF’s investors.</li> </ul>
Performance	Neutral	<ul style="list-style-type: none"> <li>→ AlInvest is targeting a fund size of \$4.25 billion for ACF IX. The Firm has committed \$315 million.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Management fees vary based on commitment size. The basis for the management fee is 1.0% per annum on aggregate Commitments during the Commitment Period; thereafter, 1.0% per annum on net invested capital.</li> <li>→ ACF IX has a preferred return of 8%.</li> <li>→ The carried interest ratchet for ACF IX is as follows: if at any time the Fund achieves a 2x realized total value to paid-in multiple, as determined by the General Partner, the carried interest percentage shall increase from 10% to 12.5%.</li> </ul>

**AlInvest Partners Co-Investment Programs Performance**  
(as of March 31, 2024)

Fund Name	Vintage Year	Program Size (\$m)	# of Deals	Total Invested (\$m)	Gross IRR	Gross Multiple on Invested Capital (MOIC)	Net IRR	Net MOIC
ACP I	2000	553	14	454	19.9%	1.71x	16.4%	1.53x
ACP II	2003	1,286	41	1,113	43.8%	2.77x	38.7%	2.43x
ACP III	2006	3,256	48	3,303	6.3%	1.53x	5.1%	1.39x
ACP IV	2010	1,740	28	1,596	23.4%	2.95x	20.8%	2.58x
ACP V	2012	1,328	36	1,236	28.0%	2.86x	24.9%	2.50x
ACP VI	2014	1,451	54	1,320	24.4%	2.60x	21.6%	2.29x
ACP VII	2017	3,343	78	3,257	17.8%	1.93x	14.8%	1.73x
ACP VIII	2021	4,743	87	4,454	12.0%	1.21x	8.9%	1.15x
ACP IX	2023	5,500	13	512	-0.7%	1.00x	NM	0.93x
ACP IV-VII	NA	7,862	189	7,409	23.5%	2.43x	20.6%	2.14x
ACP IV-VIII	NA	12,605	275	11,863	22.9%	1.97x	19.9%	1.78x
ACP I-IX	NA	23,199	388	17,246	17.9%	1.90x	15.1%	1.71x
ACF VII	2017	1,293	75	1,263	17.2%	1.91x	15.0%	1.71x
ACF VIII	2021	2,681	86	2,464	11.2%	1.20x	9.1%	1.13x
ACF IX	2023	3,000	13	315	-0.8%	1.00x	NM	0.96x

**Adams Street Partners, LLC (Adams Street 2024/ 2025 US Fund)**

Rating Criteria	Score	Rationale
Organization	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Adams Street Partners was founded in 1972 as part of the growth equity investment team of First National Bank of Chicago. Following restructuring, the firm became part of UBS Global Asset Management before becoming an independent, 100% employee-owned firm in 2001.</li> <li>→ The investment team is experienced and able to take advantage of Adams Street’s integrated platform. Despite having tenured personnel across primary, secondary, co-investment, growth equity and private credit portfolios, each investment team is entirely focused on its specific investment strategy.</li> <li>→ The firm manages \$59 billion as of December 31, 2023.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ Adams Street currently employs 310 people across 12 global offices.</li> <li>→ The senior investment team have an average of 20 years of investment experience and 11 years of working at the firm.</li> <li>→ The investment team and overall firm is supported by 100+ middle/back-office staff across finance, legal investor relations, information technology, marketing, reporting and HR.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The proposed fund (2024 US Fund) is a sleeve of the flagship fund which invests in US primaries, secondaries, co- investments, growth equity investments and opportunistic private credit investments.</li> <li>→ The 2024 US Fund utilizes bottom-up analysis to create diverse portfolios based on strategy, subclass, region, and investment period.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ The Adams Street Partnership US Funds has produced high quartile returns by IRR and multiple.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Terms: The standard fee schedule is an average annual rate of 0.69% on subscription amount under \$25mm. The Fund has a preferred return of 7% on secondary investments, co-investments, and private credit investments.</li> <li>→ Carried interest schedule is below: <ul style="list-style-type: none"> <li>→ Secondary → 10%</li> <li>→ Co-Investment → 12.5%</li> <li>→ Private Credit → 15%</li> <li>→ Primary → None</li> </ul> </li> </ul>

**Adams Street Partners Management Track Record**  
(as of December 31, 2023)

Closed-End Funds / Programs	Strategy	Vintage	Commitments (\$m)	Drawn Down (\$m)	Net IRR %	TVPI
Adams Street Partnership Fund Program - US Funds						
Adams Street Partnership Fund - 2002 US Fund, LP	US All PE Primary, Secondary	2002	760	723	8.36	1.64
Adams Street Partnership Fund - 2003 US Fund, LP	US All PE Primary, Secondary	2003	705	670	7.84	1.63
Adams Street Partnership Fund - 2004 US Fund, LP	US All PE Primary, Secondary	2004	558	531	7.25	1.60
Adams Street Partnership Fund - 2005 US Fund, LP	US All PE Primary, Secondary	2005	809	768	7.24	1.62
Adams Street Partnership Fund - 2006 US Fund, LP	US All PE Primary, Secondary	2006	814	770	8.00	1.68
Adams Street Partnership Fund - 2007 US Fund, LP	US All PE Primary, Secondary	2007	1,042	994	12.49	2.09
Adams Street Partnership Fund - 2008 US Fund, LP	US All PE Primary, Secondary	2008	1,001	932	16.08	2.39
Adams Street Partnership Fund - 2009 US Fund, LP	US All PE Primary, Secondary	2009	888	815	15.40	2.45
Adams Street Partnership Fund - 2010 US Fund, LP	US All PE Primary, Secondary	2010	615	542	16.2	2.51
Adams Street 2011 US Fund LP	US All PE Primary, Secondary	2011	548	476	16.00	2.46

**Adams Street Partners Management Track Record**  
(as of December 31, 2023) (cont.)

Closed-End Funds / Programs	Strategy	Vintage	Commitments (\$m)	Drawn Down (\$m)	Net IRR %	TVPI
Adams Street 2012 US Fund LP	US All PE Primary, Secondary, Co-Investments	2012	551	510	14.91	2.29
Adams Street 2013 US Fund LP	US All PE Primary, Secondary, Co-Investments	2013	396	367	14.35	2.20
Adams Street 2014 US Fund LP	US All PE Primary, Secondary, Co-Investments	2014	455	425	16.31	2.24
Adams Street 2015 US Fund LP	US All PE Primary, Secondary, Co-Investments	2015	386	347	22.21	2.22
Adams Street 2016 US Fund LP	US All PE Primary, Secondary, Co-Investments	2016	428	376	19.50	1.90
Adams Street 2017 US Fund LP	US All PE Primary, Secondary, Co-Investments, Private Credit	2017	404	354	20.98	2.00
Adams Street 2018 US Fund LP	US All PE Primary, Secondary, Co-Investments, Private Credit	2018	424	331	22.42	1.76
Adams Street 2019 US Fund LP	US All PE Primary, Secondary, Co-Investments, Private Credit	2019	405	341	21.11	1.38
Adams Street 2020 US Fund LP	US All PE Primary, Secondary, Co-Investments, Private Credit	2020	455	340	16.09	1.22
Adams Street 2021 US Fund LP	US All PE Primary, Secondary, Co-Investments, Private Credit	2021	458	220	9.21	1.09
Adams Street 2022 US Fund LP	US All PE Primary, Secondary, Co-Investments, Private Credit	2022	590	127	N/A	N/A
Adams Street 2023 US Fund LP	US All PE Primary, Secondary, Co-Investments, Private Credit	2023	451	23	N/A	N/A

### Barings LLC (Barings Emerging Generation Fund II)

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ Barings LLC is an indirect, wholly owned subsidiary of Massachusetts Mutual Life Insurance Company.</li> <li>→ The Barings Diversified Alternative Equity (DAE) team has an over thirty-year track record investing in private markets strategies including buyouts, growth, and real assets. The team specializes in lower middle market (enterprise values of less than \$250 million) and emerging managers within diverse portfolios.</li> <li>→ The team was created in 1991 to invest in primary funds, co-investments and mezzanine debt opportunities focusing on lower middle market companies in North America.</li> <li>→ Barings is a \$406 billion global financial services firm. Within the DAE portfolio, the team has committed \$2.8 billion across 174 funds and 77 co-investments/commingled fund of funds.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ Barings LLC has more than 1,800 staff globally, including 712 dedicated investment professionals.</li> <li>→ The investment committee and senior leadership team is comprised of investment professionals, all with over 15 years of experience.</li> <li>→ The DAE team is a tenured group with 17 dedicated investment professionals supported by 14 operations, legal and client services employees.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The proposed fund invests in small and emerging manager funds I, II and III along with co-investments and secondary opportunities in the lower-middle-market businesses. A majority of the portfolio will be invested alongside North American buyout managers.</li> <li>→ The firm has a long-term approach, utilizing bottom-up, fundamental analysis to construct portfolios.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ Performance for recent vintages, while still early and developing, is strong. Barings has committed over \$2.5 billion to emerging managers since 1993 resulting in 1.97x MOIC and 17.5% nIRR.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Baseline management fee of 0.55% on committed capital to primary funds (years 1-3) and secondaries/co- investments (years 1-5).</li> <li>→ Preferred Return: 8%, Carried Interest: 10% after full return of capital and preferred return.</li> </ul>

**Barings LLC Management Track Record**  
(as of September 30, 2023)

Fund	Vintage Year	Committed (\$mm)	Invested (\$mm)	Total Value (\$mm)	MOIC	Net IRR (%)
BEGF I	2020	122.0	80.3	109.6	1.35x	19.7
BEGF II	2023	26.4	5.1	4.8	NA	NA
MassMutual Emerging Manager SMA	1993	2,505.2	2,491.5	4,902.0	1.97x	17.5
Barings Single Investor Fund 1-A	2019	69.0	66.6	115.8	1.76x	20.7
Barings Single Investor Fund 1-B	2021	32.4	30.5	37.1	1.20x	14.6
Barings Single Investor Fund 2-A	2020	49.0	35.8	52.9	1.48x	22.6
Barings Single Investor Fund 2-B	2023	NA	NA	NA	NA	NA
Barings Single Investor Fund 3	2021	99.3	63.0	74.7	1.16x	13.1
Barings Single Investor Fund 4	2023	NA	NA	NA	NA	NA

### Apogem Private Equity Fund XI, LP (“APEF XI”)

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ Apogem Capital is a private markets specialist with capabilities spanning private equity, private credit, GP stakes, and private real assets. The firm’s flagship North American focused private equity fund of funds program is well established. Apogem have been investing in the space since 1991 and launched its first dedicated fund in 2001.</li> <li>→ New York Life, its parent company, is one of the world’s largest life insurers,1 with a 175+ year. New York Life has been an anchor investor in the firm’s Multi-Manager funds alongside Apogem’s third party investors.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ Apogem’s private equity funds are managed broadly by the firm’s Private Equity Team. The Private Equity Team sources fund, co-investment, secondaries, and GP stakes opportunities collaboratively through a proactive, database-driven approach leveraging the Firm’s collective relationships and data.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ APEF XI will be managed by Apogem Capital and led by the APEF XI Investment Committee. Implementation and management of the Fund is led by the Fund’s focused Execution Team, which is comprised of the Firm’s fund &amp; co-investment-focused investment professionals. The APEF XI Execution Team leads the sourcing, due diligence, and monitoring efforts for the Fund.</li> <li>→ The Fund will target significant capital gains by building a diversified portfolio of small company buyout and growth private equity funds, as well as direct co-investments and opportunistic secondary continuation vehicles in North America across the Lower Middle Market.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ Apogem’s 20+ Year Track Record: History of Strong Absolute &amp; Relative Performance: 16.5% net IRR across market cycles; +650 bps outperformance relative to S&amp;P 500 PME; +360 bps outperformance relative to N. America buyout &amp; growth pooled IRR.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Average annual management fee over the life of the Fund is 0.55% on committed capital, after accounting for the Fund’s 125% overcommitment.</li> </ul>

