

**ATTACHMENT A:**

**Oakland Police and Fire System Quarterly  
Investment Performance Report**



# Oakland Police and Fire Retirement System

February 28, 2024

Quarterly Performance Report  
as of December 31, 2023

## Agenda

1. Executive Summary
2. Economic and Market Update as of December 31, 2023
3. Quarterly Performance as of December 31, 2023
4. Manager Monitoring / Probation Status
5. Appendix
6. Disclaimer, Glossary, and Notes

## **Executive Summary**

### Total Portfolio Review

The Oakland Police and Fire Retirement System (OPFRS) finished the quarter with \$435.9 million in assets after net cash flows including monthly benefit payments. All asset classes in their acceptable target allocation ranges except for Fixed Income which is marginally underweight at the end of the year.

Cash Flow Summary (\$ Millions)	Quarter	1 Year
<b>Beginning Market Value</b>	<b>405.1</b>	<b>398.5</b>
Net Cash Flows (including Benefit Payments)	-2.6	-15.6
Net Investment Change (Gain/Loss)	33.4	53.0
<b>Ending Market Value</b>	<b>435.9</b>	<b>435.9</b>

### Investment Performance<sup>1</sup>

	QTD	FYTD	1 Year	3 Year	5 Year
<b>Total Plan (Gross)</b>	<b>8.4</b>	<b>5.3</b>	<b>13.8</b>	<b>3.6</b>	<b>8.1</b>
<b>Total Plan (Net)</b>	<b>8.3</b>	<b>5.2</b>	<b>13.5</b>	<b>3.3</b>	<b>7.8</b>
<i>Policy Benchmark</i>	<i>8.7</i>	<i>5.4</i>	<i>15.1</i>	<i>3.6</i>	<i>8.0</i>
Excess Return	-0.4	-0.2	-1.6	-0.3	-0.2
<i>Public DB (\$250M-\$1B) Median Fund</i>	<i>7.7</i>	<i>4.7</i>	<i>12.4</i>	<i>3.5</i>	<i>8.6</i>
Total Plan (Net) vs. Peer Median Fund	0.6	0.5	1.0	-0.2	-0.8
<i>Peer Group Percentile Rank</i>	<i>33</i>	<i>29</i>	<i>32</i>	<i>62</i>	<i>66</i>

<sup>1</sup> Fiscal year begins on July 1. Peer group is Investment Metrics Public Defined Benefit plans with \$250 million to \$1 billion in assets. The number of peers is about 80-90 portfolios in each time period. Please see the Benchmark History section for the Policy Benchmark's current and historical compositions.

### Asset Class and Manager Highlights

- Total Plan underperformed its Policy Benchmark across all time periods on net of fees basis. The underperformance during the quarter was attributable to the Crisis Risk Offset segment's underperformance.
  - The 1-year period's underperformance was primarily due to Domestic Equity's lag behind its broad market Russell 3000 Index. International Equity, along with Fixed Income and Covered Calls, were positive contributors to the Total Plan's relative performance in 2023, partially offsetting Domestic Equity's underperformance.
- **Domestic Equity** underperformed the Russell 3000 Index over all trailing periods.
  - Rice Hall James outperformed its benchmark while all other active managers underperformed their respective benchmarks for the quarter.
  - All active Domestic Equity managers across different styles trailed the broad market Russell 3000 Index over the 1-year period as a handful of companies ("Magnificent Seven") drove returns in 2023.
- **International Equity** outperformed the MSCI ACWI ex US (Net) for all periods except for the most recent quarter.
- **Fixed Income** slightly underperformed or matched its custom benchmark over the quarter, 1-year, and since inception time periods. The underlying managers outperformed their respective benchmarks across almost all time periods.
- The **Credit** segment, with Polen Capital as its only manager, underperformed the asset class's benchmark, Bloomberg US High Yield Index, for all time periods except over the 3-year and since inception periods.
- **Covered Calls**, as well as both the passive BXM and the active DeltaShift strategies outperformed the CBOE S&P 500 Buy Write Index across all periods measured.
- The **Crisis Risk Offset** segment underperformed its custom benchmark over all time periods measured.
  - Kepos Alternative Risk Premia outperformed its benchmark during the quarter and over the 1-year period while Versor Trend Following and Vanguard Long-term Treasury ETF underperformed their respective benchmarks for the same periods.

# **Economic and Market Update**

## Data as of December 31, 2023

## Commentary

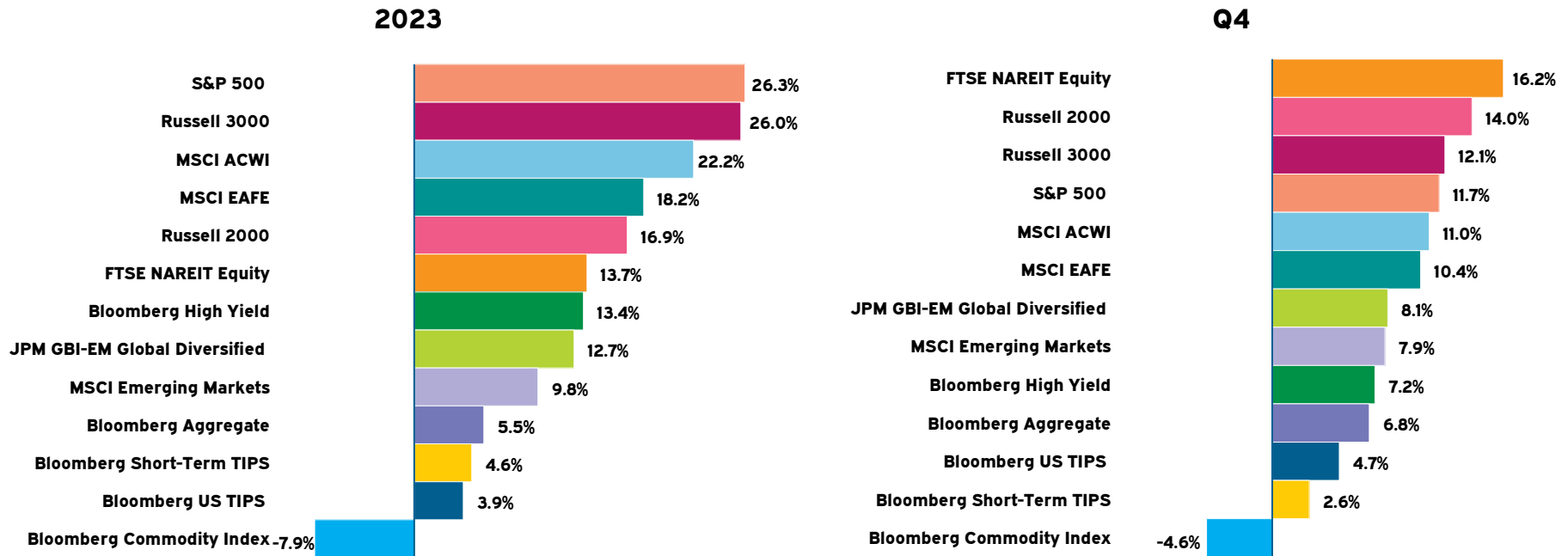
→ Most markets rallied in the fourth quarter in anticipation that policy rates cuts were ahead in 2024.

