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# Erie County Employees Retirement Plan

Investment Performance Review  
Period Ending December 31, 2024

**MARINER**

# **4th Quarter 2024 Market Environment**

### The Economy

- The US Federal Reserve (the Fed) continued to loosen its policy stance during the quarter with two fed funds rate cuts totaling 0.50%, bringing the year-end rate to a range of 4.25%-4.50%. While the Fed conveyed a degree of confidence that the fight against inflation is progressing in its December press release, Fed Chairman Jerome Powell signaled in his post-meeting press conference that the pace and timing of future rate cuts is unclear. The Fed's December "Dot Plot" now projects only two quarter-point rate cuts in 2025, down from four anticipated cuts in September's plot.
- Growth in the US labor market continued during the fourth quarter. US payrolls grew by 256,000 in December, up from the previous month's total of 212,000, and well above the 155,000 projected. If strength in the labor market continues, this data could support a slower pace Fed action in the form of policy rate reductions in 2025.

### Equity (Domestic and International)

- US equity results were modestly higher for the quarter. Markets also saw a return to the narrowly focused technology and communication services company exuberance which has dominated domestic performance in recent years. The S&P 500 Index rose 2.4% for the quarter with the small-cap Russell 2000 Index managing just a 0.3% rise. The rotation away from large cap growth stocks during the third quarter seemed to reverse as the Russell 1000 Growth Index once again outpaced the Russell 1000 Value Index by a large margin.
- Large-cap equity benchmarks continue to represent a heavy concentration among a limited number of stocks. As of quarter end, the weight of the top 10 stocks in the S&P 500 Index exceeded 35%.
- Most international stocks faltered during the fourth quarter and US Dollar (USD) denominated results were further exacerbated by a strengthening USD. The USD performance of international stocks fell short of local currency (LCL) returns in most regions for the quarter, albeit to varying degrees.

### Fixed Income

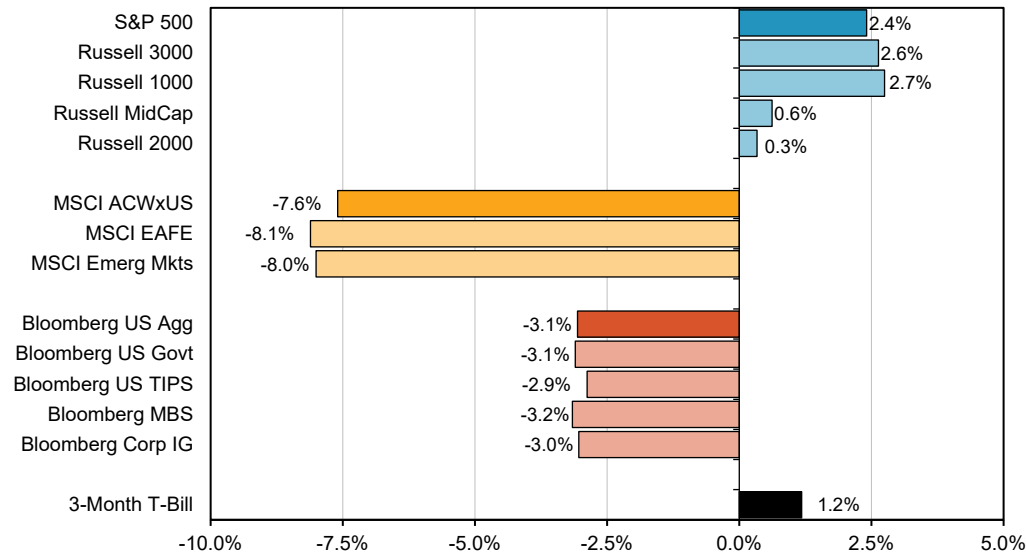
- Fixed-income markets traded lower during the quarter on the back of the Fed's ongoing policy actions. Short term Treasury yields fell while longer term yields rose, leading to a slight steepening in the yield curve. The yield on the bellwether 10-year Treasury advanced by 0.84% during the quarter, closing the year at a yield of 4.58%. The inverse relationship between prices and yields resulted in the Bloomberg US Aggregate Bond Index posting a -3.1% loss for the quarter.
- High-yield bonds outpaced the Bloomberg US Aggregate Bond Index for the quarter, largely due to higher coupons, a shorter duration profile, and a small narrowing of the option-adjusted spread (OAS) for the Bloomberg US High-Yield Index.
- Global bonds fell during the quarter, with the Bloomberg Global Aggregate ex-US returning -6.8% in USD terms. Like international equity results, global bond performance was dragged down by a strengthening USD during the quarter.

### Market Themes

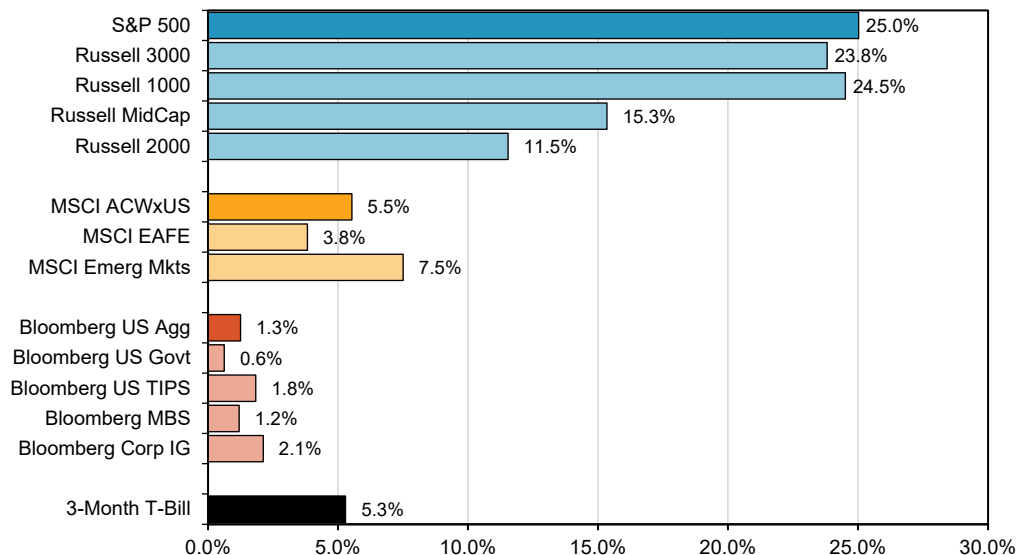
- Strength in the US Dollar during the quarter led to relative weakness in international markets. Many of the major currencies depreciated relative to the US Dollar as the year came to a close. Latin America saw the most significant decline during the period while the Pacific region was the only region to post positive LCL returns.
  - The AI trade that has taken shape for much of the past two years continued in 2024 with the communication services and information technology sectors each posting gains of more than 35% for the year. This phenomenon contributed to narrow market leadership particularly within the large-cap segment of the market. The concentration in the large-cap indexes helped the S&P 500 post its second straight year of greater than a 20% return, further widening the performance gap between large and smaller capitalization benchmarks.
  - Ongoing military conflicts in Ukraine and the Middle East, coupled with global economic uncertainty, continue to act as headwinds for international market results, further complicated by an advancing USD.
  - The results of the most recent US presidential election appeared to please domestic equity markets in anticipation of the new administration supporting loosened regulations and pro-growth policies. As we move into the new year, equity markets will need to digest the anticipated effects of proposed tax legislation changes, a new view on foreign policy, and potential trade tariffs by the new administration.
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- Domestic equity markets continued to climb higher during the quarter. Large-cap stocks returned to the forefront, outpacing small-cap stocks. The S&P 500 rose 2.4% during the quarter versus a muted gain of 0.3% for the Russell 2000 Index. The broad capitalization Russell 3000 Index, which benefited from strength in mid- and large-cap names, returned 2.6% for the quarter.
- International developed market equities reversed course and soured during the fourth quarter with the USD performance of the broad benchmarks each trading lower than (LCL) currency performance. The broad MSCI ACWI ex US Index delivered a disappointing -7.6% for the quarter but was down less than both the MSCI EAFE and MSCI EM indexes. The broad index was aided by Canada, which is not included in the EAFE or EM indexes. International developed market (DM) equities narrowly fell behind emerging market (EM) equities, returning -8.1% and -8.0%, respectively for the quarter. Negative performance for the international indexes was broad-based and not localized to any specific region.
- Broad market fixed-income benchmarks displayed a poor finish to the year as many of the core indexes succumbed to a steepening of the yield curve and the prospect of fewer rate cuts in 2025. The Bloomberg US Aggregate Index returned -3.1% for the quarter. The TIPS market, which is not part of the Aggregate Index, was also negative, posting a return of -2.9% for the quarter. While the performance differentials were small, the Mortgage-Backed Securities Index lagged other domestic bond market segments with a benchmark return of -3.2% for the quarter.
- Domestic equity indexes finished the year by adding to their already strong returns over the trailing one-year period. The S&P 500 Index gained 25.0% for the year and the Russell 1000 Index returned 24.5%. The weakest performing capitalization range of domestic equities for the year was the small-cap Russell 2000 Index, which still managed a double-digit climb over the last 12 months, returning a solid 11.5%.
- Domestic bond indexes' results were mixed throughout the year but still managed to deliver positive annual results. While the performance spread was narrow, investment-grade corporate bonds led bond index results for the year, returning a muted 2.1%. The government bond index lagged for the year, but was also positive, posting a return of 0.6%.
- International equity markets also delivered positive results for the trailing one-year period. The MSCI EM Index was the best international performer, returning 7.5%, while the MSCI EAFE and MSCI ACWI ex US indexes posted returns of 3.8% and 5.5%, respectively.

### Quarter Performance



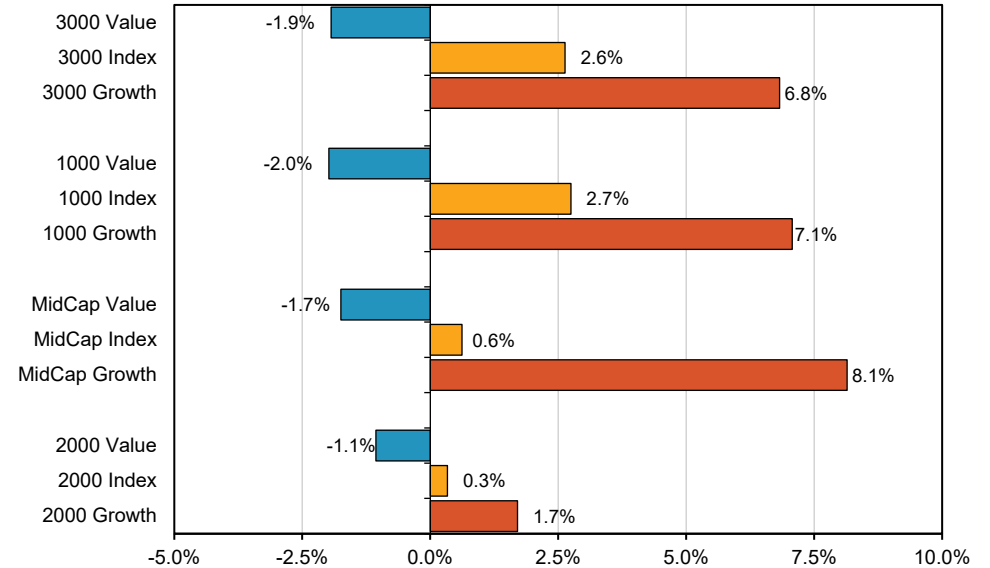
### 1-Year Performance



Source: Investment Metrics

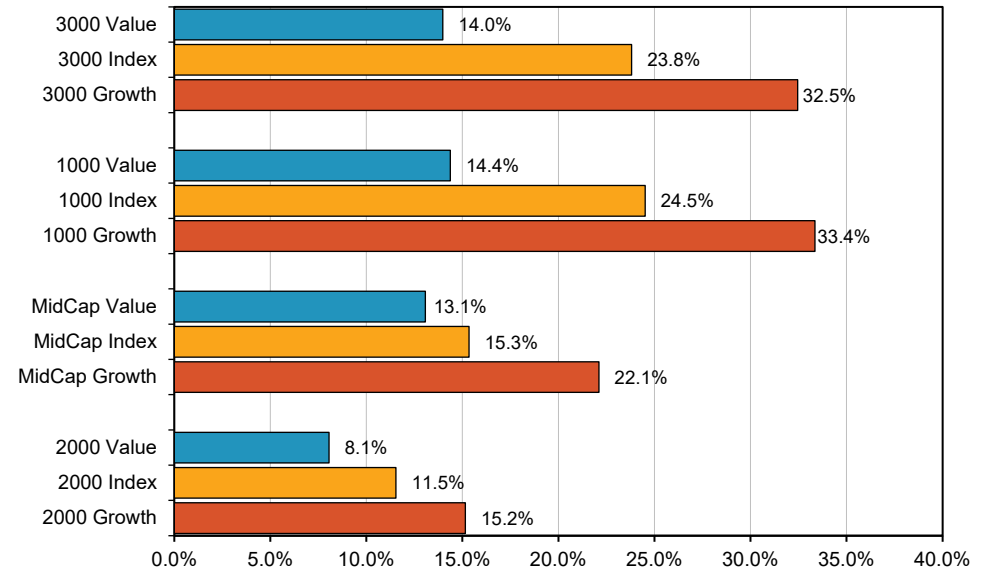
- Domestic equity benchmarks exhibited a return to their long-run trend of growth style companies vastly outperforming value during the fourth quarter. This theme was relatively consistent across the capitalization spectrum with growth benchmarks dominating performance results while value benchmarks each posted negative returns for the quarter.
- The broadest disparity between growth and value was visible in the mid-cap index. The Russell Mid Cap Value Index return of -1.7% trailed the Russell Mid Cap Growth Index return of 8.1%, a performance span of nearly 10%. The Russell Mid Cap Growth Index was also the best performing segment of the equity market during the quarter. Conversely, the worst performing segment of the market was large cap value which returned a disappointing -2.0% during the fourth quarter.

Quarter Performance - Russell Style Series



- This quarter's ascension of the growth indexes widened their performance gaps relative to the value indexes for the trailing year. The Russell 1000 Growth Index amassed a staggering 33.4% for the year, leading the way among style and market capitalization index performance. Much of the year's strong performance has been attributable to the emergence of the "Magnificent 7" stocks (Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia, and Tesla) which have dominated the large-cap core and growth indexes and the headlines over the past several years. The 10 largest stocks in the Russell 1000 Index have contributed more than 50% of the index's total performance over the trailing 12-month period. The weakest performing index for the year was the Russell 2000 Value Index, which still climbed 8.1%.
- The strength of growth sectors is also evident in the trailing one-year period with the chart on the right showing growth benchmarks at all capitalization ranges outpacing their value counterparts. The performance gap between the Russell 1000 Growth Index and the Russell 1000 Value Index was nearly 20% and the gaps for mid- and small-cap indexes were narrower, but still wide.

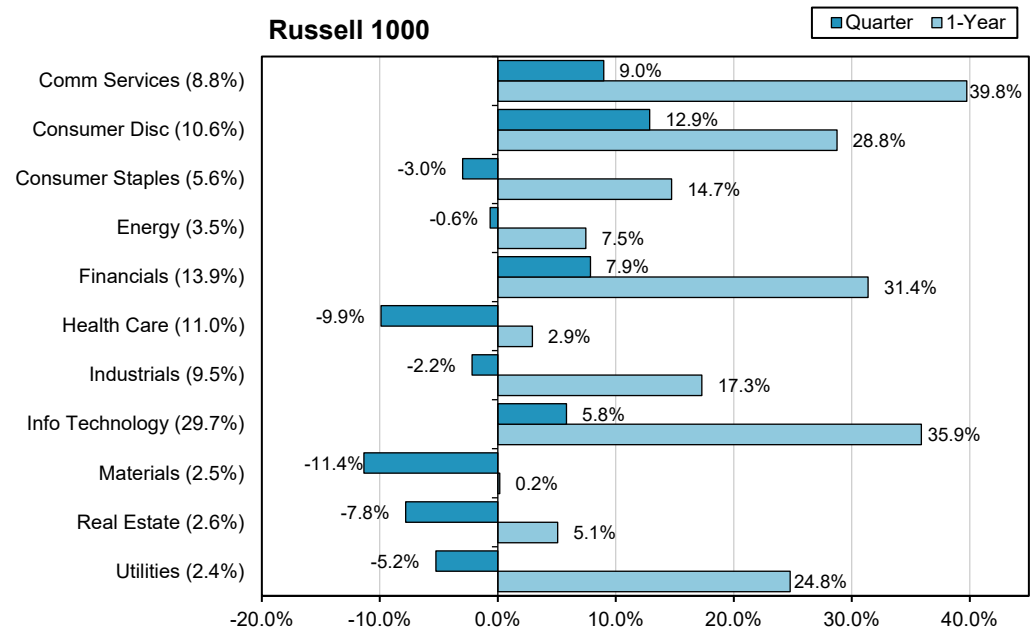
1-Year Performance - Russell Style Series



Source: Investment Metrics

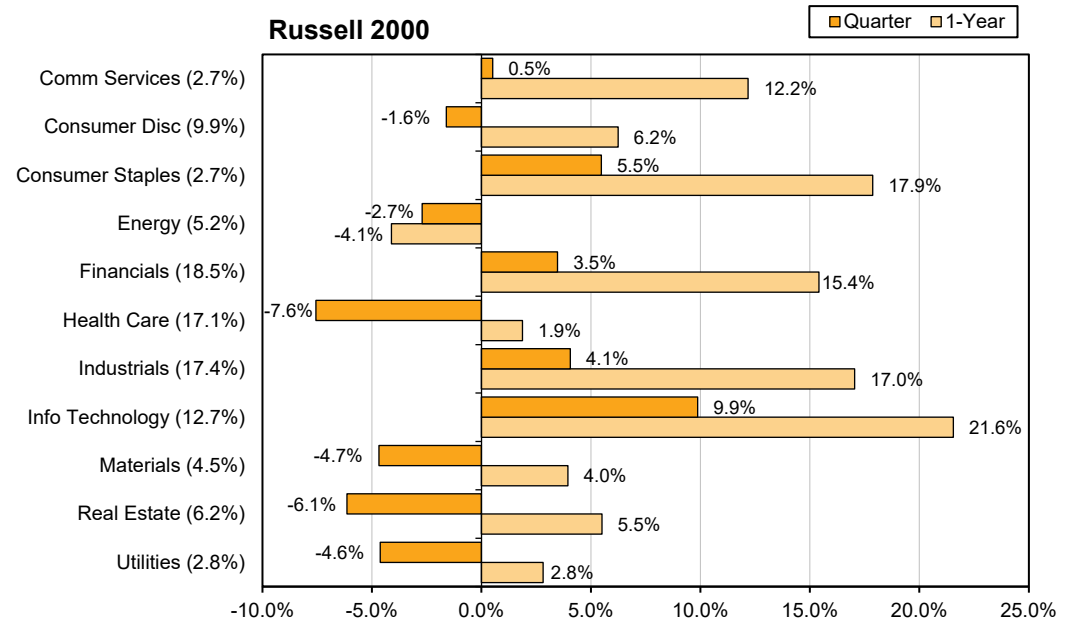
- Economic sector performance delivered mixed results in the fourth quarter as just four of the 11 economic sectors moved higher in the large-cap index. While performance during the year could be characterized by broader participation in the domestic equity markets, this was not the case during the fourth quarter as only the communication services, consumer discretionary, financials, and information technology sectors managed to post positive returns. Within the large cap index, consumer discretionary stocks led the way, collectively returning 12.9% for the quarter while the materials sector struggled, falling -11.4% during the period.
- Full year results during 2024 showcased strong performance across the economic sector classifications. Communication services narrowly outpaced information technology for the year, posting returns of 39.8% and 35.9%, respectively, with financials coming in third with a return of 31.4%. While all sectors posted positive returns for the year, the broad index's strong performance during 2024 was largely driven by three of the five most heavily weighted index sectors.

Russell 1000



- Similar to the large cap benchmark, just five of the 11 small-cap economic sectors gained value during the quarter. Communication services, consumer staples, financials, industrials, and information technology led the way with information technology as the best performing sector during the quarter. Health care faltered as the worst-performing sector with a return of -7.6% during the quarter, followed closely by real estate, which finished the quarter with a return of -6.1%.
- Despite their struggles during the most recent quarter, small-cap stocks delivered strong results for the year. Ten small-cap sectors advanced higher during the trailing one-year period, making energy the lone negative performer over the period. The sector's -2.7% return during the fourth quarter pushed the sector's performance to -4.1% for the trailing year. Information technology (up 21.6%) was the only sector to cross the 20% return threshold, but four others also amassed double digit positive returns for the calendar year.

Russell 2000



Source: Morningstar Direct  
As a result of the GICS classification changes on 9/28/2018 and certain associated reporting limitations, sector performance represents backward looking performance for the prior year of each sector's current constituency, post creation of the Communication Services sector.

**The Market Environment**  
**Top 10 Index Weights & Quarterly Performance for the Russell 1000 & 2000**  
As of December 31, 2024

Top 10 Weighted Stocks				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Apple Inc	6.6%	7.6%	30.7%	Information Technology
NVIDIA Corp	5.8%	10.6%	171.2%	Information Technology
Microsoft Corp	5.8%	-1.8%	12.9%	Information Technology
Amazon.com Inc	3.8%	17.7%	44.4%	Consumer Discretionary
Meta Platforms Inc Class A	2.4%	2.4%	66.0%	Communication Services
Tesla Inc	2.1%	54.4%	62.5%	Consumer Discretionary
Alphabet Inc Class A	2.1%	14.3%	36.0%	Communication Services
Broadcom Inc	2.0%	34.7%	110.4%	Information Technology
Alphabet Inc Class C	1.7%	14.0%	35.6%	Communication Services
Berkshire Hathaway Inc Class B	1.5%	-1.5%	27.1%	Financials

Top 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Astera Labs Inc	0.0%	152.8%	N/A	Information Technology
AppLovin Corp Ordinary Shares	0.2%	148.1%	712.6%	Information Technology
Trump Media & Technology Group	0.0%	112.2%	N/A	Communication Services
Palantir Technologies Inc Ordinary	0.3%	103.3%	340.5%	Information Technology
SoFi Technologies Inc Ordinary Shares	0.0%	95.9%	54.8%	Financials
Amer Sports Inc	0.0%	75.3%	N/A	Consumer Discretionary
MicroStrategy Inc	0.1%	71.8%	358.5%	Information Technology
United Airlines Holdings Inc	0.1%	70.2%	135.3%	Industrials
New Fortress Energy Inc	0.0%	66.3%	-59.3%	Utilities
Twilio Inc Class A	0.0%	65.7%	42.5%	Information Technology

Bottom 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Capri Holdings Ltd	0.0%	-50.4%	-58.1%	Consumer Discretionary
Celanese Corp Class A	0.0%	-48.8%	-54.6%	Materials
Rocket Companies Inc Ordinary	0.0%	-41.3%	-22.2%	Financials
Enphase Energy Inc	0.0%	-39.2%	-48.0%	Information Technology
Moderna Inc	0.0%	-37.8%	-58.2%	Health Care
Acadia Healthcare Co Inc	0.0%	-37.5%	-49.0%	Health Care
Viking Therapeutics Inc	0.0%	-36.4%	116.2%	Health Care
10x Genomics Inc Ordinary	0.0%	-36.4%	-74.3%	Health Care
Monolithic Power Systems Inc	0.1%	-35.9%	-5.6%	Information Technology
The AES Corp	0.0%	-35.1%	-30.3%	Utilities

Top 10 Weighted Stocks				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
FTAI Aviation Ltd	0.5%	8.6%	214.7%	Industrials
Sprouts Farmers Market Inc	0.5%	15.1%	164.1%	Consumer Staples
Insmed Inc	0.4%	-5.4%	122.8%	Health Care
Vaxcyte Inc Ordinary Shares	0.4%	-28.4%	30.4%	Health Care
Credo Technology Group Holding Ltd	0.4%	118.2%	245.2%	Information Technology
Applied Industrial Technologies Inc	0.3%	7.5%	39.7%	Industrials
Mueller Industries Inc	0.3%	7.4%	70.5%	Industrials
Rocket Lab USA Inc	0.3%	161.8%	360.6%	Industrials
Fluor Corp	0.3%	3.4%	25.9%	Industrials
IonQ Inc Class A	0.3%	377.9%	237.1%	Information Technology

Top 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Rigetti Computing Inc	0.1%	1848.7%	1449.4%	Information Technology
D-Wave Quantum Inc.	0.0%	754.6%	854.4%	Information Technology
Scholar Rock Holding Corp	0.1%	439.6%	129.9%	Health Care
IonQ Inc Class A	0.3%	377.9%	237.1%	Information Technology
SoundHound AI Inc Ordinary Shares	0.2%	325.8%	835.8%	Information Technology
Kodiak Sciences Inc	0.0%	281.2%	227.3%	Health Care
The RealReal Inc	0.0%	248.1%	443.8%	Consumer Discretionary
SES AI Corp	0.0%	242.3%	19.7%	Industrials
Poseida Therapeutics Inc Ordinary	0.0%	235.7%	185.7%	Health Care
Archer Aviation Inc Class A	0.1%	221.8%	58.8%	Industrials

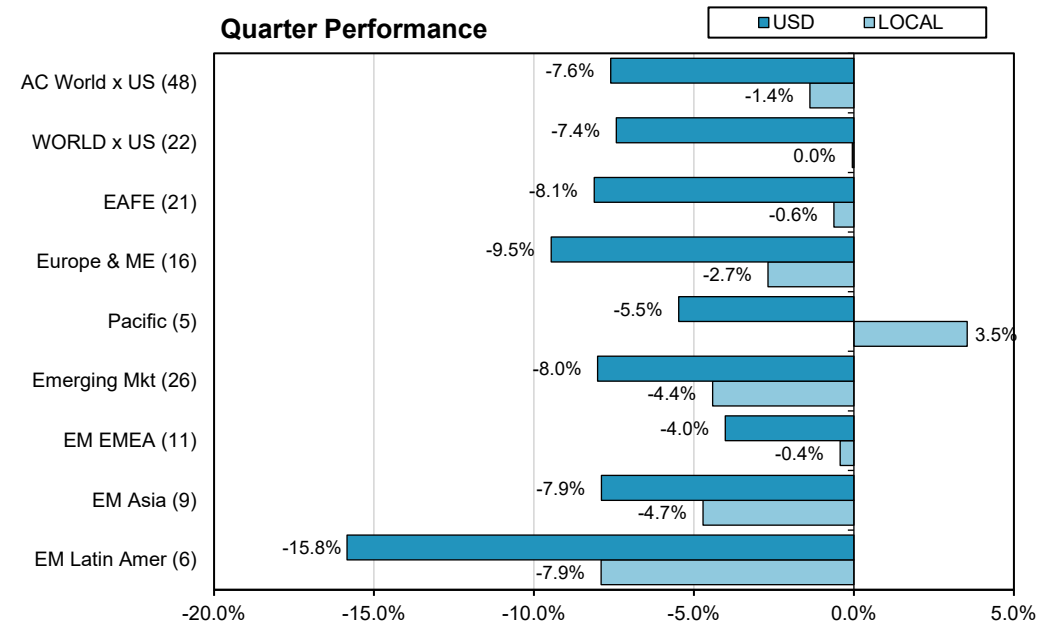
Bottom 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Q32 Bio Inc	0.0%	-92.3%	0.0%	Health Care
Cassava Sciences Inc	0.0%	-92.0%	-89.5%	Health Care
Applied Therapeutics Inc	0.0%	-89.9%	-74.4%	Health Care
Perspective Therapeutics Inc	0.0%	-76.1%	-20.6%	Health Care
Keros Therapeutics Inc	0.0%	-72.7%	-60.2%	Health Care
Bioage Labs Inc	0.0%	-72.2%	N/A	Health Care
Inovio Pharmaceuticals Inc	0.0%	-68.3%	-70.1%	Health Care
PACS Group Inc	0.0%	-67.2%	N/A	Health Care
Shattuck Labs Inc Ordinary Shares	0.0%	-65.3%	-83.0%	Health Care
Sunnova Energy International Inc	0.0%	-64.8%	-77.5%	Utilities

Source: Morningstar Direct

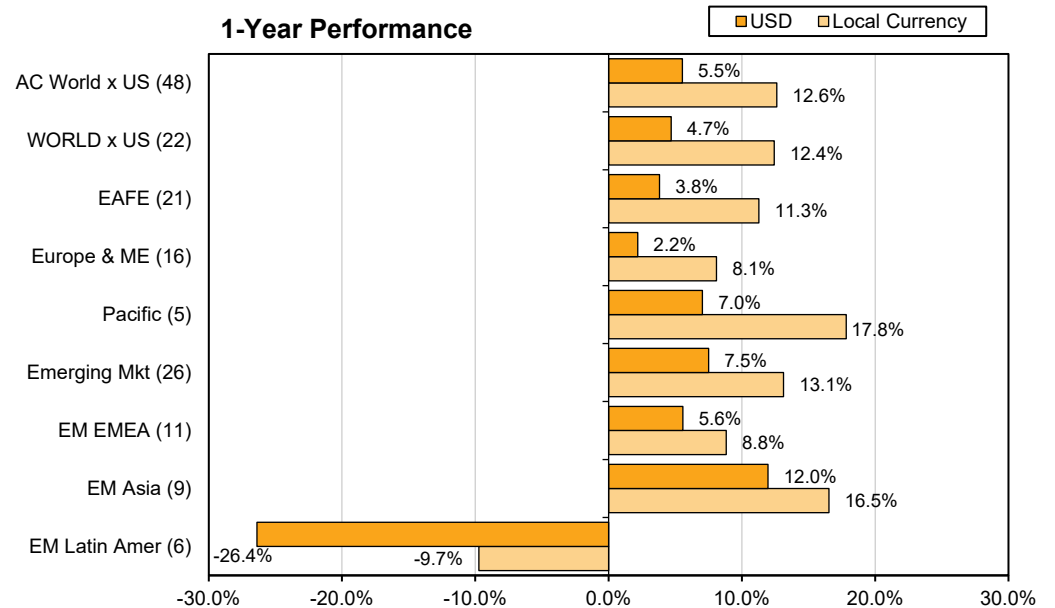


- Results in USD terms among the headline international equity indexes were sharply lower during the quarter. The strengthening USD relative to many major currencies during the quarter was a substantial headwind for the USD performance of non-US regional benchmarks' returns. The developed-market MSCI EAFE Index returned a muted -0.6% in LCL terms but fell -8.1% in USD terms. The MSCI ACWI ex-US Index pulled back -7.6% in USD and -1.4% in LCL terms for the quarter.
- Latin America continued to lag other regions during the quarter in USD terms, posting an outsized loss of -15.8%. Weakening currencies in the region put added pressure on realized performance for US investors. The MSCI Pacific benchmark was the only regional benchmark to deliver positive performance in LCL terms with a return of 3.5%, but USD strength led to a -5.5% decline in USD terms for the quarter. Regional LCL currency performance was disparate for the quarter, with some regional indexes remaining relatively flat over the final three months of the year.
- Full year results by country show Taiwan and Malaysia as the biggest winners during the year in USD terms. These two countries advanced 34.4% and 20.8%, respectively. China was not far behind with the largest economy in the emerging market world climbing 19.4% in USD terms for the year despite declining 7.7% during the fourth quarter. Much of the broad-based MSCI Emerging Market Index's returns are attributable to the health of the dominant Chinese economy, which came under pressure during the year due to troubles in the manufacturing and commercial property sectors.
- Much like domestic markets, trailing one-year results for international developed and emerging markets benchmarks were strongly positive. Higher LCL versus USD returns for most international benchmarks demonstrate the USD's relative strength over the trailing one-year period, which represents a drag on results for US investors.
- Most broad and regional indexes were positive for the trailing 12 months in both USD and LCL terms. The exception to these positive results is the EM Latin America index, where negative LCL performance was exacerbated by the region's currency weakness, which led to a more severe -26.4% return in USD terms. The MSCI Pacific Index led the way with a return of 17.8% in LCL terms for the trailing year, but US investor returns were dampened to just 7.0% in USD terms.

