
Erie County Employees Retirement Plan

Investment Performance Review
Period Ending September 30, 2024

MARINER

3rd Quarter 2024 Market Environment

The Economy

- The US Federal Reserve (the Fed) shifted its policy stance during the quarter and cut the fed funds rate by 0.50% for the first time in four years to a range of 4.75%-5.00%. Capital markets celebrated the move after struggling to predict the pace and timing of future Fed actions earlier in the year. In its press release for the September meeting, the Fed continued to assert its stance on fighting inflation, while also inserting that the committee is strongly committed to “supporting maximum employment.” Fed Chairman Jerome Powell signaled to the markets that the expectation is for the committee to shift to a more expansionary policy moving forward.
- The Fed’s September “Dot Plot” showed revised expectations from a single 0.25% rate cut for the remainder of 2024 to a low-end estimate of a 4.25%-4.50% range. The dots also showed the target rate range decreasing below 4.00% in 2025.
- Growth in the US labor market continued in the third quarter, albeit at a slower pace than previous quarters with growth coming in at 527,000 new jobs. However, the strength of the labor market during the previous year was undermined by the large downward revision (818,000) on the trailing one-year statistic.

Equity (Domestic and International)

- US equity results were sharply higher for the quarter, which also saw a significant broadening of returns across both the style and capitalization spectrum. The S&P 500 Index rose a solid 5.9% for the quarter and the small-cap Russell 2000 Index posted a higher gain of 9.3%. This quarter not only saw a significant rotation from large-cap to small-cap stocks but also from growth stocks to value stocks as value indexes outpaced their growth counterparts.
- Large-cap equity benchmarks continue to represent top-heavy concentration among a limited number of stocks. As of quarter end, the top 10 stocks in the S&P 500 Index made up nearly 35% of the index.
- International stocks continued delivering positive results during the third quarter and US Dollar (USD) denominated results were further helped by a weakening USD. USD performance of international stocks surged past local currency (LCL) returns in most regions for the quarter, albeit to varying degrees.

Fixed Income

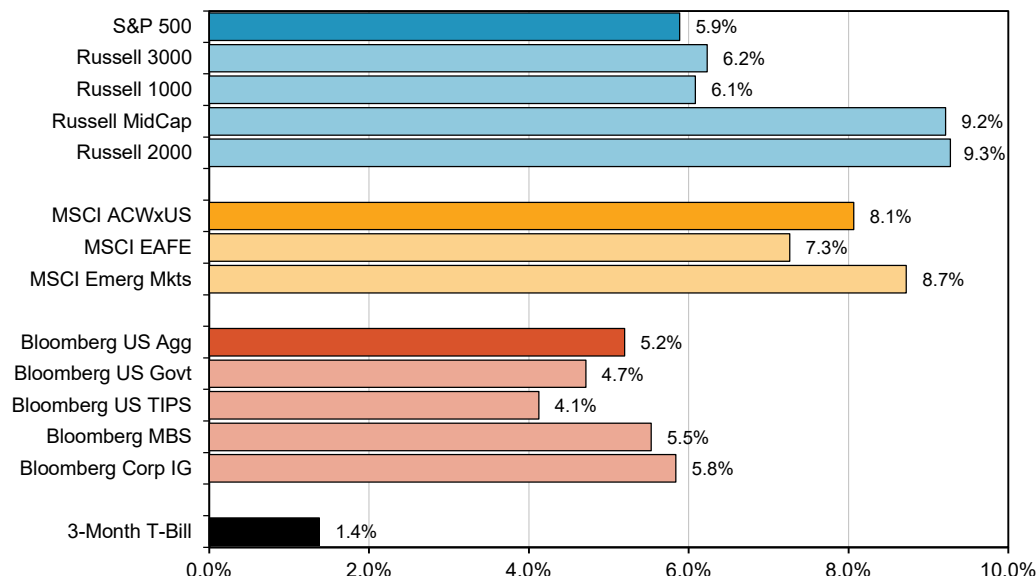
- Fixed-income markets traded higher during the quarter on the back of the Fed’s policy shift as Treasury yields fell. The inverse relationship between prices and yields resulted in the Bloomberg US Aggregate Bond Index advancing 5.2%. The yield on the bellwether 10-year Treasury declined by 0.55% during the quarter.
- High-yield bonds slightly outperformed the Bloomberg US Aggregate Bond Index for the quarter, largely due to higher coupons and partly due to narrowing option-adjusted spreads (OAS) for the Bloomberg US High-Yield index.
- Global bonds outpaced the domestic benchmarks, with the Bloomberg Global Aggregate ex-US returning 8.5% for the quarter in USD terms. Global bond performance was boosted by a weakening USD during the quarter.

Market Themes

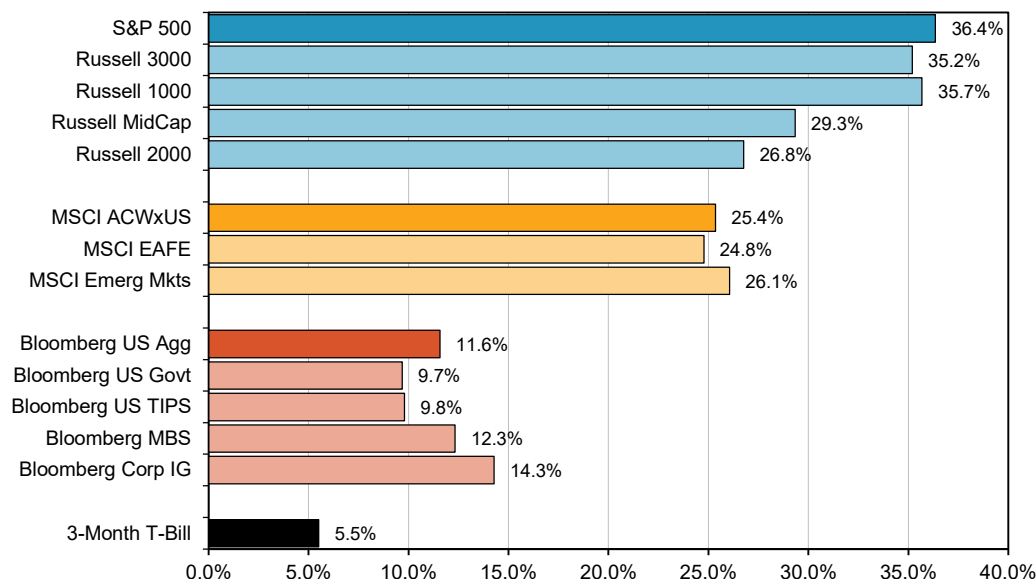
- Divergent monetary policies across regions led to increased volatility during the quarter. Most developed markets across the world kept rates at elevated levels as central banks continued their tight monetary stances. However, the Japanese Central Bank chose to raise its policy rates at the end of July, shortly before the Fed cut its policy rate in September. This divergence led to an unwinding of the systematic Yen carry trade, where investors quickly took action to cover short yen positions by taking down positions in various higher growth investments, including US equities. This subsequently led to a sharp decline in equity markets around the world in early August.
- Ongoing military conflicts in Ukraine and the Middle East, coupled with global economic uncertainty, continue to act as headwinds for international market results but they received a boost from the weakening USD. New escalations to existing conflicts have resulted in anticipated and unanticipated consequences. Domestic Defense companies have tended to trade higher on the news of developing escalations abroad while similarly putting upward pressure on oil prices and downward pressure on energy stocks as a result.

- Performance in the domestic equity markets was broadly positive after markets received a boost from the Fed's first rate cut in four years. Small-cap stocks outperformed their large-cap counterparts, with the Russell 2000 returning 9.3% versus a gain of 5.9% for the S&P 500. The all-cap Russell 3000, which is heavily weighted in its large-cap names, lagged the Russell 2000 Index by 3.1%, returning 6.2% for the quarter.
- International developed market equities realized similar results with both the MSCI ACWI ex US and MSCI EAFE indexes gaining during the quarter. The MSCI ACWI ex US Index posted a strong 8.1% for the quarter, while the MSCI EAFE Index returned a slightly lower 7.3%, both in USD terms. International emerging market (EM) equities were the best performing foreign segment, gaining 8.7% in for the quarter and outpacing their developed market counterparts. Much of the solid USD performance for EM can be attributed to the Far East index countries, particularly China, Taiwan, and Singapore.
- Broad fixed-income indexes added to their year-to-date results during the quarter, thanks in large part to the Fed's 0.50% rate cut on September 18th. The Bloomberg US Aggregate Index returned a solid 5.2% for the quarter. Investment-grade corporate bonds topped other US fixed-income sectors for the quarter, finishing with a return of 5.8%. The TIPS market, which is not part of the Aggregate Index, was the worst-performing bond benchmark during the quarter with a return of 4.1%, lagging the rest of the domestic fixed-income indexes.
- Large-cap US equity indexes built on their already massive returns over the trailing one-year period. The S&P 500 Index has gained 36.4%, while the Russell 1000 Index returned 35.7%. The weakest performing capitalization range of domestic equities for the year has been the small-cap Russell 2000 Index, which still posted a double-digit return of 26.8% over the last 12 months.
- Domestic bond indexes also produced strong, positive results for the year. Investment-grade corporate bonds continued to lead, returning an impressive 14.3% for the trailing one-year. The government bond index lagged for the year, but still returned a solid 9.7%.
- International markets also showcased healthy performance for the trailing one-year period. The MSCI EM Index was the best international performer, returning 26.1%, while the MSCI EAFE and MSCI ACWI ex US indexes posted returns of 24.8% and 25.4%, respectively.

Quarter Performance

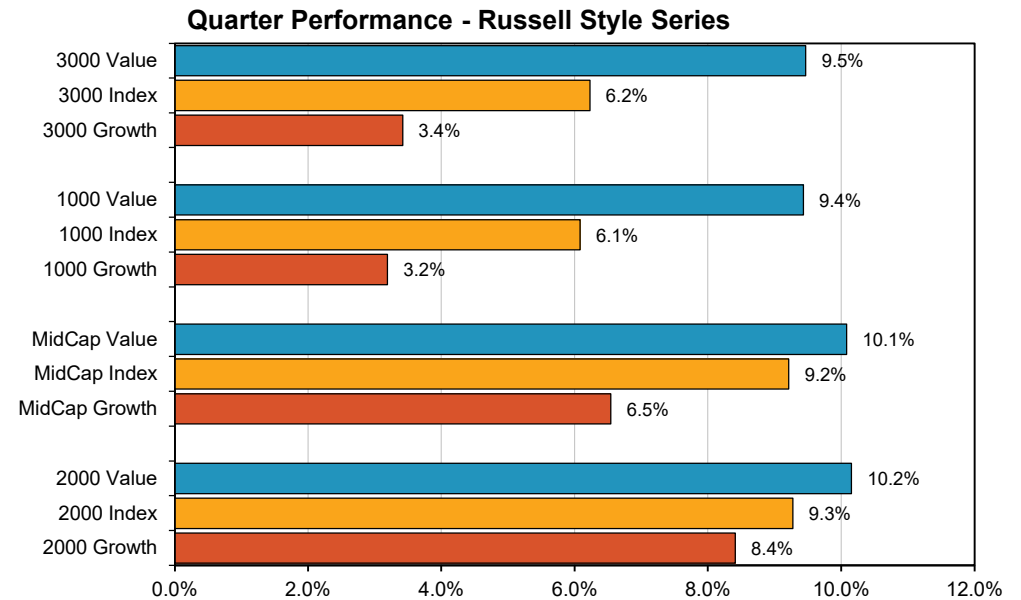


1-Year Performance

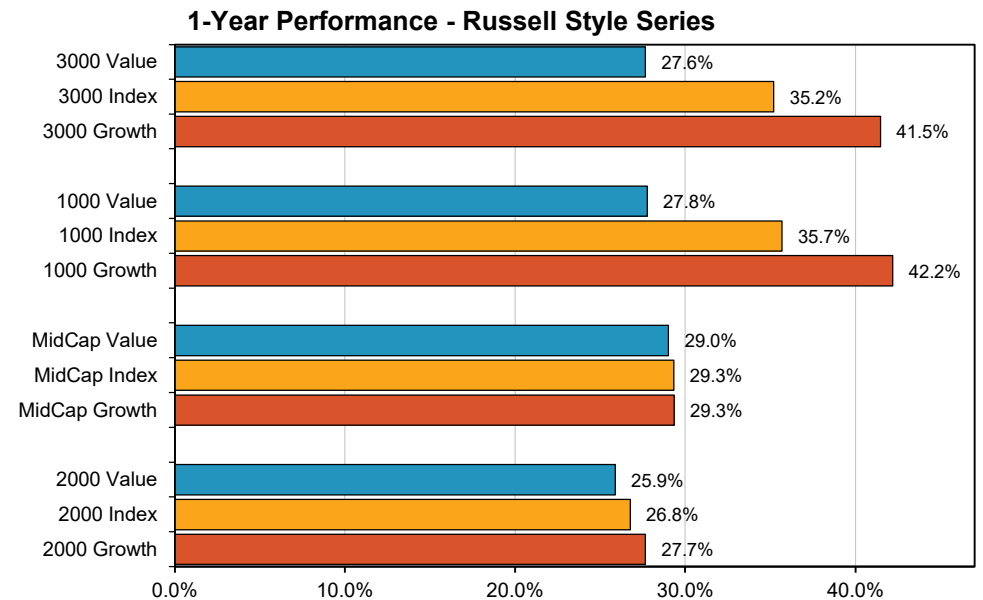


Source: Investment Metrics

- Domestic equity benchmarks posted strong absolute results across styles and market capitalization ranges. During the third quarter, value stocks outpaced their growth counterparts at each capitalization level for the first time since Q4 2022. The best-performing segment of the equity market was small-cap value, with the Russell 2000 Value Index advancing 10.2% for the quarter. Conversely, the large-cap growth Russell 1000 Growth Index produced the weakest relative equity performance, returning just 3.2%.
- The growth-oriented rally took a hiatus during the quarter with the broadest disparity visible in large-cap indexes. The Russell 1000 Value Index return of 9.4% surpassed the Russell 1000 Growth Index return by 6.2%. This quarter's results bucked the trend of large-cap growth stocks being the best-performing segment of the domestic equity market.



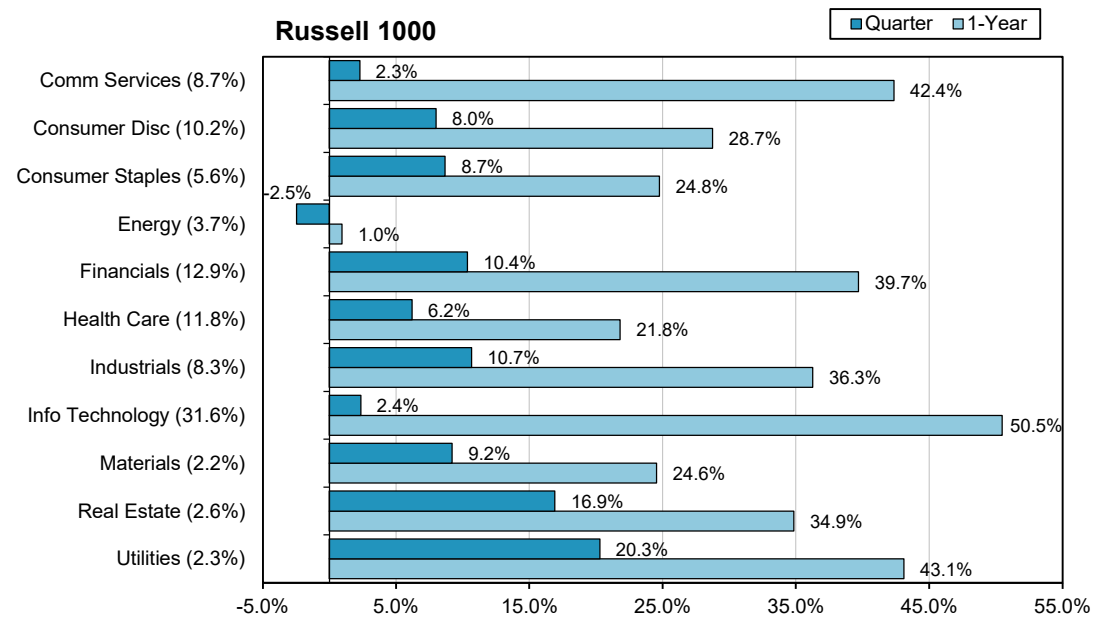
- This quarter's resurgence by the value indexes was not enough to bring them above growth indexes on a trailing one-year basis. The Russell 1000 Growth Index amassed a staggering 42.2%, leading the way among style and market capitalization classifications. Much of this strong performance has been attributable 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 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 posted an impressive 25.9%.
- The strength of growth sectors is evident in the chart with the broad-cap, large-cap, and small-cap benchmarks outpacing their value counterparts for the trailing one-year period. The gap between the Russell 1000 Growth Index and the Russell 1000 Value Index was in double-digits for the year, while the gaps for mid- and small-cap indexes were much narrower.



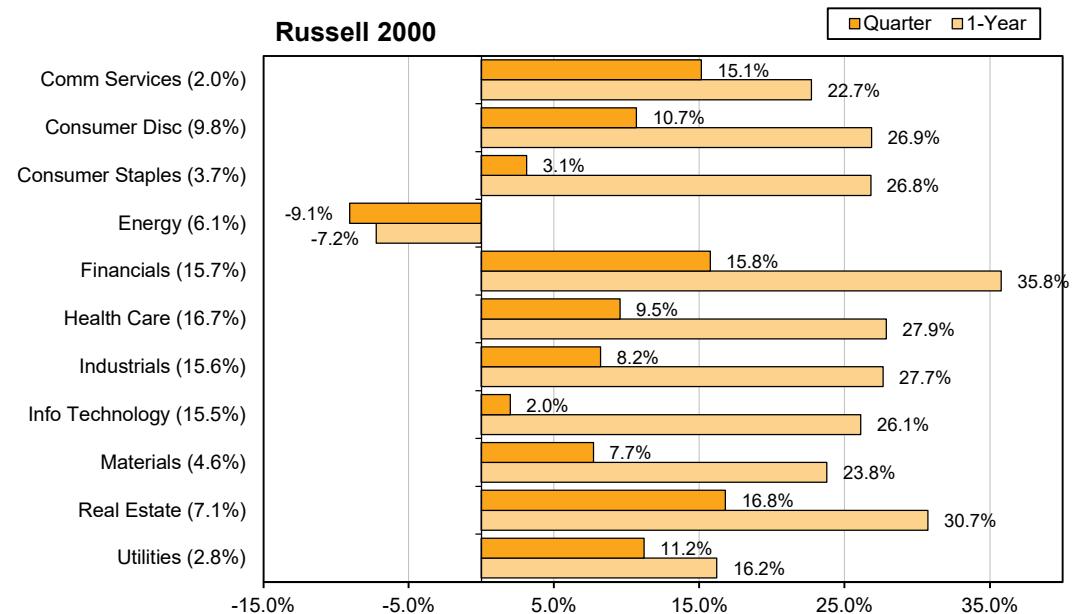
Source: Investment Metrics

- Economic sector performance was mostly positive during the third quarter, with 10 of the 11 economic sectors moving higher in both the large-cap and small-cap indexes. The quarter continued the previous trend in the domestic equities markets of broader participation in companies outside of the technology sector. Energy was the lone sector to slide during the quarter, posting a return of -2.5%.
- Third-quarter results for the large-cap benchmark added to already strong trailing one-year numbers, with all but one sector producing a return of greater than 20%. Similar to the quarter's results, the energy sector was the one to fall short, gaining just 1.0% over the trailing year. Of the 11 sectors, three (communication services, information technology, and utilities) were up by more than 40.0% for the past year. Financials, industrials, and real estate followed closely behind with gains of 39.7%, 36.3%, and 34.9%, respectively. Despite this strong sector performance, only five of the six leading sectors managed to outpace the Russell 1000 Index's return of 35.7%, which was lifted even higher by the strong results in the most heavily weighted sector, information technology.
- Small-cap stocks displayed similar strength, with 10 of the 11 small-cap economic sectors gaining value during the quarter. Real estate, financials, and communication services led the way with gains of more than 15% for the quarter. Similar to the large-cap benchmark, energy was the worst-performing sector for the quarter and produced the sole negative sector return, falling -9.1%.
- Small-cap stocks also had a strong performance for the trailing year. The same 10 small-cap sectors that advanced during the quarter moved higher over the trailing one-year period. Energy remains the weakest performing sector, with the most recent quarterly return dragging the sector's performance to -7.2% for the trailing year. Financials (up 35.8%), and seven other sectors earned more than 20%.

Russell 1000



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 September 30, 2024

Top 10 Weighted Stocks				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Apple Inc	6.4%	10.8%	36.8%	Information Technology
Microsoft Corp	6.1%	-3.6%	37.3%	Information Technology
NVIDIA Corp	5.4%	-1.7%	179.3%	Information Technology
Amazon.com Inc	3.3%	-3.6%	46.6%	Consumer Discretionary
Meta Platforms Inc Class A	2.4%	13.6%	91.3%	Communication Services
Alphabet Inc Class A	1.8%	-8.8%	27.1%	Communication Services
Berkshire Hathaway Inc Class B	1.6%	13.1%	31.4%	Financials
Alphabet Inc Class C	1.6%	-8.7%	27.1%	Communication Services
Broadcom Inc	1.5%	7.8%	110.9%	Information Technology
Tesla Inc	1.4%	32.2%	4.6%	Consumer Discretionary

Top 10 Weighted Stocks				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Vaxcyte Inc Ordinary Shares	0.5%	51.3%	124.1%	Health Care
FTAI Aviation Ltd	0.5%	29.1%	281.0%	Industrials
Insmed Inc	0.4%	9.0%	189.1%	Health Care
Sprouts Farmers Market Inc	0.4%	32.0%	158.0%	Consumer Staples
Fabrinet	0.3%	-3.4%	41.9%	Information Technology
Applied Industrial Technologies Inc	0.3%	15.2%	45.4%	Industrials
Mueller Industries Inc	0.3%	30.5%	100.0%	Industrials
Fluor Corp	0.3%	9.6%	30.0%	Industrials
Ensign Group Inc	0.3%	16.3%	55.1%	Health Care
UFP Industries Inc	0.3%	17.5%	29.6%	Industrials

Top 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
Exact Sciences Corp	0.0%	61.2%	-0.1%	Healthcare
Inspire Medical Systems Inc	0.0%	57.7%	6.4%	Healthcare
AppLovin Corp Ordinary Shares - A	0.1%	56.9%	226.7%	Information Technology
Doximity Inc Class A	0.0%	55.8%	105.3%	Healthcare
Ubiquiti Inc	0.0%	52.7%	55.3%	Information Technology
Vornado Realty Trust	0.0%	49.9%	75.4%	Real Estate
GE Vernova Inc	0.1%	48.7%	N/A	Utilities
VF Corp	0.0%	48.5%	15.5%	Communication Services
Palantir Technologies Inc Ordinary - A	0.1%	46.9%	132.5%	Technology
SharkNinja Inc	0.0%	44.7%	139.9%	Communication Services

Top 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Lumen Technologies Inc Ordinary	0.1%	545.5%	400.0%	Communication Services
CommScope Holding Co Inc	0.0%	396.7%	81.8%	Information Technology
Capricor Therapeutics Inc	0.0%	218.9%	344.7%	Health Care
Summit Therapeutics Inc Ordinary	0.0%	180.8%	1071.1%	Health Care
Q32 Bio Inc	0.0%	148.6%	N/A	Health Care
Intuitive Machines Inc Ordinary - A	0.0%	143.9%	120.5%	Industrials
IGM Biosciences Inc Ordinary	0.0%	140.8%	98.1%	Health Care
Cassava Sciences Inc	0.0%	138.3%	76.9%	Health Care
AST SpaceMobile Inc Ordinary - A	0.1%	125.2%	588.2%	Communication Services
Biomea Fusion Inc	0.0%	124.4%	-26.6%	Health Care

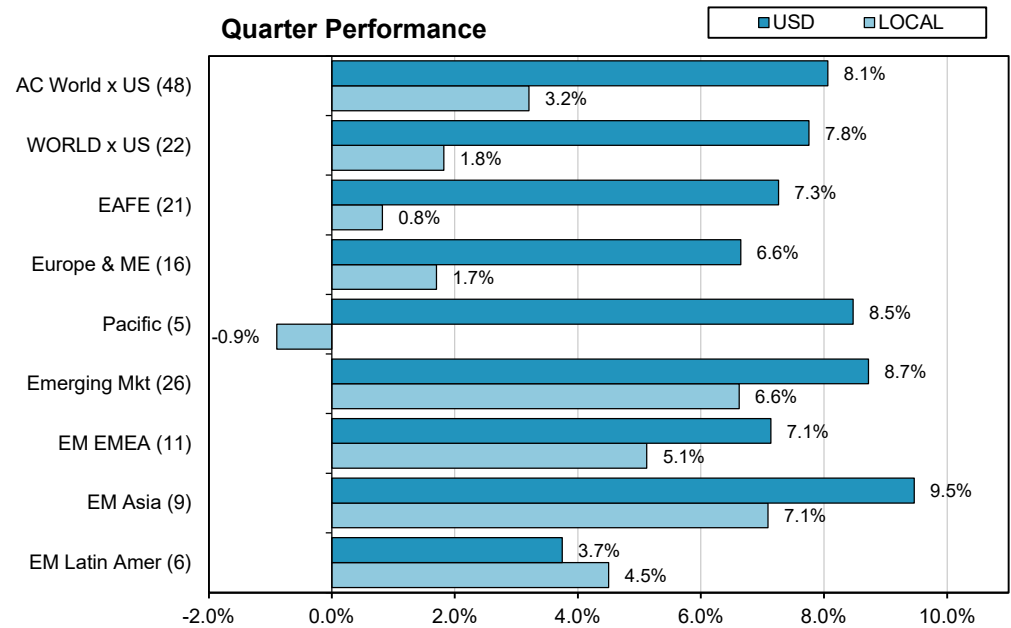
Bottom 10 Performing Stocks (by Quarter)				
Russell 1000	Weight	1-Qtr Return	1-Year Return	Sector
New Fortress Energy Inc Class A	0.0%	-58.3%	-71.7%	Utilities
Wolfspeed Inc	0.0%	-57.4%	-74.5%	Information Technology
Trump Media & Technology Group Corp	0.0%	-50.9%	N/A	Communication Services
Super Micro Computer Inc	0.0%	-49.2%	51.8%	Information Technology
e.l.f. Beauty Inc	0.0%	-48.3%	-0.7%	Consumer Staples
Celsius Holdings Inc	0.0%	-45.1%	-45.2%	Consumer Staples
Moderna Inc	0.1%	-43.7%	-35.3%	Health Care
DexCom Inc	0.1%	-40.9%	-28.1%	Health Care
Advance Auto Parts Inc	0.0%	-38.2%	-29.1%	Communication Services
Dollar General Corp	0.0%	-35.7%	-18.6%	Consumer Staples

Bottom 10 Performing Stocks (by Quarter)				
Russell 2000	Weight	1-Qtr Return	1-Year Return	Sector
Conduit Pharmaceuticals Inc	0.0%	-88.8%	-98.0%	Health Care
HilleVax Inc	0.0%	-87.8%	-86.9%	Health Care
iLearningEngines Inc	0.0%	-81.6%	N/A	Information Technology
SolarMax Technology Inc	0.0%	-80.8%	N/A	Industrials
Verrica Pharmaceuticals Inc	0.0%	-80.1%	-62.7%	Health Care
Elevation Oncology Inc	0.0%	-77.8%	-9.5%	Health Care
Actinium Pharmaceuticals Inc	0.0%	-74.6%	-68.2%	Health Care
Renovaro Inc	0.0%	-72.4%	-89.2%	Health Care
B. Riley Financial Inc	0.0%	-70.2%	-86.1%	Financials
ALX Oncology Holdings Inc Ordinary	0.0%	-69.8%	-62.1%	Health Care

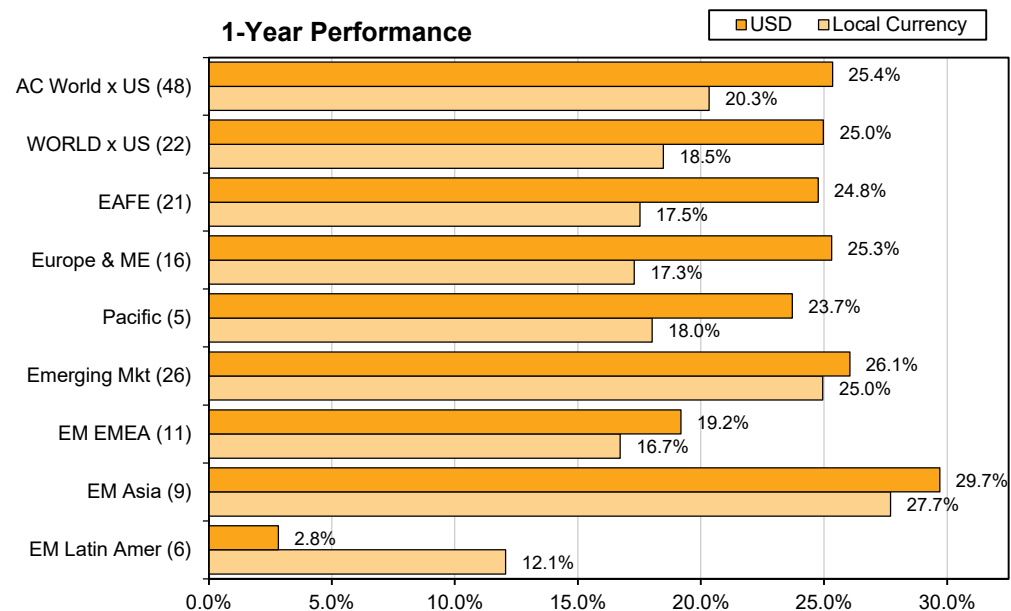
Source: Morningstar Direct

- Results in USD terms among the headline international equity indexes were sharply higher during the quarter, echoing the performance of major domestic equity benchmarks. The weakening USD relative to many major currencies during the quarter was a tailwind for the USD performance of most regional benchmarks' returns. The developed-market MSCI EAFE Index returned a muted 0.8% in LCL terms but rose 7.3% in USD terms. The MSCI Emerging Markets Index was the best-performing broad index, climbing 8.7% in USD and 6.6% in LCL terms for the quarter.
- Latin America lagged other regions during the quarter in USD terms, posting a return of 3.7%. Weakening currencies in the region put pressure on performance, making it the only region with USD performance that lagged LCL currency performance. The MSCI Pacific benchmark was the only regional benchmark to deliver negative performance in LCL teams (-0.9%), but USD weakness led to an 8.5% positive return in USD terms. Regional LCL currency performance struggles were led by the unwinding of the carry trade in the Japanese equity markets in early August which carried over to neighboring Pacific countries and US markets.
- China, which is the most heavily weighted country in the emerging market index, continued its rebound during the quarter posting a 23.5% gain in USD terms. Recently announced government stimulus for the Chinese economy helped lift equity markets in the country during the quarter. The Chinese economy has yet to expand at its pre-pandemic rate of roughly 5.0% primarily due to troubles in its commercial property and banking sectors, which have created challenges for growth in the region.
- Much like domestic markets, trailing one-year results for international developed and emerging markets benchmarks were strongly positive. Higher USD versus LCL returns for most international benchmarks demonstrate the USD's relative weakness over the trailing one-year period.
- All broad and regional indexes were positive for the trailing 12 months in both USD and LCL terms. The EM Latin America index, where weakening local currencies dragged the region's double-digit LCL performance to a muted 2.8% in USD terms. MSCI Asia Index led the way with a return of 27.7% in LCL terms for the trailing year. The relative weakening of the USD during the period further boosted returns in the region to 29.7% 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 September 30, 2024