- Major central banks have largely paused interest rates hikes. Markets are now largely expecting the FOMC to maintain interest rates at the current levels and begin cutting rates as soon as Q1 2024.
- Inflation rose in December in the US and Europe, but both finished the year much lower than where they started. China remained in deflationary territory (-0.3%) at year-end.
- US equity markets (Russell 3000 index) posted strong gains for the quarter (12.1%), raising full year results to +26.0%. Most sectors rallied, with more defensive sectors lagging.
- Non-US developed equity markets also rallied in the fourth quarter (MSCI EAFE 10.4%), with the weakening of the US dollar contributing meaningfully (10.4% versus 5.0% ex-US dollar influence). The performance difference between US and international developed equities for the year remained wide (26.0% versus 18.2%).
- Emerging market equities were up 7.9% in the fourth quarter and 9.8% for calendar 2023 but trailed developed markets due to lagging returns in China (-4.2% Q4/-11.2% one-year). Emerging market equities ex-China returned 20% in 2023.
- Interest rates generally fell in the fourth quarter, particularly for longer-dated maturities. The broad US bond market rallied (6.8%) for the quarter, lifting 2023 returns into positive territory (5.5%).

→ Looking to 2024, the paths of inflation and monetary policy, China's economic disorder and slowing economic growth, and the wars in Ukraine and Israel, will be key.



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



→ After a tough start to the quarter on lingering fears that the Federal Reserve might keep interest rates “higher for longer”, markets rallied in November and December. Economic data generally coming in below expectations sparked expectations that the Federal Reserve might really be done raising policy rates for this cycle.

→ Strong results for the quarter built on gains for the year with all asset classes finishing in positive territory in 2023, except commodities.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2023.

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

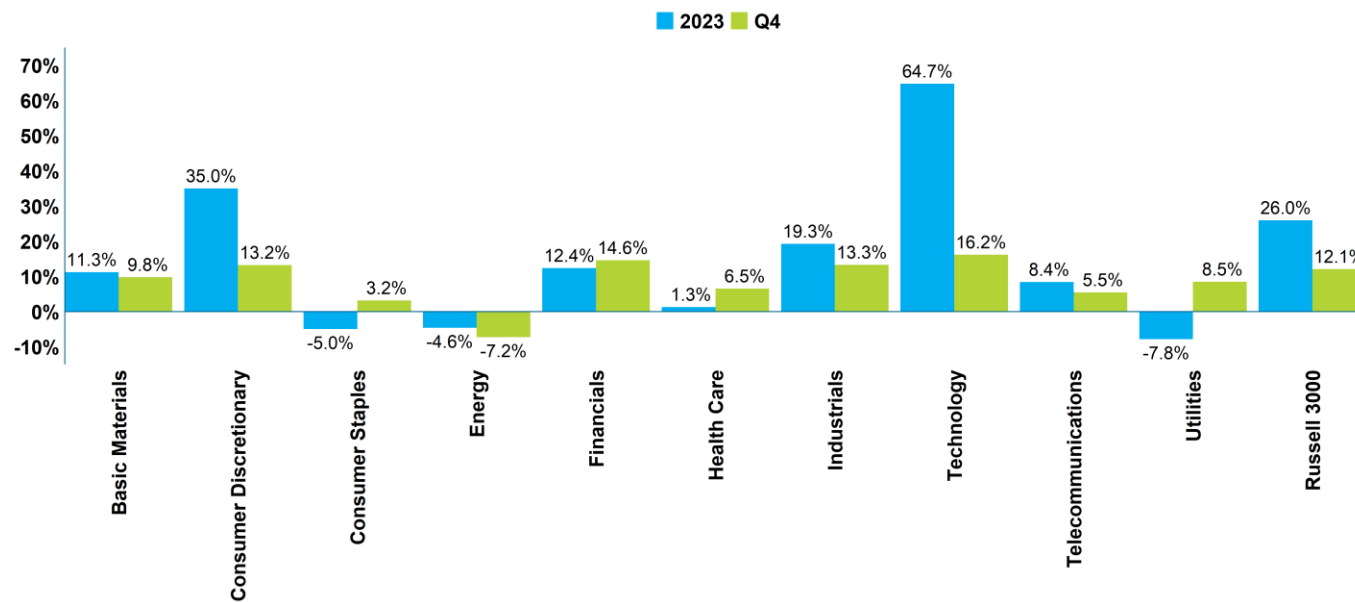
Domestic Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	4.5	11.7	26.3	10.0	15.7	12.0
Russell 3000	5.3	12.1	26.0	8.6	15.2	11.5
Russell 1000	4.9	12.0	26.5	9.0	15.5	11.8
Russell 1000 Growth	4.4	14.2	42.7	8.9	19.5	14.9
Russell 1000 Value	5.5	9.5	11.5	8.9	10.9	8.4
Russell MidCap	7.7	12.8	17.2	5.9	12.7	9.4
Russell MidCap Growth	7.6	14.5	25.9	1.3	13.8	10.6
Russell MidCap Value	7.8	12.1	12.7	8.4	11.2	8.3
Russell 2000	12.2	14.0	16.9	2.2	10.0	7.2
Russell 2000 Growth	12.0	12.7	18.7	-3.5	9.2	7.2
Russell 2000 Value	12.4	15.3	14.6	8.0	10.0	6.8

**US Equities: The Russell 3000 rallied 5.3% in December, bringing fourth quarter results to +12.1%. US stocks were up 26.0% in 2023.**

- US equities had a strong final quarter of the year, driven by expectations that rate cuts may be ahead in 2024.
- Small cap stocks outperformed their large cap peers for the quarter while growth outpaced value with the exception of small cap. Large cap stocks outperformed small cap stocks by a wide margin for the calendar year and growth outpaced value across market caps.
- Calendar year results were clearly driven by large cap technology stocks. Within the S&P 500 index, the “Magnificent 7” stocks generated more than 50% of the total gains.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2023. Magnificent Seven stocks include: Apple, Microsoft, Alphabet, Amazon, Nvidia, Tesla, and Meta.

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



- All sectors posted gains for the fourth quarter, except for energy (-7.2%) given oil's recent declines. Technology (+16.2%) led the way for the quarter followed by financials (+14.6%).
- In 2023, technology (+64.7%) and consumer discretionary (+35.0%) sectors had the best results, helped respectively by artificial intelligence optimism and a healthy US consumer. Traditionally defensive sectors like utilities (-7.8%) and consumer staples (-5.0%) trailed.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2023.