**Apogem Private Equity Fund**  
(as of 12-31-2023)

Apogem Fund	Vintage Year	Fund Size (in \$M)	# of Investments	Net Multiple	Net IRR
Fund I	2001	175	14	2.3x	23.20%
Fund II	2003	296	22	1.7x	10.40%
Fund III	2007	203	19	1.6x	11.40%
Fund IV	2010	212	19	1.8x	13.30%
Fund V	2012	340	17	1.9x	14.60%
Fund VI	2014	350	18	1.9x	18.50%
Fund VII	2016	350	35	1.7x	18.20%
Fund VIII	2018	420	34	1.8x	23.40%
Fund IX	2020	473	55	1.5x	27.50%
Fund X	2022	424	30	1.2x	Not Meaningful
Fund XI	2024	Target: \$400	N/A - Fundraising	N/A - Fundraising	N/A - Fundraising

### GCM Grosvenor Private Equity Partners III

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ Having been invested in alternative investments since 1971, GCM Grosvenor (“GCM”) is a global firm with ~\$79 billion in AUM across several asset classes including private equity, infrastructure, real estate, credit and multi-asset class investments. The firm is headquartered in Chicago with offices across the globe.</li> <li>→ GCM entered in a transaction to become a public company in November 2020. GCM’s existing senior management controls 77% of the interests of the company, while the remaining ownership is held by the public.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ GCM employs 56 professionals on its Private Equity Investment team including 35 senior members (18 years average experience) and 21 associates. The investment committee is comprised of seven senior professionals.</li> <li>→ The team is also supported by 358 operational professionals across risk management, operational due diligence, and various investment professionals.</li> <li>→ The Firm’s Chief Risk Officer left the firm in 2024 to pursue other opportunities. Over the last five years, four Managing Directors have also departed the firm to pursue other career opportunities.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The GCM Grosvenor Private Equity Partners III Fund is targeting between \$100-\$250 million fund size, investing in a diversified portfolio of private equity investments utilizing their vast network to source deals from established managers, hard-to-access funds, small and emerging managers across primary, secondary and co-investment funds within the middle market space.</li> <li>→ The Fund’s primary focus will be the US (70%). The composition will be 60% primaries and 40% opportunistic which includes secondaries and co-investments. The allocation is expected to be 70% buyout, 15% special situations/credit and 15% growth equity/venture.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ Across Fund I and II, performance was strong with mid-teen net IRR’s and high relative multiples.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Primary Fund Investments: 0.45% on commitment</li> <li>→ Opportunistic Investments (Secondaries &amp; Co-Investments): 1.00% as invested</li> <li>→ Preferred Return: 8%</li> <li>→ Carried Interest: Primaries, None; Co-investments/Secondaries: 10% carried interest after 8% preferred</li> </ul>

**GCM Grosvenor Private Equity**  
(as of December 31, 2023)

Fund	Vintage Year	Fund Size (\$mm)	Invested (\$mm)	TVPI <sup>3</sup>	Net IRR (%)
GCM Grosvenor 777 Fund "PEP I"	2017	74.19	58.98	1.48x	15.0
GCM Grosvenor Private Equity Partners 2020 "PEP II"	2020	88.44	82.70	1.29x	14.3

<sup>3</sup> TVPI: Total Value to Paid-In ratio (a realization ratio). The TVPI is the total of the net asset value and distributions, as compared to contributed capital.

**JP Morgan-PEG Small-Mid Market Buyouts Fund VIII**

Rating Criteria	Score	Rationale
Organization	Advantageous	→ Private Equity Group (“PEG”) was established at J.P. Morgan in 1997, the group has 43 years of experience and manages approximately \$33 billion in assets as of December 31, 2023.
Team	Advantageous	→ Team has 9 founding members who have worked together on average for nearly 30 years. The group’s senior Portfolio Managers have worked together on average for 24 years and the Group as a whole has an average tenure of 14 years.
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ Majority of their focus has been in the small to medium-sized end of the buyout market, which PEP defines as less than \$3.0 billion fund size or less than \$1.5 billion in enterprise value for a co-investment.</li> <li>→ Portfolio construction is 100% buyout with 60% Primary Investments, 30% Co-investments and 10% Secondaries.</li> <li>→ Targeting 25 to 35 core and emerging GP relationships. Three-year commitment period.</li> <li>→ Fund size \$250 million. Close date June 30, 2025.</li> </ul>
Performance	Advantageous	→ Target return is net 500 basis points in excess of the S&P 500
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Option 1: 0.54% average annual fee over the life of the fund. Carry or Incentive Fee for primary funds (0%), secondary investments (10%), Co-Investments (15%). Preferred return is 8%</li> <li>→ Option 2: 0.33% average annual fee over the life of the fund. Carry or Incentive Fee for primary funds (5%), secondary investments (10%), Co-Investments (15%). Preferred return is 8%</li> </ul>

**JP Morgan-PEG Small-Mid Market Buyouts Fund VIII**  
(as of December 31, 2023)

Fund	Vintage Year	IRR (%)	MOIC	DPI	Direct Alpha (%)
US Corporate Finance II	2023	11	1.7x	1.7x	4
US Corporate Finance III	2005	12	1.9x	1.9x	2
US Corporate Finance IV	2009	18	2.3x	2.3x	4
US Corporate Finance V	2014	18	2.0x	1.4x	3
US Corporate Finance VI	2017	17	1.6x	0.7x	2
US Corporate Finance VII	2022	N/A	N/A	N/A	N/A

**Muller & Monroe-M2 Libertas Private Equity FOF LP**

Rating Criteria	Score	Rationale
Organization	Advantageous	→ Founded in 1999 by Andre Rice to focus on small and emerging lower-middle private equity firms. Muller & Monroe Asset Management manages \$1.54 billion dollars and since their launch have managed \$1.77 billion in commitments.
Team	Advantageous	→ Andre Rice, Irwin Loud, Marcia Markowitz, Alfred Sharp and Gregg Walker lead the investment selection team, they have an average of 32 years of experience with complimentary skill sets to execute M2's strategies.
Investment Philosophy & Process	Advantageous	<p>→ The Partnership will exclusively invest in Primary Funds and Co-investments managed by private equity managers who have significant minority or women ownership economics and management ("MWBE Manager").</p> <p>→ Target market includes the following types of funds and managers: spin-outs, niches &amp; specialty funds, industry or regionally focused funds, first-time funds, funds created by serial deal investors with a prior track record, and funds partnering with successful family-operating business.</p> <p>→ Typically commit 30-45% to buyout strategies, 30-45% to growth equity strategies, and the remaining percentage is allocated to other later-stage strategies.</p> <p>→ 80% of commitments to Primary funds and 20% to Co-investments.</p> <p>→ 10-12 Primary Fund commitments and 8-10 Co-investments</p> <p>→ Fund target size \$300 million and the anticipated close is 12-31-2025</p>
Performance	Advantageous	→ Preferred return is 8% and carried interest is a European Waterfall with return of capital, referred return, GP catch- up and then 5% to the GP (95% to LP's).
Fees	Advantageous	→ Management fee is a sliding scale averaging 55bps over 15 years, assuming an initial 12-year term and three one-year extensions paid quarterly in advance. Preferred return is 8% and carried interest is a European Waterfall with return of capital, referred return, GP catch-up and then 5% to the GP (95% to LP's).

**M2 Libertas Private Equity FOF LP Track Record**  
(September 30, 2023)

Partnership	Vintage	Mandate	LP Fund Size (\$M)	Funded Commitment (\$M)	Funded Commitment (%)	Distribution (\$M)	DPI	TVPI	Gross IRR (%)	Net IRR (%)	PME (Russell 3000) (%)
Client A-Series I	2011	Minority & Women Funds less than \$500M <sup>4</sup>	100.0	90.3	90.3	99.6	1.04x	1.46x	8.3	6.9	10.3
Client A-Series II	2012	Minority & Women Funds less than \$500M <sup>5</sup>	100.0	90.1	90.1	129.5	1.27x	1.79x	23.2	19.8	11.6
M2 Private Equity Fund-of Funds II LP	2014	Core Commingled FOF Lower Middle Market	135.0	124.6	92.3	157.3	1.10x	1.61x	15.9	12.7	11.4
Class D Partnership	2016	Minority & Women Funds less than \$500M <sup>6</sup>	100.0	95.1	95.1	70.5	0.69x	1.93x	23.6	21.0	10.3
Client A Series II Annex	2017	Minority & Women Funds less than \$500M <sup>7</sup>	40.0	36.3	90.8	54.4	1.19x	2.13x	29.3	28.5	14.8
Client A Series III	2017	Minority & Women Funds less than \$500M <sup>8</sup>	100.0	87.6	87.6	51.3	0.51x	1.77x	19.9	17.7	9.1
Public Fund Client B	2018	Core FOF Lower Middle Market	250.0	170.3	68.1	40.6	0.22x	1.35x	18.5	14.8	7.0

<sup>4</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

<sup>5</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

<sup>6</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

<sup>7</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

<sup>8</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

**M2 Libertas Private Equity FOF LP Track Record**  
(September 30, 2023) (cont.)

Partnership	Vintage	Mandate	LP Fund Size (\$M)	Funded Commitment (\$M)	Funded Commitment (%)	Distribution (\$M)	DPI	TVPI	Gross IRR (%)	Net IRR (%)	PME (Russell 3000) (%)
Public Fund Client B	2018	Core FOF Lower Middle Market	250.0	170.3	68.1	40.6	0.22x	1.35x	18.5	14.8	7.0
Client A-Series IV	2019	Minority & Women Funds less than \$500M <sup>9</sup>	100.0	80.2	80.2	21.8	0.25x	1.31x	15.9	13.3	6.7
Client C Partnership II	2019	Minority & Women Home State based Innovative Strategies	50.0	29.1	58.2	7.0	0.22x	1.55x	23.7	20.2	5.6
Client A Series V	2021	Minority & Women Funds less than \$1B <sup>10</sup>	150.0	56.9	38.0	2.8	0.05x	1.04x	8.8	3.6	-0.4
Client A Series VI	2023	Minority & Women Funds less than \$1B <sup>11</sup>	150.0	0.0	0.0	0.0	0.00x	NM	NM	NM	NM

<sup>9</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

<sup>10</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

<sup>11</sup> 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>-time funds

**Portfolio Advisors Private Equity Fund XII (PAPEF XII)**

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ Portfolio Advisors was founded in 1994, headquartered in Darien, CT, specializing in the US middle-market. They provide private equity, private credit, and private real estate investment solutions through a variety of customized programs including direct, secondary, and primary investments and junior &amp; senior credit.</li> <li>→ In 2023 they combined with FS Investments a pioneer in the democratization of alternative assets. Together they manage over \$75 billion in assets. The firm has 500 employees.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ PAPEF XII investment committee has an average of 23 years of private markets experience and 13-year tenure at PA. The senior private equity team has an average of 20 years of market experience and 12-year tenure at PA.</li> <li>→ Over the past five years, the Firm’s dedicated US Primaries Team has not had any turnover at tis senior ranks.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ Portfolio is comprised of six unique sectors like PAPEF funds in the past.</li> <li>→ Investors can choose between the Model Portfolio or “menu-driven” option.</li> <li>→ Model Portfolio Allocation is 50% Global Buyout which includes a 35% download into the U.S Middle Market Buyout Sector, 30% Venture Capital and 20% Special Situations.</li> <li>→ Menu-Driven Portfolio Allocation: Portfolio Advisors has structured PAPEF XII in order to allow investors to access PA’s various specialist strategies within one vehicle. The fund is “menu driven” and allows investors to select one or more strategy allocation options.</li> </ul>
Performance	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Aggregate performance for PAPEF VI-X has resulted in a 2.2x net TVPI and 15.2% net IRR&gt;</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Series I: initial period 0.75% thereafter 0.60%. Series II: initial period 0.50% thereafter 0.40%. Series II 8% Preferred return &amp; 5% European carry</li> </ul>