**Quarter Performance**



**1-Year Performance**



Source: MSCI Global Index Monitor (Returns are Net)



**The Market Environment**  
**US Dollar International Index Attribution & Country Detail**  
As of December 31, 2024

MSCI - EAFE	Sector Weight	Quarter Return	1-Year Return
Communication Services	4.8%	-4.7%	11.2%
Consumer Discretionary	11.3%	-4.3%	1.4%
Consumer Staples	8.3%	-12.6%	-7.9%
Energy	3.5%	-8.3%	-10.5%
Financials	21.9%	-2.3%	20.9%
Health Care	12.4%	-14.1%	-1.5%
Industrials	17.8%	-6.4%	9.6%
Information Technology	8.8%	-7.2%	3.8%
Materials	6.1%	-17.8%	-12.9%
Real Estate	2.0%	-13.4%	-3.9%
Utilities	3.2%	-12.8%	-4.1%
<b>Total</b>	<b>100.0%</b>	<b>-8.1%</b>	<b>3.8%</b>

MSCI - ACWixUS	Sector Weight	Quarter Return	1-Year Return
Communication Services	5.9%	-6.8%	12.4%
Consumer Discretionary	11.2%	-8.1%	4.6%
Consumer Staples	7.0%	-12.4%	-7.8%
Energy	5.0%	-7.9%	-3.5%
Financials	23.7%	-2.8%	17.5%
Health Care	8.8%	-13.9%	-1.4%
Industrials	14.0%	-7.1%	7.5%
Information Technology	13.5%	-1.8%	13.3%
Materials	6.3%	-17.2%	-12.6%
Real Estate	1.8%	-11.5%	-1.7%
Utilities	3.0%	-12.8%	-2.0%
<b>Total</b>	<b>100.0%</b>	<b>-7.6%</b>	<b>5.5%</b>

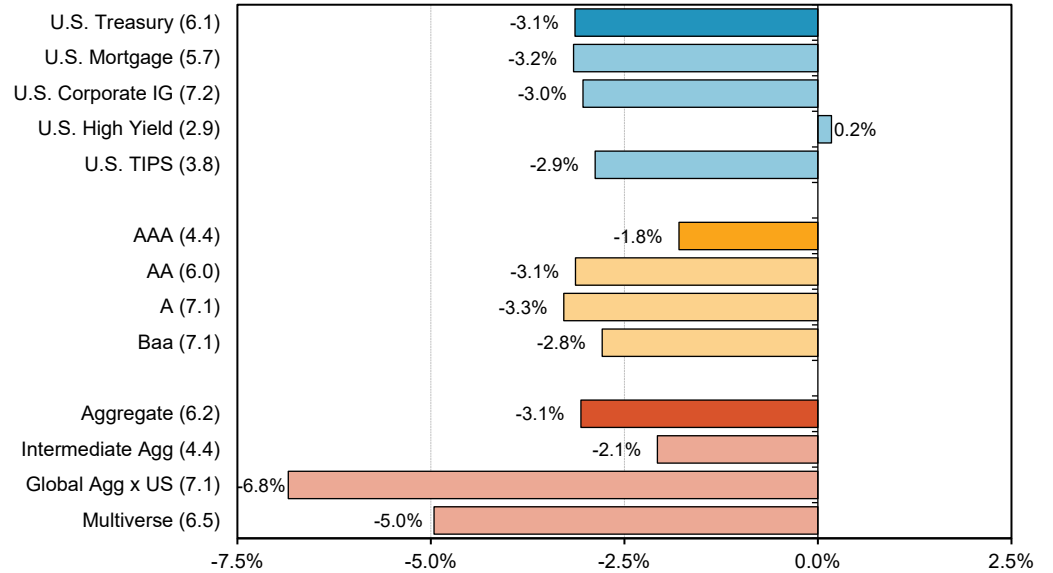
MSCI - Emerging Mkt	Sector Weight	Quarter Return	1-Year Return
Communication Services	9.4%	-8.1%	15.9%
Consumer Discretionary	13.1%	-14.5%	11.8%
Consumer Staples	4.8%	-13.9%	-11.1%
Energy	4.6%	-14.5%	-5.9%
Financials	23.7%	-5.0%	11.0%
Health Care	3.5%	-11.7%	-0.9%
Industrials	6.6%	-10.9%	0.6%
Information Technology	24.3%	1.1%	20.4%
Materials	5.7%	-18.6%	-19.6%
Real Estate	1.7%	-6.5%	3.8%
Utilities	2.7%	-14.1%	3.3%
<b>Total</b>	<b>100.0%</b>	<b>-8.0%</b>	<b>7.5%</b>

Country	MSCI-EAFE Weight	MSCI-ACWixUS Weight	Quarter Return	1-Year Return
Japan	23.2%	14.5%	-3.6%	8.3%
United Kingdom	14.9%	9.3%	-6.8%	7.5%
France	11.1%	6.9%	-10.3%	-5.3%
Switzerland	9.6%	6.0%	-11.3%	-2.0%
Germany	9.2%	5.8%	-5.7%	10.2%
Australia	7.4%	4.6%	-11.4%	1.2%
Netherlands	4.6%	2.9%	-12.4%	1.4%
Sweden	3.6%	2.2%	-14.0%	-3.7%
Denmark	2.9%	1.8%	-21.5%	-12.9%
Italy	2.8%	1.7%	-6.7%	11.3%
Spain	2.8%	1.7%	-9.2%	9.8%
Hong Kong	2.0%	1.2%	-9.8%	0.1%
Singapore	1.7%	1.0%	3.2%	32.3%
Belgium	1.0%	0.6%	-8.3%	8.5%
Finland	1.0%	0.6%	-13.1%	-7.3%
Israel	1.0%	0.6%	14.1%	38.3%
Norway	0.6%	0.4%	-5.4%	-4.3%
Ireland	0.3%	0.2%	-12.6%	14.0%
New Zealand	0.2%	0.1%	-6.0%	-1.5%
Austria	0.2%	0.1%	1.1%	18.3%
Portugal	0.2%	0.1%	-22.7%	-25.2%
<b>Total EAFE Countries</b>	<b>100.0%</b>	<b>62.3%</b>	<b>-8.1%</b>	<b>3.8%</b>
Canada		8.1%	-1.8%	11.9%
<b>Total Developed Countries</b>		<b>70.4%</b>	<b>-7.4%</b>	<b>4.7%</b>
China		8.2%	-7.7%	19.4%
Taiwan		5.8%	3.3%	34.4%
India		5.8%	-11.3%	11.2%
Korea		2.7%	-19.2%	-23.4%
Saudi Arabia		1.2%	-1.5%	0.6%
Brazil		1.2%	-19.4%	-29.8%
South Africa		0.9%	-12.1%	6.7%
Mexico		0.5%	-10.6%	-27.1%
Malaysia		0.5%	-6.9%	20.8%
Indonesia		0.4%	-15.6%	-13.0%
Thailand		0.4%	-10.1%	1.3%
United Arab Emirates		0.4%	9.0%	19.6%
Qatar		0.3%	-0.2%	6.1%
Poland		0.2%	-11.5%	-6.7%
Kuwait		0.2%	1.2%	10.5%
Turkey		0.2%	-3.2%	17.8%
Philippines		0.2%	-13.9%	-0.7%
Greece		0.1%	-6.2%	8.9%
Chile		0.1%	-6.8%	-7.5%
Peru		0.1%	-9.1%	15.8%
Hungary		0.1%	-2.3%	14.0%
Czech Republic		0.0%	0.9%	4.0%
Colombia		0.0%	-0.2%	7.9%
Egypt		0.0%	-9.0%	-31.2%
<b>Total Emerging Countries</b>		<b>29.7%</b>	<b>-8.0%</b>	<b>7.5%</b>
<b>Total ACWixUS Countries</b>		<b>100.0%</b>	<b>-7.6%</b>	<b>5.5%</b>

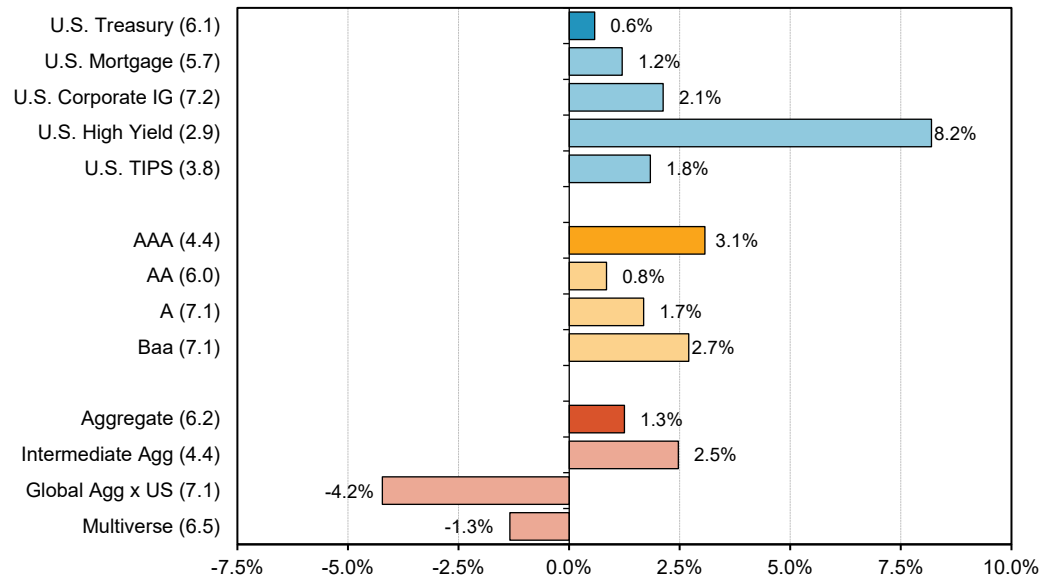
Source: Morningstar Direct, MSCI Global Index Monitor (Returns are Net in USD)  
As a result of the GICS classification changes on 9/28/2018 and certain associated reporting limitations, sector performance represents backward looking performance for the prior year of each sector's current constituency, post creation of the Communication Services sector.

- Domestic fixed-income markets declined during the fourth quarter despite two additional 0.25% rate cuts by the Fed. Although the Fed's action moved short-term rates lower, longer-term yields advanced during the quarter, leading to a modest steepening of the Treasury Yield Curve. The Fed's target range is now set at 4.25%-4.50% at year-end, down a full percentage point, including the first 0.50% cut in September of 2024.
- While the Fed's first rate cut in September was initially celebrated by fixed income investors and boosted the levels of the indexes during the third quarter, many of the core indexes fell during the fourth quarter as longer-term yields advanced and worked against the Fed's short-term rate declines. Performance across the investment-grade index's segments declined with the Treasury, Mortgage-Backed and Corporate IG indexes falling in a tight range around -3.0%. Higher quality issues performed better, as BBB issues fell by -2.8%, while AAA issues fell a smaller -1.8% due in large part to their lower duration (4.4 vs. 7.1 years).
- High Yield bonds outperformed investment grade issues as longer-term yields climbed. This was primarily due to the high-yield benchmark's lower duration and higher coupon income. Despite their lower credit quality, below-investment grade issues returned just 0.2% for the quarter, but still outpaced all other broad-based investment-grade fixed income indexes.
- Over the trailing one-year period, the Bloomberg US Aggregate Bond Index posted a return of 1.3%. The benchmark's sub-components also posted positive performance over the trailing 12 months with the Bloomberg US Corporate Investment Grade Index rising 2.1% and the US Mortgage Index returning 1.2%. US TIPS, which are excluded from the Bloomberg US Aggregate Bond Index, returned 1.8% for the trailing year.
- Results were mixed across credit qualities of investment grade issues. The performance of AAA issues was aided by their lower duration and returned 3.1% while AA issues returned only 0.8% for the year. High yield bonds were also the best performing segment of the market for the year, returning an outsized 8.2%, more than double any other segment of the domestic fixed income market. Results in high yield were spurred by stable credit spreads and higher coupon income.
- The Bloomberg Global Aggregate ex-US Index finished both the quarter and the year significantly weaker than its domestic benchmark counterpart. Strength in the USD was a primary driver in the international index's weak -6.8% fourth quarter performance and its -4.2% return for the calendar year.

**Quarter Performance**



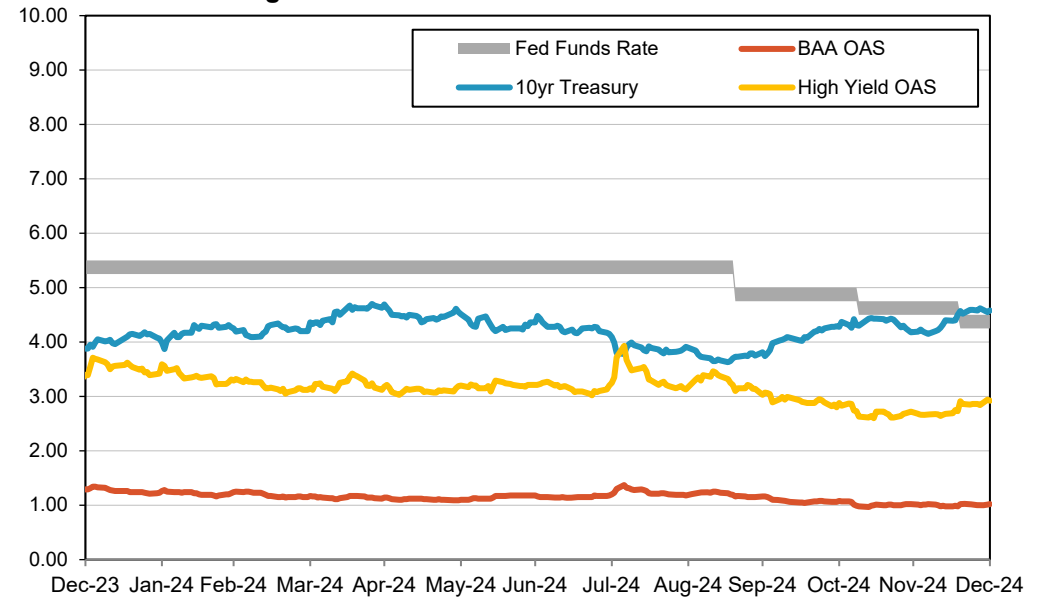
**1-Year Performance**



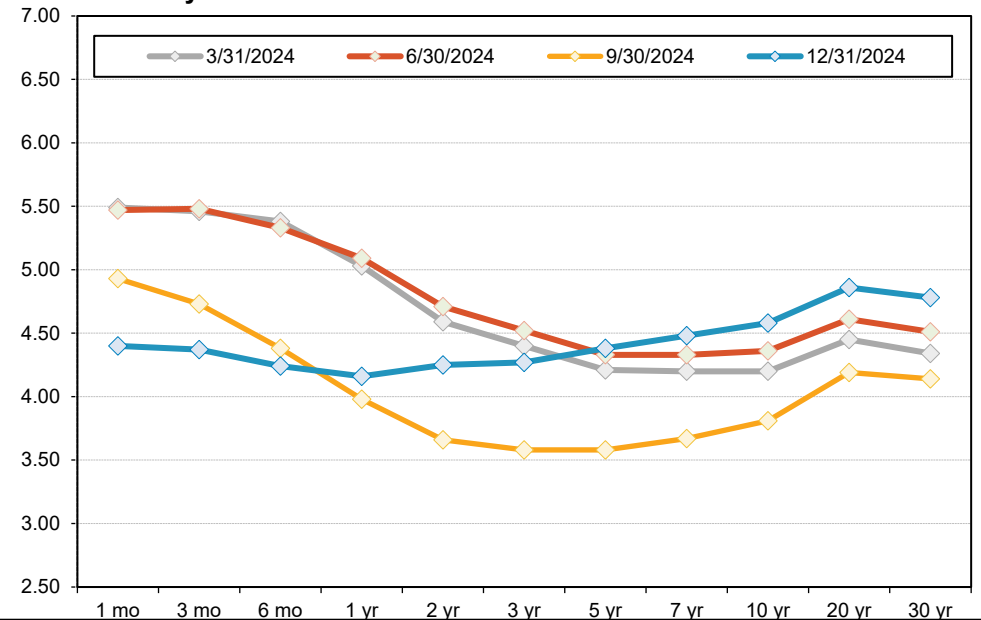
Source: Bloomberg

- The gray band across the graph illustrates the fed funds target rate range over the last 12 months. During the fourth quarter, the Federal Open Market Committee (FOMC) cut its policy rates by 0.50% with two successive 0.25% cuts in November and December. The target policy range now stands at 4.25-4.50%, a level not seen since January of 2023. With inflation declining and unemployment remaining largely stable, the Fed has pivoted from its restrictive monetary policy stance. The most recent FOMC press release continued to emphasize economic data-dependent outcomes while placing greater emphasis on the second part of the committee's dual mandate: full employment. The CME FedWatch tool, which forecasts rates based on fed fund futures pricing, showed a greater than 90% probability of no rate decrease at the FOMC January meeting at the time of this writing. Fed officials and market participants continue to express concern that leaving rates at their current elevated levels for an extended period could tip the US economy into a recession.
- The yield on the US 10-year Treasury (blue line of the top chart) rose 0.84% during the quarter. The bellwether benchmark rate opened the quarter at a yield of 3.74% and finished December at a yield of 4.58%, which is its highest level since May 2024.
- The red line in the top chart shows the option-adjusted spread (OAS) for BAA-rated corporate bonds. This measure quantifies the additional yield premium investors require to purchase and hold non-US Treasury issues with the lowest investment grade rating. During the quarter, the yield spread experienced a slight decline, beginning October at 1.13% and finishing December at 1.02%. High-yield OAS spreads (represented by the yellow line in the top chart) also remained relatively stable, despite a sharp spike in early August spurred by an unwinding of the yen carry trade. The high-yield OAS fell by 0.11% over the quarter from 3.03% to 2.92%. The spread measure's relative stability over the trailing year results from steady economic growth, stable monetary policy, and falling inflation readings.
- The lower graph provides a snapshot of the US Treasury yield curve at the end of each of the last four quarters. For the first time since November 2022, the quarter-end yield on the 30-year Treasury was higher than the one-month Treasury. Furthermore, the spread between the two-year yield and the 10-year yield continued to widen during the quarter, growing from 0.15% in October to 0.30% at year end. The yield curve had been inverted for much of the last two years. This 2-10-year yield curve inversion is a common heuristic used to foretell a pending recession.

1-Year Trailing Market Rates



Treasury Yield Curve



Source: US Department of Treasury, FRED (Federal Reserve of St. Louis)

[CME FedWatch Tool - CME Group](#)

[Effective Federal Funds Rate - FEDERAL RESERVE BANK of NEW YORK \(newyorkfed.org\)](#)

[ICE BofA US High Yield Index Option-Adjusted Spread \(BAMLH0A0HYM2\) | FRED | St. Louis Fed \(stlouisfed.org\)](#)

[When will the Federal Reserve start cutting interest rates? | J.P. Morgan Asset Management \(jpmorgan.com\)](#)

[U.S. Department of the Treasury](#)

[China's Economy Limpers Into 2024 – WSJ Support Site - Global Index Lens: Index Returns – MSCI](#)

[Federal Reserve issues FOMC statement](#)

[The Fed - Meeting calendars and information \(federalreserve.gov\)](#)

[The Federal Reserve's latest dot plot, explained – and what it says about interest rates | Bankrate](#)

[Why Chinese banks are now vanishing \(economist.com\)](#)

[Fed rate cut: Here's what changed in the central bank's statement \(cnbc.com\)](#)

[10-Year Treasury Constant Maturity Minus 2-Year Treasury Constant Maturity \(T10Y2Y\) | FRED | St. Louis Fed \(stlouisfed.org\)](#)

[The Fed's dot plot shows only two rate cuts in 2025, fewer than previously projected](#)

- **The Fund's 4<sup>th</sup> quarter return was -1.17% and its 2024 return was 9.31%. As of 12-31-2024, the total Fund had an annualized 7-year return of 6.59%.**
  
- **The Fund's total equity weighting at 12-31-2024 was 54.5% versus its target equity weighting of 50%. Risk assets including public equities, private equity/debt, and private real estate as a percentage of the total Fund was 71.4%.**
  
- **In October, the Adams Street Co-Investment Fund V issued a capital call in the amount of \$750,000 with funding coming from the Vanguard Russell 1000 Growth Index fund.**
  
- **In December, the Hamilton Lane Secondary Fund VI issued a capital call in the amount of \$1,499,944 with funding coming from the Vanguard Russell 1000 Growth Index fund.**

- **During the 4<sup>th</sup> quarter, the Fund received seven net distributions from their private equity and private debt managers totaling \$2,629,254.64 all received in the Cash Disbursement account.**
  
- **Mariner Institutional Recommends raising \$2,000,000 from the Emerald Small Cap Growth strategy to reduce the small cap allocation to keep it within the investment policy guidelines. We recommend investing the proceeds in the Boyd Watterson Fixed Income portfolio to move the portfolio towards its target allocation.**

**Wednesday, February 19, 2025 @ 12:00 pm**

Hamilton Lane Private Equity

Adams Street Partners Private Equity

BGO US Core Plus

Review of Investment Policy Statement (Every February)

**Wednesday, May 21, 2025 @ 12:00 pm**

Stoneridge Investment Partners

Boyd Watterson Fixed Income

Boyd Watterson GSA Real Estate

Allspring Global Small Cap Value Equity

Review of Brokerage (Every May)

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**Wednesday, August 20, 2025 @ 12:00 pm**

Vanguard Large Cap and Fixed Income  
American Funds EuroPacific Growth Fund  
Constitution Capital Partners Private Equity  
Emerald Advisors

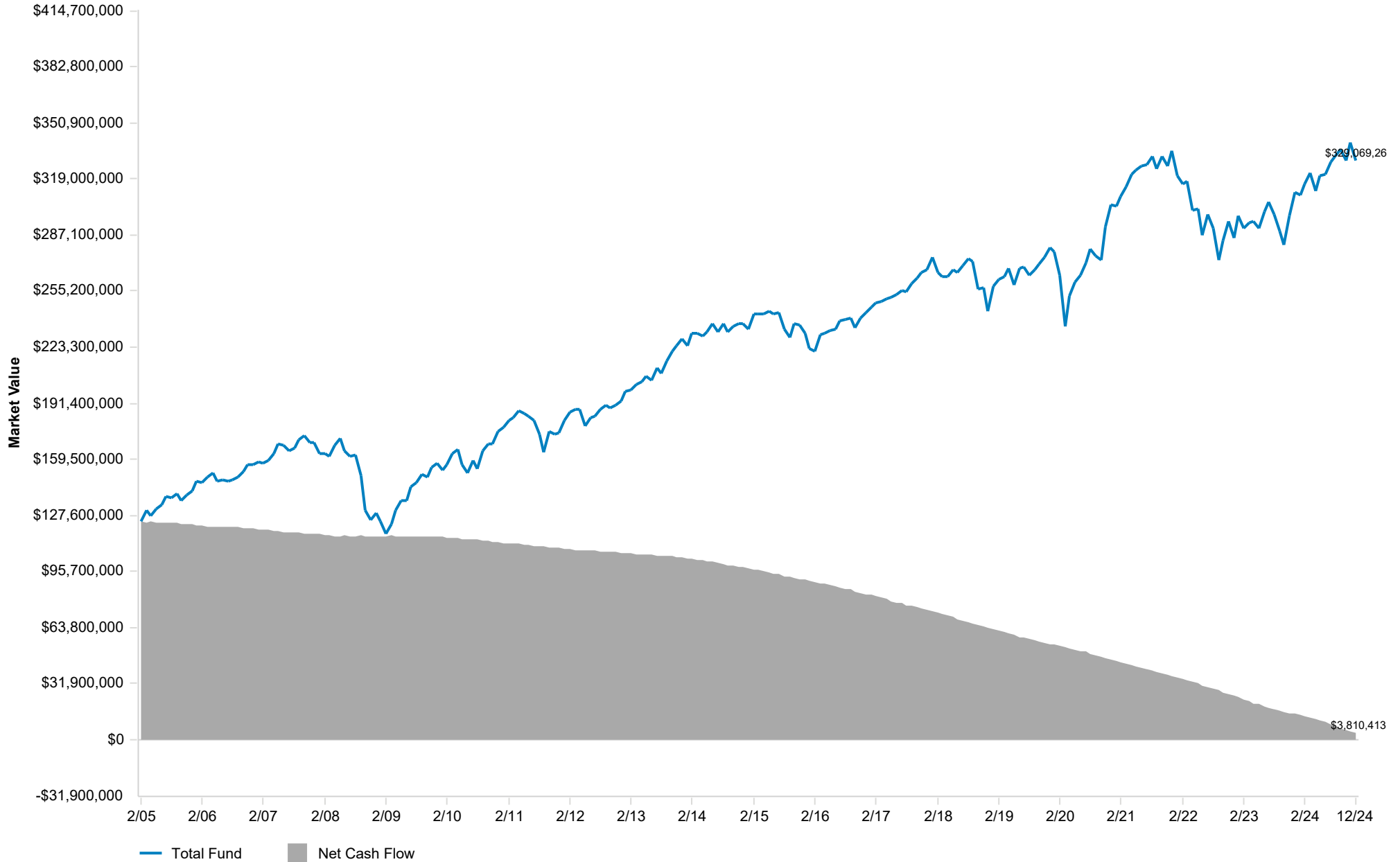
**Wednesday, November 19, 2025 @ 12:00 pm**

PNC Fixed Income and Custody  
DFA Large Cap and International Equity  
Portfolio Advisors Private Equity

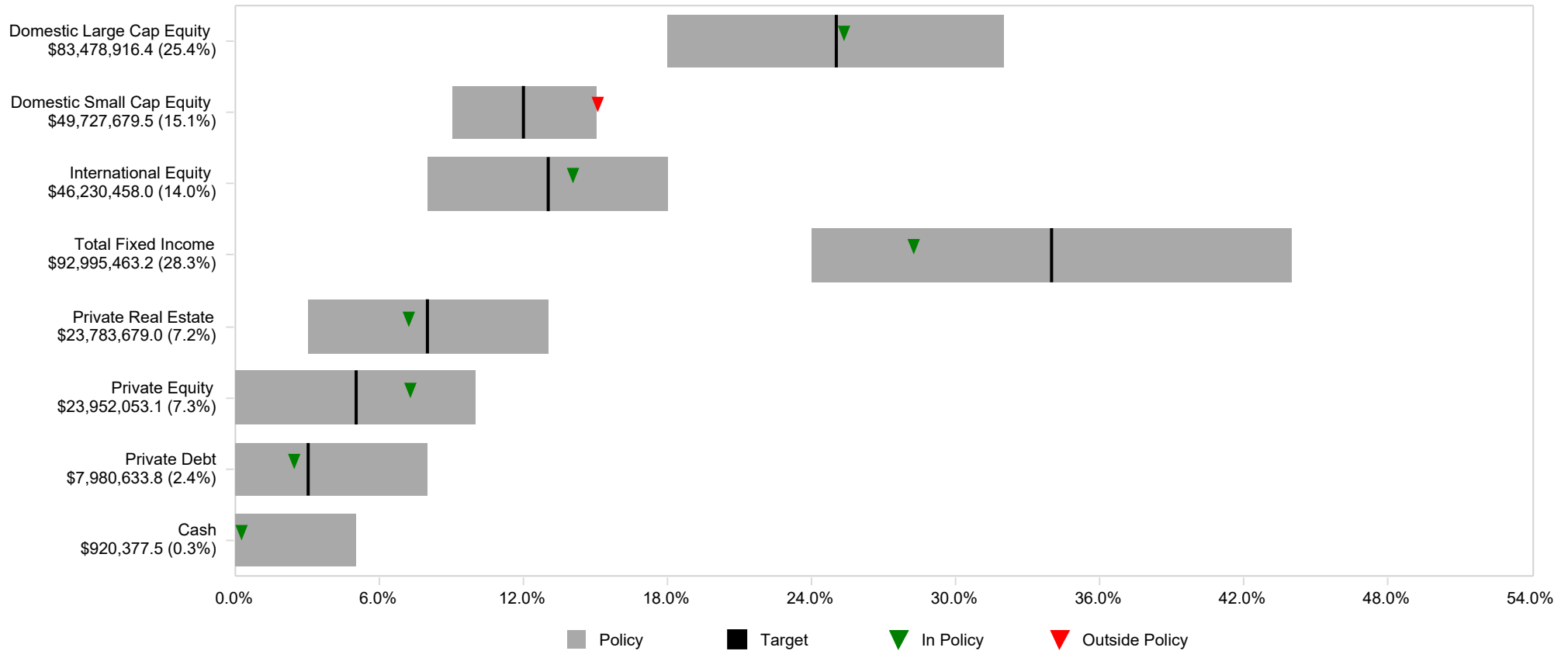
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**Schedule of Investable Assets**  
**Total Fund**  
 Since Inception Ending December 31, 2024

**Schedule of Investable Assets**



Executive Summary



Asset Allocation Compliance

	Asset Allocation \$	Current Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)
<b>Total Fund</b>	<b>329,069,260</b>	<b>100.0</b>	<b>N/A</b>	<b>N/A</b>	<b>100.0</b>
Domestic Large Cap Equity	83,478,916	25.4	18.0	32.0	25.0
Domestic Small Cap Equity	49,727,679	15.1	9.0	15.0	12.0
International Equity	46,230,458	14.0	8.0	18.0	13.0
Total Fixed Income	92,995,463	28.3	24.0	44.0	34.0
Private Real Estate	23,783,679	7.2	3.0	13.0	8.0
Private Equity	23,952,053	7.3	0.0	10.0	5.0
Private Debt	7,980,634	2.4	0.0	8.0	3.0
Cash	920,378	0.3	0.0	5.0	0.0

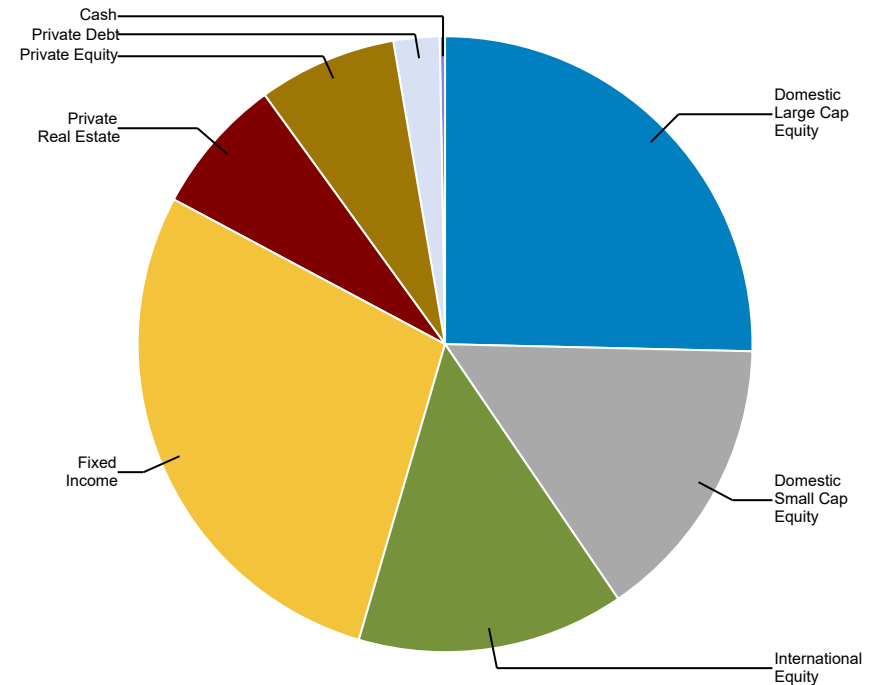
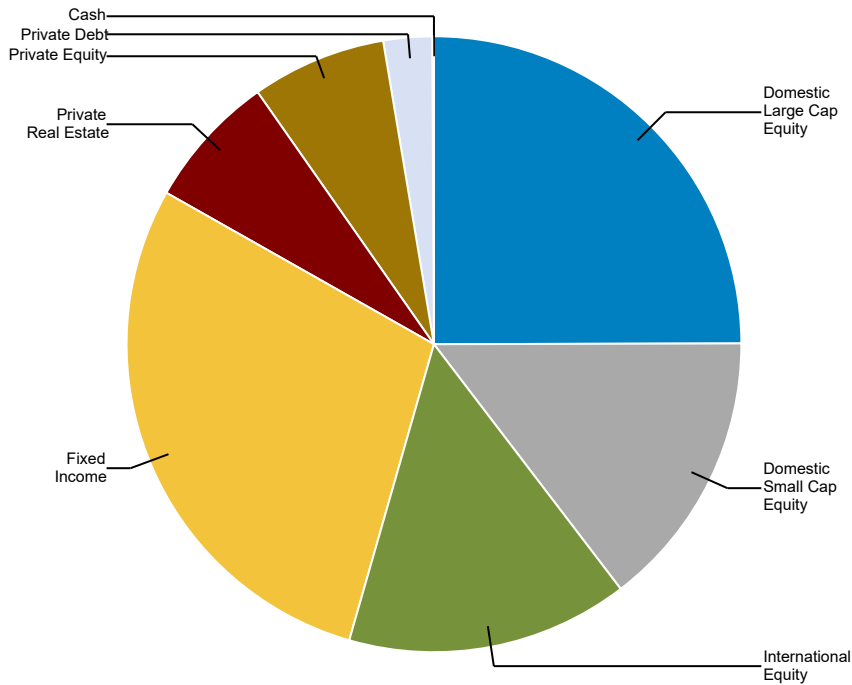
# Asset Allocation By Asset Class