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

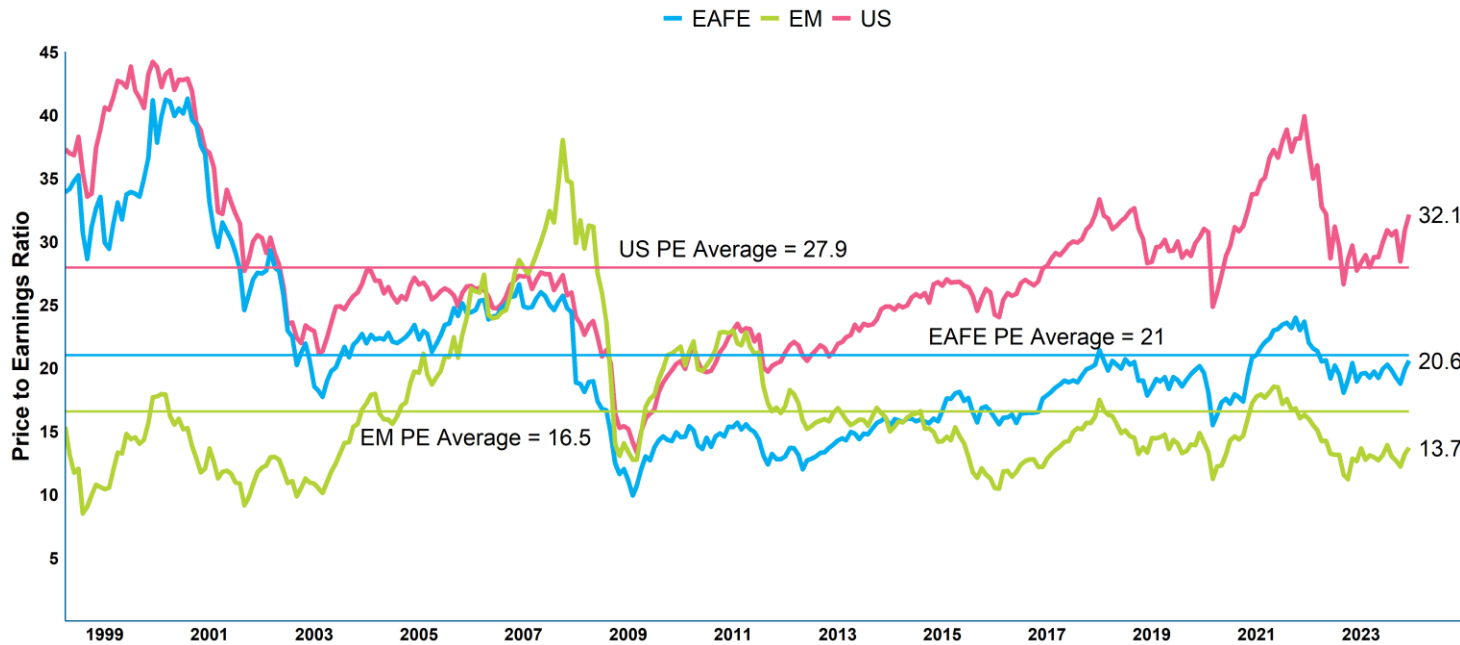
Foreign Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	5.0	9.8	15.6	1.5	7.1	3.8
MSCI EAFE	5.3	10.4	18.2	4.0	8.2	4.3
MSCI EAFE (Local Currency)	2.9	5.0	16.2	8.7	9.5	6.6
MSCI EAFE Small Cap	7.3	11.1	13.2	-0.7	6.6	4.8
MSCI Emerging Markets	3.9	7.9	9.8	-5.1	3.7	2.7
MSCI Emerging Markets (Local Currency)	3.1	5.6	9.9	-2.5	5.4	5.2
MSCI China	-2.4	-4.2	-11.2	-18.5	-2.8	0.9

**Foreign Equity:** Developed international equities (MSCI EAFE) gained 5.3% in December and 10.4% in the fourth quarter bringing calendar year results to 18.2%. Emerging market equities (MSCI EM) rose 3.9% in December, 7.9% for the quarter, and 9.8% for the year.

- Optimism around lower inflation and potentially peaking and declining policy rates drove gains in the UK and Europe. Japan had weaker results for the quarter as concerns over a strengthening yen weighed on returns in December. Overall weakness in the US dollar also contributed to quarterly and full year results across developed markets.
- Emerging markets also experienced strong performance in the fourth quarter but trailed developed markets. China weighed on relative results for the quarter and year, declining 4.2% and 11.2%, respectively. Slowing growth, issues in the property sector, and on-going tensions with the US all weighed on results.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2023.

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



- Given the strong technology-driven rally last year, the US equity price-to-earnings ratio increased above its 21st century average. Fourth quarter gains brought valuations to their highest level for the year.
- International market valuations also increased in the fourth quarter, but remain below the US. In the case of developed markets, valuations finished the year close to the their long-term average, while emerging markets remained well below their average.

<sup>1</sup> US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of December 2023. The average line is the long-term average of the US, EM, and EAFE PE values from April 1998 to the recent month-end respectively.

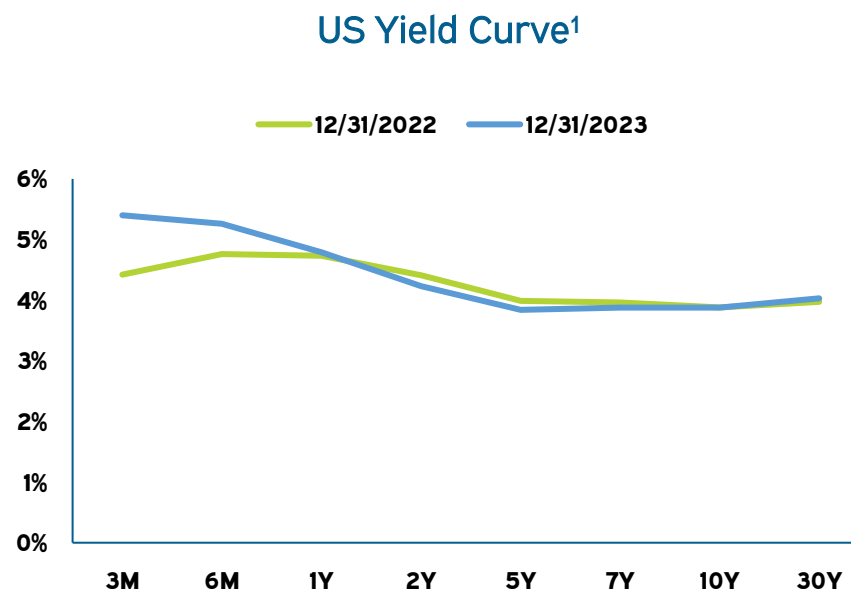
### Fixed Income Returns<sup>1</sup>

Fixed Income	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	3.8	6.8	6.2	-3.0	1.4	2.1	4.8	6.1
Bloomberg Aggregate	3.8	6.8	5.5	-3.3	1.1	1.8	4.5	6.3
Bloomberg US TIPS	2.7	4.7	3.9	-1.0	3.2	2.4	4.2	6.7
Bloomberg Short-term TIPS	1.1	2.6	4.6	2.3	3.4	2.0	4.5	2.4
Bloomberg High Yield	3.7	7.2	13.4	2.0	5.4	4.6	7.6	3.8
JPM GBI-EM Global Diversified (USD)	3.2	8.1	12.7	-3.2	1.1	0.1	6.5	5.0

**Fixed Income: The Bloomberg Universal index rose 3.8% in December, 6.8% for the quarter, and 6.2% for the year.**

- Policy rate expectations swung from pessimism to optimism in November and December. Signs of the labor market cooling and improving inflation led investors to bring forward expectations for interest rate cuts to early 2024, leading to one of the best quarterly results in over twenty years.
- The broad US bond market (Bloomberg Aggregate) rallied 6.8% for the quarter, lifting full-year performance into positive territory (+5.5%). The broader TIPS index rose 4.7% for the quarter and 3.9% for the year, while the less interest-rate-sensitive short-term TIPS index rose 2.6% and 4.6% over the same periods.
- High yield bonds rallied on better risk sentiment (+7.2%), as did emerging market bonds (+8.1%). Both asset classes produced double-digit results last year.

