

# Pennsylvania Municipal Retirement System

Quarterly Performance Report  
As of March 31, 2024



[Page Intentionally Left Blank]

# TABLE OF CONTENTS

---

## EXHIBITS

Marquette Update ..... I  
Market Environment..... II  
Portfolio Overview ..... III  
Investment Managers..... IV

## DISCLOSURE

---

Marquette Associates, Inc. ("Marquette") has prepared this document for the exclusive use by the client or third party for which it was prepared. The information herein was obtained from various sources, including but not limited to third party investment managers, the client's custodian(s) accounting statements, commercially available databases, and other economic and financial market data sources.

The sources of information used in this document are believed to be reliable. Marquette has not independently verified all of the information in this document and its accuracy cannot be guaranteed. Marquette accepts no liability for any direct or consequential losses arising from its use. The information provided herein is as of the date appearing in this material only and is subject to change without prior notice. Thus, all such information is subject to independent verification and we urge clients to compare the information set forth in this statement with the statements you receive directly from the custodian in order to ensure accuracy of all account information. Past performance does not guarantee future results and investing involves risk of loss. No graph, chart, or formula can, in and of itself, be used to determine which securities or investments to buy or sell.

Forward-looking statements, including without limitation any statement or prediction about a future event contained in this presentation, are based on a variety of estimates and assumptions by Marquette, including, but not limited to, estimates of future operating results, the value of assets and market conditions. These estimates and assumptions, including the risk assessments and projections referenced, are inherently uncertain and are subject to numerous business, industry, market, regulatory, geo-political, competitive, and financial risks that are outside of Marquette's control. There can be no assurance that the assumptions made in connection with any forward-looking statement will prove accurate, and actual results may differ materially.

The inclusion of any forward-looking statement herein should not be regarded as an indication that Marquette considers forward-looking statements to be a reliable prediction of future events. The views contained herein are those of Marquette and should not be taken as financial advice or a recommendation to buy or sell any security. Any forecasts, figures, opinions or investment techniques and strategies described are intended for informational purposes only. They are based on certain assumptions and current market conditions, and although accurate at the time of writing, are subject to change without prior notice. Opinions, estimates, projections, and comments on financial market trends constitute our judgment and are subject to change without notice. Marquette expressly disclaims all liability in respect to actions taken based on any or all of the information included or referenced in this document. The information is being provided based on the understanding that each recipient has sufficient knowledge and experience to evaluate the merits and risks of investing.

Marquette is an independent investment adviser registered under the Investment Advisers Act of 1940, as amended. Registration does not imply a certain level of skill or training. More information about Marquette including our investment strategies, fees and objectives can be found in our ADV Part 2, which is available upon request.

# Marquette Update



[Page Intentionally Left Blank]

# Marquette Update

2Q 2024

**\$366B**  
assets under advisement

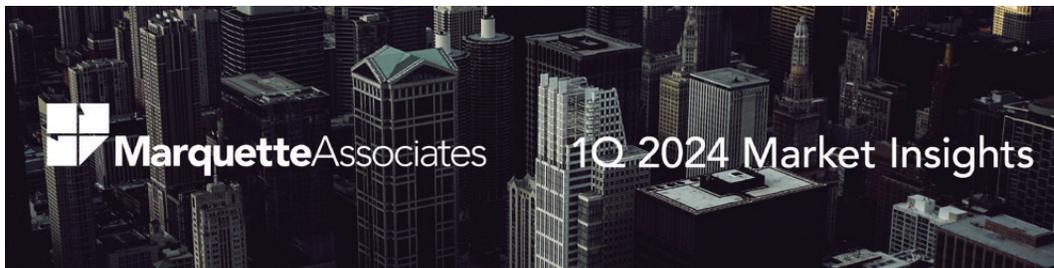
**99%**  
client retention rate

**38<sup>th</sup>**  
year in business

**100%**  
employee-owned<sup>1</sup>

**25**  
partners

**130+**  
employees



#### LIVE WEBINAR — APRIL 25

Our 1Q 2024 Market Insights webinar will be hosted live on April 25<sup>th</sup> at 1:00pm CT by our research team and posted to our YouTube channel the following day. For registration information and to be added to our research distribution list, send our team an email at [clientservice@marquetteassociates.com](mailto:clientservice@marquetteassociates.com).

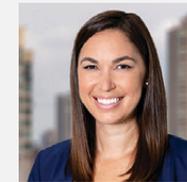
Follow us on [YouTube](#) [Twitter](#) [LinkedIn](#)

Client data as of December 31, 2023; firm data as of April 2024. Client retention rate calculated 2014–2023. <sup>1</sup>By current and former employees. Marquette is an independent investment adviser registered under the Investment Advisers Act of 1940, as amended. Registration does not imply a certain level of skill or training. More information about Marquette including our investment strategies, fees and objectives can be found in our ADV Part 2, which is available upon request and on our website.

#### 2024 NEW PARTNERS



**Tom Latzke, CAIA**  
Managing Partner



**Melissa Gyurcsik,**  
Director of Marketing,  
Managing Partner

#### UPCOMING SPEAKING ENGAGEMENTS

- ▶ Ibrahim Rashid Speaking at 3rd Annual Symposium on System-Level Investing 4/10 ([link](#))
- ▶ Kris Katarski Speaking at DFW Institutional Investment FORUM 4/16 ([link](#))
- ▶ Griffin Gildea Speaking at 2024 Real Estate Midwest Forum 4/17 ([link](#))
- ▶ Lee Martin, Patrick Wing, Matt Nowak speaking at PSACC 2024 Spring Conference 4/17
- ▶ Nat Kellogg and Evan Frazier Speaking at Midwest LP Summit 4/18 ([link](#))
- ▶ Evan Frazier Speaking at Midwest Institutional Forum 5/15 ([link](#))
- ▶ Stephanie Osten Speaking at CFA Society of Pittsburgh Endowments & Foundations Conference 5/22 ([link](#))

[Page Intentionally Left Blank]

# Market Environment



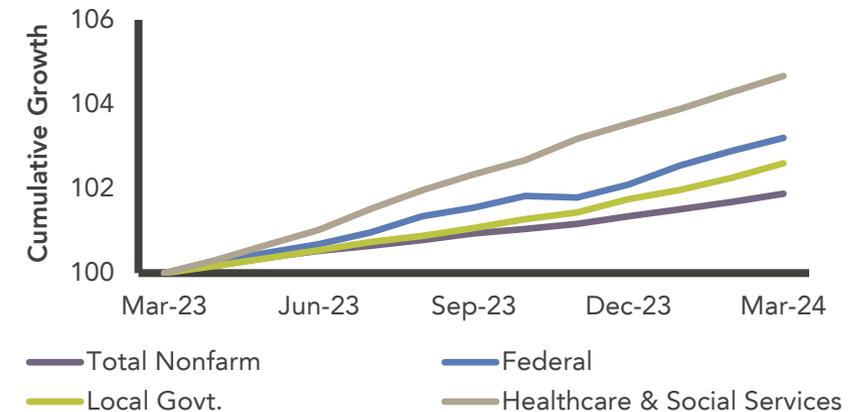
# U.S. Economy

- U.S. economic growth continued to decelerate, with real GDP increasing at an annual rate of 1.6% in Q1. That said, net exports and inventories detracted about 1.2 percentage points from the headline number, masking a relatively mild slowdown in domestic demand compared to Q4.
- Economic resilience seems largely due to lower interest-rate sensitivity among households and corporations than history would suggest, coupled with extremely loose fiscal policy. Household debt service ratios, for example, remain low despite higher rates. According to Carlyle, fixed-rate mortgages are saving households \$550 billion annually relative to current mortgage rates.
- The federal government deficit, meanwhile, remains considerably large at this point in the economic cycle. Further, fiscal support is evident in the labor market as well, with government jobs and government-related sectors (e.g., healthcare and social services) showing more rapid growth than the broader labor market over the past year.

U.S. Real GDP Growth<sup>1</sup>



Growth in Employment



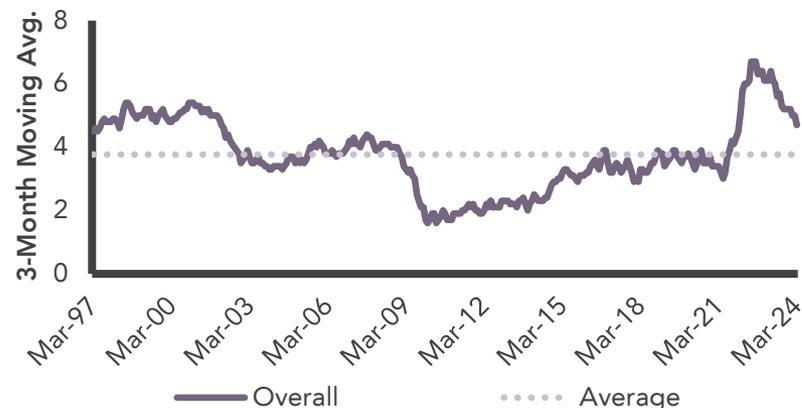
Source: Federal Reserve Bank of St. Louis, Refinitiv, The Wall Street Journal

<sup>1</sup>Striped bars reflect economist estimates from The Wall Street Journal Economic Forecasting Survey

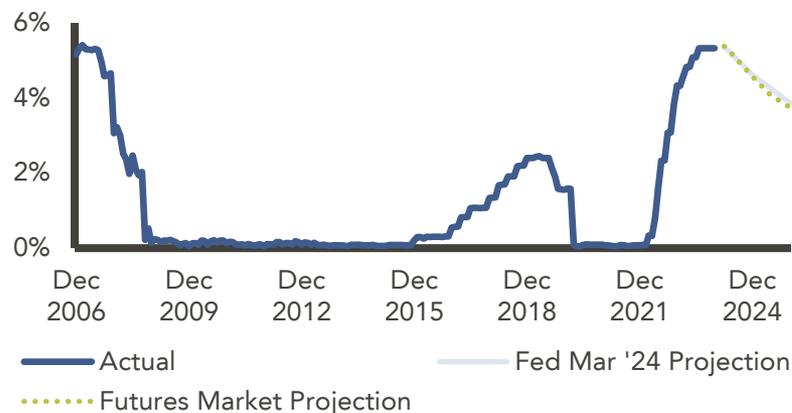
# U.S. Economy

- Amid the continued economic strength and strong labor market, the disinflationary trend appears to have stalled to some degree in the first quarter amid higher energy prices, increasing supply chain pressures, higher-than-average wage growth, etc.
- Moving forward, it's unclear if the recent trend change is a bump in the road or something more persistent. It is notable, however, that much of the disinflation over the past year or so has been driven by *deflation* among goods prices. With economic activity improving in other parts of the globe (e.g., Euro Area), increased demand for goods may turn into another headwind for the disinflationary process to reassert itself.
- Amid this environment, the market is now pricing far fewer rate cuts than expected at the end of 2023, putting upward pressure on interest rates during the quarter. More specifically, markets see approximately three rate cuts (data as of quarter end) in 2024, compared to more than six just three months ago.

Wage Growth (%)



Short-Term Interest Rates

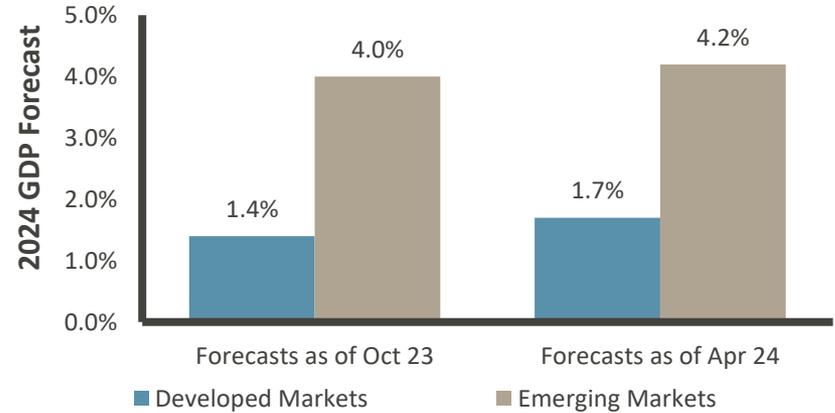


Source: Federal Reserve Bank of Atlanta, Refinitiv

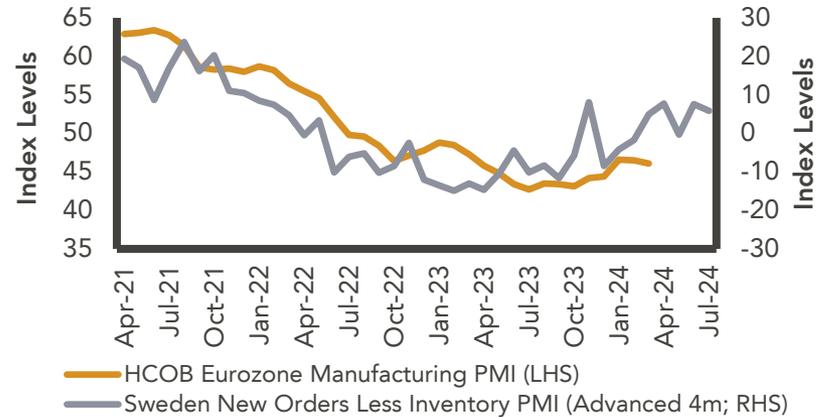
# Global Economy

- Economic growth outside the U.S. was notably weaker in 2023 due to higher rate sensitivity. Household mortgages, for example, tend to be a mix of fixed- and floating-rate loans, leaving consumers susceptible to more frequent debt refinancing and/or higher rates than in the U.S. Further, there is a heavier reliance on the manufacturing sector, which has proven more rate sensitive than services over time.
- More recently, there are signs of a rebound. The IMF, for example, slightly increased their forecast for 2024 economic growth in both Developed and Emerging Markets economies.
- The Euro Area saw a notable revision, with its 2024 economic growth forecast increased from 1.2% to 1.7%. The upward revision seems due in part to a rebound in manufacturing. Sweden, as a small and open economy, is a good leading indicator for the larger region. Recently, manufacturing new orders have risen more quickly than inventories, indicating more demand for goods and that sluggish growth in the Euro Area is likely to pick up in the coming months.

2024 Global Economic Growth Forecast



Eurozone Manufacturing Outlook

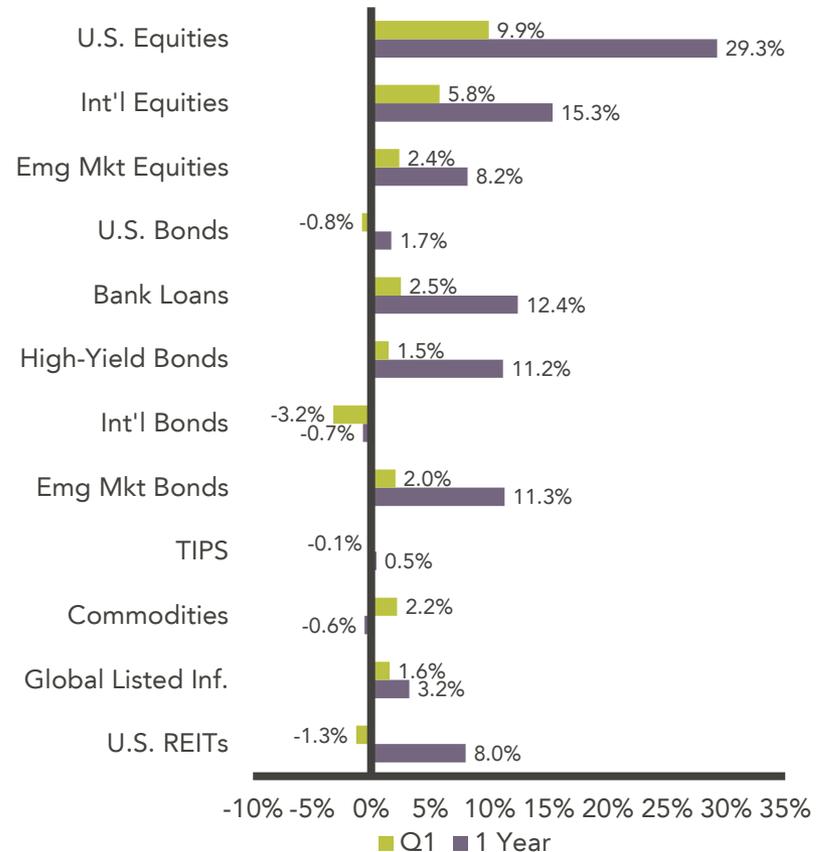


Source: IMF, Refinitiv

# Global Asset Class Performance

- Global equities continued to rally in Q1, posting strong gains amid robust economic data and easing financial conditions. U.S equities outperformed their international counterparts handily. U.S. dollar strength played a sizeable role in relative returns, detracting approximately 4.2 and 2.1 percentage points, respectively, from international developed and emerging markets returns.
- Fixed income markets were mixed. Investment-grade bonds were slightly in the red thanks to higher rates across the yield curve. Sub-investment grade debt, on the other hand, posted gains as spreads tightened, with bank loans outperforming high yield given their floating-rate characteristics.
- Inflation-sensitive assets were also mixed in Q1. TIPS were flat but outperformed their nominal government bond counterparts due to rising inflation expectations. Global listed infrastructure was in the black though lagged broad global equity markets, while REITs were negative as higher rates drove the relative underperformance for both asset classes. Commodities generated a slight gain thanks largely a 17% jump in oil prices. Interestingly, gold also rose more than 7%, despite higher real rates.

Asset Class Returns: Select Asset Class Performance

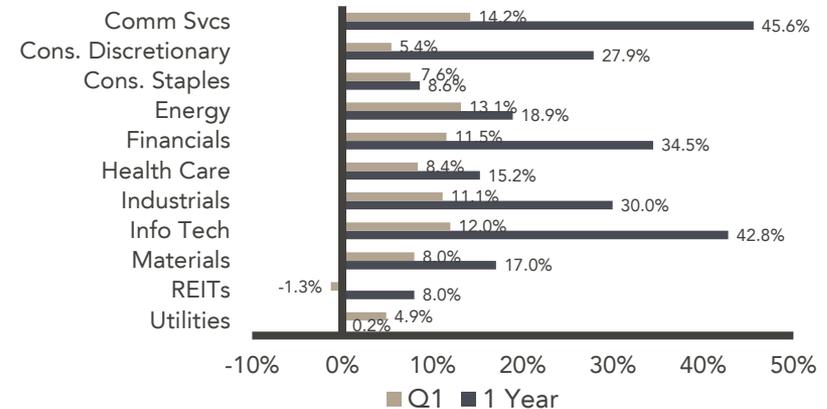


Source: Refinitiv

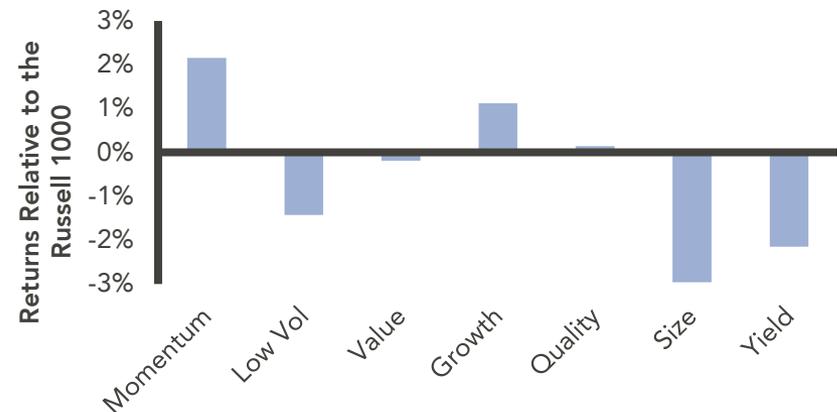
# U.S. Equity Markets

- Economic sector performance was mostly positive in Q1, with all sectors in the black, save REITs, which lagged due to rising rates. More defensive sectors also lagged the broad markets amid the strong gains. At the other end of the spectrum, Communication Services led the way, followed by Energy and Information Technology.
- From a style perspective, growth stocks topped value stocks once again in Q1. Over the past year, growth outperformed value by more than 18 percentage points (as measured by their respective Russell 3000 Indices) thanks in large part to outperformance by a handful of mega-cap growth stocks (e.g., Nvidia).
- High momentum stocks, which are currently dominated by mega-cap growth names (Nvidia, Meta, Broadcom, etc.) outperformed notably in Q1, while small caps and higher-yielding stocks underperformed amid higher interest rates. This led to a deterioration in market breadth. For example, the S&P 500 Index outperformed its equally-weighted counterpart by 2.7 percentage points for the quarter.

## Sector Returns



## Q1 Returns Relative to the Russell 1000

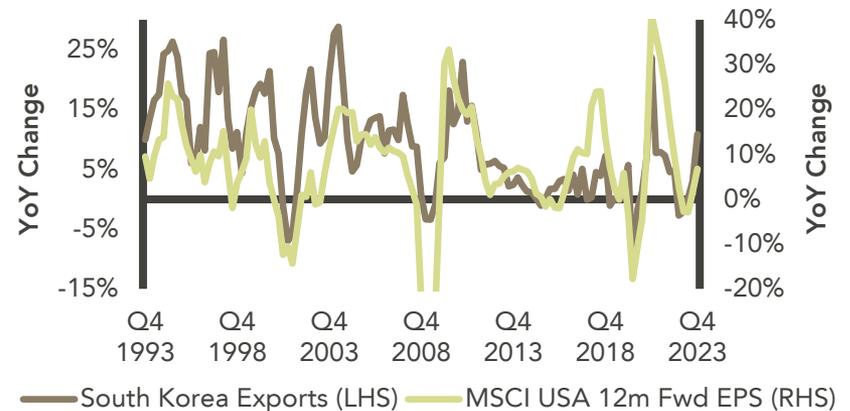


Source: Bloomberg, Refinitiv

# U.S. Equity Markets

- Continued strength in U.S. economic growth, along with early signs of a pickup in economic activity outside the U.S. may signal an improved profit outlook for U.S. companies.
- South Korea, as an export-driven, open economy, has a long history of signaling turning points in the profit cycle. As of year end, year-over-year exports posted their fastest growth since mid-2021, indicating a likely acceleration in U.S. corporate profits in the coming quarters.
- A recent survey by Commonfund showed 77% of 203 institutional investors expect the Fed to engineer an economic soft landing. That said, economic resilience and profit growth appear baked into investor expectations and current market pricing. U.S. equity market valuations (as measured by the forward P/E ratio of the MSCI US Index) are trading comfortably above their 10- and 20-year averages.