MSCI - EAFE	Sector Weight	Quarter Return	1-Year Return
Communication Services	4.3%	11.5%	27.1%
Consumer Discretionary	11.0%	4.8%	14.4%
Consumer Staples	8.7%	10.6%	10.9%
Energy	3.6%	-5.8%	-2.1%
Financials	20.6%	10.4%	36.0%
Health Care	13.3%	4.6%	20.4%
Industrials	17.3%	9.4%	33.8%
Information Technology	8.7%	-2.4%	35.6%
Materials	6.8%	10.7%	24.0%
Real Estate	2.2%	17.3%	27.6%
Utilities	3.4%	14.9%	25.4%
Total	100.0%	7.3%	24.8%

MSCI - ACWixUS	Sector Weight	Quarter Return	1-Year Return
Communication Services	5.6%	13.6%	26.3%
Consumer Discretionary	11.3%	11.5%	20.4%
Consumer Staples	7.4%	10.5%	11.1%
Energy	5.0%	-1.7%	7.2%
Financials	22.5%	11.4%	33.2%
Health Care	9.4%	6.4%	20.4%
Industrials	13.8%	8.7%	30.5%
Information Technology	12.8%	-1.6%	38.3%
Materials	7.1%	9.4%	18.8%
Real Estate	1.9%	16.9%	23.5%
Utilities	3.2%	13.4%	27.7%
Total	100.0%	8.1%	25.4%

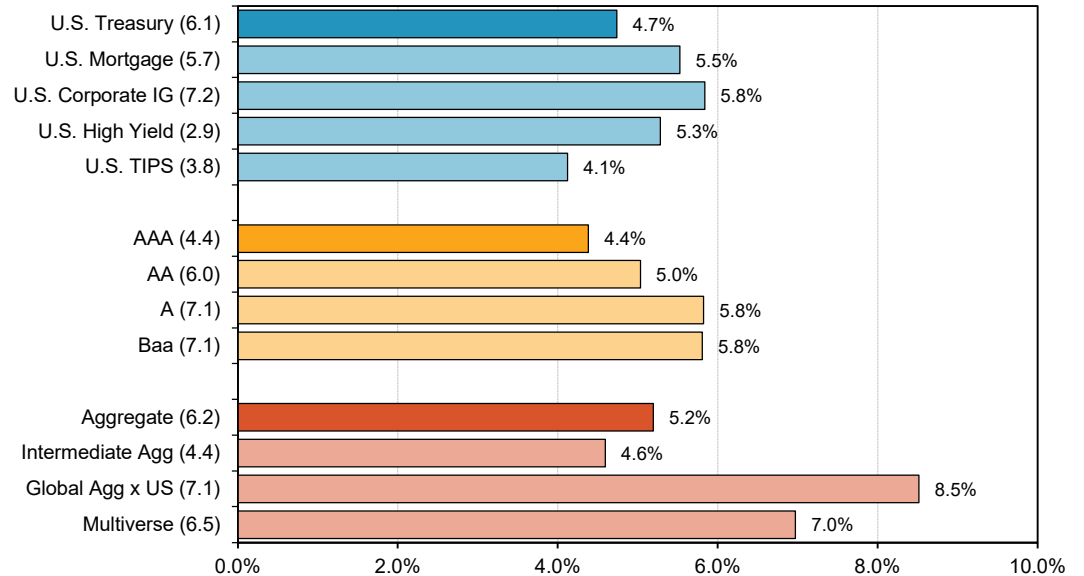
MSCI - Emerging Mkt	Sector Weight	Quarter Return	1-Year Return
Communication Services	9.4%	15.6%	26.2%
Consumer Discretionary	14.0%	25.0%	31.9%
Consumer Staples	5.2%	11.1%	9.6%
Energy	4.8%	-0.4%	17.4%
Financials	22.8%	10.4%	26.5%
Health Care	3.6%	22.9%	20.5%
Industrials	6.8%	7.0%	19.9%
Information Technology	22.2%	-2.6%	40.3%
Materials	6.6%	5.5%	5.5%
Real Estate	1.6%	14.8%	10.8%
Utilities	2.9%	9.3%	35.5%
Total	100.0%	8.7%	26.1%

Country	MSCI-EAFE Weight	MSCI-ACWixUS Weight	Quarter Return	1-Year Return
Japan	22.3%	14.0%	5.7%	21.6%
United Kingdom	14.7%	9.3%	7.9%	23.3%
France	11.4%	7.1%	7.7%	16.4%
Switzerland	9.9%	6.2%	8.5%	21.6%
Germany	9.0%	5.7%	10.7%	32.1%
Australia	7.8%	4.9%	11.5%	31.6%
Netherlands	4.8%	3.0%	-4.5%	38.7%
Denmark	3.4%	2.1%	-10.3%	24.5%
Sweden	3.4%	2.1%	8.4%	35.8%
Italy	2.7%	1.7%	8.6%	34.4%
Spain	2.8%	1.8%	13.7%	35.9%
Hong Kong	2.0%	1.3%	24.4%	14.8%
Singapore	1.5%	0.9%	17.6%	33.9%
Finland	1.0%	0.7%	8.1%	16.5%
Belgium	1.0%	0.6%	15.3%	25.9%
Israel	0.8%	0.5%	12.4%	32.4%
Norway	0.6%	0.4%	2.1%	4.5%
Ireland	0.3%	0.2%	13.9%	38.6%
Portugal	0.2%	0.1%	8.7%	11.3%
Austria	0.2%	0.1%	8.7%	28.3%
New Zealand	0.2%	0.1%	5.6%	20.1%
Total EAFE Countries	100.0%	62.7%	7.3%	24.8%
Canada		7.7%	12.0%	26.8%
Total Developed Countries		70.4%	7.8%	25.0%
China		8.2%	23.5%	23.9%
India		5.8%	7.3%	40.3%
Taiwan		5.2%	0.5%	52.7%
Korea		3.1%	-5.6%	9.3%
Brazil		1.4%	7.1%	2.6%
Saudi Arabia		1.1%	5.3%	11.2%
South Africa		0.9%	16.1%	36.7%
Mexico		0.6%	-3.4%	-3.4%
Indonesia		0.5%	15.3%	5.2%
Malaysia		0.4%	20.5%	35.6%
Thailand		0.4%	28.9%	17.0%
United Arab Emirates		0.3%	12.0%	6.4%
Poland		0.3%	-3.9%	45.7%
Turkey		0.2%	-12.6%	6.8%
Qatar		0.2%	10.6%	11.2%
Kuwait		0.2%	3.7%	8.9%
Philippines		0.2%	21.7%	22.7%
Greece		0.1%	10.4%	31.3%
Chile		0.1%	5.3%	5.8%
Peru		0.1%	7.9%	57.4%
Hungary		0.1%	6.3%	36.4%
Czech Republic		0.0%	5.1%	7.7%
Colombia		0.0%	-0.9%	25.4%
Egypt		0.0%	12.3%	-7.3%
Total Emerging Countries		29.6%	8.7%	26.1%
Total ACWixUS Countries		100.0%	8.1%	25.4%

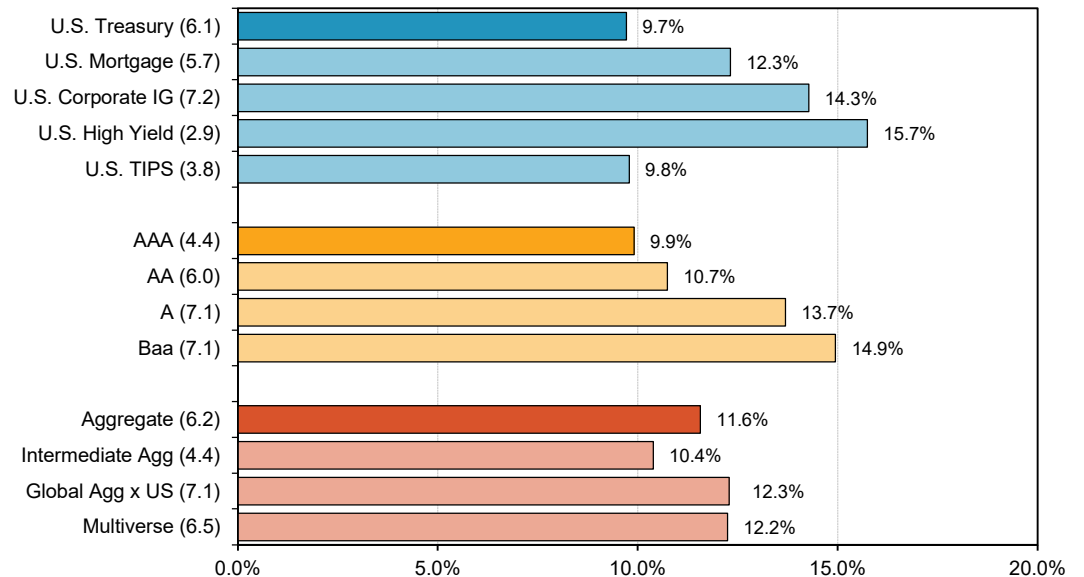
Source: Morningstar Direct, MSCI Global Index Monitor (Returns are Net in USD)
As a result of the GICS classification changes on 9/28/2018 and certain associated reporting limitations, sector performance represents backward looking performance for the prior year of each sector's current constituency,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

- Domestic fixed-income markets advanced during the third quarter. Although the Federal Reserve began to unwind its tight monetary policy stance that began in 2022 during the quarter, yields remained elevated. On September 18, the Fed reduced its target policy rate by 0.50%, a move that was celebrated in a performance boost by equity and bond markets alike.
- After a muted first half of 2024, which held the Bloomberg US Aggregate Bond Index slightly negative for the year, the index posted its best quarterly performance year-to-date, climbing 5.2% during the third quarter. Performance across the investment-grade index's segments was more favorable in the credit sectors, with the corporate investment-grade index rising 5.8%, outpacing the government and mortgage-backed-securities sectors. Lower quality issues also performed better, with A and BAA components of the index outpacing higher quality issues during the quarter.
- High Yield bonds underperformed investment grade issues as interest rates declined primarily due to the high-yield benchmark's lower duration. Despite their lower duration, below-investment grade issues continued to rise, posting a return of 5.3% for the quarter. The Bloomberg Global Aggregate ex-US Index outperformed all broad-market domestic indexes with a return of 8.5% for the quarter, aided by a weakening USD.
- Over the trailing one-year period, the Bloomberg US Aggregate Bond Index posted a solid 11.6% return. The benchmark's sub-components also posted positive performance over the trailing 12 months with the Bloomberg US Corporate Investment Grade Index rising a strong 14.3% and the US Mortgage Index returning 12.3%. US TIPS, which are excluded from the Bloomberg US Aggregate Bond Index, returned 9.8% for the trailing year.
- Among credit qualities, lower-quality issues (both within investment grade and below investment grade) have outperformed higher-quality bonds due to higher yields and credit spread compression over the last year. Higher yields mean larger coupon payments as well as greater sensitivity to changes in credit spreads, which narrowed. High-yield bonds have enjoyed a healthy 15.7% gain for the trailing year.
- The Bloomberg Global Aggregate ex-US Index moderately outpaced its domestic counterpart, the Bloomberg US Aggregate Bond Index, by 0.7% during the trailing year.

Quarter Performance



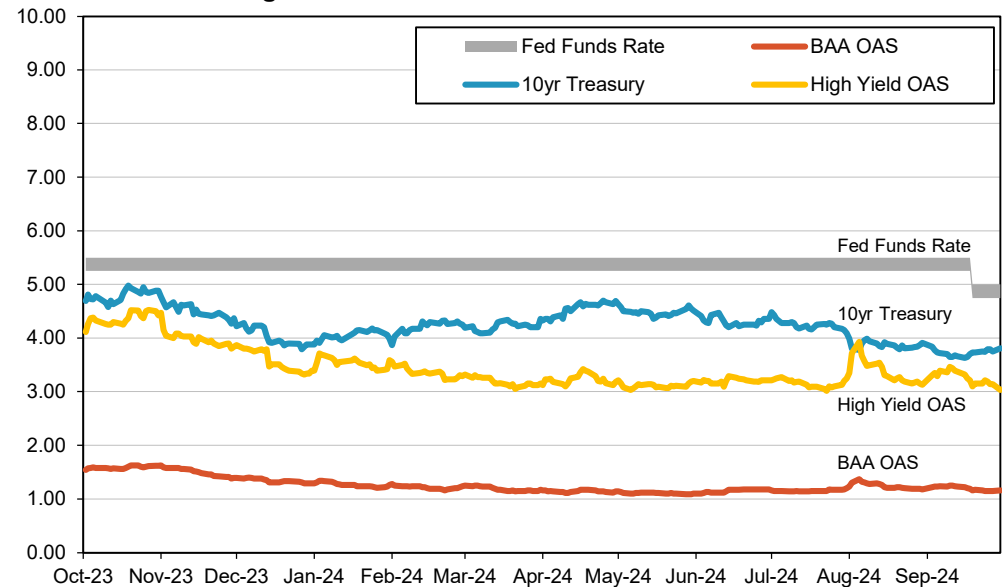
1-Year Performance



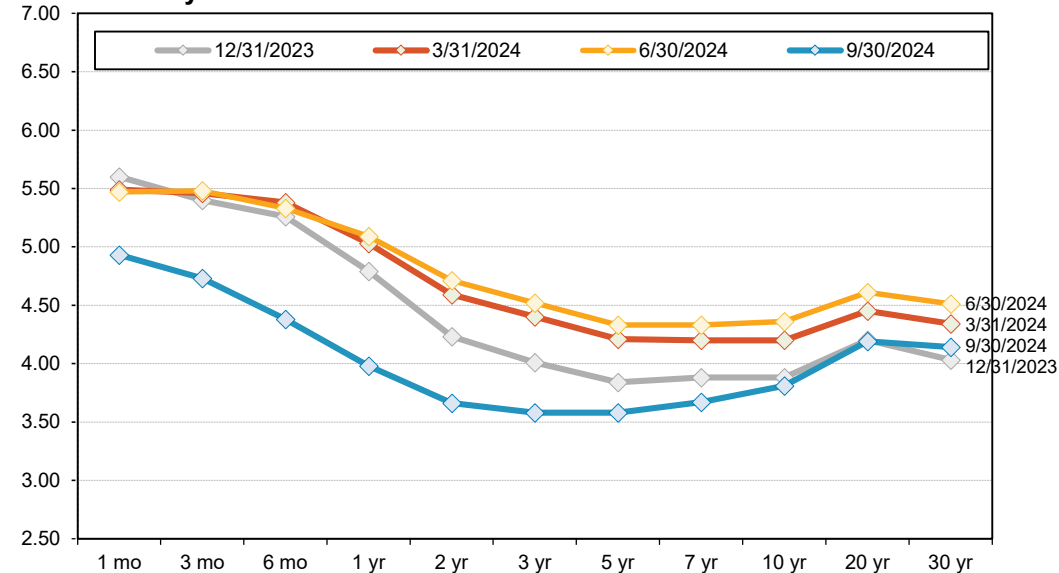
Source: Bloomberg

- The gray band across the graph illustrates the fed funds target rate range over the last 12 months. During the third quarter, the Federal Open Market Committee (FOMC) cut its policy rates by 0.50%, to a range of 4.75-5.00%. The last rate increase occurred at the FOMC's July 2023 meeting, and this was the first rate cut since March of 2020. With inflation declining and unemployment remaining largely stable, the Fed appears to be pivoting from a tight monetary policy stance. The most recent FOMC press release continued to emphasize economic data-dependent outcomes while placing renewed 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 80% probability of a 0.25% rate decrease at the FOMC November 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. However, inflation remains above the FOMC's long-term 2.0% target level.
- The yield on the US 10-year Treasury (blue line of the top chart) fell roughly 0.55% during the quarter, attributable to Fed policy decisions and expectations of future rate actions. The bellwether benchmark rate opened the quarter at a yield of 4.36% and finished September at a yield of 3.81%. The 10-year Treasury benchmark's rate peaked in October 2023, cresting at a yield of just under 5.00% before pulling back during the remainder of the year.
- 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 was relatively stable, beginning July at 1.18% and finishing September at 1.16%. High-yield OAS spreads (represented by the yellow line in the top chart) have also remained relatively unchanged, despite a sharp spike in early August spurred by an unwinding of the Yen carry trade. The high-yield OAS fell 0.18% over the quarter from 3.21% to 3.03%. 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 July 2022, the quarter-end yield on the 10-year Treasury was higher relative to the two-year Treasury. The yield curve has been inverted for each of the previous three quarter-end readings on the graph and for much of the last two years. This 2-10-year yield curve inversion is a common heuristic used to foretell a pending recession environment.

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 \(stlouisfed.org\)](#)

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

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

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[Fed's Jerome Powell Declares 'Time Has Come' for Interest-Rate Cuts – WSJ](#)

[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 Fund's 3rd quarter return was 4.75% and its year-to-date return was 10.00%. As of 9-30-2024, the total Fund had an annualized 7-year return of 7.27%.**

- **The Fund's total equity weighting at 9-30-2024 was 54.7% 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 71.0%.**

- **In July, the Ironsides Direct Investment Fund V issued two distributions (\$103,029.74 & \$125,422.67) with both received in the Cash Disbursement account.**

- **The Portfolio Advisors Co-Investment Fund III issued a distribution in July (\$590,269) and in August (\$251,835) with both received in the Cash Disbursement account.**

- **In September, the Hamilton Lane Secondary Fund VI issued a capital call in the amount of \$771,217 with funding coming from the Vanguard Russell 1000 Growth Index fund.**

Wednesday, February 21, 2024 @ 12:00 pm

Hamilton Lane Private Equity

Adams Street Partners Private Equity

DFA Large Cap and International Equity

Review of Investment Policy Statement (Every February)

Wednesday, May 15, 2024 @ 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)

Wednesday, August 21, 2024 @ 12:00 pm

Vanguard Large Cap and Fixed Income

American Funds Europacific Growth Fund

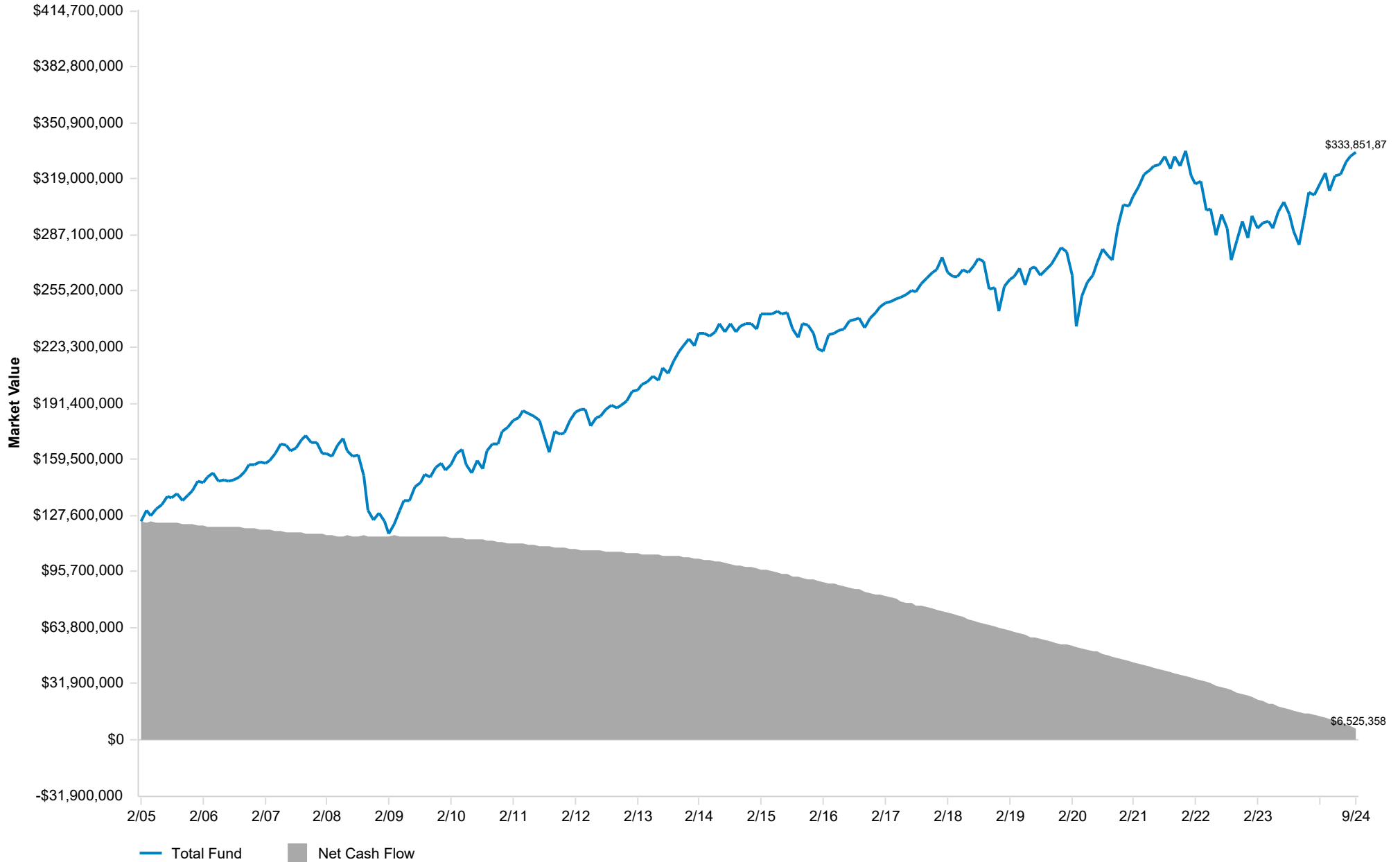
Constitution Capital Partners Private Equity

Wednesday, November 20, 2024 @ 12:00 pm

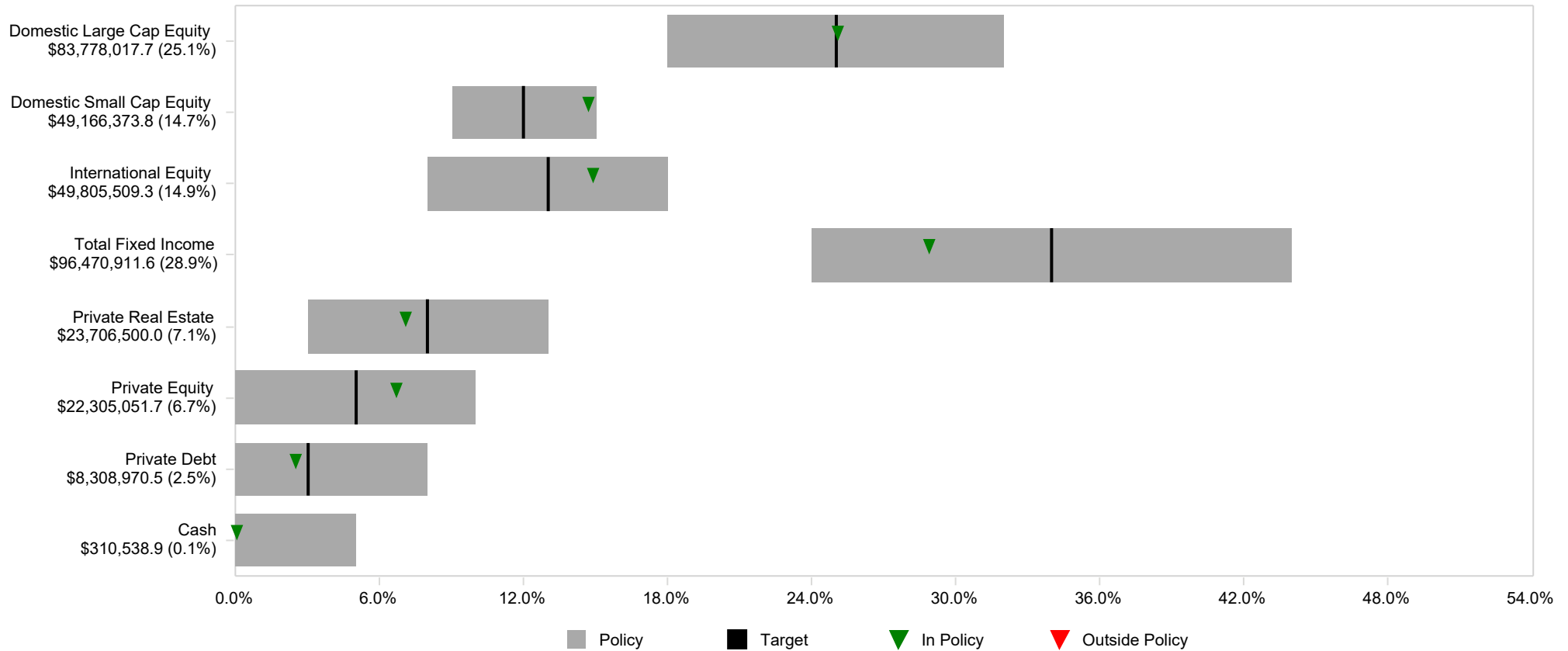
PNC Fixed Income and Custody

Portfolio Advisors Private Equity

Schedule of Investable Assets



Executive Summary



Asset Allocation Compliance

	Asset Allocation \$	Current Allocation (%)	Minimum Allocation (%)	Maximum Allocation (%)	Target Allocation (%)
Total Fund	333,851,873	100.0	N/A	N/A	100.0
Domestic Large Cap Equity	83,778,018	25.1	18.0	32.0	25.0
Domestic Small Cap Equity	49,166,374	14.7	9.0	15.0	12.0
International Equity	49,805,509	14.9	8.0	18.0	13.0
Total Fixed Income	96,470,912	28.9	24.0	44.0	34.0
Private Real Estate	23,706,500	7.1	3.0	13.0	8.0
Private Equity	22,305,052	6.7	0.0	10.0	5.0
Private Debt	8,308,970	2.5	0.0	8.0	3.0
Cash	310,539	0.1	0.0	5.0	0.0

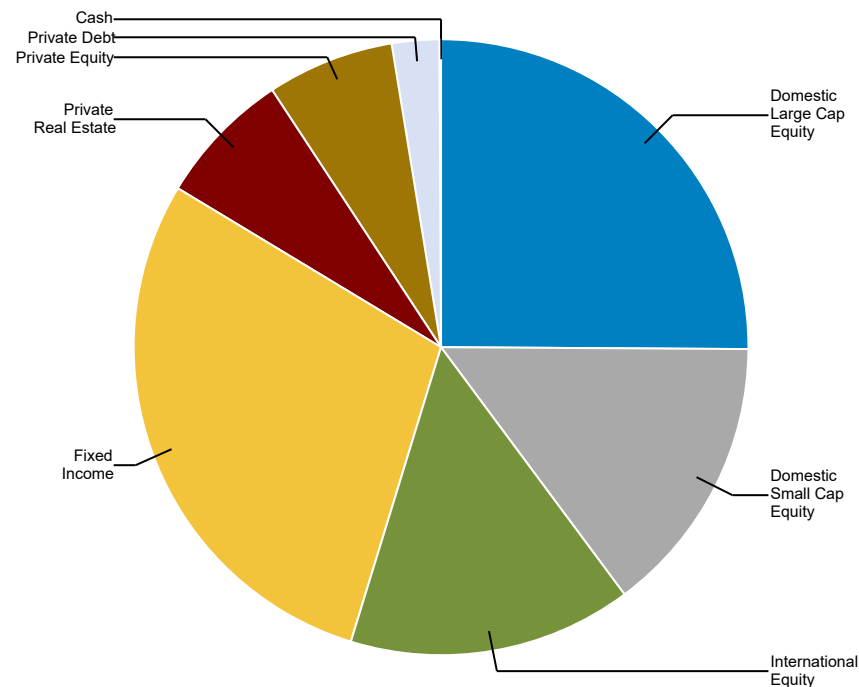
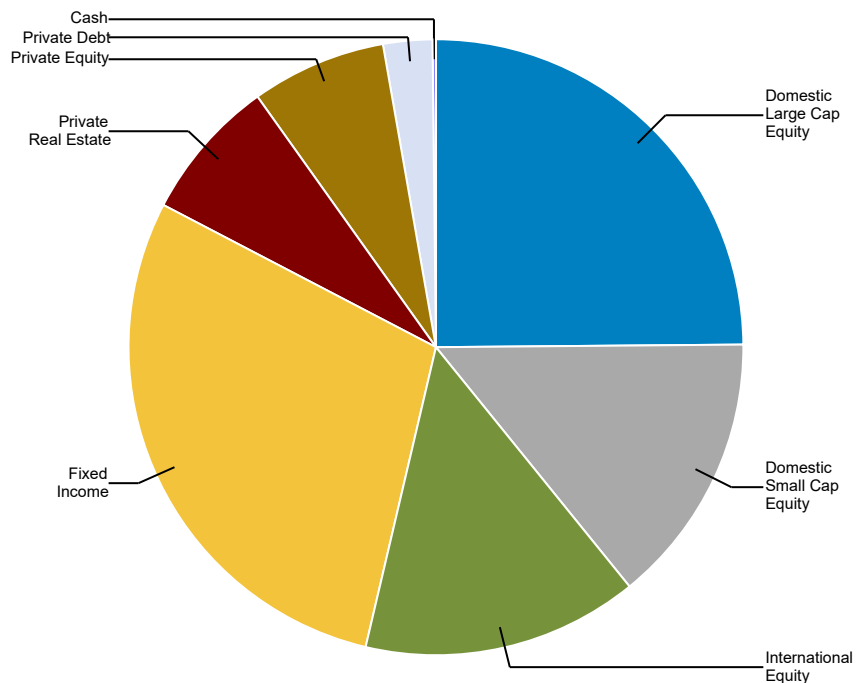
Asset Allocation By Asset Class