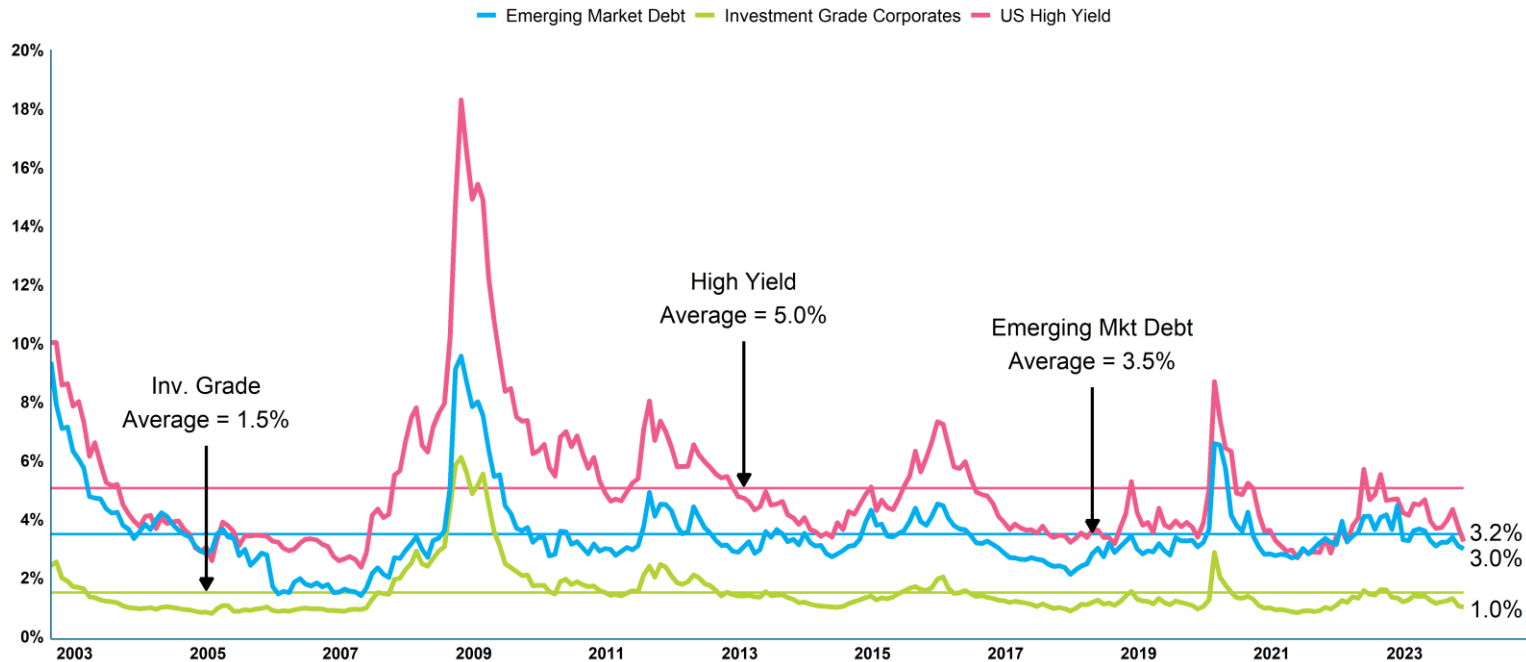
<sup>1</sup> Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of December 31, 2023. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.



- The more policy sensitive short-term maturities were higher this year while longer-term maturities finished the year where they started.
- Still, rates declined sharply over the quarter, particularly at the longer end of the yield curve on continued easing of inflation-related risks and speculation that the Federal Reserve is done with their policy rate increases for this cycle.
- For the quarter, two-year Treasury yields fell from 5.05% to 4.24% while ten-year Treasury yields declined from 4.56% to 3.88%.
- The yield curve remained inverted at year-end despite a recent flattening trend. The spread between the 2-year and 10-year Treasury was -0.37% at the end of December.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2023.

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

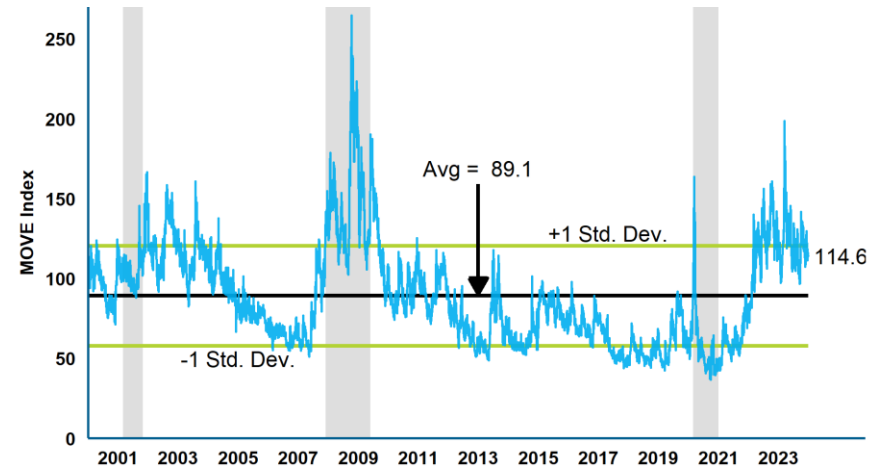
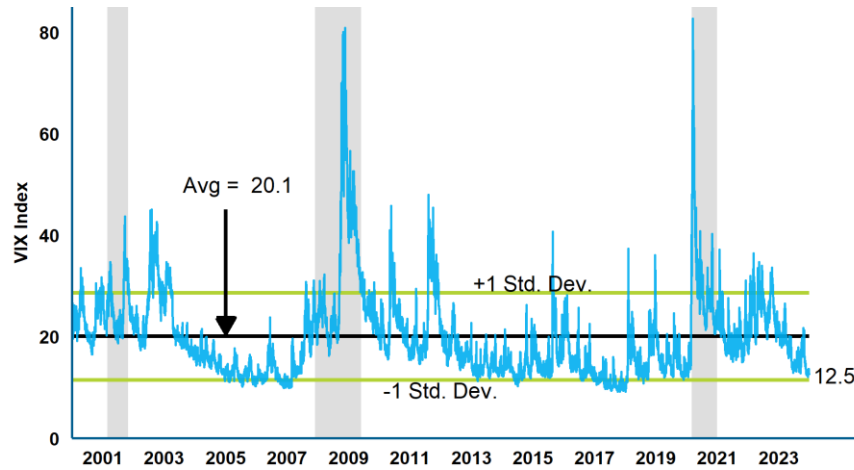


- Expectations of peaking policy rates and the corresponding increase in risk appetite benefited credit in the fourth quarter with spreads (the added yield above a comparable maturity Treasury) narrowing. All spreads remain below their respective long run averages.
- High yield spreads continue to be the furthest below their long-term average given the overall risk appetite last year and lower duration. Investment-grade corporate and emerging market spreads are also below their respective long-term averages, but by smaller margins.