Profit Outlook



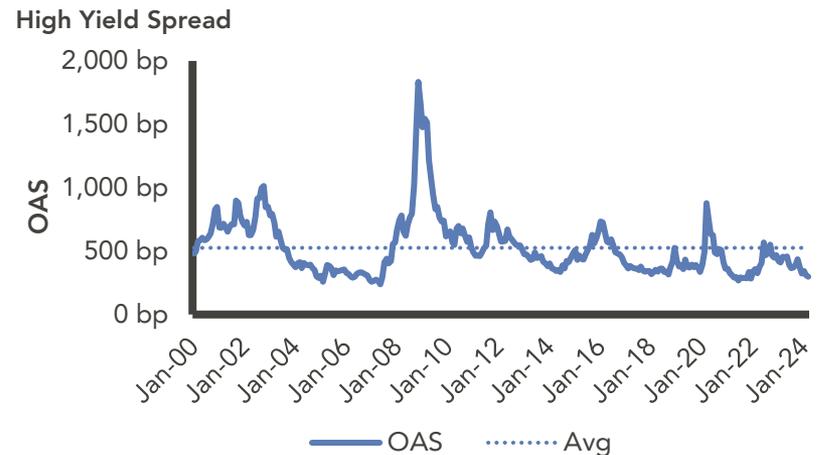
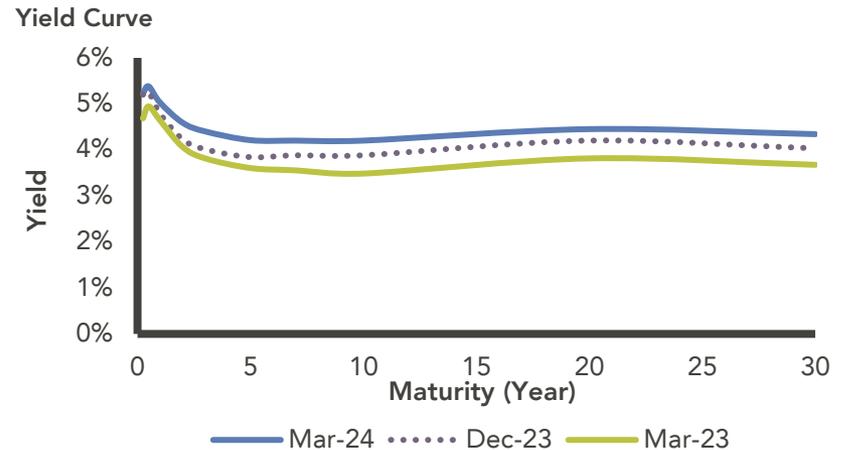
Forward Price-to-Earnings Ratio for the MSCI U.S.



Source: Refinitiv

# U.S. Fixed Income

- After declining notably during the end of 2023, Treasury yields rose in Q1, with intermediate- and longer-dated maturities seeing the largest increases due in part to higher-than-expected inflation data.
- Despite the recent inflation data, the Federal Reserve’s Summary of Economic Projections, which was updated in March, maintained a median forecast of three interest rate cuts in 2024.
- Given the move higher in rates, the broad investment-grade bond market was in the red for the quarter, with the Bloomberg Aggregate Index generating a return of **-0.8%**.
- Sub-investment grade debt, on the other hand, posted gains amid a strong environment for risk assets, with bank loans outperforming high-yield debt given their floating-rate characteristics. Still, high-yield spreads ended Q1 below 300 basis points, which marked their tightest level since December 2021.



Source: Refinitiv

# Global Index Returns

DOMESTIC EQUITY	QTR	YTD	1 Year	3 Year	5 Year	10 Year
S&P 500 Index	10.6	10.6	29.9	11.5	15.0	13.0
Russell 3000 Index	10.0	10.0	29.3	9.8	14.3	12.3
Russell 3000 Growth Index	11.2	11.2	38.0	11.5	17.8	15.4
Russell 3000 Value Index	8.6	8.6	20.2	7.7	10.2	8.9
Russell TOP 200 Index	10.8	10.8	32.4	12.0	16.1	13.7
Russell TOP 200 Growth Index	11.7	11.7	41.7	14.2	20.1	17.3
Russell TOP 200 Value Index	9.4	9.4	20.1	8.7	10.5	9.2
Russell 1000 Index	10.3	10.3	29.9	10.5	14.8	12.7
Russell 1000 Growth Index	11.4	11.4	39.0	10.5	18.5	16.0
Russell 1000 Value Index	9.0	9.0	20.3	8.1	10.3	9.0
Russell Mid-Cap Index	8.6	8.6	22.3	6.1	11.1	9.9
Russell Mid-Cap Growth Index	9.5	9.5	26.3	4.6	11.8	11.4
Russell Mid-Cap Value Index	8.2	8.2	20.4	6.8	9.9	8.6
Russell 2000 Index	5.2	5.2	19.7	(0.1)	8.1	7.6
Russell 2000 Growth Index	7.6	7.6	20.3	(2.7)	7.4	7.9
Russell 2000 Value Index	2.9	2.9	18.8	2.2	8.2	6.9
<b>DOMESTIC EQUITY BY SECTOR (MSCI)</b>						
Communication Services	14.2	14.2	45.6	4.5	12.4	9.6
Consumer Discretionary	5.4	5.4	27.9	3.0	13.5	12.9
Consumer Staples	7.6	7.6	8.6	7.9	10.1	9.2
Energy	13.1	13.1	18.9	29.7	12.5	3.7
Financials	11.5	11.5	34.5	9.1	12.3	10.9
Health Care	8.4	8.4	15.2	7.3	11.1	11.4
Industrials	11.1	11.1	30.0	10.5	13.6	11.2
Information Technology	12.0	12.0	42.8	16.0	23.4	20.6
Materials	8.0	8.0	17.0	7.8	12.9	8.9
Real Estate	(1.3)	(1.3)	8.0	2.4	4.0	6.8
Utilities	4.9	4.9	0.2	3.9	5.3	8.2

Source: Refinitiv

# Global Index Returns

INTERNATIONAL/GLOBAL EQUITY	QTR	YTD	1 Year	3 Year	5 Year	10 Year
MSCI EAFE (Net)	5.8	5.8	15.3	4.8	7.3	4.8
MSCI EAFE Growth (Net)	7.0	7.0	13.3	2.8	7.8	5.9
MSCI EAFE Value (Net)	4.5	4.5	17.3	6.6	6.4	3.5
MSCI EAFE Small Cap (Net)	2.4	2.4	10.4	(1.4)	4.9	4.7
MSCI AC World Index (Net)	8.2	8.2	23.2	7.0	10.9	8.7
MSCI AC World Index Growth (Net)	9.5	9.5	28.2	6.7	13.6	11.0
MSCI AC World Index Value (Net)	6.9	6.9	18.0	6.7	7.6	6.0
MSCI Europe ex UK (Net)	5.9	5.9	15.1	5.7	8.9	5.0
MSCI United Kingdom (Net)	3.1	3.1	10.9	7.7	5.1	2.9
MSCI Pacific ex Japan (Net)	(1.7)	(1.7)	2.4	(0.5)	3.0	3.4
MSCI Japan (Net)	11.0	11.0	25.8	3.7	7.8	6.7
MSCI Emerging Markets (Net)	2.4	2.4	8.2	(5.1)	2.2	2.9

Source: Refinitiv

# Global Index Returns

FIXED INCOME	QTR	YTD	1 Year	3 Year	5 Year	10 Year
Merrill Lynch 3-month T-Bill	1.3	5.2	5.2	2.6	2.0	1.4
Barclays Intermediate Gov't./Credit	(0.2)	(0.2)	2.7	(1.1)	1.1	1.6
Barclays Aggregate Bond	(0.8)	(0.8)	1.7	(2.5)	0.4	1.5
Barclays Short Government	0.3	3.0	3.0	0.0	1.1	1.1
Barclays Intermediate Government	(0.3)	1.6	1.6	(1.4)	0.6	1.1
Barclays Long Government	(3.2)	(6.0)	(6.0)	(8.0)	(2.8)	1.2
Barclays Investment Grade Corp.	(0.4)	4.4	4.4	(1.9)	1.5	2.6
Barclays High Yield Corp. Bond	1.5	1.5	11.2	2.2	4.2	4.4
Credit Suisse Leveraged Loan	2.5	2.5	12.4	5.8	5.3	4.6
JPMorgan Global ex US Bond	(3.2)	(3.2)	(0.7)	(6.5)	(2.5)	(1.4)
JPMorgan Emerging Market Bond	2.0	2.0	11.3	(1.4)	0.7	3.1
INFLATION SENSITIVE						
Consumer Price Index	1.8	3.5	3.5	5.6	4.2	2.8
BC TIPS	(0.1)	(0.1)	0.5	(0.5)	2.5	2.2
Commodities	2.2	2.2	(0.6)	9.1	6.4	(1.6)
Gold	7.4	7.4	12.0	8.5	10.2	4.8
REITs	(1.3)	(1.3)	8.0	2.4	4.0	6.8
FTSE EPRA/NAREIT Global REITs	(1.5)	(1.5)	6.5	(2.2)	(1.0)	2.7
NCREIF ODCE*	(2.6)	(2.6)	(12.0)	2.5	2.6	5.8

\*Data are preliminary.

Source: Refinitiv



PREPARED BY MARQUETTE ASSOCIATES

180 North LaSalle St, Ste 3500, Chicago, Illinois 60601 PHONE 312-527-5500

CHICAGO BALTIMORE MILWAUKEE PHILADELPHIA ST. LOUIS WEB [MarquetteAssociates.com](http://MarquetteAssociates.com)

**CONFIDENTIALITY NOTICE:** This communication, including attachments, is for the exclusive use of the addressee and contains proprietary, confidential and/or privileged information; any use, copying, disclosure, dissemination or distribution is strictly prohibited. Marquette Associates, Inc. retains all proprietary rights they may have in the information.

Marquette Associates, Inc. ("Marquette") has prepared this document for the exclusive use by the client or third party for which it was prepared. The information herein was obtained from various sources, including but not limited to third party investment managers, the client's custodian(s) accounting statements, commercially available databases, and other economic and financial market data sources.

The sources of information used in this document are believed to be reliable. Marquette has not independently verified all of the information in this document and its accuracy cannot be guaranteed. Marquette accepts no liability for any direct or consequential losses arising from its use. The information provided herein is as of the date appearing in this material only and is subject to change without prior notice. Thus, all such information is subject to independent verification, and we urge clients to compare the information set forth in this statement with the statements you receive directly from the custodian in order to ensure accuracy of all account information. Past performance does not guarantee future results and investing involves risk of loss. No graph, chart, or formula can, in and of itself, be used to determine which securities or investments to buy or sell.

Forward-looking statements, including without limitation any statement or prediction about a future event contained in this presentation, are based on a variety of estimates and assumptions by Marquette, including, but not limited to, estimates of future operating results, the value of assets and market conditions. These estimates and assumptions, including the risk assessments and projections referenced, are inherently uncertain and are subject to numerous business, industry, market, regulatory, geopolitical, competitive, and financial risks that are outside of Marquette's control. There can be no assurance that the assumptions made in connection with any forward-looking statement will prove accurate, and actual results may differ materially. Indices have been selected for comparison purposes only. Client account holdings may differ significantly from the securities in the indices and the volatility of the index may be materially different from client account performance. You cannot invest directly in an index.

The inclusion of any forward-looking statement herein should not be regarded as an indication that Marquette considers forward-looking statements to be a reliable prediction of future events. The views contained herein are those of Marquette and should not be taken as financial advice or a recommendation to buy or sell any security. Any forecasts, figures, opinions, or investment techniques and strategies described are intended for informational purposes only. They are based on certain assumptions and current market conditions, and although accurate at the time of writing, are subject to change without prior notice. Opinions, estimates, projections, and comments on financial market trends constitute our judgment and are subject to change without notice. Marquette expressly disclaims all liability in respect to actions taken based on any or all of the information included or referenced in this document. The information is being provided based on the understanding that each recipient has sufficient knowledge and experience to evaluate the merits and risks of investing.

This presentation does not constitute an offer to sell, or a solicitation of an offer to buy, any interest in any investment vehicle, and should not be relied on as such. Targets, ranges and expectations set forth in this presentation are approximations; actual results may differ. The information and opinions expressed herein are as of the date appearing in this material only, are subject to change without prior notice, and do not contain material information regarding the Marquette Model Portfolio, including specific information relating to portfolio investments and related important risk disclosures. The descriptions herein of Marquette's investment objectives or criteria, the characteristics of its investments, investment process, or investment strategies and styles may not be fully indicative of any present or future investments, are not intended to reflect performance and may be changed in the discretion of Marquette. While the data contained herein has been prepared from information that Marquette believes to be reliable, Marquette does not warrant the accuracy or completeness of such information. Client account holdings may differ significantly from the securities in the indices and the volatility of the index may be materially different from client account performance. You cannot invest directly in an index.

## **ABOUT MARQUETTE ASSOCIATES**

Marquette was founded in 1986 with the sole objective of providing investment consulting at the highest caliber of service. Our expertise is grounded in our commitment to client service — our team aims to be a trusted partner and as fiduciaries, our clients' interests and objectives are at the center of everything we do. Our approach brings together the real-world experience of our people and our dedication to creativity and critical thinking in order to empower our clients to meet their goals. Marquette is an independent investment adviser registered under the Investment Advisers Act of 1940, as amended. Registration does not imply a certain level of skill or training. More information about Marquette including our investment strategies, fees and objectives can be found in our ADV Part 2, which is available upon request and on our website. For more information, please visit [www.MarquetteAssociates.com](http://www.MarquetteAssociates.com).

# Portfolio Overview



## **Observations**

- Market Value as of March 31, 2024, was \$3.42 billion.
- 1<sup>st</sup> Qtr. '24 Return: Total Fund 4.5% (net) vs. Policy Index 3.8%; investment gain of \$148.2 million.
- Contributors to 1<sup>st</sup> Qtr. Performance:
  - Growth Equity
  - Underweight to Core Fixed Income
  - Timberland
  - Opportunistic Credit
- Detractors from 1<sup>st</sup> Qtr. Performance:
  - Value Equity
  - Small Cap Equity
- Longer term performance has been strong:
  - 5-Year Return: 7.5% (44<sup>th</sup> percentile) vs. Policy Index 7.6%; investment gain of \$1.1 billion
  - 10-Year Return: 7.1% (30<sup>th</sup> percentile) vs. Policy Index 7.1%; investment gain of \$1.9 billion
- Low Investment Management Fees: 0.29%

## **Recent Changes / Looking Ahead**

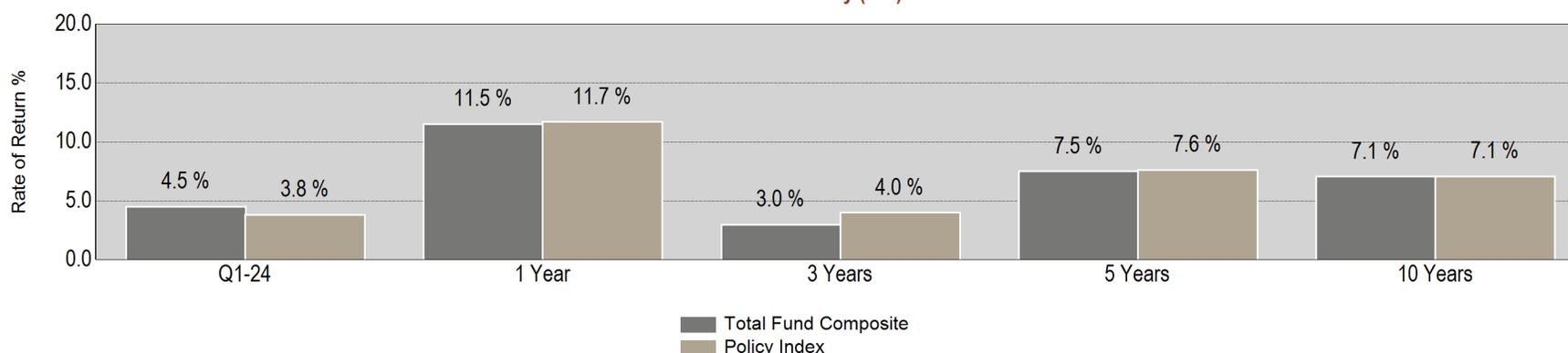
- Transition Manager Contacts Pending
  - Smith Graham SCV to Channing SCV transition
- International Value Equity Manager Selection
- Rebalancing for Cash Flows

As of March 31, 2024

Summary of Cash Flows

	First Quarter	One Year	Three Years	Five Years	Ten Years
Beginning Market Value	\$3,290,113,763	\$3,124,694,950	\$3,308,194,183	\$2,578,513,727	\$1,972,085,106
Net Cash Flow	-\$16,182,805	-\$59,744,334	-\$178,621,410	-\$255,099,425	-\$414,155,743
Net Investment Change	\$148,194,217	\$357,174,558	\$292,552,402	\$1,098,710,873	\$1,864,195,812
Ending Market Value	\$3,422,125,175	\$3,422,125,175	\$3,422,125,175	\$3,422,125,175	\$3,422,125,175

Return Summary (Net)



Asset Allocation vs. Target

	Current	Policy	Difference*	Policy Range	Within Range
U.S. Equity	35.1%	32.5%	\$89,582,370	27.0% - 38.0%	Yes
Global Equity	4.9%	5.0%	-\$3,707,379	0.0% - 10.0%	Yes
Non-U.S. Equity	18.0%	17.5%	\$18,632,332	12.0% - 23.0%	Yes
Timberland/Farmland	4.7%	5.0%	-\$8,646,733	0.0% - 10.0%	Yes
Private Real Estate	10.8%	10.0%	\$26,653,753	5.0% - 15.0%	Yes
High Yield	5.3%	5.0%	\$8,771,053	0.0% - 10.0%	Yes
U.S. Fixed Income	20.5%	24.0%	-\$119,831,391	19.0% - 29.0%	Yes
Cash Equivalent	0.7%	1.0%	-\$11,454,005	0.0% - 5.0%	Yes
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>			

\*Difference between Policy and Current Allocation

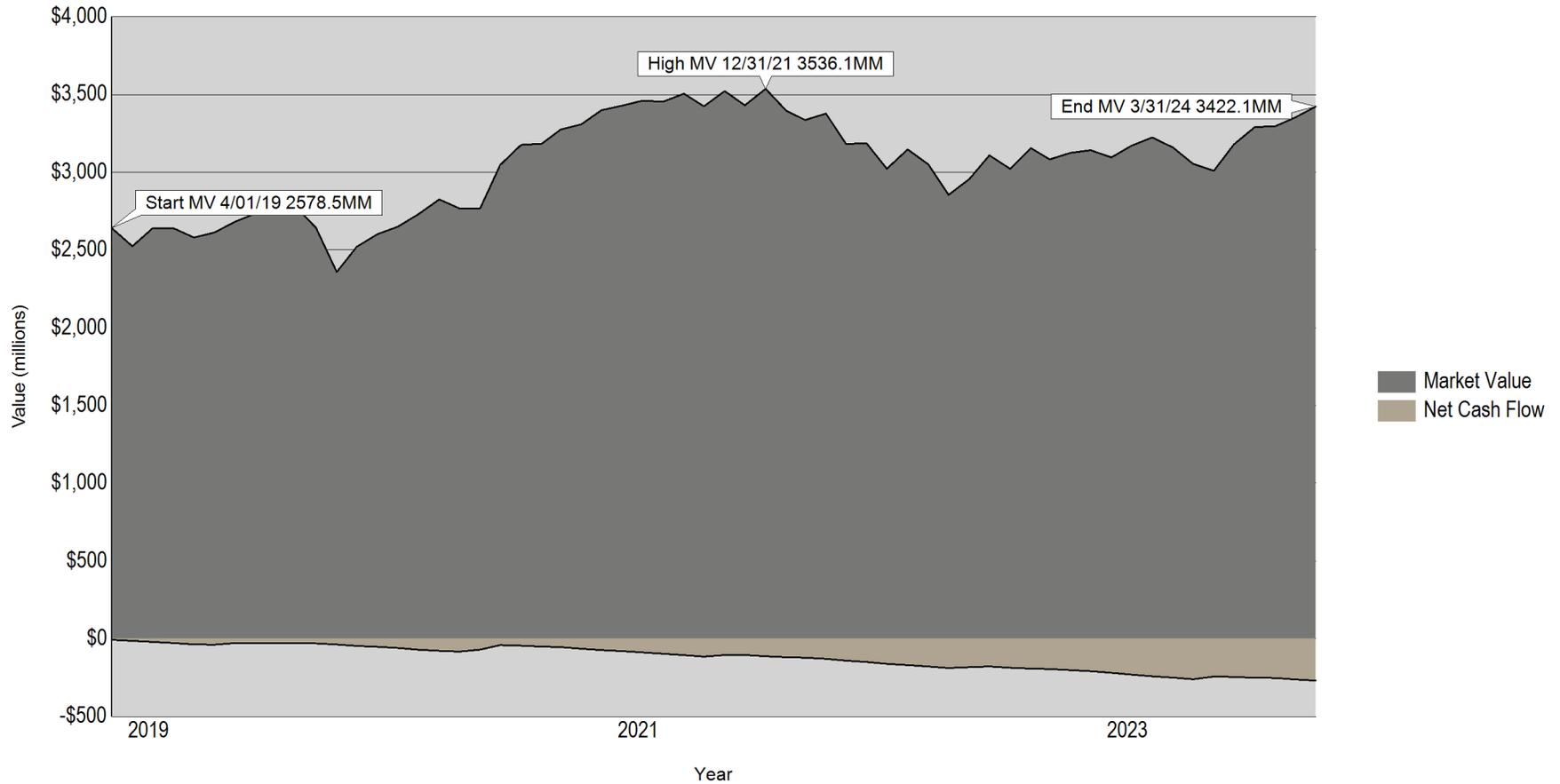
As of March 31, 2024

**Cash Flow Summary by Manager From January 01, 2024 to March 31, 2024**

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
MFS Large Cap Value	\$138,444,589	\$0	\$12,208,795	\$150,653,384
Xpounce S&P 500	\$295,326,973	\$0	\$31,114,017	\$326,440,990
Northern Trust S&P 500	\$290,802,803	\$0	\$30,681,963	\$321,484,766
Polen Focus Growth	\$116,682,242	\$0	\$8,707,405	\$125,389,647
Northern Trust Dow Jones Completion Index	\$112,692,575	\$0	\$7,839,374	\$120,531,949
Copeland SMID Cap Dividend Growth	\$55,774,449	\$0	\$3,580,865	\$59,355,313
Dana Inv. Advisors Small Cap Value	\$48,322,053	\$0	\$3,014,672	\$51,336,725
Emerald Small Cap Growth	\$44,091,440	\$0	\$2,488,837	\$46,580,277
Rhumblin Global Min. Volatility	\$158,976,609	\$0	\$8,422,270	\$167,398,879
SSGA MSCI World ex US	\$276,793,164	\$0	\$15,770,983	\$292,564,147
Hardman Johnston Int'l Equity	\$100,146,959	\$0	\$6,589,727	\$106,736,686
Hudson Edge Int'l Equity	\$135,095,364	\$0	\$7,755,215	\$142,850,579
Jarislowsky, Fraser Limited	\$137,542	\$0	-\$7,131	\$130,411
SSGA MSCI Emerging Markets Index	\$73,521,410	\$0	\$1,701,005	\$75,222,415
Forest Investment Associates	\$149,753,387	\$0	\$12,706,139	\$162,459,526
PRISA LP	\$58,004,940	\$0	-\$2,179,699	\$55,825,241
PRISA II	\$116,302,288	\$0	-\$3,512,973	\$112,789,314
PennMuni-Nuveen U.S. Real Estate Fund	\$198,893,447	\$0	\$0	\$198,893,447
N. Front Street (Nuveen)	\$1,358,268	\$0	\$0	\$1,358,268
SSGA US Aggregate Bond Index	\$351,553,392	\$0	-\$2,550,208	\$349,003,183
Federated Hermes Core Aggregate Strategy	\$354,525,824	\$0	-\$2,050,357	\$352,475,467
Ares Global Multi-Asset Credit	\$175,951,464	\$0	\$3,925,848	\$179,877,312
Cash Management	\$36,962,582	-\$16,182,805	\$1,987,470	\$22,767,246
<b>Total</b>	<b>\$3,290,113,763</b>	<b>-\$16,182,805</b>	<b>\$148,194,217</b>	<b>\$3,422,125,175</b>

\*PennMuni-Nuveen and N. Front St. values as of 12/31/23.