Portfolio Advisors Track Record

Fund Name	Vintage Year	# Commitments	Fund Size (\$mm)	Capital Drawn (\$)	Net TVPI	Net IRR (%)
PAPEF I	2000	16	57	53.2	1.4x	6.1
Global Buyout Sector	2000	5	17	14.9	1.9x	11.9
Venture Capital Sector	2000	10	40	28.3	1.2x	3.5
PAPEF II	2002	31	179	160.8	1.6x	10.4
Global Buyout Sector	2002	13	66	62.1	1.9x	15.2
Special Situations Sector	2002	11	77	65.1	1.5x	9.6
Venture Capital Sector	2002	7	36	33.6	1.3x	4.0
PAPEF III	2004	59	612	649.9	1.4x	5.5
Global Buyout Sector	2004	22	219	217.5	1.5x	5.8
Special Situations Sector	2004	16	177	178.2	1.5x	7.5
Venture Capital Sector	2004	21	216	206.5	1.5x	5.1
PAPEF IV	2006	45	827	961.4	1.5x	6.0
Global Buyout Sector	2006	13	251	260.6	1.9x	8.4
Special Situations Sector	2006	17	320	304.1	1.3x	4.6
Venture Capital Sector	2006	15	256	242.1	1.6x	5.9
PAPEF V	2007	57	1,013	972.0	2.0x	10.4
Global Buyout Sector	2007	11	250	238.8	1.9x	9.7
Special Situations Sector	2007	15	339	306.2	1.6x	8.4
Venture Capital Sector	2006	15	256	242.1	1.6x	5.9
US Mid-Market Buyout	2007	11	86	81.0	2.1x	10.2

Portfolio Advisors Track Record (cont.)

Fund Name	Vintage Year	# Commitments	Fund Size (\$mm)	Capital Drawn (\$)	Net TVPI	Net IRR (%)
PAPEF VI	2008	80	1,085	1,028.1	2.2x	11.8
Global Buyout Sector	2008	31	2243	221.1	2.5x	14.0
Special Situations Sector	2008	22	541	486.6	1.7x	8.3
Venture Capital Sector	2008	17	261	267.7	2.8x	14.3
US Mid-Market Buyout Sector	2008	10	40	36.4	2.8x	18.3
PAPEF VII	2011	64	1,068	1,061.0	2.6x	15.7
Global Buyout Sector	2011	15	245	243.5	2.5x	15.2
Special Situations Sector	2011	17	353	329.3	1.8x	10.0
Venture Capital Sector	2011	23	250	252.2	4.3x	21.7
US Mid-Market Buyout Sector	2011	9	25	25.6	3.1x	18.4
Co-Investment Sector	2011	25	196	25.6	3.1x	18.4
PAPEF VIII	2013	91	1,231	1,501.8	2.3x	16.9
Global Buyout Sector	2013	22	243	234.6	2.3x	16.1
Special Situations Sector	2013	25	358	367.8	1.9x	12.2
Venture Capital Sector	2013	29	204	505.9	3.3x	19.6
US Mid-Market Buyout Sector	2013	15	28	27.2	2.9x	21.0
Secondaries Sector	2013		190	160.2	1.7x	18.0
Co-Investment Sector	2013	26	207	199.1	2.3x	19.7

Portfolio Advisors Track Record (cont.)

Fund Name	Vintage Year	# Commitments	Fund Size (\$mm)	Capital Drawn (\$)	Net TVPI	Net IRR (%)
PAPEF IX	2016	77	1,184	1,107.5	2.0x	17.2
Global Buyout Sector	2016	15	150	156.4	1.9x	16.8
Special Situations Sector	2016	23	237	248.8	1.9x	14.7
Venture Capital Sector	2016	23	134	145.6	2.8x	22.4
US Mid-Market Buyout Sector	2016	16	105	103.3	1.7x	15.9
Secondaries Sector	2016	2	293	218.9	1.7x	14.7
Co-Investment Sector	2016	1	240	211.4	2.1x	18.5
PAPEF X	2018	68	817	789.6	1.5x	14.6
Global Buyout Sector	2018	11	117	73.3	1.3x	12.5
Special Situations Sector	2018	14	140	137.7	1.4x	14.9
Venture Capital Sector	2018	25	107	102.4	1.3x	9.5
US Mid-Market Buyout Sector	2018	18	145	166.9	1.5x	21.3
Secondaries Sector	2018	3	224	235.7	1.5x	15.6
Co-Investment Sector	2018	2	82	73.7	1.6x	13.5
PAPEF XI	2021	65	1,023	482.9	NM	NM
Global Buyout Sector	2021	9	138	15.4	NM	NM
Special Situations Sector	2021	16	177	60.0	NM	NM
Venture Capital Sector	2021	26	250	89.4	NM	NM
US Mid-Market Buyout Sector	2021	14	109	25.0	NM	NM
Secondaries Sector	2021	2	281	224.9	NM	NM
Co-Investment Sector	2021	2	68	68.2	NM	NM

RCP Advisors 3, LLC-RCP Fund XIX or Fund XX, LP

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ Founded in 2001 and headquartered in Chicago, the firm has \$14 billion in committed capital and 56 professionals.</li> <li>→ RCP is a private equity investment firm that provides access to small buyout private equity fund managers through primary fund-of-funds, secondary funds, co-investment funds and specialty fund of funds.</li> <li>→ Since 2001 RCP has organized 19 private equity FOF, 5 dedicated secondary funds, 5 dedicated co-investment funds, SBIC FOF, DEI FOF and 3 small &amp; emerging manger FOF, 2 multi-strategy FOF and offers advisory and investment research-based services.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ RCP has 56 professionals dedicated to middle market fund investments and a senior management team with an average of 22 years of combined experience in the market as of June 1, 2024.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ RCP XIX is a fund-of-funds to invest primarily in small company buyout-focus private equity funds. These funds will in turn invest in the acquisition of businesses located primarily in North America. Fund will aim to diversify its underlying investments across industry focus, fund size, geography, strategy, and manager experience.</li> <li>→ Fund XIX is seeking \$300 million of commitments and anticipating closing in Q2-Q3 of 2025.</li> <li>→ RCP will likely launch Fund XX in May 2025 with the same strategy and focus.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ Preferred return 15% at the earlier closes; 12% at later closes; 10% at final close (at the GP’s discretion) or an achievement of at least 1.75x net cash-on-cash return, subject to a 10% minimum.</li> <li>→ Fund XX will also have a 15% preferred return for first close in June 2025.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Management fee 100 bps of committed capital years 1 to 5, 75 bps of committed capital years 6-10, fees stop after year 10. Carried interest 5% (profit sharing), subject to return of all contributed capital plus Preferred Return</li> </ul>

### RCP Performance Track Record

Fund	Vintage	Size (\$)	Called Capital (%)	Max Out of Pocket (%)	Partnerships	Co-Invest	Net IRR (%)	Net ROIC	Net D/PI
Fund I	2003	92	105	55	14	--	13.6	1.8x	1.80
Fund 11	2005	140	109	73	15	--	8.1	1.5x	1.46
Fund III	2006	225	107	68	13	--	6.7	1.4x	1.36
Fund IV	2007	265	110	56	12	1	14.4	2.0x	2.00
Fund V	2008	355	121	54	13	1	13.4	1.7x	1.73
Fund VI	2009	285	114	66	12	3	15.5	2.0x	2.01
Fund VII	2011	300	112	63	15	--	16.2	2.1x	1.82
Fund VIII	2012	268	114	58	13	--	20.2	2.3x	1.82
Fund IX	2014	350	114	70	14	--	17.0	2.0x	1.01
Fund X	2015	332	113	78	13	--	17.3	1.9x	0.89
SBIC (Credit)	2016	54	86	64	7	--	15.8	1.8x	0.54
SEF (Main)	2017	104	102	65	8	--	23.4	2.0x	0.65
Fund XI	2017	315	104	74	11	--	17.3	1.7x	0.71
Fund XII	2018	382	107	69	13	--	17.4	1.6x	0.42
Fund XIII	2019	397	94	79	13	--	16.1	1.4x	0.16
Fund XIV	2020	394	77	65	14	--	13.1	1.2x	0.17
SEF II	2020	123	56	50	8	--	14.1	1.2x	0.12
Fund XV	2021	435	63	63	13	--	11.4	1.2x	0.00
Fund XVI	2022	433	29	--	12	--	--	--	--
Multi-Strategy	2022	301	47	45	44		18.5	1.2x	0.05
Fund XVII	2022	334	8	--	10		--	--	--
Multit-Strategy II	2023	233	7	--	21		--	--	--
Fund XVIII	2023	285	1	--	8		--	--	--
SEFIII	2023	120	2	--	5		--	--	--

### Russell Investments Private Markets Fund 2023 SCSp

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ Founded in 1936 by Frank Russell, Russell Investments is a global investment management firm that \$1.03 trillion assets under advisement and \$302.7 assets under management as of 12-31-23.</li> <li>→ Russell has a 53-year history in private markets with \$22.1 billion in assets under management and 100 plus funds invested in during the last five years.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ Private Markets program is headed by Global Chief Investment Officer Kate El-Hillow and Vic Leverette who is Head of Alternatives.</li> <li>→ Dan Fletcher, CFA who has a 2-year tenure at Russell Investments. Dan is supported by a private markets team who has an average of 20 years of industry experience and an average 10-year tenure at Russell.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ Fund emphasizes opportunities in North American and European buyouts at the smaller end of the market through both primary fund commitments, as well as complex global and off-the-run secondary fund commitments. The allocate opportunistically to special situations, US venture, capital and opportunistic real estate in Western countries alongside highly sought after managers.</li> <li>→ Mitigate the J-curve, accelerate exposure to private markets, enhance liquidity, and reduce fees by building a foundation of investments through focused commitment pacing in a tight commitment period and by incorporating secondary funds.</li> <li>→ Fund target size \$300M, anticipated close 5-13-2025</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ In aggregate, Russell Investments has invested \$1.9 billion in 223 investments, resulting in a 13% net IRR and 1.55x TVPI.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Average management fee of 60 bps on committed capital, preferred return is 8%, carried interest 5%.</li> </ul>

**Russell Investments Private Markets Fund 2023 SCSp**  
(December 31, 2023)

Product Name	Inception Year	Total Commitments (\$)	No. Of Commitments	Net IRR	TVPI
Private Markets Fund 2019	2019	187.9M	16	15.4	1.37x
Private Markets Fund 2021	2021	249.0M	17	6.9	1.06x
SMA #1	2013	251.7M	47	16.0	1.47x
SMA #2	2017	164.4M	9	16.7	1.36x
SMA #3	2017	23.3M	4	16.2	1.36x
SMA #4	2017	18.3M	4	16.7	1.40x
SMA #5	2018	135.7M	21	16.9	1.43x
SMA #6	2019	145.5M	9	18.1	1.43x
SMA #7	2019	142.1M	11	17.0	1.30x
SMA #8	2020	144.1M	9	20.5	1.27x
SMA #9	2023	57.7M	6	n/m	1.54x
Total PE Portfolio	2020	1.9B	223	13.0	1.55x