<sup>1</sup> Sources: Bloomberg. Data is as of December 31, 2023. Average lines denote the average of the investment grade, high yield, and emerging market spread values from September 2002 to the recent month-end, respectively.



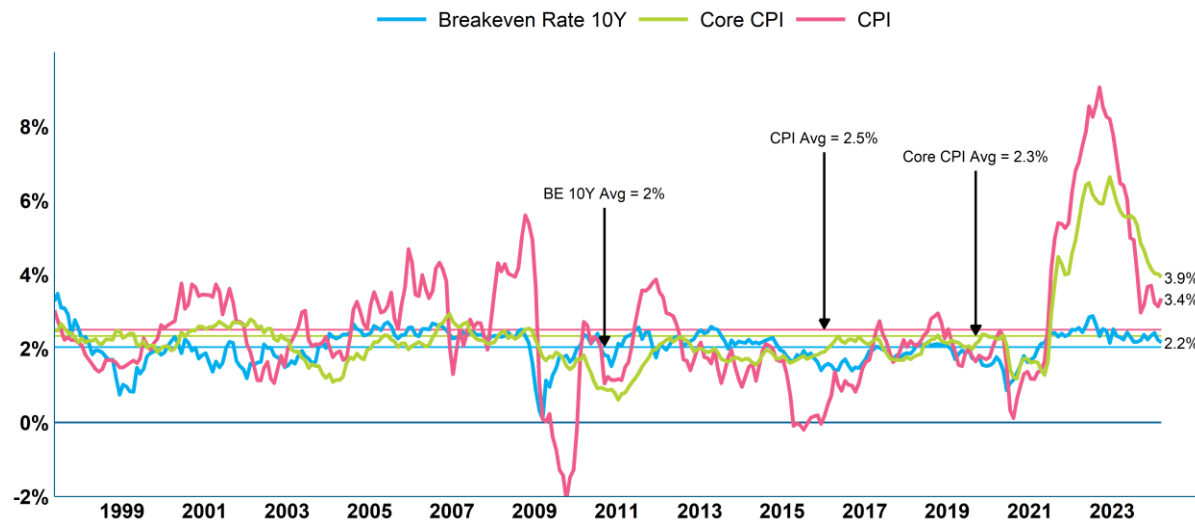
**Equity and Fixed Income Volatility<sup>1</sup>**



- Volatility in equities (VIX) finished the year close to its lows, remaining well below the long-term average as the focus shifted to peaking policy rates and the potential for a soft landing.
- Volatility in the bond market (MOVE) remained elevated to close out 2023 and is well above its long-run average (89.1). The bond market remained on edge for most of 2024 largely driven by uncertainty about the ultimate path of monetary policy.

<sup>1</sup> Equity Volatility – Source: FRED. Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of December 2023. The average line indicated is the average of the VIX and MOVE values between January 2000 and December 2023.

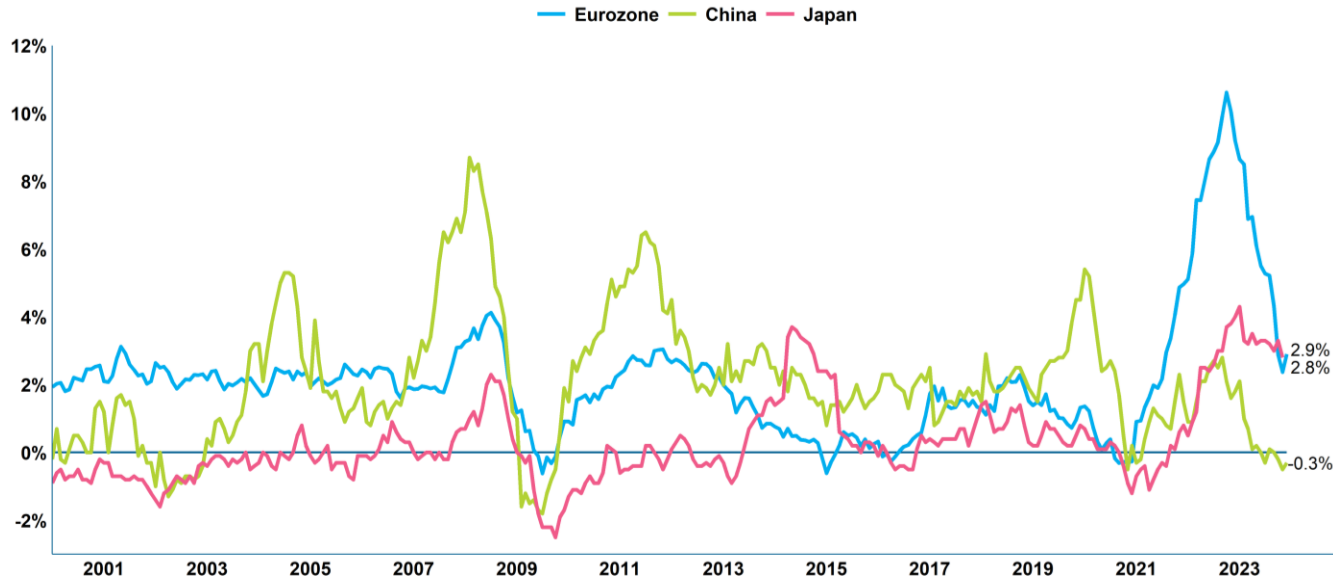
### US Ten-Year Breakeven Inflation and CPI<sup>1</sup>



- Year-over-year headline inflation rose from 3.1% to 3.4% in December, coming in above expectations of 3.2%. An increase in shelter (+6.2%) drove results, with food also increasing from a year prior (+2.7%) and energy prices falling (-2.0%). Month-over-month inflation came in at 0.3%, above expectations of 0.2% and the prior reading of 0.1%.
- Core inflation - excluding food and energy – declined in December (3.9% versus 4.0%) year-over-year, with shelter costs again driving the total core index increase.
- Inflation expectations (breakevens) have remained relatively stable despite the recent significant volatility in inflation.

<sup>1</sup> Source: FRED. Data is as December 2023. The CPI and 10 Year Breakeven average lines denote the average values from February 1997 to the present month-end, respectively. Breakeven values represent month-end values for comparative purposes.