Market Value History



# Pennsylvania Municipal Retirement System

# Asset Allocation Summary

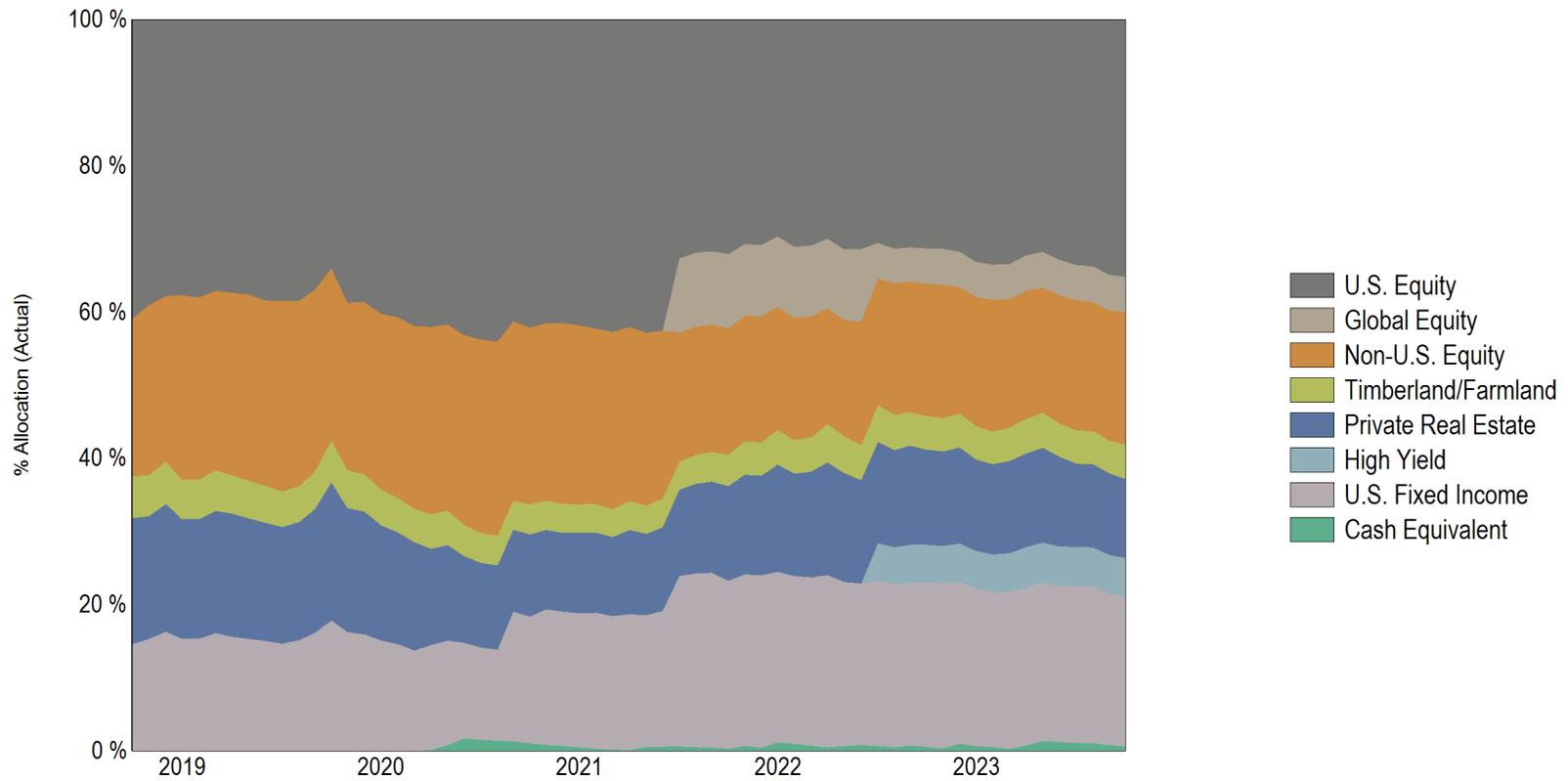
As of March 31, 2024

	Market Value	% of Portfolio	Policy %	Policy Difference
<b>Total Fund Composite</b>	<b>3,422,125,175</b>	<b>100.0</b>	<b>100.0</b>	<b>0</b>
<b>Total Equity Composite</b>	<b>1,986,676,168</b>	<b>58.1</b>	<b>55.0</b>	<b>104,507,322</b>
<b>U.S. Equity Composite</b>	<b>1,201,773,052</b>	<b>35.1</b>	<b>32.5</b>	<b>89,582,370</b>
MFS Large Cap Value	150,653,384	4.4		
Xponance S&P 500	326,440,990	9.5		
Northern Trust S&P 500	321,484,766	9.4		
Polen Focus Growth	125,389,647	3.7		
Northern Trust Dow Jones Completion Index	120,531,949	3.5		
Copeland SMID Cap Dividend Growth	59,355,313	1.7		
Dana Inv. Advisors Small Cap Value	51,336,725	1.5		
Emerald Small Cap Growth	46,580,277	1.4		
<b>Global Equity Composite</b>	<b>167,398,879</b>	<b>4.9</b>	<b>5.0</b>	<b>-3,707,379</b>
Rhumblin Global Min. Volatility	167,398,879	4.9		
<b>Non-U.S Equity Composite</b>	<b>617,504,237</b>	<b>18.0</b>	<b>17.5</b>	<b>18,632,332</b>
SSGA MSCI World ex US	292,564,147	8.5		
Hardman Johnston Int'l Equity	106,736,686	3.1		
Hudson Edge Int'l Equity	142,850,579	4.2		
SSGA MSCI Emerging Markets Index	75,222,415	2.2		
<b>Real Assets Composite</b>	<b>531,325,797</b>	<b>15.5</b>	<b>15.0</b>	<b>18,007,021</b>
Forest Investment Associates	162,459,526	4.7		
PRISA LP	55,825,241	1.6		
PRISA II	112,789,314	3.3		
PennMuni-Nuveen U.S. Real Estate Fund	198,893,447	5.8		
N. Front Street (Nuveen)	1,358,268	0.0		
<b>Total Fixed Income Composite</b>	<b>881,355,963</b>	<b>25.8</b>	<b>29.0</b>	<b>-111,060,338</b>
SSGA US Aggregate Bond Index	349,003,183	10.2		
Federated Hermes Core Aggregate Strategy	352,475,467	10.3		
Ares Global Multi-Asset Credit	179,877,312	5.3		
<b>Cash Composite</b>	<b>22,767,246</b>	<b>0.7</b>	<b>1.0</b>	<b>-11,454,005</b>

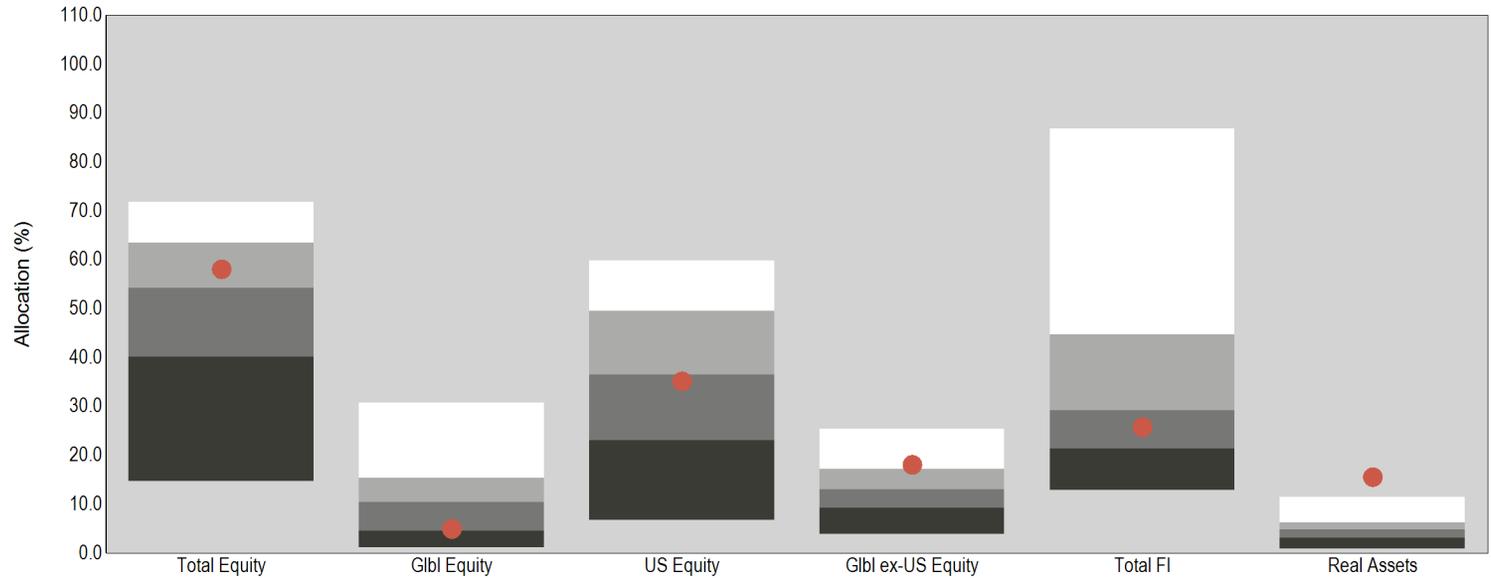
\*PennMuni-Nuveen and N. Front St. values as of 12/31/23.

\*Residual value for Jarislowsky (approx. \$130K) included in Non-US Equity and Total Fund Composite values.

Asset Allocation History



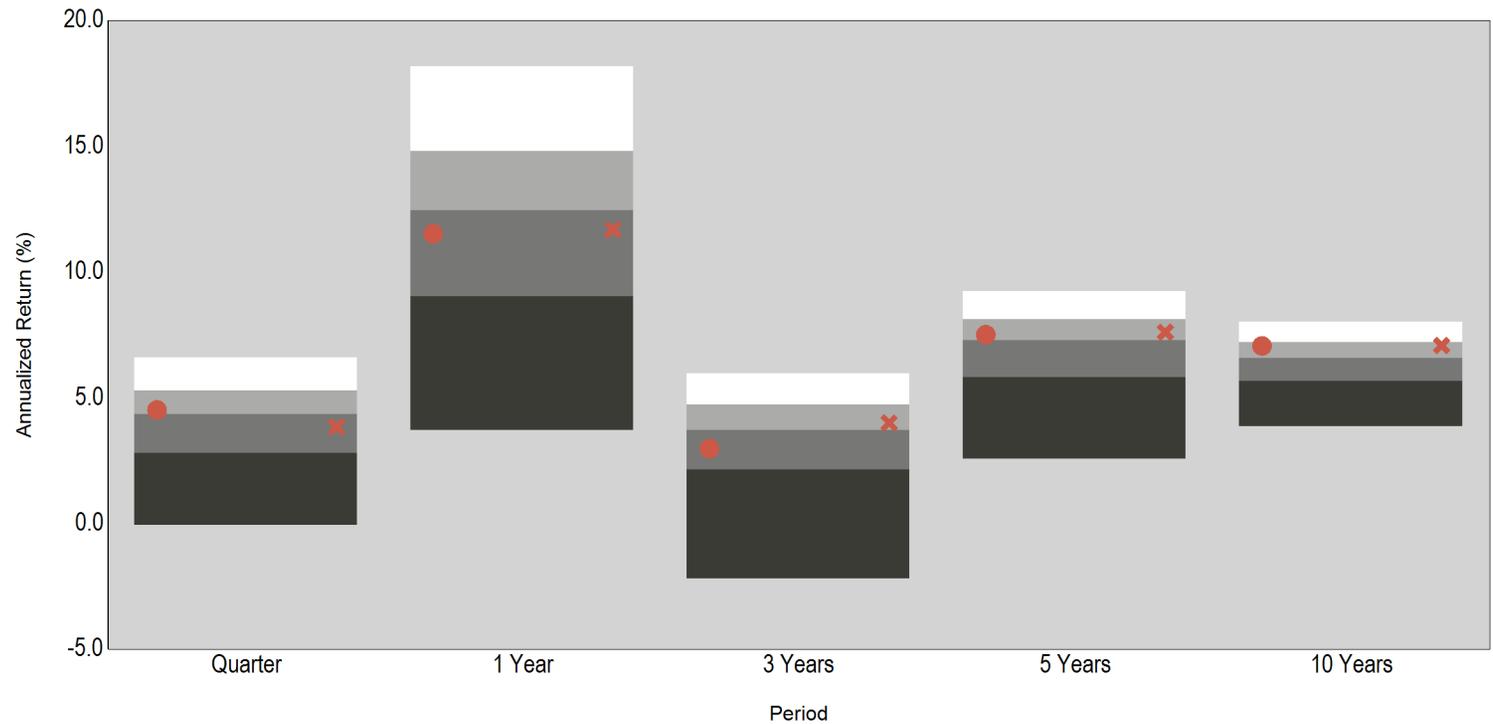
Total Plan Allocation vs. InvMetrics All DB Net  
As of March 31, 2024



Allocation (Rank)

5th Percentile	71.9	30.7	59.8	25.3	86.8	11.4						
25th Percentile	63.4	15.3	49.5	17.2	44.7	6.2						
Median	54.2	10.4	36.4	13.0	29.1	4.7						
75th Percentile	40.1	4.5	23.0	9.2	21.4	3.1						
95th Percentile	14.7	1.1	6.7	3.9	12.9	0.9						
# of Portfolios	1,292	305	1,216	1,131	1,338	310						
● Total Fund Composite	58.1	(41)	4.9	(74)	35.1	(53)	18.0	(23)	25.8	(60)	15.5	(3)

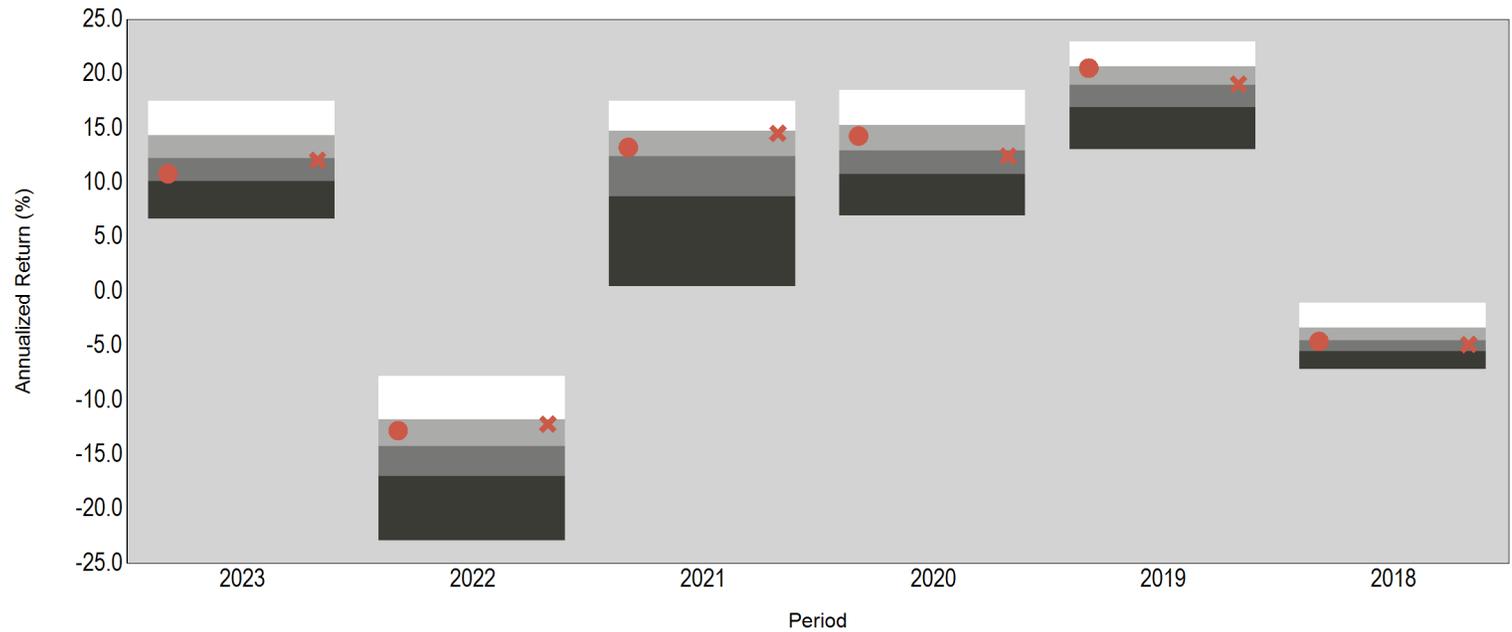
InvMetrics All DB Net Return Comparison



Return (Rank)

5th Percentile	6.6		18.2		6.0		9.2		8.0	
25th Percentile	5.3		14.8		4.7		8.1		7.2	
Median	4.3		12.4		3.7		7.3		6.6	
75th Percentile	2.8		9.0		2.1		5.8		5.7	
95th Percentile	-0.1		3.7		-2.2		2.6		3.8	
# of Portfolios	1,443		1,425		1,361		1,327		1,121	
● Total Fund Composite	4.5	(47)	11.5	(59)	3.0	(65)	7.5	(44)	7.1	(30)
▲ Policy Index	3.8	(61)	11.7	(57)	4.0	(43)	7.6	(41)	7.1	(29)

InvMetrics All DB Net Return Comparison



	2023		2022		2021		2020		2019		2018	
<b>Return (Rank)</b>												
5th Percentile	17.5	(68)	-7.8	(35)	17.5	(42)	18.5	(36)	23.0	(27)	-1.1	(53)
25th Percentile	14.3	(53)	-11.8	(30)	14.7	(27)	15.3	(56)	20.7	(49)	-3.3	(60)
Median	12.2		-14.2		12.4		12.9		18.9		-4.5	
75th Percentile	10.1		-17.0		8.7		10.8		16.9		-5.5	
95th Percentile	6.7		-22.9		0.5		7.0		13.0		-7.2	
# of Portfolios	1,452		1,531		1,646		1,745		1,580		1,647	
● Total Fund Composite	10.8	(68)	-12.8	(35)	13.2	(42)	14.3	(36)	20.5	(27)	-4.6	(53)
▲ Policy Index	12.1	(53)	-12.2	(30)	14.5	(27)	12.4	(56)	19.0	(49)	-4.9	(60)

**RISK RETURN STATISTICS**  
April 01, 2019 Through March 31, 2024

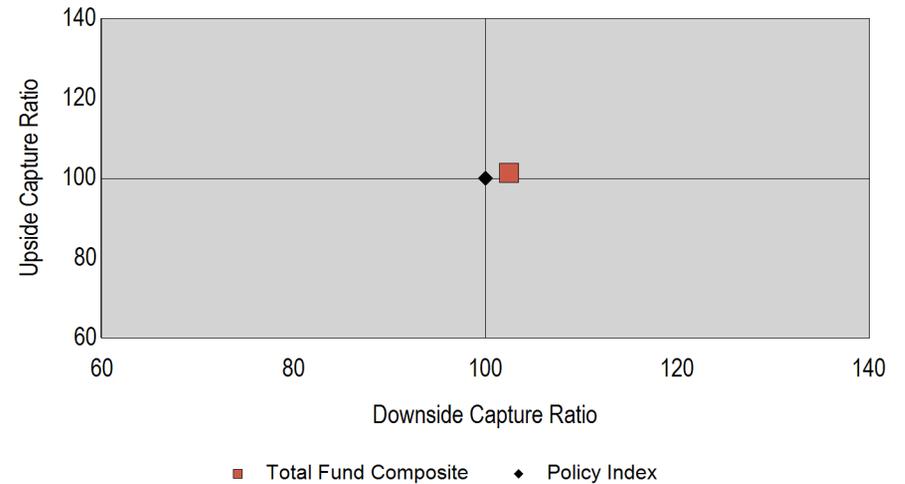
	Total Fund Composite	Policy Index
<b>RETURN SUMMARY STATISTICS</b>		
Number of Periods	20	20
Maximum Return	13.40	12.26
Minimum Return	-15.48	-14.88
Annualized Return	7.50	7.60
Total Return	43.54	44.24
Annualized Excess Return Over Risk Free	5.57	5.67
Annualized Excess Return	-0.10	0.00