## Total Fund

As of December 31, 2024

Sep-2024 : \$335,650,812

Dec-2024 : \$329,069,260



Allocation			Allocation		
	Market Value	Allocation		Market Value	Allocation
■ Domestic Large Cap Equity	83,778,018	25.0	■ Domestic Large Cap Equity	83,478,916	25.4
■ Domestic Small Cap Equity	49,166,374	14.6	■ Domestic Small Cap Equity	49,727,679	15.1
■ International Equity	49,805,509	14.8	■ International Equity	46,230,458	14.0
■ Total Fixed Income	96,470,912	28.7	■ Total Fixed Income	92,995,463	28.3
■ Private Real Estate	23,763,745	7.1	■ Private Real Estate	23,783,679	7.2
■ Private Equity	23,769,858	7.1	■ Private Equity	23,952,053	7.3
■ Private Debt	8,585,857	2.6	■ Private Debt	7,980,634	2.4
■ Cash	310,539	0.1	■ Cash	920,378	0.3

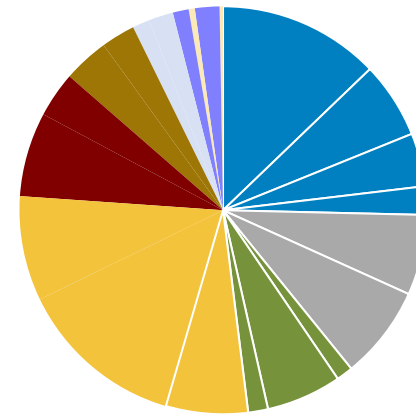
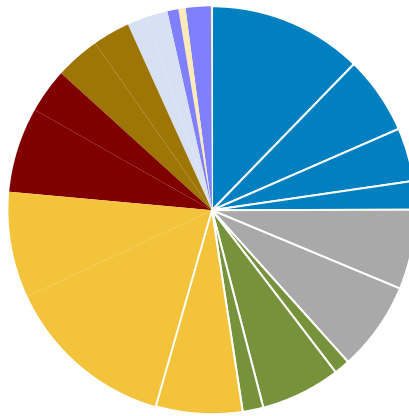
Asset Allocation by Asset Class

Total Fund

As of December 31, 2024

Sep-2024 : \$335,650,812

Dec-2024 : \$329,069,260



Allocation			Allocation		
	Market Value	Allocation		Market Value	Allocation
■ Vanguard S&P 500 Index Fund (VINIX)	41,205,811	12.3	■ Vanguard S&P 500 Index Fund (VINIX)	42,195,044	12.8
■ Vanguard Russell 1000 Growth Index (VRGWX)	20,759,633	6.2	■ Vanguard Russell 1000 Growth Index (VRGWX)	19,950,467	6.1
■ DFA Large Value Equity (DFLVX)	14,216,463	4.2	■ DFA Large Value Equity (DFLVX)	13,888,415	4.2
■ Vanguard Russell 1000 Value Index (VRVIX)	7,596,111	2.3	■ Vanguard Russell 1000 Value Index (VRVIX)	7,444,990	2.3
■ Vesper Capital Mgmt (UTRN)	-	0.0	■ Vesper Capital Mgmt (UTRN)	-	0.0
■ Allspring Global Small Value Eq.	21,188,634	6.3	■ Allspring Global Small Value Eq.	20,957,626	6.4
■ Emerald Small Growth Equity	23,744,385	7.1	■ Emerald Small Growth Equity	24,425,151	7.4
■ StoneRidge Small Growth Equity	4,233,355	1.3	■ StoneRidge Small Growth Equity	4,344,902	1.3
■ DFA International Equity (DFIEX)	21,250,526	6.3	■ DFA International Equity (DFIEX)	19,675,015	6.0
■ DFA Emerging Markets (DFCEX)	5,544,840	1.7	■ DFA Emerging Markets (DFCEX)	5,163,770	1.6
■ EuroPacific Growth Fund (RERGX)	23,010,143	6.9	■ EuroPacific Growth Fund (RERGX)	21,391,673	6.5
■ Boyd Watterson Fixed	45,650,199	13.6	■ Boyd Watterson Fixed	43,706,841	13.3
■ PNC Fixed	28,188,528	8.4	■ PNC Fixed	27,308,942	8.3
■ Vanguard Core Bond Fund (VCOBX)	22,632,184	6.7	■ Vanguard Core Bond Fund (VCOBX)	21,979,679	6.7
■ Boyd Watterson GSA Fund	11,851,525	3.5	■ Boyd Watterson GSA Fund	11,871,459	3.6
■ Bentall GreenOak US Core Plus RE	11,912,220	3.5	■ Bentall GreenOak US Core Plus RE	11,912,220	3.6
■ Ironsides Direct Investment Fund V	9,901,569	2.9	■ Ironsides Direct Investment Fund V	8,883,395	2.7
■ PA Co-Investment Fund III	5,266,771	1.6	■ PA Co-Investment Fund III	4,467,069	1.4
■ Adams Street Co-Investment Fund V	5,673,760	1.7	■ Adams Street Co-Investment Fund V	6,423,760	2.0
■ Hamilton Lane Secondary Fund VI	2,927,758	0.9	■ Hamilton Lane Secondary Fund VI	4,177,829	1.3
■ Ironsides Opportunities Fund	1,919,247	0.6	■ Ironsides Opportunities Fund	1,573,054	0.5
■ PA Credit Strategies Fund	6,666,610	2.0	■ PA Credit Strategies Fund	6,407,580	1.9
■ Cash Account	310,539	0.1	■ Cash Account	920,378	0.3

## Financial Reconciliation

## Total Fund

1 Quarter Ending December 31, 2024

	Market Value 10/01/2024	Net Transfers	Contributions	Distributions	Management Fees	Other Expenses	Return On Investment	Market Value 12/31/2024
<b>Total Fund</b>	<b>335,650,812</b>	<b>-</b>	<b>3,431,825</b>	<b>-5,806,791</b>	<b>-128,316</b>	<b>-181,561</b>	<b>-3,896,708</b>	<b>329,069,260</b>
<b>Domestic Large Cap Equity</b>	<b>83,778,018</b>	<b>-2,249,944</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1,950,843</b>	<b>83,478,916</b>
Vanguard S&P 500 Index Fund (VINIX)	41,205,811	-	-	-	-	-	989,233	42,195,044
Vanguard Russell 1000 Growth Index (VRGWX)	20,759,633	-2,249,944	-	-	-	-	1,440,778	19,950,467
DFA Large Value Equity (DFLVX)	14,216,463	-	-	-	-	-	-328,048	13,888,415
Vanguard Russell 1000 Value Index (VRVIX)	7,596,111	-	-	-	-	-	-151,121	7,444,990
<b>Domestic Small Cap Equity</b>	<b>49,166,374</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>561,306</b>	<b>49,727,679</b>
Allspring Global Small Value Eq.	21,188,634	-	-	-	-	-	-231,008	20,957,626
Emerald Small Growth Equity	23,744,385	-	-	-	-	-	680,767	24,425,151
StoneRidge Small Growth Equity	4,233,355	-	-	-	-	-	111,547	4,344,902
<b>International Equity</b>	<b>49,805,509</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-3,575,051</b>	<b>46,230,458</b>
DFA International Equity (DFIEX)	21,250,526	-	-	-	-	-	-1,575,511	19,675,015
DFA Emerging Markets (DFCEX)	5,544,840	-	-	-	-	-	-381,071	5,163,770
EuroPacific Growth Fund (RERGX)	23,010,143	-	-	-	-	-	-1,618,470	21,391,673
<b>Total Fixed Income</b>	<b>96,470,912</b>	<b>-600,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-2,875,448</b>	<b>92,995,463</b>
Boyd Watterson Fixed	45,650,199	-600,000	-	-	-	-	-1,343,358	43,706,841
PNC Fixed	28,188,528	-	-	-	-	-	-879,586	27,308,942
Vanguard Core Bond Fund (VCOBX)	22,632,184	-	-	-	-	-	-652,504	21,979,679
<b>Private Real Estate</b>	<b>23,763,745</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>19,934</b>	<b>23,783,679</b>
Boyd Watterson GSA Fund	11,851,525	-	-	-	-	-	19,934	11,871,459
Bentall GreenOak US Core Plus RE	11,912,220	-	-	-	-	-	-	11,912,220
<b>Private Equity</b>	<b>23,769,858</b>	<b>206,711</b>	<b>-</b>	<b>-</b>	<b>-15,000</b>	<b>-9,516</b>	<b>-</b>	<b>23,952,053</b>
Ironsides Direct Investment Fund V	9,901,569	-993,658	-	-	-15,000	-9,516	-	8,883,395
PA Co-Investment Fund III	5,266,771	-799,702	-	-	-	-	-	4,467,069
Adams Street Co-Investment Fund V	5,673,760	750,000	-	-	-	-	-	6,423,760
Hamilton Lane Secondary Fund VI	2,927,758	1,250,071	-	-	-	-	-	4,177,829
<b>Private Debt</b>	<b>8,585,857</b>	<b>-586,022</b>	<b>-</b>	<b>-</b>	<b>-10,884</b>	<b>-8,318</b>	<b>-</b>	<b>7,980,634</b>
Ironsides Opportunities Fund	1,919,247	-326,992	-	-	-10,884	-8,318	-	1,573,054
PA Credit Strategies Fund	6,666,610	-259,030	-	-	-	-	-	6,407,580
<b>Cash</b>	<b>310,539</b>	<b>3,229,255</b>	<b>3,431,825</b>	<b>-5,806,791</b>	<b>-102,433</b>	<b>-163,726</b>	<b>21,709</b>	<b>920,378</b>
Cash Account	310,539	3,229,255	3,431,825	-5,806,791	-102,433	-163,726	21,709	920,378

## Financial Reconciliation

## Total Fund

Year To Date Ending December 31, 2024

	Market Value 01/01/2024	Net Transfers	Contributions	Distributions	Management Fees	Other Expenses	Return On Investment	Market Value 12/31/2024
<b>Total Fund</b>	<b>311,340,529</b>	<b>-</b>	<b>13,479,439</b>	<b>-23,236,485</b>	<b>-809,983</b>	<b>-428,728</b>	<b>28,724,487</b>	<b>329,069,260</b>
<b>Domestic Large Cap Equity</b>	<b>78,737,059</b>	<b>-12,361,284</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>17,103,141</b>	<b>83,478,916</b>
Vanguard S&P 500 Index Fund (VINIX)	35,777,127	-2,222,221	-	-	-	-	8,640,138	42,195,044
Vanguard Russell 1000 Growth Index (VRGWX)	18,444,733	-4,268,731	-	-	-	-	5,774,465	19,950,467
DFA Large Value Equity (DFLVX)	14,122,557	-2,000,000	-	-	-	-	1,765,857	13,888,415
Vanguard Russell 1000 Value Index (VRVIX)	6,512,656	-	-	-	-	-	932,334	7,444,990
Vesper Capital Mgmt (UTRN)	3,879,986	-3,870,332	-	-	-	-	-9,654	-
<b>Domestic Small Cap Equity</b>	<b>40,034,711</b>	<b>4,000,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>5,692,968</b>	<b>49,727,679</b>
Allspring Global Small Value Eq.	19,521,885	-	-	-	-	-	1,435,740	20,957,626
Emerald Small Growth Equity	20,512,826	-	-	-	-	-	3,912,325	24,425,151
StoneRidge Small Growth Equity	-	4,000,000	-	-	-	-	344,902	4,344,902
<b>International Equity</b>	<b>44,095,951</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2,134,507</b>	<b>46,230,458</b>
DFA International Equity (DFIEX)	18,919,814	-	-	-	-	-	755,201	19,675,015
DFA Emerging Markets (DFCEX)	4,811,621	-	-	-	-	-	352,148	5,163,770
EuroPacific Growth Fund (RERGX)	20,364,516	-	-	-	-	-	1,027,157	21,391,673
<b>Total Fixed Income</b>	<b>96,677,135</b>	<b>-5,550,000</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1,868,329</b>	<b>92,995,463</b>
Boyd Watterson Fixed	48,261,523	-5,550,000	-	-	-	-	995,319	43,706,841
PNC Fixed	26,853,814	-	-	-	-	-	455,129	27,308,942
Vanguard Core Bond Fund (VCOBX)	21,561,798	-	-	-	-	-	417,881	21,979,679
<b>Private Real Estate</b>	<b>20,294,189</b>	<b>4,222,221</b>	<b>-</b>	<b>-</b>	<b>-77,354</b>	<b>-</b>	<b>-655,377</b>	<b>23,783,679</b>
Boyd Watterson GSA Fund	12,622,014	-	-	-	-	-	-750,555	11,871,459
Bentall GreenOak US Core Plus RE	7,672,175	4,222,221	-	-	-77,354	-	95,178	11,912,220
<b>Private Equity</b>	<b>22,284,046</b>	<b>31,037</b>	<b>-</b>	<b>-</b>	<b>-319,231</b>	<b>-76,442</b>	<b>2,032,643</b>	<b>23,952,053</b>
Ironsides Direct Investment Fund V	10,667,449	-2,106,178	-	-	-75,000	-72,957	470,081	8,883,395
PA Co-Investment Fund III	5,885,752	-1,865,328	-	-	-	-	446,645	4,467,069
Adams Street Co-Investment Fund V	4,108,837	1,500,000	-	-	-	-	814,923	6,423,760
Hamilton Lane Secondary Fund VI	1,622,008	2,502,543	-	-	-244,231	-3,485	300,994	4,177,829
<b>Private Debt</b>	<b>8,202,416</b>	<b>-654,653</b>	<b>-</b>	<b>-</b>	<b>-16,713</b>	<b>-14,213</b>	<b>463,796</b>	<b>7,980,634</b>
Ironsides Opportunities Fund	1,989,880	-395,623	-	-	-16,713	-14,213	9,722	1,573,054
PA Credit Strategies Fund	6,212,536	-259,030	-	-	-	-	454,074	6,407,580
<b>Cash</b>	<b>1,015,022</b>	<b>10,312,679</b>	<b>13,479,439</b>	<b>-23,236,485</b>	<b>-396,685</b>	<b>-338,073</b>	<b>84,480</b>	<b>920,378</b>
Cash Account	1,015,022	10,312,679	13,479,439	-23,236,485	-396,685	-338,073	84,480	920,378



Asset Allocation & Performance

Total Fund

As of December 31, 2024

	Allocation		Performance(%)										Inception Date
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	7 YR	10 YR	Inception			
<b>Total Fund (Gross)</b>	<b>329,069,260</b>	<b>100.0</b>	<b>-1.17 (61)</b>	<b>9.31 (78)</b>	<b>9.31 (78)</b>	<b>3.02 (40)</b>	<b>6.81 (56)</b>	<b>6.59 (65)</b>	<b>6.86 (60)</b>	<b>7.03 (20)</b>	<b>Jan-1998</b>		
Total Fund Policy Index			-0.98	9.11	9.11	2.70	6.30	6.28	6.45	6.34			
All Public DB Plans Median			-0.89	10.89	10.89	2.68	6.95	6.96	6.98	6.50			
<b>Total Fund (Net)</b>	<b>329,069,260</b>	<b>100.0</b>	<b>-1.21</b>	<b>9.04</b>	<b>9.04</b>	<b>2.83</b>	<b>6.59</b>	<b>6.32</b>	<b>6.55</b>	<b>-</b>	<b>Oct-2003</b>		
Total Fund Policy Index			-0.98	9.11	9.11	2.70	6.30	6.28	6.45	6.87			
<b>Total Equity</b>	<b>179,437,054</b>	<b>54.5</b>	<b>-0.61</b>	<b>15.51</b>	<b>15.51</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>7.54</b>	<b>Apr-2022</b>		
<b>Domestic Large Cap Equity</b>	<b>83,478,916</b>	<b>25.4</b>	<b>2.31</b>	<b>23.68</b>	<b>23.68</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>10.70</b>	<b>Apr-2022</b>		
Vanguard S&P 500 Index Fund (VINIX)	42,195,044	12.8	2.40 (30)	24.97 (23)	24.97 (23)	8.90 (23)	14.49 (19)	13.80 (12)	13.07 (8)	14.00 (10)	Jul-2013		
S&P 500 Index			2.41	25.02	25.02	8.94	14.53	13.83	13.10	14.04			
Large Blend Median			2.05	23.23	23.23	7.88	13.39	12.50	11.89	12.90			
Vanguard Russell 1000 Growth Index (VRGWX)	19,950,467	6.1	7.05 (22)	33.24 (29)	33.24 (29)	10.42 (9)	18.89 (9)	18.01 (9)	16.70 (8)	17.39 (8)	Jul-2013		
Russell 1000 Growth Index			7.07	33.36	33.36	10.47	18.96	18.08	16.78	17.46			
Large Growth Median			5.26	30.00	30.00	7.36	15.68	15.30	14.42	15.33			
DFA Large Value Equity (DFLVX)	13,888,415	4.2	-2.31 (68)	12.75 (63)	12.75 (63)	5.80 (59)	8.55 (65)	7.62 (79)	8.60 (52)	7.89 (41)	May-2006		
Russell 1000 Value Index			-1.98	14.37	14.37	5.63	8.68	8.41	8.49	7.60			
Large Value Median			-1.81	14.36	14.36	6.25	9.27	8.64	8.65	7.61			
Vanguard Russell 1000 Value Index (VRVIX)	7,444,990	2.3	-1.99 (56)	14.32 (51)	14.32 (51)	5.57 (63)	-	-	-	9.19 (66)	Mar-2021		
Russell 1000 Value Index			-1.98	14.37	14.37	5.63	-	-	-	9.26			
Large Value Median			-1.81	14.36	14.36	6.25	-	-	-	10.01			
<b>Domestic Small Cap Equity</b>	<b>49,727,679</b>	<b>15.1</b>	<b>1.14</b>	<b>12.68</b>	<b>12.68</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>6.26</b>	<b>Apr-2022</b>		
Allspring Global Small Value Eq.	20,957,626	6.4	-1.09 (68)	7.35 (73)	7.35 (73)	4.29 (56)	8.53 (78)	7.87 (59)	9.18 (46)	9.39 (49)	Dec-2004		
Russell 2000 Value Index			-1.06	8.05	8.05	1.94	7.29	6.13	7.14	7.11			
IM U.S. Small Cap Value Equity (SA+CF) Median			-0.18	11.27	11.27	4.69	9.85	8.22	8.91	9.36			
Emerald Small Growth Equity	24,425,151	7.4	2.87 (35)	19.07 (32)	19.07 (32)	2.64 (24)	9.73 (47)	9.31 (75)	10.70 (58)	11.15 (65)	Oct-1998		
Russell 2000 Growth Index			1.70	15.15	15.15	0.21	6.86	7.17	8.09	7.86			
IM U.S. Small Cap Growth Equity (SA+CF) Median			1.10	15.74	15.74	-0.29	9.45	11.02	11.09	11.80			
StoneRidge Small Growth Equity	4,344,902	1.3	2.63 (37)	-	-	-	-	-	-	10.94 (87)	Feb-2024		
Russell 2000 Growth Index			1.70	-	-	-	-	-	-	18.97			
IM U.S. Small Cap Growth Equity (SA+CF) Median			1.10	-	-	-	-	-	-	18.05			

See the disclosure page at the end of the report.

Asset Allocation & Performance

Total Fund

As of December 31, 2024

	Allocation		Performance(%)									
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	7 YR	10 YR	Inception	Inception Date	
<b>International Equity</b>	<b>46,230,458</b>	<b>14.0</b>	<b>-7.18</b>	<b>4.84</b>	<b>4.84</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>3.19</b>	<b>Apr-2022</b>
DFA International Equity (DFIEX)	19,675,015	6.0	-7.41 (44)	3.99 (55)	3.99 (55)	1.87 (20)	5.33 (22)	3.85 (43)	-	4.13 (39)	Dec-2017	
MSCI EAFE Value Index (Net)			-7.12	5.68	5.68	5.88	5.09	3.45	-	3.63		
Foreign Large Blend Median			-7.54	4.30	4.30	0.67	4.35	3.72	-	3.89		
DFA Emerging Markets (DFCEX)	5,163,770	1.6	-6.87 (48)	7.32 (48)	7.32 (48)	1.18 (31)	4.53 (32)	2.97 (35)	-	3.47 (36)	Dec-2017	
MSCI Emerging Markets (Net) Index			-8.01	7.50	7.50	-1.92	1.70	1.38	-	1.87		
IM Emerging Markets Equity (SA+CF) Median			-7.04	7.14	7.14	-1.21	2.59	2.01	-	2.51		
EuroPacific Growth Fund (RERGX)	21,391,673	6.5	-7.03 (37)	5.04 (45)	5.04 (45)	-1.97 (40)	3.95 (48)	4.00 (55)	-	5.94 (43)	Nov-2015	
MSCI AC World ex USA Growth (Net)			-7.88	5.07	5.07	-2.67	3.44	3.71	-	5.72		
Foreign Large Growth Median			-7.50	4.68	4.68	-2.68	3.79	4.28	-	5.79		
<b>Total Fixed Income</b>	<b>92,995,463</b>	<b>28.3</b>	<b>-2.98</b>	<b>2.00</b>	<b>2.00</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>1.13</b>	<b>Apr-2022</b>	
Boyd Watterson Fixed	43,706,841	13.3	-2.95 (58)	2.20 (57)	2.20 (57)	-0.52 (18)	0.94 (31)	1.87 (40)	1.97 (61)	3.98 (81)	Oct-1998	
Boyd Watterson Fixed Policy			-3.06	1.25	1.25	-0.65	0.56	1.48	1.56	-		
IM U.S. Broad Market Fixed Income (SA+CF) Median			-2.87	2.38	2.38	-1.78	0.54	1.67	2.07	4.37		
PNC Fixed	27,308,942	8.3	-3.12 (87)	1.69 (72)	1.69 (72)	-0.70 (19)	0.76 (37)	1.67 (51)	1.69 (81)	2.84 (94)	Jul-2008	
PNC Fixed Policy			-3.06	1.25	1.25	-0.65	0.56	1.48	1.56	2.55		
IM U.S. Broad Market Fixed Income (SA+CF) Median			-2.87	2.38	2.38	-1.78	0.54	1.67	2.07	3.70		
Vanguard Core Bond Fund (VCOBX)	21,979,679	6.7	-2.88 (42)	1.94 (54)	1.94 (54)	-	-	-	-	2.39 (60)	Feb-2023	
Blmbg. U.S. Aggregate Index			-3.06	1.25	1.25	-	-	-	-	1.89		
Intermediate Core Bond Median			-2.94	2.00	2.00	-	-	-	-	2.54		
<b>Total Alternatives</b>	<b>55,716,366</b>	<b>16.9</b>										
<b>Private Real Estate</b>	<b>23,783,679</b>	<b>7.2</b>	<b>0.08</b>	<b>-2.94</b>	<b>-2.94</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-1.00</b>	<b>Apr-2022</b>	
Boyd Watterson GSA Fund	11,871,459	3.6	0.17 (88)	-5.95 (97)	-5.95 (97)	-1.60 (33)	1.94 (77)	4.07 (63)	-	5.36 (-)	Feb-2016	
NCREIF Property Index			0.90	0.43	0.43	-0.82	3.13	4.10	-	4.89		
IM U.S. Private Real Estate (SA+CF) Median			1.30	-1.13	-1.13	-2.22	3.07	4.47	-	-		
Bentall GreenOak US Core Plus RE	11,912,220	3.6	0.00 (89)	0.39 (33)	0.39 (33)	-	-	-	-	0.02 (-)	Nov-2022	
NCREIF Property Index			0.90	0.43	0.43	-	-	-	-	-5.13		
IM U.S. Private Real Estate (SA+CF) Median			1.30	-1.13	-1.13	-	-	-	-	-		

See the disclosure page at the end of the report.

	Allocation		Performance(%)								
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	7 YR	10 YR	Inception	Inception Date
<b>Private Equity</b>	<b>23,952,053</b>	<b>7.3</b>									
Ironsides Direct Investment Fund V	8,883,395	2.7									
PA Co-Investment Fund III	4,467,069	1.4									
Adams Street Co-Investment Fund V	6,423,760	2.0									
Hamilton Lane Secondary Fund VI	4,177,829	1.3									
<b>Private Debt</b>	<b>7,980,634</b>	<b>2.4</b>									
Ironsides Opportunities Fund	1,573,054	0.5									
PA Credit Strategies Fund	6,407,580	1.9									
<b>Cash</b>	<b>920,378</b>	<b>0.3</b>									
Cash Account	920,378	0.3									

See the disclosure page at the end of the report.

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Comparative Performance

Total Fund

As of December 31, 2024

Comparative Performance																				
	2024		2023		2022		2021		2020		2019		2018		2017		2016		2015	
<b>Total Fund (Gross)</b>	<b>9.31</b>	<b>(78)</b>	<b>13.15</b>	<b>(53)</b>	<b>-11.59</b>	<b>(24)</b>	<b>13.31</b>	<b>(62)</b>	<b>12.18</b>	<b>(60)</b>	<b>18.55</b>	<b>(65)</b>	<b>-5.13</b>	<b>(69)</b>	<b>14.12</b>	<b>(71)</b>	<b>8.40</b>	<b>(21)</b>	<b>0.36</b>	<b>(35)</b>
Total Fund Policy Index	9.11		13.02		-12.15		11.61		12.26		17.45		-3.89		10.71		8.86		1.22	
All Public DB Plans Median	10.89		13.29		-13.81		13.92		12.99		19.60		-4.41		15.17		7.15		-0.20	
<b>Total Fund (Net)</b>	<b>9.04</b>		<b>12.97</b>		<b>-11.73</b>		<b>13.09</b>		<b>11.89</b>		<b>18.18</b>		<b>-5.52</b>		<b>13.72</b>		<b>7.99</b>		<b>-0.03</b>	
Total Fund Policy Index	9.11		13.02		-12.15		11.61		12.26		17.45		-3.89		10.71		8.86		1.22	
<b>Total Equity</b>	<b>15.51</b>		<b>20.76</b>																	
<b>Domestic Large Cap Equity</b>	<b>23.68</b>		<b>23.91</b>																	
Vanguard S&P 500 Index Fund (VINIX)	24.97	(23)	26.24	(25)	-18.14	(49)	28.67	(21)	18.39	(38)	31.47	(23)	-4.42	(25)	21.80	(34)	11.93	(25)	1.34	(26)
S&P 500 Index	25.02		26.29		-18.11		28.71		18.40		31.49		-4.38		21.83		11.96		1.38	
Large Blend Median	23.23		24.66		-18.23		26.79		17.64		30.03		-5.50		21.18		10.56		0.29	
Vanguard Russell 1000 Growth Index (VRGWX)	33.24	(29)	42.65	(33)	-29.17	(34)	27.52	(15)	38.38	(41)	36.30	(22)	-1.56	(53)	30.13	(42)	7.03	(18)	5.56	(47)
Russell 1000 Growth Index	33.36		42.68		-29.14		27.60		38.49		36.39		-1.51		30.21		7.08		5.67	
Large Growth Median	30.00		39.34		-31.16		21.89		36.16		32.89		-1.36		29.22		2.56		5.12	
DFA Large Value Equity (DFLVX)	12.75	(63)	11.47	(47)	-5.78	(53)	28.07	(27)	-0.60	(82)	25.49	(52)	-11.61	(82)	18.97	(22)	18.89	(13)	-3.49	(52)
Russell 1000 Value Index	14.37		11.46		-7.54		25.16		2.80		26.54		-8.27		13.66		17.34		-3.83	
Large Value Median	14.36		11.05		-5.52		25.98		2.83		25.59		-8.81		16.31		14.32		-3.40	
Vanguard Russell 1000 Value Index (VRVIX)	14.32	(51)	11.42	(48)	-7.62	(69)														
Russell 1000 Value Index	14.37		11.46		-7.54		25.16		2.80		26.54		-8.27		13.66		17.34		-3.83	
Large Value Median	14.36		11.05		-5.52		25.98		2.83		25.59		-8.81		16.31		14.32		-3.40	
Vesper Capital Mgmt (UTRN)			0.73	(100)	-20.37	(85)	30.04	(22)												
S&P 500 Index	25.02		26.29		-18.11		28.71		18.40		31.49		-4.38		21.83		11.96		1.38	
IM U.S. Large Cap Core Equity (SA+CF) Median	22.89		23.86		-16.87		26.89		16.02		29.50		-5.66		21.58		9.86		1.05	
<b>Domestic Small Cap Equity</b>	<b>12.68</b>		<b>18.89</b>																	
Allspring Global Small Value Eq.	7.35	(73)	20.80	(27)	-12.53	(70)	29.83	(51)	2.24	(69)	29.50	(14)	-12.84	(37)	12.21	(45)	30.62	(26)	-3.36	(44)
Russell 2000 Value Index	8.05		14.65		-14.48		28.27		4.63		22.39		-12.86		7.84		31.74		-7.47	
IM U.S. Small Cap Value Equity (SA+CF) Median	11.27		17.24		-10.59		30.09		5.18		24.99		-14.08		11.56		27.12		-4.29	
Emerald Small Growth Equity	19.07	(32)	19.35	(45)	-23.91	(30)	5.74	(77)	39.16	(60)	31.23	(42)	-10.67	(89)	28.70	(27)	10.07	(54)	4.58	(13)
Russell 2000 Growth Index	15.15		18.66		-26.36		2.83		34.63		28.48		-9.31		22.17		11.32		-1.38	
IM U.S. Small Cap Growth Equity (SA+CF) Median	15.74		19.07		-27.32		12.12		43.32		29.54		-3.83		24.51		10.60		-0.72	
StoneRidge Small Growth Equity																				
Russell 2000 Growth Index	15.15		18.66		-26.36		2.83		34.63		28.48		-9.31		22.17		11.32		-1.38	
IM U.S. Small Cap Growth Equity (SA+CF) Median	15.74		19.07		-27.32		12.12		43.32		29.54		-3.83		24.51		10.60		-0.72	

See the disclosure page at the end of this report.