SEI Global Private Assets VII, LP

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ SEI Investments Company (SEIC) was founded in 1968 by Alfred (Al) West, Jr, who was Chairman of the board of Directors and Chief Executive Officer until June 202 when Ryan Hicke became the next CEO.</li> <li>→ SEIC is a diversified, global finance and technology company and manages, advises or administers \$1.4 trillion in assets and has 5,000 employees and is headquartered in Oaks, Pennsylvania.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ Private assets team has six members, and the firm is looking to hire two additional members. They are also supported by the broader Alternatives team which consists of 10 members.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The strategy is to offer exposure to a diversified pool of global private assets fund investment. The partnership will be managed across three primary sub-classes: venture capital (40%-60%), buyouts (20%-40%), and private credit (5%-20%), with opportunistic investments to co-investments, real estate and real assets (each a “Sub-Class Strategy”),</li> <li>→ Investment will primarily be made in traditional private asset funds that require long-term commitment with stated lives of 10 or more years.</li> <li>→ Geographically the partnership is heavily focused on the US with small European and minimal rest of the world exposure although the investment mandate is global and the GP or the Investment Manager cause the Partnership to invest anywhere that is determined in its sole discretion is appropriate.</li> <li>→ Targets private asset managers that have a track record of buying companies at below market purchase price multiples and takes a hands-on operational approach to adding value.</li> <li>→ Fund size is \$250 million, closing Q4 2025</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ SEIC’s provided private market performance shows consistent performance throughout its funds.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Management fee of 0.90%. Preferred return N/A and carried interest N/A</li> </ul>

**SEI Global Performance**  
(as of 12-31-2023)

Fund Name	Vintage Year	Strategy	Total Commit (\$)	# of Commits	Total Invested	Gross IRR	Net IRR	Net IRR (w/o Real Estate & Real Assets)	DPI	TVPI
SEI Global PE Fund I	2006	Buyout, Venture Capital	\$98.9M	6	\$84.8M	9.2%	8.01%	N/a	1.7x	1.8x
SEI Global PE Fund II	2008	Buyout, Venture Capital	\$91.1M	6	\$65.1M	10.9%	9.8%	n/a	1.7x	1.8x
SEI GPA Fund III	2015	Buyout, Private Credit, Real Assets, Venture Capital, Real Estate	\$275.3M	11	\$221.2M	11.2%	10.1%	13.4%	1.0x	1.6x
SEI GPA Fund IV	2018	Buyout, Private Credit, Real Assets, Venture Capital, Real Estate	\$588.5M	23	\$409.4M	18.0%	16.9%	16.8%	0.2x	1.7x
SEI GPA Fund V	2020	Buyout, Private Credit, Real Assets, Venture Capital, Real Estate	\$644.3M	25	\$319.7M	9.12%	7.9%	9.0%	0.0x	1.2x

**SEI Global Performance**  
(As of 12-31-2023)(cont.)

Fund Name	Vintage Year	Strategy	Total Commit (\$)	# of Commits	Total Invested	Gross IRR	Net IRR	Net IRR (w/o Real Estate & Real Assets)	DPI	TVPI
SEI GPA Fund VI	2022	Buyout, Private Credit, Real Assets, Venture Capital, Real Estate	\$518.0M	20	\$67.0M	N/A	N/A	N/A	N/A	N/A
SEI Secondary Opportunity Fund I	2022	Primarily Focused on Secondary Investments in Buyout, Venture Debt, Real Estate and Infrastructure	\$326.0M	14	\$73.0M	N/A	N/A	N/A	N/A	N/A
SEI Institutional GPA Fund I	2021	Buyout, Private Credit, Real Assets, Venture Capital (Secondary Emphasis)	\$61.2M	6 (as of 9/30/23)	\$22.7M	16.7%	15.5%	N/A	0.2x	1.3x

Solamere Capital AF V LP (Access Fund V)

Rating Criteria	Score	Rationale
Organization	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Founded in 2008 by a collection of business leaders to leverage their broad networks and industry expertise to access, evaluate, and add value to private investments. Solamere is a "one-stop shop" for private equity company and fund investments. The firm has focused on investing in high quality companies as well as investing in premier lower-middle market buyout and venture capital managers, co-investments, and opportunistic secondaries. Solamere is led by Managing Partners Taggart Romney, Eric Scheuermann, and Spencer Zwick, and Partners Scott Hutchins, Paul Ryan and Vaibhav Saraiya.</li> <li>→ Solamere was founded for the purposes of bringing together Mitt Romney's network of current and former CEOs to invest alongside each other and leverage their shared expertise to identify compelling investment opportunities and drive value post-investment.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ The firm maintains 19 investment professionals across its Access Fund strategy and direct investment strategy.</li> <li>→ The Access Fund V Investment Committee will be comprised of Eric Scheuermann, Tagg Romney, Spencer Zwick, Vaibhav Saraiya and Paul Ryan.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ Members of the Access Fund investment team are responsible for the origination, underwriting, execution, and monitoring of all investments (fund investments, co-investments, opportunistic secondaries) within the Access Fund strategy. The team evaluates private equity managers that invest in the sectors and sub-sectors where Solamere's direct investment team has developed its own investment theses and domain expertise. The Access Fund team will routinely leverage the direct investments team to corroborate (or refute) its own underwriting.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ Across the fund series performance has been consistent and strong, with low gross to net spreads. Target returns are 2.0x net MOIC and 20%+ net IRR.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ 0.8% of committed capital over the life of the Fund with &lt;\$10 million, 0.5% of committed capital over the life of the Fund with at least \$10 million. It is likely Meketa clients will likely receive an aggregation fee discount, making the management fee at most 0.5% of committed capital over the life of the fund. Preferred return: 0% for primary fund investments; 8% for co-investments. Carried interest: 5% for primary fund investments; 20% for co-investments.</li> </ul>

**Solamere Capital**  
(Track Record December 31, 2023)

Fund	Vintage Year	Total Invested Capital (\$ USD M)	Distributed Capital (\$ USD M)	Gross MOIC	Est. Net Moic	Gross IRR (%)	Est. Net IRR (%)
Access Fund I	2008	157	255	1.83X	1.65X	11.8	9.1
Access Fund II	2013	238	293	2.68X	2.48X	20.5	18.4
Access Fund III	2018	269	96	1.62X	1.54X	24.5	23.1
Access Fund IV	2021	143	16	1.15X	1.08X	9.9	6.1

50 South Capital Private Equity Core Fund XI

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ The history of 50 South Capital dates back to 2000 when Northern Trust started providing fund of hedge funds and private equity exposure to clients. In October 2011, Northern Trust Alternatives Group (“NTA”) was formed by combining the existing hedge fund and private equity business units. In 2015, Northern Trust established 50 South Capital Advisors, LLC, a wholly-owned registered investment advisor subsidiary.</li> <li>→ As of March 31, 2024, 50 South Capital’s firm assets managed were \$11.1 billion in AUM and AUA (AUM - \$7.9B, AUA - \$3.2B). Private equity assets managed were \$7.7 billion in AUM and AUA (AUM - \$5.7B, AUA - \$1.9B).</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ The investment team is comprised of four Managing Directors, five Senior Vice Presidents, two Directors, and two Vice Presidents. The average tenure of the Managing Directors and Senior Vice Presidents are 17 years and 8 years, respectively.</li> <li>→ As of March 31, 2024, one Senior Vice President and two Vice Presidents had departed the firm within the last five years. Each professional departed to pursue other opportunities.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The Fund will allocate 75% of its capital to buyout managers and 25% to venture capital firms.</li> <li>→ Within the buyout sector the fund will primarily invest in funds less than \$1.5 billion in size focusing on generating returns in lower middle market businesses through true operational value-add.</li> <li>→ In the venture capital segment, the Fund will focus on seed and early-stage funds investing in early financing rounds of technology, business services and consumer companies. To date, 60% of our venture capital commitments have been to early stage focused firms with a median fund size of \$350 million.</li> <li>→ The Fund will be largely focused on US managers with international managers representing approximately 15-20%. Historically international efforts were focused on Western European buyout managers and Asian venture capital firms.</li> <li>→ The Fund will maintain an opportunistic allocation of up to 30% to be invested in a combination of secondary purchases and co-investments.</li> <li>→ Target size of the fund \$750 million and anticipated close date is 3-31-2025.</li> </ul>
Performance	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Performance across the seven global fund-of-funds, three secondary funds, and one venture capital-focused fund-of-funds has been mixed. Four funds generated first quartile returns, three funds generated second quartile returns, three funds posted third quartile returns, and one fund posted fourth quartile performance.</li> </ul>
Fees	Highly Advantageous	<ul style="list-style-type: none"> <li>→ Terms: Management fee: 0.44% over the life of the fund; No preferred return or carried interest; \$1,000,000 minimum commitment.</li> </ul>

**50 South Capital Track Record**  
(As of December 31, 2023)

Core Funds	Vintage Year	Fund Size (\$mm)	# of Commitments	Committed (\$mm)	NAV (\$mm)	TVPI <sup>1</sup>	Net IRR (%)
Fund I	2000	69.8	21	\$67.1	--	1.38x	5.5
Fund II	2005	226.5	25	\$219.4	5.2	1.38x	5.2
Fund III	2007	358.7	32	\$350.4	49.37	2.08x	13.1
Fund IV	2009	268.8	21	\$265.4	163.8	2.63x	16.5
Fund V	2012	330.9	21	\$323.4	259.7	2.11x	14.8
Fund VI	2014	454.2	37	\$442.8	630.1	2.47x	21.9
Fund VII	2016	541.4	32	\$486.2	678.5	1.87x	18.0
GVCO	2016	103.8	15	\$117.5	295.9	3.05x	25.5
Fund VIII	2018	653.4	37	\$466.5	680.4	1.46x	15.3
Fund IX	2020	677.4	35	\$379.9	473.0	1.25x	16.3
GVCO II	2022	388.1	15	\$80.5	74.7	--	--
Fund X	2022	912.0	37	\$220.7	212.5	--	--

<sup>1</sup> TVPI: Total Value to Paid-In ratio (a realization ratio). The TVPI is the total of the net asset value and distributions, as compared to contributed capital.

**Abbott Capital Management, LLC**  
 (Abbott Capital Private Equity Investors 2025)

Rating Criteria	Score	Rationale
Organization	Advantageous	<ul style="list-style-type: none"> <li>→ Abbott Capital was founded as an independent investment advisor in 1986 by Stanley E. Pratt and Raymond L. Held.</li> <li>→ The firm has been investing on behalf of institutional investors and high net worth individuals for more than 35 years.</li> <li>→ Abbott Capital has 59 full-time employees across investment and non-investment teams.</li> <li>→ As of December 31, 2023, Abbott Capital manages \$15.2 billion in AUM.</li> </ul>
Team	Advantageous	<ul style="list-style-type: none"> <li>→ The tenured investment team is led by several Managing Directors who have been working together for over 18 years on average.</li> </ul>
Investment Philosophy & Process	Advantageous	<ul style="list-style-type: none"> <li>→ The NAPE Fund is a diversified strategy within Abbot Capita’s Annual Program Funds focused on diversifying the portfolio, investing in North American middle-market buyout funds and control-oriented funds.</li> <li>→ The NAPE strategy will invest in buyouts primarily, including change in control, industry-focused and consolidation strategies. The Fund will invest in portfolio funds headquartered in or with a focus on North America.</li> </ul>
Performance	Advantageous	<ul style="list-style-type: none"> <li>→ Performance of the NAPE strategy (Annual Program Funds Vintage Years 2015-2023) is attractive and consistent across all vintages.</li> </ul>
Fees	Advantageous	<ul style="list-style-type: none"> <li>→ Terms: The management fee for Abbott Capital Private Equity Investors 2025 or “AP25” (final closing date 2Q 2025) is not yet available. For reference, the AP 24 effective management fee is 0.64% on the initial \$10mm committed capital and 0.57% on the amount over \$10mm up to \$25mm of committed capital. There is no preferred return, but a 10% carried interest on opportunistic investments only.</li> </ul>

**Abbott Capital Management Track Record**  
(As of December 31, 2023)

Fund	Vintage Year	Strategy	Strategy Size (\$mm)	Committed (\$mm)	TVPI	Net IRR (%)
AP15	2015	North American PE Secondaries	29.5 N/A	29.4	2.0x	19.5
				7.1	1.9x	23.5
AP16	2016	North American PE Secondaries	67.9 N/A	67.8	1.9x	22.0
				14.1	2.0x	22.3
AP17	2017	North American PE Secondaries	64.6 N/A	62.8	1.8x	23.1
				42.0	2.0x	23.4
AP18	2018	North American PE Secondaries	14.4 N/A	14.3	1.4x	16.8
				8.1	1.8x	27.1
AP19	2019	North American PE Secondaries	51.3 N/A	49.1	1.3	15.7
				29.4	1.8	23.6
AP20	2020	North American PE Secondaries	49.8 N/A	49.7	1.1x	6.0
				59.3	1.5x	15.2
AP21	2021	North American PE Secondaries	46.0 N/A	46.0	1.0x	NM
				30.1	1.3x	10.1
AP22	2022	North American PE Secondaries	12.6 N/A	9.0	0.5x	NM
				13.0	1.1x	(3.3)
AP23	2023	North American PE Secondaries	84.6 N/A	18.0	0.6x	NM
				34.6	1.1x	62.3

## Summary

Based upon our review and evaluation of each respondent, Meketa Investment Group has ranked:

- Three managers as highly advantageous and thirteen as advantageous.
- We recommend the Board consider making commitments among the highly advantageously ranked managers.