Total Fund

As of September 30, 2024

Jun-2024 : \$321,973,433

Sep-2024 : \$333,851,873



Allocation			Allocation		
	Market Value	Allocation		Market Value	Allocation
■ Domestic Large Cap Equity	80,042,419	24.9	■ Domestic Large Cap Equity	83,778,018	25.1
■ Domestic Small Cap Equity	46,052,128	14.3	■ Domestic Small Cap Equity	49,166,374	14.7
■ International Equity	46,739,522	14.5	■ International Equity	49,805,509	14.9
■ Total Fixed Income	93,263,740	29.0	■ Total Fixed Income	96,470,912	28.9
■ Private Real Estate	24,120,439	7.5	■ Private Real Estate	23,706,500	7.1
■ Private Equity	22,850,375	7.1	■ Private Equity	22,305,052	6.7
■ Private Debt	8,308,970	2.6	■ Private Debt	8,308,970	2.5
■ Cash	595,839	0.2	■ Cash	310,539	0.1

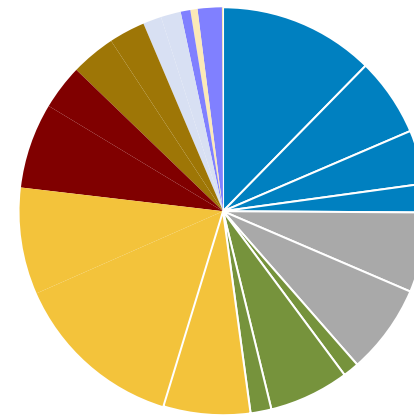
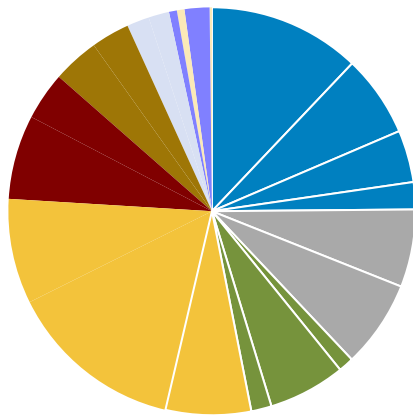
Asset Allocation by Asset Class

Total Fund

As of September 30, 2024

Jun-2024 : \$321,973,433

Sep-2024 : \$333,851,873



Allocation			Allocation		
	Market Value	Allocation		Market Value	Allocation
■ Vanguard S&P 500 Index Fund (VINIX)	38,918,790	12.1	■ Vanguard S&P 500 Index Fund (VINIX)	41,205,811	12.3
■ Vanguard Russell 1000 Growth Index (VRGWX)	20,890,000	6.5	■ Vanguard Russell 1000 Growth Index (VRGWX)	20,759,633	6.2
■ DFA Large Value Equity (DFLVX)	13,290,672	4.1	■ DFA Large Value Equity (DFLVX)	14,216,463	4.3
■ Vanguard Russell 1000 Value Index (VRVIX)	6,942,957	2.2	■ Vanguard Russell 1000 Value Index (VRVIX)	7,596,111	2.3
■ Vesper Capital Mgmt (UTRN)	-	0.0	■ Vesper Capital Mgmt (UTRN)	-	0.0
■ Allspring Global Small Value Eq.	19,823,855	6.2	■ Allspring Global Small Value Eq.	21,188,634	6.3
■ Emerald Small Growth Equity	22,354,069	6.9	■ Emerald Small Growth Equity	23,744,385	7.1
■ StoneRidge Small Growth Equity	3,874,204	1.2	■ StoneRidge Small Growth Equity	4,233,355	1.3
■ DFA International Equity (DFIEX)	19,710,343	6.1	■ DFA International Equity (DFIEX)	21,250,526	6.4
■ DFA Emerging Markets (DFCEX)	5,200,803	1.6	■ DFA Emerging Markets (DFCEX)	5,544,840	1.7
■ EuroPacific Growth Fund (RERGX)	21,828,376	6.8	■ EuroPacific Growth Fund (RERGX)	23,010,143	6.9
■ Boyd Watterson Fixed	45,012,020	14.0	■ Boyd Watterson Fixed	45,650,199	13.7
■ PNC Fixed	26,754,458	8.3	■ PNC Fixed	28,188,528	8.4
■ Vanguard Core Bond Fund (VCOBX)	21,497,261	6.7	■ Vanguard Core Bond Fund (VCOBX)	22,632,184	6.8
■ Boyd Watterson GSA Fund	12,265,464	3.8	■ Boyd Watterson GSA Fund	11,851,525	3.5
■ Bentall GreenOak US Core Plus RE	11,854,975	3.7	■ Bentall GreenOak US Core Plus RE	11,854,975	3.6
■ Ironsides Direct Investment Fund V	9,802,192	3.0	■ Ironsides Direct Investment Fund V	9,558,740	2.9
■ PA Co-Investment Fund III	5,734,068	1.8	■ PA Co-Investment Fund III	4,891,964	1.5
■ Adams Street Co-Investment Fund V	5,304,880	1.6	■ Adams Street Co-Investment Fund V	5,304,880	1.6
■ Hamilton Lane Secondary Fund VI	2,009,235	0.6	■ Hamilton Lane Secondary Fund VI	2,549,468	0.8
■ Ironsides Opportunities Fund	1,924,792	0.6	■ Ironsides Opportunities Fund	1,924,792	0.6
■ PA Credit Strategies Fund	6,384,178	2.0	■ PA Credit Strategies Fund	6,384,178	1.9
■ Cash Account	595,839	0.2	■ Cash Account	310,539	0.1

Financial Reconciliation

Total Fund

1 Quarter Ending September 30, 2024

	Market Value 07/01/2024	Net Transfers	Contributions	Distributions	Management Fees	Other Expenses	Return On Investment	Market Value 09/30/2024
Total Fund	321,973,433	-	3,284,716	-6,264,363	-369,856	-39,503	15,267,446	333,851,873
Domestic Large Cap Equity	80,042,419	-771,217	-	-	-	-	4,506,816	83,778,018
Vanguard S&P 500 Index Fund (VINIX)	38,918,790	-	-	-	-	-	2,287,021	41,205,811
Vanguard Russell 1000 Growth Index (VRGWX)	20,890,000	-771,217	-	-	-	-	640,850	20,759,633
DFA Large Value Equity (DFLVX)	13,290,672	-	-	-	-	-	925,791	14,216,463
Vanguard Russell 1000 Value Index (VRVIX)	6,942,957	-	-	-	-	-	653,154	7,596,111
Domestic Small Cap Equity	46,052,128	-	-	-	-	-	3,114,246	49,166,374
Allspring Global Small Value Eq.	19,823,855	-	-	-	-	-	1,364,778	21,188,634
Emerald Small Growth Equity	22,354,069	-	-	-	-	-	1,390,316	23,744,385
StoneRidge Small Growth Equity	3,874,204	-	-	-	-	-	359,152	4,233,355
International Equity	46,739,522	-	-	-	-	-	3,065,987	49,805,509
DFA International Equity (DFIEX)	19,710,343	-	-	-	-	-	1,540,183	21,250,526
DFA Emerging Markets (DFCEX)	5,200,803	-	-	-	-	-	344,037	5,544,840
EuroPacific Growth Fund (RERGX)	21,828,376	-	-	-	-	-	1,181,767	23,010,143
Total Fixed Income	93,263,740	-1,750,000	-	-	-	-	4,957,172	96,470,912
Boyd Watterson Fixed	45,012,020	-1,750,000	-	-	-	-	2,388,179	45,650,199
PNC Fixed	26,754,458	-	-	-	-	-	1,434,070	28,188,528
Vanguard Core Bond Fund (VCOBX)	21,497,261	-	-	-	-	-	1,134,923	22,632,184
Private Real Estate	24,120,439	-	-	-	-	-	-413,939	23,706,500
Boyd Watterson GSA Fund	12,265,464	-	-	-	-	-	-413,939	11,851,525
Bentall GreenOak US Core Plus RE	11,854,975	-	-	-	-	-	-	11,854,975
Private Equity	22,850,375	-299,339	-	-	-259,231	-3,485	16,732	22,305,052
Ironsides Direct Investment Fund V	9,802,192	-228,452	-	-	-15,000	-	-	9,558,740
PA Co-Investment Fund III	5,734,068	-842,104	-	-	-	-	-	4,891,964
Adams Street Co-Investment Fund V	5,304,880	-	-	-	-	-	-	5,304,880
Hamilton Lane Secondary Fund VI	2,009,235	771,217	-	-	-244,231	-3,485	16,732	2,549,468
Private Debt	8,308,970	-	-	-	-	-	-	8,308,970
Ironsides Opportunities Fund	1,924,792	-	-	-	-	-	-	1,924,792
PA Credit Strategies Fund	6,384,178	-	-	-	-	-	-	6,384,178
Cash	595,839	2,820,556	3,284,716	-6,264,363	-110,625	-36,018	20,433	310,539
Cash Account	595,839	2,820,556	3,284,716	-6,264,363	-110,625	-36,018	20,433	310,539

Financial Reconciliation

Total Fund

Year To Date Ending September 30, 2024

	Market Value 01/01/2024	Net Transfers	Contributions	Distributions	Management Fees	Other Expenses	Return On Investment	Market Value 09/30/2024
Total Fund	311,340,529	-	10,047,614	-17,429,693	-651,566	-247,167	30,792,156	333,851,873
Domestic Large Cap Equity	78,737,059	-10,111,340	-	-	-	-	15,152,299	83,778,018
Vanguard S&P 500 Index Fund (VINIX)	35,777,127	-2,222,221	-	-	-	-	7,650,905	41,205,811
Vanguard Russell 1000 Growth Index (VRGWX)	18,444,733	-2,018,787	-	-	-	-	4,333,687	20,759,633
DFA Large Value Equity (DFLVX)	14,122,557	-2,000,000	-	-	-	-	2,093,906	14,216,463
Vanguard Russell 1000 Value Index (VRVIX)	6,512,656	-	-	-	-	-	1,083,455	7,596,111
Vesper Capital Mgmt (UTRN)	3,879,986	-3,870,332	-	-	-	-	-9,654	-
Domestic Small Cap Equity	40,034,711	4,000,000	-	-	-	-	5,131,662	49,166,374
Allspring Global Small Value Eq.	19,521,885	-	-	-	-	-	1,666,749	21,188,634
Emerald Small Growth Equity	20,512,826	-	-	-	-	-	3,231,559	23,744,385
StoneRidge Small Growth Equity	-	4,000,000	-	-	-	-	233,355	4,233,355
International Equity	44,095,951	-	-	-	-	-	5,709,558	49,805,509
DFA International Equity (DFIEX)	18,919,814	-	-	-	-	-	2,330,712	21,250,526
DFA Emerging Markets (DFCEX)	4,811,621	-	-	-	-	-	733,219	5,544,840
EuroPacific Growth Fund (RERGX)	20,364,516	-	-	-	-	-	2,645,627	23,010,143
Total Fixed Income	96,677,135	-4,950,000	-	-	-	-	4,743,777	96,470,912
Boyd Watterson Fixed	48,261,523	-4,950,000	-	-	-	-	2,338,677	45,650,199
PNC Fixed	26,853,814	-	-	-	-	-	1,334,715	28,188,528
Vanguard Core Bond Fund (VCOBX)	21,561,798	-	-	-	-	-	1,070,385	22,632,184
Private Real Estate	20,294,189	4,222,221	-	-	-47,253	-	-762,657	23,706,500
Boyd Watterson GSA Fund	12,622,014	-	-	-	-	-	-770,489	11,851,525
Bentall GreenOak US Core Plus RE	7,672,175	4,222,221	-	-	-47,253	-	7,832	11,854,975
Private Equity	22,284,046	-175,674	-	-	-304,231	-66,926	567,836	22,305,052
Ironsides Direct Investment Fund V	10,667,449	-1,112,520	-	-	-60,000	-63,441	127,251	9,558,740
PA Co-Investment Fund III	5,885,752	-1,065,626	-	-	-	-	71,838	4,891,964
Adams Street Co-Investment Fund V	4,108,837	750,000	-	-	-	-	446,043	5,304,880
Hamilton Lane Secondary Fund VI	1,622,008	1,252,472	-	-	-244,231	-3,485	-77,296	2,549,468
Private Debt	8,202,416	-68,631	-	-	-5,830	-5,894	186,909	8,308,970
Ironsides Opportunities Fund	1,989,880	-68,631	-	-	-5,830	-5,894	15,267	1,924,792
PA Credit Strategies Fund	6,212,536	-	-	-	-	-	171,642	6,384,178
Cash	1,015,022	7,083,424	10,047,614	-17,429,693	-294,252	-174,347	62,771	310,539
Cash Account	1,015,022	7,083,424	10,047,614	-17,429,693	-294,252	-174,347	62,771	310,539

Asset Allocation & Performance

Total Fund

As of September 30, 2024

	Allocation		Performance(%)										Inception Date
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	7 YR	10 YR	Inception			
Total Fund (Gross)	333,851,873	100.0	4.75 (77)	10.00 (80)	18.99 (72)	4.54 (51)	8.12 (59)	7.27 (66)	7.20 (57)	7.12 (17)	Jan-1998		
Total Fund Policy Index			6.07	10.19	20.28	4.08	7.58	6.82	6.83	6.44			
All Public DB Plans Median			5.41	11.93	21.25	4.55	8.32	7.69	7.33	6.53			
Total Fund (Net)	333,851,873	100.0	4.63	9.78	18.72	4.34	7.89	7.00	6.89	-	Oct-2003		
Total Fund Policy Index			6.07	10.19	20.28	4.08	7.58	6.82	6.83	7.00			
Total Equity	182,749,901	54.7	6.18	16.21	29.67	-	-	-	-	8.59	Apr-2022		
Domestic Large Cap Equity	83,778,018	25.1	5.63	20.88	34.61	-	-	-	-	10.82	Apr-2022		
Vanguard S&P 500 Index Fund (VINIX)	41,205,811	12.3	5.88 (42)	22.04 (25)	36.30 (26)	11.87 (22)	15.94 (19)	14.46 (12)	13.35 (8)	14.09 (9)	Jul-2013		
S&P 500 Index			5.89	22.08	36.35	11.91	15.98	14.50	13.38	14.13			
Large Blend Median			5.79	20.58	34.79	10.73	14.87	13.15	12.11	12.95			
Vanguard Russell 1000 Growth Index (VRGWX)	20,759,633	6.2	3.17 (51)	24.47 (33)	42.14 (37)	11.97 (7)	19.67 (11)	18.14 (8)	16.45 (7)	17.09 (9)	Jul-2013		
Russell 1000 Growth Index			3.19	24.55	42.19	12.02	19.74	18.20	16.52	17.17			
Large Growth Median			3.20	22.81	40.20	8.24	16.48	15.46	14.15	15.00			
DFA Large Value Equity (DFLVX)	14,216,463	4.3	6.97 (71)	15.41 (58)	25.87 (65)	9.29 (57)	10.97 (54)	9.10 (69)	9.15 (54)	8.14 (38)	May-2006		
Russell 1000 Value Index			9.43	16.68	27.76	9.03	10.69	9.53	9.23	7.83			
Large Value Median			8.05	15.92	27.06	9.66	11.12	9.73	9.23	7.83			
Vanguard Russell 1000 Value Index (VRVIX)	7,596,111	2.3	9.41 (22)	16.64 (42)	27.69 (44)	8.96 (64)	-	-	-	10.48 (68)	Mar-2021		
Russell 1000 Value Index			9.43	16.68	27.76	9.03	-	-	-	10.55			
Large Value Median			8.05	15.92	27.06	9.66	-	-	-	11.20			
Domestic Small Cap Equity	49,166,374	14.7	6.76	11.41	26.71	-	-	-	-	6.42	Apr-2022		
Allspring Global Small Value Eq.	21,188,634	6.3	6.88 (80)	8.54 (73)	22.12 (76)	7.12 (56)	10.58 (65)	8.85 (50)	10.22 (41)	9.57 (45)	Dec-2004		
Russell 2000 Value Index			10.15	9.22	25.88	3.77	9.29	6.60	8.22	7.26			
IM U.S. Small Cap Value Equity (SA+CF) Median			8.32	10.97	25.06	7.29	11.56	8.84	9.71	9.41			
Emerald Small Growth Equity	23,744,385	7.1	6.22 (75)	15.75 (33)	33.01 (21)	1.81 (35)	11.53 (45)	10.04 (68)	11.67 (49)	11.14 (63)	Oct-1998		
Russell 2000 Growth Index			8.41	13.22	27.66	-0.35	8.82	7.59	8.95	7.87			
IM U.S. Small Cap Growth Equity (SA+CF) Median			7.62	13.39	27.49	0.06	11.29	11.44	11.65	11.82			
StoneRidge Small Growth Equity	4,233,355	1.3	9.27 (27)	-	-	-	-	-	-	8.09 (92)	Feb-2024		
Russell 2000 Growth Index			8.41	-	-	-	-	-	-	16.98			
IM U.S. Small Cap Growth Equity (SA+CF) Median			7.62	-	-	-	-	-	-	15.77			

See the disclosure page at the end of the report.

Asset Allocation & Performance

Total Fund

As of September 30, 2024

	Allocation		Performance(%)									
	Market Value \$	%	QTR	YTD	1 YR	3 YR	5 YR	7 YR	10 YR	Inception	Inception Date	
International Equity	49,805,509	14.9	6.56	12.95	24.32	-	-	-	-	-	6.64	Apr-2022
DFA International Equity (DFIEX)	21,250,526	6.4	7.81 (33)	12.32 (65)	23.90 (58)	5.45 (25)	8.90 (19)	-	-	-	5.46 (37)	Dec-2017
MSCI EAFE Value Index (Net)			8.89	13.79	23.14	8.94	8.27	-	-	-	4.89	
Foreign Large Blend Median			7.12	12.96	24.46	4.25	7.78	-	-	-	5.23	
DFA Emerging Markets (DFCEX)	5,544,840	1.7	6.62 (54)	15.24 (54)	24.30 (52)	3.91 (31)	8.18 (33)	-	-	-	4.69 (38)	Dec-2017
MSCI Emerging Markets (Net) Index			8.72	16.86	26.05	0.40	5.75	-	-	-	3.19	
IM Emerging Markets Equity (SA+CF) Median			6.88	15.52	24.48	0.07	6.39	-	-	-	3.72	
EuroPacific Growth Fund (RERGX)	23,010,143	6.9	5.41 (60)	12.99 (46)	24.71 (66)	0.06 (49)	7.52 (49)	5.71 (56)	-	-	6.99 (47)	Nov-2015
MSCI AC World ex USA Growth (Net)			6.92	14.06	26.75	0.81	7.09	5.77	-	-	6.86	
Foreign Large Growth Median			6.14	12.70	26.16	-0.01	7.47	5.90	-	-	6.88	
Total Fixed Income	96,470,912	28.9	5.33	5.13	12.25	-	-	-	-	-	2.48	Apr-2022
Boyd Watterson Fixed	45,650,199	13.7	5.34 (37)	5.30 (49)	12.35 (59)	0.37 (15)	1.66 (26)	2.39 (37)	2.38 (64)	4.14 (83)	Oct-1998	
Boyd Watterson Fixed Policy			5.20	4.45	11.57	0.19	1.27	1.90	1.97	-	-	
IM U.S. Broad Market Fixed Income (SA+CF) Median			5.27	5.27	12.58	-0.81	1.17	2.18	2.53	4.52		
PNC Fixed	28,188,528	8.4	5.36 (34)	4.97 (66)	12.16 (70)	0.15 (17)	1.50 (33)	2.11 (57)	2.07 (87)	3.09 (95)	Jul-2008	
PNC Fixed Policy			5.20	4.45	11.57	0.19	1.27	1.90	1.97	2.79		
IM U.S. Broad Market Fixed Income (SA+CF) Median			5.27	5.27	12.58	-0.81	1.17	2.18	2.53	3.92		
Vanguard Core Bond Fund (VCOBX)	22,632,184	6.8	5.28 (47)	4.96 (61)	12.15 (63)	-	-	-	-	4.58 (62)	Feb-2023	
Blmbg. U.S. Aggregate Index			5.20	4.45	11.57	-	-	-	-	4.10		
Intermediate Core Bond Median			5.25	5.07	12.39	-	-	-	-	4.78		
Total Alternatives	54,320,522	16.3										
Private Real Estate	23,706,500	7.1	-1.72	-3.38	-5.14	-	-	-	-	-	-1.28	Apr-2022
Boyd Watterson GSA Fund	11,851,525	3.5	-3.37 (99)	-6.10 (97)	-8.17 (71)	-1.23 (68)	2.18 (76)	4.38 (66)	-	5.50 (-)	Feb-2016	
NCREIF Property Index			0.78	-0.46	-3.47	0.87	3.26	4.23	-	4.92		
IM U.S. Private Real Estate (SA+CF) Median			0.26	-2.40	-6.22	0.28	3.14	4.55	-	-		
Bentall GreenOak US Core Plus RE	11,854,975	3.6	0.00 (77)	-0.34 (26)	-1.54 (16)	-	-	-	-	-0.36 (-)	Nov-2022	
NCREIF Property Index			0.78	-0.46	-3.47	-	-	-	-	-6.22		
IM U.S. Private Real Estate (SA+CF) Median			0.26	-2.40	-6.22	-	-	-	-	-		

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
Private Equity	22,305,052	6.7									
Ironsides Direct Investment Fund V	9,558,740	2.9									
PA Co-Investment Fund III	4,891,964	1.5									
Adams Street Co-Investment Fund V	5,304,880	1.6									
Hamilton Lane Secondary Fund VI	2,549,468	0.8									
Private Debt	8,308,970	2.5									
Ironsides Opportunities Fund	1,924,792	0.6									
PA Credit Strategies Fund	6,384,178	1.9									
Cash	310,539	0.1									
Cash Account	310,539	0.1									

See the disclosure page at the end of the report.

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Comparative Performance

Total Fund

As of September 30, 2024

Comparative Performance																				
	2023		2022		2021		2020		2019		2018		2017		2016		2015		2014	
Total Fund (Gross)	13.15	(53)	-11.59	(24)	13.31	(61)	12.18	(60)	18.55	(65)	-5.13	(69)	14.12	(71)	8.40	(21)	0.36	(35)	6.45	(44)
Total Fund Policy Index	13.02		-12.15		11.61		12.26		17.45		-3.89		10.71		8.86		1.22		7.13	
All Public DB Plans Median	13.29		-13.83		13.91		12.99		19.63		-4.42		15.13		7.14		-0.21		6.25	
Total Fund (Net)	12.97		-11.73		13.09		11.89		18.18		-5.52		13.72		7.99		-0.03		6.02	
Total Fund Policy Index	13.02		-12.15		11.61		12.26		17.45		-3.89		10.71		8.86		1.22		7.13	
Total Equity	20.76																			
Domestic Large Cap Equity	23.91																			
Vanguard S&P 500 Index Fund (VINIX)	26.24	(25)	-18.14	(50)	28.67	(21)	18.39	(36)	31.47	(22)	-4.42	(25)	21.80	(32)	11.93	(27)	1.34	(25)	13.65	(18)
S&P 500 Index	26.29		-18.11		28.71		18.40		31.49		-4.38		21.83		11.96		1.38		13.69	
Large Blend Median	24.49		-18.15		26.80		17.33		29.98		-5.51		21.16		10.68		0.25		12.03	
Vanguard Russell 1000 Growth Index (VRGWX)	42.65	(32)	-29.17	(37)	27.52	(16)	38.38	(39)	36.30	(21)	-1.56	(51)	30.13	(40)	7.03	(20)	5.56	(46)	12.98	(25)
Russell 1000 Growth Index	42.68		-29.14		27.60		38.49		36.39		-1.51		30.21		7.08		5.67		13.05	
Large Growth Median	39.00		-30.94		21.92		35.65		32.80		-1.50		29.06		2.73		5.07		10.64	
DFA Large Value Equity (DFLVX)	11.47	(47)	-5.78	(54)	28.07	(28)	-0.60	(81)	25.49	(52)	-11.61	(82)	18.97	(20)	18.89	(14)	-3.49	(52)	10.05	(66)
Russell 1000 Value Index	11.46		-7.54		25.16		2.80		26.54		-8.27		13.66		17.34		-3.83		13.45	
Large Value Median	11.00		-5.40		26.02		2.73		25.58		-8.86		16.24		14.37		-3.40		11.04	
Vanguard Russell 1000 Value Index (VRVIX)	11.42	(47)	-7.62	(70)																
Russell 1000 Value Index	11.46		-7.54		25.16		2.80		26.54		-8.27		13.66		17.34		-3.83		13.45	
Large Value Median	11.00		-5.40		26.02		2.73		25.58		-8.86		16.24		14.37		-3.40		11.04	
Vesper Capital Mgmt (UTRN)	0.73	(100)	-20.37	(86)	30.04	(20)														
S&P 500 Index	26.29		-18.11		28.71		18.40		31.49		-4.38		21.83		11.96		1.38		13.69	
IM U.S. Large Cap Core Equity (SA+CF) Median	23.77		-16.96		26.87		15.94		29.49		-5.67		21.54		9.88		0.96		12.59	
Domestic Small Cap Equity	18.89																			
Allspring Global Small Value Eq.	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)	8.76	(17)
Russell 2000 Value Index	14.65		-14.48		28.27		4.63		22.39		-12.86		7.84		31.74		-7.47		4.22	
IM U.S. Small Cap Value Equity (SA+CF) Median	17.24		-10.59		30.09		5.18		24.99		-14.08		11.56		27.12		-4.29		5.72	
Emerald Small Growth Equity	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)	7.55	(18)
Russell 2000 Growth Index	18.66		-26.36		2.83		34.63		28.48		-9.31		22.17		11.32		-1.38		5.60	
IM U.S. Small Cap Growth Equity (SA+CF) Median	19.07		-27.32		12.12		43.32		29.54		-3.83		24.51		10.60		-0.72		3.90	
StoneRidge Small Growth Equity																				
Russell 2000 Growth Index	18.66		-26.36		2.83		34.63		28.48		-9.31		22.17		11.32		-1.38		5.60	
IM U.S. Small Cap Growth Equity (SA+CF) Median	19.07		-27.32		12.12		43.32		29.54		-3.83		24.51		10.60		-0.72		3.90	

See the disclosure page at the end of this report.

Comparative Performance

Total Fund

As of September 30, 2024

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
International Equity	16.57									
DFA International Equity (DFIEX)	17.49 (34)	-13.48 (17)	13.87 (9)	7.72 (67)	21.66 (56)	-17.40 (77)				
MSCI EAFE Value Index (Net)	18.95	-5.58	10.89	-2.63	16.09	-14.78	21.44	5.02	-5.68	-5.39
Foreign Large Blend Median	16.31	-15.68	10.45	9.25	21.99	-14.90	25.54	0.65	-0.94	-5.33
DFA Emerging Markets (DFCEX)	15.45 (38)	-16.40 (32)	5.83 (31)	13.86 (66)	16.04 (70)	-15.25 (42)				
MSCI Emerging Markets (Net) Index	9.83	-20.09	-2.54	18.31	18.42	-14.57	37.28	11.19	-14.92	-2.19
IM Emerging Markets Equity (SA+CF) Median	11.89	-20.29	0.24	18.05	19.08	-16.04	36.23	8.66	-12.83	-0.67
EuroPacific Growth Fund (RERGX)	16.05 (50)	-22.72 (34)	2.84 (78)	25.27 (34)	27.38 (64)	-14.87 (58)	31.14 (49)	1.06 (26)		
MSCI AC World ex USA Growth (Net)	14.03	-23.05	5.09	22.20	27.34	-14.43	32.01	0.12	-1.25	-2.65
Foreign Large Growth Median	15.99	-24.82	8.70	22.10	28.05	-13.96	31.07	-2.30	0.44	-3.69
Total Fixed Income	5.64									
Boyd Watterson Fixed	6.04 (66)	-9.17 (6)	-0.40 (39)	6.86 (92)	8.69 (85)	-0.03 (52)	3.45 (91)	2.22 (97)	0.92 (30)	3.47 (97)
Boyd Watterson Fixed Policy	5.53	-8.24	-1.44	6.43	6.80	0.88	2.14	2.08	1.07	3.13
IM U.S. Broad Market Fixed Income (SA+CF) Median	6.38	-12.92	-0.73	8.75	9.51	-0.01	4.33	3.70	0.63	6.14
PNC Fixed	6.23 (58)	-9.36 (7)	-1.38 (75)	7.53 (85)	7.29 (96)	0.78 (10)	2.41 (99)	2.11 (97)	0.66 (49)	2.99 (99)
PNC Fixed Policy	5.53	-8.24	-1.44	6.43	6.80	0.88	2.14	2.08	1.07	3.13
IM U.S. Broad Market Fixed Income (SA+CF) Median	6.38	-12.92	-0.73	8.75	9.51	-0.01	4.33	3.70	0.63	6.14
Vanguard S-T Invnt Grade Bond Fund (VFSIX)		-5.72 (70)	-0.30 (50)	5.28 (20)	5.87 (19)	1.02 (44)	2.16 (28)	2.85 (23)	1.18 (6)	1.89 (22)
Blmbg. 1-3 Year Gov/Credit	4.61	-3.69	-0.47	3.33	4.03	1.60	0.84	1.28	0.65	0.77
Short-Term Bond Median	5.51	-4.95	-0.30	3.90	4.62	0.92	1.60	1.88	0.36	1.02
Vanguard Core Bond Fund (VCOBX)										
Blmbg. U.S. Aggregate Index	5.53	-13.01	-1.55	7.51	8.72	0.01	3.54	2.65	0.55	5.97
Intermediate Core Bond Median	5.61	-13.39	-1.61	7.80	8.49	-0.42	3.42	2.62	0.21	5.54
Private Real Estate	-2.51									
Bentall GreenOak/MEPT Real Estate		8.74 (28)	20.81 (68)	1.37 (59)	4.55 (75)	8.18 (56)	6.48 (80)	8.97 (72)	13.01 (76)	13.22 (59)
NCREIF Property Index	-7.94	5.52	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82
IM U.S. Private Real Estate (SA+CF) Median	-10.76	7.14	22.73	1.57	6.93	8.42	8.07	9.80	15.34	13.63
Boyd Watterson GSA Fund	-3.13 (13)	4.58 (73)	8.04 (94)	6.97 (6)	9.53 (15)	9.60 (23)	8.87 (36)			
NCREIF Property Index	-7.94	5.52	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82
IM U.S. Private Real Estate (SA+CF) Median	-10.76	7.14	22.73	1.57	6.93	8.42	8.07	9.80	15.34	13.63
Bentall GreenOak US Core Plus RE	1.91 (9)									
NCREIF Property Index	-7.94	5.52	17.70	1.60	6.42	6.72	6.96	7.97	13.33	11.82
IM U.S. Private Real Estate (SA+CF) Median	-10.76	7.14	22.73	1.57	6.93	8.42	8.07	9.80	15.34	13.63

See the disclosure page at the end of this report.