Comparative Performance

Total Fund

As of December 31, 2024

	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015
<b>International Equity</b>	4.84	16.57								
DFA International Equity (DFIEX)	3.99 (55)	17.49 (35)	-13.48 (16)	13.87 (9)	7.72 (68)	21.66 (57)	-17.40 (78)			
MSCI EAFE Value Index (Net)	5.68	18.95	-5.58	10.89	-2.63	16.09	-14.78	21.44	5.02	-5.68
Foreign Large Blend Median	4.30	16.40	-15.87	10.42	9.39	22.06	-14.87	25.54	0.66	-0.96
DFA Emerging Markets (DFCEX)	7.32 (48)	15.45 (39)	-16.40 (32)	5.83 (31)	13.86 (67)	16.04 (71)	-15.25 (41)			
MSCI Emerging Markets (Net) Index	7.50	9.83	-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92
IM Emerging Markets Equity (SA+CF) Median	7.14	11.99	-20.25	0.27	18.05	19.14	-16.08	36.32	8.58	-12.73
EuroPacific Growth Fund (RERGX)	5.04 (45)	16.05 (49)	-22.72 (33)	2.84 (77)	25.27 (34)	27.38 (66)	-14.87 (57)	31.14 (50)	1.06 (25)	
MSCI AC World ex USA Growth (Net)	5.07	14.03	-23.05	5.09	22.20	27.34	-14.43	32.01	0.12	-1.25
Foreign Large Growth Median	4.68	15.97	-25.05	8.70	22.14	28.14	-14.20	31.14	-2.44	0.36
<b>Total Fixed Income</b>	2.00	5.64								
Boyd Watterson Fixed	2.20 (57)	6.04 (66)	-9.17 (7)	-0.40 (39)	6.86 (91)	8.69 (85)	-0.03 (52)	3.45 (91)	2.22 (97)	0.92 (30)
Boyd Watterson Fixed Policy	1.25	5.53	-8.24	-1.44	6.43	6.80	0.88	2.14	2.08	1.07
IM U.S. Broad Market Fixed Income (SA+CF) Median	2.38	6.38	-12.92	-0.73	8.75	9.52	-0.01	4.33	3.72	0.63
PNC Fixed	1.69 (72)	6.23 (58)	-9.36 (8)	-1.38 (75)	7.53 (85)	7.29 (96)	0.78 (10)	2.41 (99)	2.11 (97)	0.66 (49)
PNC Fixed Policy	1.25	5.53	-8.24	-1.44	6.43	6.80	0.88	2.14	2.08	1.07
IM U.S. Broad Market Fixed Income (SA+CF) Median	2.38	6.38	-12.92	-0.73	8.75	9.52	-0.01	4.33	3.72	0.63
Vanguard S-T Invnt Grade Bond Fund (VFSIX)			-5.72 (70)	-0.30 (50)	5.28 (20)	5.87 (18)	1.02 (44)	2.16 (28)	2.85 (23)	1.18 (6)
Blmbg. 1-3 Year Gov/Credit	4.36	4.61	-3.69	-0.47	3.33	4.03	1.60	0.84	1.28	0.65
Short-Term Bond Median	4.88	5.50	-4.95	-0.31	3.90	4.62	0.92	1.60	1.87	0.36
Vanguard Core Bond Fund (VCOBX)	1.94 (25)									
Blmbg. U.S. Aggregate Index	1.25	5.53	-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55
Intermediate Core Bond Median	1.48	5.58	-13.41	-1.57	7.84	8.50	-0.43	3.43	2.64	0.20
<b>Private Real Estate</b>	-2.94	-2.51								
Bentall GreenOak/MEPT Real Estate			8.74 (27)	20.81 (69)	1.37 (59)	4.55 (78)	8.18 (56)	6.48 (80)	8.97 (72)	13.01 (76)
NCREIF Property Index	0.43	-7.94	5.52	17.70	1.60	6.42	6.72	6.96	7.97	13.33
IM U.S. Private Real Estate (SA+CF) Median	-1.13	-11.03	7.14	22.49	1.57	6.93	8.42	8.07	9.80	15.34
Boyd Watterson GSA Fund	-5.95 (97)	-3.13 (13)	4.58 (74)	8.04 (97)	6.97 (6)	9.53 (15)	9.60 (23)	8.87 (36)		
NCREIF Property Index	0.43	-7.94	5.52	17.70	1.60	6.42	6.72	6.96	7.97	13.33
IM U.S. Private Real Estate (SA+CF) Median	-1.13	-11.03	7.14	22.49	1.57	6.93	8.42	8.07	9.80	15.34
Bentall GreenOak US Core Plus RE	0.39 (33)	1.91 (11)								
NCREIF Property Index	0.43	-7.94	5.52	17.70	1.60	6.42	6.72	6.96	7.97	13.33
IM U.S. Private Real Estate (SA+CF) Median	-1.13	-11.03	7.14	22.49	1.57	6.93	8.42	8.07	9.80	15.34

See the disclosure page at the end of this report.

Private Equity Summary of Partnership

As of December 31, 2024

Private Equity Summary of Partnership

Partnerships	Valuation Date	Vintage Year	Investment Strategy	Capital Commitment \$	Drawn Down \$	Market Value \$	Distributed \$	IRR (%)	TVPI Multiple
<b>Private Equity Funds</b>									
Ironsides Direct Investment Fund V	12/31/2024	2018	Buyouts	6,000,000	7,788,611	8,883,395	4,798,079	14.3	1.8
PA Co-Investment Fund III	12/31/2024	2019	Buyouts	6,000,000	5,511,784	4,467,069	6,709,693	18.5	2.0
Adams Street Co-Investment Fund V	12/31/2024	2022	Co-Investment	10,000,000	4,762,945	6,423,760	-	24.6	1.4
Hamilton Lane Secondary Fund VI	12/31/2024	2022	Secondaries	10,000,000	3,759,176	4,177,829	268,815	29.3	1.2
<b>Private Debt Funds</b>									
Ironsides Opportunities Fund	12/31/2024	2018	Buyout - Mid	4,000,000	2,871,943	1,573,054	2,737,854	10.6	1.5
PA Credit Strategies Fund	12/31/2024	2015	Credit	4,000,000	4,000,000	6,407,580	259,030	8.7	1.7



**Comparative Performance - IRR**  
**Private Investments**  
As of December 31, 2024

Comparative Performance - IRR									
	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR	Inception	Inception Date
<b>Private Equity</b>									
Ironsides Direct Investment Fund V	-0.27	3.31	3.31	6.03	4.89	7.55	14.60	14.31	11/09/2018
PA Co-Investment Fund III	0.00	8.42	8.42	8.15	8.77	18.45	21.95	18.49	11/05/2018
Adams Street Co-Investment Fund V	0.00	16.99	16.99	23.51	N/A	N/A	N/A	24.64	10/28/2022
Hamilton Lane Secondary Fund VI	0.00	2.39	2.39	29.28	N/A	N/A	N/A	29.28	01/03/2023
<b>Private Debt</b>									
Ironsides Opportunities Fund	-1.18	-1.14	-1.14	4.13	6.77	8.95	10.29	10.63	12/31/2018
PA Credit Strategies Fund	0.00	7.29	7.29	6.24	6.10	9.20	8.68	8.71	11/21/2018

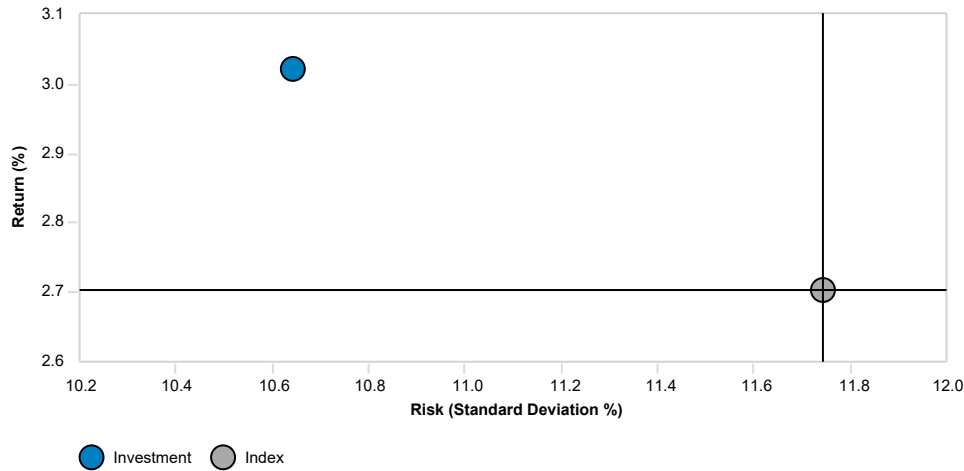
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.02	10.64	-0.03	93.97	7	91.46	5
Index	2.70	11.74	-0.04	100.00	7	100.00	5

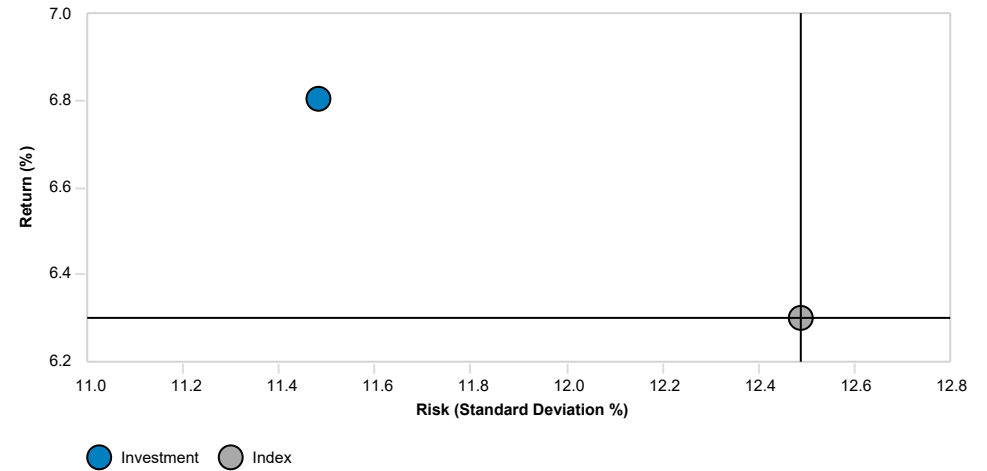
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	6.81	11.48	0.42	96.20	14	91.72	6
Index	6.30	12.49	0.36	100.00	13	100.00	7

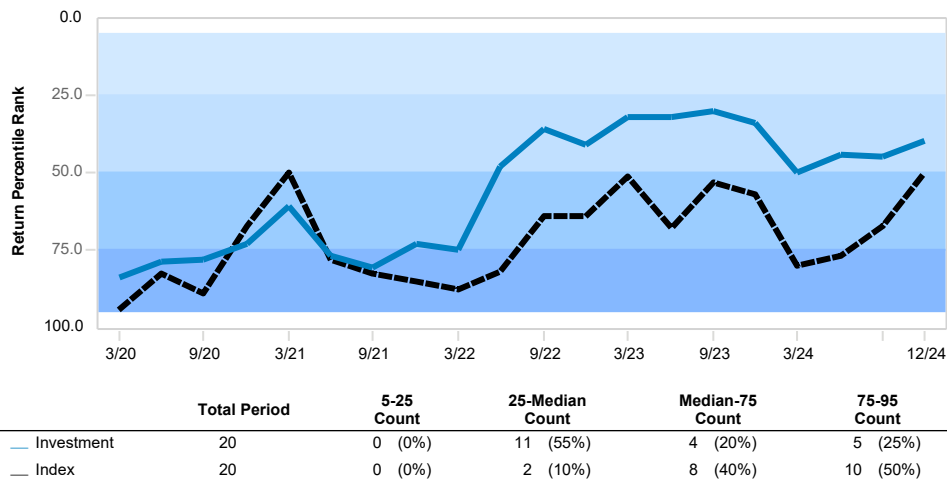
**Risk and Return 3 Years**



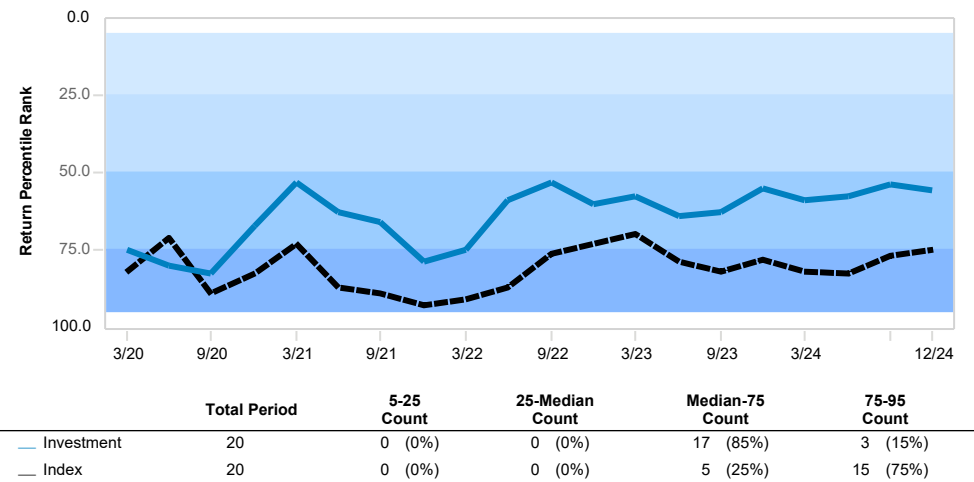
**Risk and Return 5 Years**



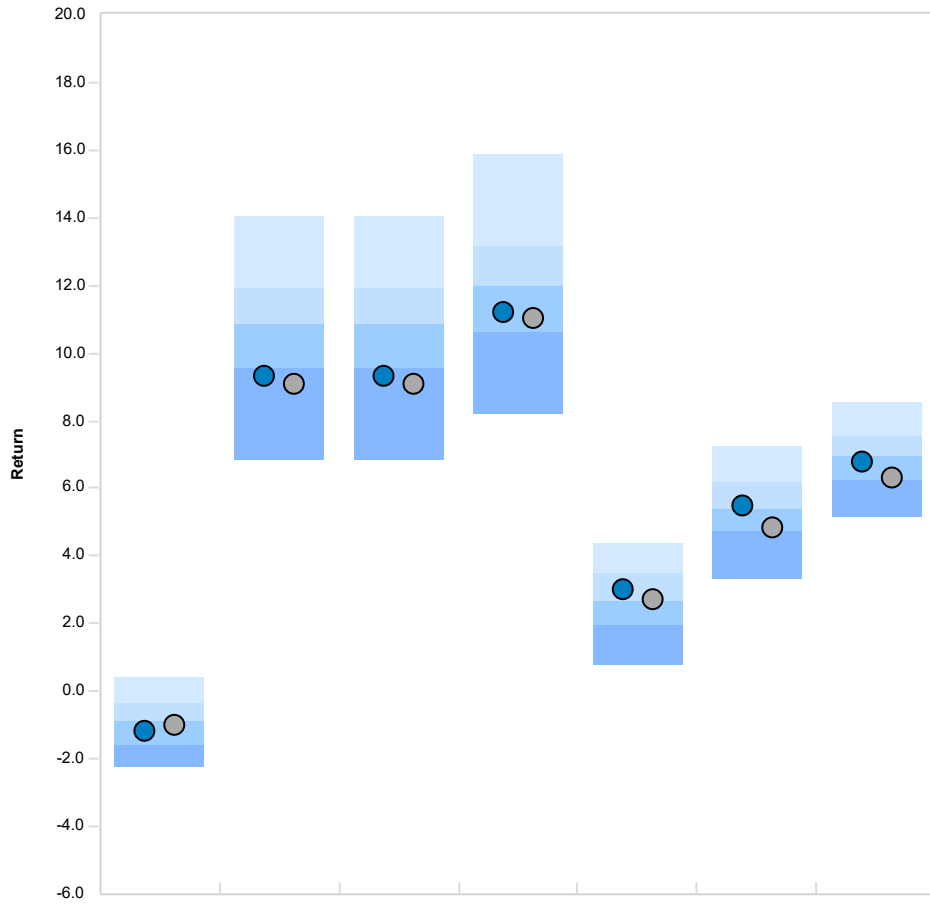
**3 Year Rolling Percentile Rank All Public DB Plans**



**5 Year Rolling Percentile Rank All Public DB Plans**

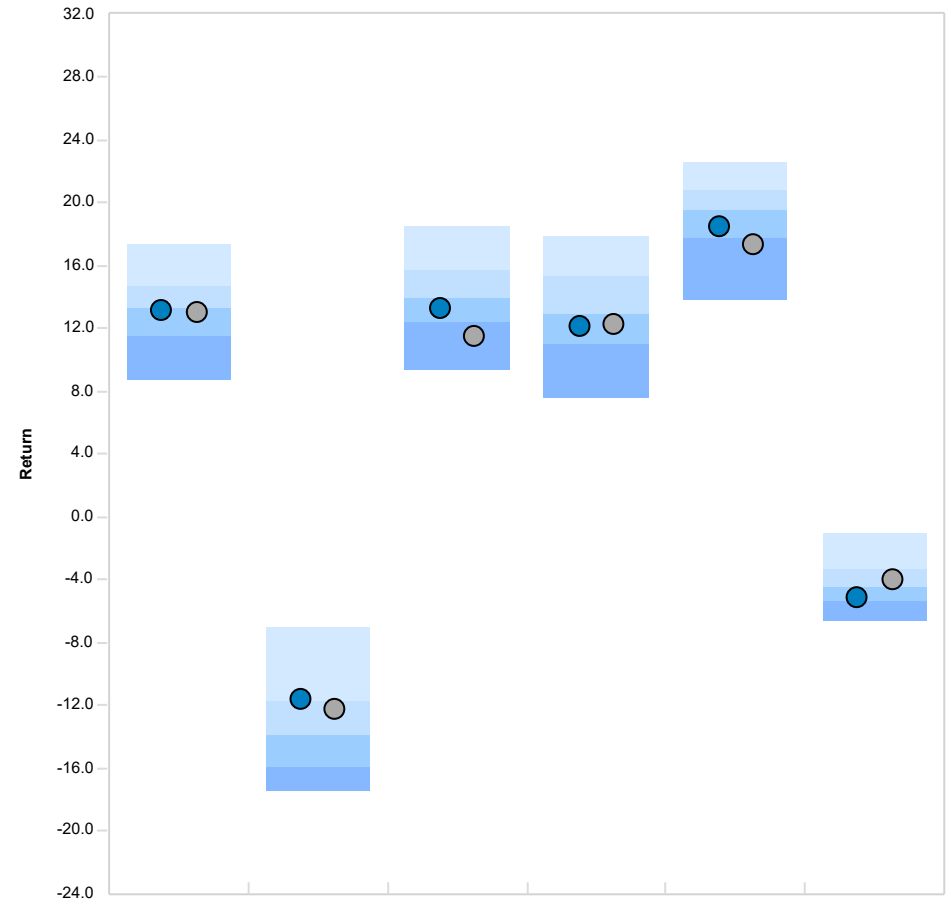


**Plan Sponsor Peer Group Analysis vs. All Public DB Plans**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-1.17 (61)	9.31 (78)	9.31 (78)	11.21 (67)	3.02 (40)	5.50 (45)	6.81 (56)
● Index	-0.98 (53)	9.11 (80)	9.11 (80)	11.05 (69)	2.70 (50)	4.86 (70)	6.30 (75)
Median	-0.89	10.89	10.89	12.01	2.68	5.37	6.95

**Plan Sponsor Peer Group Analysis vs. All Public DB Plans**



	2023	2022	2021	2020	2019	2018
● Investment	13.15 (53)	-11.59 (24)	13.31 (62)	12.18 (60)	18.55 (65)	-5.13 (69)
● Index	13.02 (54)	-12.15 (30)	11.61 (85)	12.26 (59)	17.45 (78)	-3.89 (36)
Median	13.29	-13.81	13.92	12.99	19.60	-4.41

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
<b>Investment</b>	<b>5.32 (57)</b>	<b>0.72 (74)</b>	<b>4.26 (72)</b>	<b>8.17 (50)</b>	<b>-2.80 (44)</b>	<b>3.17 (58)</b>
Index	6.07 (16)	0.10 (92)	3.78 (84)	9.15 (29)	-3.42 (79)	3.02 (65)
Median	5.43	1.18	4.89	8.17	-2.96	3.30

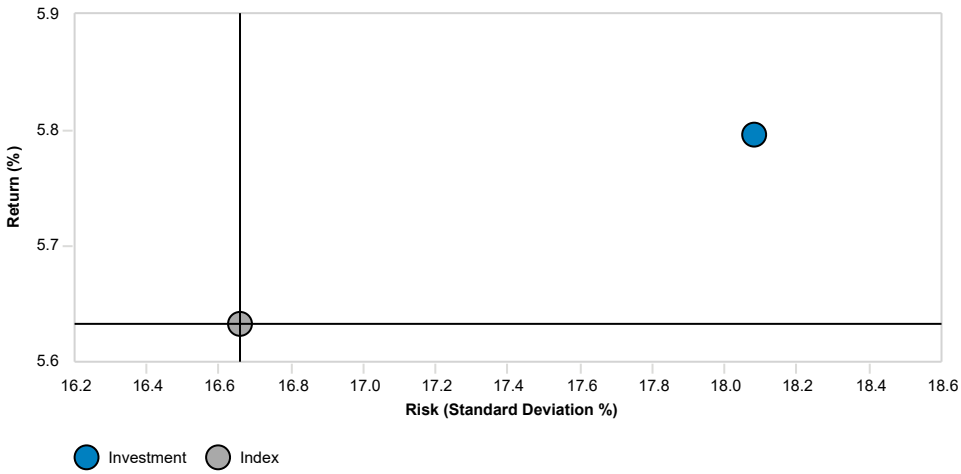
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	5.80	18.08	0.19	105.77	6	105.75	6
Index	5.63	16.66	0.18	100.00	6	100.00	6

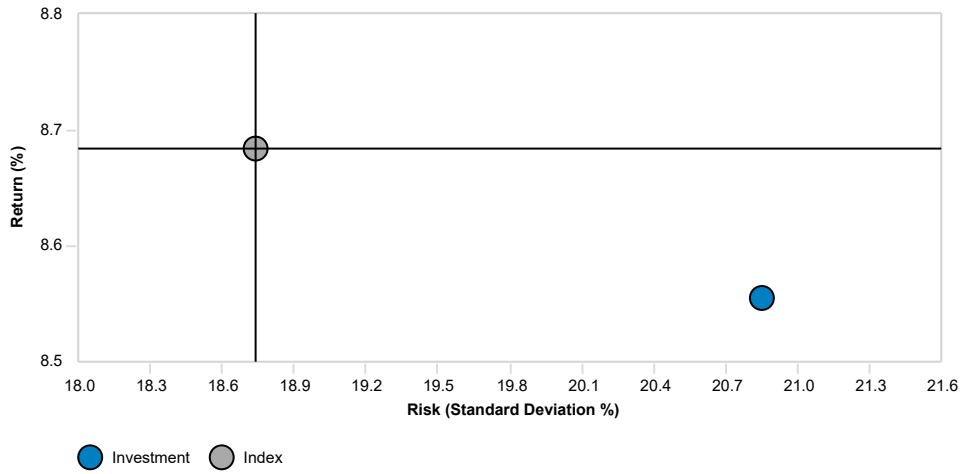
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.55	20.85	0.38	106.15	12	107.60	8
Index	8.68	18.74	0.41	100.00	12	100.00	8

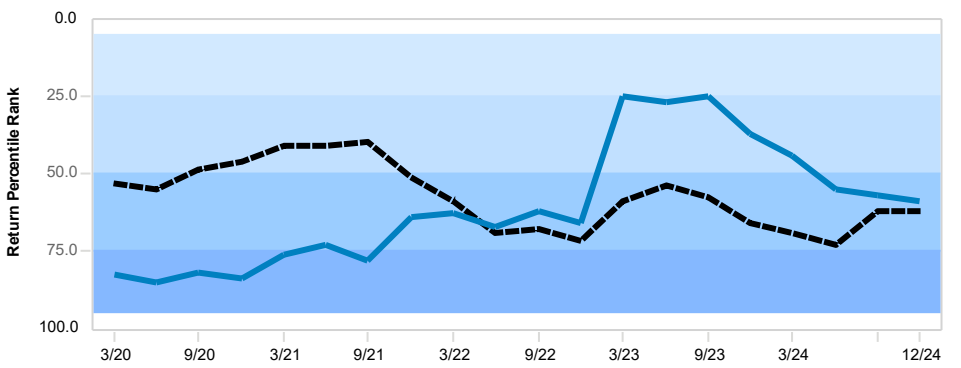
**Risk and Return 3 Years**



**Risk and Return 5 Years**

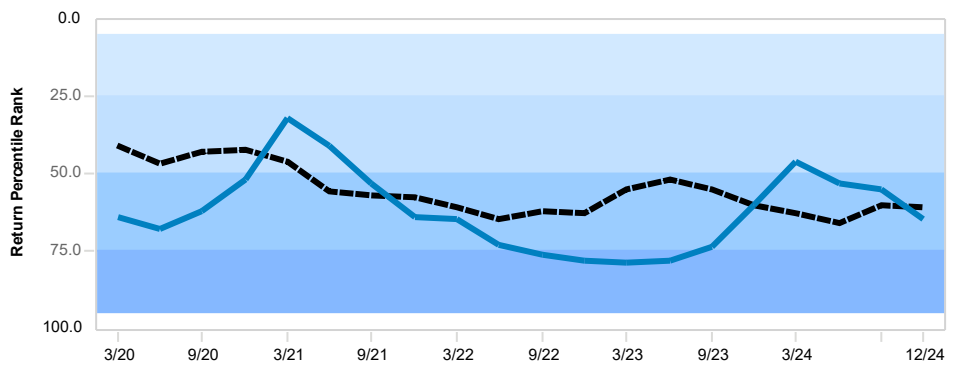


**3 Year Rolling Percentile Rank Large Value**



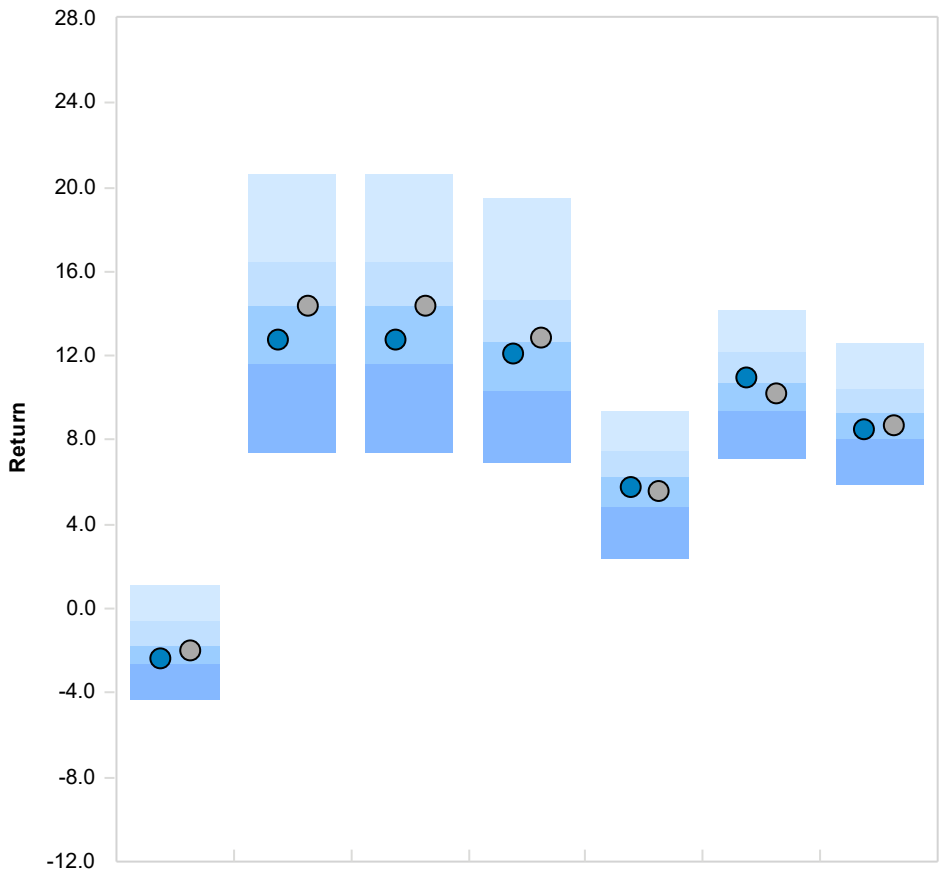
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	2 (10%)	3 (15%)	9 (45%)	6 (30%)
Index	20	0 (0%)	5 (25%)	15 (75%)	0 (0%)

**5 Year Rolling Percentile Rank Large Value**



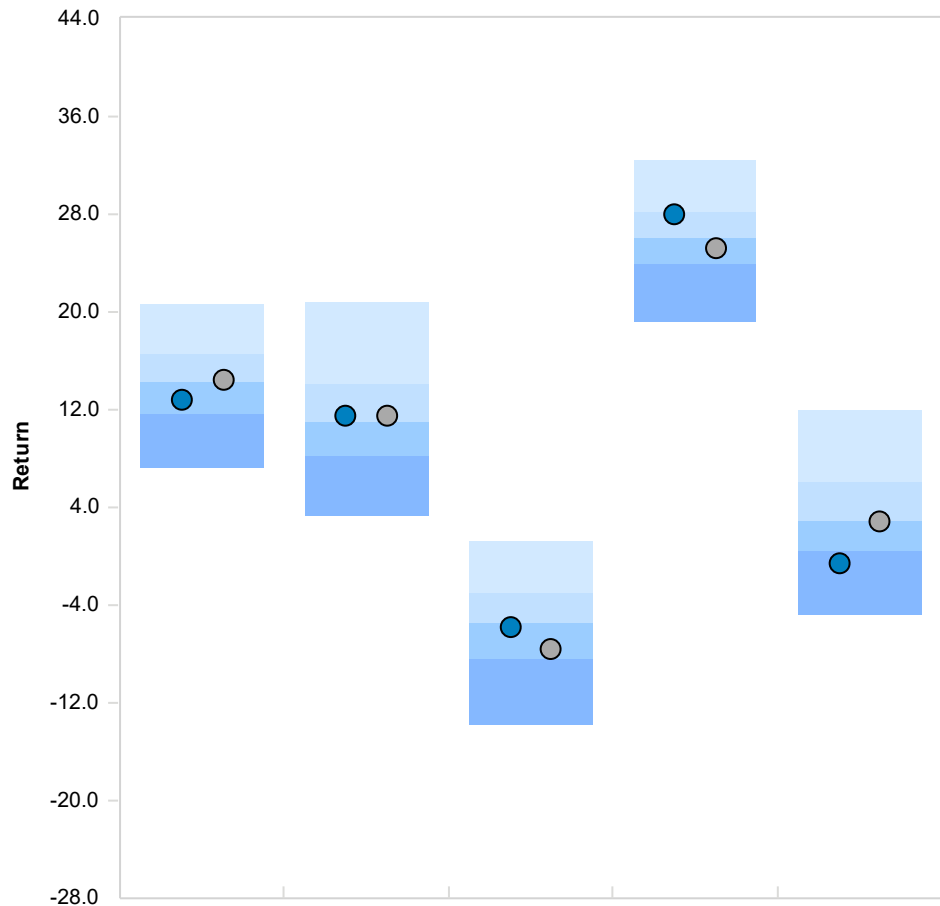
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	3 (15%)	13 (65%)	4 (20%)
Index	20	0 (0%)	5 (25%)	15 (75%)	0 (0%)

**Peer Group Analysis - Large Value**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-2.31 (68)	12.75 (63)	12.75 (63)	12.11 (58)	5.80 (59)	10.97 (46)	8.55 (65)
● Index	-1.98 (56)	14.37 (50)	14.37 (50)	12.91 (47)	5.63 (62)	10.21 (61)	8.68 (61)
Median	-1.81	14.36	14.36	12.70	6.25	10.73	9.27

**Peer Group Analysis - Large Value**



	2024	2023	2022	2021	2020
● Investment	12.75 (63)	11.47 (47)	-5.78 (53)	28.07 (27)	-0.60 (82)
● Index	14.37 (50)	11.46 (47)	-7.54 (69)	25.16 (62)	2.80 (51)
Median	14.36	11.05	-5.52	25.98	2.83

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	6.97 (72)	-2.96 (84)	11.18 (15)	9.06 (64)	-1.39 (19)	3.18 (66)
Index	9.43 (21)	-2.17 (70)	8.99 (46)	9.50 (51)	-3.16 (65)	4.07 (40)
Median	8.11	-1.41	8.80	9.54	-2.67	3.66

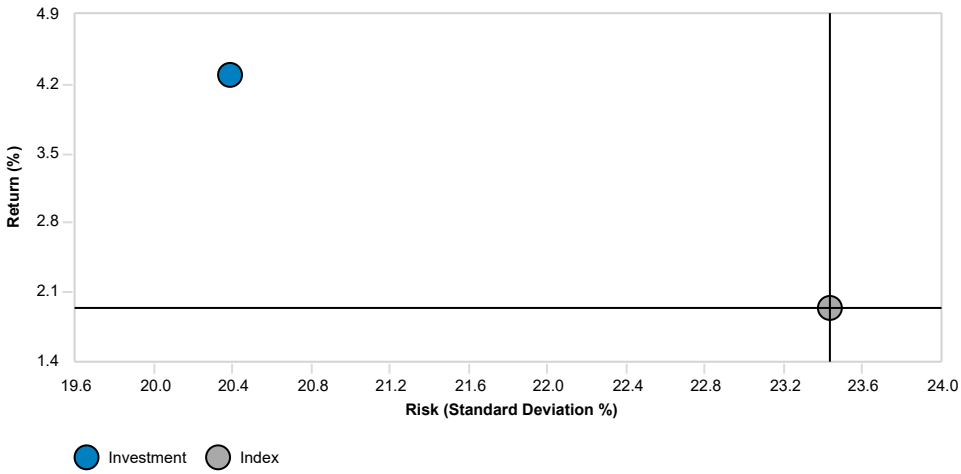
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	4.29	20.38	0.12	88.80	6	82.20	6
Index	1.94	23.44	0.03	100.00	5	100.00	7