**Domestic Small Cap  
RFP Respondent Review**

#### Background

- The City of Marlborough Contributory Retirement System (“the System”) adopted a 10% target allocation to US Small Cap at the November 28, 2023, Board meeting.
- As of December 31, 2024, the System had approximately \$69.6 million (~29% of total portfolio assets) invested in US Equity.
- In November 2024, Meketa Investment Group issued an RFP on behalf of the System, to evaluate the US Small Cap universe. Responses were due back on November 25, 2024.
  - A total of 33 managers submitted responses to this search.
- The following pages review the 33 qualified manager respondents.

Domestic Small Cap RFP Respondent Review

Strategy	Boston Trust Walden Small Cap	Westfield Small Cap Growth Equity	William Blair Small Cap Growth
<b>Overall Firm</b>	<b>Rating</b> HA	<b>Rating</b> HA	<b>Rating</b> HA
	<b>Reason</b> Wholly owned subsidiary of BTWC, which is 100% employee owned. \$15B AUM	<b>Reason</b> 100% employee owned; \$20.9B AUM	<b>Reason</b> 100% employee owned; \$72.3B AUM
<b>Team</b>	<b>Rating</b> HA	<b>Rating</b> HA	<b>Rating</b> HA
	<b>Reason</b> Four PMs with 28 years of experience supported by centralized generalist analyst pool averaging 22 years' experience.	<b>Reason</b> 13-person investment committee primarily consists of the CIO and sector specialists; committee members average 24 years of total industry experience; the committee is supported by five additional research analysis.	<b>Reason</b> Two PMs supported by a centralized research team of 17 analysts; both PMs have 25 years of industry experience.
<b>Philosophy</b>	<b>Rating</b> HA	<b>Rating</b> HA	<b>Rating</b> A
	<b>Reason</b> High-quality core, focused on profitability, cash generation, and stability.	<b>Reason</b> GARP; identify reasonably priced companies with accelerating or underappreciated earnings potential.	<b>Reason</b> Invest in quality growth companies that possess experienced management teams, unique business models, and attractive financial characteristics.
<b>Process</b>	<b>Rating</b> HA	<b>Rating</b> HA	<b>Rating</b> HA
	<b>Reason</b> Proprietary quant tools and bottom-up fundamental analysis focused on profitability, stability, balance sheet sustainability, growth, and earnings quality. 70 - 90 stocks, 15 - 35% turnover.	<b>Reason</b> Fundamental bottom-up analysis with an emphasis on valuation; all portfolio decisions are made by the investment committee on a consensus basis; 60 - 80 stocks; 60 - 80% turnover.	<b>Reason</b> Traditional, bottom-up fundamental analysis with an emphasis on earnings growth, cash flow growth, and returns on invested capital; 70 - 90 stocks; 50 - 90% turnover.
<b>Performance</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> HA
	<b>Reason</b> Above median performance + IR	<b>Reason</b> Below median 3- year & 5- year performance (absolute & risk-adjusted; above-median 10-year.	<b>Reason</b> Top decile 10-year performance (absolute & risk-adjusted); top quintile 5-year; above median 3-year.
<b>Fees</b>	<b>Rating</b> HA	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> CIT 0.69% - lowest quartile	<b>Reason</b> SA 1.00% - highest quartile MF 0.88% - below median	<b>Reason</b> CF (CIT): 0.95% - highest quartile MF: 0.94% - above median

### Domestic Small Cap RFP Respondent Review

	PanAgora U.S. Small Cap Core Stock Selector	GW&K Small Cap Core	Vaughan Nelson Small Cap Value	JPMorgan Small Cap Core
Strategy Overall Firm	<b>Rating</b>	HA A	HA A	A A
	<b>Reason</b>	Subsidiary of Power Corp. of Canada. PanAgora employees own 20% of the firm. Firm AUM: \$33.3 billion	GW&K is 35% employee owned, 65% owned by AMG. Firm: \$51.2 billion	Wholly owned subsidiary of Natixis. \$17.8B AUM
Team	<b>Rating</b>	HA	HA	HA
	<b>Reason</b>	The CIO is George Mussalli: 29 years of investment experience. Richard Tan runs the strategy day-to-day: 27 years of investment experience. Supported by a broader team with average of 15 years' experience.	Daniel Miller is Director of Equities. Jeff Thibault is the lead PM and has 26 years of investment experience. Supported by 6 analysts. The average team experience is 26 years.	Lead by Chris Wallis, architect of the strategy, and James Eisenman supported by 3 analysts with team averaging 19 years of experience.
Philosophy	<b>Rating</b>	A	A	A
	<b>Reason</b>	Stock prices reflect the fundamental strengths and weaknesses of companies. Opportunities are best exploited through a combination of in- depth fundamental insights, quantitative techniques, and unique information.	Long-term sustainable earnings growth drives stock performance. Companies with sustainable earnings growth have strong products in niche markets and high-quality management	Investing in companies w/ change in ROIC, valued at a discount to asset value, or w/ attractive dividend yield
Process	<b>Rating</b>	HA	HA	HA
	<b>Reason</b>	The systematic investment process aims for excess returns over the Russell 2000 Index using a bottom-up, quantitative stock selection based on fundamental metrics. 250 - 350 stocks. Turnover: 60%-100%.	Bottom-up fundamental approach. Select stocks through in-depth fundamental analysis. Focus on leading companies in niche markets with consistent growth, quality management, and appropriate valuation. 65 - 95 stocks. Turnover: <50%.	Bottom up driven with macro-overlay that includes upfront screening for cheap stocks and qualitative screening complemented by in-depth fundamental research at company and industry level. 55 - 80 stocks, 66% turnover.
Performance	<b>Rating</b>	A	A	HA
	<b>Reason</b>	Absolute returns near median over 5 and 10-year trailing periods; risk-adjusted returns are in the top quartile.	Top third risk-adjusted over 10-year period.	Top quintile short term performance and above median 10yr. Top quintile IR and above median 10yr.
Fees	<b>Rating</b>	HA	HA	NA
	<b>Reason</b>	CIT: 0.65% on first \$150 million. Bottom quartile	CIT: 0.75%. Below median	MF - NEJYX 1.00%. Highest quintile

Domestic Small Cap RFP Respondent Review

	Fort Washington Small Company Equity Strategy	NB US Small Cap	PIMCO Stocks PLUS Small
<b>Strategy</b>			
<b>Overall Firm</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> JP Morgan Investment Management is the investment adviser under JP Morgan Asset Management (JPMAM), which is a wholly owned subsidiary of JP Morgan Chase (NYSE: JPM). JPMAM had \$3.4T in AUM.	<b>Reason</b> 100% employee owned; \$481.5B AUM.	<b>Reason</b> Strategy is managed by both PIMCO, which is owned by Allianz SE, and Research Affiliates LLC, a privately owned company (95% employee owned). PIMCO AUM - \$1.9T.
<b>Team</b>	<b>Rating</b> A	<b>Rating</b> HA	<b>Rating</b> HA
	<b>Reason</b> Lead PM is Don San Jose, who has 27 years of investment experience. Supported by co-PM Dan Percella (22 years), and four analysts (7 years to 17 years).	<b>Reason</b> Three generalist PMs supported by five dedicated research analysts, each with sector-specific coverage responsibilities; average 23 years of industry experience.	<b>Reason</b> Experienced team led by Rob Arnott and Chris Brightman, supported by Que Nguyen, CIO of equities. Large resource of 70+ person equity team across the two firms.
<b>Philosophy</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Seek quality businesses that are run by strong management teams at attractive valuations. Look for clear competitive advantages and sustainable free cash flow generation.	<b>Reason</b> Invest in high-quality businesses with above-average, sustainable growth prospects selling at/or below-average valuations	<b>Reason</b> Quantitative, "unemotional" approach to capitalize on short-term mispricing, which are driven by behavioral biases.
<b>Process</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Fundamental, bottom-up analysis focuses on business/product and management factors. Valuation analysis uses quantitative methods (e.g., EV, FCF yield) and qualitative assessments. 80 - 120 stocks. Low turnover (15% - 30%).	<b>Reason</b> Screen for companies with above average or improving ROA; bottom-up fundamental analysis; high importance placed on meetings with company management; 90 - 150 stocks. Low turnover 10% - 20% turnover.	<b>Reason</b> Stocks selected and weighed based on their RAE Score, which is a composite of value, quality, and momentum signals, and size. The strategy is bottom-up driven. 200 - 300 stocks. Annual turnover is 40% - 60%.
<b>Performance</b>	<b>Rating</b> HA	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Above median long-term risk-adjusted returns. Bottom decile absolute returns over 5-Year period.	<b>Reason</b> Top third 10-year performance (absolute & risk adjusted); below-median 3-year and 5-year.	<b>Reason</b> Below median returns, average risk-adjusted returns.
<b>Fees</b>	<b>Rating</b> HA	<b>Rating</b> A	<b>Rating</b> HA
	<b>Reason</b> MF: 0.75%. Bottom quintile for mutual fund but expensive vs. CIT.	<b>Reason</b> MF: 0.74% - lowest decile, more expensive than other CFs.	<b>Reason</b> CIT - 0.47% Lowest decile