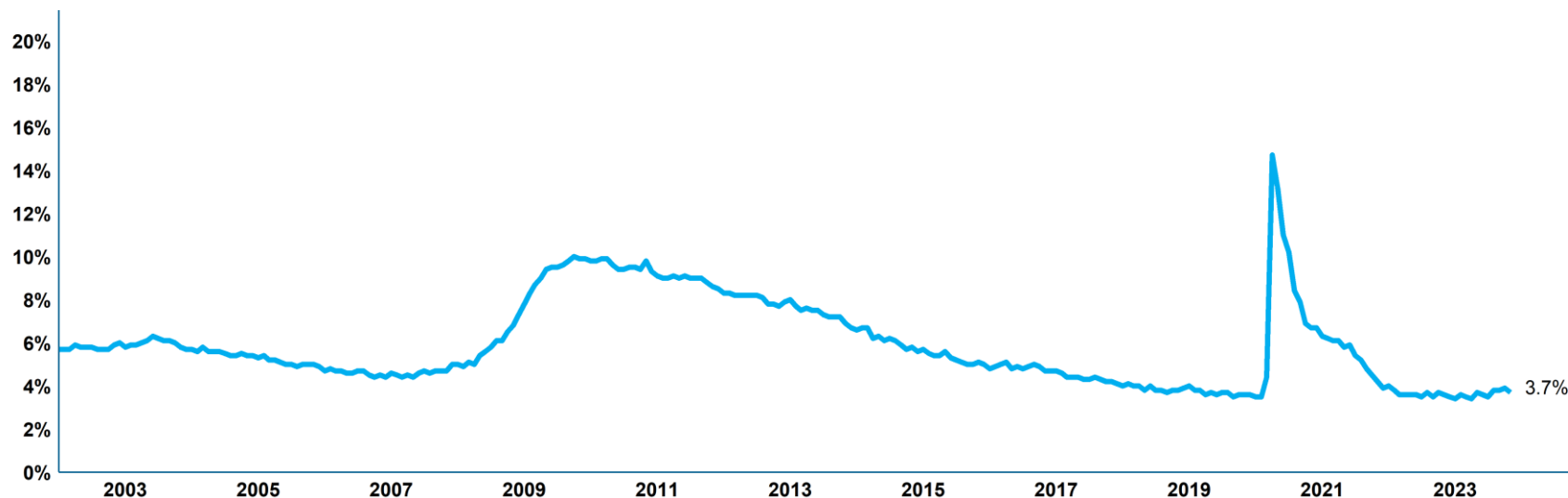
**Global Inflation (CPI Trailing Twelve Months)<sup>1</sup>**



- Outside the US, inflation is also falling across major economies with China slipping into deflation.
- In the eurozone, inflation experienced a dramatic decline last year. Despite a small increase in December (2.9% versus 2.4%) it finished the year below the 3.4% year-over-year reading in the US.
- Inflation in Japan remains near levels not seen in almost a decade, driven by food and home related items.

<sup>1</sup> Source: FRED for United States CPI and Eurozone CPI. Source: Bloomberg for Japan CPI, China CPI, and Eurozone December flash estimate. Data is as December 31, 2023, except Japan which is as of November 30, 2023.

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

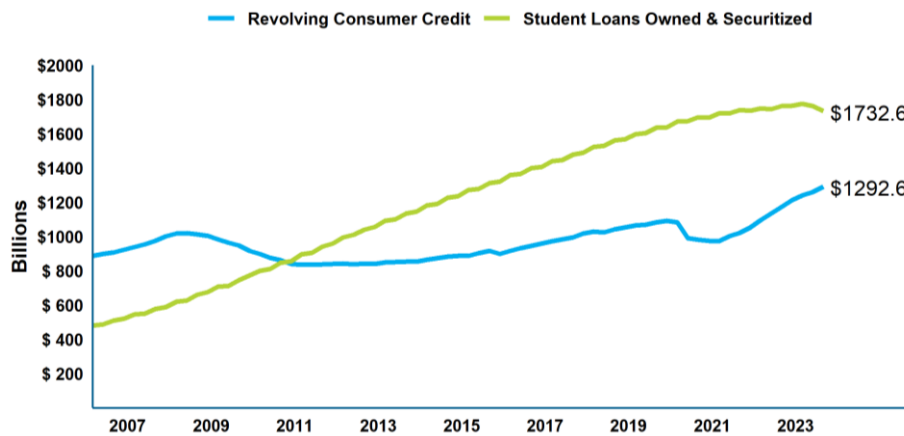


- Overall, the US labor market remains healthy with the unemployment rate relatively low, wage growth now positive in real terms, and initial claims for unemployment staying subdued.
- In December, US unemployment remained unchanged (3.7%) and came in slightly below expectations of an increase to 3.8%. The number of jobs added did come in above expectations (216k versus 175k) though with the most jobs added in the government, leisure and hospitality, and health care sectors.
- The labor force participation remained relatively stable at 62.5%, well off the lows of the pandemic (60.1%) but not back to pre-pandemic levels (63.3%).
- The pace of hourly wage growth has declined from its peak of close to 6.0% finishing 2023 at 4.1% yoy. Wage growth remains positive in real terms though.

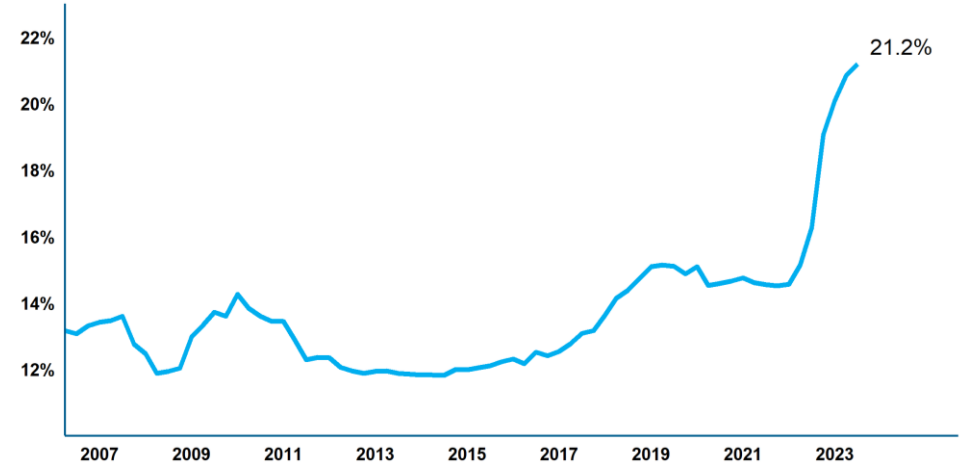
<sup>1</sup>Source: FRED. Data is as December 31, 2023.