	Total Fund Composite	Policy Index
<b>RISK SUMMARY STATISTICS</b>		
Beta	1.03	1.00
Upside Deviation	7.02	6.72
Downside Deviation	10.94	10.81

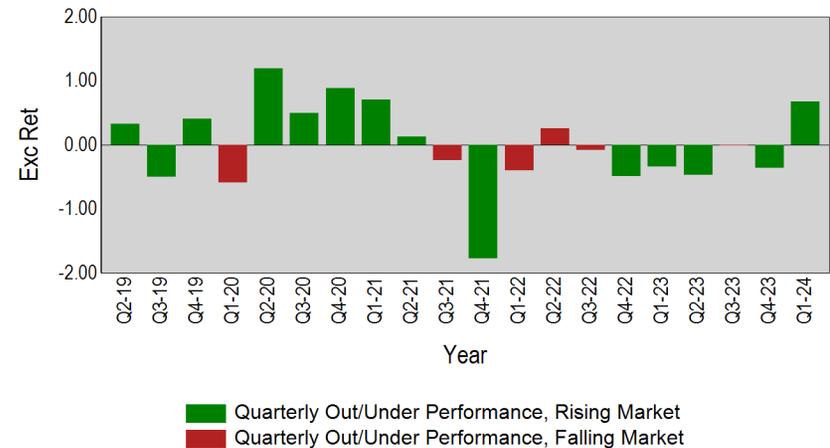
	Total Fund Composite	Policy Index
<b>RISK/RETURN SUMMARY STATISTICS</b>		
Annualized Standard Deviation	13.90	13.40
Alpha	-0.08	0.00
Sharpe Ratio	0.40	0.42
Excess Return Over Market / Risk	-0.01	0.00
Tracking Error	1.33	0.00
Information Ratio	-0.08	--

	Total Fund Composite	Policy Index
<b>CORRELATION STATISTICS</b>		
R-Squared	0.99	1.00
Correlation	1.00	1.00

Upside Capture Ratio vs. Downside Capture Ratio  
5 Years Ending March 31, 2024



Quarterly Excess Performance  
Total Fund Composite vs. Policy Index



# Pennsylvania Municipal Retirement System

## Performance Summary (Net)

As of March 31, 2024

	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	Market Value	Inception	Inception Date
<b>Total Fund Composite</b>	<b>4.5</b>	<b>11.5</b>	<b>3.0</b>	<b>7.5</b>	<b>7.1</b>	<b>3,422,125,175</b>	<b>8.4</b>	<b>Jan-86</b>
<i>Policy Index</i>	3.8	11.7	4.0	7.6	7.1		8.9	Jan-86
<i>InvMetrics All DB Net Rank</i>	47	59	65	44	30		35	Jan-86
<b>Total Equity Composite</b>	<b>7.6</b>	<b>20.4</b>	<b>4.9</b>	<b>--</b>	<b>--</b>	<b>1,986,676,168</b>	<b>11.9</b>	<b>Oct-20</b>
<i>MSCI ACWI IMI Net USD</i>	7.7	22.5	6.3	--	--		11.5	Oct-20
<b>U.S. Equity Composite</b>	<b>9.0</b>	<b>26.7</b>	<b>7.1</b>	<b>13.2</b>	<b>11.3</b>	<b>1,201,773,052</b>	<b>9.4</b>	<b>Jan-06</b>
<i>Russell 3000</i>	10.0	29.3	9.8	14.3	12.3		10.2	Jan-06
<i>InvMetrics Public DB US Eq Net Rank</i>	87	76	91	68	60		60	Jan-06
MFS Large Cap Value	8.8	19.4	--	--	--	150,653,384	15.0	Jun-22
<i>Russell 1000 Value</i>	9.0	20.3	--	--	--		15.6	Jun-22
<i>eV US Large Cap Value Equity Net Rank</i>	56	66	--	--	--		62	Jun-22
Xponance S&P 500	10.5	29.8	--	--	--	326,440,990	6.1	Dec-21
<i>S&amp;P 500</i>	10.6	29.9	--	--	--		6.1	Dec-21
<i>eV US Large Cap Core Equity Net Rank</i>	51	42	--	--	--		39	Dec-21
Northern Trust S&P 500	10.5	29.9	--	--	--	321,484,766	6.1	Dec-21
<i>S&amp;P 500</i>	10.6	29.9	--	--	--		6.1	Dec-21
<i>eV US Large Cap Core Equity Net Rank</i>	50	41	--	--	--		38	Dec-21
Polen Focus Growth	7.5	29.5	4.3	12.9	15.0	125,389,647	15.1	Oct-10
<i>Russell 1000 Growth</i>	11.4	39.0	12.5	18.5	16.0		16.5	Oct-10
<i>eV US Large Cap Growth Equity Net Rank</i>	91	80	92	85	28		39	Oct-10
Northern Trust Dow Jones Completion Index	7.0	26.5	--	--	--	120,531,949	-0.7	Dec-21
<i>Dow Jones U.S. Completion Total Stock Market</i>	7.0	26.3	--	--	--		-0.8	Dec-21
<i>eV US Small-Mid Cap Core Equity Net Rank</i>	69	26	--	--	--		83	Dec-21
Copeland SMID Cap Dividend Growth	6.4	19.1	6.9	11.2	--	59,355,313	10.6	Sep-17
<i>Russell 2500</i>	6.9	21.4	0.6	8.6	--		7.4	Sep-17
<i>Russell 2000</i>	5.2	19.7	-0.1	8.1	--		7.0	Sep-17
<i>eV US Small Cap Core Equity Net Rank</i>	38	49	21	31	--		18	Sep-17
Dana Inv. Advisors Small Cap Value	6.2	19.7	-0.3	10.1	--	51,336,725	6.8	Dec-16
<i>Russell 2000 Value</i>	2.9	18.8	2.2	8.2	--		6.8	Dec-16
<i>Russell 2000</i>	5.2	19.7	-0.1	8.1	--		8.1	Dec-16
<i>eV US Small Cap Value Equity Net Rank</i>	30	52	96	51	--		77	Dec-16
Emerald Small Cap Growth	5.6	20.5	-1.2	8.1	9.2	46,580,277	10.3	Oct-98
<i>Russell 2000 Growth</i>	7.6	20.3	-2.7	7.4	7.9		7.8	Oct-98
<i>eV US Small Cap Growth Equity Net Rank</i>	69	34	49	66	58		60	Oct-98

# Pennsylvania Municipal Retirement System

## Performance Summary (Net)

As of March 31, 2024

	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	Market Value	Inception	Inception Date
<b>Global Equity Composite</b>	<b>5.3</b>	<b>11.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>167,398,879</b>	<b>-0.7</b>	<b>Dec-21</b>
Global Equity Policy Index	4.7	11.1	--	--	--		-1.1	Dec-21
InvMetrics Public DB Gbl Eq Net Rank	99	99	--	--	--		99	Dec-21
Rhumblin Global Min. Volatility	5.3	11.0	--	--	--	167,398,879	0.8	Dec-21
MSCI ACWI Minimum Volatility Index	4.7	11.1	--	--	--		0.5	Dec-21
MSCI ACWI	8.2	23.2	--	--	--		3.5	Dec-21
eV Global Low Volatility Equity Net Rank	74	72	--	--	--		79	Dec-21
<b>Non-U.S Equity Composite</b>	<b>5.4</b>	<b>12.1</b>	<b>1.4</b>	<b>6.8</b>	<b>5.3</b>	<b>617,504,237</b>	<b>7.2</b>	<b>May-12</b>
MSCI ACWI ex USA IMI	4.3	13.2	1.7	6.0	4.3		6.6	May-12
InvMetrics Public DB ex-US Eq Net Rank	19	69	59	31	18		22	May-12
SSGA MSCI World ex US	5.7	15.7	5.3	7.8	5.2	292,564,147	6.5	Apr-12
MSCI World ex USA	5.6	15.3	4.9	7.5	4.8		6.2	Apr-12
eV ACWI ex-US Large Cap Equity Net Rank	50	36	15	37	48		40	Apr-12
Hardman Johnston Int'l Equity	6.6	3.2	-3.3	6.5	6.5	106,736,686	7.5	Apr-12
MSCI EAFE	5.8	15.3	4.8	7.3	4.8		6.3	Apr-12
eV EAFE All Cap Equity Net Rank	32	98	95	59	12		22	Apr-12
Hudson Edge Int'l Equity	5.8	13.9	5.8	9.7	6.4	142,850,579	9.1	Feb-12
MSCI EAFE	5.8	15.3	4.8	7.3	4.8		6.7	Feb-12
eV EAFE All Cap Equity Net Rank	44	60	21	12	13		10	Feb-12
SSGA MSCI Emerging Markets Index	2.3	7.7	-5.2	2.1	2.8	75,222,415	6.3	Nov-08
MSCI Emerging Markets	2.4	8.2	-5.1	2.2	2.9		6.5	Nov-08
eV Emg Mkts Equity Net Rank	61	65	60	76	80		78	Nov-08

# Pennsylvania Municipal Retirement System

## Performance Summary (Net)

As of March 31, 2024

	3 Mo	1 Yr	3 Yrs	5 Yrs	10 Yrs	Market Value	Inception	Inception Date
<b>Real Assets Composite</b>	<b>1.6</b>	<b>-2.7</b>	<b>3.8</b>	<b>3.4</b>	<b>5.5</b>	<b>531,325,797</b>	<b>7.2</b>	<b>Apr-93</b>
<i>Real Assets Policy Index</i>	-1.0	-5.1	6.4	4.9	7.0		7.3	Apr-93
Forest Investment Associates	8.7	14.9	11.0	6.1	5.8	162,459,526	4.7	Mar-99
<i>NCREIF Timberland Property Index</i>	2.1	9.9	11.0	7.0	5.8		6.4	Mar-99
PRISA LP	-2.9	-12.4	2.3	2.8	6.1	55,825,241	5.9	Jan-86
<i>NFI-ODCE</i>	-2.6	-12.0	2.5	2.6	5.8		5.8	Jan-86
<i>InvMetrics Public DB Real Estate Priv Net Rank</i>	92	64	66	58	48		--	Jan-86
PRISA II	-2.4	-13.3	2.4	2.7	6.5	112,789,314	3.4	Jul-07
<i>NFI-ODCE</i>	-2.6	-12.0	2.5	2.6	5.8		4.0	Jul-07
<i>InvMetrics Public DB Real Estate Priv Net Rank</i>	63	70	60	66	34		88	Jul-07
PennMuni-Nuveen U.S. Real Estate Fund	0.0	-4.9	0.2	2.4	5.6	198,893,447	4.9	Dec-08
<i>NFI-ODCE</i>	-2.6	-12.0	2.5	2.6	5.8		4.8	Dec-08
<i>InvMetrics Public DB Real Estate Priv Net Rank</i>	3	4	94	70	72		94	Dec-08
N. Front Street (Nuveen)	0.0	-3.9	-10.3	-6.3	--	1,358,268	-7.9	Sep-16
<i>Consumer Price Index</i>	1.8	3.5	5.6	4.2	--		3.5	Sep-16
<b>Total Fixed Income Composite</b>	<b>-0.1</b>	<b>3.7</b>	<b>-2.0</b>	<b>0.7</b>	<b>1.7</b>	<b>881,355,963</b>	<b>5.6</b>	<b>Jan-86</b>
<i>Bloomberg US Aggregate TR</i>	-0.8	1.7	-2.5	0.4	1.5		5.6	Jan-86
<i>InvMetrics Public DB US Fix Inc Net Rank</i>	57	18	71	81	32		--	Jan-86
SSGA US Aggregate Bond Index	-0.7	1.7	-2.5	0.4	1.5	349,003,183	4.2	Apr-97
<i>Bloomberg US Aggregate TR</i>	-0.8	1.7	-2.5	0.4	1.5		4.2	Apr-97
<i>eV US Core Fixed Inc Net Rank</i>	84	79	79	86	79		78	Apr-97
Federated Hermes Core Aggregate Strategy	-0.6	1.8	--	--	--	352,475,467	0.8	Jul-22
<i>Bloomberg US Aggregate TR</i>	-0.8	1.7	--	--	--		0.9	Jul-22
<i>eV US Core Fixed Inc Net Rank</i>	66	75	--	--	--		80	Jul-22
Ares Global Multi-Asset Credit	2.2	12.4	--	--	--	179,877,312	12.8	Dec-22
<i>50% Bloomberg HY / 50% CSFB Lev Loans</i>	2.0	11.8	--	--	--		12.3	Dec-22
<i>eV US High Yield Fixed Inc Net Rank</i>	15	9	--	--	--		11	Dec-22
<b>Cash Composite</b>						<b>22,767,246</b>		

\*PennMuni-Nuveen and N. Front St. Values as of 12/31/23.

As of March 31, 2024

Investment Manager	Asset Class	Status	Reason
MFS Large Cap Value	US Stock Large Cap Value	In Compliance	---
Xponance S&P 500	US Stock Large Cap Core	In Compliance	---
Northern Trust S&P 500	US Stock Large Cap Core	In Compliance	---
Polen Focus Growth	US Stock Large Cap Growth	In Compliance	---
Northern Trust Dow Jones Completion Index	US Stock SMID Cap Core	In Compliance	---
Dana Inv. Advisors Small Cap Value	US Stock Small Cap Value	On Alert	Organizational Issues
Copeland Small Cap Dividend Growth	US Stock Small Cap Core	In Compliance	---
Emerald Small Cap Growth	US Stock Small Cap Growth	In Compliance	---
Rhumblin Global Min. Volatility	Global Stock Low Volatility	In Compliance	---
SSGA MSCI World ex US	Non-US Stock All Cap Core	In Compliance	---
Hardman Johnston Int'l Equity	Non-US Stock All Cap Core	In Compliance	---
HGK Int'l Equity	Non-US Stock All Cap Core	In Compliance	---
SSGA MSCI Emerging Markets Index	Non-US Stock Emerging	In Compliance	---
Forest Investment Associates	Real Assets - Timberland	In Compliance	---
PRISA LP	Real Estate	In Compliance	---
PRISA II	Real Estate	In Compliance	---
PennMuni-Nuveen U.S. Real Estate Fund	Real Estate	In Compliance	---
N. Front Street (Nuveen)	Real Estate	In Compliance	---
SSGA US Aggregate Bond Index	US Fixed Income Core	In Compliance	---
Federated Hermes Core Aggregate Strategy	US Fixed Income Core	In Compliance	---
Ares Global Multi-Asset Credit Fund	Opportunistic Credit	In Compliance	---

### Investment Manager Evaluation Terminology

The following terminology has been developed by Marquette Associates to facilitate efficient communication between the investment program's responsible parties. Each term signifies a particular status with the investment program.

**In Compliance** – Marquette has not been notified of any issues or changes to the investment manager that would materially impede upon its ability to execute the investment strategy or adhere to any applicable investment guidelines.

**Alert** – The investment manager has experienced a problem in performance (usually relative to a benchmark), a change in investment characteristics, an alteration in management style, ownership, or key investment professionals, and/or any other irregularities that may impede upon its ability to execute the investment strategy or adhere to any applicable investment guidelines.

**On Notice** – The investment manager has experienced continued concern with one or more Alert issues. Failure to improve upon stated issues within a certain time frame may justify termination.

**Termination** – The investment manager has been terminated and transition plans are in place.

**Policy Index History**

<b>Total Fund Composite</b>		
12/1/2022	Present	32.5% Russell 3000 / 5% Global Equity Policy Index / 17.5% MSCI ACWI ex USA IMI / 15% Real Assets Policy Index / 29% Bloomberg US Aggregate TR / 1% 91 Day T-Bills
1/1/2022	11/30/2022	32.5% Russell 3000 / 10% Global Equity Policy Index / 17.5% MSCI ACWI ex USA IMI / 15% Real Assets Policy Index / 24% Bloomberg US Aggregate TR / 1% 91 Day T-Bills
10/1/2020	12/31/2021	25% S&P 500 / 15% Russell 2000 / 15% MSCI EAFE / 10% MSCI Emerging Markets / 20% NFI-ODCE / 15% Bloomberg US Aggregate TR
<b>Total Equity Composite</b>		
10/1/2020	Present	MSCI ACWI IMI Net USD
<b>U.S. Equity Composite</b>		
1/1/2006	Present	Russell 3000
<b>Large Cap U.S. Equity Composite</b>		
1/1/1986	Present	S&P 500
<b>SMID Cap U.S. Equity Composite</b>		
1/1/1993	Present	Russell 2000
<b>Global Equity Composite</b>		
12/1/2022	Present	100% MSCI ACWI Minimum Volatility Index
1/1/2022	11/30/2022	50% MSCI ACWI / 50% MSCI ACWI Minimum Volatility Index
<b>Non-U.S Equity Composite</b>		
5/31/2012	Present	MSCI ACWI ex USA IMI
<b>Developed Non-U.S. Equity Composite</b>		
1/1/1993	Present	MSCI EAFE
<b>Emerging Markets Composite</b>		
1/1/2009	Present	MSCI Emerging Markets
<b>Real Assets Composite</b>		
4/1/2024	Present	0.00
1/1/2022	3/31/2024	66.67% NFI-ODCE / 33.33% NCREIF Timberland Property Index
4/1/1993	12/31/2021	100% NFI-ODCE
<b>Total Fixed Income Composite</b>		
1/31/1986	Present	Bloomberg US Aggregate TR
<b>Cash Composite</b>		
	Present	91 Day T-Bills

# Pennsylvania Municipal Retirement System

## Fee Summary

As of March 31, 2024

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
MFS Large Cap Value	0.35% of First 100.0 Mil, 0.33% Thereafter	4.4%	\$514,623	0.34%
Xponance S&P 500	0.02% of Assets	9.6%	\$65,288	0.02%
Northern Trust S&P 500	0.00% of Assets	9.5%	\$12,859	0.00%
Polen Focus Growth	0.50% of First 100.0 Mil, 0.40% Thereafter	3.7%	\$601,559	0.48%
Northern Trust Dow Jones Completion Index	0.02% of Assets	3.5%	\$18,080	0.02%
Copeland SMID Cap Dividend Growth	0.50% of Assets	1.7%	\$296,777	0.50%
Dana Inv. Advisors Small Cap Value	0.75% of First 50.0 Mil, 0.60% Thereafter	1.5%	\$383,020	0.75%
Emerald Small Cap Growth	0.60% of First 10.0 Mil, 0.55% of Next 5.0 Mil, 0.50% Thereafter	1.4%	\$245,401	0.53%
Rhumblin Global Min. Volatility	0.07% of Assets	4.9%	\$108,809	0.06%
SSGA MSCI World ex US	0.04% of Assets	8.6%	\$117,026	0.04%
Hardman Johnston Int'l Equity	0.75% of First 25.0 Mil, 0.60% Thereafter	3.1%	\$677,920	0.64%
Hudson Edge Int'l Equity	0.65% of Assets	4.2%	\$928,529	0.65%
SSGA MSCI Emerging Markets Index	0.05% of Assets	2.2%	\$37,611	0.05%
Forest Investment Associates	0.75% of Assets	4.8%	\$1,218,446	0.75%
PRISA LP	1.00% of First 25.0 Mil, 0.95% of Next 25.0 Mil, 0.85% of Next 50.0 Mil, 0.75% of Next 100.0 Mil, 0.70% of Next 100.0 Mil, 0.65% Thereafter	1.6%	\$537,015	0.96%

# Pennsylvania Municipal Retirement System

## Fee Summary

As of March 31, 2024

Account	Fee Schedule	% of Portfolio	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
PRISA II	1.20% of First 25.0 Mil, 1.15% of Next 25.0 Mil, 1.05% of Next 50.0 Mil, 0.95% of Next 100.0 Mil, 0.90% of Next 100.0 Mil, 0.85% Thereafter	3.3%	\$1,233,998	1.09%
PennMuni-Nuveen U.S. Real Estate Fund	0.85% of Assets	5.9%	\$1,690,594	0.85%
N. Front Street (Nuveen)	0.85% of Assets	0.0%	\$11,545	0.85%
SSGA US Aggregate Bond Index	0.02% of First 100.0 Mil, 0.01% of Next 300.0 Mil, 0.01% Thereafter	10.3%	\$44,900	0.01%
Federated Hermes Core Aggregate Strategy	0.12% of First 100.0 Mil, 0.10% of Next 400.0 Mil, 0.07% Thereafter	10.4%	\$372,475	0.11%
Ares Global Multi-Asset Credit	0.35% of Assets	5.3%	\$629,571	0.35%
<b>Investment Management Fee</b>		<b>100.0%</b>	<b>\$9,746,048</b>	<b>0.29%</b>

**Characteristics**

	Portfolio	MSCI ACWI IMI Net USD
Number of Holdings	5,982	9,026
Weighted Avg. Market Cap. (\$B)	377.5	473.1
Median Market Cap. (\$B)	6.0	2.1
Price To Earnings	21.3	21.0
Price To Book	3.5	3.5
Price To Sales	1.8	1.8
Return on Equity (%)	19.1	18.7
Yield (%)	1.9	2.0