Domestic Small Cap RFP Respondent Review

	Glenmede Small Cap Equity	SBH Small Cap Equity Strategy (Core)	Ariel Small Cap Value
<b>Strategy Overall Firm</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> GIM is a wholly-owned entity of Glenmede Trust Company (“GTC”); GTC is in turn owned by the Glenmede Corporation; Glenmede Corporation is owned by the board of directors, former employees, former directors and outside shareholders, and current employees; \$10.6B AUM.	<b>Reason</b> Wholly owned subsidiary of public company being acquired by PE firm in 2025. \$25.7B AUM.	<b>Reason</b> 92.9% Employee owned. \$13.9B AUM.
<b>Team</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> 2 experienced PMs supported by one research analyst; all members have research coverage; average 19 years of total industry experience.	<b>Reason</b> Managed by two PMs and supported by 4 dedicated analysts with team averaging 20 years industry experience.	<b>Reason</b> 3 PMs supported by analyst team dedicated to all US strategies averaging 23 years of industry experience.
<b>Philosophy</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> "Early GARP"; invest in higher quality businesses that trade at attractive valuation levels; behavioral biases create inefficiencies; 2 – 3-year time horizon.	<b>Reason</b> Seek to provide consistent returns and downside protection by combining value (catalyst to ROIC improvements) and growth (GARP).	<b>Reason</b> Relative value approach seeking companies with strong potential for growth trading at a discount relative to earnings and intrinsic worth.
<b>Process</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Utilize multi-factor screen to narrow universe; bottom-up fundamental analysis, top-down economic considerations included in evaluation of company fundamentals; 85 - 90 stocks; 30 - 40% turnover.	<b>Reason</b> Combines proprietary ROIC dashboard with in-depth bottom-up analysis incorporating ESG seeking to identify companies with the potential for large improvements on ROIC. 70 - 85 stocks, 40% turnover.	<b>Reason</b> Bottom-up approach seeking quality companies with attractive valuations through fundamental and qualitative analysis with p/e <13x forward cash earnings and/or 40% discount to internally generated PMV. 25 - 45 stocks, 20 - 30% turnover.
<b>Performance</b>	<b>Rating</b> HA	<b>Rating</b> HA	<b>Rating</b> A
	<b>Reason</b> Above-median performance (absolute & risk-adjusted) over the 3-year, 5-year, and 10-year trailing periods; top-quartile 5-year.	<b>Reason</b> Long term top quartile performance + IR	<b>Reason</b> Below median performance + IR
<b>Fees</b>	<b>Rating</b> HA	<b>Rating</b> HA	<b>Rating</b> HA
	<b>Reason</b> Undisclosed vehicle type (likely SA): 0.62% - lowest quintile; MF: 0.75% - lowest quintile CF(CIT):0.50% - lowest decile.	<b>Reason</b> CIT 0.65% - bottom quintile	<b>Reason</b> MF - ARAIX 0.68% - lowest quartile

Domestic Small Cap RFP Respondent Review

	Nuveen Small Cap Select (Core)	Wasatch Small Cap Growth	Lazard US Systematic Small Cap Equity Strategy
<b>Strategy</b>			
<b>Overall Firm</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>A</b>
	<b>Reason</b> Wholly owned subsidiary of TIAA. \$1.3T AUM.	<b>Reason</b> 100% employee-owned; \$27.7B AUM.	<b>Reason</b> Lazard Asset Management is a wholly owned subsidiary of Lazard Frères & Co. LLC., a private company. \$205B AUM.
<b>Team</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>HA</b>	<b>Rating</b> <b>A</b>
	<b>Reason</b> Two PMs that average 28 years of experience. They are supported by the firm's Global Equity Research Team of 71 analysts, averaging 19 years of experience.	<b>Reason</b> 17-person investment team; three PM structure with two Co-Lead PMs; each individual has analyst responsibilities; average 18 years of total industry experience.	<b>Reason</b> Three PM team, led by Oren Shiran. Average 18 years of investment experience.
<b>Philosophy</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>A</b>
	<b>Reason</b> Seeks to invest in higher quality companies with an identifiable catalyst and at least 2:1 upside/downside ratio across the small cap spectrum.	<b>Reason</b> Earnings growth drives stock prices; target high-quality growth companies; 3 - 5-Year horizon; believes quality tilt provides stable growth and downside protection.	<b>Reason</b> The team believes that fundamentals drive stock prices, and that fundamentals can be quantified, validated, and implemented systematically.
<b>Process</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>A</b>
	<b>Reason</b> Combines fundamental and quantitative analysis focused on fundamentals, valuation, and catalysts to invest across the small cap spectrum at discounts of 20% to intrinsic value. 80-100 stocks, 60- 90% turnover.	<b>Reason</b> Bottom-up fundamental analysis; on-site meetings with company management; build 5-year proprietary earnings model; 40-60 stocks; 30-40% turnover.	<b>Reason</b> Quantitative approach. They use "fundamental analysts," which are actually quant models. The approach is fully automated but rooted in fundamental analysis. 300 - 500 stocks. Turnover: 80 - 100%.
<b>Performance</b>	<b>Rating</b> <b>HA</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>A</b>
	<b>Reason</b> Top third performance. Top quartile IR.	<b>Reason</b> Bottom decile 3-year performance (absolute & risk-adjusted); above median 5-year and 10-year.	<b>Reason</b> Top quintile IR over the trailing 3-Year period, top decile IR over the trailing 10-year period.
<b>Fees</b>	<b>Rating</b> <b>HA</b>	<b>Rating</b> <b>A</b>	<b>Rating</b> <b>HA</b>
	<b>Reason</b> CIT 0.60% - lowest decile; SMA 0.60% - lowest decile	<b>Reason</b> CF(CIT): 0.85% - above median	<b>Reason</b> CIT: 0.35%. Bottom decile fees

Domestic Small Cap RFP Respondent Review

Strategy	Manulife US Small Cap Core Strategy	QMA US Small Cap Core Equity	FMI (Fiduciary) Common Stock Fund
Overall Firm	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	<b>A</b> Manulife IM is an indirect, wholly owned subsidiary of Manulife; Manulife is a publicly traded company; \$479.8B AUM.	<b>A</b> A indirect wholly-owned subsidiary of Prudential Financial, a publicly traded company. \$99.7B AUM.
Team	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	3 experienced PMs supported by 2 analysts; average 25 years of total industry experience.	Managed by 4-person quantitative equity team supported by seven quant analysts averaging 13 years of total industry experience.
Philosophy	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	Quality and valuation biases; seek companies with durable business models, high returns on capital, visibility on earnings and CF growth, and stocks trading at discount to the 3-year fair value estimate. Fundamental bottom-up analysis; the main driver of determining fair value is the normalized earnings estimate in year three; 60 - 80 stocks; 50 - 70% turnover.	Core quant strategy intended to provide style neutral core exposure to R2K index.
Process	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	Fundamental bottom-up analysis; main driver of determining fair value is the normalized earnings estimate in year three; 60 - 80 stocks; 50 - 70% turnover.	Active, systematic stock selection strategy based on fundamental measures, resulting in a liquid portfolio with better growth prospects and a similar beta and market cap profile as the benchmark. 300 - 500 stocks, 75 - 100% turnover.
Performance	<b>Rating</b>	<b>A</b>	<b>HA</b>
	<b>Reason</b>	Above-median performance (absolute & risk-adjusted) over the 5-year and 10-year trailing periods; below-median 3-year.	Below median long-term performance; Median IR.
Fees	<b>Rating</b>	<b>HA</b>	<b>A</b>
	<b>Reason</b>	CF(CIT): 0.55% all in - lowest; MF: 0.82% - lowest quartile; SA: 0.80% - below median	CIT 0.55% - lowest decile

Domestic Small Cap RFP Respondent Review

Strategy	FIAM Small Company	Wasatch Small Cap Value	Boston Partners Small Cap Value Equity
Overall Firm	<b>Rating</b>	A	A
	<b>Reason</b>	Indirect wholly owned subsidiary of FMR, LLC, a private company. \$436B AUM.	100% employee owned. \$27B AUM.
Team	<b>Rating</b>	HA	A
	<b>Reason</b>	PM Forrest St. Clair has 26 years of experience and is supported by broader Fidelity research team including 15 dedicated small cap analysts and 148 equity analysts.	PM Austin Bone has 8 years of experience and is supported by 17 person US Equity analyst team, averaging 18 years of experience.
Philosophy	<b>Rating</b>	A	A
	<b>Reason</b>	Seeks to exploit inefficiencies in small caps through investing in stocks with strong growth and financial characteristics trading at modest prices.	Relative value focused on discounted companies with strong growth prospects, core tilt.
Process	<b>Rating</b>	A	A
	<b>Reason</b>	Bottom-up, fundamental process incorporating macro insights to focus on above-average earnings growth, attractive valuation, and strong competitive positions. 150-250 stocks, 40-80% turnover.	Bottom-up fundamental approach, using quantitative tools to identify high-quality, stable companies with long-term earnings growth potential. 45-60 stocks, 53% turnover.
Performance	<b>Rating</b>	A	HA
	<b>Reason</b>	Performance + IR in middle quartiles over short and long term.	Top quartile performance and top quintile IR.
Fees	<b>Rating</b>	A	HA
	<b>Reason</b>	CIT 0.80% - median	MF - WICVX 1.07% - highest percentile

### Domestic Small Cap RFP Respondent Review

Strategy	Nuveen: Small Cap Value	Axiom US Small Cap Equity	Stephens Small Cap Growth
Overall Firm	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	Wholly owned subsidiary of TIAA. \$1.3T AUM.	100% employee owned; \$23.2B AUM.
Team	<b>Rating</b>	<b>A</b>	<b>HA</b>
	<b>Reason</b>	Two PMs that average 37 years of experience. They are supported by the firm's Global Equity Research Team of 71 analysts averaging 19 years of experience.	Two PMs that have worked together for 18 years; supported by one dedicated analyst and a team of seven global sector analysts; average 23 years of industry experience.
Philosophy	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	Seeks to identify industry leaders with strong or improving financials, trading at 20% or higher discounts to intrinsic value with an identifiable catalyst.	Dynamic growth; identify companies experiencing under-appreciated positive change with strong sustainability at a reasonable valuation.
Process	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	Combines fundamental and quantitative analysis focused on fundamentals, valuation, and catalysts to invest across the value spectrum in deep value, traditional value and GARP. 80 - 100 stocks, 50 - 80% turnover.	Fundamental bottom-up analysis to identify misalignments in the medium-term earnings trajectory of companies that result in a significant current undervaluation; 50 - 70 stocks; 30 - 40% turnover.
Performance	<b>Rating</b>	<b>A</b>	<b>A</b>
	<b>Reason</b>	Top third short term performance + IR. Middle to bottom quartile long term performance + IR.	Bottom quintile 3-year performance (absolute & risk adjusted); above median 5-year and 10 - year.
Fees	<b>Rating</b>	<b>HA</b>	<b>A</b>
	<b>Reason</b>	CIT 0.55% - lowest decile; SMA 0.55% - lowest decile.	CF: 0.77% mgmt. fee - below median; not including opex.

Domestic Small Cap RFP Respondent Review

	Congress Small Cap Growth	Frontier Capital Appreciation	Baron Discovery Strategy
<b>Strategy</b>			
<b>Overall Firm</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Congress Asset Management is a partnership between Lagan Holding Company Trust (an S Corp – 99%) and Lagan-Congress Inc. (a C Corp -1%); while the firm is 41% employee owned, three employees own 100% of the voting stock of Lagan Holding Company Trust. \$13.2B AUM.	<b>Reason</b> AMG holds a majority ownership stake (78%) and 19 active employees own the remainder; \$10.3B AUM.	<b>Reason</b> 94.3% employee owned with the founder's wife and two former employees' owning the remainder; \$40.9B AUM.
<b>Team</b>	<b>Rating</b> HA	<b>Rating</b> HA	<b>Rating</b> A
	<b>Reason</b> Small Cap Growth Investment Policy Committee ("IPC") is responsible for all decisions related to the strategy; IPC features four PMs averaging 32 years of industry experience; IPC is supported by eight equity research analysts	<b>Reason</b> Two experienced PMs supported by 12 sector-focused research analysts; average 21 years of total industry experience	<b>Reason</b> Two PMs supported by the firm's centralized research team; both PMs have 27 years of total industry experience; the analysts average 12 years of research experience.
<b>Philosophy</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> GARP philosophy rooted in four core tenets: growth, profitability, franchise, and valuation.	<b>Reason</b> GARP; the value of future earnings primarily determines stock prices, assumes good "quality of earnings" that are supported by cash flows.	<b>Reason</b> Invest in companies with significant growth potential, durable competitive advantages, exception management, and compelling valuations relative to IR projections.
<b>Process</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Bottom-up fundamental analysis; industry research and balance sheet strength play a critical role in the evaluation of a company's attractiveness; 35 - 45 stocks; 25 - 50% turnover.	<b>Reason</b> Bottom-up fundamental analysis; project earnings, CFs, and key financial metrics to assess the magnitude of earnings growth and the quality of the earnings stream; 120 - 150 stocks; 20 - 30% turnover.	<b>Reason</b> Bottom-up fundamental analysis that considers macro factors to identify themes; aim to identify transformational, secular trends in fast-growing areas of the economy; 50 - 70 stocks; 30 - 45% turnover.
<b>Performance</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Top decile 5-year and 10-year performance (absolute & risk-adjusted); below-median 3-year.	<b>Reason</b> Above-median performance (absolute & risk-adjusted) over the trailing 3-year, 5-year, and 10-year periods.	<b>Reason</b> Bottom quintile 3-year performance (absolute & risk-adjusted); above-median 5-year; top quartile 10-year.
<b>Fees</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> MF: 1.00% - above median; CF(CIT): 0.72% - below median; SA: 0.75% - lowest quartile.	<b>Reason</b> Currently invested; CF 0.75% - below median; not including opex.	<b>Reason</b> MF: 1.06% - highest quartile; CF(CIT): 78 bps - below median.