### US Consumer Under Stress?<sup>1</sup>

#### Revolving Consumer Credit & Student Loans (\$B)



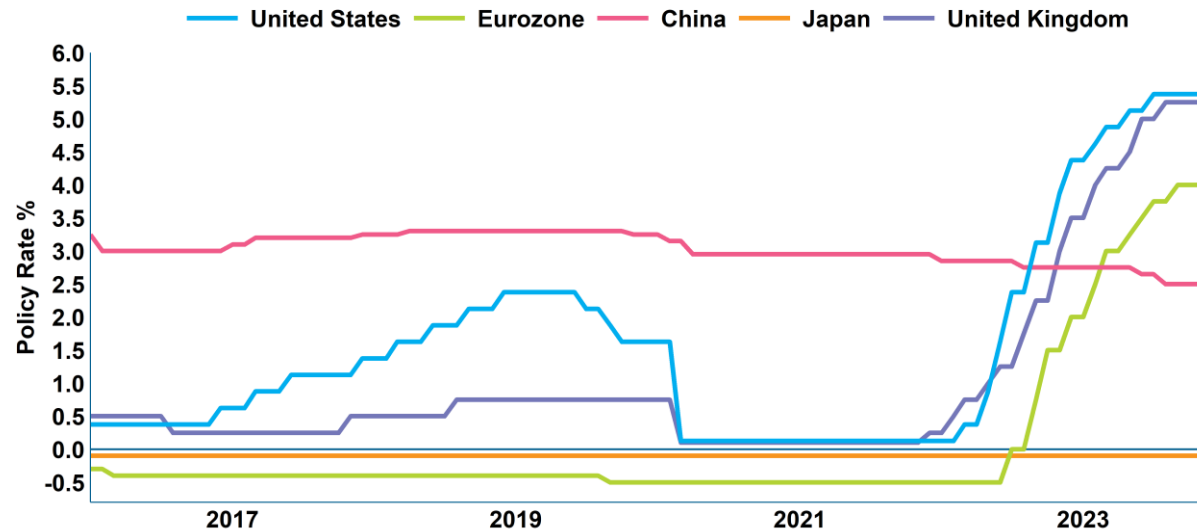
#### Consumer Credit Card Interest Rates (%)



- Despite the strong labor market and higher wages, pressures have started to build on the US consumer. This is an important consideration as consumer spending has been a key driver of economic growth.
- Revolving consumer credit surged to new highs in 2023 even as credit card interest rates hit levels not seen before (the prior peak was around 19% in the 1980s).
- The return of student loan repayments after a three-year pandemic-related reprieve could add to pressures on consumers' budgets. This might be partially mitigated by recently initiated repayment and forgiveness programs.
- As we look ahead, the strength of the US consumer will remain key as this sector makes up most of the domestic economy (GDP).

<sup>1</sup> Source: FRED. Data is as of September 30, 2023. Revolving Consumer Credit data is seasonally adjusted to remove distortions during the holiday season.

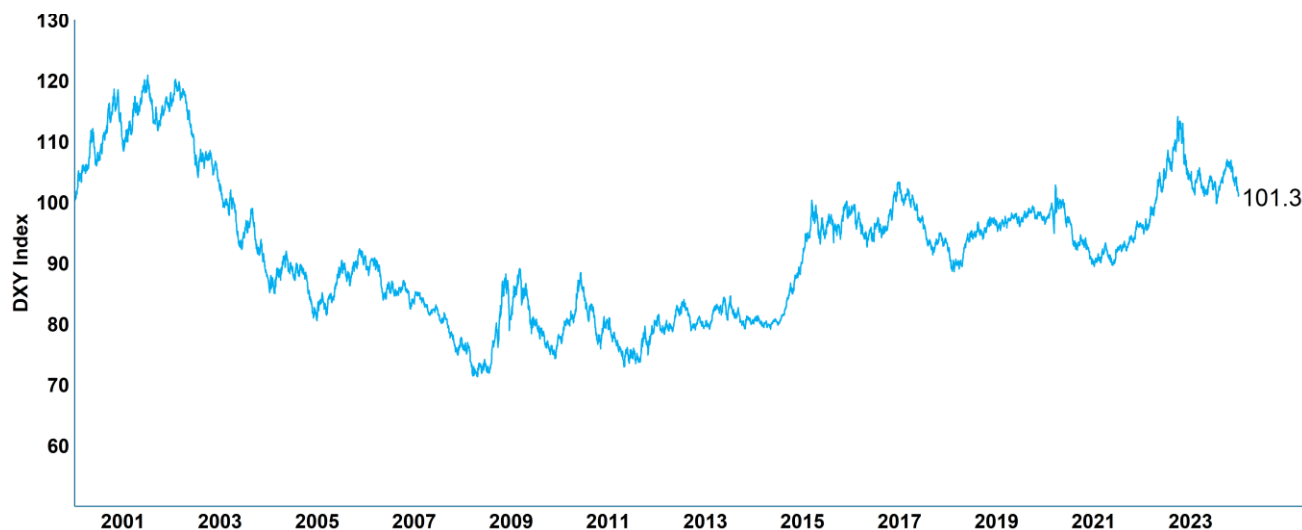
### Policy Rates<sup>1</sup>



- Slowing inflation and growth have led to expectations for a reduction in the pace of aggressive policy tightening.
- The Fed has been on hold since July 2023 when it raised rates to a range of 5.25%-5.50%. Markets are pricing in six rate cuts next year given the track of economic data and recent comments from the Fed, while the Fed itself is only predicting three. How this discrepancy is resolved will be key this year.
- The European and UK central banks also recently paused their rate increases on slowing inflation. In Japan, the BoJ has further relaxed its yield curve control on the 10-year bond, and expectations for further policy normalization are rising.
- The central bank in China has maintained interest rates at record low levels and continues to inject liquidity into the banking system, as weaker than expected economic data appears to indicate a widespread slowdown.

<sup>1</sup> Source: Bloomberg. Data is as of December 2023.

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



- The US dollar declined around 5% in the fourth quarter as generally weaker economic data led investors to anticipate the end of FOMC tightening and interest rate cuts in 2024.
- Overall, the dollar finished the year only slightly below where it started but it was a volatile year for the US currency as expectations related to monetary policy evolved.

<sup>1</sup> Source: Bloomberg. Data as of December 31, 2023.

## Summary

### Key Trends:

- The impact of inflation still above policy targets will remain important, with bond market volatility likely to stay high.
- Global monetary policies could diverge going forward. The risk of policy errors remains elevated as central banks try to further reduce inflation toward targets while not tipping their economies into recession. In the case of the US the resolution of the disparity between market expectations for the path of interest rates versus the Fed's dot plot will be key.
- Global growth is expected to slow next year, with some economies forecasted to tip into recession. However, optimism has been building that certain economies could experience soft landings. Inflation, monetary policy, and geopolitical issues will remain key in 2024.
- US consumers could feel pressure as certain components of inflation (e.g., shelter), remain high, borrowing costs are elevated, and the job market may weaken.
- A focus for US equities going forward, will be whether earnings can remain resilient if growth continues to slow. Also, the future paths of the large technology companies that have driven market gains will be important.
- Equity valuations remain lower in emerging and developed markets, but risks remain, including the potential for China's economic slowdown and on-going weakness in the real estate sector could spill over into key trading partners' economies. Japan's recent hint at potentially tightening monetary policy along with changes in corporate governance in the country could influence relative results.
- Recent, heightened tensions in Israel could add to overall uncertainty and drive safe haven flows.