As of September 30, 2024

Private Equity Summary of Partnership									
Partnerships	Valuation Date	Vintage Year	Investment Strategy	Capital Commitment \$	Drawn Down \$	Market Value \$	Distributed \$	IRR (%)	TVPI Multiple
Private Equity Funds									
Ironsides Direct Investment Fund V	09/30/2024	2018	Buyouts	6,000,000	7,692,170	9,558,740	3,707,979	14.3	1.7
PA Co-Investment Fund III	09/30/2024	2019	Buyouts	6,000,000	5,511,784	4,891,964	5,909,991	18.1	2.0
Adams Street Co-Investment Fund V	09/30/2024	2022	Co-Investment	10,000,000	4,012,945	5,304,880	-	24.1	1.3
Hamilton Lane Secondary Fund VI	09/30/2024	2022	Secondaries	10,000,000	2,259,232	2,549,468	18,942	18.5	1.1
Private Debt Funds									
Ironsides Opportunities Fund	09/30/2024	2018	Buyout - Mid	4,000,000	2,827,757	1,924,792	2,366,677	11.0	1.5
PA Credit Strategies Fund	09/30/2024	2015	Credit	4,000,000	4,000,000	6,384,178	-	8.3	1.6

Comparative Performance - IRR
Private Investments
As of September 30, 2024

Comparative Performance - IRR									
	QTR	YTD	1 YR	2 YR	3 YR	4 YR	5 YR	Inception	Inception Date
Private Equity									
Ironsides Direct Investment Fund V	-0.16	0.04	2.06	4.65	4.57	11.02	14.22	14.28	11/09/2018
PA Co-Investment Fund III	0.00	1.30	4.02	6.30	11.20	18.27	20.99	18.11	11/05/2018
Adams Street Co-Investment Fund V	0.00	9.76	20.67	24.11	N/A	N/A	N/A	24.11	10/28/2022
Hamilton Lane Secondary Fund VI	-11.20	-16.39	-12.95	N/A	N/A	N/A	N/A	18.48	01/03/2023
Private Debt									
Ironsides Opportunities Fund	0.00	0.18	1.27	6.13	8.12	10.48	10.56	11.01	12/31/2018
PA Credit Strategies Fund	0.00	2.76	4.21	5.11	6.61	11.26	8.37	8.30	11/21/2018

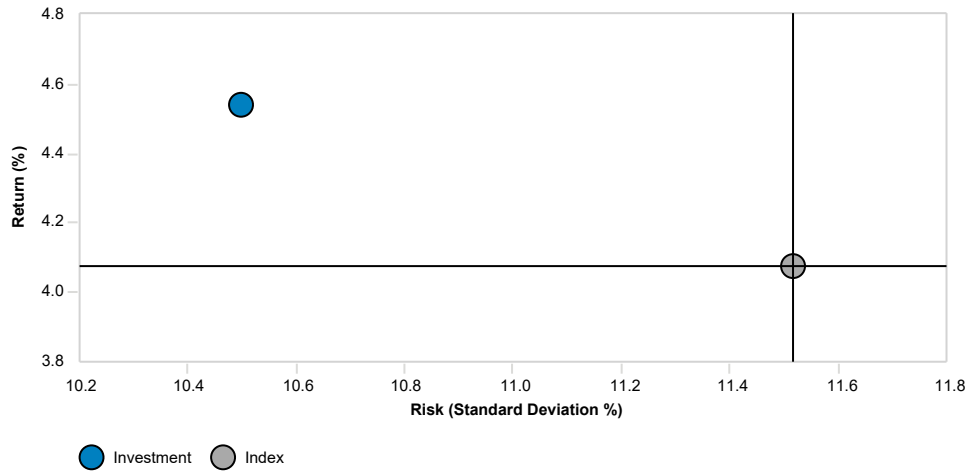
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	4.54	10.50	0.15	95.14	8	91.31	4
Index	4.08	11.52	0.11	100.00	8	100.00	4

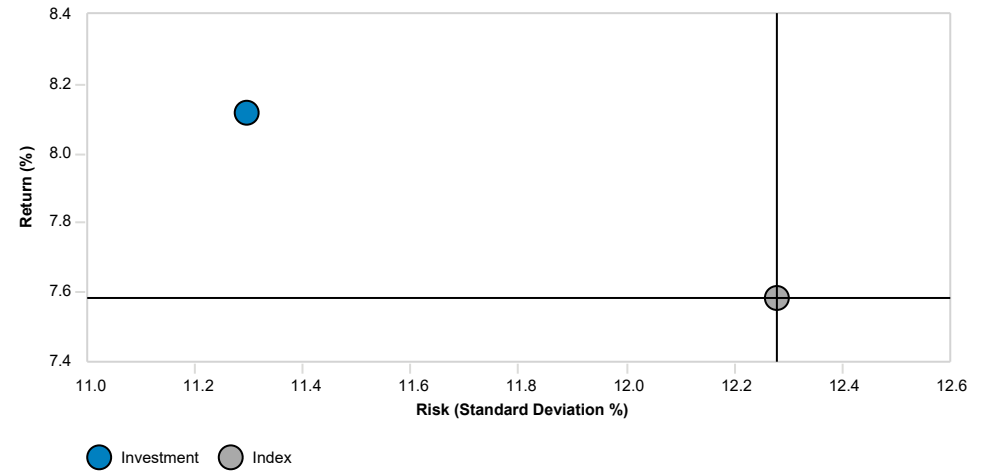
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.12	11.30	0.54	96.68	15	91.60	5
Index	7.58	12.28	0.47	100.00	14	100.00	6

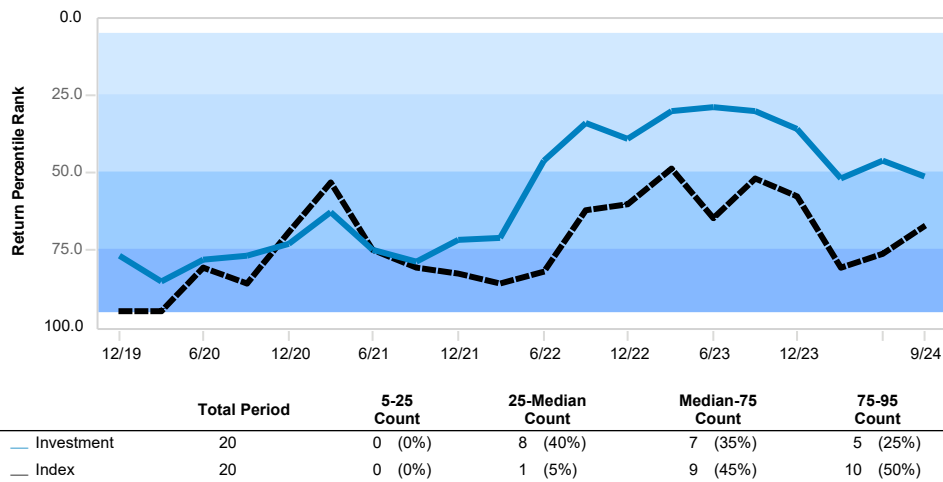
Risk and Return 3 Years



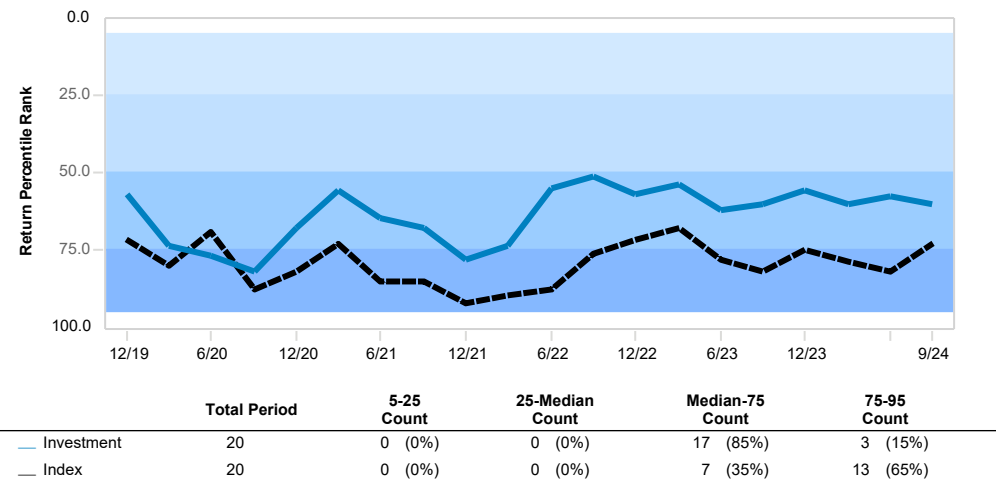
Risk and Return 5 Years



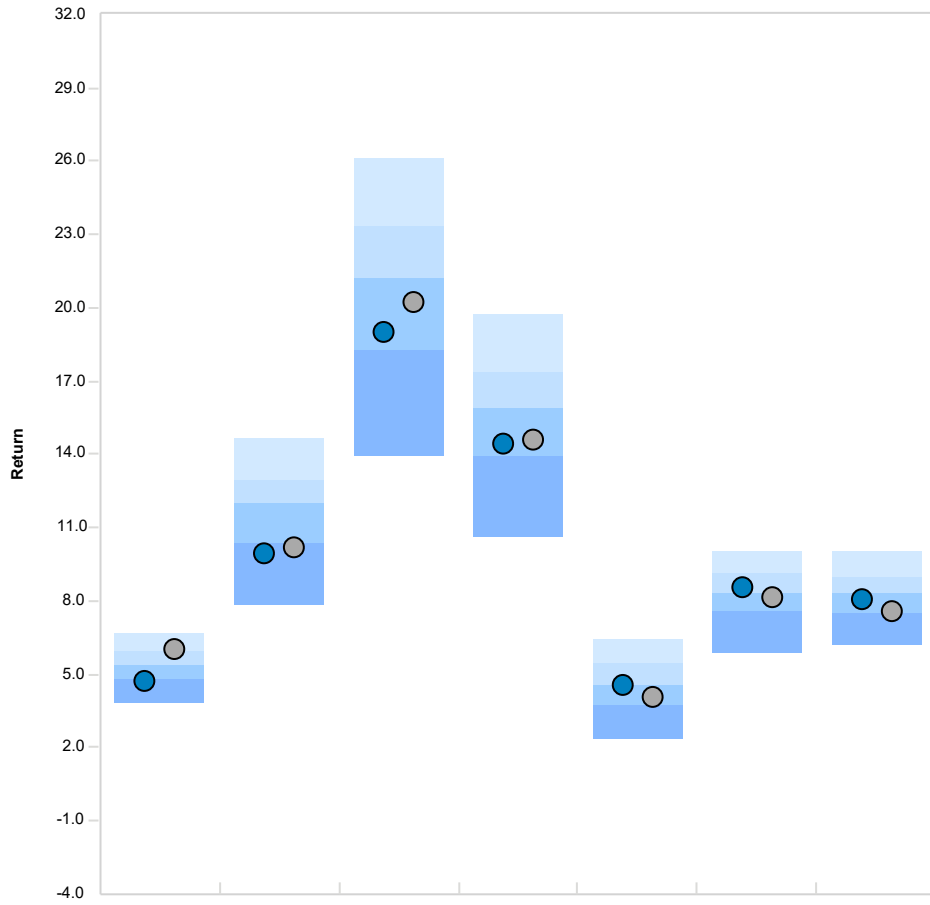
3 Year Rolling Percentile Rank All Public DB Plans



5 Year Rolling Percentile Rank All Public DB Plans

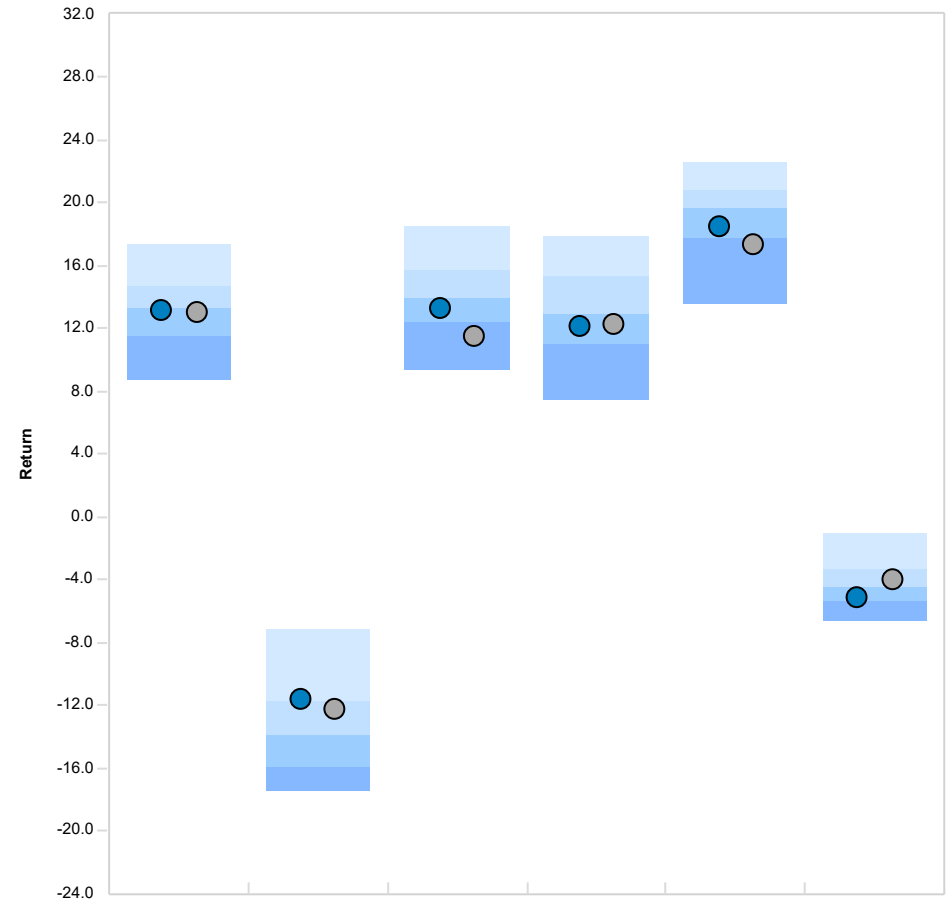


Plan Sponsor Peer Group Analysis vs. All Public DB Plans



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	4.75 (77)	10.00 (79)	18.99 (72)	14.47 (68)	4.54 (51)	8.56 (45)	8.12 (60)
● Index	6.07 (22)	10.19 (77)	20.28 (61)	14.57 (67)	4.08 (67)	8.13 (58)	7.58 (73)
Median	5.41	11.97	21.19	15.92	4.57	8.33	8.31

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 (61)	12.18 (60)	18.55 (65)	-5.13 (69)
● Index	13.02 (54)	-12.15 (30)	11.61 (84)	12.26 (59)	17.45 (78)	-3.89 (36)
Median	13.29	-13.83	13.91	12.99	19.63	-4.42

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	0.72 (73)	4.26 (72)	8.17 (51)	-2.80 (44)	3.17 (58)	4.31 (53)
Index	0.10 (92)	3.78 (84)	9.15 (29)	-3.42 (79)	3.02 (65)	4.07 (63)
Median	1.16	4.90	8.18	-2.98	3.30	4.37

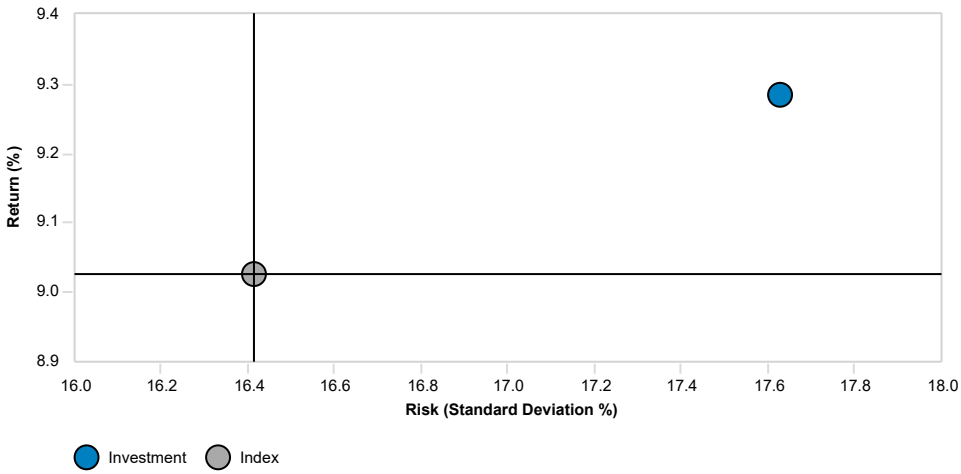
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	9.29	17.63	0.40	104.33	7	104.28	5
Index	9.03	16.41	0.40	100.00	7	100.00	5

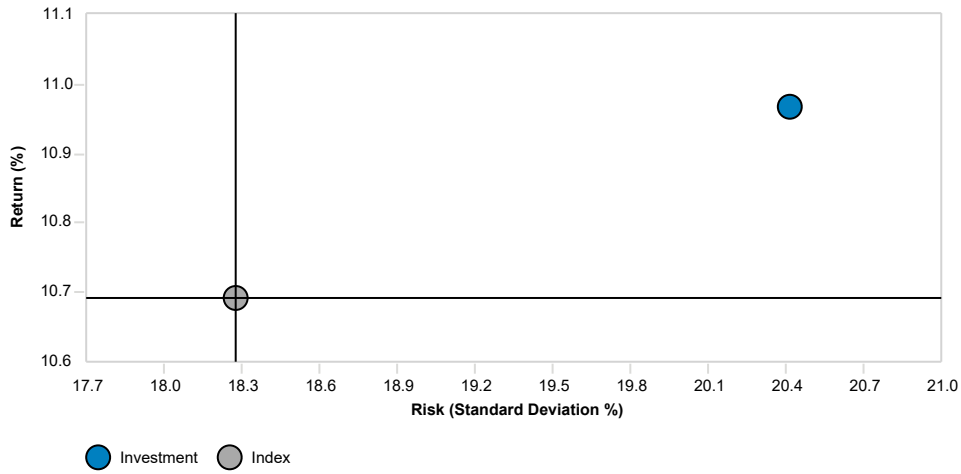
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	10.97	20.42	0.50	107.15	13	108.00	7
Index	10.69	18.28	0.52	100.00	13	100.00	7

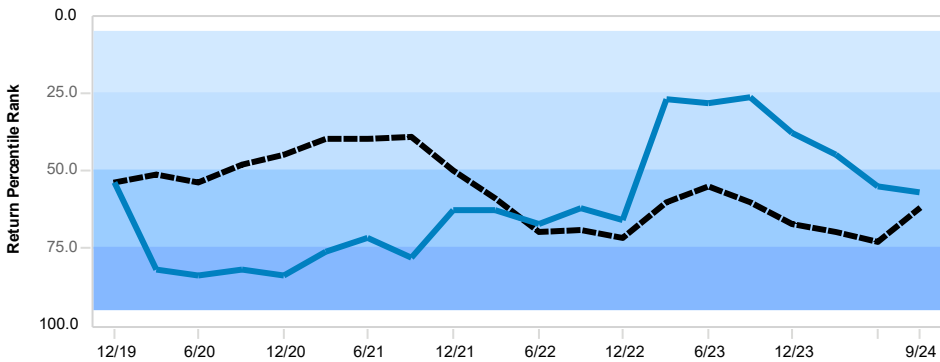
Risk and Return 3 Years



Risk and Return 5 Years

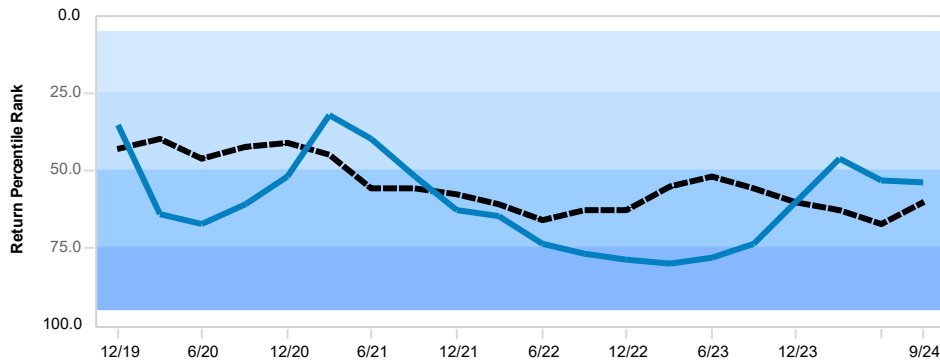


3 Year Rolling Percentile Rank Large Value



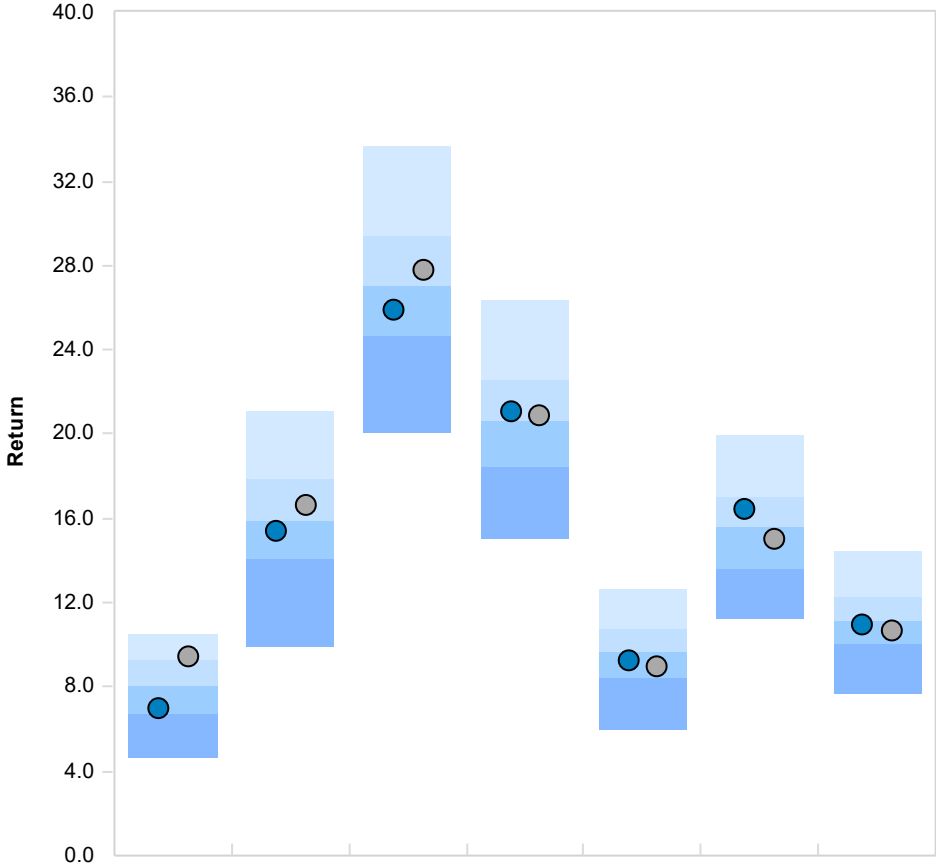
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	5 (25%)	9 (45%)	6 (30%)
Index	20	0 (0%)	6 (30%)	14 (70%)	0 (0%)

5 Year Rolling Percentile Rank Large Value



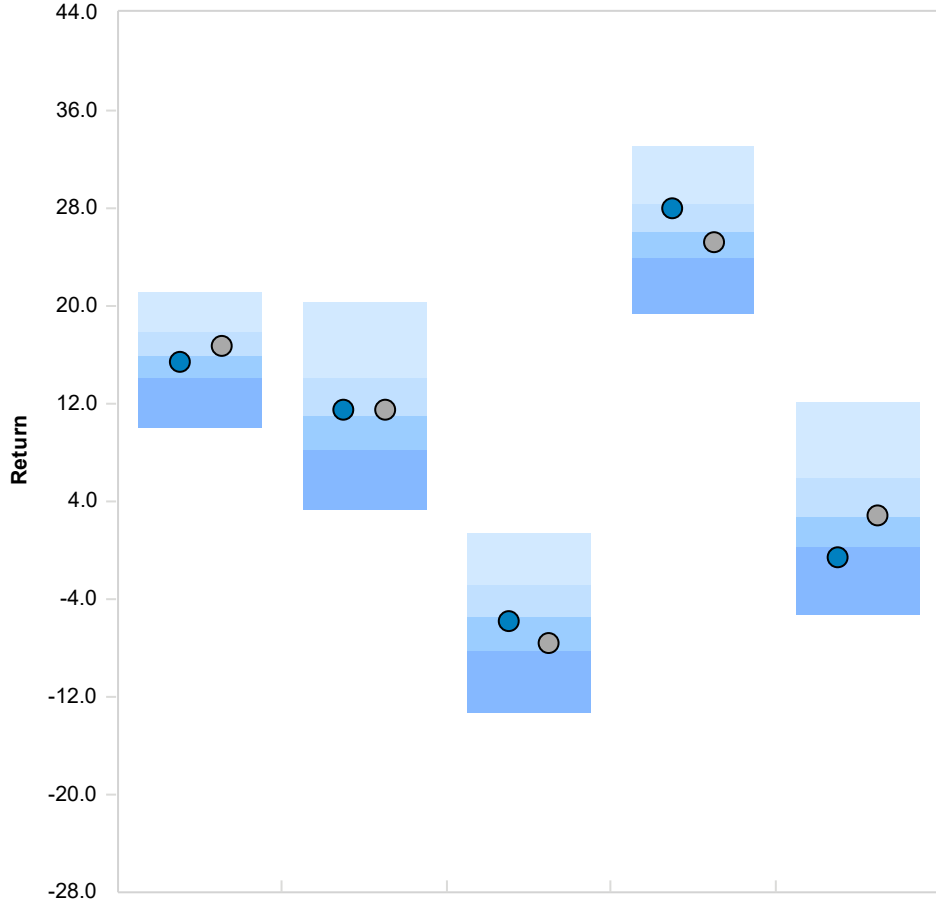
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	0 (0%)	4 (20%)	12 (60%)	4 (20%)
Index	20	0 (0%)	6 (30%)	14 (70%)	0 (0%)

Peer Group Analysis - Large Value



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	6.97 (71)	15.41 (58)	25.87 (65)	21.13 (42)	9.29 (57)	16.47 (36)	10.97 (54)
● Index	9.43 (21)	16.68 (41)	27.76 (43)	20.92 (46)	9.03 (62)	15.01 (58)	10.69 (60)
Median	8.05	15.92	27.06	20.63	9.66	15.62	11.12

Peer Group Analysis - Large Value



	2024	2023	2022	2021	2020
● Investment	15.41 (58)	11.47 (47)	-5.78 (54)	28.07 (28)	-0.60 (81)
● Index	16.68 (41)	11.46 (47)	-7.54 (70)	25.16 (62)	2.80 (50)
Median	15.92	11.00	-5.40	26.02	2.73

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	-2.96 (83)	11.18 (15)	9.06 (64)	-1.39 (20)	3.18 (66)	0.46 (43)
Index	-2.17 (68)	8.99 (47)	9.50 (52)	-3.16 (66)	4.07 (39)	1.01 (32)
Median	-1.46	8.82	9.57	-2.65	3.65	0.12

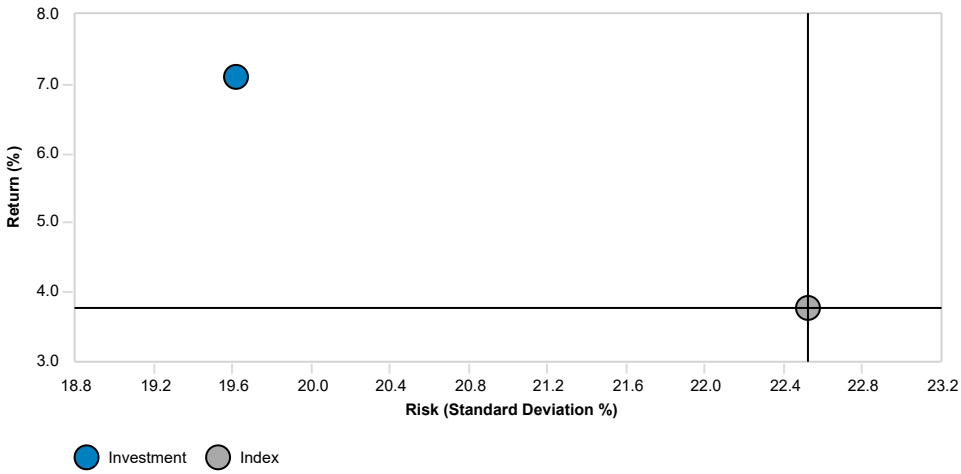
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	7.12	19.62	0.27	90.97	7	80.59	5
Index	3.77	22.52	0.12	100.00	6	100.00	6

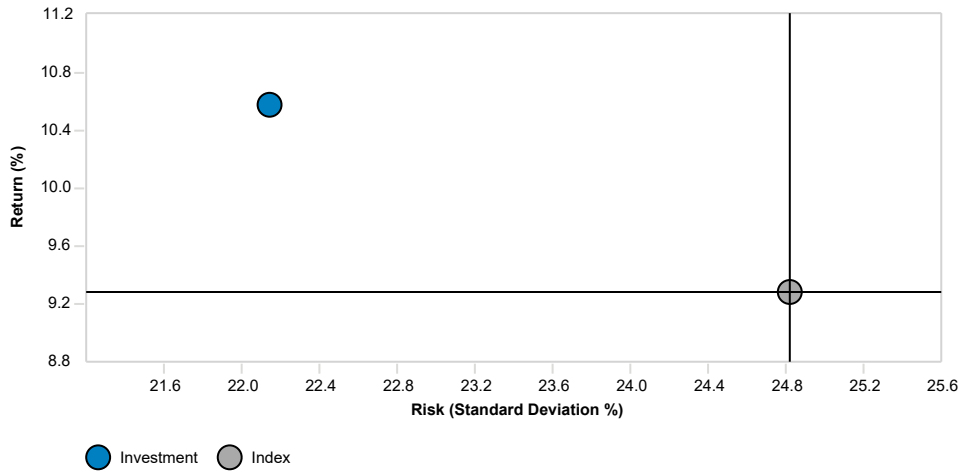
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	10.58	22.14	0.46	91.42	13	85.84	7
Index	9.29	24.82	0.39	100.00	12	100.00	8