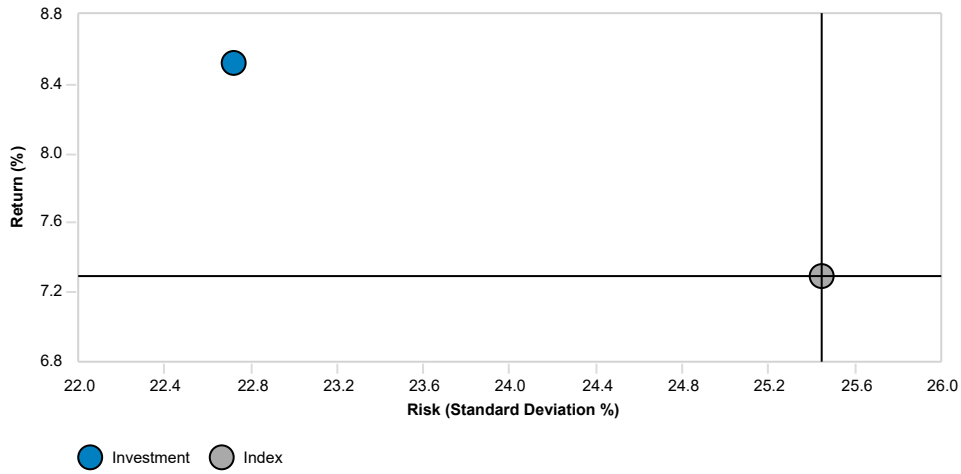
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.53	22.72	0.37	91.13	12	86.49	8
Index	7.29	25.44	0.31	100.00	11	100.00	9

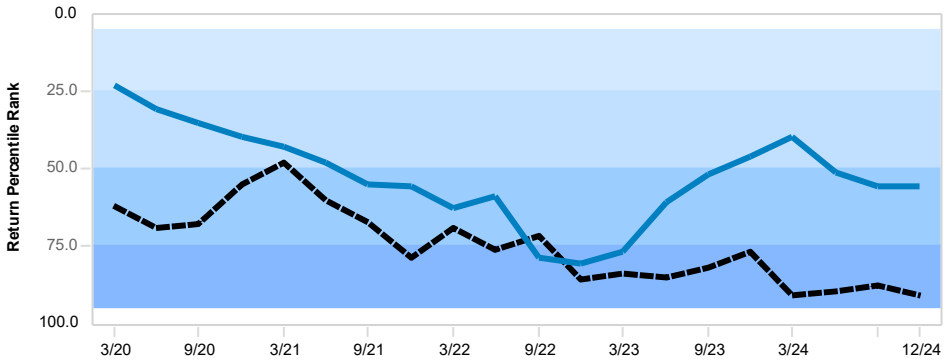
**Risk and Return 3 Years**



**Risk and Return 5 Years**

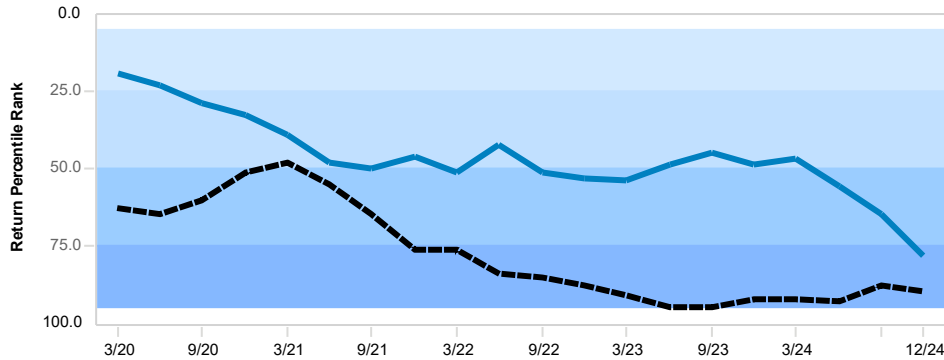


**3 Year Rolling Percentile Rank IM U.S. Small Cap Value Equity (SA+CF)**



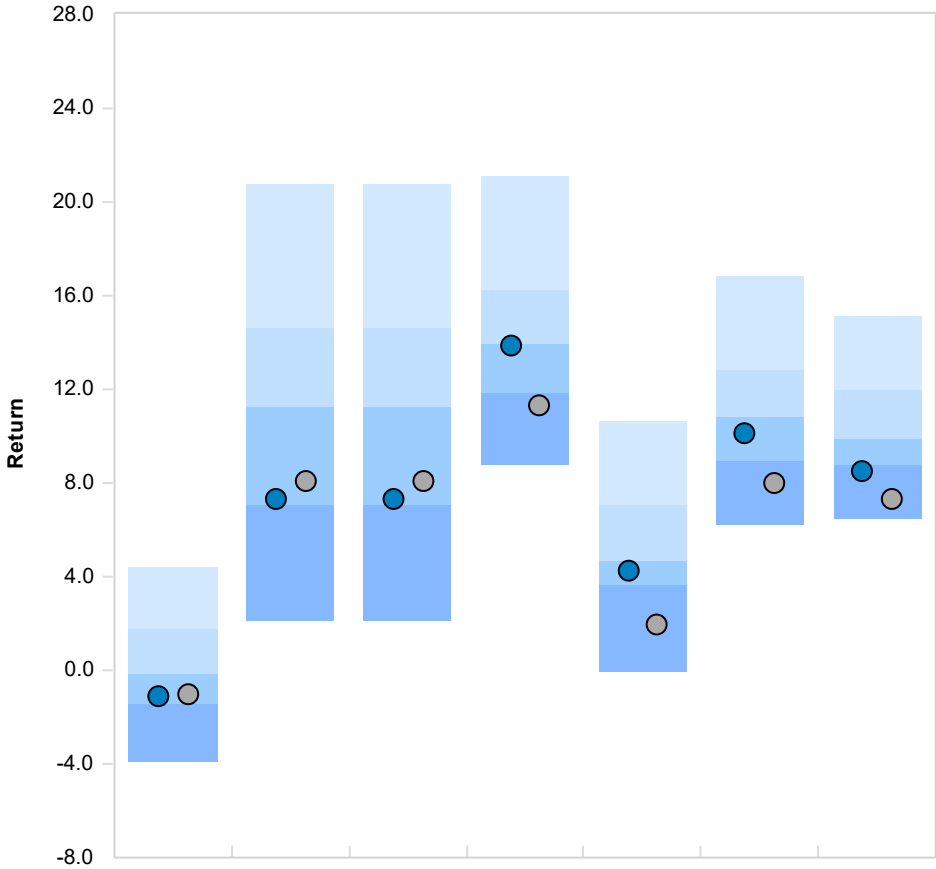
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	7 (35%)	9 (45%)	3 (15%)
Index	20	0 (0%)	1 (5%)	8 (40%)	11 (55%)

**5 Year Rolling Percentile Rank IM U.S. Small Cap Value Equity (SA+CF)**



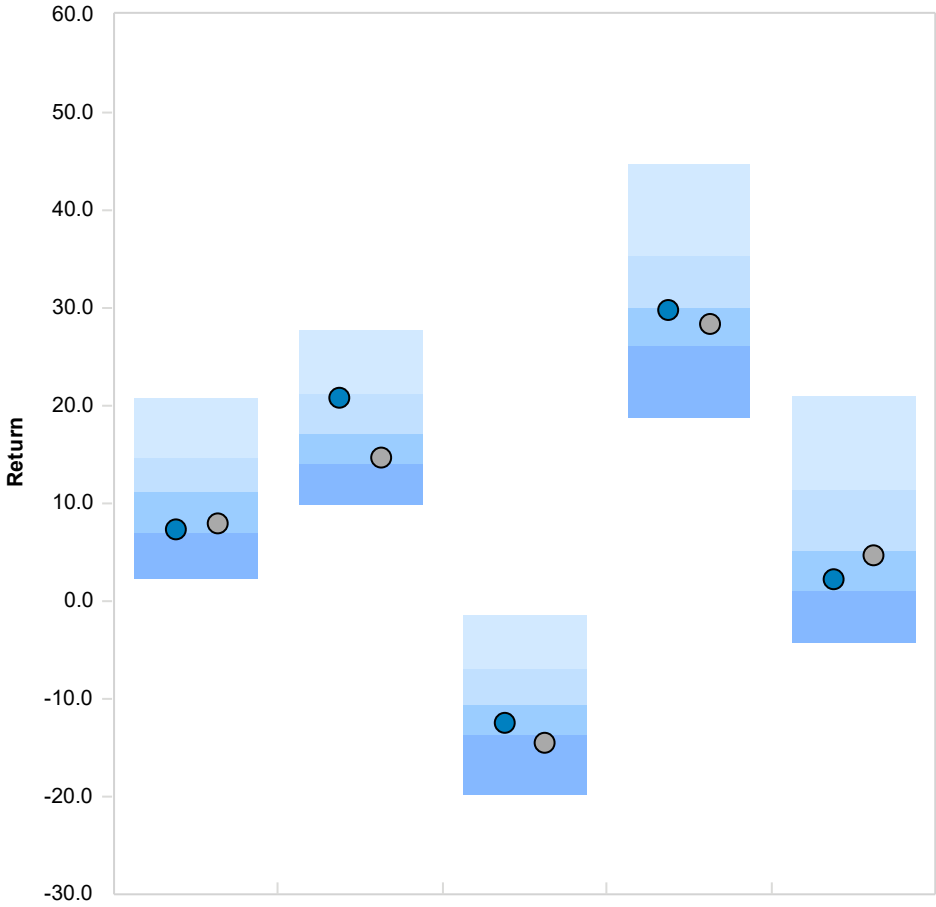
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	2 (10%)	11 (55%)	6 (30%)	1 (5%)
Index	20	0 (0%)	1 (5%)	6 (30%)	13 (65%)

**Peer Group Analysis - IM U.S. Small Cap Value Equity (SA+CF)**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-1.09 (68)	7.35 (73)	7.35 (73)	13.88 (51)	4.29 (56)	10.16 (60)	8.53 (78)
● Index	-1.06 (68)	8.05 (71)	8.05 (71)	11.30 (81)	1.94 (91)	7.97 (82)	7.29 (90)
Median	-0.18	11.27	11.27	13.96	4.69	10.82	9.85

**Peer Group Analysis - IM U.S. Small Cap Value Equity (SA+CF)**



	2024	2023	2022	2021	2020
● Investment	7.35 (73)	20.80 (27)	-12.53 (70)	29.83 (51)	2.24 (69)
● Index	8.05 (71)	14.65 (73)	-14.48 (80)	28.27 (58)	4.63 (52)
Median	11.27	17.24	-10.59	30.09	5.18

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	6.88 (80)	-5.38 (86)	7.32 (26)	12.52 (57)	-2.17 (50)	5.47 (28)
Index	10.15 (25)	-3.64 (56)	2.90 (91)	15.26 (15)	-2.96 (59)	3.18 (68)
Median	8.60	-3.36	5.20	12.95	-2.18	4.05



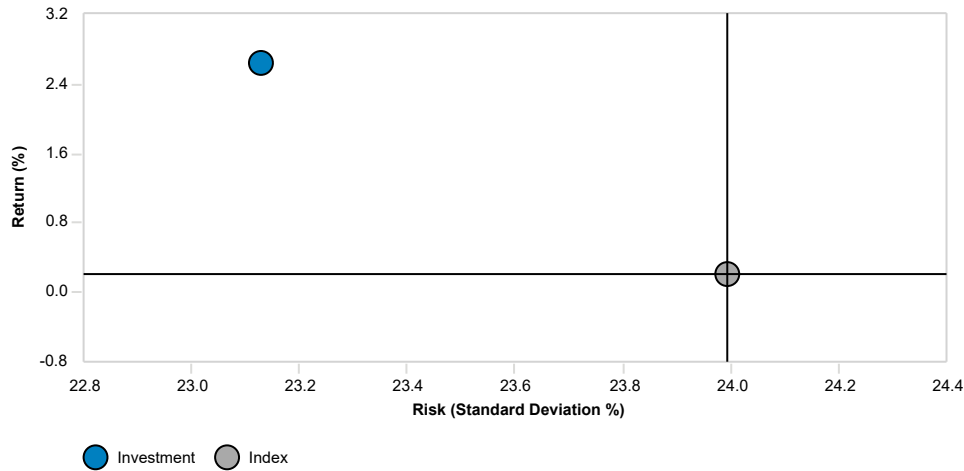
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	2.64	23.13	0.06	98.77	9	91.79	3
Index	0.21	23.99	-0.03	100.00	8	100.00	4

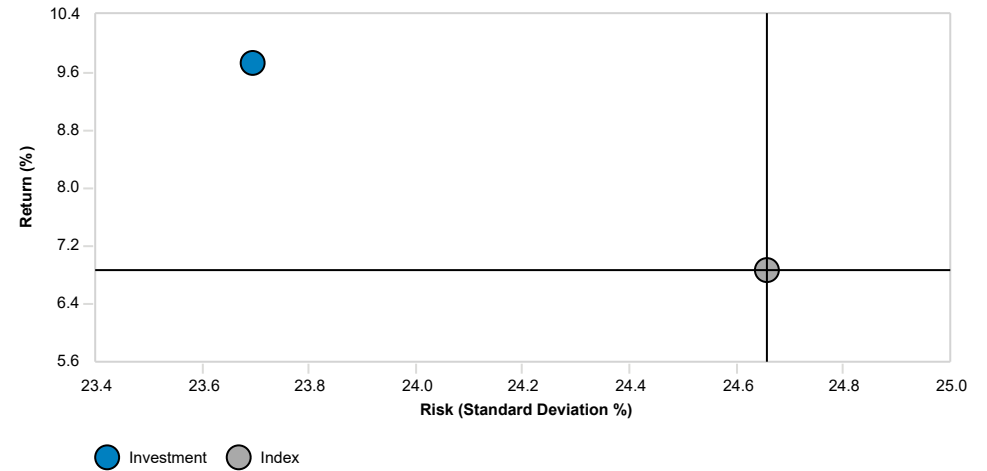
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.73	23.69	0.41	99.77	15	91.18	5
Index	6.86	24.66	0.29	100.00	14	100.00	6

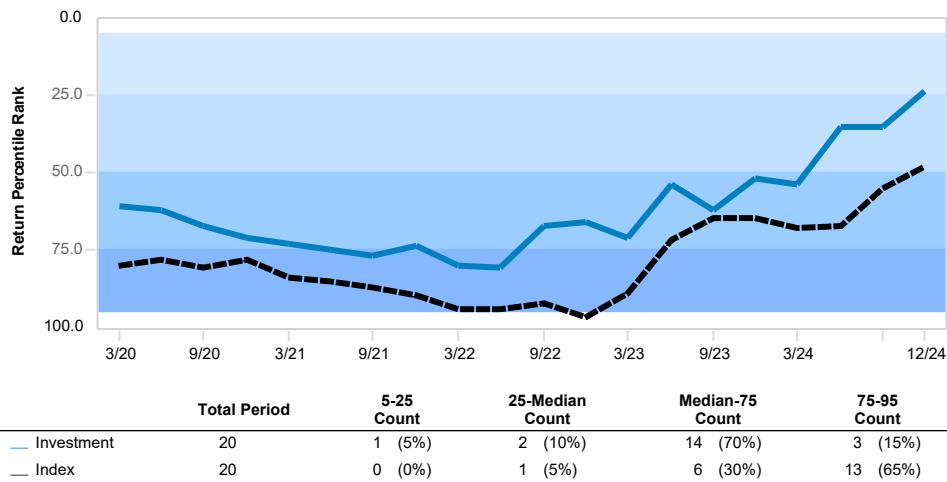
**Risk and Return 3 Years**



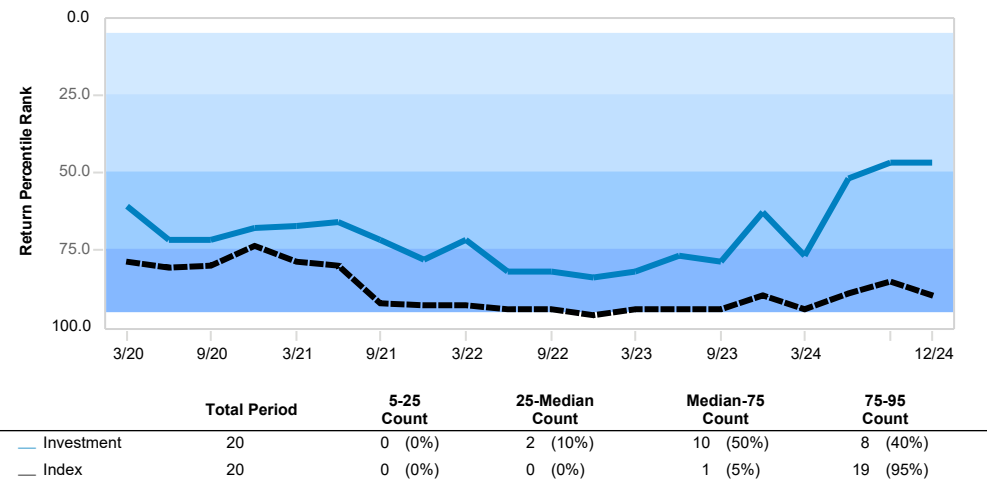
**Risk and Return 5 Years**



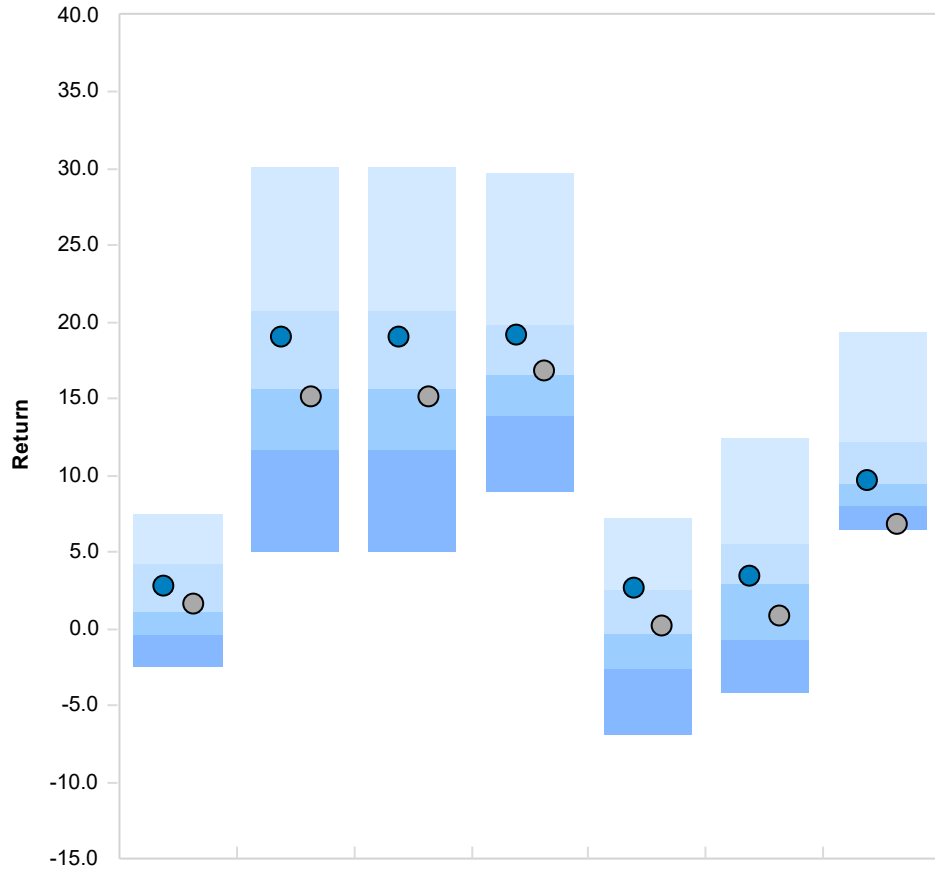
**3 Year Rolling Percentile Rank IM U.S. Small Cap Growth Equity (SA+CF)**



**5 Year Rolling Percentile Rank IM U.S. Small Cap Growth Equity (SA+CF)**

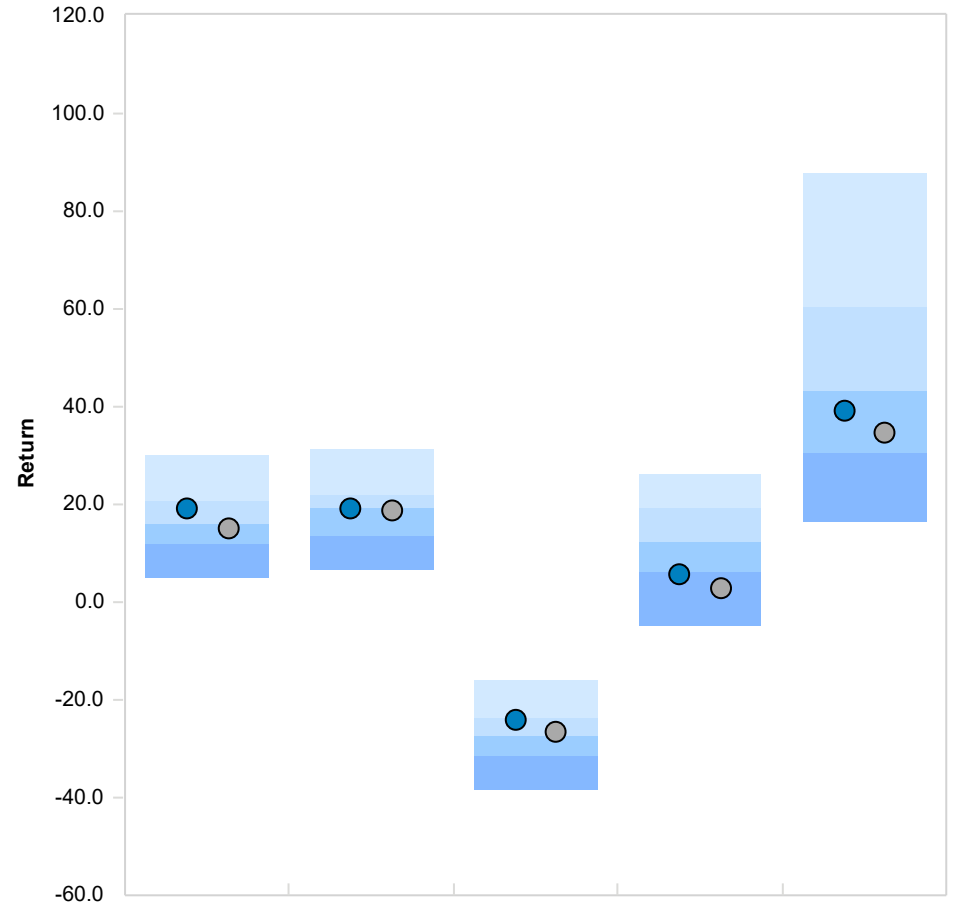


**Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	2.87 (35)	19.07 (32)	19.07 (32)	19.21 (33)	2.64 (24)	3.40 (46)	9.73 (47)
● Index	1.70 (45)	15.15 (55)	15.15 (55)	16.89 (48)	0.21 (48)	0.86 (66)	6.86 (90)
Median	1.10	15.74	15.74	16.53	-0.29	2.88	9.45

**Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)**



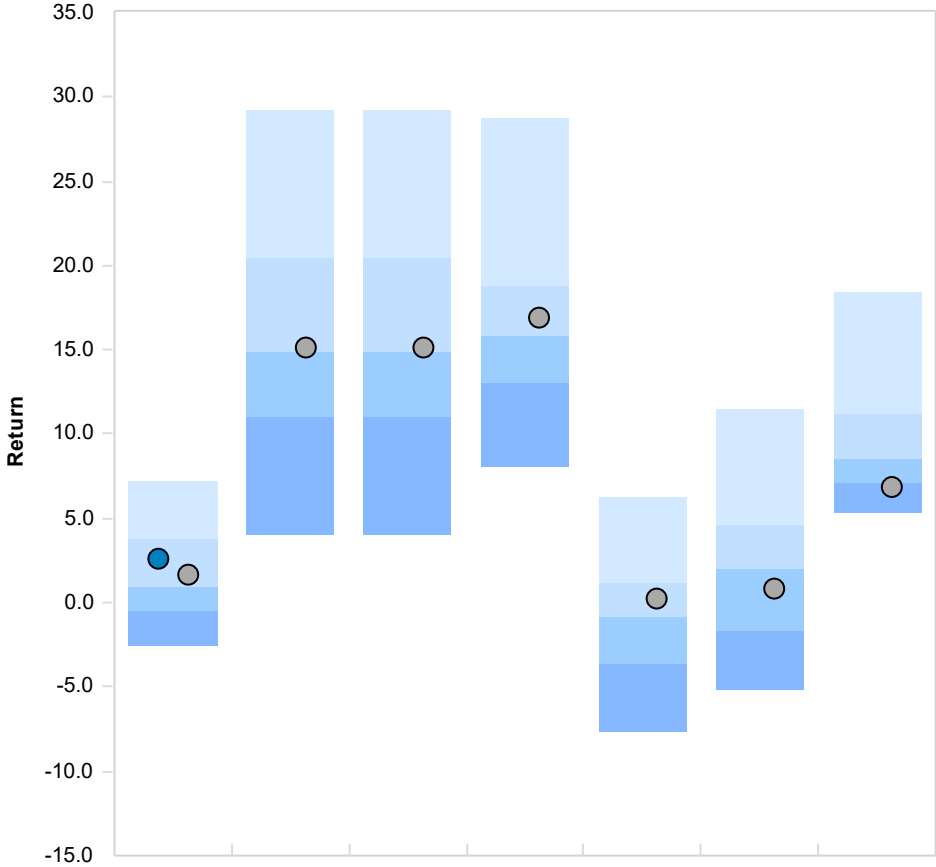
	2024	2023	2022	2021	2020
● Investment	19.07 (32)	19.35 (45)	-23.91 (30)	5.74 (77)	39.16 (60)
● Index	15.15 (55)	18.66 (52)	-26.36 (43)	2.83 (85)	34.63 (67)
Median	15.74	19.07	-27.32	12.12	43.32

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	6.22 (75)	3.14 (7)	5.66 (70)	14.91 (10)	-8.50 (80)	8.85 (13)
Index	8.41 (39)	-2.92 (56)	7.58 (46)	12.75 (27)	-7.32 (68)	7.05 (29)
Median	7.65	-2.53	7.26	11.12	-6.41	5.73

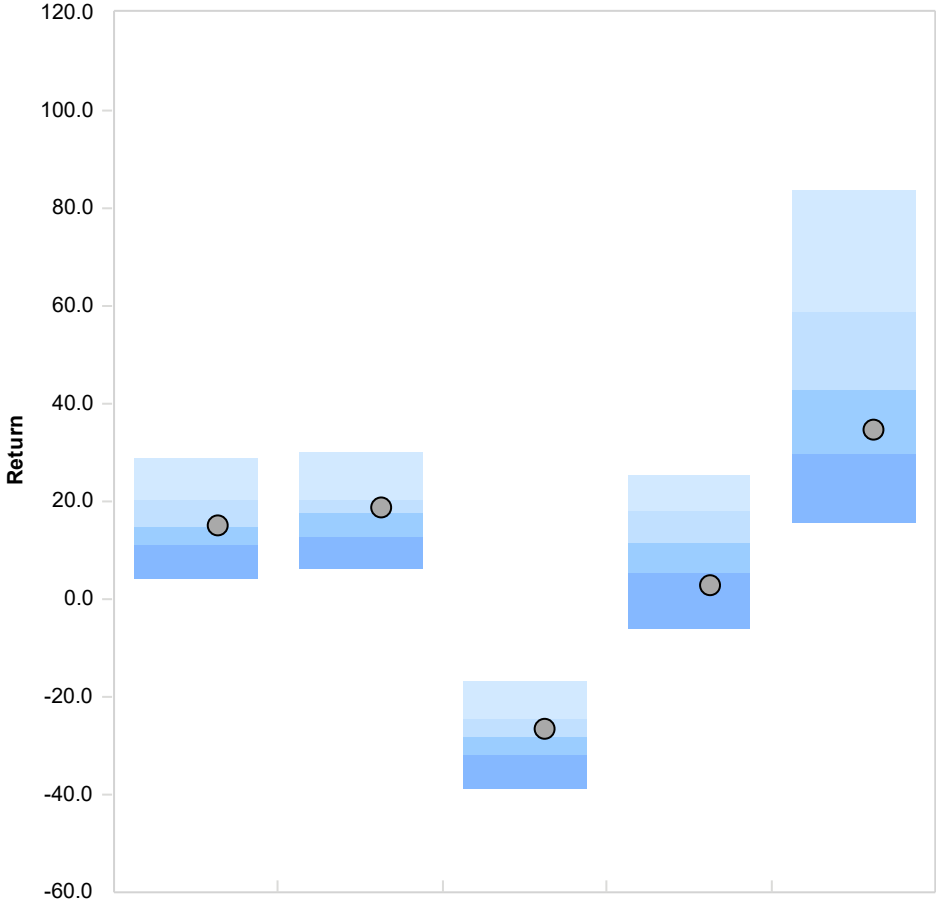
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**Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	2.63 (34)	N/A	N/A	N/A	N/A	N/A	N/A
● Index	1.70 (40)	15.15 (47)	15.15 (47)	16.89 (42)	0.21 (31)	0.86 (61)	6.86 (78)
Median	0.96	14.90	14.90	15.83	-0.82	2.05	8.47

**Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)**



	2024	2023	2022	2021	2020
● Investment	N/A	N/A	N/A	N/A	N/A
● Index	15.15 (47)	18.66 (41)	-26.36 (36)	2.83 (84)	34.63 (67)
Median	14.90	17.56	-28.26	11.62	43.04

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	9.27 (26)	-6.45 (88)	N/A	N/A	N/A	N/A
Index	8.41 (38)	-2.92 (53)	7.58 (45)	12.75 (20)	-7.32 (65)	7.05 (25)
Median	7.57	-2.77	7.06	10.78	-6.73	5.68

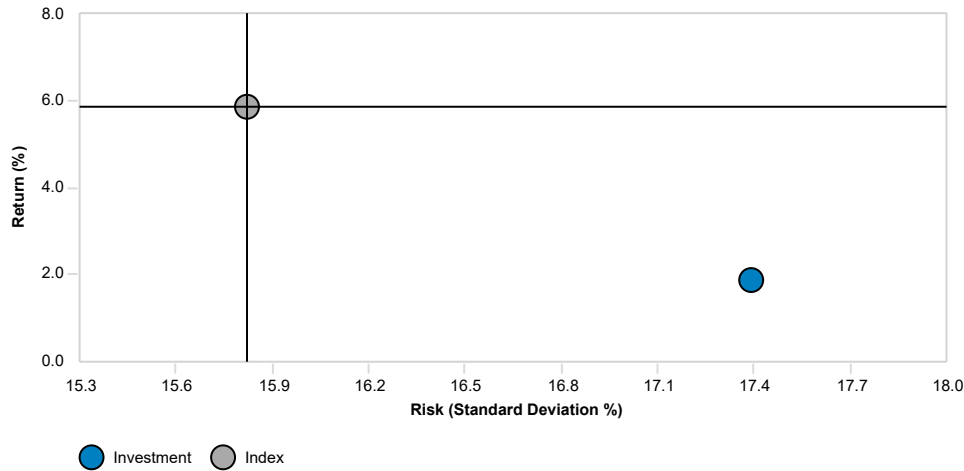
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.87	17.39	-0.03	96.81	6	115.31	6
Index	5.88	15.82	0.20	100.00	9	100.00	3

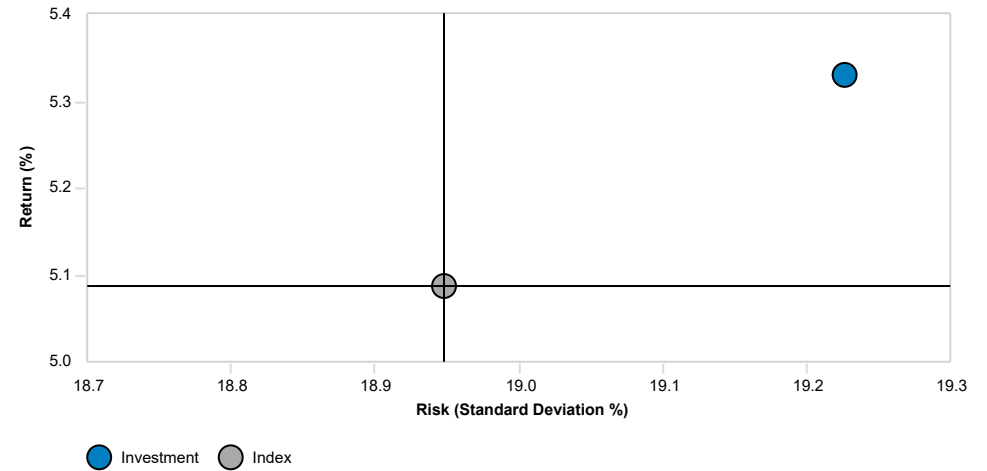
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	5.33	19.23	0.24	102.95	12	102.47	8
Index	5.09	18.95	0.23	100.00	15	100.00	5