Domestic Small Cap RFP Respondent Review

	WCM Small Cap Growth Strategy	Fisher Investments Small Cap Core Strategy	Federated Hermes MDT Small Cap Core
<b>Strategy</b>			
<b>Overall Firm</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> 75% employee owned; Natixis Investment Managers holds a minority equity interest; \$90.7B AUM.	<b>Reason</b> 70% owned by Ken & Sherrilyn Fisher, 30% privately owned; Recently announced proposed sale of minority stake to Advent International & Abu Dhabi Investment Authority; \$277.1B AUM.	<b>Reason</b> Federated Hermes is a 100% publicly traded firm. \$782.7B in AUM.
<b>Team</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Two PMs supported by two research analysts; average 22 years of total industry experience.	<b>Reason</b> Investment Policy Committee executes all investment decisions; 5 total IPC members averaging 34 years of industry experience; IPC supported by 116 investment professionals.	<b>Reason</b> Managed by 4-person quantitative team and supported by six quant analysts averaging 15 years of industry experience.
<b>Philosophy</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Seek businesses that possess an expanding competitive advantage demonstrated with an increasing Cash Flow Rate of Return on Investment (CFROI) and a Growing Invested Capital Base.	<b>Reason</b> "Style agnostic", opportunistically tilting towards/away from particular styles over time in attempt to capitalize on trends as they come in and out of favor.	<b>Reason</b> Core quant strategy based on fundamental and technical factors to build a diversified portfolio based on expected return vs the benchmark.
<b>Process</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Bottom-up fundamental analysis; focus on companies' business drivers of their returns on invested capital; 55 - 75 stocks; 40 - 70% turnover.	<b>Reason</b> FIIG US Small Cap Core strategy uses a combined top-down/bottom-up approach, aiming for 50% alpha from stock selection and 50% from sector allocation. 60-100 stocks. Turnover: ~25%.	<b>Reason</b> Quant model using daily alpha forecasts and a multi-factor model to build a diversified core portfolio. 300 stocks, 135% turnover.
<b>Performance</b>	<b>Rating</b> A	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> Above median 3-year performance (absolute & risk-adjusted); bottom quintile 5-year; below median 10-year.	<b>Reason</b> Bottom quintile 3-year and 5-year performance (absolute & risk-adjusted); above median 10-year.	<b>Reason</b> Top third long term performance + top quintile long term IR.
<b>Fees</b>	<b>Rating</b> HA	<b>Rating</b> A	<b>Rating</b> A
	<b>Reason</b> SA: 0.75% - lowest quartile; MF: 0.99% - above median; CF(CIT): 0.70% - below median	<b>Reason</b> SA: 0.85% - below median	<b>Reason</b> MF 0.88% - second quartile

### Domestic Small Cap RFP Respondent Review

	London Company Small Cap	WCM Small Cap Quality Value
<b>Strategy</b>	<b>Rating</b>	<b>A</b>
	<b>Reason</b>	<b>A</b>
<b>Overall Firm</b>	<b>Rating</b>	<b>A</b>
	<b>Reason</b>	<b>A</b>
<b>Team</b>	<b>Rating</b>	<b>A</b>
	<b>Reason</b>	<b>A</b>
<b>Philosophy</b>	<b>Rating</b>	<b>A</b>
	<b>Reason</b>	<b>A</b>
<b>Process</b>	<b>Rating</b>	<b>A</b>
	<b>Reason</b>	<b>A</b>
<b>Performance</b>	<b>Rating</b>	<b>A</b>
	<b>Reason</b>	<b>A</b>
<b>Fees</b>	<b>Rating</b>	<b>A</b>
	<b>Reason</b>	<b>A</b>

Domestic Small Cap Respondent Performance Preview

Strategy Name	RM	Returns - 3 Years (12/2024)	Rank	Returns - 5 Years (12/2024)	Rank	Returns - 10 Years (12/2024)	Rank
<b>Highly Advantageous Respondents</b>							
Boston Trust Walden Small Cap	Gross	5.01	28	10.55	39	10.92	22
Westfield Small Cap Growth Equity	Gross	0.77	73	9.62	51	10.60	28
William Blair Small Cap Growth	Gross	4.24	36	12.77	15	12.99	7
PanAgora U.S. Small Cap Core Stock Selector	Gross	4.03	39	9.58	52	9.30	55
GW&K Small Cap Core	Gross	2.03	63	9.24	58	9.79	44
<b>Select Advantageous Respondents</b>							
Congress Small Cap Growth	Gross	2.97	53	16.00	6	14.57	3
Lazard US Systematic Small Cap Equity Strategy	Gross	4.88	30	12.99	14	---	---
FMI (Fiduciary) Common Stock Fund	Gross	10.18	4	12.96	14	11.02	21
Vaughan Nelson Small Cap Value	Gross	7.00	14	12.26	19	9.87	42
Glenmede Small Cap Equity	Gross	5.28	26	12.12	20	9.63	48
<b>Benchmarks</b>							
Russell 2000 Index	Gross	1.24		7.40		7.82	
Russell 2000 Growth	Gross	0.21		6.86		8.09	
Russell 2000 Value	Gross	1.94		7.29		7.14	

Domestic Small Cap Respondent Full Performance Review

Strategy Name	RM	Returns - 3 Years (12/2024)	Rank	Returns - 5 Years (12/2024)	Rank	Returns - 10 Years (12/2024)	Rank
Ariel Small Cap Value	Gross	2.59	57	9.05	62	7.83	85
Axiom US Small Cap Equity	Gross	-1.84	88	12.09	20	10.84	24
Baron Discovery Strategy	Gross	-1.48	86	11.22	29	12.48	10
Boston Partners Small Cap Value Equity	Gross	5.94	20	9.24	58	8.75	68
Boston Trust Walden Small Cap	Gross	5.01	28	10.55	39	10.92	22
Congress Small Cap Growth	Gross	2.97	53	16.00	6	14.57	3
Federated Hermes MDT Small Cap Core	Gross	3.01	53	11.10	31	10.82	24
FIAM Small Company	Gross	2.33	59	9.33	56	9.88	41
Fisher Investments Small Cap Core Strategy	Gross	-2.99	91	7.53	84	10.23	34
FMI (Fiduciary) Common Stock Fund	Gross	10.18	4	12.96	14	11.02	21
Fort Washington Small Company Equity Strategy	Gross	5.05	28	11.46	27	10.79	25
Frontier Capital Appreciation	Gross	4.54	32	10.07	45	9.59	49
Glenmede Small Cap Equity	Gross	5.28	26	12.12	20	9.63	48
GW&K Small Cap Core	Gross	2.03	63	9.24	58	9.79	44
JPMorgan Small Cap Core	Gross	2.10	62	8.34	73	9.81	43
Lazard US Systematic Small Cap Equity Strategy	Gross	4.88	30	12.99	14	---	---
London Company Small Cap	Gross	7.51	12	11.00	32	8.33	76

Domestic Small Cap Respondent Full Performance Review

Strategy Name	RM	Returns - 3 Years (12/2024)	Rank	Returns - 5 Years (12/2024)	Rank	Returns - 10 Years (12/2024)	Rank
Manulife US Small Cap Core Strategy	Gross	2.40	58	11.37	28	10.56	29
NB US Small Cap	Gross	1.49	68	9.50	54	10.58	29
Nuveen Small Cap Select (core)	Gross	4.28	35	11.30	29	10.52	30
Nuveen: Small Cap Value	Gross	4.89	29	8.79	67	7.92	83
PanAgora U.S. Small Cap Core Stock Selector	Gross	4.03	39	9.58	52	9.30	55
PIMCO StocksPLUS Small	Gross	0.82	72	7.27	86	8.46	74
QMA US Small Cap Core Equity	Gross	6.00	19	8.95	64	8.80	67
SBH Small Cap Equity Strategy (Core)	Gross	4.58	32	12.08	20	10.77	25
Stephens Small Cap Growth	Gross	0.85	72	10.39	41	10.63	28
Vaughan Nelson Small Cap Value	Gross	7.00	14	12.26	19	9.87	42
Wasatch Small Cap Growth	Gross	-3.82	93	8.67	69	11.55	16
Wasatch Small Cap Value	Gross	6.16	18	11.55	26	11.38	18
WCM Small Cap Growth Strategy	Gross	-1.42	86	7.81	81	9.69	46
WCM Small Cap Quality Value	Gross	4.40	33	6.98	89	9.32	54
Westfield Small Cap Growth Equity	Gross	0.77	73	9.62	51	10.60	28
William Blair Small Cap Growth	Gross	4.24	36	12.77	15	12.99	7

Domestic Small Cap Respondent Review

Strategy Name	Vehicle Type	Management Fee
Ariel Small Cap Value	MF	0.68% - lowest quartile
Axiom US Small Cap Equity	CIT	0.77% mgmt. fee - below median; not including opex
Baron Discovery Strategy	Var	MF: 1.06% - highest quartile; CF(CIT): 78 bps - below median
Boston Partners Small Cap Value Equity	MF	0.99% - highest quintile
Boston Trust Walden Small Cap	CIT	0.69% - lowest quartile
Congress Small Cap Growth	Var	MF: 1.00% - above median; CF(CIT): 0.72% - below median;
Federated Hermes MDT Small Cap Core	MF	0.88% - second quartile
FIAM Small Company	CIT	0.80% - median
Fisher Investments Small Cap Core Strategy	SMA	0.85% - below median
FMI (Fiduciary) Common Stock Fund	MF	0.84%. First quartile, high vs. CIT
Fort Washington Small Company Equity Strategy	CIT	0.50%. Bottom decile fee
Frontier Capital Appreciation	CIT	Currently invested; CF 0.75% - below median; not including opex
Glenmede Small Cap Equity	Var	Undisclosed vehicle type (likely SA): 0.62% - lowest quintile; MF: 0.75% - lowest quintile
GW&K Small Cap Core	CIT	0.75%. Below median
JPMorgan Small Cap Core	MF	MF: 0.75%. Bottom quintile for mutual fund but expensive vs. CIT
Lazard US Systematic Small Cap Equity Strategy	CIT	0.35%. Bottom decile fees
London Company Small Cap	SMA	0.70% - lowest third