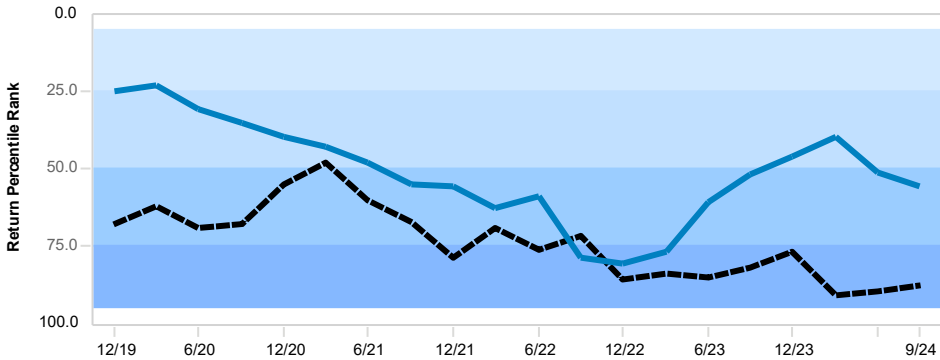
Risk and Return 3 Years



Risk and Return 5 Years

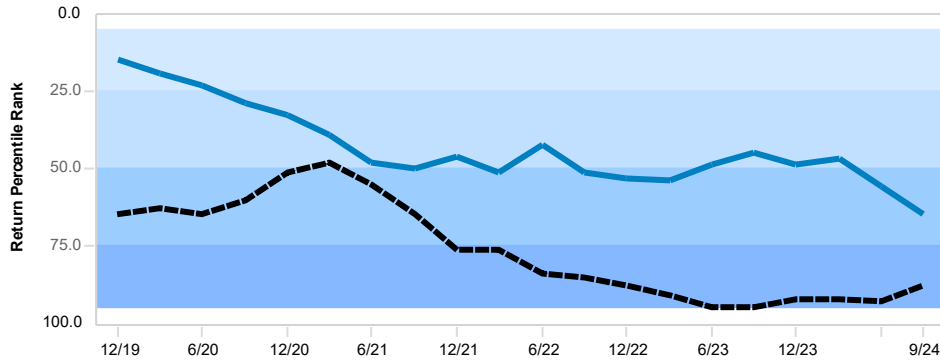


3 Year Rolling Percentile Rank IM U.S. Small Cap Value Equity (SA+CF)



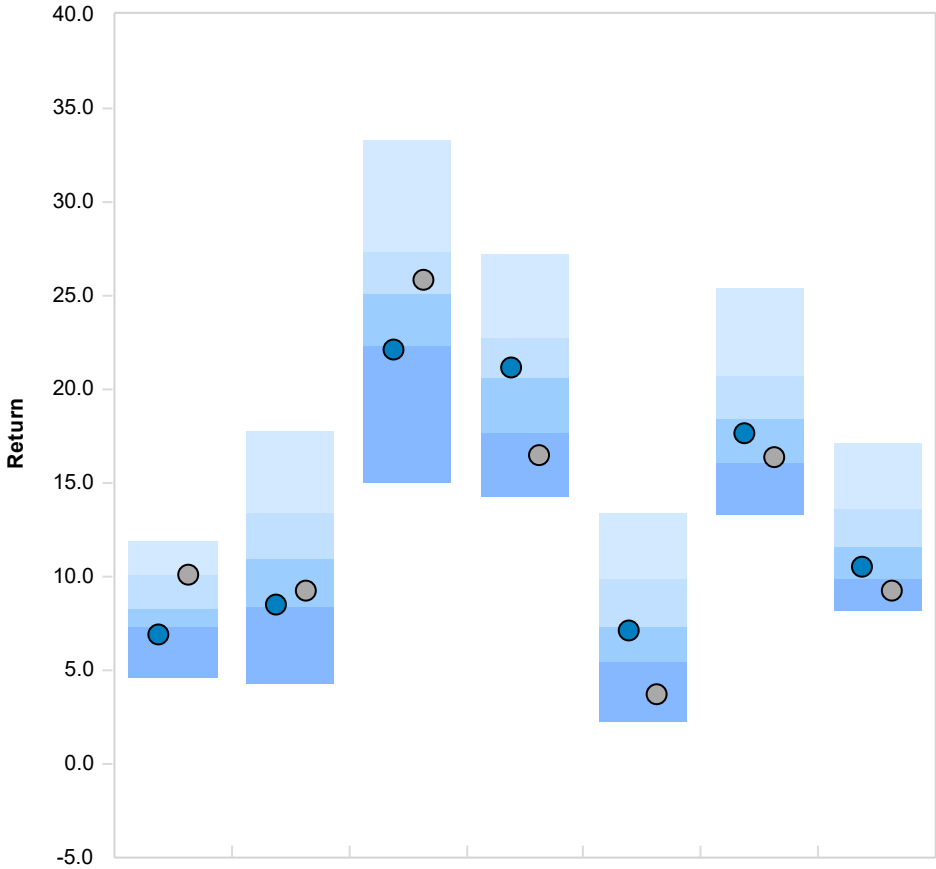
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	2 (10%)	7 (35%)	8 (40%)	3 (15%)
Index	20	0 (0%)	1 (5%)	9 (45%)	10 (50%)

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



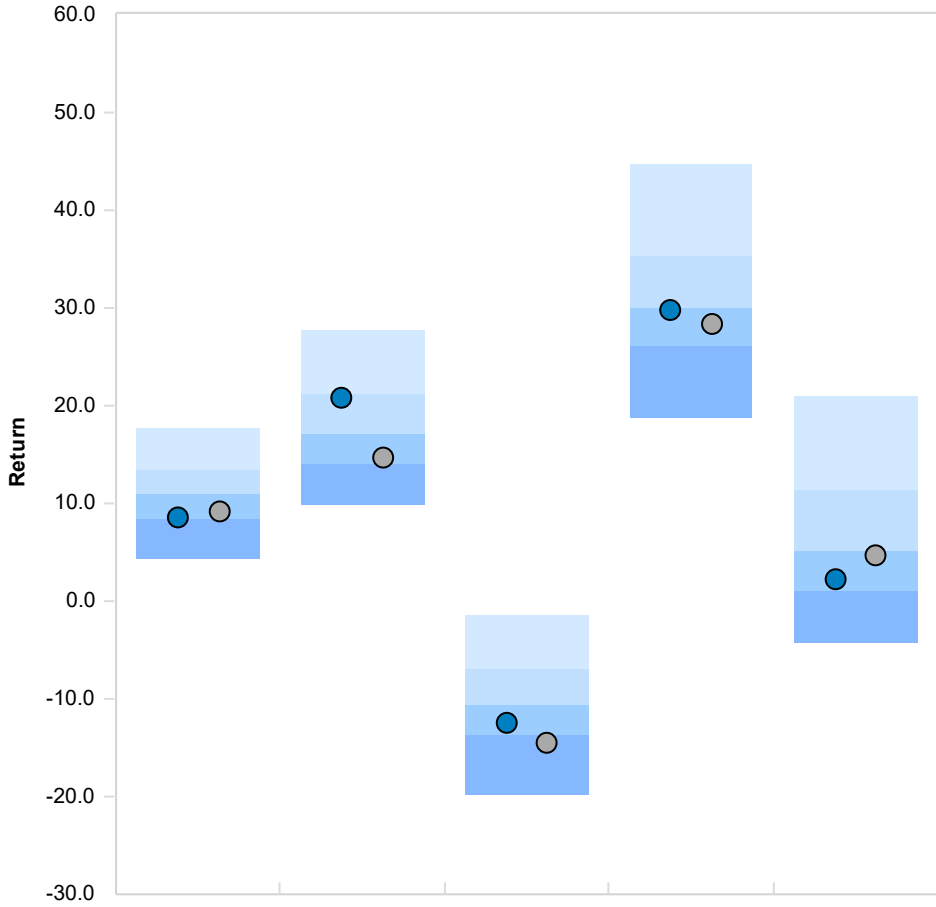
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	3 (15%)	11 (55%)	6 (30%)	0 (0%)
Index	20	0 (0%)	1 (5%)	7 (35%)	12 (60%)

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	6.88 (80)	8.54 (73)	22.12 (76)	21.19 (45)	7.12 (56)	17.65 (59)	10.58 (65)
● Index	10.15 (24)	9.22 (65)	25.88 (41)	16.51 (86)	3.77 (88)	16.34 (74)	9.29 (88)
Median	8.32	10.97	25.06	20.60	7.29	18.37	11.56

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



	2024	2023	2022	2021	2020
● Investment	8.54 (73)	20.80 (27)	-12.53 (70)	29.83 (51)	2.24 (69)
● Index	9.22 (65)	14.65 (73)	-14.48 (80)	28.27 (58)	4.63 (52)
Median	10.97	17.24	-10.59	30.09	5.18

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	-5.38 (86)	7.32 (26)	12.52 (57)	-2.17 (50)	5.47 (28)	4.04 (30)
Index	-3.64 (56)	2.90 (91)	15.26 (15)	-2.96 (59)	3.18 (68)	-0.66 (90)
Median	-3.36	5.20	12.95	-2.18	4.05	2.32

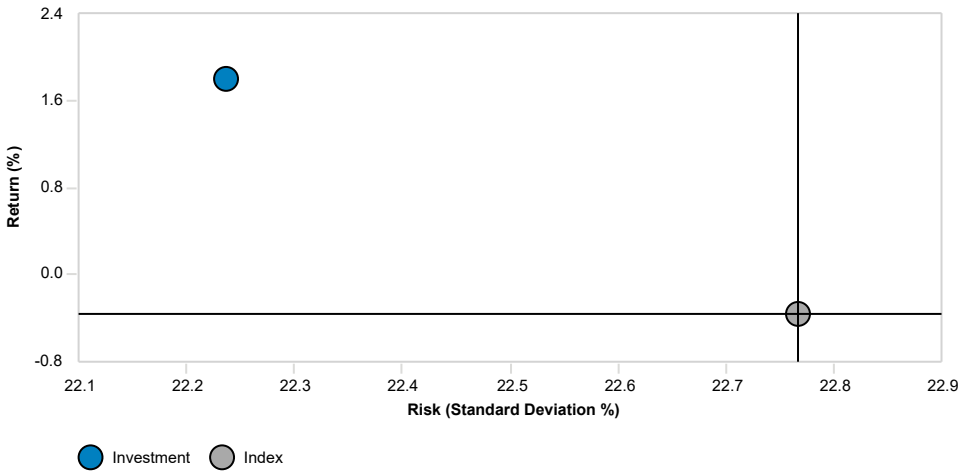
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.81	22.24	0.04	100.72	9	94.10	3
Index	-0.35	22.77	-0.05	100.00	8	100.00	4

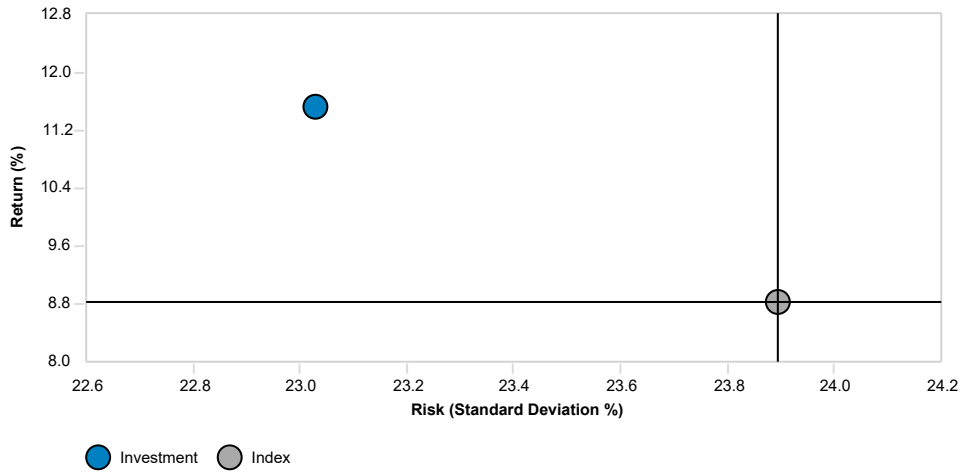
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	11.53	23.03	0.49	100.26	15	91.87	5
Index	8.82	23.89	0.38	100.00	14	100.00	6

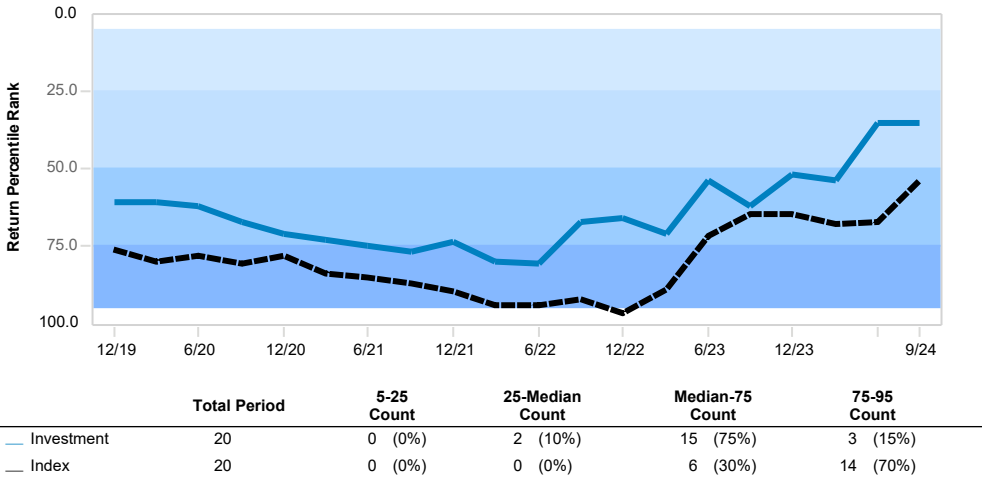
Risk and Return 3 Years



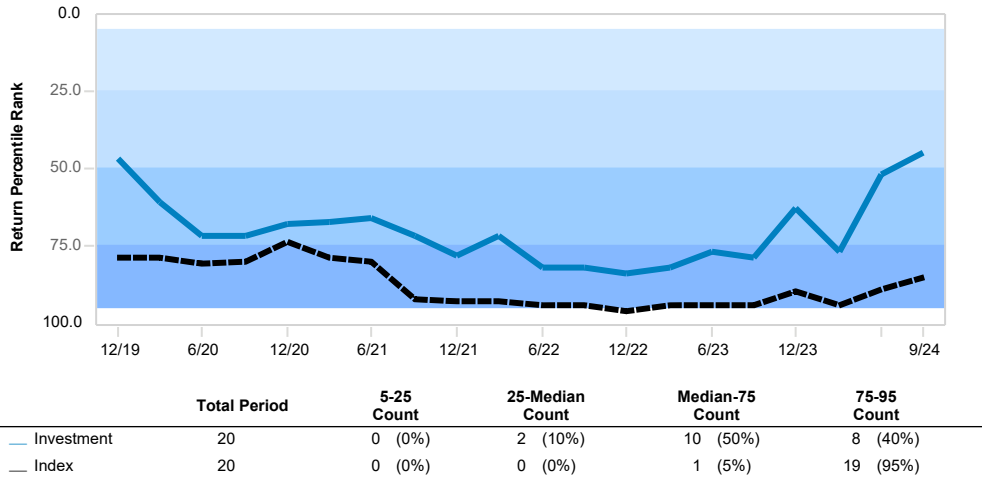
Risk and Return 5 Years



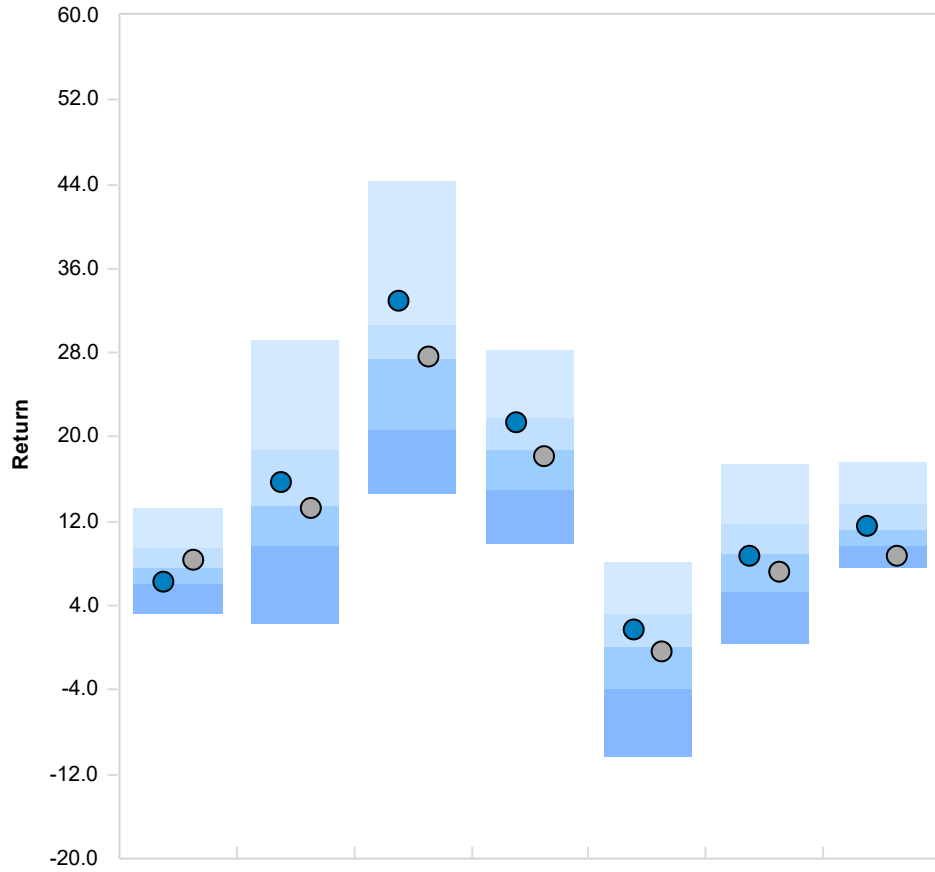
3 Year Rolling Percentile Rank IM U.S. Small Cap Growth Equity (SA+CF)



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

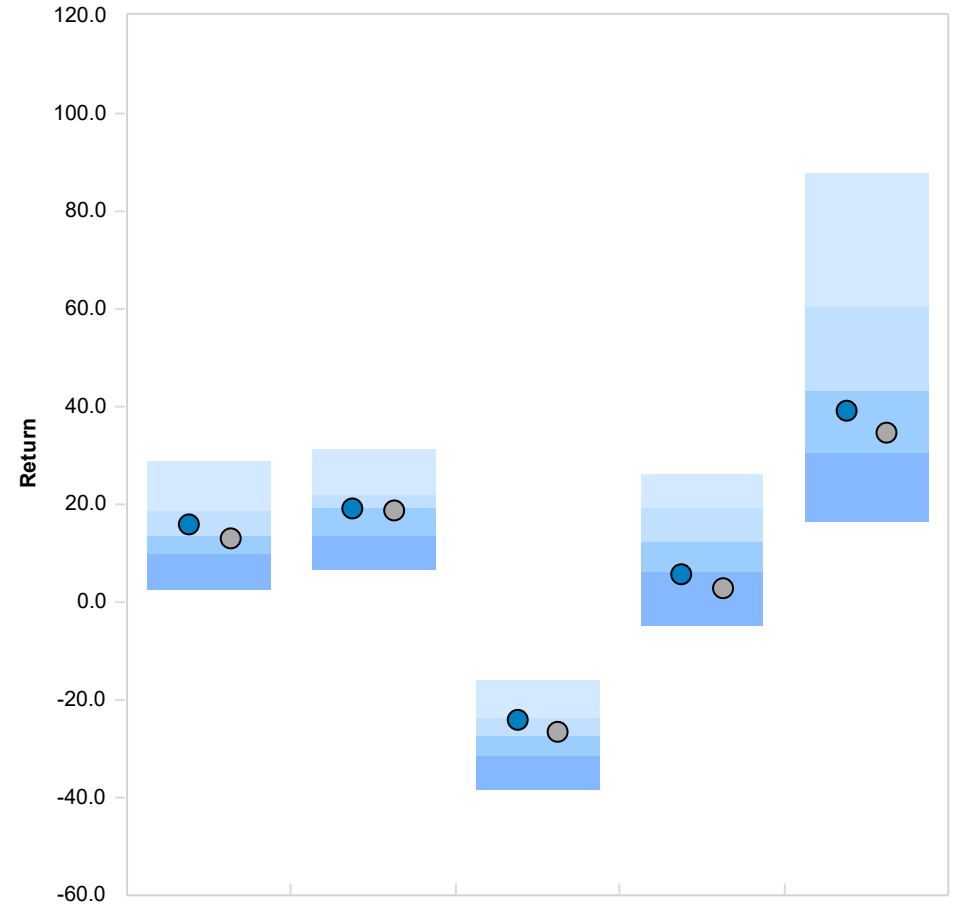


Peer Group Analysis - IM U.S. Small Cap Growth Equity (SA+CF)



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	6.22 (75)	15.75 (33)	33.01 (21)	21.33 (32)	1.81 (35)	8.75 (53)	11.53 (45)
● Index	8.41 (37)	13.22 (54)	27.66 (50)	18.28 (54)	-0.35 (54)	7.16 (62)	8.82 (85)
Median	7.62	13.39	27.49	18.78	0.06	8.95	11.29

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



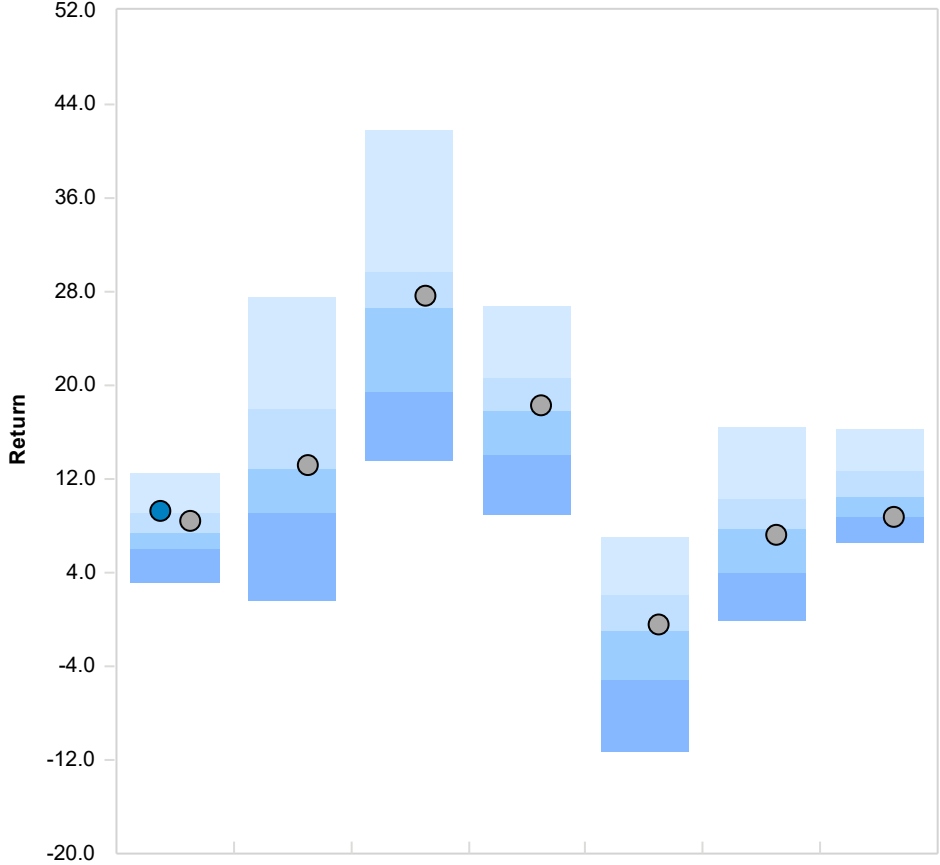
	2024	2023	2022	2021	2020
● Investment	15.75 (33)	19.35 (45)	-23.91 (30)	5.74 (77)	39.16 (60)
● Index	13.22 (54)	18.66 (52)	-26.36 (43)	2.83 (85)	34.63 (67)
Median	13.39	19.07	-27.32	12.12	43.32

Comparative Performance

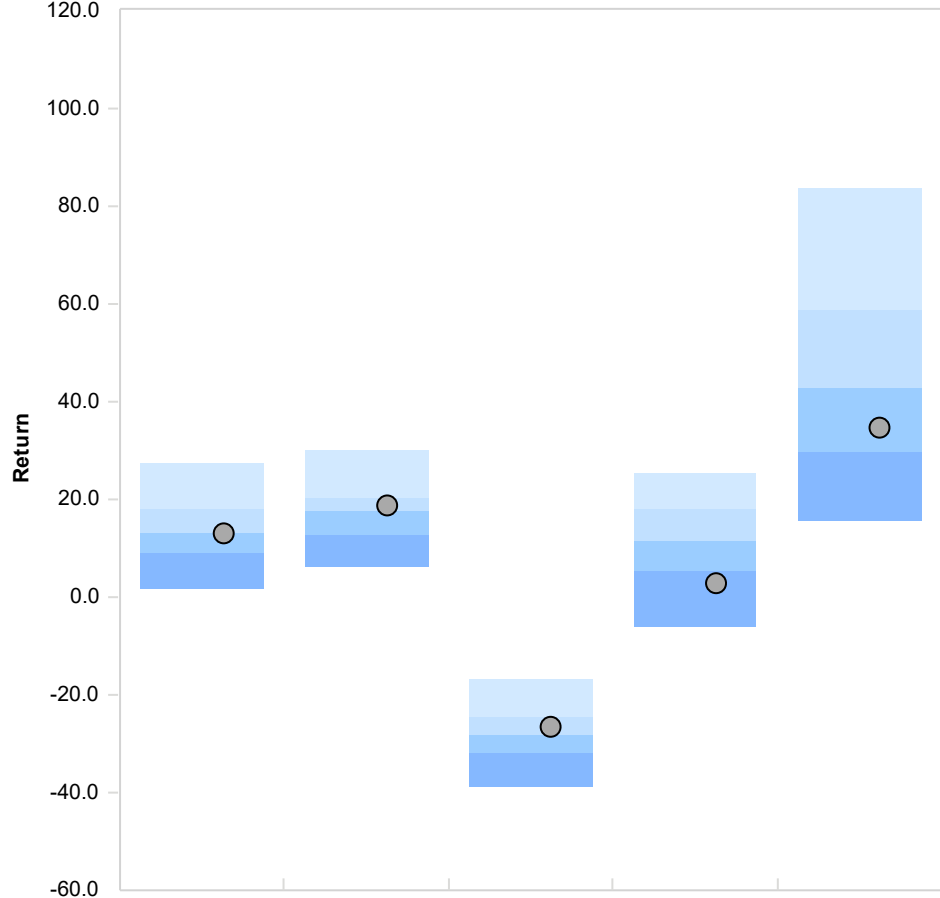
	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023	1 Qtr Ending Mar-2023
Investment	3.14 (7)	5.66 (70)	14.91 (10)	-8.50 (80)	8.85 (13)	4.28 (84)
Index	-2.92 (56)	7.58 (46)	12.75 (27)	-7.32 (68)	7.05 (29)	6.07 (68)
Median	-2.53	7.26	11.12	-6.41	5.73	7.28

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



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



Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	-6.45 (88)	N/A	N/A	N/A	N/A	N/A
Index	-2.92 (53)	7.58 (45)	12.75 (20)	-7.32 (65)	7.05 (25)	6.07 (66)
Median	-2.77	7.06	10.78	-6.73	5.68	7.06

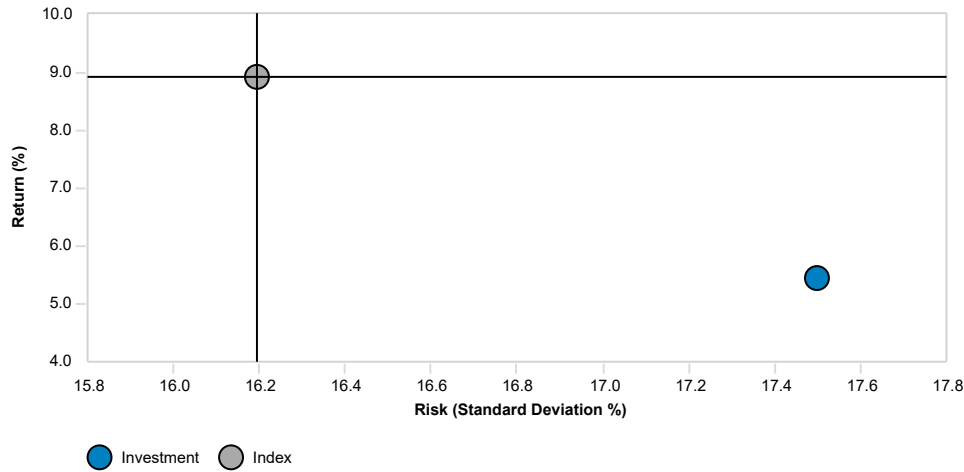
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	5.45	17.50	0.20	97.37	7	112.97	5
Index	8.94	16.19	0.40	100.00	10	100.00	2

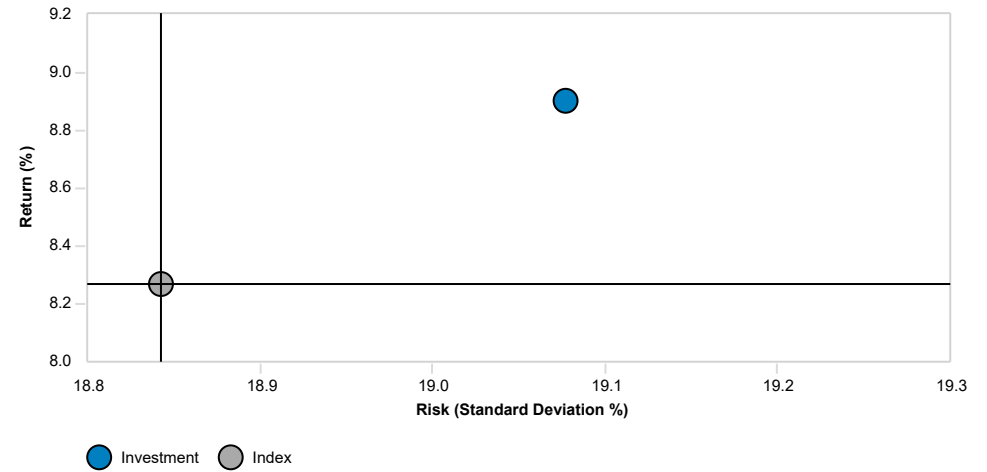
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.90	19.08	0.42	103.79	13	102.38	7
Index	8.27	18.84	0.40	100.00	16	100.00	4