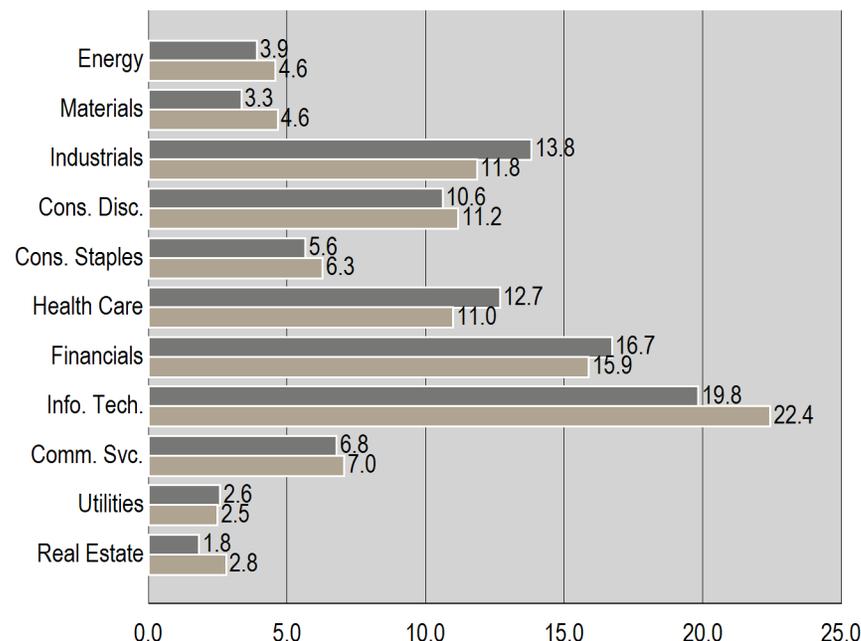
**Top Holdings**

MICROSOFT CORP	3.1%
APPLE INC	1.9%
AMAZON.COM INC	1.7%
NVIDIA CORPORATION	1.7%
ISHARES MSCI EMERGING MARKETS MIN VOL FACTOR ETF	1.0%
ALPHABET INC	0.9%
JPMORGAN CHASE & CO	0.8%
META PLATFORMS INC	0.8%
ALPHABET INC	0.8%
VISA INC	0.8%
<b>Total</b>	<b>13.4%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Total Equity Composite	13.9%	16.3%	65.2%	4.6%
MSCI ACWI IMI Net USD	15.6%	14.9%	69.5%	0.0%
<i>Weight Over/Under</i>	<i>-1.7%</i>	<i>1.4%</i>	<i>-4.3%</i>	<i>4.6%</i>

**Sector Allocation (%) vs MSCI ACWI IMI Net USD**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	2.9%	2.9%	0.0%
United States	64.3%	61.2%	3.1%
Europe Ex U.K.	14.8%	13.5%	1.3%
United Kingdom	3.6%	3.3%	0.3%
Pacific Basin Ex Japan	2.7%	3.0%	-0.3%
Japan	5.6%	6.1%	-0.5%
Emerging Markets	5.4%	9.5%	-4.1%
Other	0.7%	0.4%	0.3%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Characteristics**

	Portfolio	Russell 3000
Number of Holdings	3,747	2,949
Weighted Avg. Market Cap. (\$B)	547.0	704.8
Median Market Cap. (\$B)	2.6	2.7
Price To Earnings	24.6	25.2
Price To Book	4.1	4.3
Price To Sales	2.2	2.5
Return on Equity (%)	21.3	22.8
Yield (%)	1.4	1.4

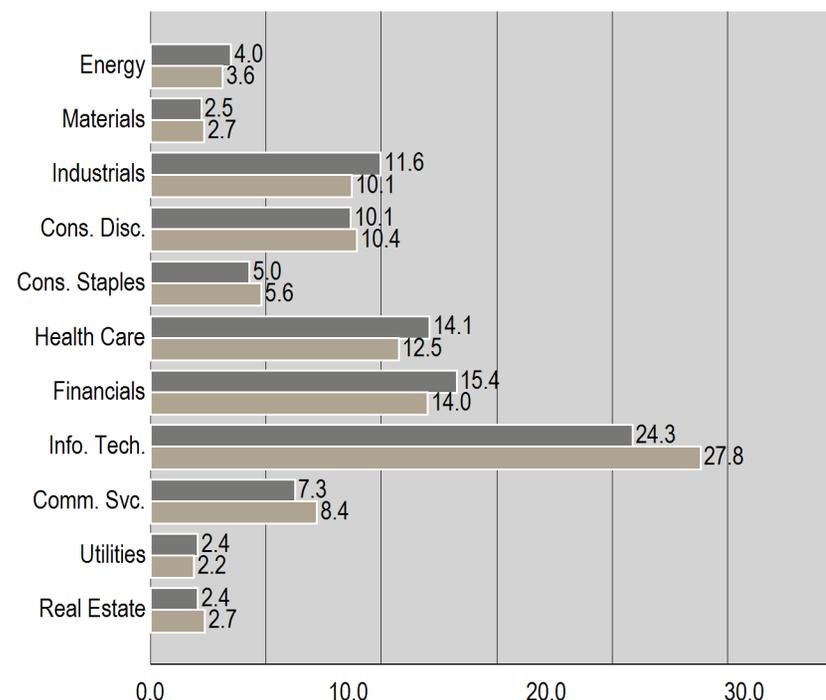
**Top Holdings**

MICROSOFT CORP	4.9%
APPLE INC	3.1%
AMAZON.COM INC	2.8%
NVIDIA CORPORATION	2.7%
ALPHABET INC	1.5%
JPMORGAN CHASE & CO	1.3%
META PLATFORMS INC	1.3%
ALPHABET INC	1.3%
VISA INC	1.2%
MASTERCARD INC	1.1%
<b>Total</b>	<b>21.2%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
U.S. Equity Composite	8.2%	21.4%	66.8%	3.5%
Russell 3000	5.5%	20.1%	74.3%	0.0%
<i>Weight Over/Under</i>	2.7%	1.3%	-7.5%	3.5%

**Sector Allocation (%) vs Russell 3000**



Common Holdings Matrix

	<i>MFS Large Cap Value</i>		<i>Xponance S&amp;P 500</i>		<i>Northern Trust S&amp;P 500</i>		<i>Polen Focus Growth</i>		<i>Northern Trust Dow Jones Completion Index</i>		<i>Copeland SMID Cap Dividend Growth</i>		<i>Smith, Graham &amp; Co Small Cap Value</i>		<i>Emerald Small Cap Growth</i>	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
MFS Large Cap Value	--	--	66	17	66	17	2	8	1	1	0	0	0	0	0	0
Xponance S&P 500	66	94	--	--	501	100	22	94	2	0	10	14	1	3	1	4
Northern Trust S&P 500	66	94	501	100	--	--	22	94	6	0	10	14	1	3	1	4
Polen Focus Growth	2	3	22	23	22	23	--	--	1	1	0	0	0	0	0	0
Northern Trust Dow Jones Completion Index	1	1	2	0	6	0	1	2	--	--	56	81	65	96	109	96
Copeland SMID Cap Dividend Growth	0	0	10	0	10	0	0	0	56	5	--	--	1	2	7	5
Smith, Graham & Co Small Cap Value	0	0	1	0	1	0	0	0	65	2	1	2	--	--	2	1
Emerald Small Cap Growth	0	0	1	0	1	0	0	0	109	5	7	9	2	2	--	--

**Characteristics**

	Portfolio	MSCI ACWI IMI Net USD
Number of Holdings	282	9,026
Weighted Avg. Market Cap. (\$B)	115.8	473.1
Median Market Cap. (\$B)	21.6	2.1
Price To Earnings	18.0	21.0
Price To Book	3.4	3.5
Price To Sales	1.2	1.8
Return on Equity (%)	20.6	18.7
Yield (%)	2.6	2.0

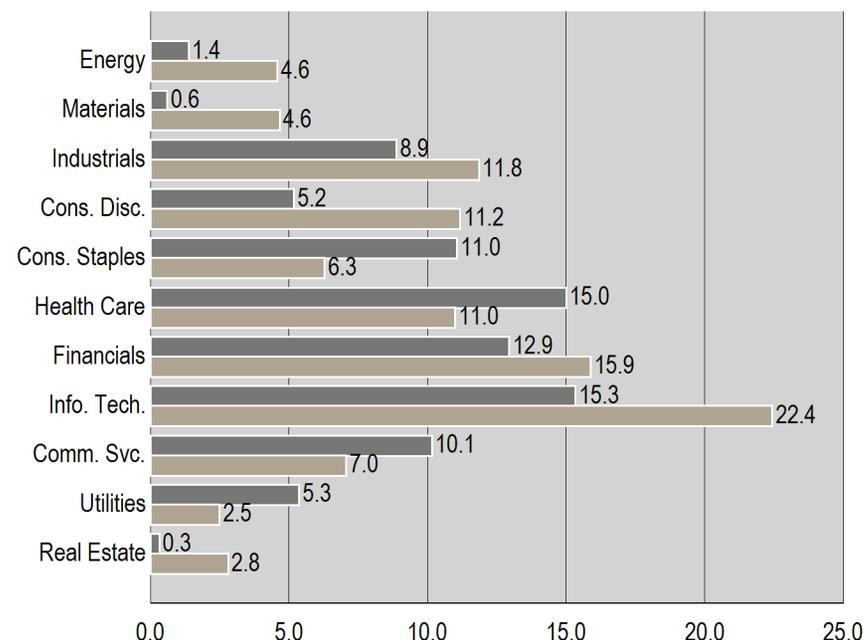
**Top Holdings**

ISHARES MSCI EMERGING MARKETS MIN VOL FACTOR ETF	12.3%
MERCK & CO INC	1.7%
WASTE MANAGEMENT INC.	1.6%
CISCO SYSTEMS INC	1.5%
MOTOROLA SOLUTIONS INC	1.4%
ROPER TECHNOLOGIES INC	1.4%
WALMART INC	1.4%
REPUBLIC SERVICES INC.	1.3%
PEPSICO INC	1.2%
T-MOBILE US INC	1.2%
<b>Total</b>	<b>25.0%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Global Equity Composite	18.8%	24.1%	56.4%	0.8%
MSCI ACWI IMI Net USD	15.6%	14.9%	69.5%	0.0%
<i>Weight Over/Under</i>	3.2%	9.2%	-13.2%	0.8%

**Sector Allocation (%) vs MSCI ACWI IMI Net USD**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	1.3%	2.9%	-1.6%
United States	69.9%	61.2%	8.7%
Europe Ex U.K.	5.9%	13.5%	-7.6%
United Kingdom	0.3%	3.3%	-3.0%
Pacific Basin Ex Japan	3.1%	3.0%	0.1%
Japan	10.3%	6.1%	4.2%
Emerging Markets	8.1%	9.5%	-1.4%
Other	1.1%	0.4%	0.7%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Characteristics**

	Portfolio	MSCI ACWI ex USA IMI
Number of Holdings	2,223	6,648
Weighted Avg. Market Cap. (\$B)	103.7	91.4
Median Market Cap. (\$B)	10.0	1.7
Price To Earnings	16.9	16.0
Price To Book	2.7	2.5
Price To Sales	1.3	1.2
Return on Equity (%)	14.8	13.8
Yield (%)	2.7	3.1

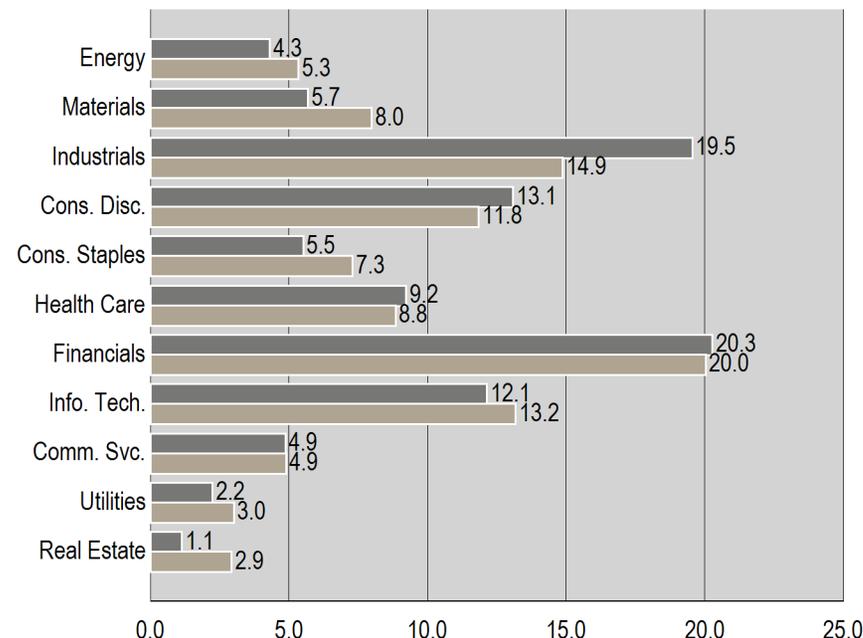
**Top Holdings**

RHEINMETALL	2.3%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.9%
NOVO NORDISK A/S	1.9%
ASML HOLDING NV	1.8%
SUZUKI MOTOR CORP	1.6%
LVMH MOET HENNESSY LOUIS VUITTON SE	1.4%
BAE SYSTEMS PLC	1.3%
ASTRAZENECA PLC	1.3%
SAMSUNG ELECTRONICS CO LTD	1.3%
AIRBUS SE	1.3%
<b>Total</b>	<b>16.2%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Non-U.S Equity Composite	9.4%	27.6%	55.2%	7.8%
MSCI ACWI ex USA IMI	26.3%	21.7%	52.0%	0.0%
<i>Weight Over/Under</i>	<i>-16.9%</i>	<i>5.9%</i>	<i>3.2%</i>	<i>7.8%</i>

**Sector Allocation (%) vs MSCI ACWI ex USA IMI**



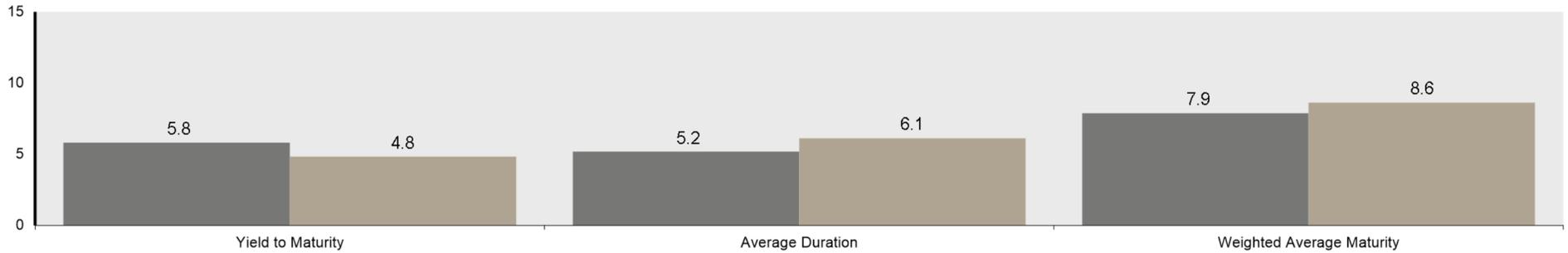
**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	8.9%	7.5%	1.4%
United States	0.7%	0.0%	0.7%
Europe Ex U.K.	40.9%	33.5%	7.4%
United Kingdom	9.5%	7.7%	1.8%
Pacific Basin Ex Japan	7.6%	8.0%	-0.4%
Japan	15.5%	16.6%	-1.0%
Emerging Markets	15.5%	25.9%	-10.3%
Other	1.4%	0.9%	0.5%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

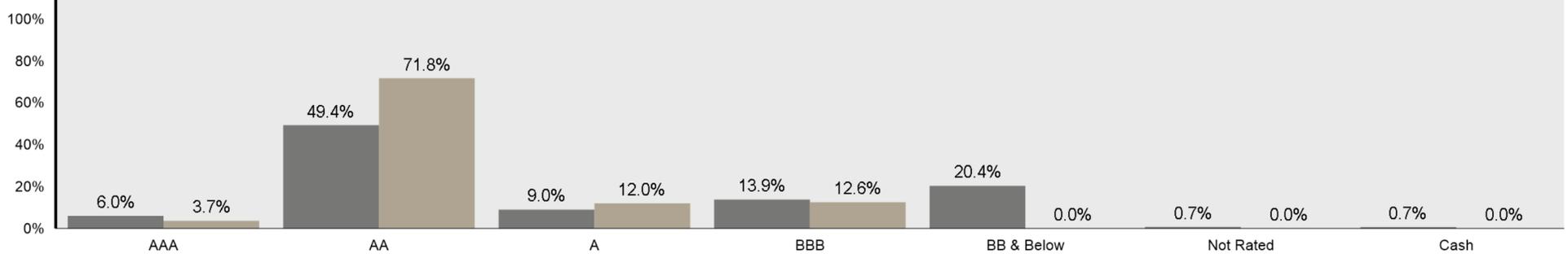
Common Holdings Matrix

	<i>SSGA MSCI World ex US</i>		<i>Hardman Johnston Int'l Equity</i>		<i>Hudson Edge Int'l Equity</i>		<i>SSGA MSCI Emerging Markets Index</i>	
	#	%	#	%	#	%	#	%
SSGA MSCI World ex US	--	--	18	74	27	79	2	0
Hardman Johnston Int'l Equity	18	9	--	--	4	12	3	8
Hudson Edge Int'l Equity	27	4	4	16	--	--	3	4
SSGA MSCI Emerging Markets Index	2	0	3	12	3	8	--	--

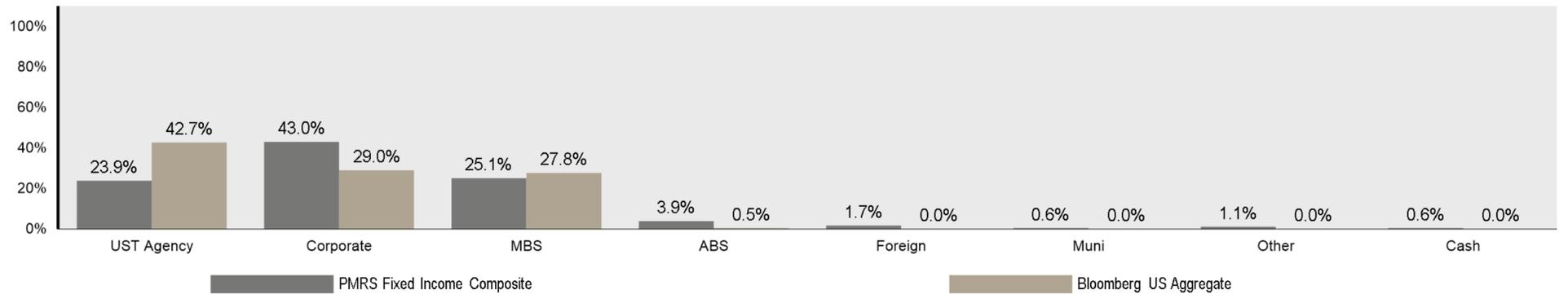
Yield to Maturity



Credit Quality



US Sector



[Page Intentionally Left Blank]

# Investment Managers



As of March 31, 2024

**Manager Summary:** Active strategy holding diversified portfolio of 70-80 stocks. Stock selection focuses on bottom-up company analysis seeking to identify high quality undervalued stocks that have durable franchises, significant free cash flow, solid balance sheets and strong management teams.

**Characteristics**

	Portfolio	Russell 1000 Value
Number of Holdings	73	845
Weighted Avg. Market Cap. (\$B)	144.1	161.7
Median Market Cap. (\$B)	91.6	14.2
Price To Earnings	21.8	19.0
Price To Book	3.2	2.6
Price To Sales	2.2	1.8
Return on Equity (%)	20.4	15.0
Yield (%)	2.2	2.2

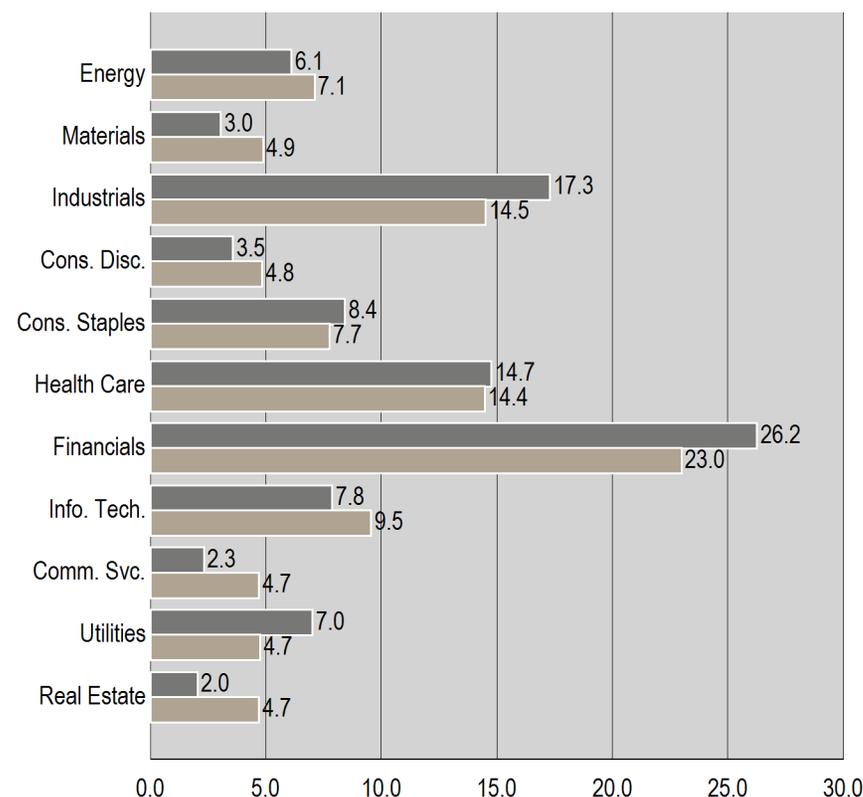
**Top Holdings**

JPMORGAN CHASE & CO	4.9%
PROGRESSIVE CORP (THE)	3.4%
THE CIGNA GROUP	3.2%
CONOCOPHILLIPS	2.8%
MCKESSON CORP	2.5%
MARSH & MCLENNAN COMPANIES INC	2.4%
COMCAST CORP	2.3%
AON PLC	2.3%
LOWE'S COS INC	2.2%
JOHNSON & JOHNSON	2.1%
<b>Total</b>	<b>28.1%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
MFS Large Cap Value	0.0%	10.7%	89.3%
Russell 1000 Value	2.9%	31.3%	65.8%
<i>Weight Over/Under</i>	<i>-2.9%</i>	<i>-20.7%</i>	<i>23.6%</i>

**Sector Allocation (%) vs Russell 1000 Value**



**Manager Summary:** Passive strategy that seeks to replicate the return of the Standard & Poor's 500 index. This strategy is a low-cost option to gain diversified exposure to U.S. domiciled companies by owning the 500 largest companies by market capitalization in the U.S.