Domestic Small Cap Respondent Review

Strategy Name	Vehicle Type	Management Fee
Manulife US Small Cap Core Strategy	Var	CIT: 0.55% all in - lowest; MF: 0.82% - lowest quartile; SA: 0.80% - below median
NB US Small Cap	MF	0.74% - lowest decile, more expensive than other CFs
Nuveen Small Cap Select (core)	Var	CIT 0.60% - lowest decile; SMA 0.60% - lowest decile
Nuveen: Small Cap Value	Var	CIT 0.55% - lowest decile; SMA 0.55% - lowest decile
PanAgora U.S. Small Cap Core Stock Selector	CIT	CIT: 0.65% on first \$150 million. Bottom quartile
PIMCO StocksPLUS Small	CIT	0.47% - lowest decile
QMA US Small Cap Core Equity	CIT	0.55% - lowest decile
SBH Small Cap Equity Strategy (Core)	CIT	0.65% - bottom quintile
Stephens Small Cap Growth	CF	0.73% - lowest third
Vaughan Nelson Small Cap Value	MF	1.00% - highest quintile
Wasatch Small Cap Growth	CIT	0.85% - above median
Wasatch Small Cap Value	MF	1.07% - highest percentile
WCM Small Cap Growth Strategy	Var	SA: 0.75% - lowest quartile; MF: 0.99% - above median; CIT: 0.70% - below median
WCM Small Cap Quality Value	SMA	SMA 0.80% - median
Westfield Small Cap Growth Equity	Var	SA: 1.00% - highest quartile; MF 0.88% - below median
William Blair Small Cap Growth	Var	CIT: 0.95% - highest quartile; MF: 0.94% - above median

## Asset Allocation Update

# 2025 Capital Markets Expectations

### Summary of Capital Markets Expectations

- We update our capital markets expectations (“CMEs”) each year in January.
  - Capital markets are dynamic, and regular updates ensure that assumptions accurately reflect the current market environment.
- Changes in our CMEs are driven by shifts in the capital markets, including factors such as interest rates, credit spreads, cap rates, and equity prices.
  - Yields increased for much of the investment grade bond market, while credit spreads tightened, especially for lower quality credit such as high yield.
  - Stock market valuations continued to rise, especially in the US, where equity markets rallied at a faster pace than the gain in earnings.
  - Cap rates for real estate moved higher, while the rebound in buyout multiples lagged the valuation gains for public markets.
  - Not only did current Treasury yields increase, but projections for future Treasury yields also increased.
- Our 10-year CMEs continue to be lower than our 20-year CMEs for every asset class, largely due to a higher assumed “risk-free” rate in the future.
- The return assumption decreased for two-thirds of the asset classes over the 10-year horizon, while it increased for half the asset classes over the 20-year horizon.
- Our lower return assumptions over the 10-year horizon implies that investors might be well served by moderating their return expectations for the next ten years.

**20-year Geometric Expected Returns  
Rate Sensitive**

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
Cash Equivalents	2.5	3.1	0.6	Higher yields
Short-term Investment Grade Bonds	3.7	4.3	0.6	Higher yields
Investment Grade (Core) Bonds	4.8	5.3	0.5	Higher yields
Intermediate Government Bonds	4.1	4.6	0.5	Higher yields
Long-term Government Bonds	5.0	5.7	0.7	Higher yields
Mortgage-Backed Securities	4.9	5.5	0.6	Higher yields
Investment Grade Corporate Bonds	5.4	5.9	0.5	Higher yields
Long-term Corporate Bonds	6.0	6.7	0.7	Higher yields
Short-term TIPS	3.7	4.1	0.4	Higher real yields
TIPS	4.7	5.0	0.3	Higher real yields
Long-term TIPS	5.2	5.7	0.5	Higher real yields
Global ILBs	4.7	5.0	0.3	Higher yields
Foreign Bonds	3.9	3.9	0.0	Higher yields offset by currency headwind
<i>US Inflation</i>	2.8	2.7	-0.1	<i>Slightly lower near-term economist and market projections</i>

**20-year Geometric Expected Returns  
Credit**

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
High Yield Bonds	6.8	7.1	0.3	Higher yields offset by tighter spreads
Bank Loans	6.6	6.8	0.2	Higher yields offset by tighter spreads
Multi-Sector Credit	NA	7.0	NA	
Collateralized Loan Obligations (CLOs)	7.2	7.0	-0.2	Higher yields offset by tighter spreads
Emerging Market Bonds (major)	6.8	7.1	0.3	Higher yields
Emerging Market Bonds (local)	6.2	6.7	0.5	Higher yields with addition of India
Emerging Market Corporate Bonds	NA	6.5	NA	
Private Debt	9.2	9.1	-0.1	Higher yields offset by tighter spreads
Direct Lending	8.4	8.2	-0.2	Higher yields offset by tighter spreads
Asset Based Lending	9.4	9.3	-0.1	Higher yields offset by tighter spreads
Special Situations Lending	9.9	9.9	0.0	Higher yields offset by tighter spreads

**20-year Geometric Expected Returns  
Equities**

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
US Equity	8.5	8.4	-0.1	Higher valuations, partly offset by higher projected earnings growth
Developed Non-US (EAFE) Equity	8.9	8.7	-0.2	Switched to currency headwind
Emerging Market Equity	8.9	8.7	-0.2	Higher valuations and lower projected earnings growth
Emerging Market ex-China	9.0	9.0	0.0	
China Equity	8.6	8.1	-0.5	Higher valuations and lower projected earnings growth
Frontier Market Equity	10.0	9.8	-0.2	Lower projected earnings growth
Global Equity	8.7	8.5	-0.2	Higher valuations and some currency headwind
Low Volatility Equity	7.8	7.7	-0.1	Higher valuations
Private Equity	11.2	11.2	0.0	
Buyouts	10.8	10.9	0.1	Lower valuations relative to public markets offset by lower amount of leverage
Growth Equity	11.5	11.4	-0.1	Higher valuations
Venture Capital	12.0	11.9	-0.1	Higher valuations

**20-year Geometric Expected Returns  
Real Estate & Infrastructure**

	2024 E(R) (%)	2025 E(R) (%)	Δ From 2024 (%)	Notes
Real Estate	8.0	8.5	0.5	Higher cap rates
US REITs	7.8	7.8	0.0	
Core Private Real Estate	6.9	7.4	0.5	Higher cap rates
Value-Added Real Estate	9.0	9.6	0.6	Higher cap rates
Opportunistic Real Estate	10.3	10.9	0.6	Higher cap rates
Infrastructure	9.0	9.2	0.2	Higher income growth
Infrastructure (Public)	9.1	9.0	-0.1	Higher valuations
Infrastructure (Core Private)	8.0	8.0	0.0	
Infrastructure (Non-Core Private)	10.0	10.3	0.3	Higher income growth partly offset by higher borrowing costs

#### 2024 Peer Survey

- Annually, Horizon Actuarial Services, LLC publishes a survey of capital market assumptions that they collect from various investment advisors.<sup>1</sup>
- The Horizon survey is a useful tool to determine whether a consultant's expectations for returns (and risk) are reasonable.

Asset Class	Horizon 10-Year Average (%)	Meketa 10-Year (%)	Horizon 20-Year Average (%)	Meketa 20-Year (%)
Cash Equivalents	3.7	2.4	3.4	2.5
TIPS	4.4	4.3	4.3	4.7
US Core Bonds	4.9	4.6	4.9	4.8
US High Yield Bonds	6.1	6.5	6.4	6.8
Emerging Market Debt	6.2	6.3	6.3	6.2
Private Debt	8.3	9.2	8.4	9.2
US Equity (large cap)	6.5	6.9	7.0	8.5
Developed Non-US Equity	7.1	7.7	7.5	8.9
Emerging Non-US Equity	7.7	7.6	8.2	8.9
Private Equity	9.1	9.9	9.7	11.2
Real Estate	6.1	6.3	6.2	8.0
Infrastructure	7.3	7.4	7.4	9.0
Commodities	4.9	4.9	5.0	5.3
Hedge Funds	5.9	4.5	6.2	5.8
Inflation	2.4	2.4	2.4	2.8

<sup>1</sup>The 10-year horizon included all 41 respondents to the survey, and the 20-year horizon included 26 respondents. Figures are based on Meketa's 2024 CMEs. The survey is typically published in August.

# Expected System Returns Over Time

**Asset Allocation Policy Overview**

	Current Policy (2025 CME) (%)	Actual Allocation (%)	Current Policy (2024 CME) (%)
Growth/Equity	65	63	65
US Equity	10	29	10
US Small Cap	10	0	10
Developed Market Equity (non-US)	15	19	15
Developed Market Small Cap	5	0	5
Emerging Market Equity	10	10	10
Private Equity	15	5	15
Global Credit	15	13	15
High Yield Bonds	5	6	5
Private Debt	5	2	5
Emerging Market Bonds (major)	5	5	5
Rate Sensitive	10	16	10
Cash Equivalents	0	0	0
Investment Grade Bonds	5	11	5
TIPS	5	5	5
Global Real Assets	10	9	10
Real Estate	5	4	5
Infrastructure (Core Private)	5	5	5
Expected Return (20 years)	9.03	8.35	9.03
Standard Deviation	14.8	13.1	14.9
Probability of Achieving 7.5% over 20 Years	67.6	61.0	67.5

## MVO Risk Analysis

MPT-Based Risk Analysis

Scenario	Current Policy (%)	Actual Allocation (%)
Worst Case Returns <sup>(1)</sup>		
OneYear (annualized)	-20.2	-18.1
ThreeYears (annualized)	-9.0	-7.8
FiveYears (annualized)	-5.2	-4.4
TenYears (annualized)	-1.3	-0.8
TwentyYears (annualized)	1.6	1.7
Probability of Experiencing Negative Returns		
OneYear	26.1	25.3
ThreeYears	13.3	12.5
FiveYears	7.6	6.9
TenYears	2.1	1.8
TwentyYears	0.2	0.1
Probability of Achieving at least a 7.5% Return		
OneYear	54.1	52.5
ThreeYears	57.0	54.3
FiveYears	59.0	55.6
TenYears	62.6	57.8
TwentyYears	67.6	61.0

<sup>1</sup> "Worst Case Returns" refers to the 99.7th percentile return.

### Notes and Disclaimers

- <sup>1</sup> The returns shown in the Policy Options and Risk Analysis sections rely on estimates of expected return, standard deviation, and correlation developed by Meketa Investment Group. To the extent that actual return patterns to the asset classes differ from our expectations, the results in the table will be incorrect. However, our inputs represent our best unbiased estimates of these simple parameters.
- <sup>2</sup> The returns shown in the Policy Options and Risk Analysis sections use a lognormal distribution, which may or may not be an accurate representation of each asset classes' future return distribution. To the extent that it is not accurate in whole or in part, the probabilities listed in the table will be incorrect. As an example, if some asset classes' actual distributions are even more right-skewed than the lognormal distribution (i.e., more frequent low returns and less frequent high returns), then the probability of the portfolio hitting a given annual return will be lower than that stated in the table.
- <sup>3</sup> The standard deviation bars in the chart in the Risk Analysis section do not indicate the likelihood of a 1, 2, or 3 standard deviation event—they simply indicate the return we expect if such an event occurs. Since the likelihood of such an event is the same across allocations regardless of the underlying distribution, a relative comparison across policy choices remains valid.

# Appendix

## Disclaimer, Glossary, and Notes

THIS REPORT (THE “REPORT”) HAS BEEN PREPARED FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE “RECIPIENT”).

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PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

**Credit Risk:** Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security).

**Duration:** Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

**Information Ratio:** This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

**Jensen's Alpha:** A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. Portfolio Return- [Risk Free Rate + Beta\*(market return-Risk Free Rate)].

**Market Capitalization:** For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

**Market Weighted:** Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

**Maturity:** The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

**Prepayment Risk:** The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

**Price-Book Value (P/B) Ratio:** The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

**Price-Earnings (P/E) Ratio:** A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

**Quality Rating:** The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

**Sharpe Ratio:** A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

**STIF Account:** Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

**Standard Deviation:** A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

**Style:** The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

**Tracking Error:** A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

**Yield to Maturity:** The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

**Yield to Worst:** The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

**NCREIF Property Index (NPI):** Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

**NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE):** Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.  
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.