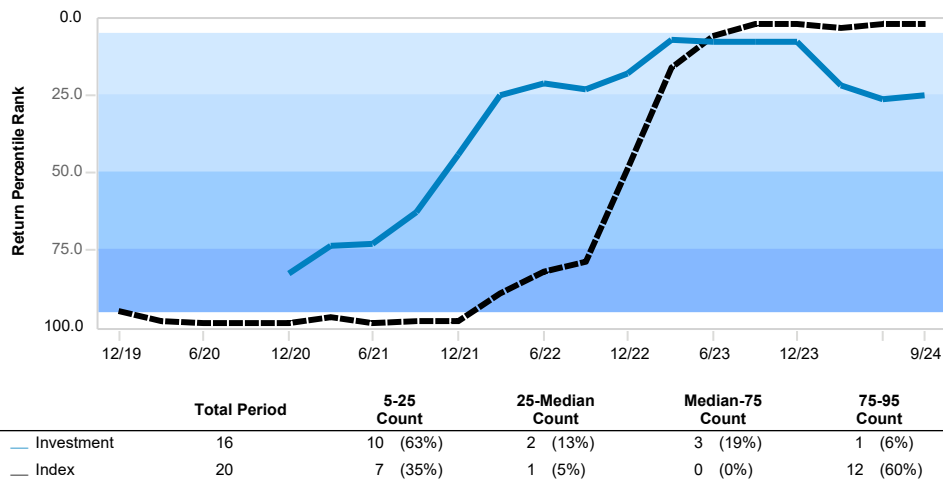
Risk and Return 3 Years



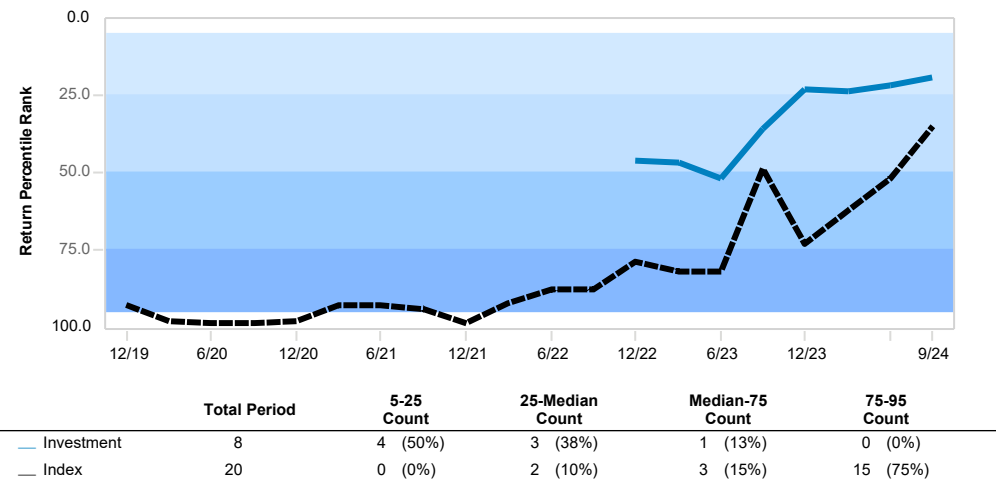
Risk and Return 5 Years



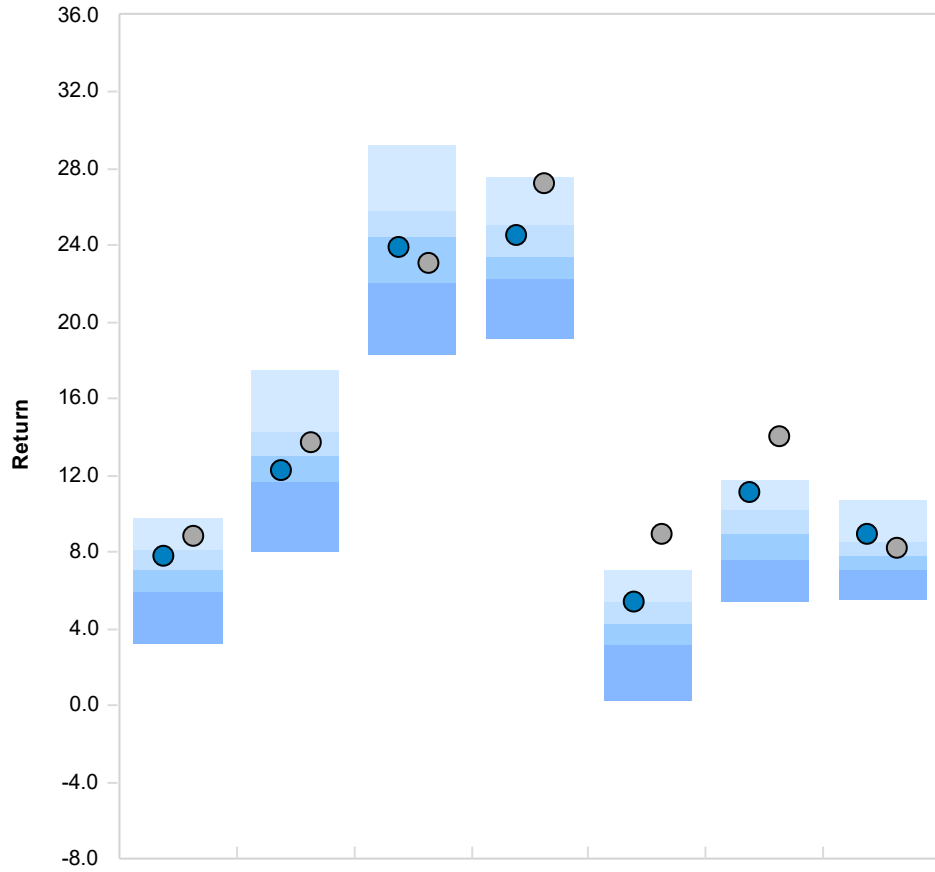
3 Year Rolling Percentile Rank Foreign Large Blend



5 Year Rolling Percentile Rank Foreign Large Blend

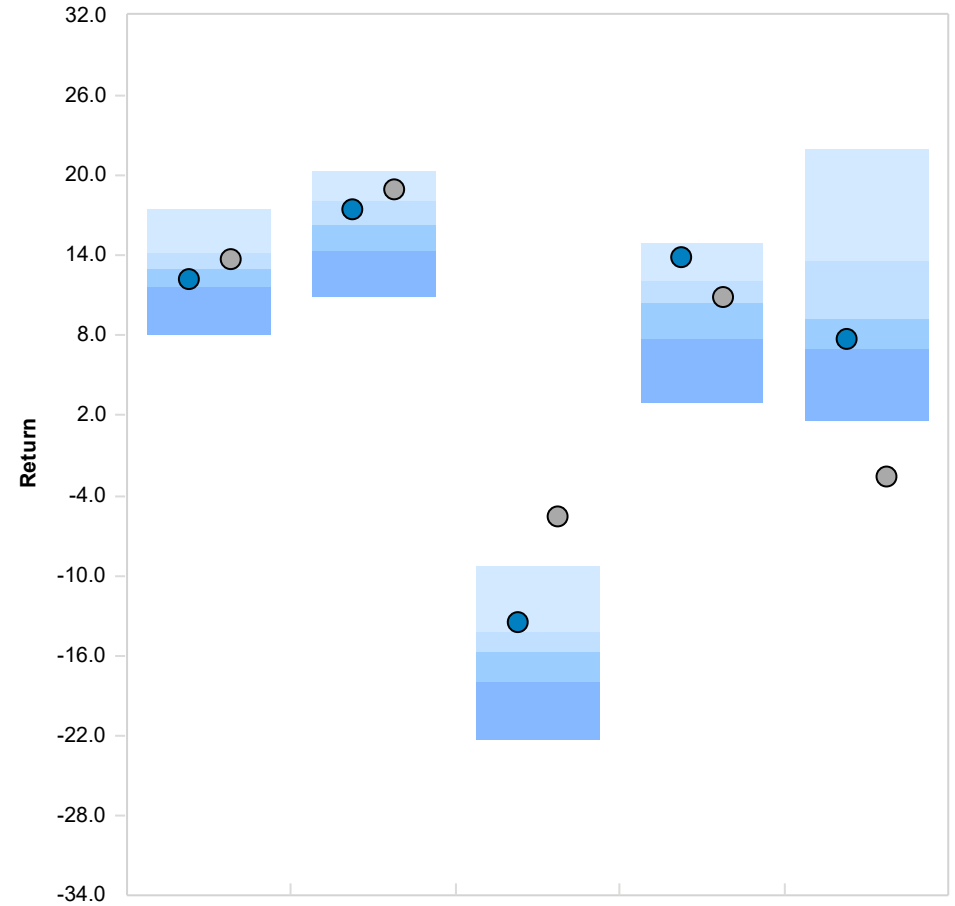


Peer Group Analysis - Foreign Large Blend



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	7.81 (33)	12.32 (65)	23.90 (58)	24.59 (33)	5.45 (25)	11.15 (11)	8.90 (19)
● Index	8.89 (11)	13.79 (33)	23.14 (66)	27.25 (7)	8.94 (2)	14.00 (2)	8.27 (35)
Median	7.12	12.96	24.46	23.43	4.25	8.98	7.78

Peer Group Analysis - Foreign Large Blend



	2024	2023	2022	2021	2020
● Investment	12.32 (65)	17.49 (34)	-13.48 (17)	13.87 (9)	7.72 (67)
● Index	13.79 (33)	18.95 (15)	-5.58 (1)	10.89 (43)	-2.63 (99)
Median	12.96	16.31	-15.68	10.45	9.25

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	-0.47 (74)	4.67 (67)	10.31 (42)	-2.94 (11)	2.07 (83)	7.51 (61)
Index	0.01 (52)	4.48 (72)	8.22 (87)	0.59 (1)	3.15 (35)	5.93 (92)
Median	0.09	5.29	9.99	-4.70	2.88	7.87

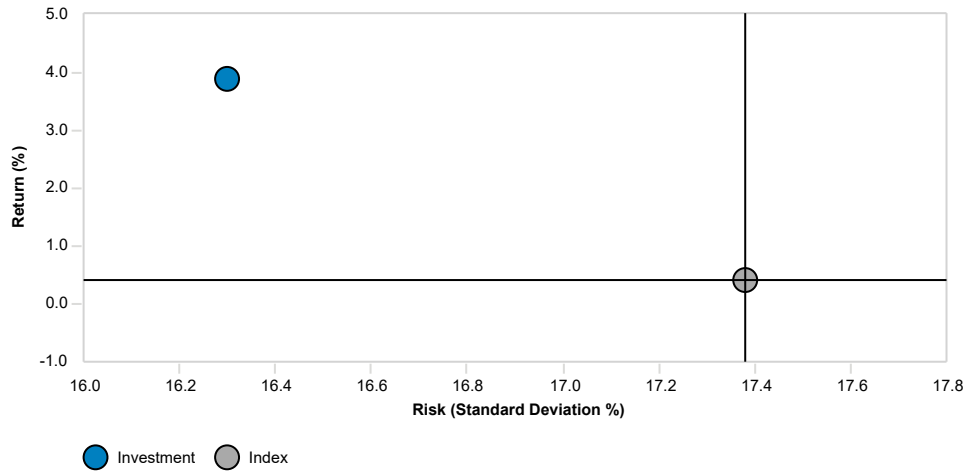
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	3.91	16.30	0.11	97.15	8	82.21	4
Index	0.40	17.38	-0.09	100.00	7	100.00	5

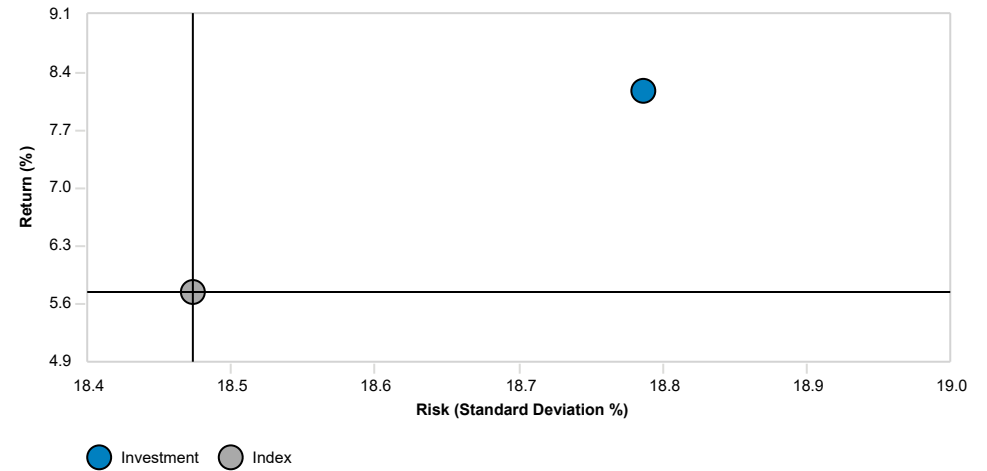
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	8.18	18.79	0.39	100.38	14	89.30	6
Index	5.75	18.47	0.27	100.00	13	100.00	7

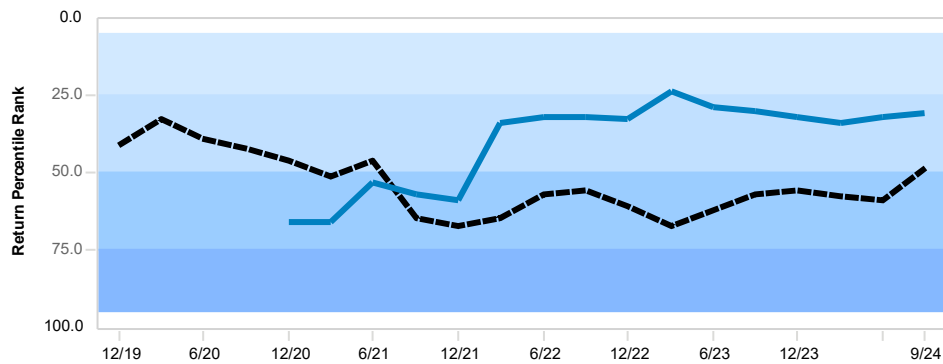
Risk and Return 3 Years



Risk and Return 5 Years

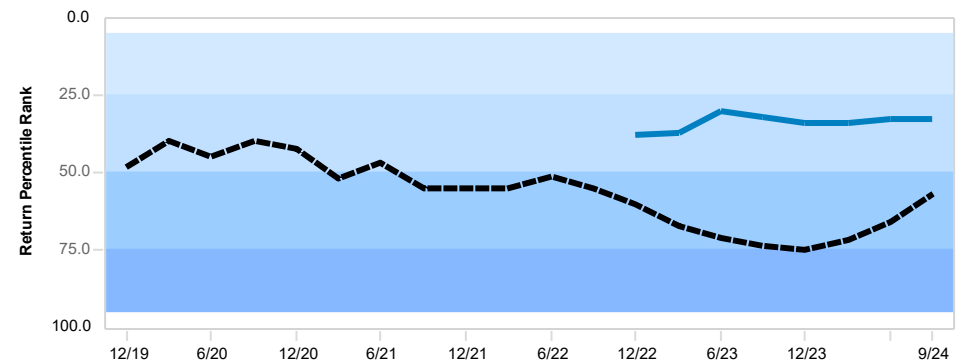


3 Year Rolling Percentile Rank IM Emerging Markets Equity (SA+CF)



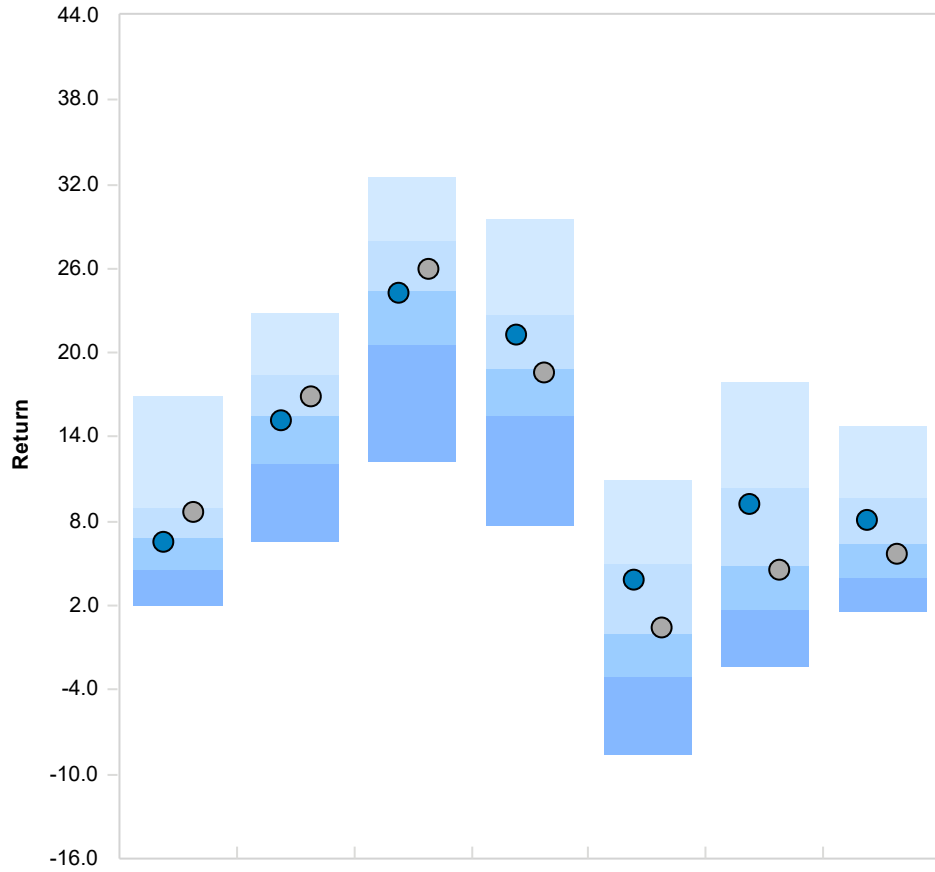
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	16	1 (6%)	10 (63%)	5 (31%)	0 (0%)
Index	20	0 (0%)	7 (35%)	13 (65%)	0 (0%)

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



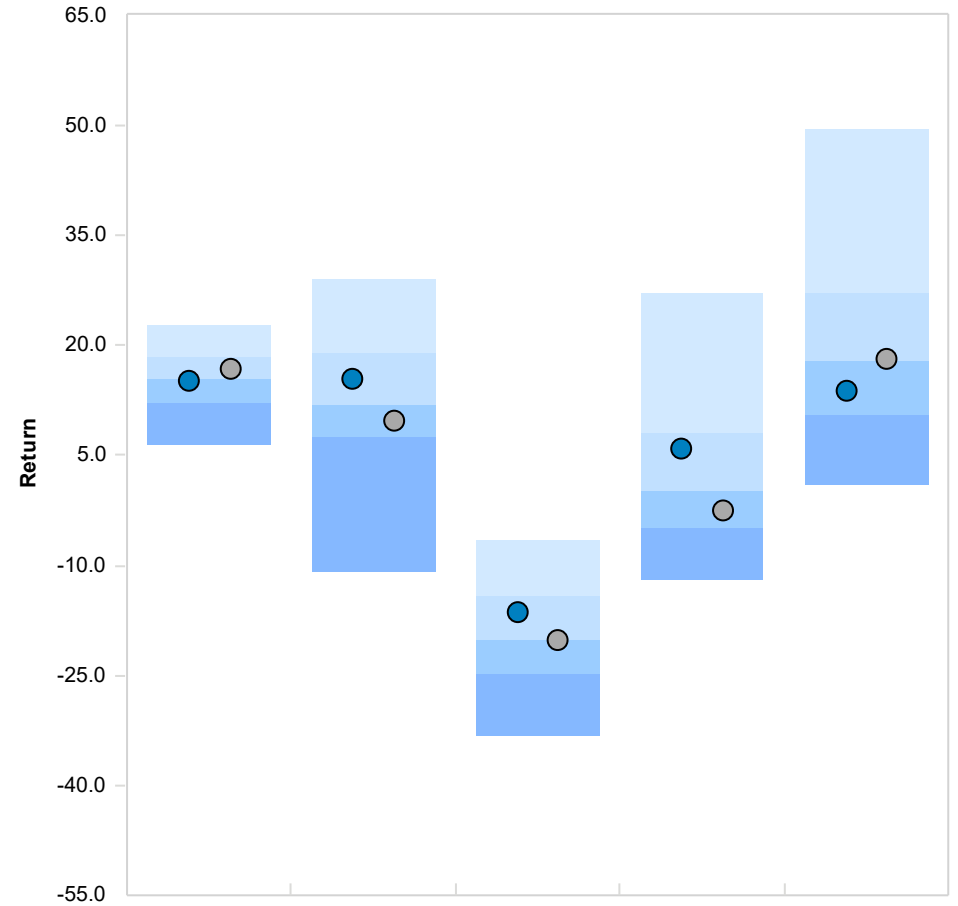
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	8	0 (0%)	8 (100%)	0 (0%)	0 (0%)
Index	20	0 (0%)	6 (30%)	14 (70%)	0 (0%)

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



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	6.62 (54)	15.24 (54)	24.30 (52)	21.27 (36)	3.91 (31)	9.30 (31)	8.18 (33)
● Index	8.72 (29)	16.86 (37)	26.05 (37)	18.66 (51)	0.40 (49)	4.58 (53)	5.75 (57)
Median	6.88	15.52	24.45	18.87	0.07	4.86	6.39

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



	2024	2023	2022	2021	2020
● Investment	15.24 (54)	15.45 (38)	-16.40 (32)	5.83 (31)	13.86 (66)
● Index	16.86 (37)	9.83 (65)	-20.09 (49)	-2.54 (63)	18.31 (50)
Median	15.52	11.89	-20.29	0.21	18.05

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	5.57 (34)	2.38 (58)	7.86 (54)	-1.52 (34)	2.93 (42)	5.59 (35)
Index	5.00 (43)	2.37 (59)	7.86 (54)	-2.93 (46)	0.90 (71)	3.96 (68)
Median	4.52	3.23	8.08	-3.35	2.13	4.84

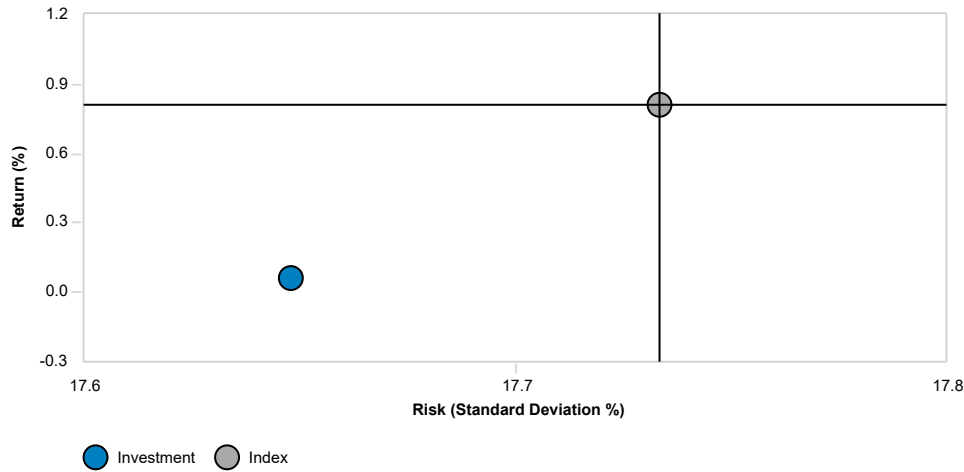
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.06	17.65	-0.10	97.73	6	100.66	6
Index	0.81	17.73	-0.06	100.00	8	100.00	4

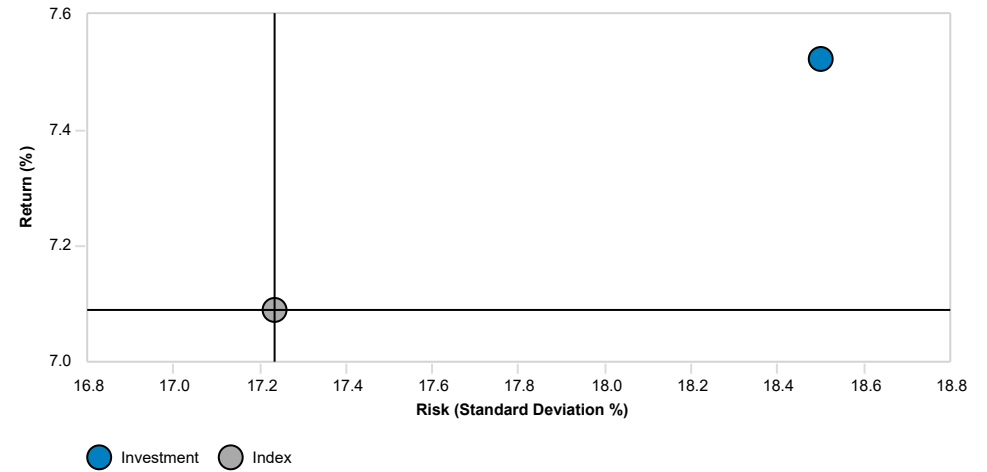
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	7.52	18.50	0.36	104.49	11	103.19	9
Index	7.09	17.24	0.35	100.00	13	100.00	7

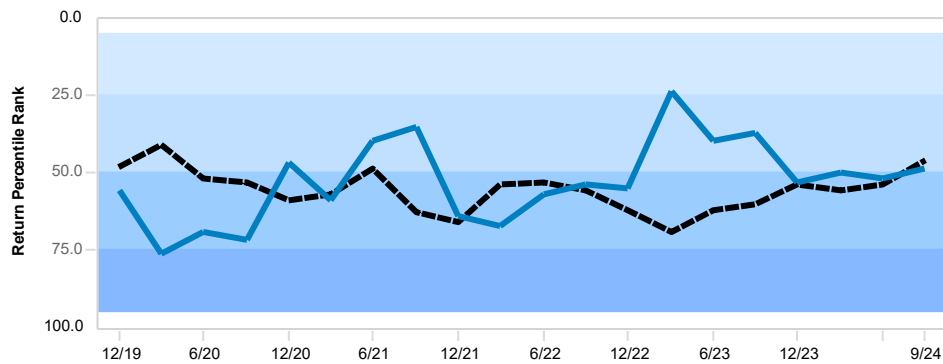
Risk and Return 3 Years



Risk and Return 5 Years

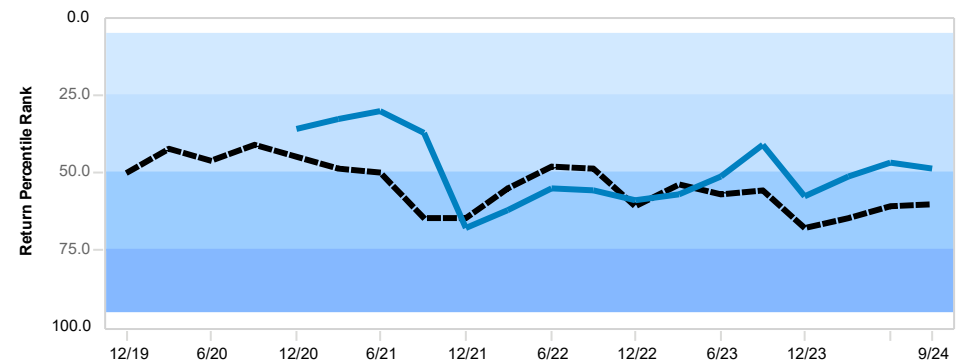


3 Year Rolling Percentile Rank Foreign Large Growth



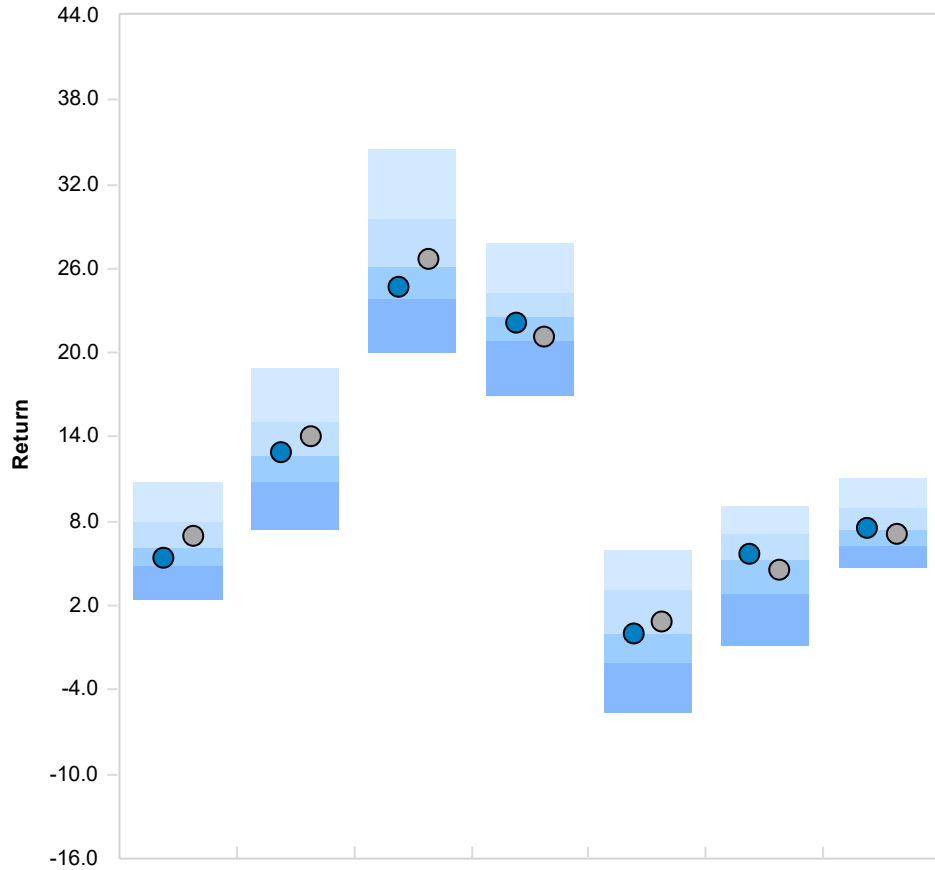
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	1 (5%)	7 (35%)	11 (55%)	1 (5%)
Index	20	0 (0%)	4 (20%)	16 (80%)	0 (0%)