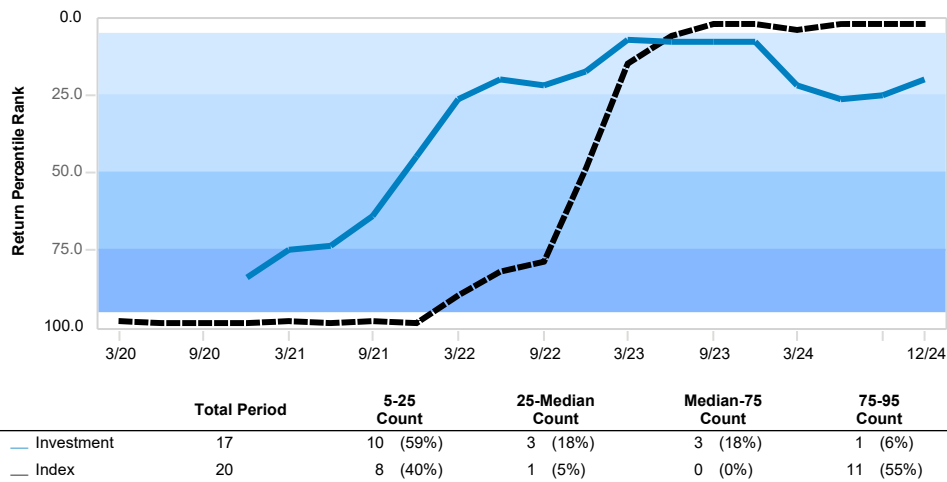
Risk and Return 3 Years



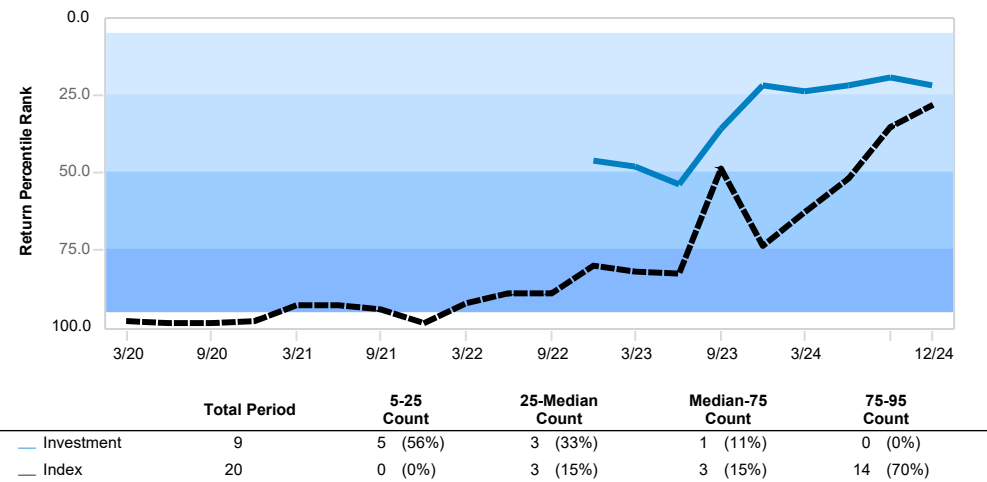
Risk and Return 5 Years



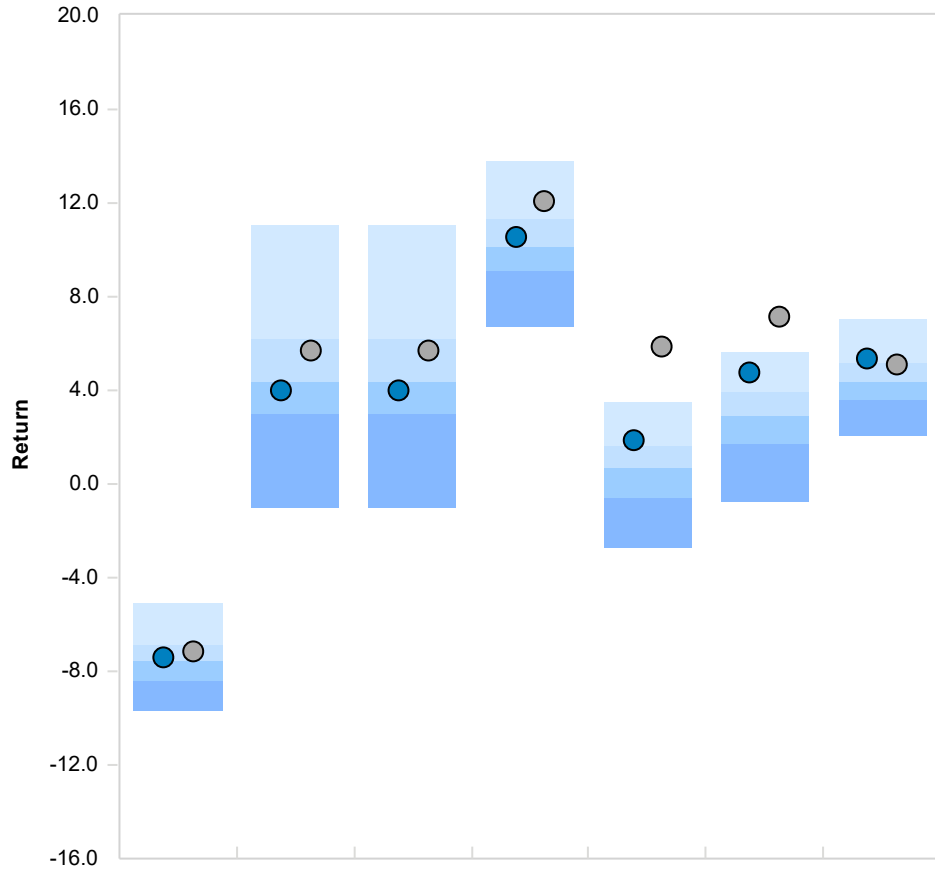
3 Year Rolling Percentile Rank Foreign Large Blend



5 Year Rolling Percentile Rank Foreign Large Blend

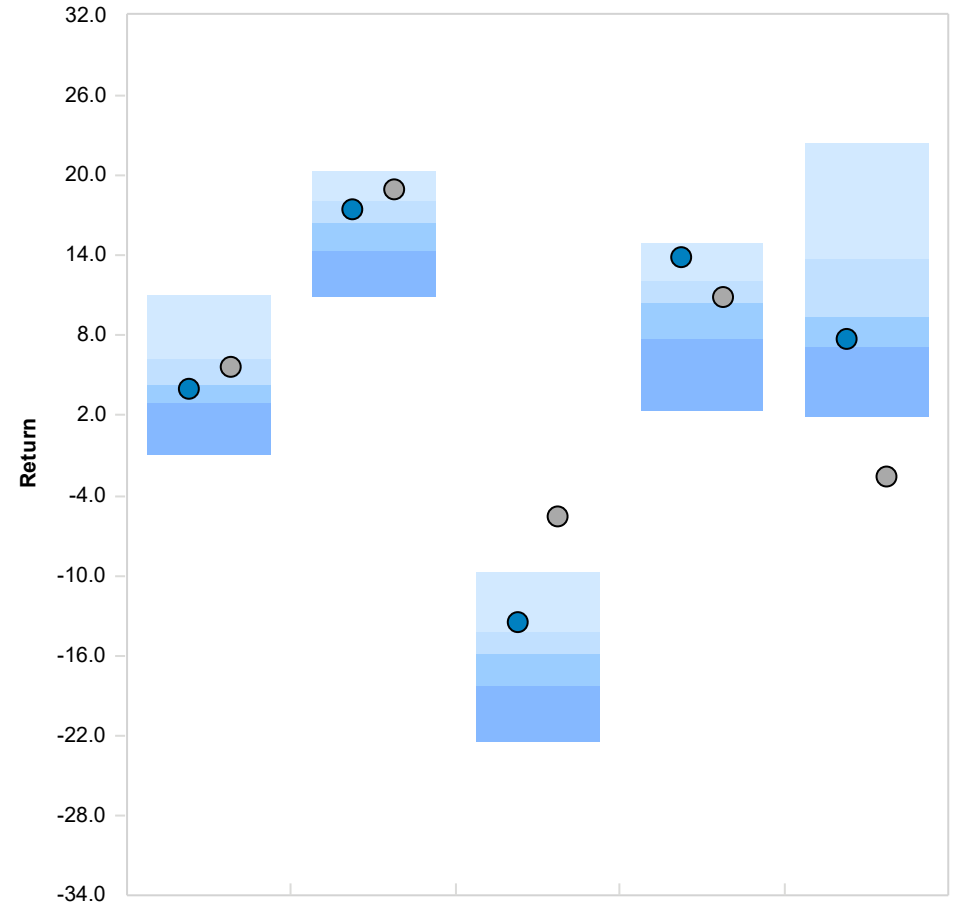


**Peer Group Analysis - Foreign Large Blend**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-7.41 (44)	3.99 (55)	3.99 (55)	10.54 (39)	1.87 (20)	4.74 (15)	5.33 (22)
● Index	-7.12 (31)	5.68 (30)	5.68 (30)	12.12 (16)	5.88 (2)	7.11 (3)	5.09 (28)
Median	-7.54	4.30	4.30	10.16	0.67	2.90	4.35

**Peer Group Analysis - Foreign Large Blend**



	2024	2023	2022	2021	2020
● Investment	3.99 (55)	17.49 (35)	-13.48 (16)	13.87 (9)	7.72 (68)
● Index	5.68 (30)	18.95 (16)	-5.58 (1)	10.89 (43)	-2.63 (99)
Median	4.30	16.40	-15.87	10.42	9.39

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	7.81 (34)	-0.47 (75)	4.67 (67)	10.31 (43)	-2.94 (9)	2.07 (84)
Index	8.89 (12)	0.01 (51)	4.48 (73)	8.22 (89)	0.59 (1)	3.15 (34)
Median	7.14	0.07	5.31	10.04	-4.75	2.90

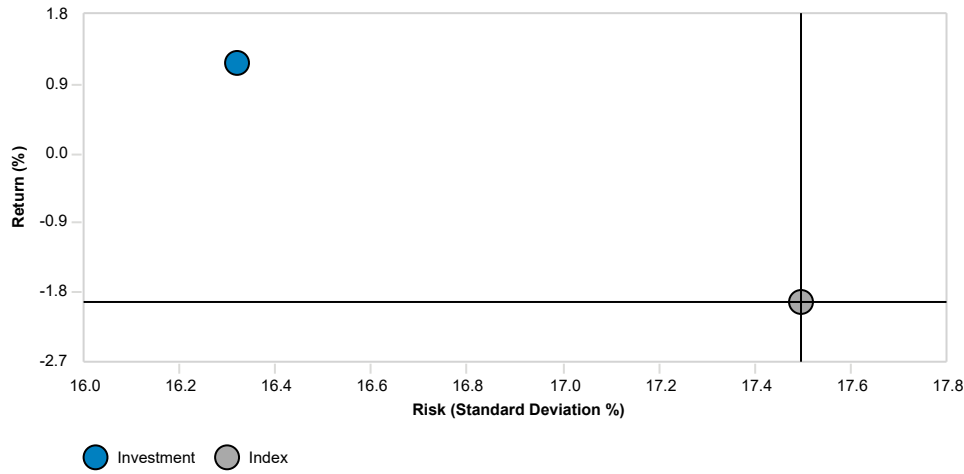
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.18	16.32	-0.08	95.08	7	82.80	5
Index	-1.92	17.50	-0.25	100.00	7	100.00	5

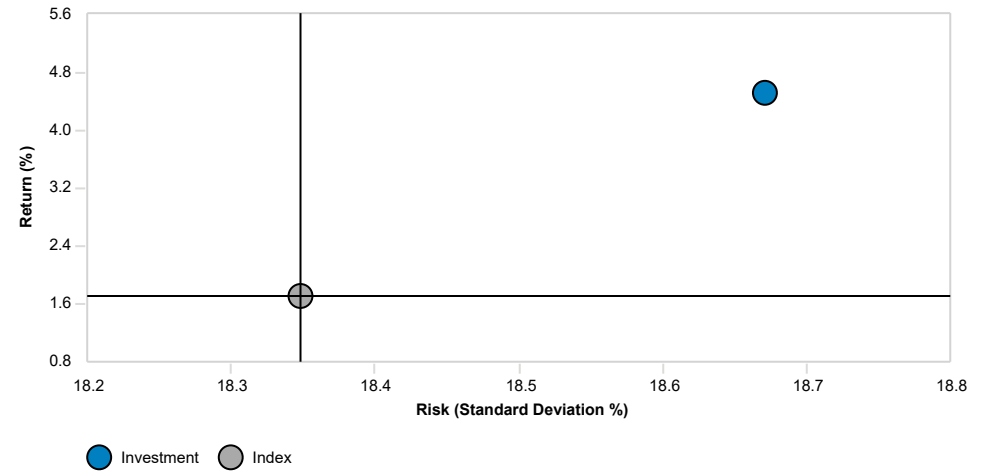
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	4.53	18.67	0.20	100.91	13	88.55	7
Index	1.70	18.35	0.05	100.00	12	100.00	8

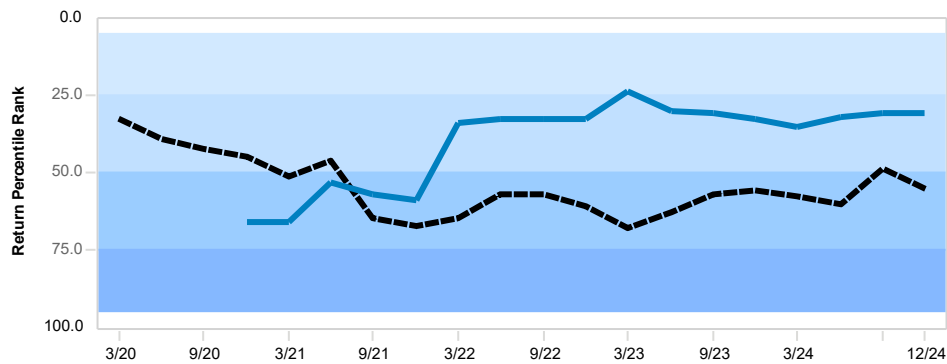
Risk and Return 3 Years



Risk and Return 5 Years

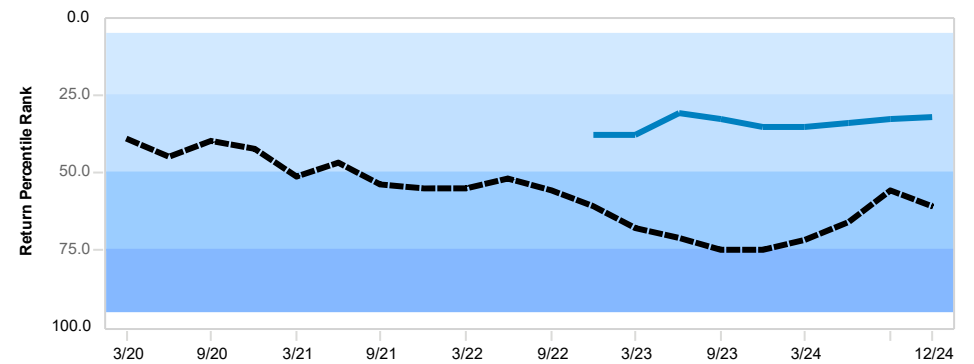


3 Year Rolling Percentile Rank IM Emerging Markets Equity (SA+CF)



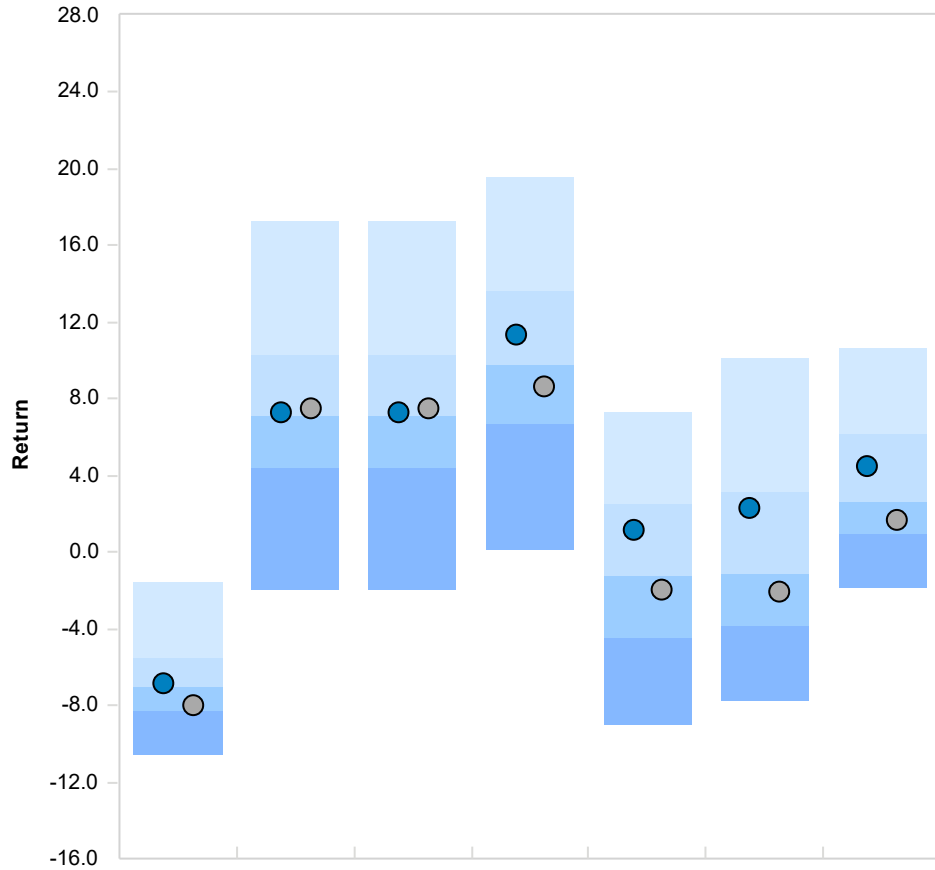
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	17	1 (6%)	11 (65%)	5 (29%)	0 (0%)
Index	20	0 (0%)	6 (30%)	14 (70%)	0 (0%)

5 Year Rolling Percentile Rank IM Emerging Markets Equity (SA+CF)



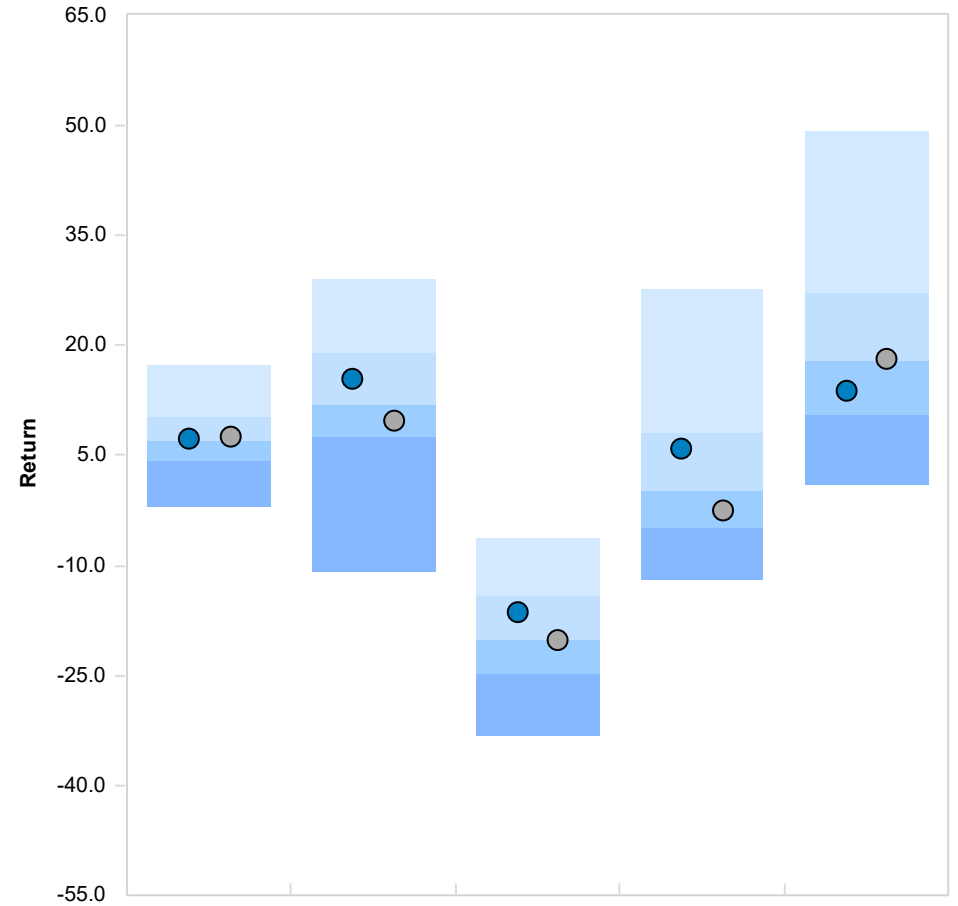
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	9	0 (0%)	9 (100%)	0 (0%)	0 (0%)
Index	20	0 (0%)	5 (25%)	15 (75%)	0 (0%)

**Peer Group Analysis - IM Emerging Markets Equity (SA+CF)**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-6.87 (48)	7.32 (48)	7.32 (48)	11.31 (41)	1.18 (31)	2.32 (29)	4.53 (32)
● Index	-8.01 (72)	7.50 (46)	7.50 (46)	8.66 (61)	-1.92 (55)	-2.08 (57)	1.70 (61)
Median	-7.04	7.11	7.11	9.78	-1.18	-1.15	2.61

**Peer Group Analysis - IM Emerging Markets Equity (SA+CF)**



	2024	2023	2022	2021	2020
● Investment	7.32 (48)	15.45 (39)	-16.40 (33)	5.83 (31)	13.86 (66)
● Index	7.50 (46)	9.83 (66)	-20.09 (49)	-2.54 (63)	18.31 (50)
Median	7.11	11.99	-20.22	0.28	18.05

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	6.62 (53)	5.57 (33)	2.38 (58)	7.86 (55)	-1.52 (34)	2.93 (43)
Index	8.72 (29)	5.00 (43)	2.37 (59)	7.86 (55)	-2.93 (46)	0.90 (72)
Median	6.88	4.48	3.23	8.08	-3.36	2.15



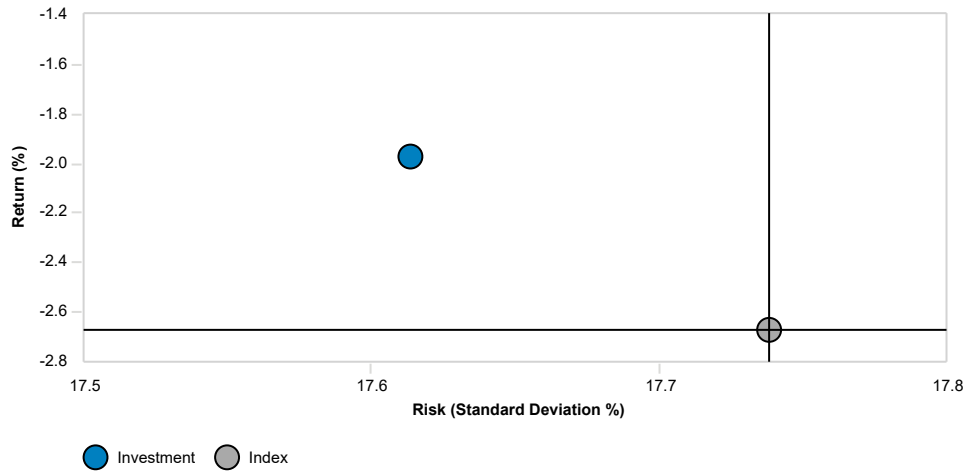
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.97	17.61	-0.25	100.26	6	97.51	6
Index	-2.67	17.74	-0.28	100.00	7	100.00	5

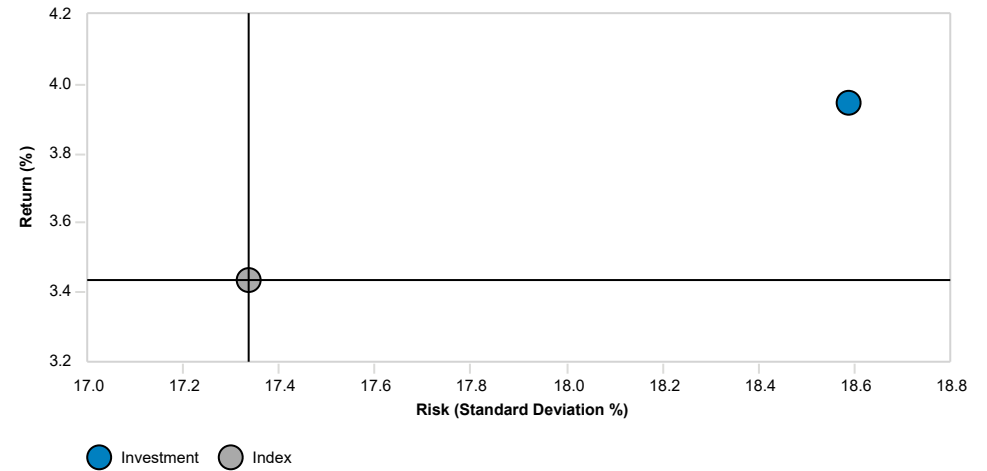
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.95	18.59	0.17	104.45	10	102.11	10
Index	3.44	17.34	0.14	100.00	12	100.00	8

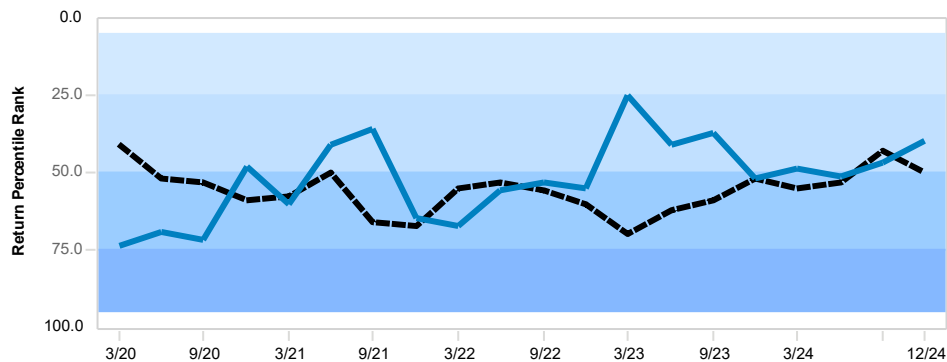
**Risk and Return 3 Years**



**Risk and Return 5 Years**

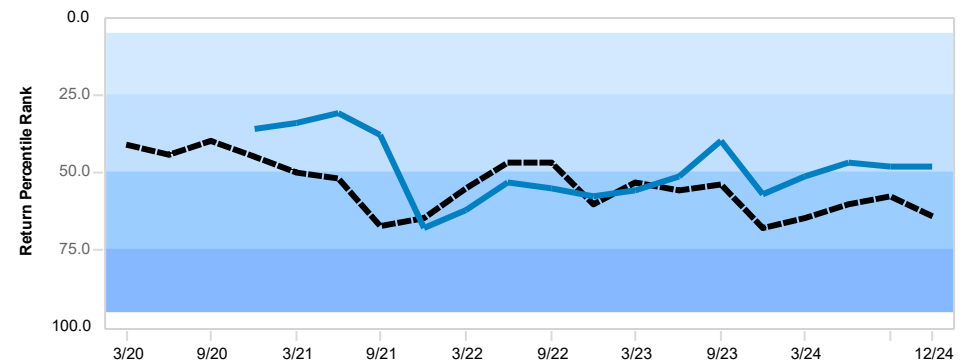


**3 Year Rolling Percentile Rank Foreign Large Growth**



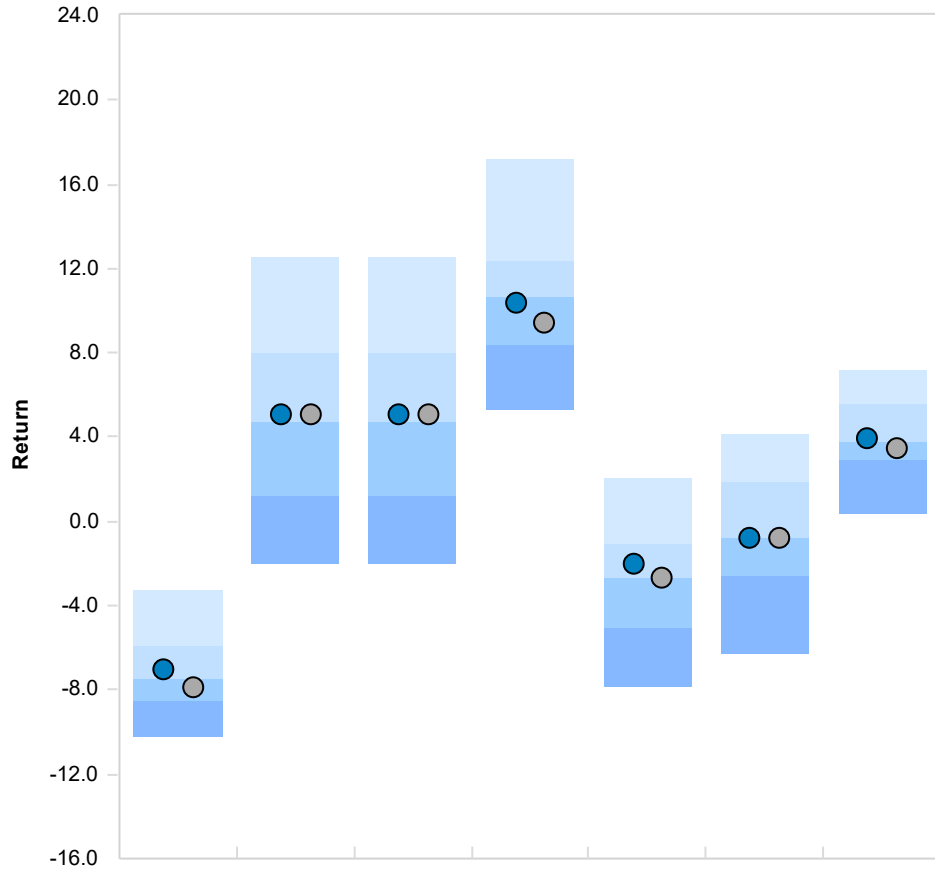
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	8 (40%)	11 (55%)	0 (0%)
Index	20	0 (0%)	4 (20%)	16 (80%)	0 (0%)