**Characteristics**

	Portfolio	S&P 500
Number of Holdings	504	503
Weighted Avg. Market Cap. (\$B)	797.8	795.7
Median Market Cap. (\$B)	35.1	34.8
Price To Earnings	25.9	25.7
Price To Book	4.6	4.6
Price To Sales	3.0	2.9
Return on Equity (%)	28.6	28.6
Yield (%)	1.4	1.4

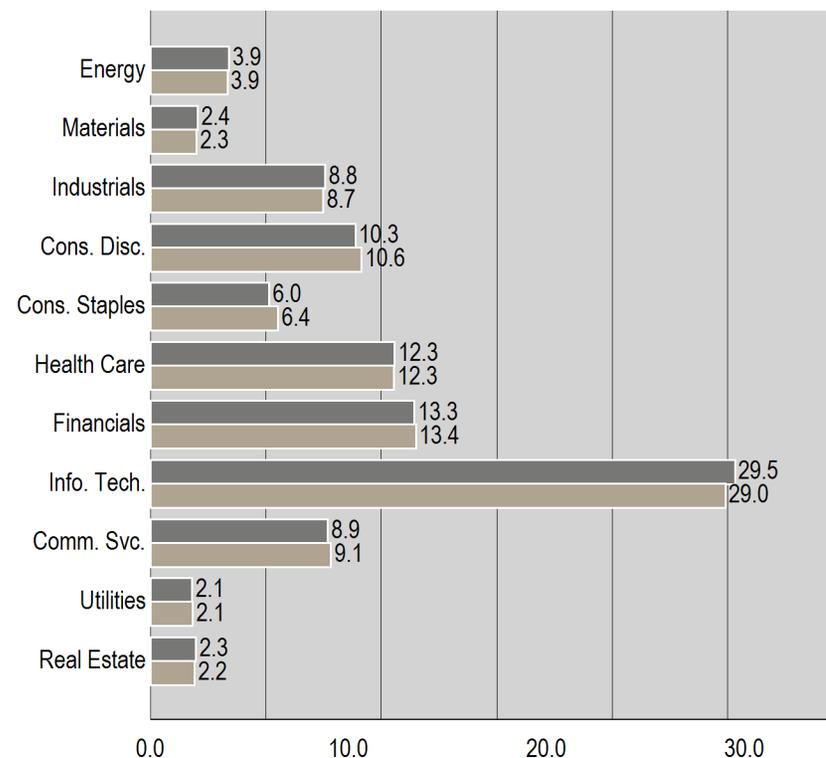
**Top Holdings**

MICROSOFT CORP	7.1%
APPLE INC	5.6%
NVIDIA CORPORATION	5.1%
AMAZON.COM INC	3.7%
META PLATFORMS INC	2.4%
ALPHABET INC	2.0%
BERKSHIRE HATHAWAY INC	1.7%
ALPHABET INC	1.7%
ELI LILLY AND CO	1.4%
BROADCOM INC	1.3%
<b>Total</b>	<b>32.1%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Xpounce S&P 500	0.0%	14.4%	85.6%
S&P 500	0.5%	14.2%	85.3%
<i>Weight Over/Under</i>	<i>-0.5%</i>	<i>0.2%</i>	<i>0.3%</i>

**Sector Allocation (%) vs S&P 500**



**Manager Summary:** Passive strategy that seeks to replicate the return of the Standard & Poor’s 500 index. This strategy is a low-cost option to gain diversified exposure to U.S. domiciled companies by owning the 500 largest companies by market capitalization in the U.S.

**Characteristics**

	Portfolio	S&P 500
Number of Holdings	505	503
Weighted Avg. Market Cap. (\$B)	798.1	795.7
Median Market Cap. (\$B)	34.3	34.8
Price To Earnings	25.9	25.7
Price To Book	4.6	4.6
Price To Sales	3.0	2.9
Return on Equity (%)	28.6	28.6
Yield (%)	1.4	1.4

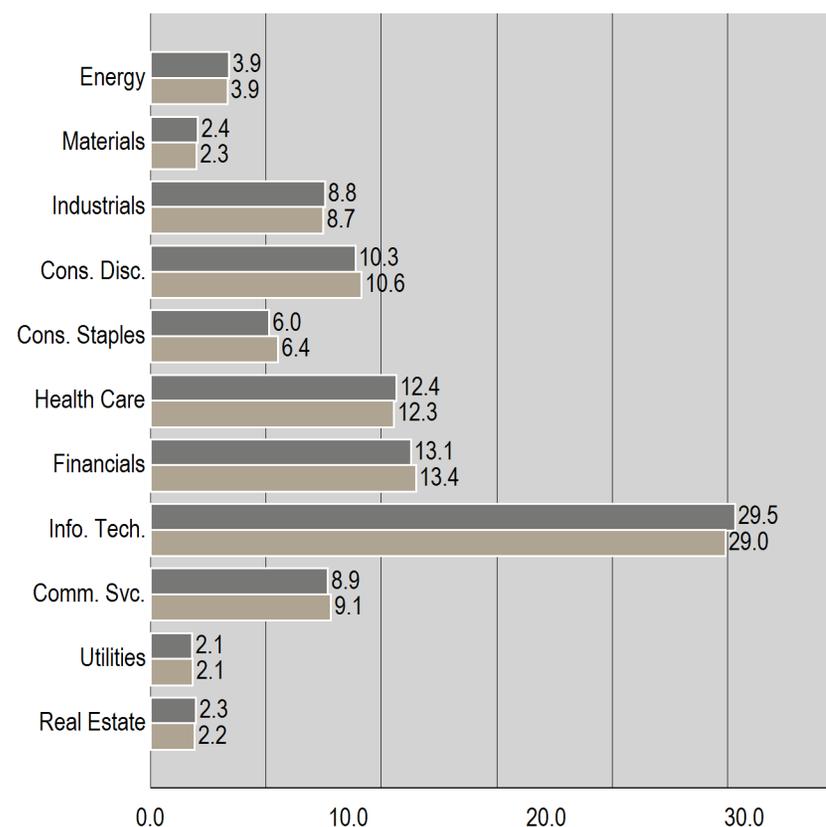
**Top Holdings**

MICROSOFT CORP	7.1%
APPLE INC	5.6%
NVIDIA CORPORATION	5.1%
AMAZON.COM INC	3.7%
META PLATFORMS INC	2.4%
ALPHABET INC	2.0%
BERKSHIRE HATHAWAY INC	1.7%
ALPHABET INC	1.7%
ELI LILLY AND CO	1.4%
BROADCOM INC	1.3%
<b>Total</b>	<b>32.1%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Northern Trust S&P 500	0.0%	14.4%	85.6%
S&P 500	0.5%	14.2%	85.3%
<i>Weight Over/Under</i>	<i>-0.5%</i>	<i>0.2%</i>	<i>0.3%</i>

**Sector Allocation (%) vs S&P 500**



**Manager Summary:** Concentrated U.S. large cap growth portfolio with 20-30 names. Investment process begins with negative screening, only including names with robust financials, strong management and attractive earnings growth potential. Then team of generalists perform bottom-up fundamental analysis reviewing industry dynamics, competitive advantage, free cash flow modeling, meet with mgmt. and perform worst case scenarios. High active share. Position limit: 50% limit on sector exposure. Low portfolio turnover (30%).

**Characteristics**

	Portfolio	Russell 1000 Growth
Number of Holdings	25	440
Weighted Avg. Market Cap. (\$B)	818.3	1,215.3
Median Market Cap. (\$B)	226.1	21.7
Price To Earnings	40.8	35.6
Price To Book	9.8	11.6
Price To Sales	6.9	5.0
Return on Equity (%)	36.7	44.6
Yield (%)	0.5	0.7

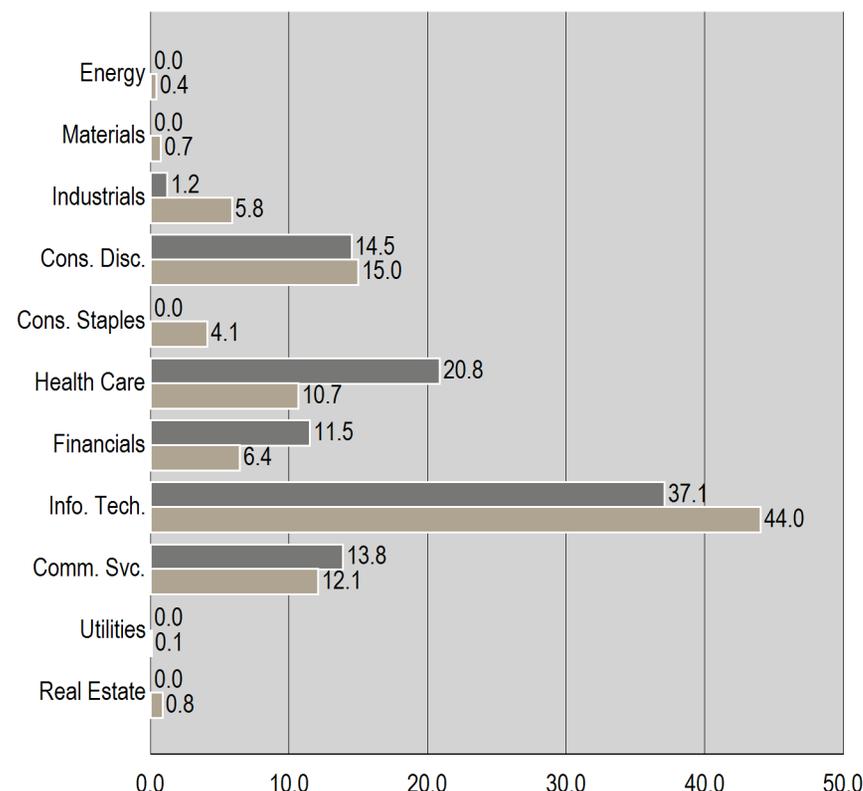
**Top Holdings**

MICROSOFT CORP	10.6%
AMAZON.COM INC	7.5%
NETFLIX INC	6.4%
VISA INC	6.0%
SALESFORCE INC	6.0%
MASTERCARD INC	5.6%
ALPHABET INC	5.6%
SERVICENOW INC	5.4%
THERMO FISHER SCIENTIFIC INC	5.1%
AIRBNB INC	4.7%
<b>Total</b>	<b>62.9%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Polen Focus Growth	0.0%	5.0%	95.0%
Russell 1000 Growth	1.5%	9.7%	88.8%
<i>Weight Over/Under</i>	-1.5%	-4.8%	6.3%

**Sector Allocation (%) vs Russell 1000 Growth**



**Manager Summary:** The fund employs a replication technique in order to approximate the risk and return characteristics of the Dow Jones U.S. Completion Total Stock Market Index. This Index is commonly used to represent the small and mid cap segments of the U.S. equity market. The 'completion' index is a sub-set of the DJ US Total Stock Market Index that excludes components of the S&P500.

**Characteristics**

	Portfolio	Dow Jones U.S. Completion Total Stock Market
Number of Holdings	3,196	3,588
Weighted Avg. Market Cap. (\$B)	12.6	12.6
Median Market Cap. (\$B)	0.8	0.7
Price To Earnings	19.6	19.5
Price To Book	2.9	2.9
Price To Sales	1.6	1.6
Return on Equity (%)	6.7	6.5
Yield (%)	1.3	1.3

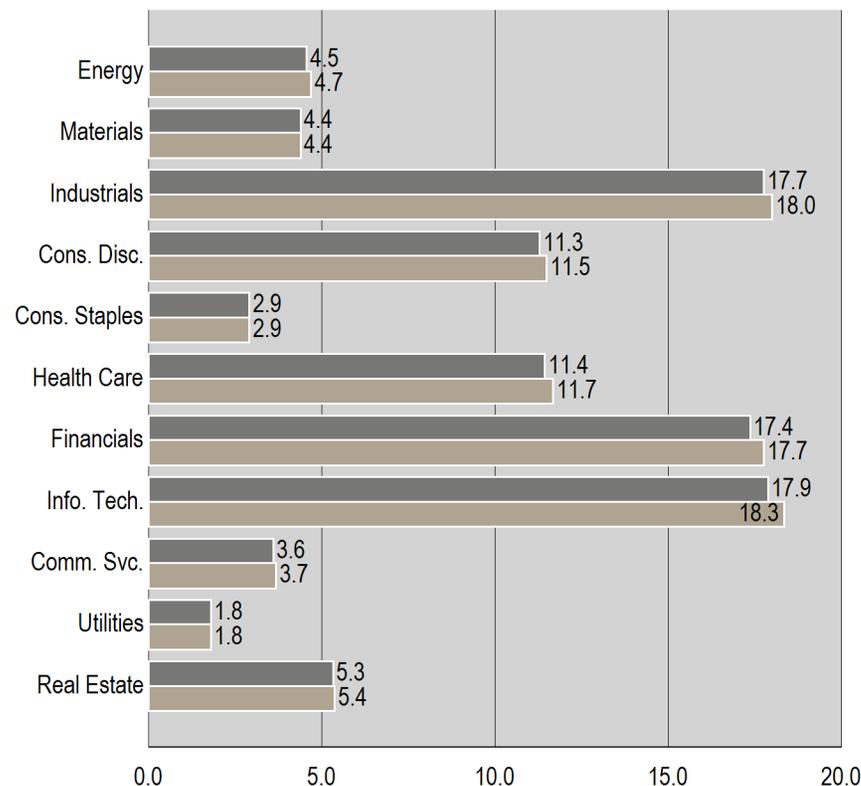
**Top Holdings**

CROWDSTRIKE HOLDINGS INC	1.1%
KKR & CO INC	1.0%
MARVELL TECHNOLOGY INC	0.9%
WORKDAY INC	0.8%
SNOWFLAKE INC	0.8%
APOLLO GLOBAL MANAGEMENT INC	0.7%
BLOCK INC	0.7%
COINBASE GLOBAL INC CL A	0.7%
FERGUSON (OTC)	0.6%
PALANTIR TECHNOLOGIES INC CL A CL A	0.6%
<b>Total</b>	<b>7.9%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Northern Trust Dow Jones Completion Index	28.3%	65.9%	5.9%
Dow Jones U.S. Completion Total Stock Market	37.1%	57.7%	5.1%
<i>Weight Over/Under</i>	-8.9%	8.1%	0.7%

**Sector Allocation (%) vs Dow Jones U.S. Completion Total Stock Market**



As of March 31, 2024

**Manager Summary:** Minority-owned investment management firm with fundamental bottom-up process. Stocks are first screened based on earnings, book value, and cash flow criteria with fundamental analysis performed on the top 20% within each respective sector. Sell candidates are companies that have dropped to the bottom 40% of their screen. The strategy holds 50-75 positions and is typically within plus/minus 5% of index sector weightings.

**Characteristics**

	Portfolio	Russell 2000 Value
Number of Holdings	68	1,419
Weighted Avg. Market Cap. (\$B)	3.5	3.0
Median Market Cap. (\$B)	1.7	0.9
Price To Earnings	13.6	13.6
Price To Book	1.9	1.7
Price To Sales	0.6	1.0
Return on Equity (%)	9.6	4.2
Yield (%)	1.5	2.3

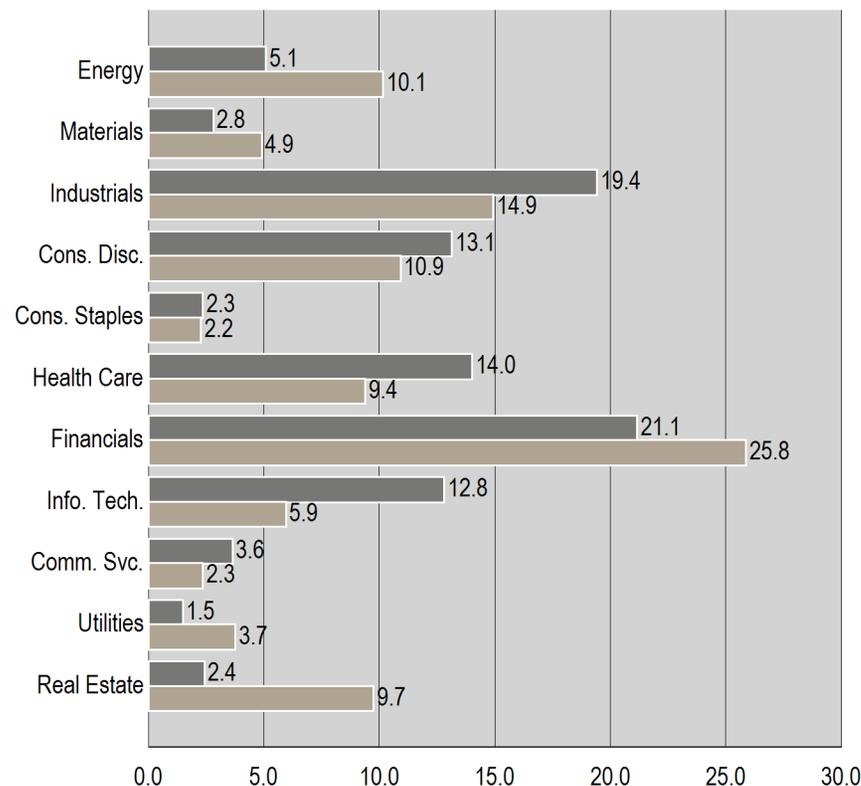
**Top Holdings**

KOPPERS HOLDINGS INC	2.8%
DYCOM INDUSTRIES INC.	2.8%
HIBBETT INC	2.8%
GRIFFON CORP.	2.8%
DECKERS OUTDOOR CORP	2.7%
ULTRA CLEAN HOLDINGS INC	2.4%
OWENS & MINOR INC.	2.4%
SELECTIVE INSURANCE GROUP INC	2.4%
SCANSOURCE INC	2.3%
GROUP 1 AUTOMOTIVE INC	2.3%
<b>Total</b>	<b>25.8%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Dana Inv. Advisors Small Cap Value	77.8%	22.2%	0.0%
Russell 2000 Value	77.9%	22.1%	0.0%
<i>Weight Over/Under</i>	<i>-0.1%</i>	<i>0.1%</i>	<i>0.0%</i>

**Sector Allocation (%) vs Russell 2000 Value**



**Manager Summary:** A bottom-up fundamental manager who views dividend growth as a litmus test for earnings quality and focuses on attributes such as dividend coverage, cash flow strength, earnings growth, and return on capital. Fundamental research is focused on identifying companies with strong competitive positions that support steadily rising dividends. Strategy invests in larger, more established small cap firms while tending to underweight the lower market cap ranges. The strategy seeks sector diversification with 45-60 holdings.

**Characteristics**

	Portfolio	Russell 2500
Number of Holdings	70	2,442
Weighted Avg. Market Cap. (\$B)	9.0	8.6
Median Market Cap. (\$B)	7.1	1.7
Price To Earnings	21.0	18.9
Price To Book	3.6	2.7
Price To Sales	2.0	1.5
Return on Equity (%)	19.5	10.2
Yield (%)	1.7	1.5

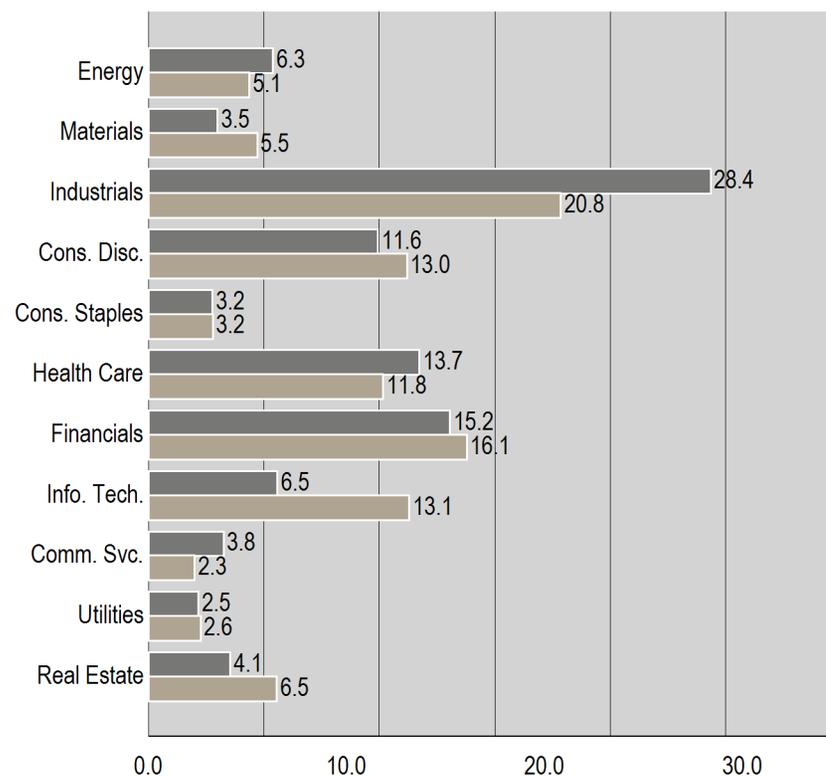
**Top Holdings**

ENSIGN GROUP INC (THE)	2.2%
RELIANCE INC	2.2%
KINSALE CAPITAL GROUP INC	2.2%
DICK'S SPORTING GOODS INC.	2.1%
WINGSTOP INC	2.0%
ENCOMPASS HEALTH CORP	1.9%
CARLISLE COS INC	1.9%
CASEY'S GENERAL STORES INC.	1.9%
AIR LEASE CORP	1.8%
STANDEX INTERNATIONAL CORP	1.8%
<b>Total</b>	<b>20.0%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Copeland SMID Cap Dividend Growth	18.5%	81.5%	0.0%
Russell 2500	35.1%	64.0%	0.8%
<i>Weight Over/Under</i>	<i>-16.6%</i>	<i>17.4%</i>	<i>-0.8%</i>

**Sector Allocation (%) vs Russell 2500**



As of March 31, 2024

**Manager Summary:** Core growth strategy, fundamental, bottom-up process seeking companies with a competitive advantage, market leadership, growth rates exceeding peers, differentiated growth drivers, and low research coverage. Analysts work across the market cap spectrum supporting small, mid, and all-cap strategies with coverage of dynamic sectors. The strategy holds 110-125 companies and portfolio construction limits of no more than 15% in any one industry group.