5 Year Rolling Percentile Rank Foreign Large Growth



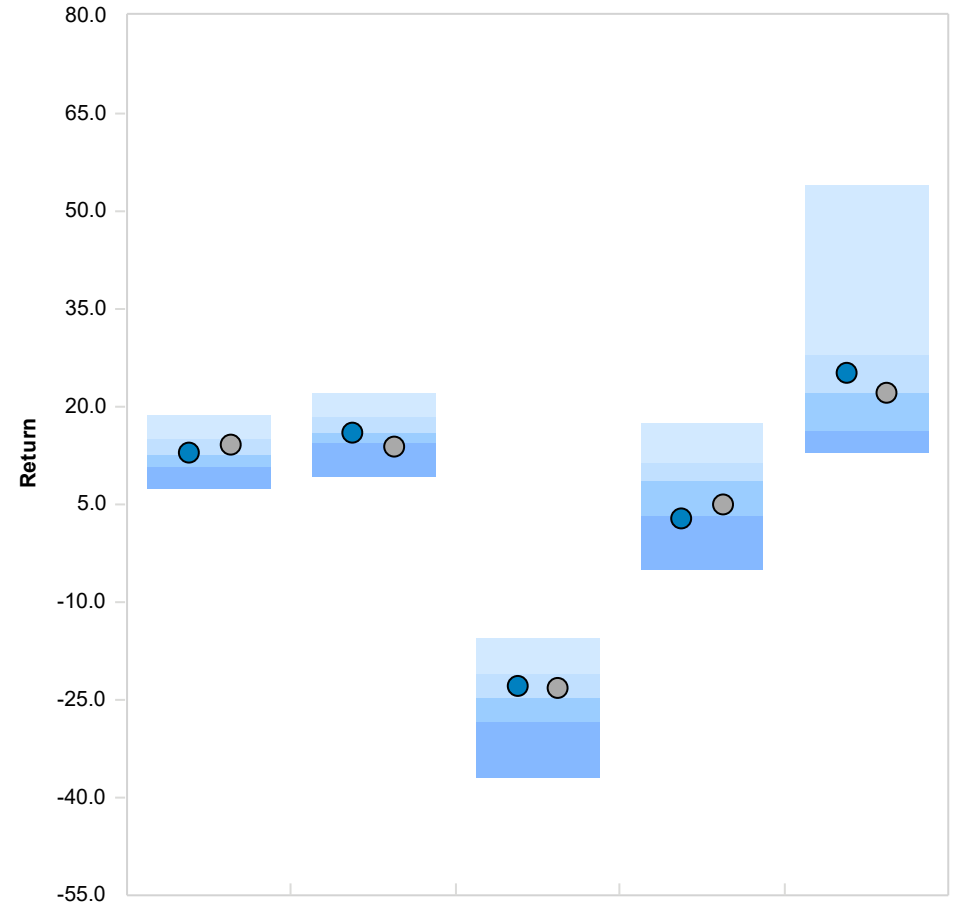
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	16	0 (0%)	7 (44%)	9 (56%)	0 (0%)
Index	20	0 (0%)	9 (45%)	11 (55%)	0 (0%)

Peer Group Analysis - Foreign Large Growth



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	5.41 (60)	12.99 (46)	24.71 (66)	22.15 (57)	0.06 (49)	5.74 (43)	7.52 (49)
● Index	6.92 (35)	14.06 (35)	26.75 (45)	21.17 (71)	0.81 (46)	4.62 (56)	7.09 (60)
Median	6.14	12.70	26.16	22.55	-0.01	5.23	7.47

Peer Group Analysis - Foreign Large Growth



	2024	2023	2022	2021	2020
● Investment	12.99 (46)	16.05 (50)	-22.72 (34)	2.84 (78)	25.27 (34)
● Index	14.06 (35)	14.03 (80)	-23.05 (37)	5.09 (70)	22.20 (49)
Median	12.70	15.99	-24.82	8.70	22.10

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	-0.23 (51)	7.44 (36)	10.37 (79)	-6.33 (19)	2.16 (60)	9.87 (52)
Index	0.72 (26)	5.91 (58)	11.12 (61)	-7.31 (38)	1.94 (69)	8.59 (75)
Median	-0.23	6.73	11.80	-7.84	2.63	9.93

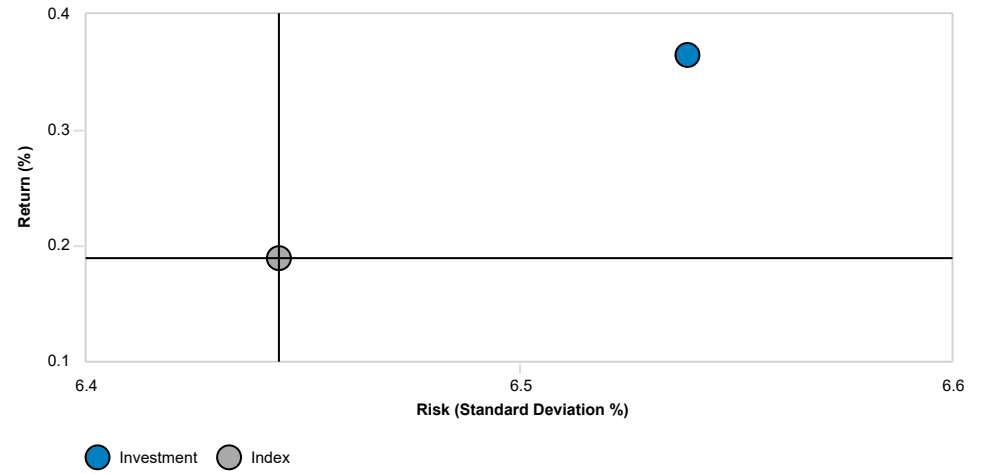
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.37	6.54	-0.45	100.64	5	98.63	7
Index	0.19	6.44	-0.49	100.00	5	100.00	7

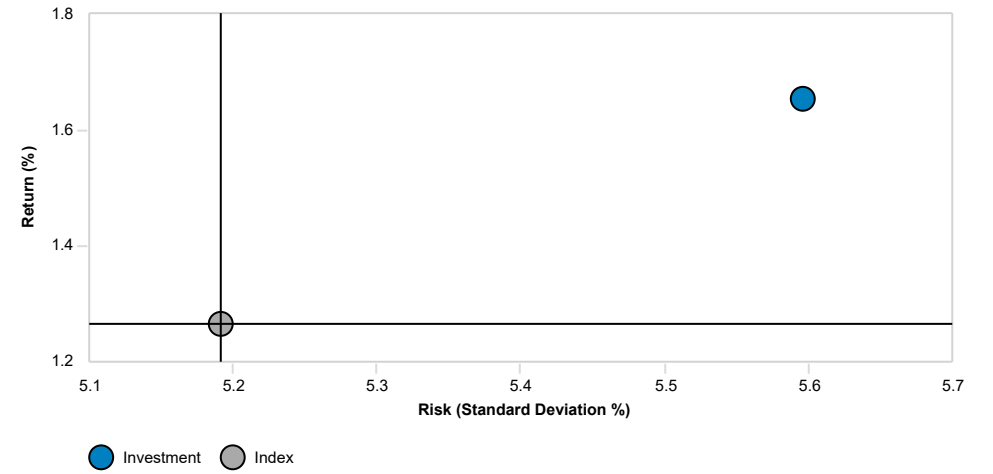
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.66	5.60	-0.09	109.56	11	105.06	9
Index	1.27	5.19	-0.18	100.00	12	100.00	8

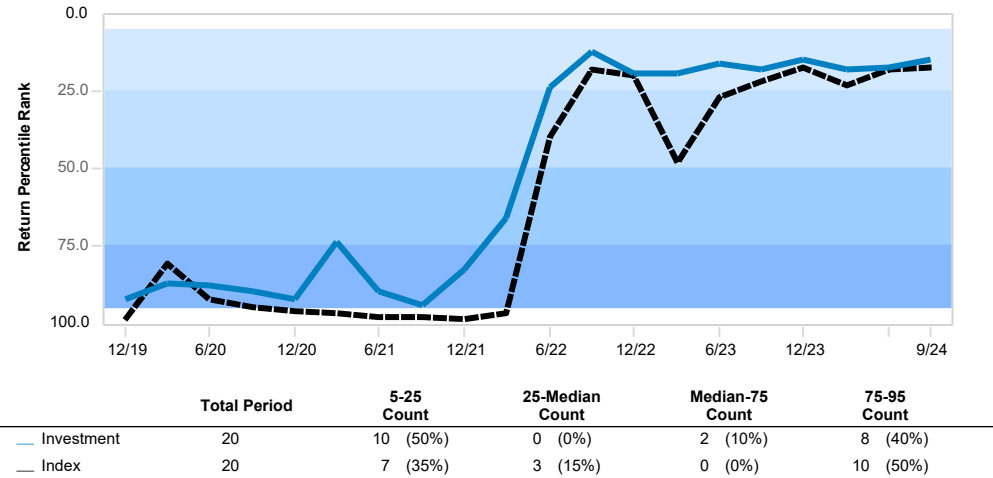
Risk and Return 3 Years



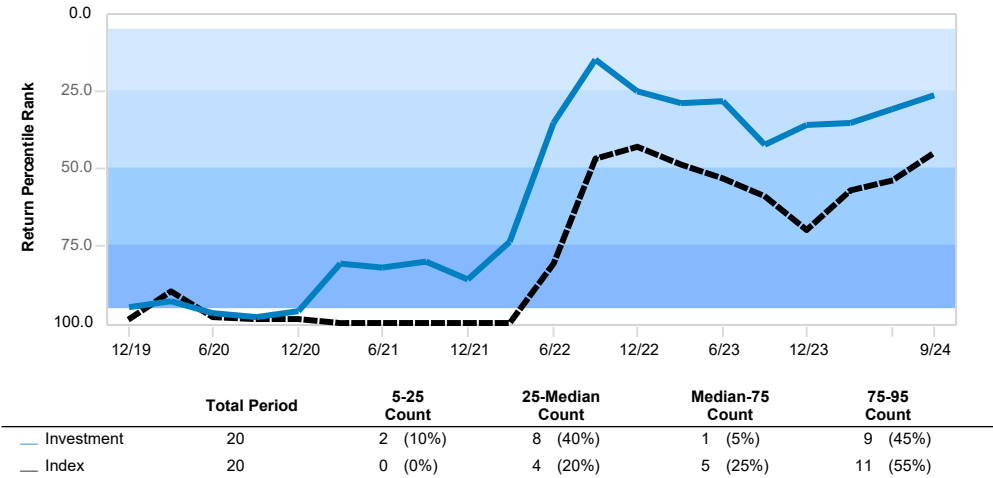
Risk and Return 5 Years



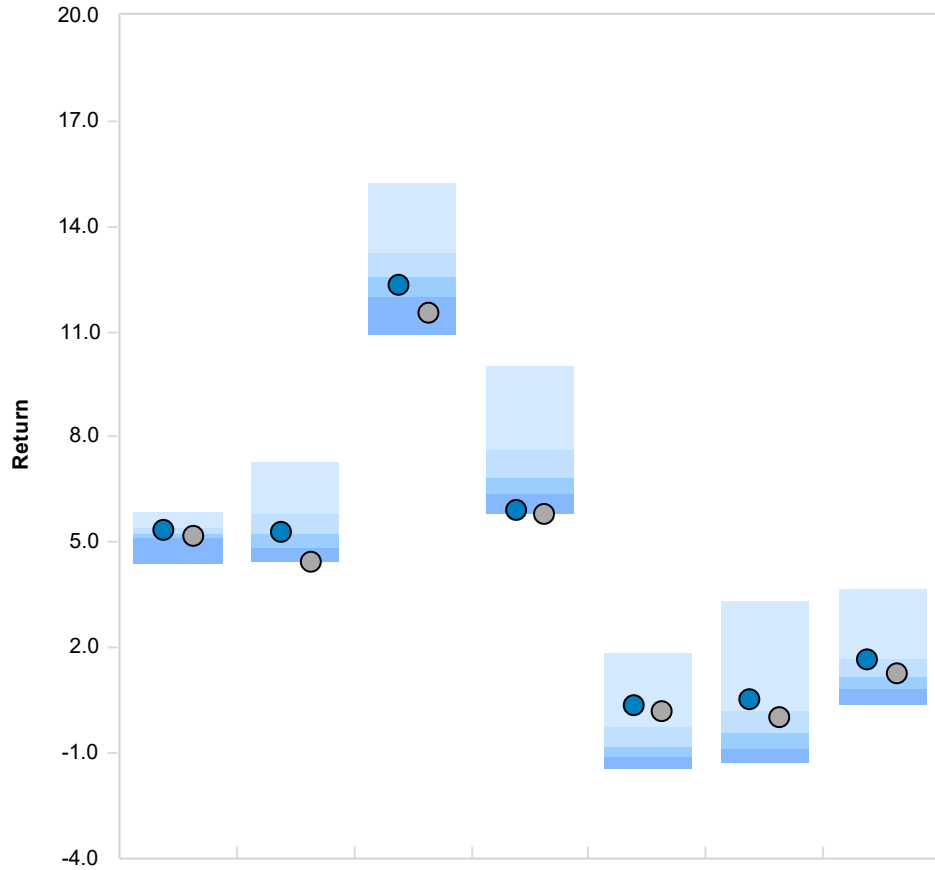
3 Year Rolling Percentile Rank IM U.S. Broad Market Fixed Income (SA+CF)



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

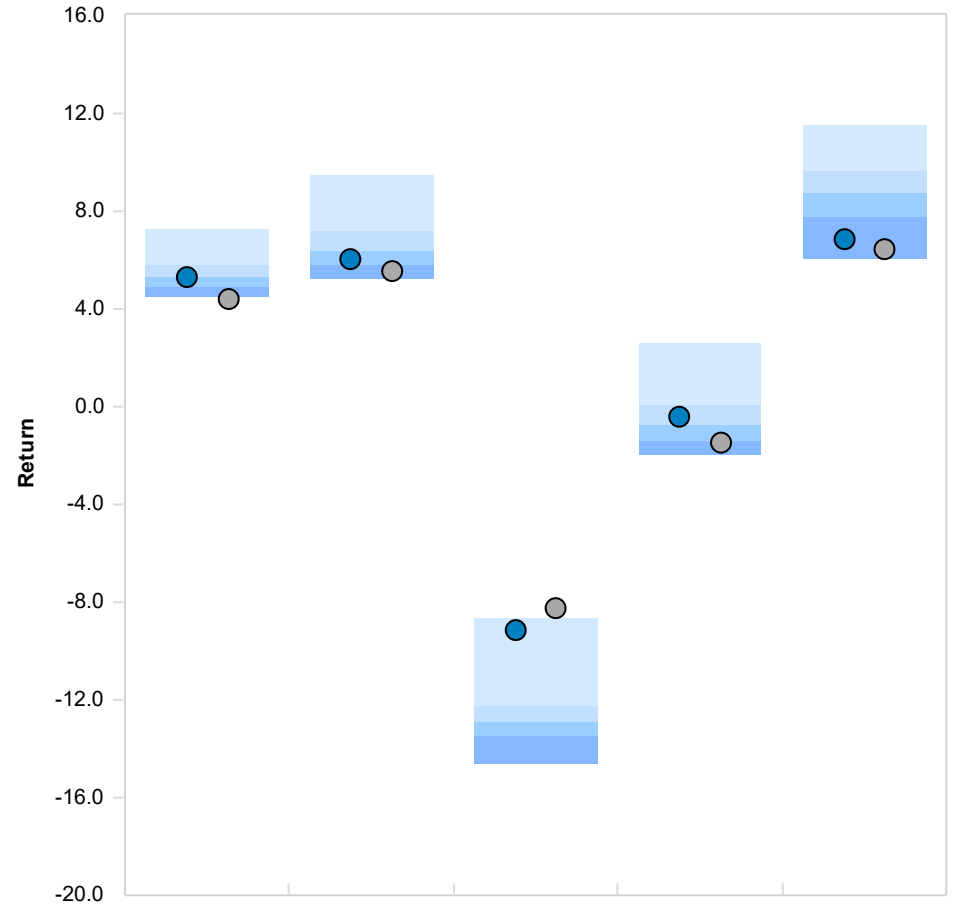


Peer Group Analysis - IM U.S. Broad Market Fixed Income (SA+CF)



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	5.34 (37)	5.30 (49)	12.35 (60)	5.92 (94)	0.37 (15)	0.53 (18)	1.66 (26)
● Index	5.20 (66)	4.45 (96)	11.57 (86)	5.79 (96)	0.19 (17)	0.04 (33)	1.27 (45)
Median	5.27	5.27	12.58	6.82	-0.81	-0.41	1.17

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



	2024	2023	2022	2021	2020
● Investment	5.30 (49)	6.04 (66)	-9.17 (6)	-0.40 (39)	6.86 (92)
● Index	4.45 (96)	5.53 (88)	-8.24 (5)	-1.44 (76)	6.43 (93)
Median	5.27	6.38	-12.92	-0.73	8.75

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	0.21 (71)	-0.24 (46)	6.69 (74)	-3.40 (86)	-0.15 (19)	3.05 (67)
Index	0.07 (94)	-0.78 (93)	6.82 (60)	-3.23 (77)	-0.84 (83)	2.96 (75)
Median	0.32	-0.31	6.92	-3.00	-0.58	3.17

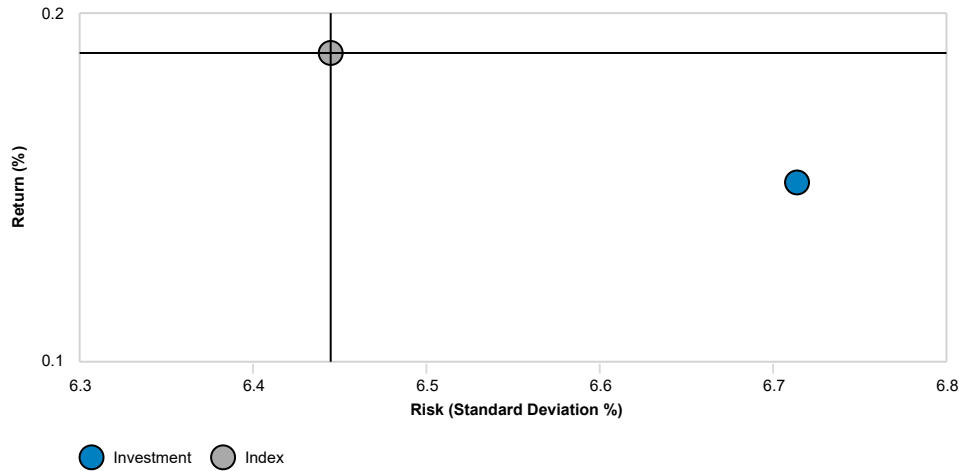
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	0.15	6.71	-0.47	104.26	5	104.67	7
Index	0.19	6.44	-0.49	100.00	5	100.00	7

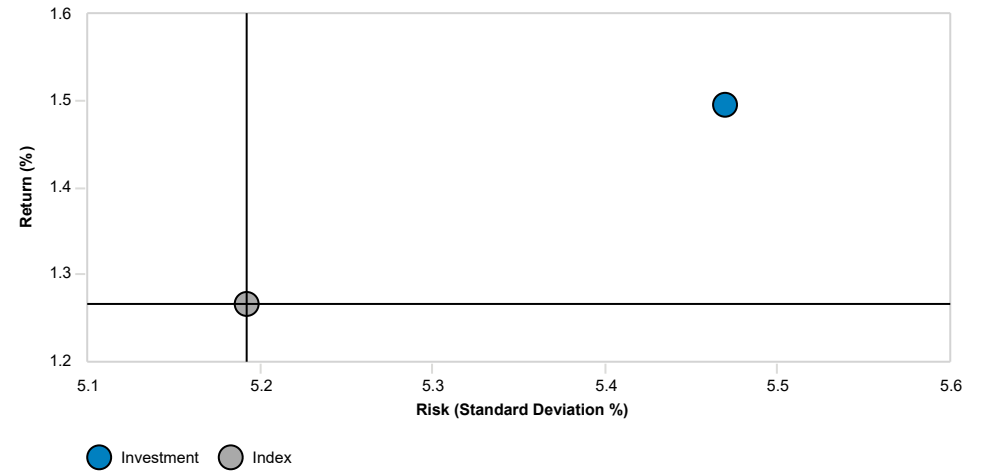
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	1.50	5.47	-0.12	107.60	11	105.35	9
Index	1.27	5.19	-0.18	100.00	12	100.00	8

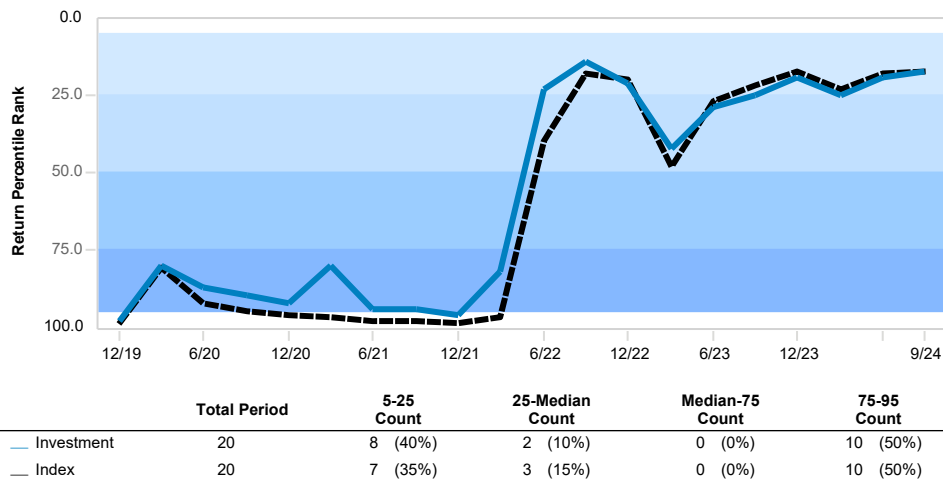
Risk and Return 3 Years



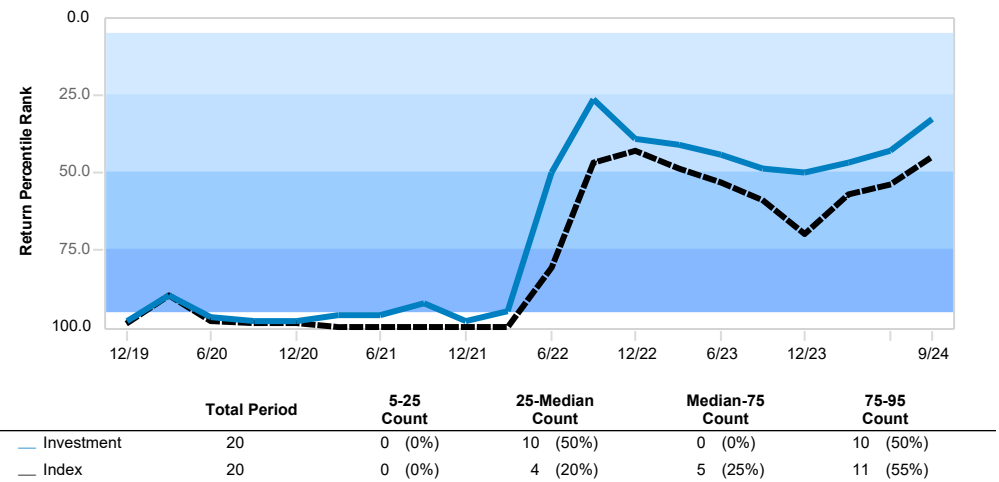
Risk and Return 5 Years



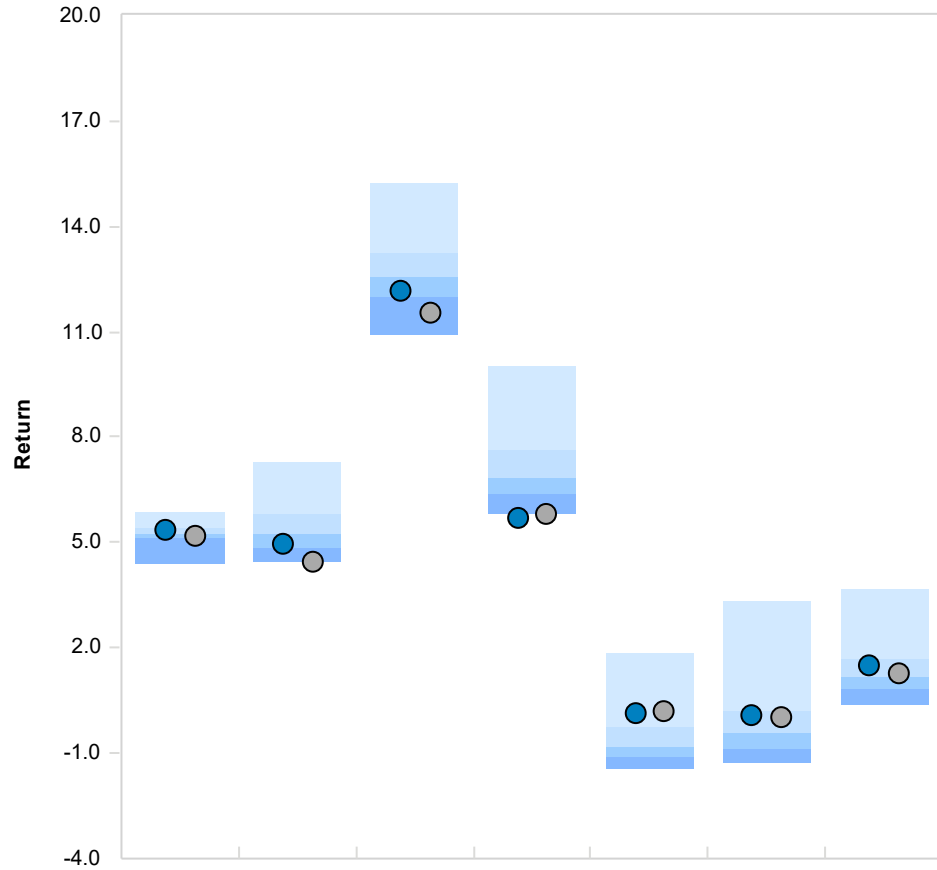
3 Year Rolling Percentile Rank IM U.S. Broad Market Fixed Income (SA+CF)



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

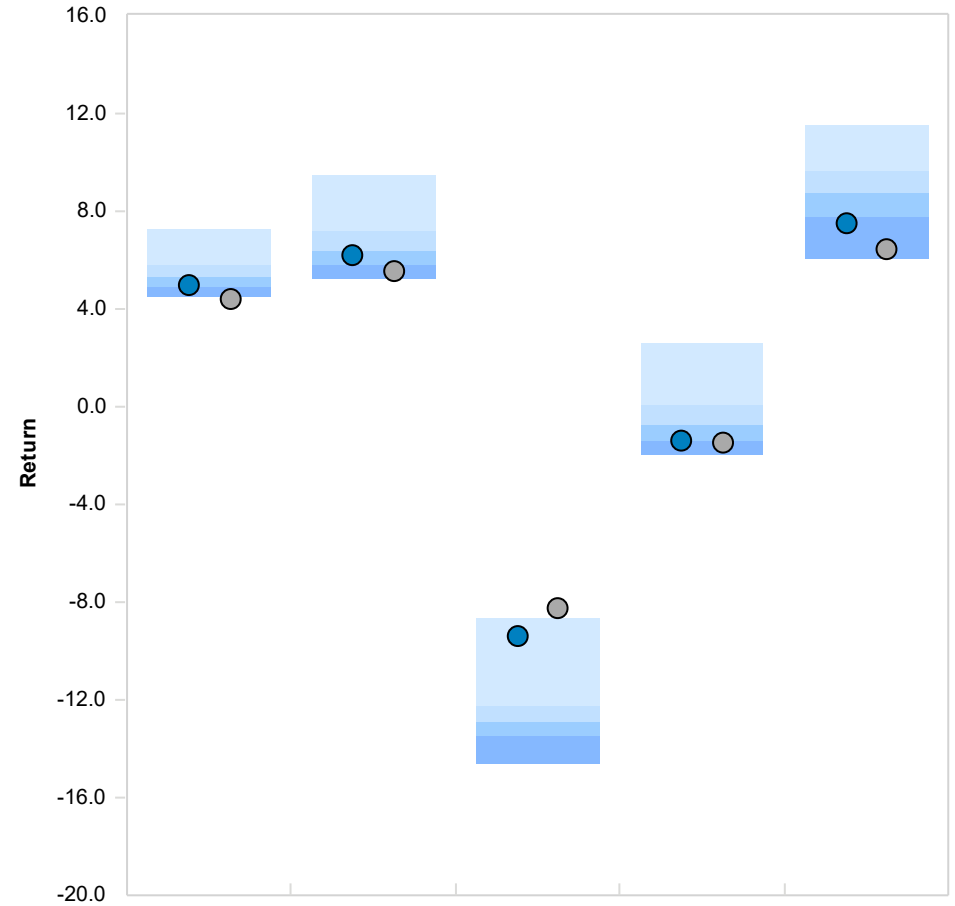


Peer Group Analysis - IM U.S. Broad Market Fixed Income (SA+CF)



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	5.36 (34)	4.97 (66)	12.16 (70)	5.73 (96)	0.15 (17)	0.08 (31)	1.50 (33)
● Index	5.20 (66)	4.45 (96)	11.57 (86)	5.79 (96)	0.19 (17)	0.04 (33)	1.27 (45)
Median	5.27	5.27	12.58	6.82	-0.81	-0.41	1.17