**5 Year Rolling Percentile Rank Foreign Large Growth**



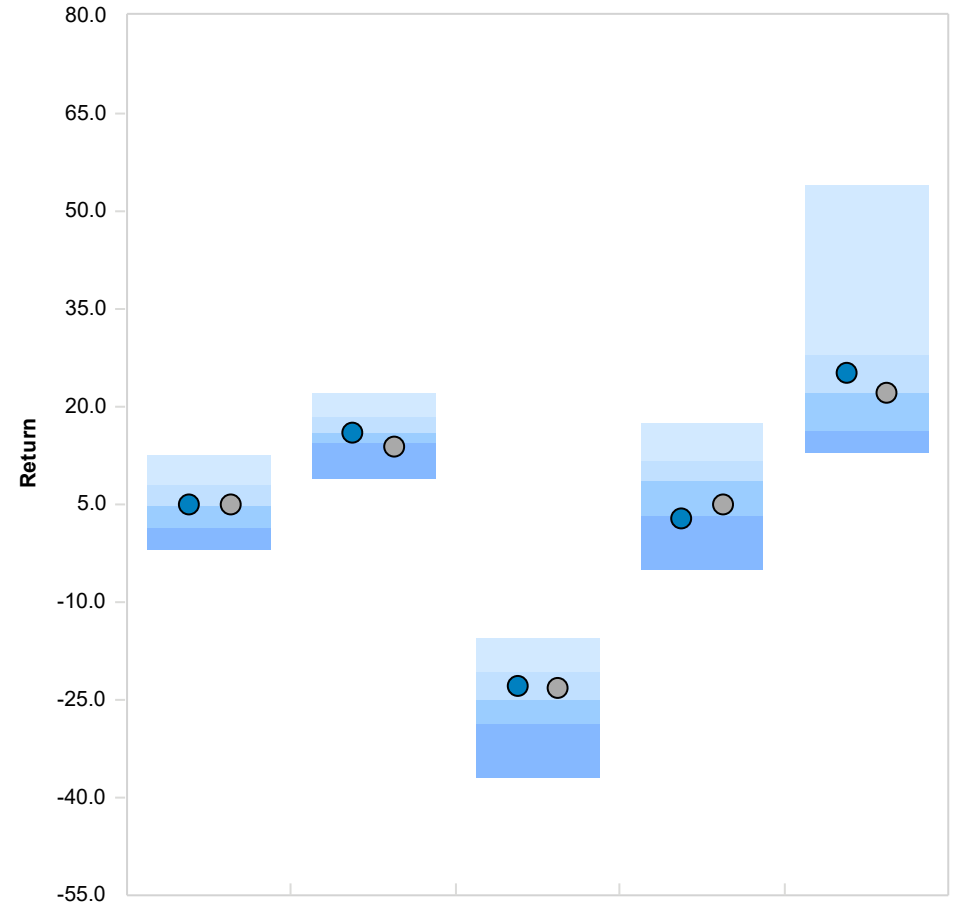
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	17	0 (0%)	8 (47%)	9 (53%)	0 (0%)
Index	20	0 (0%)	7 (35%)	13 (65%)	0 (0%)

**Peer Group Analysis - Foreign Large Growth**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-7.03 (37)	5.04 (45)	5.04 (45)	10.41 (53)	-1.97 (40)	-0.79 (50)	3.95 (48)
● Index	-7.88 (60)	5.07 (44)	5.07 (44)	9.46 (62)	-2.67 (50)	-0.79 (50)	3.44 (64)
Median	-7.50	4.68	4.68	10.67	-2.68	-0.80	3.79

**Peer Group Analysis - Foreign Large Growth**



	2024	2023	2022	2021	2020
● Investment	5.04 (45)	16.05 (49)	-22.72 (33)	2.84 (77)	25.27 (34)
● Index	5.07 (44)	14.03 (79)	-23.05 (36)	5.09 (69)	22.20 (50)
Median	4.68	15.97	-25.05	8.70	22.14

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	5.41 (59)	-0.23 (51)	7.44 (37)	10.37 (81)	-6.33 (17)	2.16 (59)
Index	6.92 (34)	0.72 (27)	5.91 (57)	11.12 (61)	-7.31 (36)	1.94 (68)
Median	6.06	-0.15	6.68	11.80	-7.91	2.57

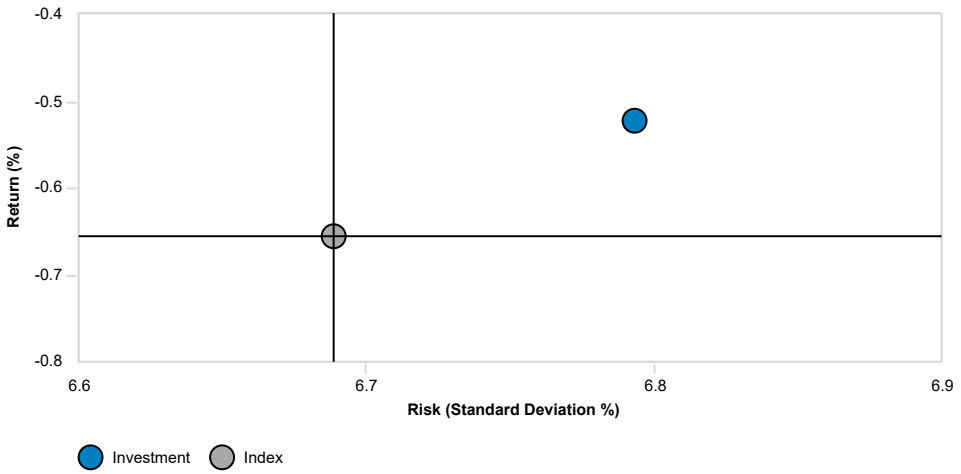
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.52	6.79	-0.62	101.77	5	100.31	7
Index	-0.65	6.69	-0.65	100.00	5	100.00	7

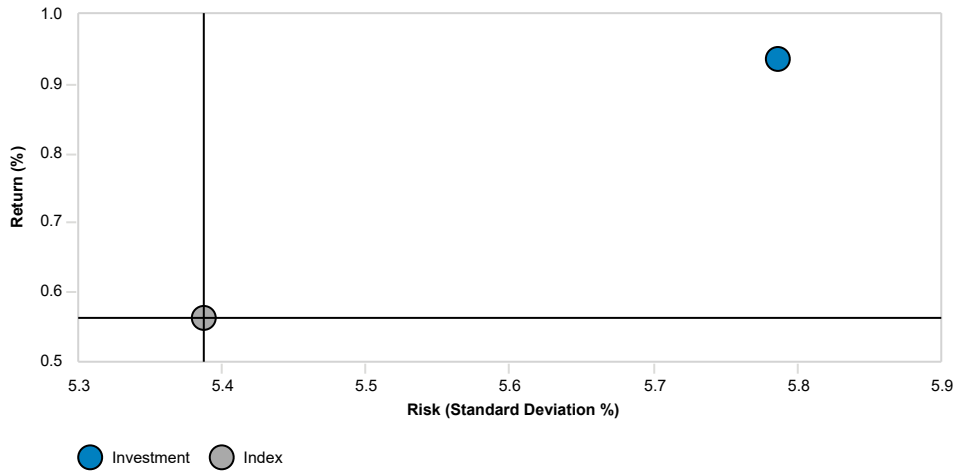
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.94	5.79	-0.23	109.48	10	104.74	10
Index	0.56	5.39	-0.32	100.00	11	100.00	9

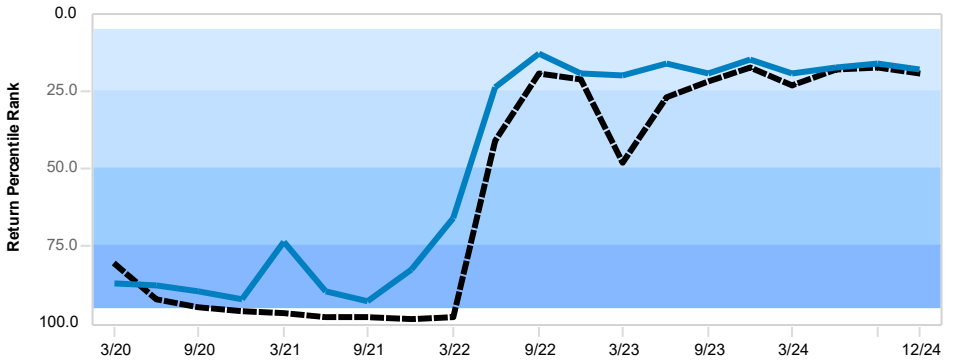
**Risk and Return 3 Years**



**Risk and Return 5 Years**

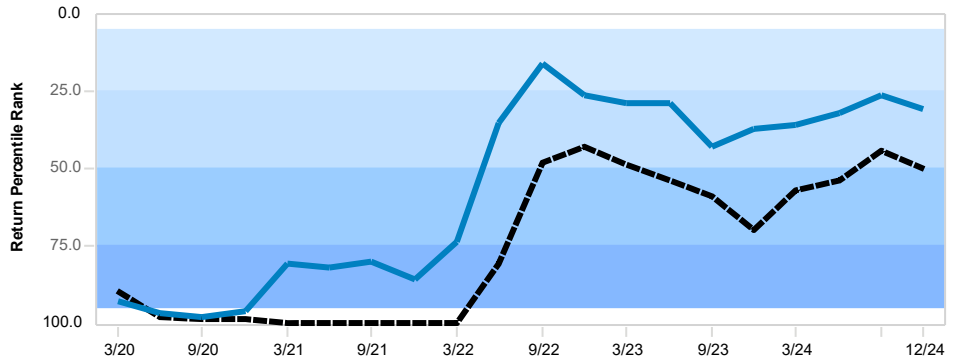


**3 Year Rolling Percentile Rank IM U.S. Broad Market Fixed Income (SA+CF)**



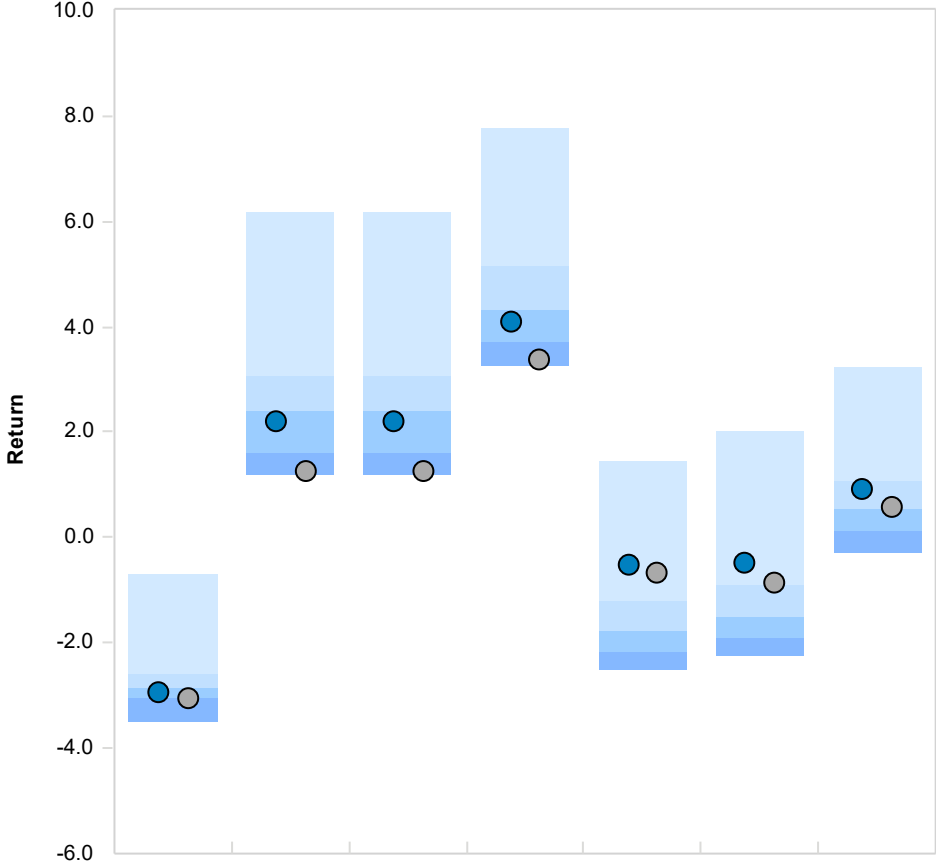
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	11 (55%)	0 (0%)	2 (10%)	7 (35%)
Index	20	8 (40%)	3 (15%)	0 (0%)	9 (45%)

**5 Year Rolling Percentile Rank IM U.S. Broad Market Fixed Income (SA+CF)**



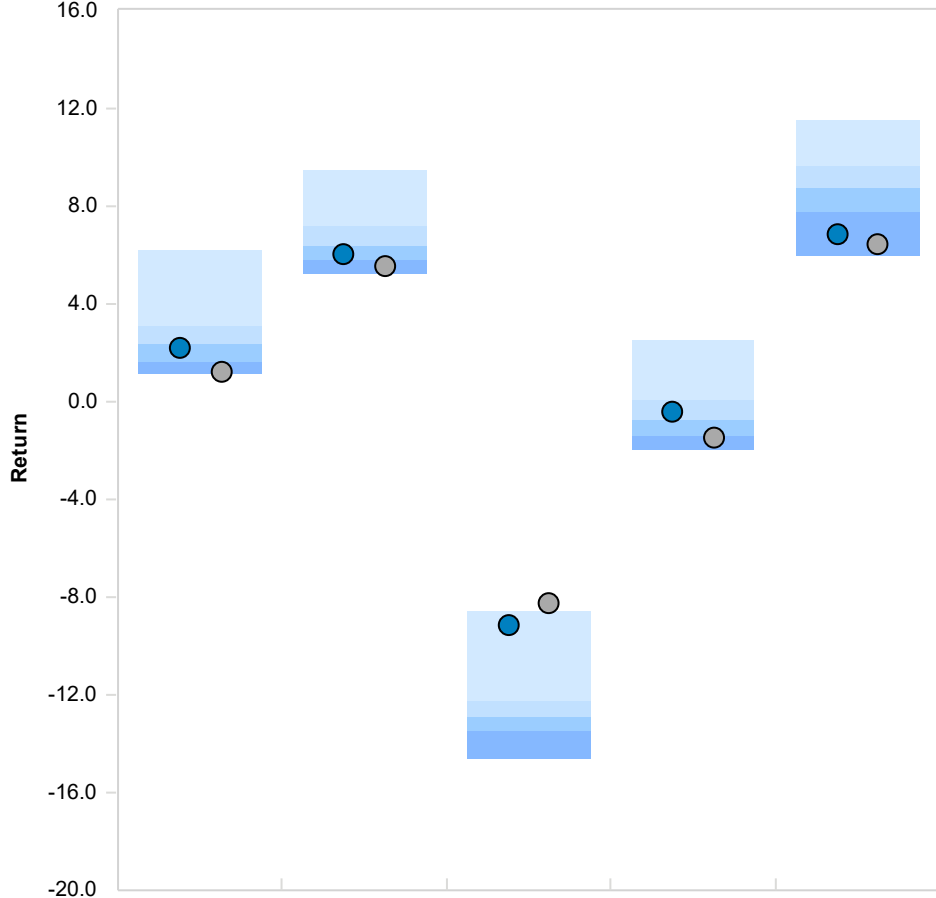
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	10 (50%)	1 (5%)	8 (40%)
Index	20	0 (0%)	5 (25%)	5 (25%)	10 (50%)

**Peer Group Analysis - IM U.S. Broad Market Fixed Income (SA+CF)**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-2.95 (58)	2.20 (57)	2.20 (57)	4.10 (59)	-0.52 (18)	-0.49 (19)	0.94 (31)
● Index	-3.06 (78)	1.25 (93)	1.25 (93)	3.37 (95)	-0.65 (19)	-0.85 (25)	0.56 (50)
Median	-2.87	2.38	2.38	4.34	-1.78	-1.50	0.54

**Peer Group Analysis - IM U.S. Broad Market Fixed Income (SA+CF)**



	2024	2023	2022	2021	2020
● Investment	2.20 (57)	6.04 (66)	-9.17 (7)	-0.40 (39)	6.86 (91)
● Index	1.25 (93)	5.53 (88)	-8.24 (5)	-1.44 (76)	6.43 (93)
Median	2.38	6.38	-12.92	-0.73	8.75

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	5.34 (37)	0.21 (70)	-0.24 (45)	6.69 (74)	-3.40 (86)	-0.15 (20)
Index	5.20 (67)	0.07 (95)	-0.78 (93)	6.82 (60)	-3.23 (77)	-0.84 (83)
Median	5.27	0.32	-0.32	6.92	-3.00	-0.58

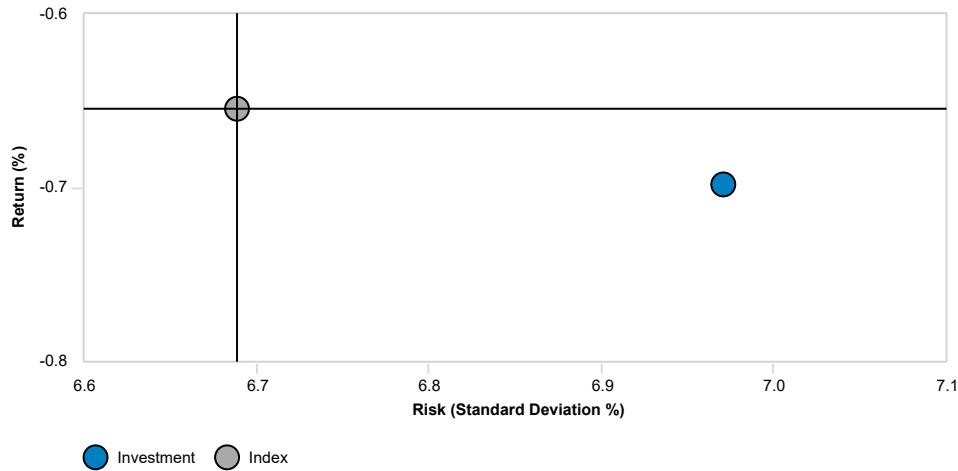
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-0.70	6.97	-0.63	104.78	5	104.82	7
Index	-0.65	6.69	-0.65	100.00	5	100.00	7

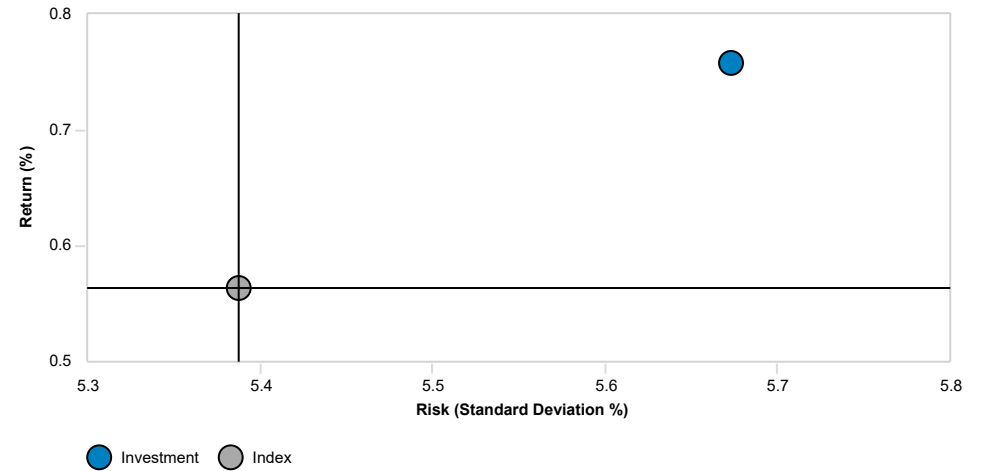
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.76	5.67	-0.27	107.54	10	105.28	10
Index	0.56	5.39	-0.32	100.00	11	100.00	9

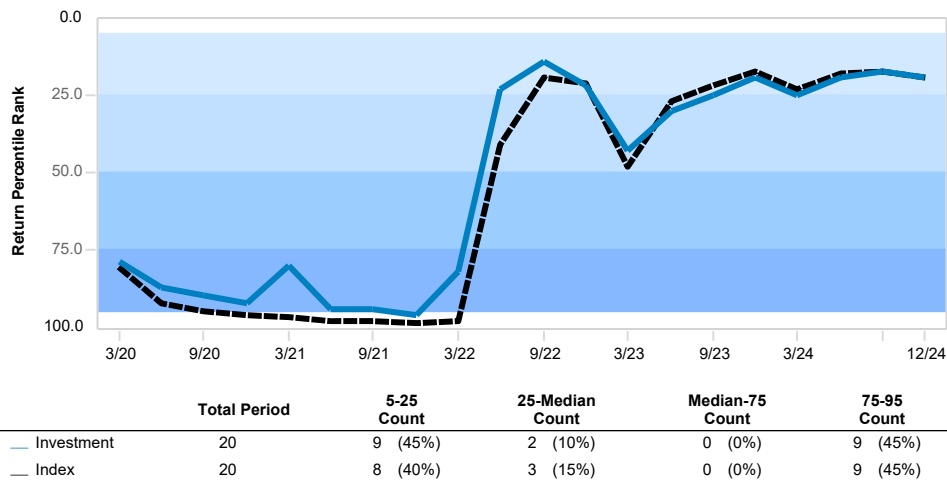
**Risk and Return 3 Years**



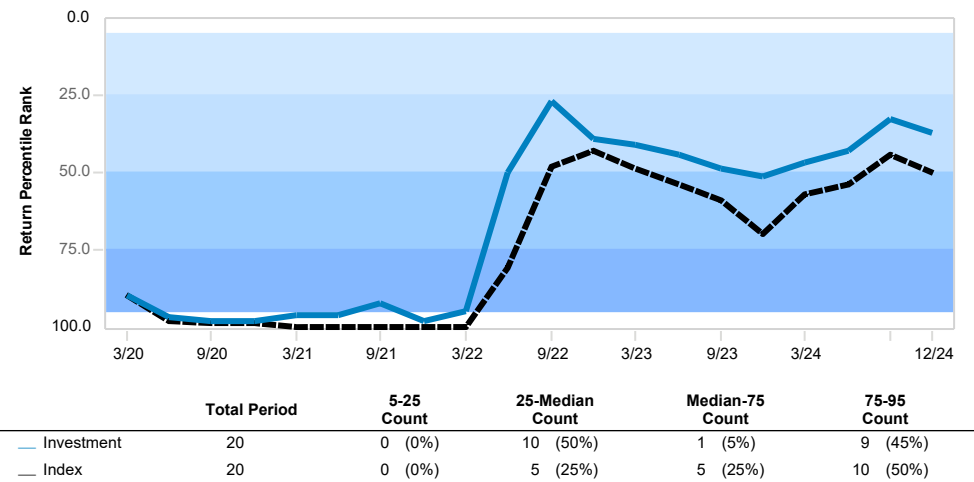
**Risk and Return 5 Years**



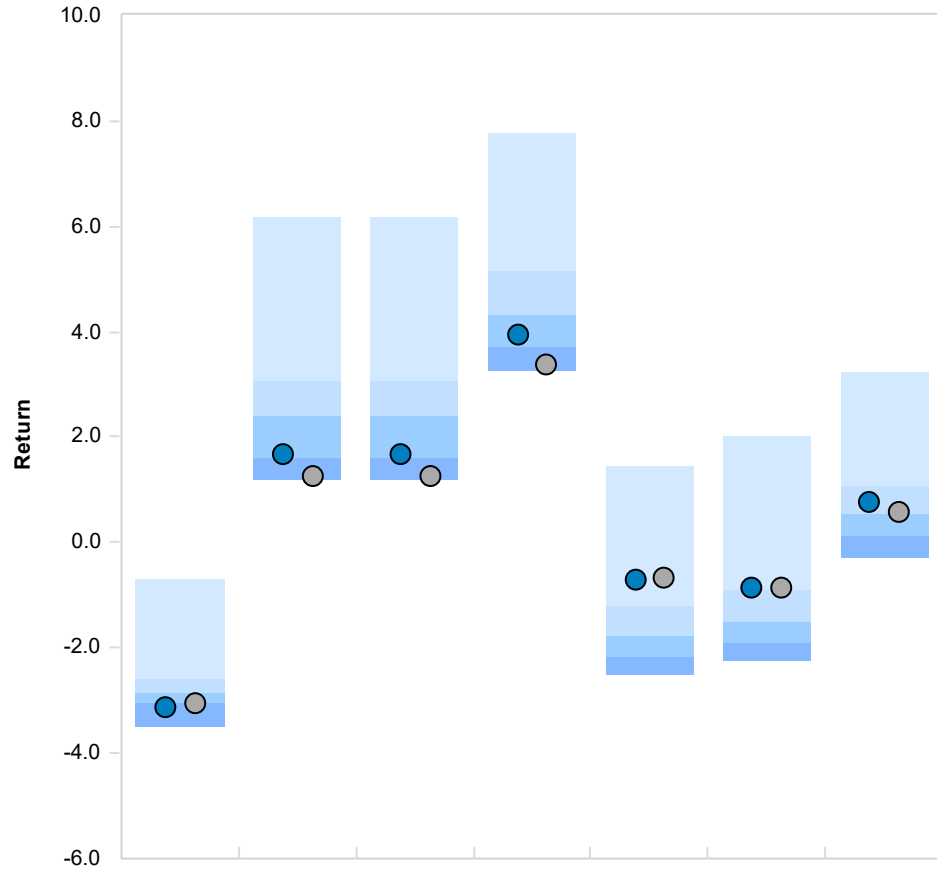
**3 Year Rolling Percentile Rank IM U.S. Broad Market Fixed Income (SA+CF)**



**5 Year Rolling Percentile Rank IM U.S. Broad Market Fixed Income (SA+CF)**

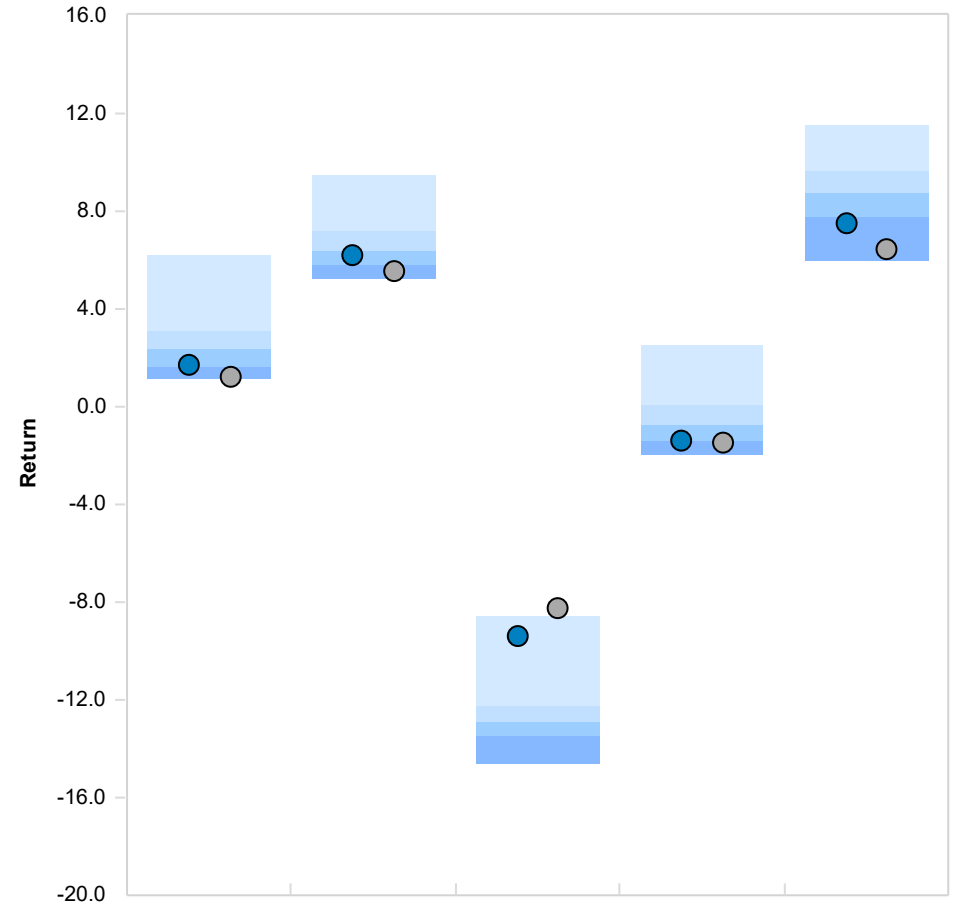


Peer Group Analysis - IM U.S. Broad Market Fixed Income (SA+CF)



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-3.12 (87)	1.69 (72)	1.69 (72)	3.94 (69)	-0.70 (19)	-0.87 (25)	0.76 (37)
● Index	-3.06 (78)	1.25 (93)	1.25 (93)	3.37 (95)	-0.65 (19)	-0.85 (25)	0.56 (50)
Median	-2.87	2.38	2.38	4.34	-1.78	-1.50	0.54

Peer Group Analysis - IM U.S. Broad Market Fixed Income (SA+CF)



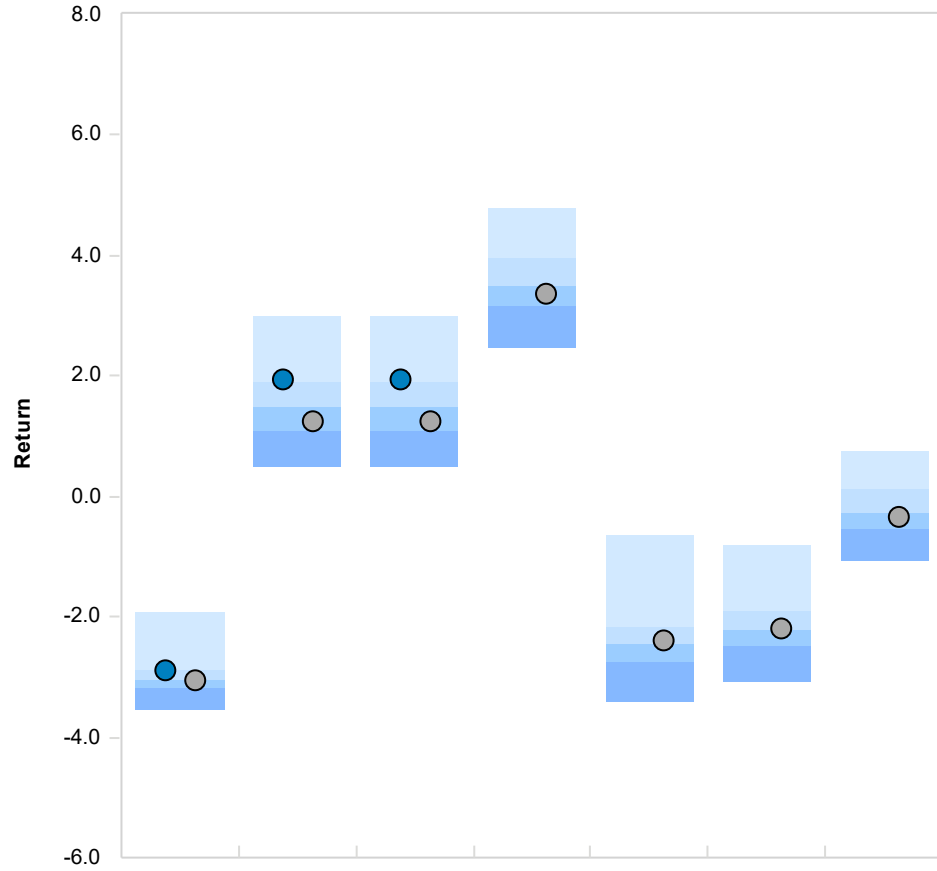
	2024	2023	2022	2021	2020
● Investment	1.69 (72)	6.23 (58)	-9.36 (8)	-1.38 (75)	7.53 (85)
● Index	1.25 (93)	5.53 (88)	-8.24 (5)	-1.44 (76)	6.43 (93)
Median	2.38	6.38	-12.92	-0.73	8.75

Comparative Performance

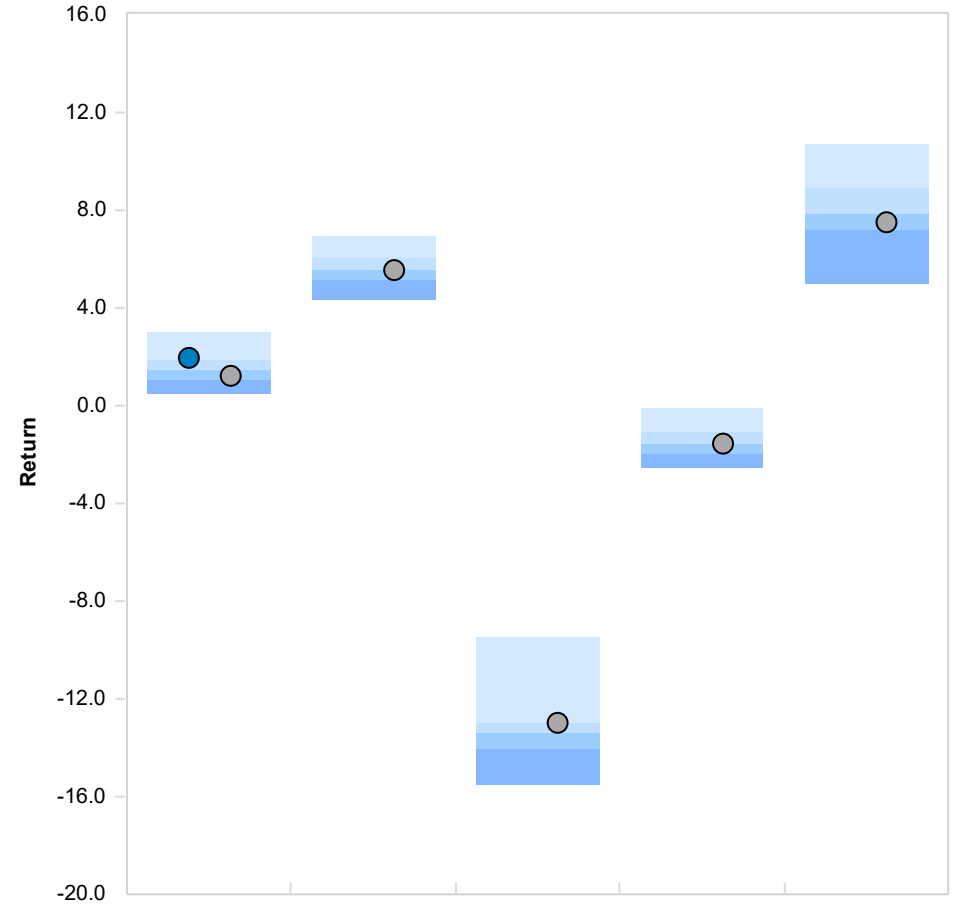
	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	5.36 (34)	0.22 (68)	-0.59 (74)	6.85 (56)	-3.20 (71)	-0.67 (59)
Index	5.20 (67)	0.07 (95)	-0.78 (93)	6.82 (60)	-3.23 (77)	-0.84 (83)
Median	5.27	0.32	-0.32	6.92	-3.00	-0.58