**Characteristics**

	Portfolio	Russell 2000 Growth
Number of Holdings	114	1,064
Weighted Avg. Market Cap. (\$B)	6.8	7.0
Median Market Cap. (\$B)	3.4	1.4
Price To Earnings	26.8	24.9
Price To Book	4.6	4.3
Price To Sales	2.8	2.0
Return on Equity (%)	-3.4	6.2
Yield (%)	0.4	0.6

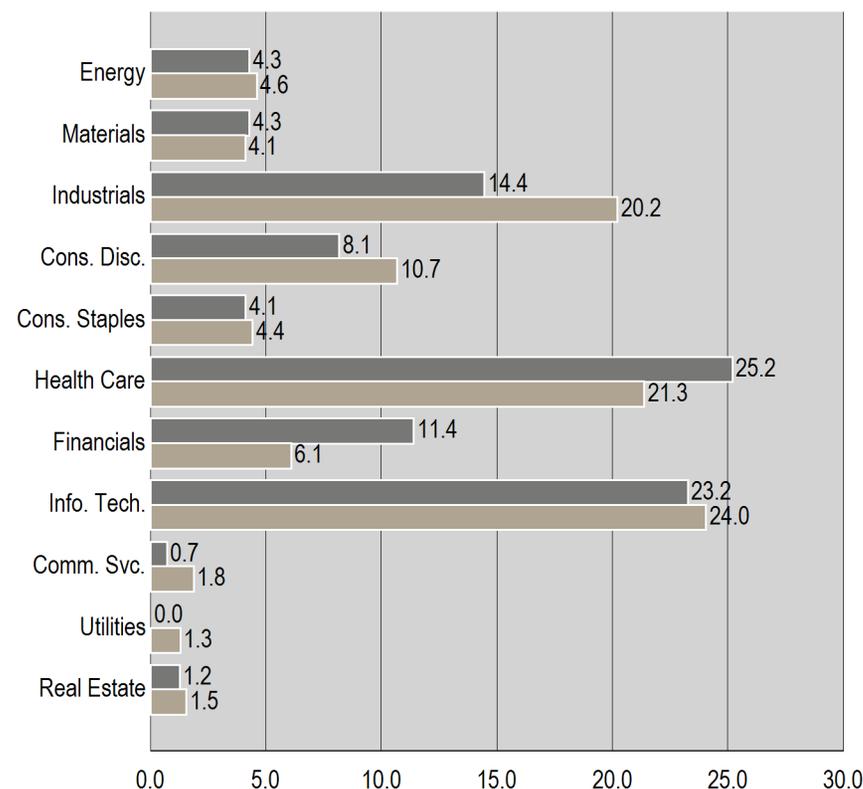
**Top Holdings**

SUPER MICRO COMPUTER INC	3.9%
FRESHPET INC	2.7%
FTAI AVIATION LTD	2.5%
VARONIS SYSTEMS INC	2.0%
CARPENTER TECHNOLOGY CORP	1.9%
TENABLE HOLDINGS INC	1.7%
CHART INDUSTRIES INC	1.7%
LIVANOVA PLC	1.6%
CHURCHILL DOWNS INC	1.6%
BLUEPRINT MEDICINES CORP	1.6%
<b>Total</b>	<b>21.2%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap
Emerald Small Cap Growth	51.6%	43.8%	4.5%
Russell 2000 Growth	56.8%	39.4%	3.8%
<i>Weight Over/Under</i>	<i>-5.2%</i>	<i>4.5%</i>	<i>0.7%</i>

**Sector Allocation (%) vs Russell 2000 Growth**



**Manager Summary:** The fund invests primarily in U.S. and foreign stocks that are expected to minimize volatility relative to the global equity market. To reduce volatility, the fund will consider stocks' risk and diversification characteristics and seek to hedge away most of the currency exposure resulting from its foreign stock holdings.

**Characteristics**

	Portfolio	MSCI ACWI
Number of Holdings	282	2,841
Weighted Avg. Market Cap. (\$B)	115.8	527.0
Median Market Cap. (\$B)	21.6	14.1
Price To Earnings	18.0	21.6
Price To Book	3.4	3.7
Price To Sales	1.2	2.0
Return on Equity (%)	20.6	21.6
Yield (%)	2.6	2.0

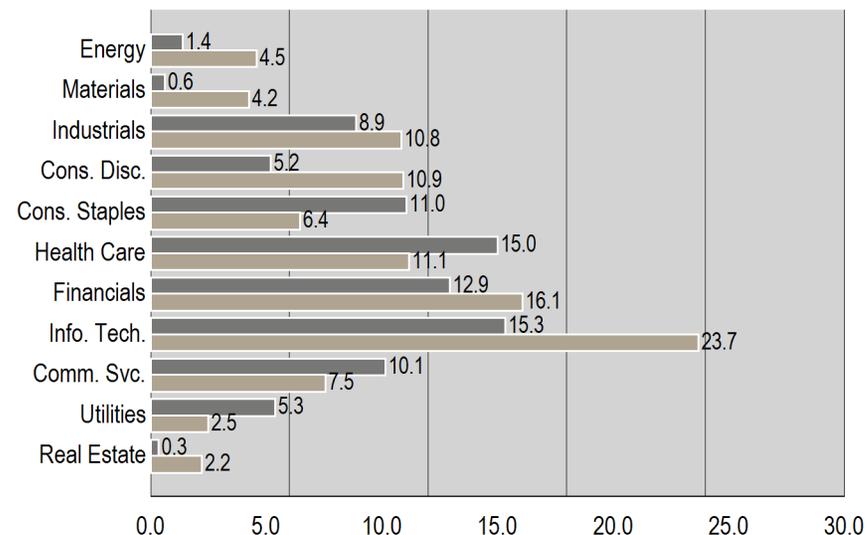
**Top Holdings**

ISHARES MSCI EMERGING MARKETS MIN VOL FACTOR ETF	12.3%
MERCK & CO INC	1.7%
WASTE MANAGEMENT INC.	1.6%
CISCO SYSTEMS INC	1.5%
MOTOROLA SOLUTIONS INC	1.4%
ROPER TECHNOLOGIES INC	1.4%
WALMART INC	1.4%
REPUBLIC SERVICES INC.	1.3%
PEPSICO INC	1.2%
T-MOBILE US INC	1.2%
<b>Total</b>	<b>25.0%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Rhumblin Global Min. Volatility	18.8%	24.1%	56.4%	0.8%
MSCI ACWI	6.2%	15.8%	78.1%	0.0%
<i>Weight Over/Under</i>	<i>12.6%</i>	<i>8.3%</i>	<i>-21.7%</i>	<i>0.8%</i>

**Sector Allocation (%) vs MSCI ACWI**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	1.3%	2.9%	-1.6%
United States	69.9%	62.2%	7.7%
Europe Ex U.K.	5.9%	13.9%	-8.0%
United Kingdom	0.3%	3.2%	-2.9%
Pacific Basin Ex Japan	3.1%	2.8%	0.3%
Japan	10.3%	5.5%	4.8%
Emerging Markets	8.1%	9.1%	-1.0%
Other	1.1%	0.3%	0.7%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Manager Summary:** Passive strategy that seeks to replicate the returns of the MSCI ACWI ex US index. This strategy is a low-cost option to gain diversified exposure to internationally based companies.

**Characteristics**

	Portfolio	MSCI World ex USA
Number of Holdings	878	855
Weighted Avg. Market Cap. (\$B)	92.3	95.3
Median Market Cap. (\$B)	11.9	14.1
Price To Earnings	16.7	16.6
Price To Book	2.5	2.6
Price To Sales	1.4	1.4
Return on Equity (%)	14.3	14.5
Yield (%)	3.1	3.1

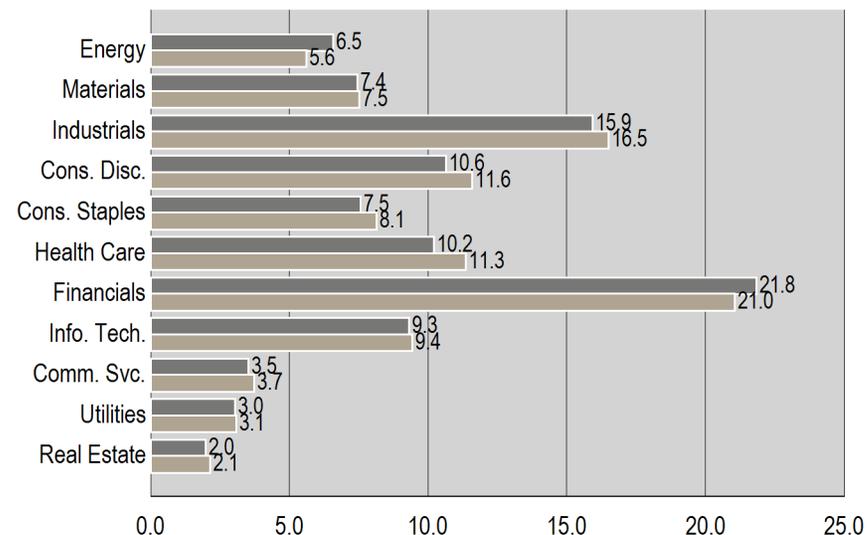
**Top Holdings**

NOVO NORDISK A/S	2.0%
ASML HOLDING NV	1.9%
NESTLE SA, CHAM UND VEVEY	1.4%
TOYOTA MOTOR CORP	1.3%
ROYAL BANK OF CANADA	1.3%
LVMH MOET HENNESSY LOUIS VUITTON SE	1.2%
SHELL PLC	1.0%
ASTRAZENECA PLC	1.0%
SAP SE	1.0%
TORONTO-DOMINION BANK (THE)	1.0%
<b>Total</b>	<b>13.0%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
SSGA MSCI World ex US	7.6%	24.6%	61.6%	6.2%
MSCI World ex USA	9.2%	25.2%	65.7%	0.0%
<i>Weight Over/Under</i>	-1.6%	-0.6%	-4.0%	6.2%

**Sector Allocation (%) vs MSCI World ex USA**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	17.7%	10.5%	7.1%
United States	0.6%	0.0%	0.6%
Europe Ex U.K.	43.8%	48.2%	-4.3%
United Kingdom	9.3%	10.3%	-1.0%
Pacific Basin Ex Japan	8.3%	9.1%	-0.8%
Japan	19.6%	21.3%	-1.7%
Emerging Markets	0.0%	0.0%	0.0%
Other	0.7%	0.6%	0.0%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Manager Summary:** Concentrated portfolio (20-30 names). Utilizes fundamental research invests in quality companies with 10% EPS growth and market leaders, invest at attractive valuation. Turnover is between 20-30%. Maximum position is 5%. Given the concentrated nature of the portfolio, high idiosyncratic risk in the portfolio and sizable tracking error. High active share (around 90-95%). No currency hedge.

**Characteristics**

	Portfolio	MSCI EAFE
Number of Holdings	29	768
Weighted Avg. Market Cap. (\$B)	158.7	99.8
Median Market Cap. (\$B)	75.8	13.8
Price To Earnings	22.9	16.4
Price To Book	4.0	2.7
Price To Sales	1.5	1.3
Return on Equity (%)	21.7	14.8
Yield (%)	1.5	3.2

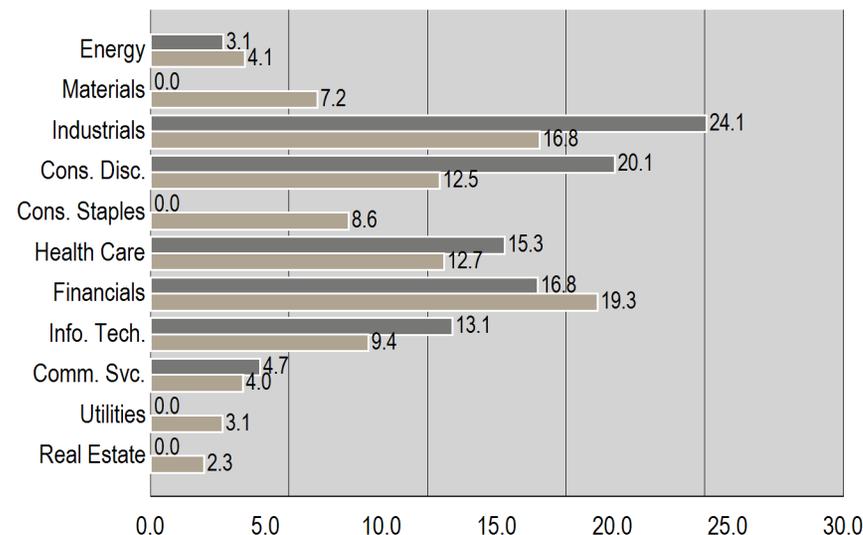
**Top Holdings**

RHEINMETALL	6.2%
AIRBUS SE	5.8%
NOVO NORDISK A/S	5.5%
SAFRAN SA	5.4%
MERCADOLIBRE INC	5.2%
ASML HOLDING NV	5.1%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	5.0%
DAI-ICHI LIFE HOLDINGS INC	5.0%
LVMH MOET HENNESSY LOUIS VUITTON SE	5.0%
DEUTSCHE TELEKOM AG	4.9%
<b>Total</b>	<b>53.1%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Hardman Johnston Int'l Equity	10.7%	23.1%	57.3%	8.9%
MSCI EAFE	9.1%	24.8%	66.0%	0.0%
<i>Weight Over/Under</i>	1.5%	-1.8%	-8.7%	8.9%

**Sector Allocation (%) vs MSCI EAFE**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	0.0%	0.0%
United States	0.0%	0.0%	0.0%
Europe Ex U.K.	53.6%	53.8%	-0.2%
United Kingdom	10.2%	11.5%	-1.3%
Pacific Basin Ex Japan	5.7%	10.2%	-4.4%
Japan	15.2%	23.8%	-8.6%
Emerging Markets	10.0%	0.0%	10.0%
Other	5.2%	0.7%	4.5%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Manager Summary:** Bottom-up fundamental manager looking for businesses that are undergoing structural change. Analysts are generalists who are unconstrained in their candidates. Looking for upside over a time horizon of 2-3 years through assessing and predicting earnings estimates. Concentrated portfolio: 25-35 names equally weighted with a max of 5% initial allocation. Sector and countries limits of 30%. Turnover is roughly 30-40%.

**Characteristics**

	Portfolio	MSCI EAFE
Number of Holdings	34	768
Weighted Avg. Market Cap. (\$B)	68.8	99.8
Median Market Cap. (\$B)	28.5	13.8
Price To Earnings	16.9	16.4
Price To Book	2.5	2.7
Price To Sales	2.0	1.3
Return on Equity (%)	12.7	14.8
Yield (%)	2.8	3.2

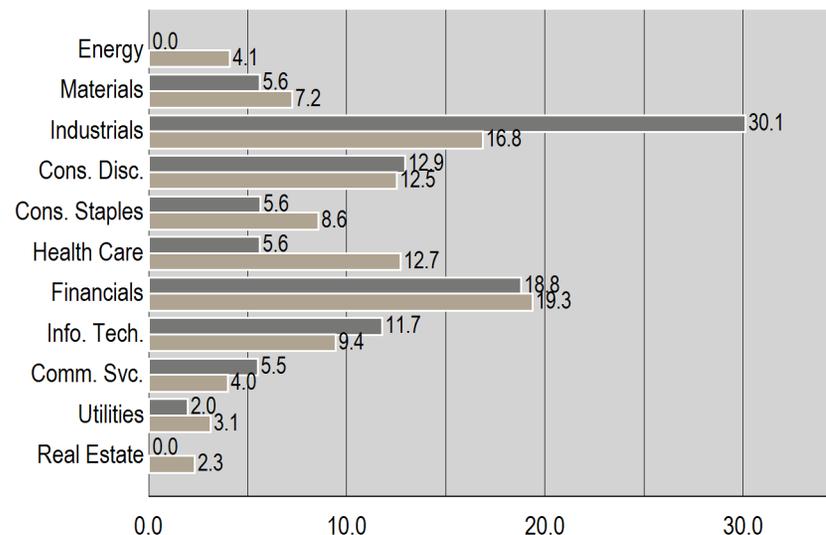
**Top Holdings**

BAE SYSTEMS PLC	5.3%
RHEINMETALL	5.2%
THALES SA	4.1%
VESTAS WIND SYSTEMS A/S	3.8%
RYANAIR HOLDINGS PLC	3.7%
SAMSUNG ELECTRONICS CO LTD	3.7%
ICON PLC	3.5%
GETLINK SE	3.4%
DEUTSCHE BOERSE AG	3.4%
KOMATSU LTD	3.3%
<b>Total</b>	<b>39.4%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
Hudson Edge Int'l Equity	6.5%	38.4%	44.5%	10.6%
MSCI EAFE	9.1%	24.8%	66.0%	0.0%
<i>Weight Over/Under</i>	-2.6%	13.6%	-21.6%	10.6%

**Sector Allocation (%) vs MSCI EAFE**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	2.4%	0.0%	2.4%
United States	0.0%	0.0%	0.0%
Europe Ex U.K.	46.5%	53.8%	-7.3%
United Kingdom	14.5%	11.5%	3.0%
Pacific Basin Ex Japan	9.3%	10.2%	-0.9%
Japan	15.6%	23.8%	-8.2%
Emerging Markets	11.7%	0.0%	11.7%
Other	0.0%	0.7%	-0.7%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Manager Summary:** Passive strategy that seeks to replicate the return of the MSCI Emerging Markets index. This strategy is a low-cost option to gain diversified exposure to emerging market based companies.

**Characteristics**

	Portfolio	MSCI Emerging Markets
Number of Holdings	1,337	1,376
Weighted Avg. Market Cap. (\$B)	134.3	133.5
Median Market Cap. (\$B)	7.8	7.8
Price To Earnings	14.8	15.0
Price To Book	2.6	2.6
Price To Sales	1.1	1.2
Return on Equity (%)	13.9	13.9
Yield (%)	3.0	3.0

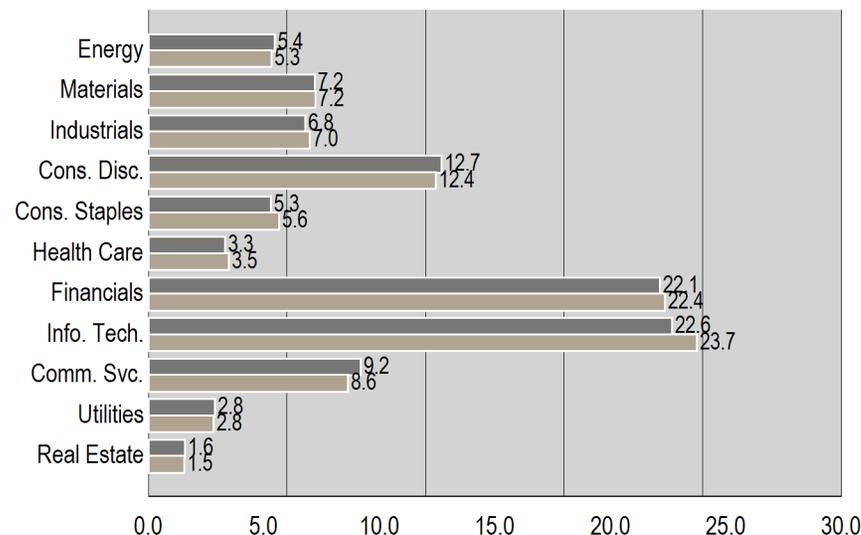
**Top Holdings**

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	8.4%
TENCENT HOLDINGS LTD	4.1%
SAMSUNG ELECTRONICS CO LTD	3.8%
ALIBABA GROUP HOLDING LTD	2.2%
RELIANCE INDUSTRIES LTD	1.5%
PDD HOLDINGS INC	1.1%
ICICI BANK	1.0%
MEITUAN	1.0%
SK HYNIX INC	1.0%
CHINA CONSTRUCTION BANK CORP	0.9%
<b>Total</b>	<b>24.9%</b>

**Market Capitalization**

	Small Cap	Mid Cap	Large Cap	Unclassified
SSGA MSCI Emerging Markets Index	6.1%	25.6%	60.9%	7.4%
MSCI Emerging Markets	14.4%	25.6%	60.1%	0.0%
<i>Weight Over/Under</i>	-8.3%	0.0%	0.8%	7.4%

**Sector Allocation (%) vs MSCI Emerging Markets**



**Region Allocation Summary**

Region	% of Total	% of Bench	% Diff
North America ex U.S.	0.0%	0.0%	0.0%
United States	3.0%	0.0%	3.0%
Europe Ex U.K.	0.6%	0.6%	0.0%
United Kingdom	0.1%	0.0%	0.1%
Pacific Basin Ex Japan	4.5%	0.0%	4.5%
Japan	0.0%	0.0%	0.0%
Emerging Markets	90.2%	98.6%	-8.3%
Other	1.6%	0.9%	0.8%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

**Characteristics**

Fund GAV (\$MM)	\$29,800.0
Fund NAV (\$MM)	\$23,161.0
Cash (% of NAV)	2.1%
# of Investments	284
% in Top 10 by NAV	18.3%
Leverage %	24.1%
Occupancy	92.4%
# of MSAs	45
1-Year Dividend Yield	3.1%
As of Date	31-Dec-23

**Strategy Breakdown**

	% of Portfolio
Pre-Development	1.1%
Development	2.1%
Initial Leasing	0.5%
Operating	96.4%
Re-Development	
Other	
<u>Queue In:</u>	
Contribution Queue (\$MM)	\$34.48
Anticipated Drawdown (Months)	

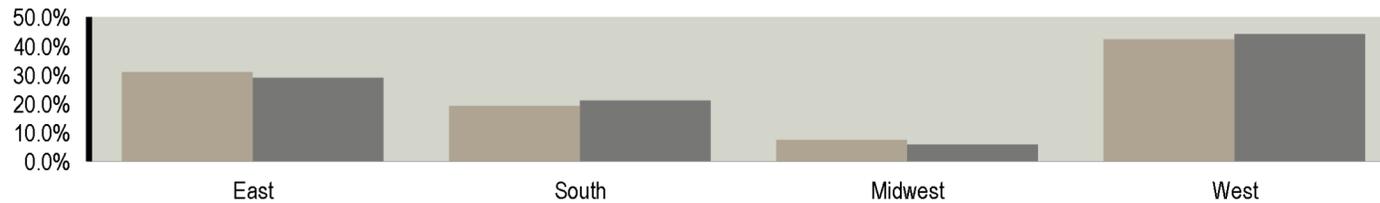
**Top Five Metro Areas**

	% of NAV
Los Angeles-Long Beach, CA	22.9%
New York-Newark, NY-NJ-CT-F	13.0%
Washington-Baltimore-Arlington	10.6%
San Jose-San Francisco-Oaklar	6.8%
Boston-Worcester-Providence,	4.6%