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



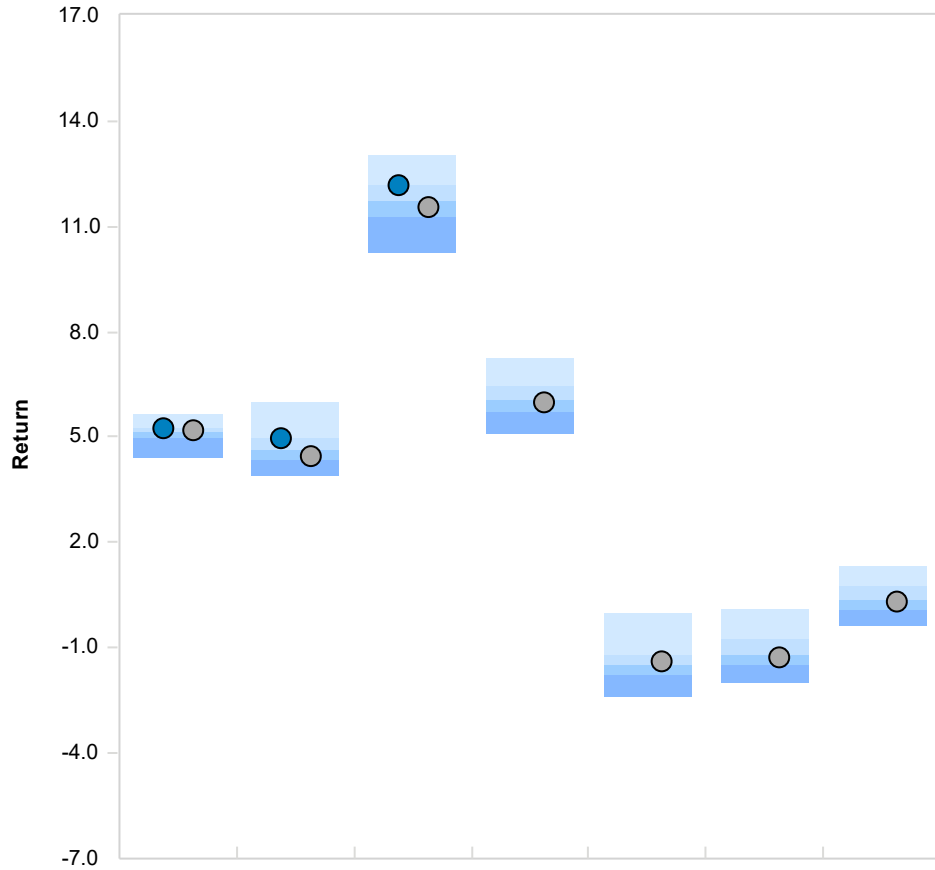
	2024	2023	2022	2021	2020
● Investment	4.97 (66)	6.23 (58)	-9.36 (7)	-1.38 (75)	7.53 (85)
● Index	4.45 (96)	5.53 (88)	-8.24 (5)	-1.44 (76)	6.43 (93)
Median	5.27	6.38	-12.92	-0.73	8.75

Comparative Performance

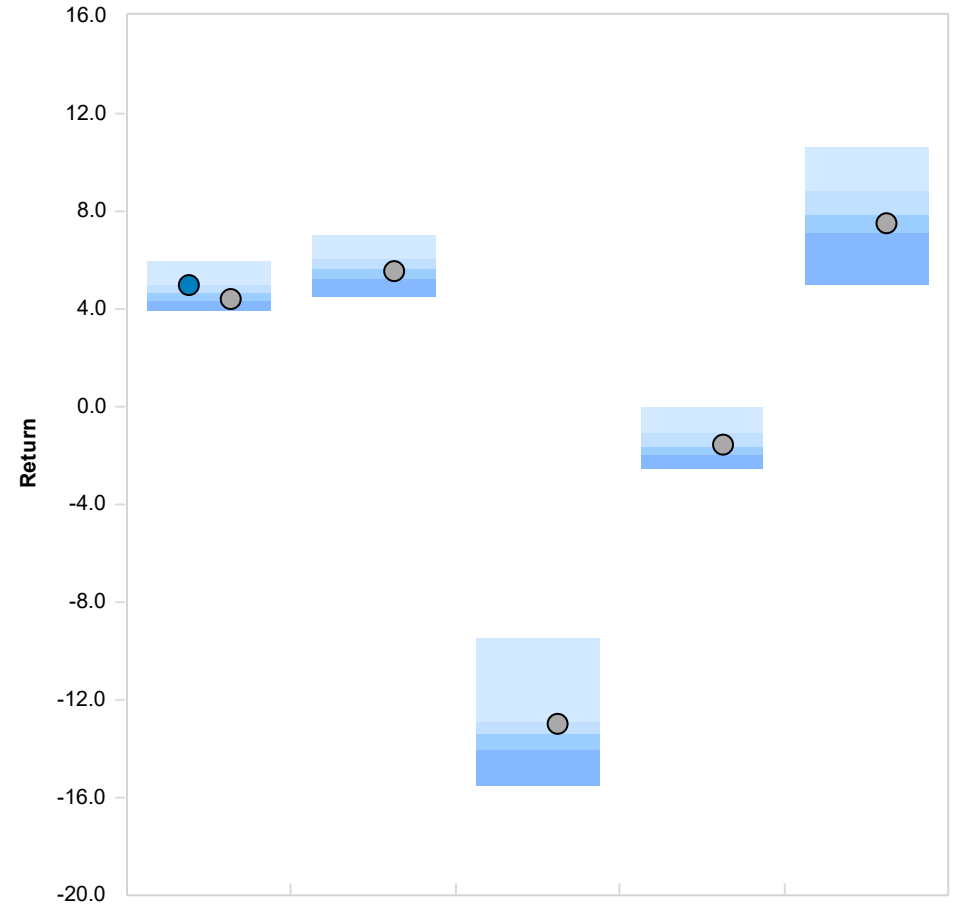
	1 Qtr Ending Jun-2024	1 Qtr Ending Mar-2024	1 Qtr Ending Dec-2023	1 Qtr Ending Sep-2023	1 Qtr Ending Jun-2023	1 Qtr Ending Mar-2023
Investment	0.22 (69)	-0.59 (75)	6.85 (56)	-3.20 (71)	-0.67 (59)	3.40 (25)
Index	0.07 (94)	-0.78 (93)	6.82 (60)	-3.23 (77)	-0.84 (83)	2.96 (75)
Median	0.32	-0.31	6.92	-3.00	-0.58	3.17

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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	5.28 (23)	4.96 (26)	12.15 (27)	N/A	N/A	N/A	N/A
Index	5.20 (38)	4.45 (69)	11.57 (60)	5.97 (56)	-1.39 (39)	-1.27 (56)	0.33 (55)
Median	5.13	4.65	11.72	6.03	-1.50	-1.19	0.39

	2024	2023	2022	2021	2020
Investment	4.96 (26)	N/A	N/A	N/A	N/A
Index	4.45 (69)	5.53 (57)	-13.01 (28)	-1.55 (48)	7.51 (60)
Median	4.65	5.61	-13.39	-1.61	7.80

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	0.31 (21)	-0.61 (48)	6.85 (34)	-2.93 (23)	-0.84 (48)	N/A
Index	0.07 (78)	-0.78 (71)	6.82 (37)	-3.23 (61)	-0.84 (50)	2.96 (66)
Median	0.18	-0.63	6.70	-3.15	-0.85	3.11

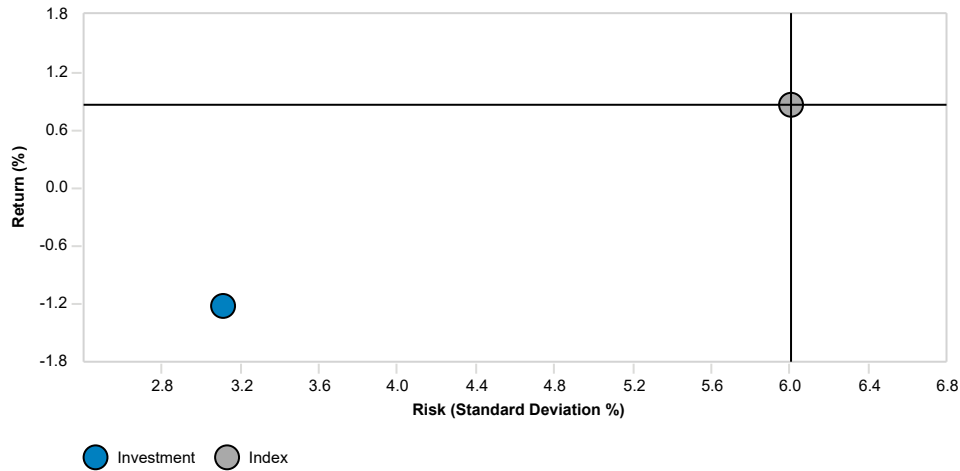
Historical Statistics 3 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	-1.23	3.11	-1.14	14.27	6	45.19	6
Index	0.87	6.01	-0.35	100.00	5	100.00	7

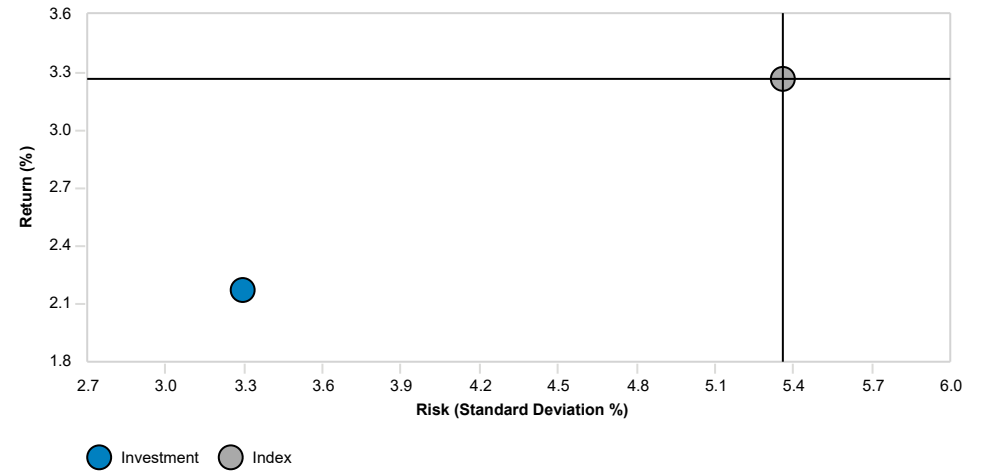
Historical Statistics 5 Years

	Return	Standard Deviation	Sharpe Ratio	Up Market Capture	Up Quarters	Down Market Capture	Down Quarters
Investment	2.18	3.29	-0.02	47.91	14	26.33	6
Index	3.26	5.36	0.17	100.00	12	100.00	8

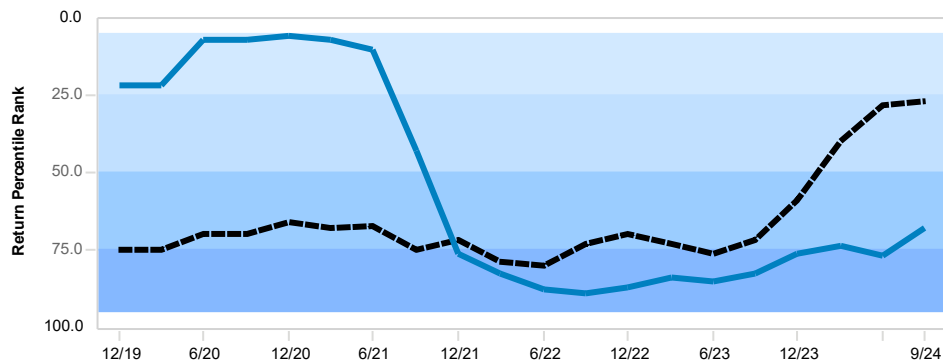
Risk and Return 3 Years



Risk and Return 5 Years

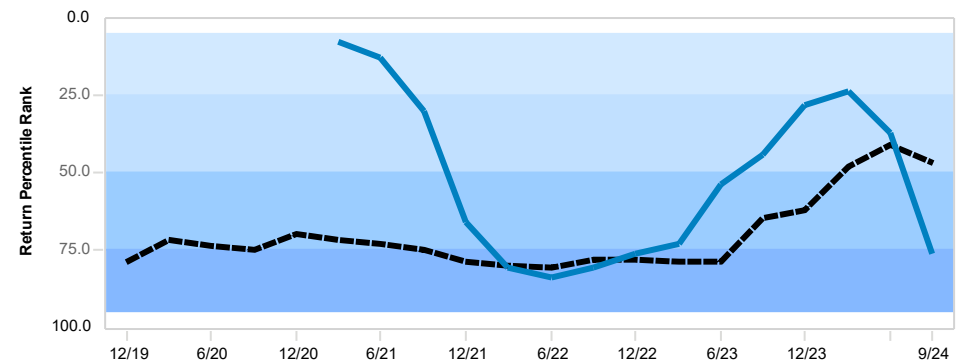


3 Year Rolling Percentile Rank IM U.S. Private Real Estate (SA+CF)



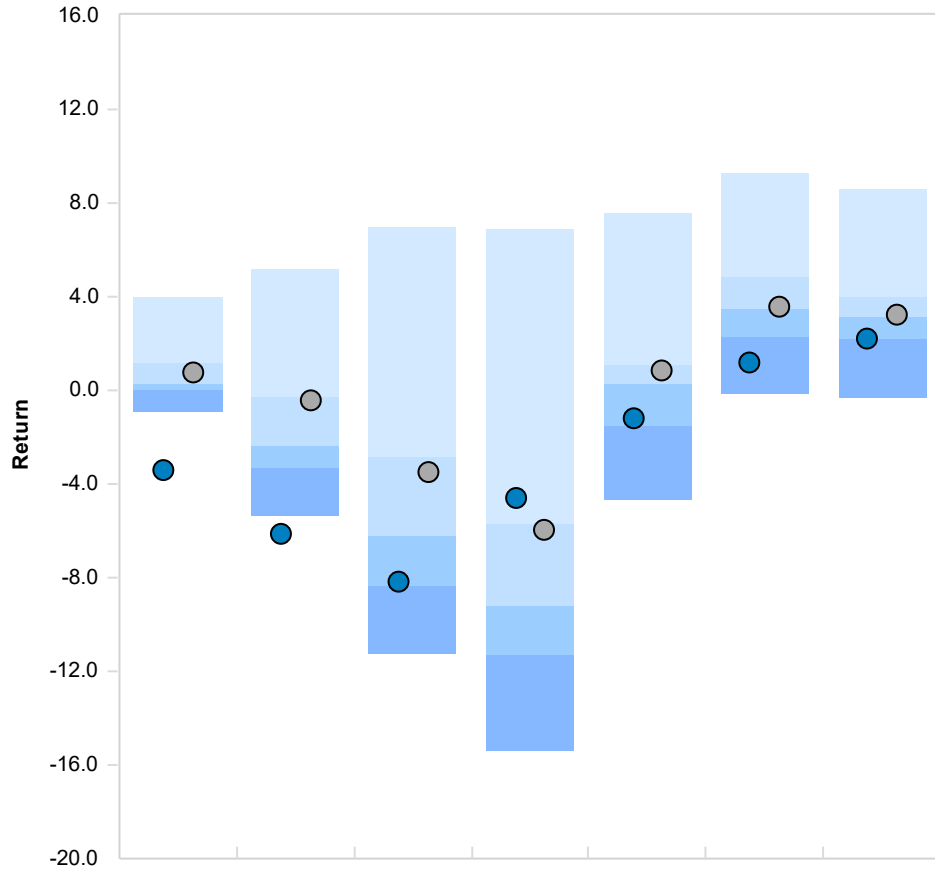
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	20	7 (35%)	1 (5%)	2 (10%)	10 (50%)
Index	20	0 (0%)	3 (15%)	14 (70%)	3 (15%)

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



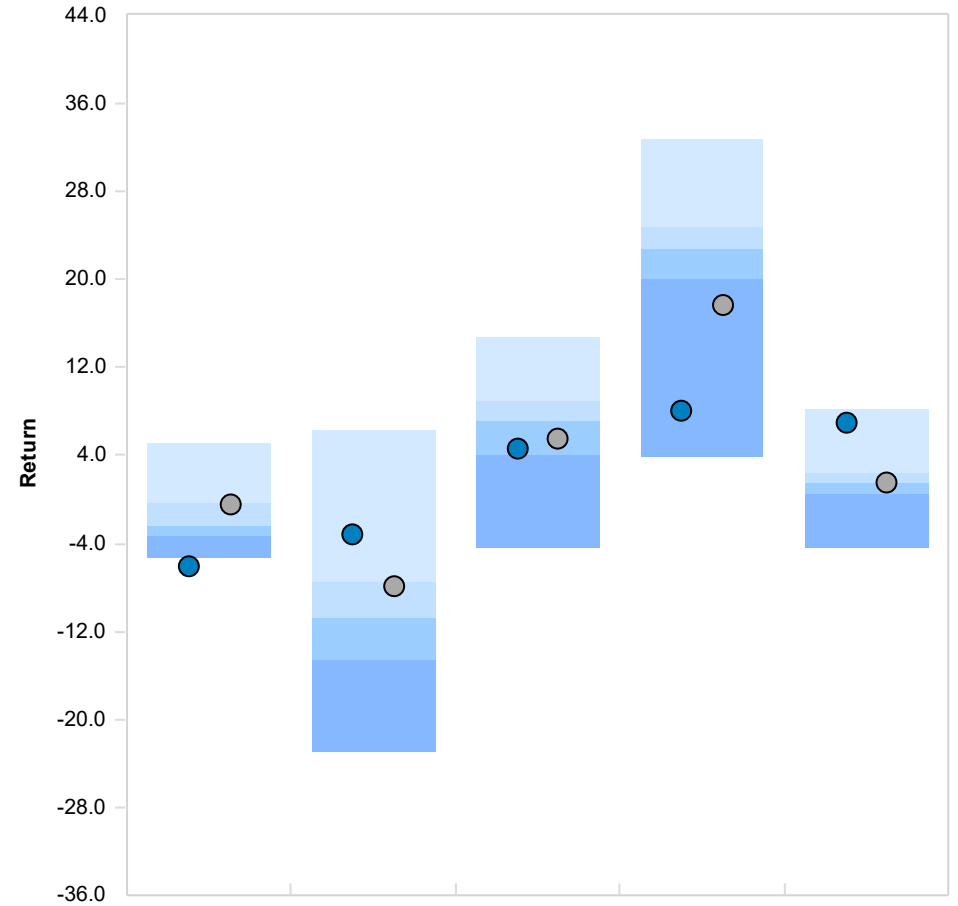
	Total Period	5-25 Count	25-Median Count	Median-75 Count	75-95 Count
Investment	15	3 (20%)	4 (27%)	3 (20%)	5 (33%)
Index	20	0 (0%)	3 (15%)	9 (45%)	8 (40%)

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



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	-3.37 (99)	-6.10 (97)	-8.17 (71)	-4.56 (17)	-1.23 (68)	1.16 (85)	2.18 (76)
● Index	0.78 (37)	-0.46 (27)	-3.47 (29)	-5.97 (27)	0.87 (27)	3.58 (50)	3.26 (47)
Median	0.26	-2.40	-6.22	-9.20	0.28	3.53	3.14

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



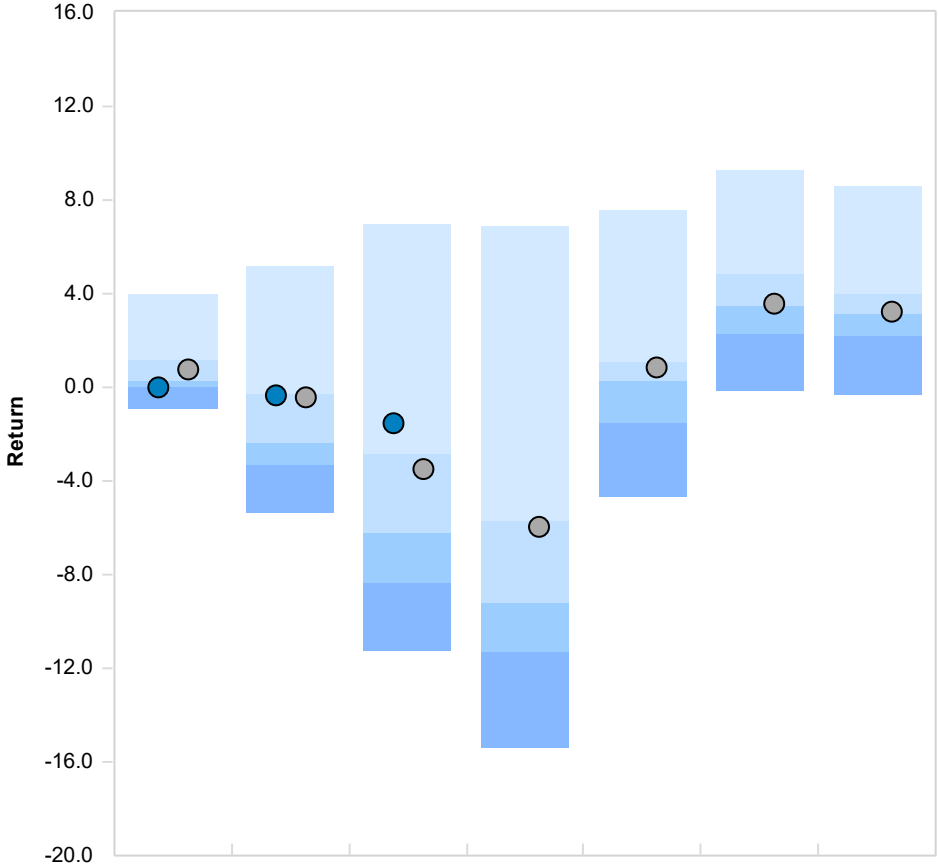
	2024	2023	2022	2021	2020
● Investment	-6.10 (97)	-3.13 (13)	4.58 (73)	8.04 (94)	6.97 (6)
● Index	-0.46 (27)	-7.94 (27)	5.52 (61)	17.70 (81)	1.60 (47)
Median	-2.40	-10.76	7.14	22.73	1.57

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	-1.01 (71)	-1.84 (44)	-2.20 (36)	-0.85 (17)	0.50 (9)	-0.60 (15)
Index	-0.26 (32)	-0.98 (25)	-3.02 (43)	-1.37 (23)	-1.98 (50)	-1.81 (28)
Median	-0.69	-2.09	-4.10	-2.49	-1.98	-2.87

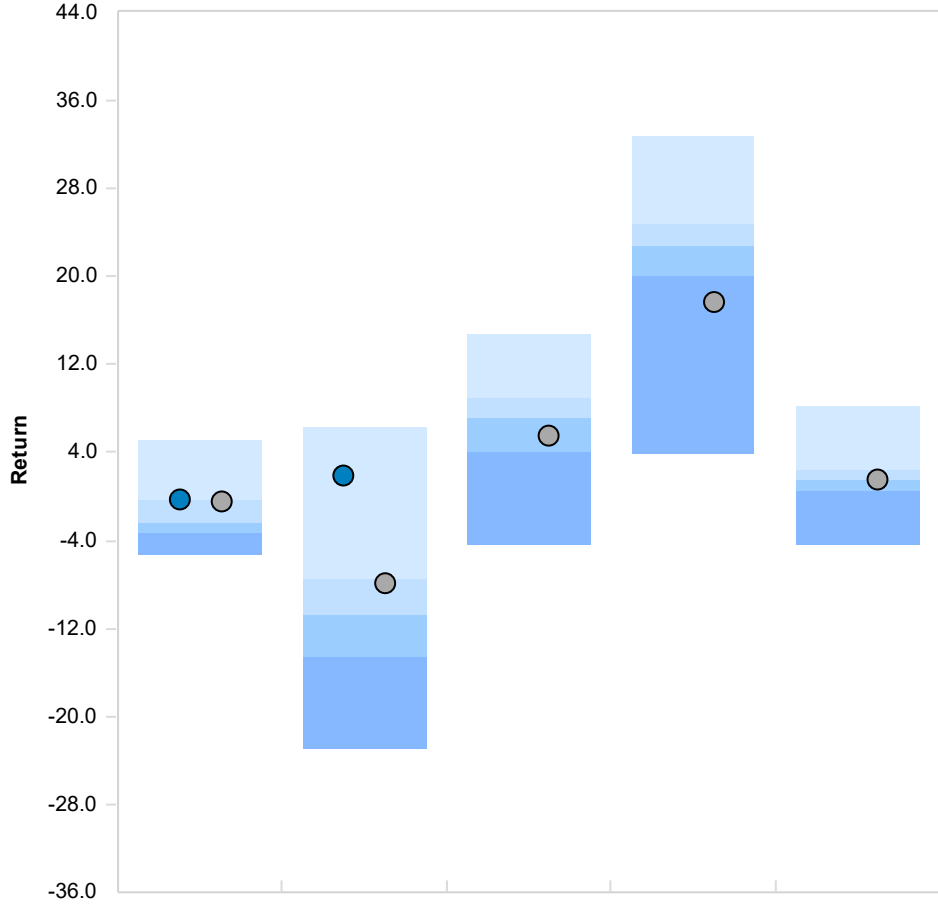
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Peer Group Analysis - IM U.S. Open End Private Real Estate (SA+CF)



	QTR	FYTD	1 YR	2 YR	3 YR	4 YR	5 YR
● Investment	0.00 (77)	-0.34 (26)	-1.54 (16)	N/A	N/A	N/A	N/A
● Index	0.78 (37)	-0.46 (27)	-3.47 (29)	-5.97 (27)	0.87 (27)	3.58 (50)	3.26 (47)
Median	0.26	-2.40	-6.22	-9.20	0.28	3.53	3.14

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



	2024	2023	2022	2021	2020
● Investment	-0.34 (26)	1.91 (9)	N/A	N/A	N/A
● Index	-0.46 (27)	-7.94 (27)	5.52 (61)	17.70 (81)	1.60 (47)
Median	-2.40	-10.76	7.14	22.73	1.57

Comparative Performance

	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	1 Qtr Ending Mar-2023
Investment	0.81 (10)	-1.15 (27)	-1.21 (16)	0.53 (8)	1.54 (7)	1.06 (6)
Index	-0.26 (32)	-0.98 (25)	-3.02 (43)	-1.37 (23)	-1.98 (50)	-1.81 (28)
Median	-0.69	-2.09	-4.10	-2.49	-1.98	-2.87

Erie County Employees Retirement Plan

Fee Analysis

As of September 30, 2024

	Estimated Annual Fee (%)	Market Value (\$)	Estimated Annual Fee (\$)	Fee Schedule
Total Fund	0.39	333,851,873	1,295,407	
Domestic Large Cap Equity	0.08	83,778,018	65,547	
Vanguard S&P 500 Index Fund (VINIX)	0.04	41,205,811	14,422	0.04 % of Assets
Vanguard Russell 1000 Growth Index (VRGWX)	0.07	20,759,633	14,532	0.07 % of Assets
DFA Large Value Equity (DFLVX)	0.22	14,216,463	31,276	0.22 % of Assets
Vanguard Russell 1000 Value Index (VRVIX)	0.07	7,596,111	5,317	0.07 % of Assets
Domestic Small Cap Equity	0.56	49,166,374	276,810	
Allspring Global Small Value Eq.	0.50	21,188,634	105,943	0.50 % of Assets
Emerald Small Growth Equity	0.61	23,744,385	145,466	0.75 % of First \$2 M 0.60 % Thereafter
StoneRidge Small Growth Equity	0.60	4,233,355	25,400	0.60 % of Assets
International Equity	0.36	49,805,509	178,473	
DFA International Equity (DFIEX)	0.24	21,250,526	51,001	0.24 % of Assets
DFA Emerging Markets (DFCEX)	0.39	5,544,840	21,625	0.39 % of Assets
EuroPacific Growth Fund (RERGX)	0.46	23,010,143	105,847	0.46 % of Assets
Total Fixed Income	0.21	96,470,912	206,556	
Boyd Watterson Fixed	0.23	45,650,199	104,995	0.23 % of Assets
PNC Fixed	0.28	28,188,528	78,928	0.28 % of Assets
Vanguard Core Bond Fund (VCOBX)	0.10	22,632,184	22,632	0.10 % of Assets
Private Real Estate	1.12	23,706,500	266,694	
Boyd Watterson GSA Fund	1.25	11,851,525	148,144	1.25 % of Assets
Bentall GreenOak US Core Plus RE	1.00	11,854,975	118,550	1.00 % of Assets
Private Equity	1.00	22,305,052	223,051	
Ironsides Direct Investment Fund V	1.00	9,558,740	95,587	1.00 % of Assets
PA Co-Investment Fund III	1.00	4,891,964	48,920	1.00 % of Assets
Adams Street Co-Investment Fund V	1.00	5,304,880	53,049	1.00 % of Assets
Hamilton Lane Secondary Fund VI	1.00	2,549,468	25,495	1.00 % of Assets
Private Debt	0.94	8,308,970	78,278	
Ironsides Opportunities Fund	0.75	1,924,792	14,436	0.75 % of Assets
PA Credit Strategies Fund	1.00	6,384,178	63,842	1.00 % of Assets
Cash		310,539	-	
Cash Account		310,539	-	

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 September 30, 2024

Historical Hybrid Composition

Allocation Mandate	Weight (%)
Dec-1997	
Bloomberg Intermediate US Govt/Credit Idx	40.00
MSCI EAFE (Net) Index	10.00
Russell 3000 Index	50.00
Mar-1998	
Russell 3000 Index	50.00
MSCI EAFE (Net) Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	40.00
Mar-2005	
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
Mar-2007	
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
Dec-2010	
Russell 3000 Index	45.00
MSCI EAFE (Net) Index	10.00
Bloomberg Intermediate US Govt/Credit Idx	38.00
NCREIF Property Index	7.00
Dec-2015	
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 (%)
Mar-2019	
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
Credit Suisse Leveraged Loan Index	2.00
Russell Microcap + 3%	4.00
Bloomberg 1-5 Year Gov/Credit Idx	5.00
Mar-2021	
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
Credit Suisse Leveraged Loan Index	3.00
Russell Microcap + 3%	5.00
Bloomberg 1-5 Year Gov/Credit Idx	5.00
Jan-2023	
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
Credit Suisse 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.

Active Return	- Arithmetic difference between the manager's performance and the designated benchmark return over a specified time period.
Alpha	- 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.
Beta	- A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of the portfolio's systematic risk.
Consistency	- 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.
Distributed to Paid In (DPI)	- 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.
Down Market Capture	- The ratio of average portfolio performance over the designated benchmark during periods of negative returns. A lower value indicates better product performance
Downside Risk	- 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.
Excess Return	- Arithmetic difference between the manager's performance and the risk-free return over a specified time period.
Excess Risk	- A measure of the standard deviation of a portfolio's performance relative to the risk free return.
Information Ratio	- 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.
Public Market Equivalent (PME)	- 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.
R-Squared	- 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.
Return	- Compounded rate of return for the period.
Sharpe Ratio	- 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.
Standard Deviation	- 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.
Total Value to Paid In (TVPI)	- 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
Tracking Error	- This is a measure of the standard deviation of a portfolio's returns in relation to the performance of its designated market benchmark.
Treynor Ratio	- 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.
Up Market Capture	- The ratio of average portfolio performance over the designated benchmark during periods of positive returns. A higher value indicates better product performance.

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.

This performance report is based on data obtained by the client's custodian(s), investment fund administrator, or other sources believed to be reliable. While these sources are believed to be reliable, the data providers are responsible for the accuracy and completeness of their statements. Clients are encouraged to compare the records of their custodian(s) to ensure this report fairly and accurately reflects their various asset positions.

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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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