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**Peer Group Analysis - Intermediate Core Bond**



**Peer Group Analysis - Intermediate Core Bond**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
Investment	-2.88 (27)	1.94 (25)	1.94 (25)	N/A	N/A	N/A	N/A
Index	-3.06 (50)	1.25 (66)	1.25 (66)	3.37 (61)	-2.41 (45)	-2.19 (46)	-0.33 (57)
Median	-3.07	1.48	1.48	3.50	-2.46	-2.24	-0.26

	2024	2023	2022	2021	2020
Investment	1.94 (25)	N/A	N/A	N/A	N/A
Index	1.25 (66)	5.53 (56)	-13.01 (27)	-1.55 (49)	7.51 (60)
Median	1.48	5.58	-13.41	-1.57	7.84

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	5.28 (23)	0.31 (20)	-0.61 (48)	6.85 (32)	-2.93 (22)	-0.84 (46)
Index	5.20 (37)	0.07 (78)	-0.78 (72)	6.82 (35)	-3.23 (61)	-0.84 (48)
Median	5.13	0.17	-0.63	6.69	-3.16	-0.86



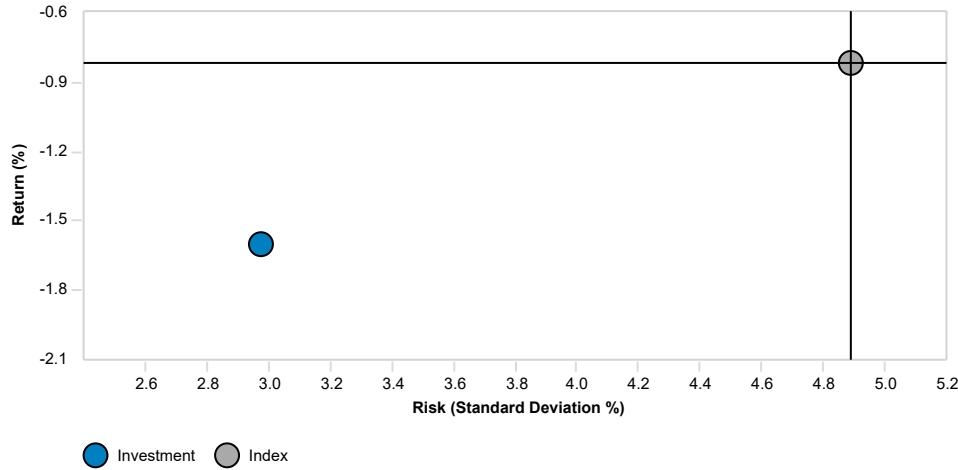
**Historical Statistics 3 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.60	2.97	-1.43	10.61	6	45.19	6
Index	-0.82	4.89	-0.81	100.00	5	100.00	7

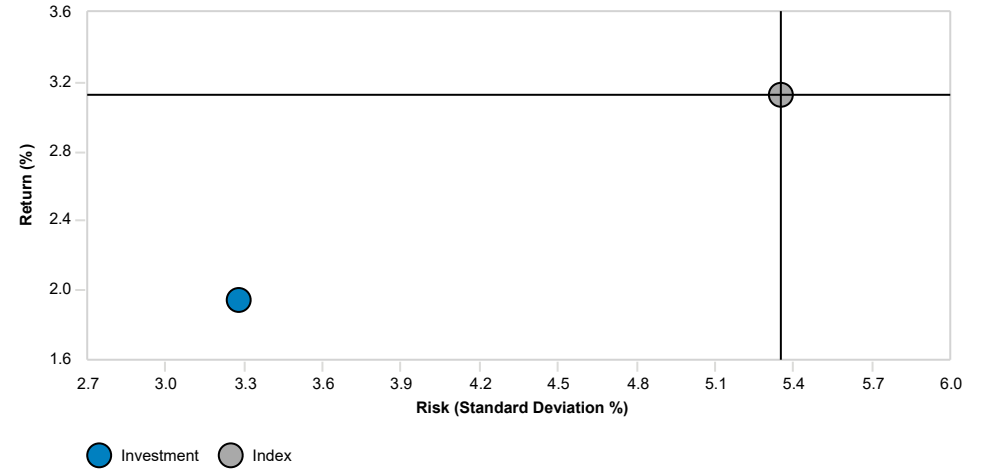
**Historical Statistics 5 Years**

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.94	3.28	-0.11	45.15	14	26.33	6
Index	3.13	5.35	0.13	100.00	12	100.00	8

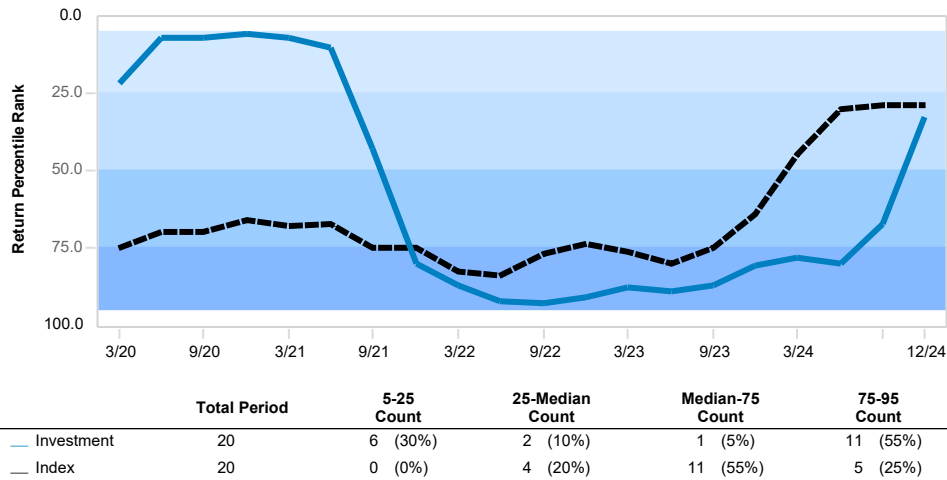
**Risk and Return 3 Years**



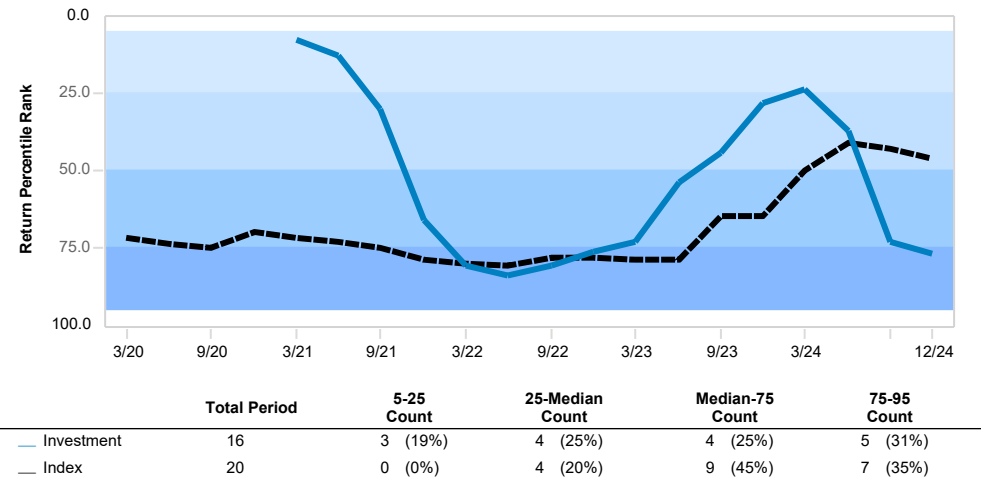
**Risk and Return 5 Years**



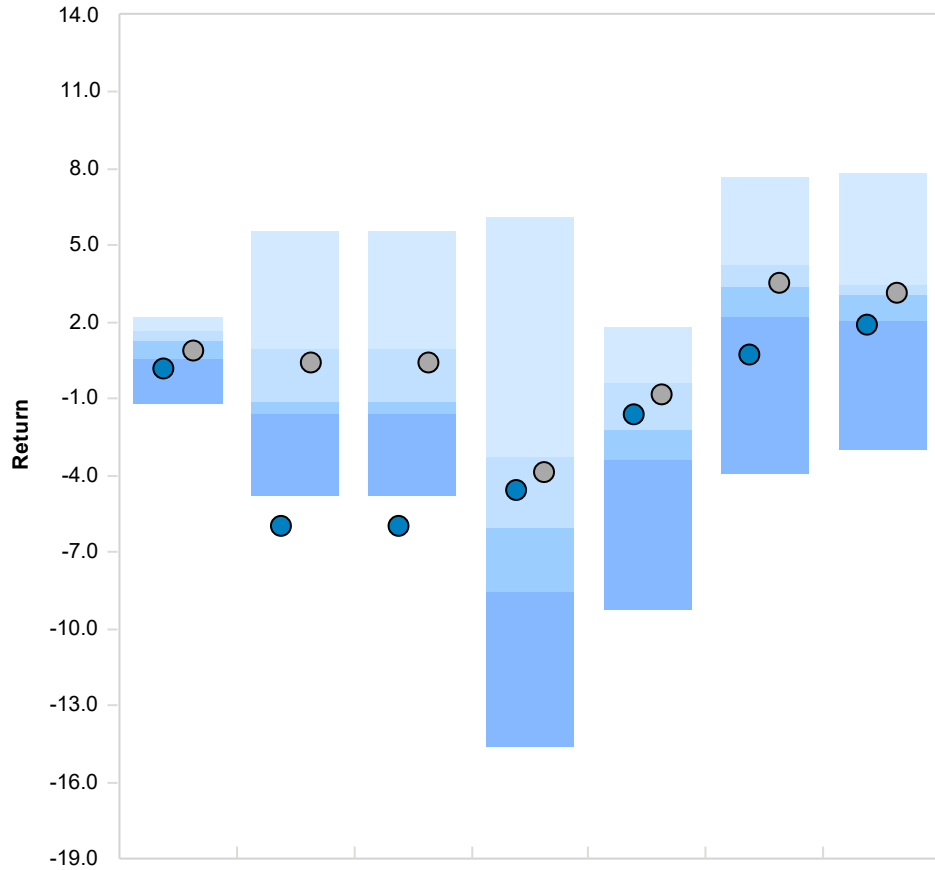
**3 Year Rolling Percentile Rank IM U.S. Private Real Estate (SA+CF)**



**5 Year Rolling Percentile Rank IM U.S. Private Real Estate (SA+CF)**

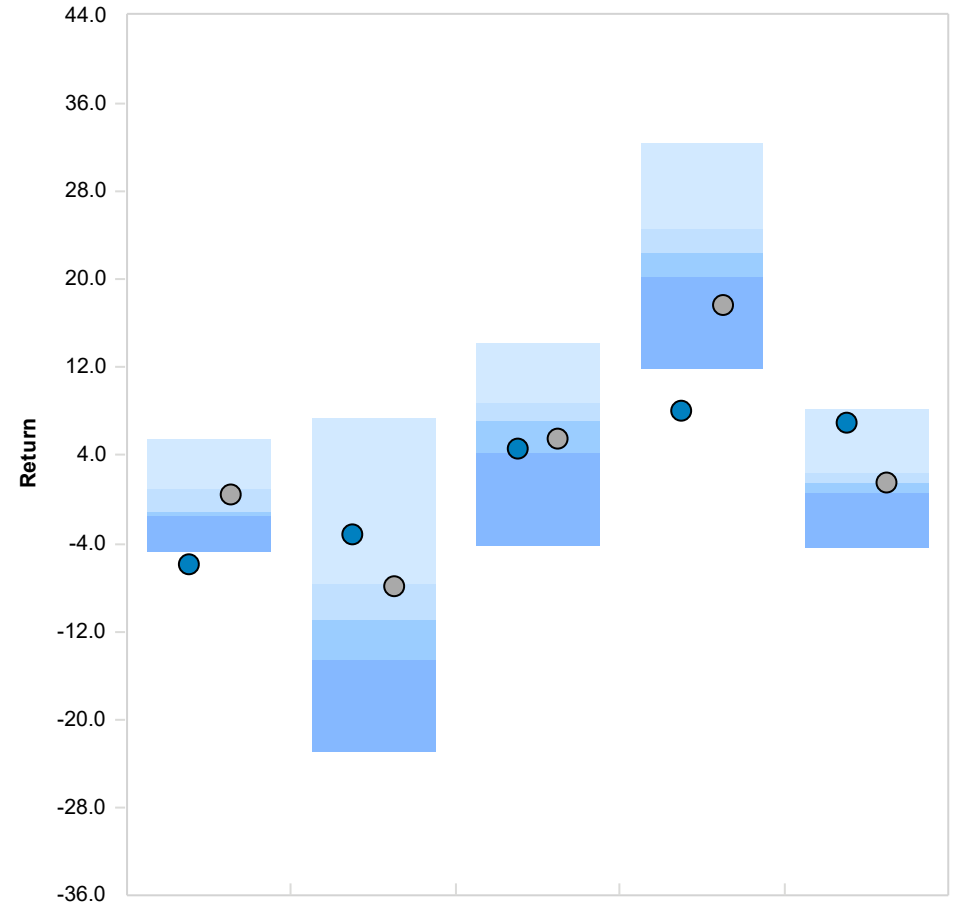


**Peer Group Analysis - IM U.S. Private Real Estate (SA+CF)**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	0.17 (88)	-5.95 (97)	-5.95 (97)	-4.55 (37)	-1.60 (33)	0.73 (83)	1.94 (77)
● Index	0.90 (64)	0.43 (32)	0.43 (32)	-3.85 (30)	-0.82 (29)	3.52 (46)	3.13 (46)
Median	1.30	-1.13	-1.13	-6.03	-2.22	3.43	3.07

**Peer Group Analysis - IM U.S. Private Real Estate (SA+CF)**



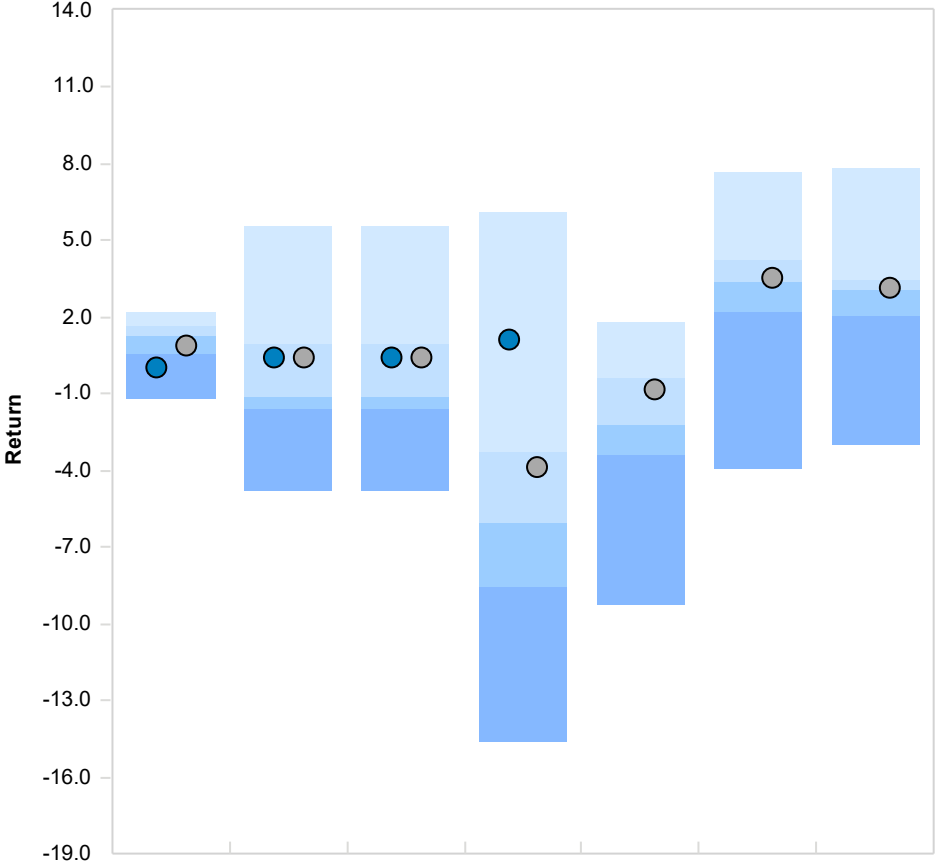
	2024	2023	2022	2021	2020
● Investment	-5.95 (97)	-3.13 (13)	4.58 (74)	8.04 (97)	6.97 (6)
● Index	0.43 (32)	-7.94 (26)	5.52 (62)	17.70 (82)	1.60 (47)
Median	-1.13	-11.03	7.14	22.49	1.57

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	-3.37 (99)	-1.01 (72)	-1.84 (42)	-2.20 (34)	-0.85 (17)	0.50 (11)
Index	0.78 (36)	-0.26 (31)	-0.98 (24)	-3.02 (42)	-1.37 (22)	-1.98 (49)
Median	0.26	-0.69	-2.10	-4.20	-2.37	-2.02

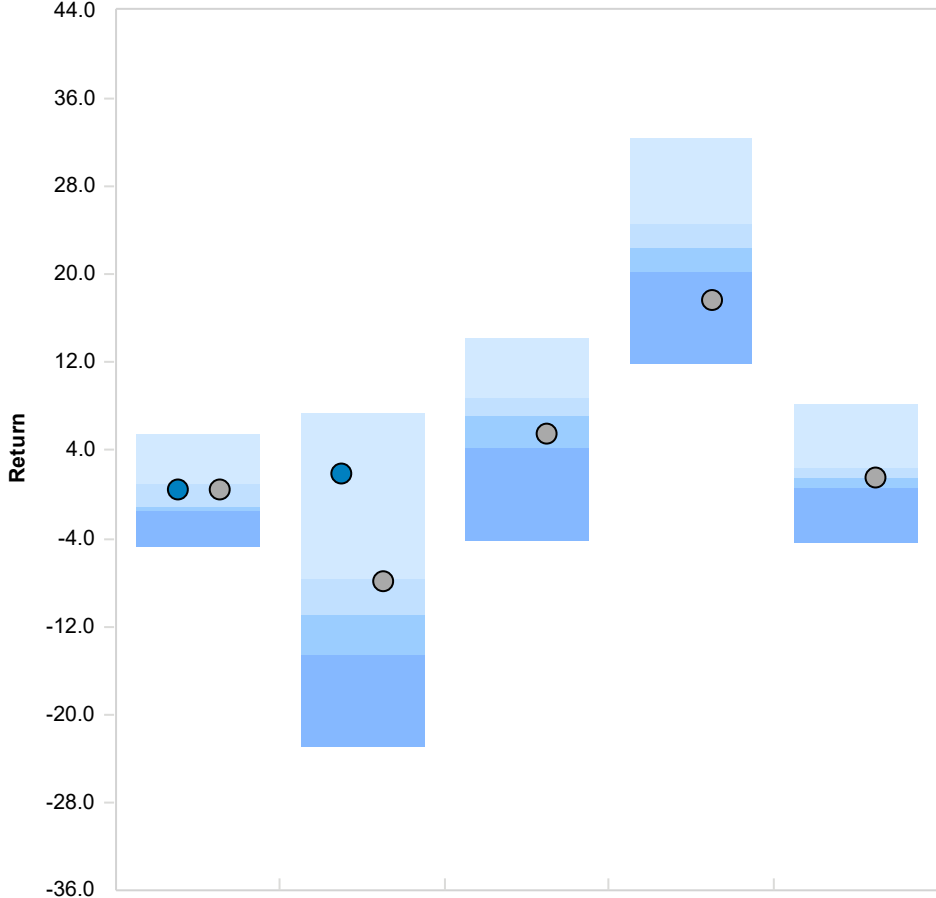
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**Peer Group Analysis - IM U.S. Open End Private Real Estate (SA+CF)**



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	0.00 (89)	0.39 (33)	0.39 (33)	1.15 (13)	N/A	N/A	N/A
● Index	0.90 (64)	0.43 (32)	0.43 (32)	-3.85 (30)	-0.82 (29)	3.52 (46)	3.13 (46)
Median	1.30	-1.13	-1.13	-6.03	-2.22	3.43	3.07

**Peer Group Analysis - IM U.S. Open End Private Real Estate (SA+CF)**



	2024	2023	2022	2021	2020
● Investment	0.39 (33)	1.91 (11)	N/A	N/A	N/A
● Index	0.43 (32)	-7.94 (26)	5.52 (62)	17.70 (82)	1.60 (47)
Median	-1.13	-11.03	7.14	22.49	1.57

**Comparative Performance**

	1 Qtr Ending Sep-2024	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023
Investment	0.74 (37)	0.81 (10)	-1.15 (27)	-1.21 (16)	0.53 (11)	1.54 (10)
Index	0.78 (36)	-0.26 (31)	-0.98 (24)	-3.02 (42)	-1.37 (22)	-1.98 (49)
Median	0.26	-0.69	-2.10	-4.20	-2.37	-2.02

Erie County Employees Retirement Plan

Fee Analysis

As of December 31, 2024

	Estimated Annual Fee (%)	Market Value (\$)	Estimated Annual Fee (\$)	Fee Schedule
<b>Total Fund</b>	<b>0.39</b>	<b>329,069,260</b>	<b>1,292,549</b>	
<b>Domestic Large Cap Equity</b>	<b>0.08</b>	<b>83,478,916</b>	<b>64,500</b>	
Vanguard S&P 500 Index Fund (VINIX)	0.04	42,195,044	14,768	0.04 % of Assets
Vanguard Russell 1000 Growth Index (VRGWX)	0.07	19,950,467	13,965	0.07 % of Assets
DFA Large Value Equity (DFLVX)	0.22	13,888,415	30,555	0.22 % of Assets
Vanguard Russell 1000 Value Index (VRVIX)	0.07	7,444,990	5,211	0.07 % of Assets
<b>Domestic Small Cap Equity</b>	<b>0.56</b>	<b>49,727,679</b>	<b>280,408</b>	
Allspring Global Small Value Eq.	0.50	20,957,626	104,788	0.50 % of Assets
Emerald Small Growth Equity	0.61	24,425,151	149,551	0.75 % of First \$2 M 0.60 % Thereafter
StoneRidge Small Growth Equity	0.60	4,344,902	26,069	0.60 % of Assets
<b>International Equity</b>	<b>0.36</b>	<b>46,230,458</b>	<b>165,760</b>	
DFA International Equity (DFIEX)	0.24	19,675,015	47,220	0.24 % of Assets
DFA Emerging Markets (DFCEX)	0.39	5,163,770	20,139	0.39 % of Assets
EuroPacific Growth Fund (RERGX)	0.46	21,391,673	98,402	0.46 % of Assets
<b>Total Fixed Income</b>	<b>0.21</b>	<b>92,995,463</b>	<b>198,970</b>	
Boyd Watterson Fixed	0.23	43,706,841	100,526	0.23 % of Assets
PNC Fixed	0.28	27,308,942	76,465	0.28 % of Assets
Vanguard Core Bond Fund (VCOBX)	0.10	21,979,679	21,980	0.10 % of Assets
<b>Private Real Estate</b>	<b>1.12</b>	<b>23,783,679</b>	<b>267,515</b>	
Boyd Watterson GSA Fund	1.25	11,871,459	148,393	1.25 % of Assets
Bentall GreenOak US Core Plus RE	1.00	11,912,220	119,122	1.00 % of Assets
<b>Private Equity</b>	<b>1.00</b>	<b>23,952,053</b>	<b>239,521</b>	
Ironsides Direct Investment Fund V	1.00	8,883,395	88,834	1.00 % of Assets
PA Co-Investment Fund III	1.00	4,467,069	44,671	1.00 % of Assets
Adams Street Co-Investment Fund V	1.00	6,423,760	64,238	1.00 % of Assets
Hamilton Lane Secondary Fund VI	1.00	4,177,829	41,778	1.00 % of Assets
<b>Private Debt</b>	<b>0.95</b>	<b>7,980,634</b>	<b>75,874</b>	
Ironsides Opportunities Fund	0.75	1,573,054	11,798	0.75 % of Assets
PA Credit Strategies Fund	1.00	6,407,580	64,076	1.00 % of Assets
<b>Cash</b>		<b>920,378</b>	<b>-</b>	
Cash Account		920,378	-	

See the disclosure page at the end of this report.

Fee information on this page is an illustrative estimate of management fees based on current reported portfolio values. Fee estimates do not reflect actual calculation methodologies or applicable carried interest.

**Historical Hybrid Composition**  
**Total Fund Policy Index**  
As of December 31, 2024

**Historical Hybrid Composition**

Allocation Mandate	Weight (%)
<b>Dec-1997</b>	
Bloomberg Intermediate US Govt/Credit Idx	40.00
MSCI EAFE (Net) Index	10.00
Russell 3000 Index	50.00
<b>Mar-1998</b>	
Russell 3000 Index	50.00
MSCI EAFE (Net) Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	40.00
<b>Mar-2005</b>	
Russell 3000 Index	50.00
MSCI EAFE (Net) Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	37.00
Blmbg. U.S. Corp High Yield	3.00
<b>Mar-2007</b>	
Russell 3000 Index	50.00
MSCI EAFE (Net) Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	30.00
Blmbg. U.S. Gov't/Credit	10.00
<b>Dec-2010</b>	
Russell 3000 Index	45.00
MSCI EAFE (Net) Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	38.00
NCREIF Property Index	7.00
<b>Dec-2015</b>	
MSCI EAFE (Net) Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	37.00
NCREIF Property Index	7.00
Russell 2000 Index	15.00
Russell 1000 Index	12.00
S&P 500 Index	13.00
Alerian MLP Index	6.00

Allocation Mandate	Weight (%)
<b>Mar-2019</b>	
MSCI EAFE (Net) Index	13.00
Bloomberg Intermediate US Govt/Credit Idx	29.00
NCREIF Property Index	6.00
Russell 2000 Index	12.00
Russell 1000 Index	25.00
Alerian MLP Index	4.00
S&P UBS Leveraged Loan Index	2.00
Russell Microcap + 3%	4.00
Bloomberg 1-5 Year Gov/Credit Idx	5.00
<b>Mar-2021</b>	
MSCI EAFE (Net) Index	13.00
Bloomberg Intermediate US Govt/Credit Idx	29.00
NCREIF Property Index	8.00
Russell 2000 Index	15.00
Russell 1000 Index	22.00
S&P UBS Leveraged Loan Index	3.00
Russell Microcap + 3%	5.00
Bloomberg 1-5 Year Gov/Credit Idx	5.00
<b>Jan-2023</b>	
MSCI EAFE (Net) Index	13.00
Blmbg. U.S. Aggregate Index	34.00
NCREIF Property Index	8.00
Russell 2000 Index	15.00
Russell 1000 Index	22.00
S&P UBS Leveraged Loan Index	3.00
Russell Microcap + 3%	5.00

Returns prior to 1/1/2023 are from the prior consultant.

Returns for periods greater than one year are annualized.

Manager fees associated with money market or cash accounts are not tracked.

<b>Active Return</b>	- Arithmetic difference between the manager's performance and the designated benchmark return over a specified time period.
<b>Alpha</b>	- A measure of the difference between a portfolio's actual performance and its expected return based on its level of risk as determined by beta. It determines the portfolio's non-systemic return, or its historical performance not explained by movements of the market.
<b>Beta</b>	- A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of the portfolio's systematic risk.
<b>Consistency</b>	- The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. Higher consistency indicates the manager has contributed more to the product's performance.
<b>Distributed to Paid In (DPI)</b>	- The ratio of money distributed to Limited Partners by the fund, relative to contributions. It is calculated by dividing cumulative distributions by paid in capital. This multiple shows the investor how much money they got back. It is a good measure for evaluating a fund later in its life because there are more distributions to measure against.
<b>Down Market Capture</b>	- The ratio of average portfolio performance over the designated benchmark during periods of negative returns. A lower value indicates better product performance
<b>Downside Risk</b>	- A measure similar to standard deviation that utilizes only the negative movements of the return series. It is calculated by taking the standard deviation of the negative quarterly set of returns. A higher factor is indicative of a riskier product.
<b>Excess Return</b>	- Arithmetic difference between the manager's performance and the risk-free return over a specified time period.
<b>Excess Risk</b>	- A measure of the standard deviation of a portfolio's performance relative to the risk free return.
<b>Information Ratio</b>	- This calculates the value-added contribution of the manager and is derived by dividing the active rate of return of the portfolio by the tracking error. The higher the Information Ratio, the more the manager has added value to the portfolio.
<b>Public Market Equivalent (PME)</b>	- Designs a set of analyses used in the Private Equity Industry to evaluate the performance of a Private Equity Fund against a public benchmark or index.
<b>R-Squared</b>	- The percentage of a portfolio's performance that can be explained by the behavior of the appropriate benchmark. A high R-Squared means the portfolio's performance has historically moved in the same direction as the appropriate benchmark.
<b>Return</b>	- Compounded rate of return for the period.
<b>Sharpe Ratio</b>	- Represents the excess rate of return over the risk free return divided by the standard deviation of the excess return. The result is an absolute rate of return per unit of risk. A higher value demonstrates better historical risk-adjusted performance.
<b>Standard Deviation</b>	- A statistical measure of the range of a portfolio's performance. It represents the variability of returns around the average return over a specified time period.
<b>Total Value to Paid In (TVPI)</b>	- The ratio of the current value of remaining investments within a fund, plus the total value of all distributions to date, relative to the total amount of capital paid into the fund to date. It is a good measure of performance before the end of a fund's life
<b>Tracking Error</b>	- This is a measure of the standard deviation of a portfolio's returns in relation to the performance of its designated market benchmark.
<b>Treynor Ratio</b>	- Similar to Sharpe ratio but utilizes beta rather than excess risk as determined by standard deviation. It is calculated by taking the excess rate of return above the risk free rate divided by beta to derive the absolute rate of return per unit of risk. A higher value indicates a product has achieved better historical risk-adjusted performance.
<b>Up Market Capture</b>	- The ratio of average portfolio performance over the designated benchmark during periods of positive returns. A higher value indicates better product performance.



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Mariner Institutional compiled this report for the sole use of the client for which it was prepared. Mariner Institutional is responsible for evaluating the performance results of the Total Fund along with the investment advisors by comparing their performance with indices and other related peer universe data that is deemed appropriate. Mariner Institutional uses the results from this evaluation to make observations and recommendations to the client.

Mariner Institutional uses time-weighted calculations which are founded on standards recommended by the CFA Institute. The calculations and values shown are based on information that is received from custodians. Mariner Institutional analyzes transactions as indicated on the custodian statements and reviews the custodial market values of the portfolio. As a result, this provides Mariner Institutional with a reasonable basis that the investment information presented is free from material misstatement. This methodology of evaluating and measuring performance provides Mariner Institutional with a practical foundation for our observations and recommendations. Nothing came to our attention that would cause Mariner Institutional to believe that the information presented is significantly misstated.

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Methodology for this Award: For the 2022 Greenwich Quality Award for Overall U.S. Investment Consulting – Midsize Consultants – Between February and November 2022, Coalition Greenwich conducted interviews with 727 individuals from 590 of the largest tax-exempt funds in the United States. These U.S.-based institutional investors are corporate and union funds, public funds, and endowment and foundation funds, with either pension or investment pool assets greater than \$150 million. Study participants were asked to provide quantitative and qualitative evaluations of their asset management and investment consulting providers, including qualitative assessments of those firms soliciting their business and detailed information on important market trends.

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