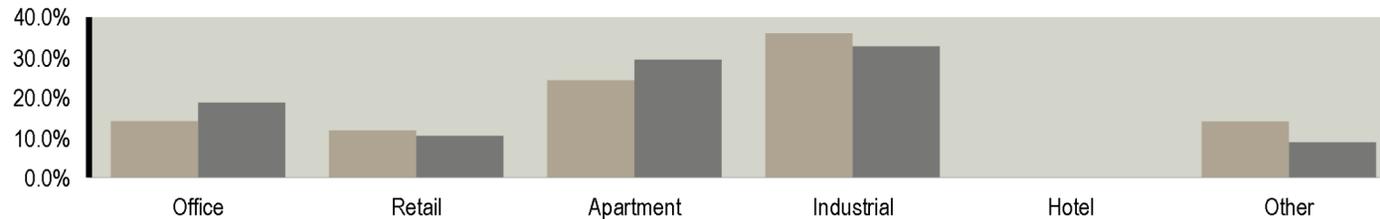
Queue Out:

Redemption Queue (\$MM)	\$3,159.81
Anticipated Payout (Months)	

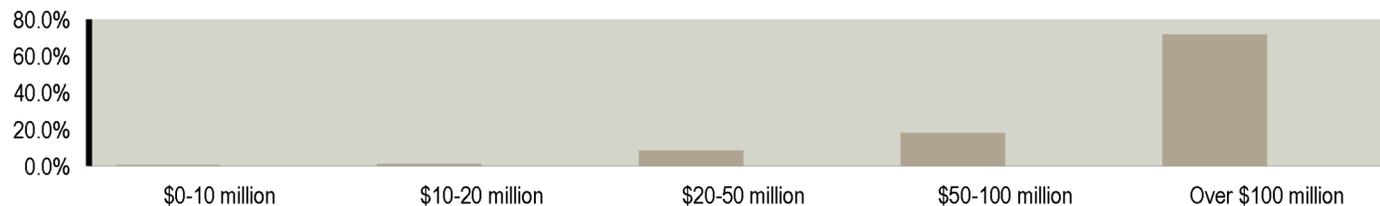
**Regional Breakdown by NAV (Excluding Cash & Debt)**



**Property Type Breakdown by NAV (Excluding Cash & Debt)**



**Property Size Breakdown by NAV (Excluding Cash & Debt)**



■ PRISA ■ NFI-ODCE

**Characteristics**

Fund GAV (\$MM)	\$15,726.0
Fund NAV (\$MM)	\$8,933.0
Cash (% of NAV)	0.8%
# of Investments	143
% in Top 10 by NAV	30.3%
Leverage %	39.4%
Occupancy	85.8%
# of MSAs	68
1-Year Dividend Yield	2.4%
As of Date	31-Dec-23

**Strategy Breakdown**

	% of Portfolio
Pre-Development	5.0%
Development	10.1%
Initial Leasing	9.3%
Operating	68.2%
Re-Development	
Other	7.4%

**Top Five Metro Areas**

	% of NAV
Northern NJ	9.7%
San Francisco	7.6%
Boston	7.3%
Riverside	5.9%
Fort Lauderdale	5.3%

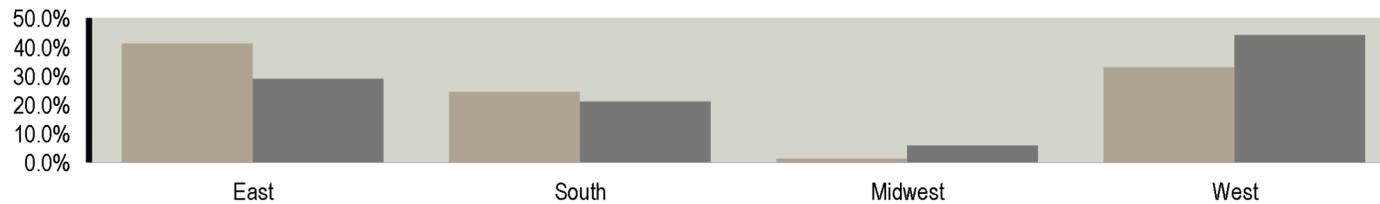
Queue In:

Contribution Queue (\$MM)	\$750.00
Anticipated Drawdown (Months)	

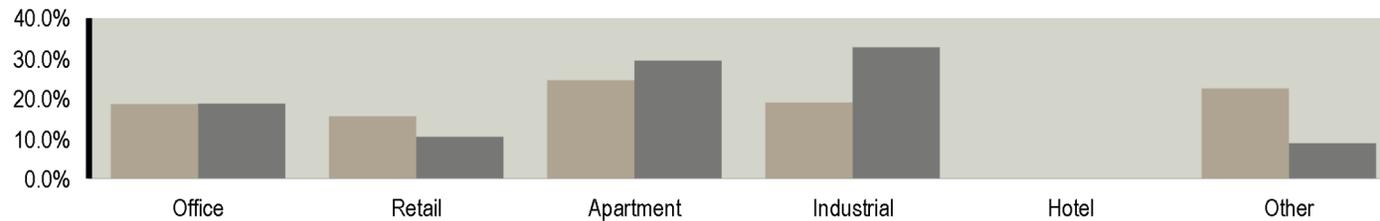
Queue Out:

Redemption Queue (\$MM)	\$1,358.80
Anticipated Payout (Months)	

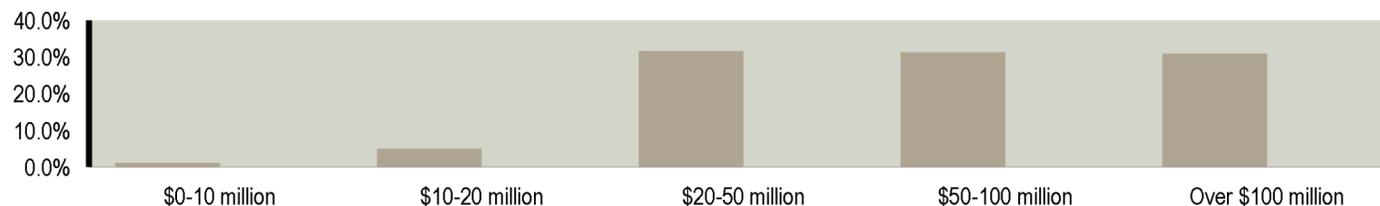
**Regional Breakdown by NAV (Excluding Cash & Debt)**



**Property Type Breakdown by NAV (Excluding Cash & Debt)**



**Property Size Breakdown by NAV (Excluding Cash & Debt)**



■ PRISA II ■ NFI-ODCE

**Characteristics**

Fund NAV (\$MM)	\$255.0
Cash (% of NAV)	1.9%
# of Investments	8
Occupancy	90.4%
NOI	3.9%
Loan to Value	7.1%
As of Date	9/30/2023

**Asset Summary**

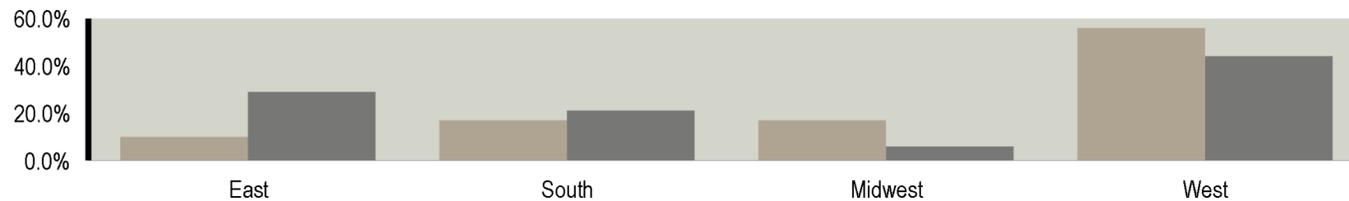
Property	Acquisition
Copley Corporate Center	2010
SR Ranch	2011
Des Peres Corners	2010
708 Uptown	2014
Fairway Center II	2016
Republic Distribution Center	2013
526 Route 46	2014
Shoppes at Monarch Lakes	2010

**Portfolio Allocation**

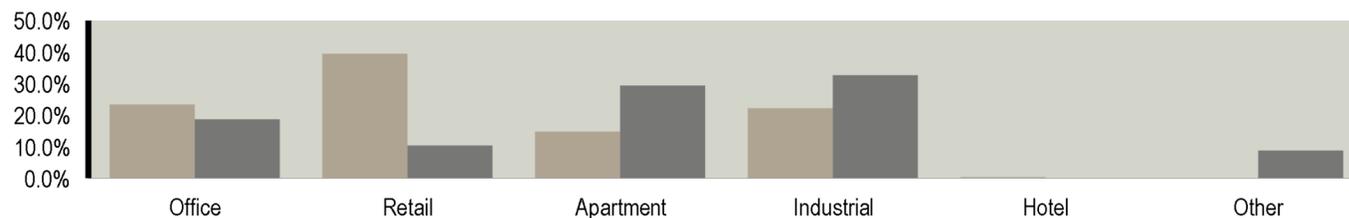
#	Property	Type	Location	% of Fund NAV
1	Copley Corporate Center	Office	San Diego, CA	11.7%
2	SR Ranch	Retail	San Diego, CA	18.0%
3	Des Peres Corners	Retail	Des Peres, MO	16.3%
4	708 Uptown	Apartment	Seattle, WA	14.8%
5	Fairway Center II	Office	Brea, CA	11.7%
6	Republic Distribution Center	Industrial	Houston, TX	12.8%
7	526 Route 46	Industrial	Teterboro, NJ	9.5%
8	Shoppes at Monarch Lakes	Retail	Miramar, FL	5.3%

<b>Total</b>	<b>100.0%</b>
--------------	---------------

**Regional Breakdown by NAV**



**Property Type Breakdown by NAV**



Net Assets (\$MM) 149.8

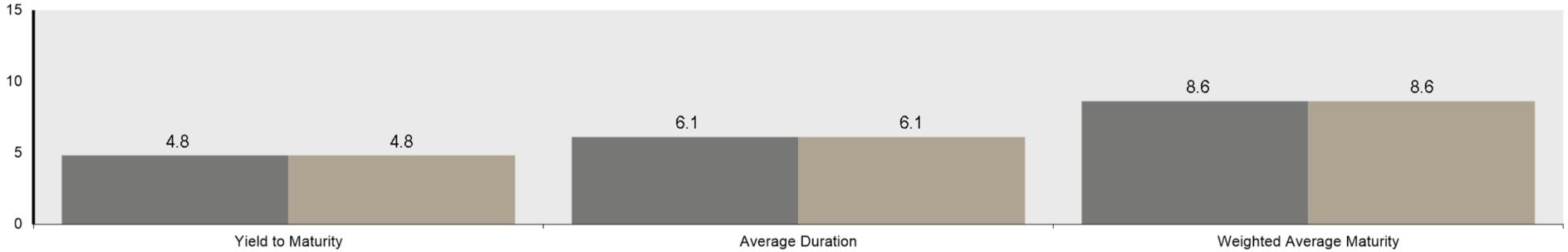
**Portfolio Allocation**

#	Property	Type	Location	% of Fund NAV
1	Bear Island	Pine	Virginia	5.8%
2	Fitz-Weller	Pine	New York	3.7%
3	Carter Pasture	Douglas Fir/Cedar	Texas	8.6%
4	Dupont	Douglas Fir/Hemlock	Georgia	20.9%
5	Black River	Pine	South Carolina	16.9%
6	Coquille	Pine	Oregon	18.9%
7	Bucktails	Pine	Pennsylvania	8.5%
8	North River	Maple/Oak	Washington	16.7%
<b>Total</b>				<b>100.0%</b>

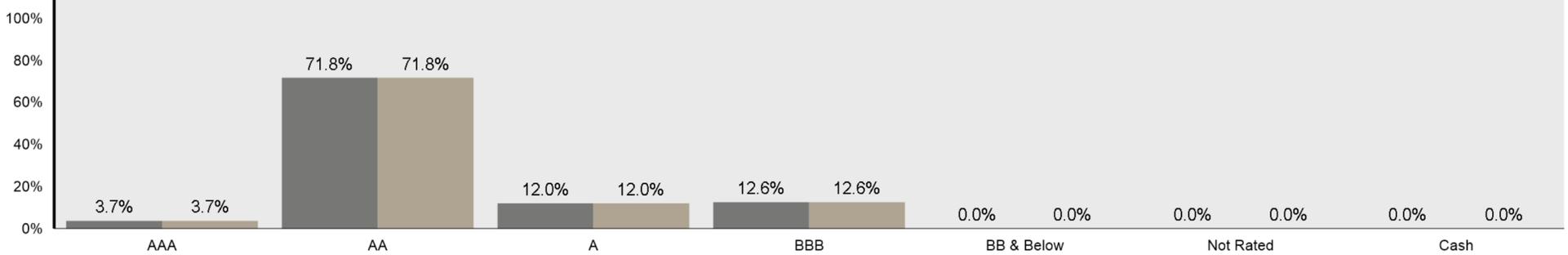
**Regional Breakdown by NAV**



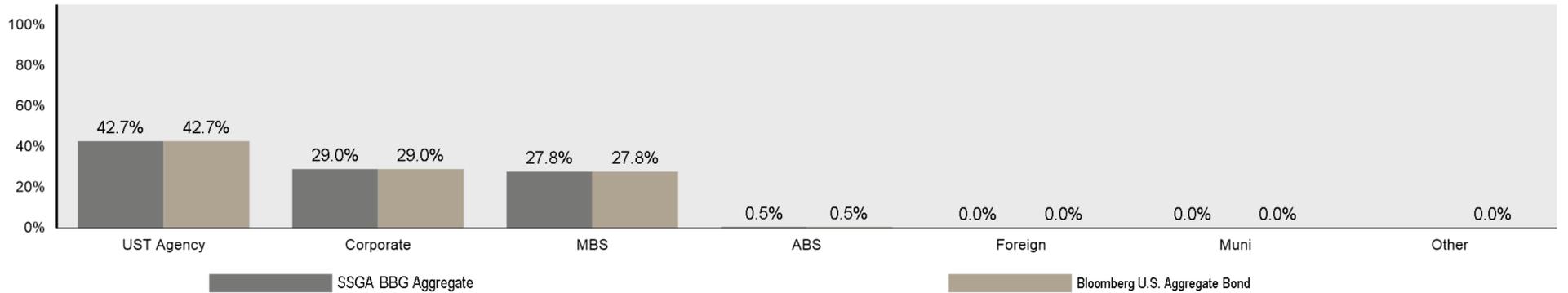
Yield to Maturity



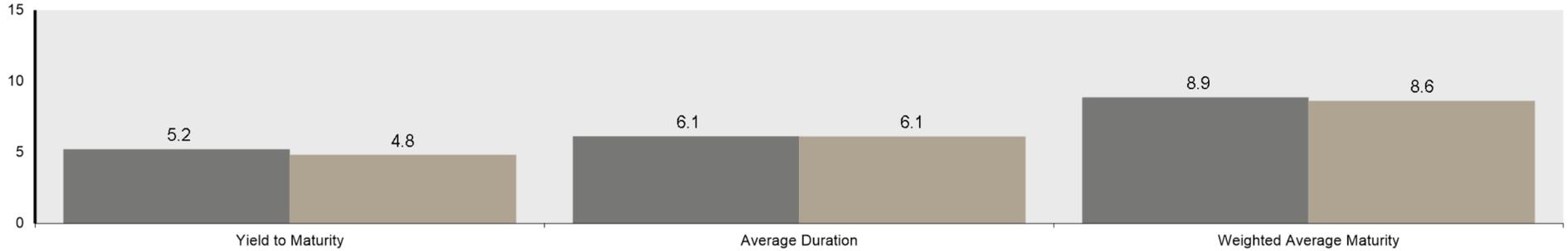
Credit Quality



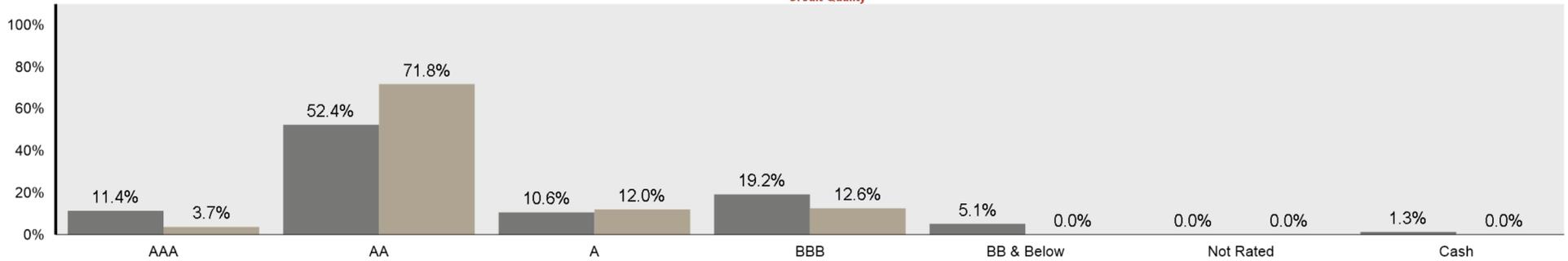
US Sector



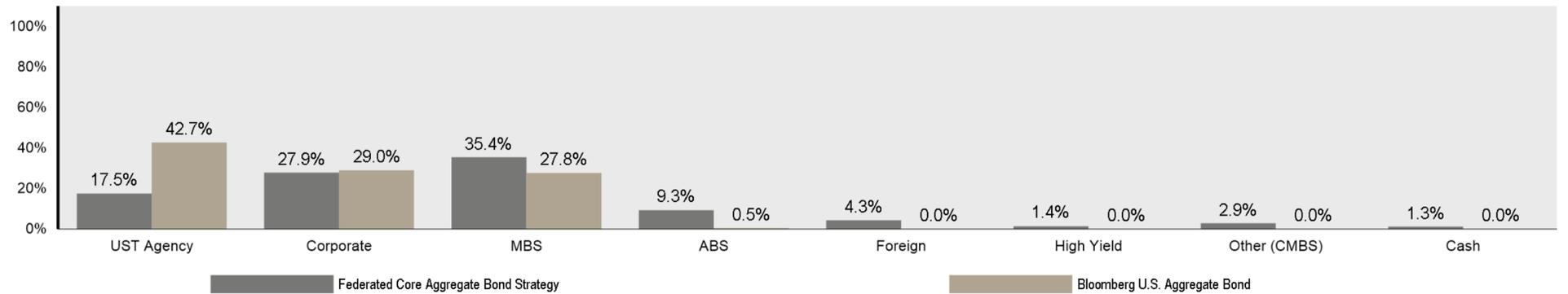
Yield to Maturity

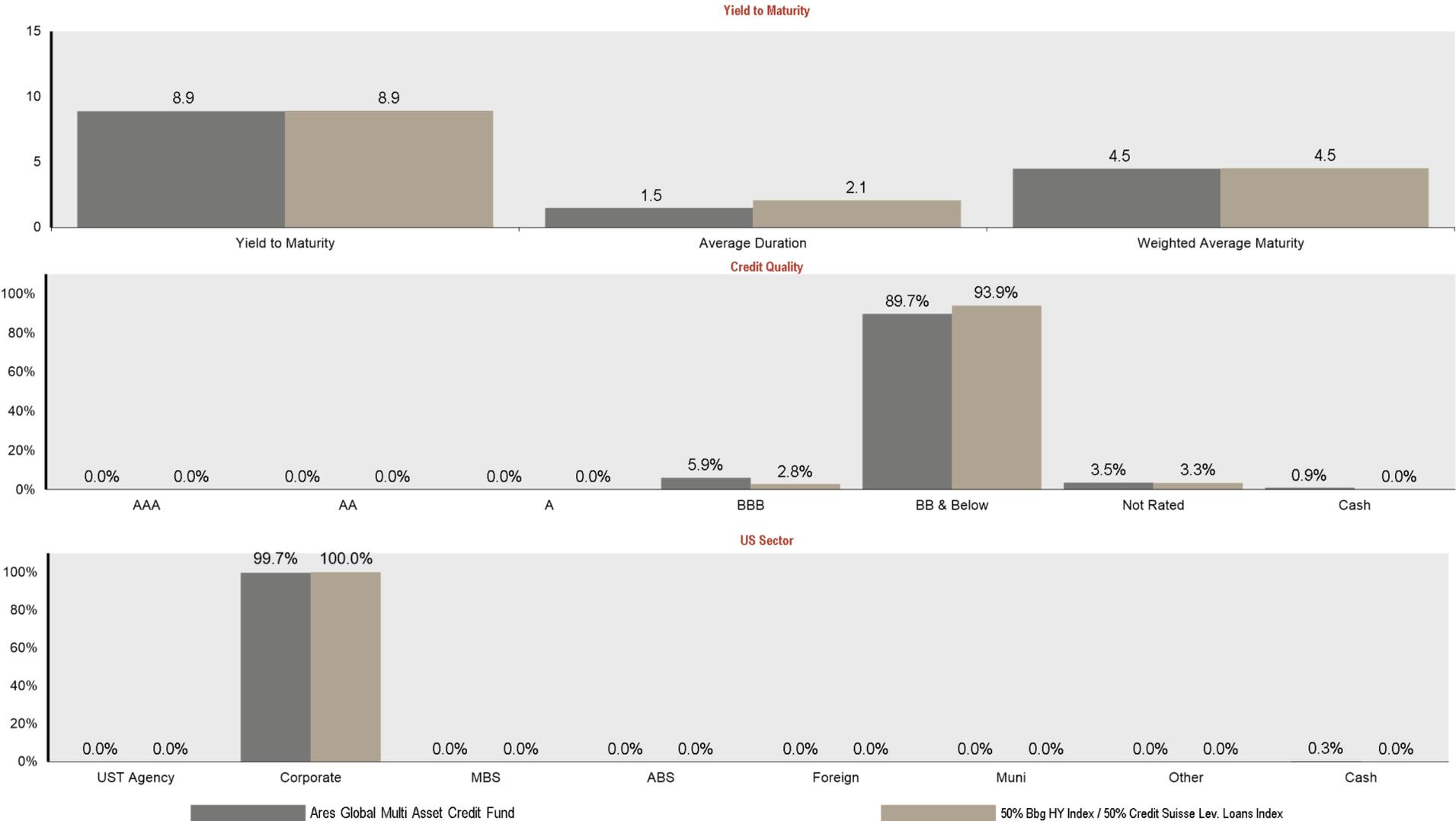


Credit Quality



US Sector





[Page Intentionally Left Blank]