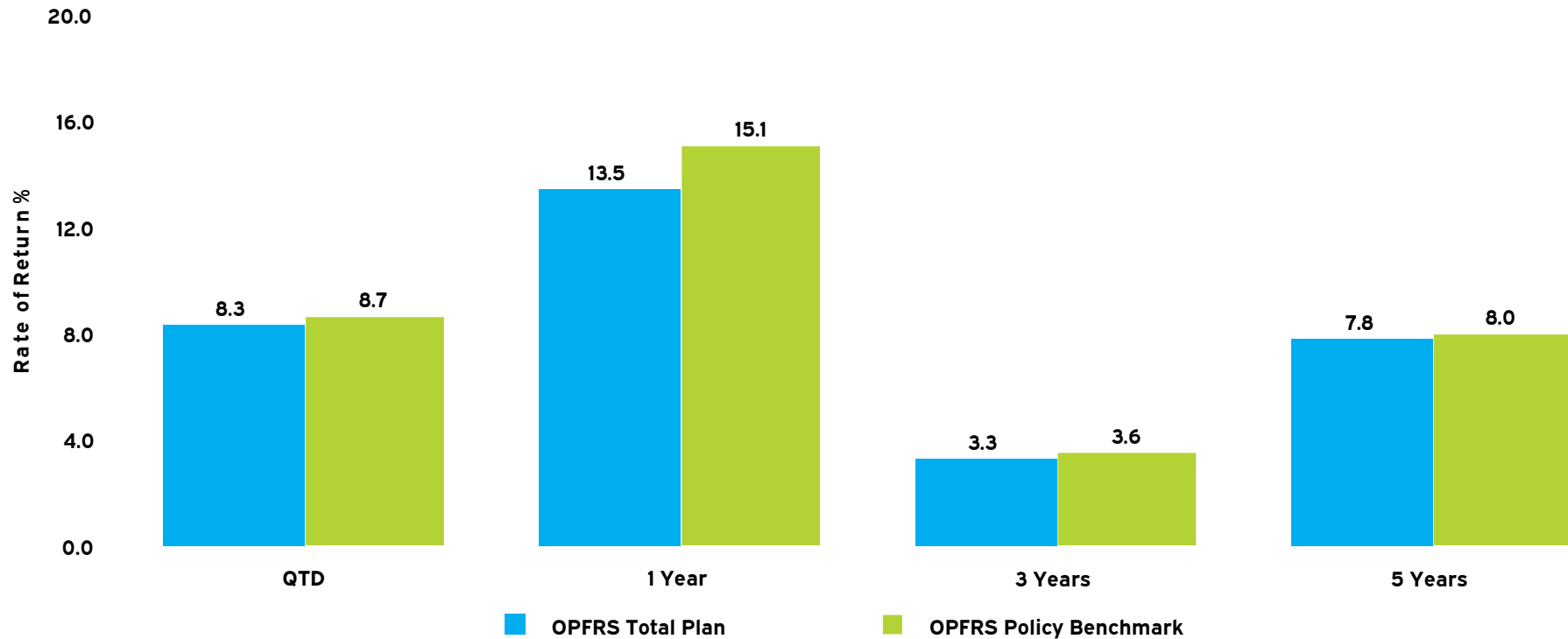


## **Quarterly Performance** as of December 31, 2023

#### Summary of Cash Flows

	QTD	1 Year
<b>OPFRS Total Plan</b>		
<b>Beginning Market Value</b>	<b>405,143,449</b>	<b>398,501,201</b>
Net Cash Flow	-2,587,879	-15,572,778
Net Investment Change	33,399,952	53,027,098
<b>Ending Market Value</b>	<b>435,955,522</b>	<b>435,955,522</b>

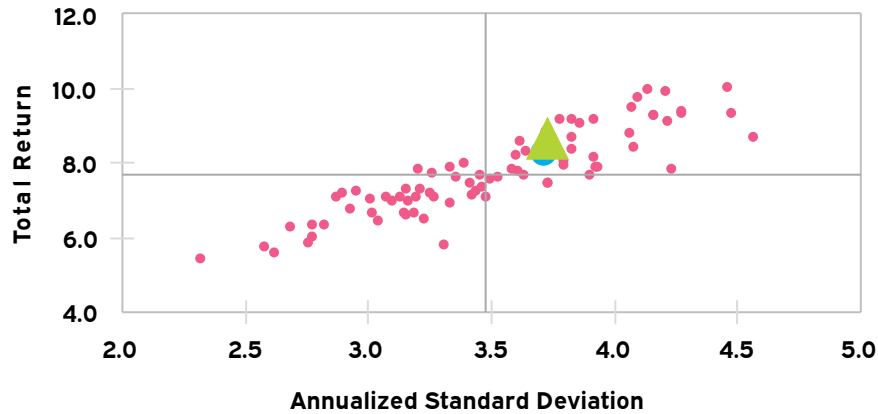
#### Return Summary Ending December 31, 2023



Total Plan performance shown is net of fees.

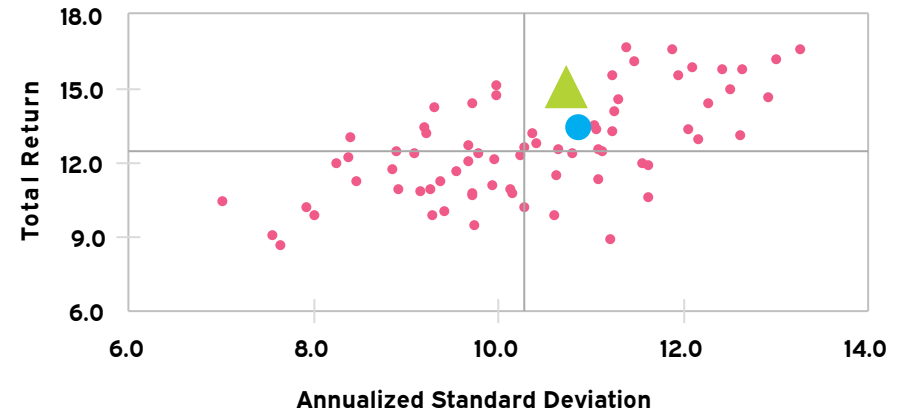
### Total Plan Risk/Return Summary | As of December 31, 2023

#### Risk-Return Summary QTD Ending December 31, 2023



- IM Public DB \$250M-\$1B
- OPFRS Total Plan
- ▲ OPFRS Policy Benchmark

#### Risk-Return Summary 1 Yr Ending December 31, 2023



- IM Public DB \$250M-\$1B
- OPFRS Total Plan
- ▲ OPFRS Policy Benchmark

	Return	Standard Deviation
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OPFRS Total Plan	8.3	3.7
OPFRS Policy Benchmark	8.7	3.7
Median	7.7	3.5

	Return	Standard Deviation
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OPFRS Total Plan	13.5	10.9
OPFRS Policy Benchmark	15.1	10.7
Median	12.4	10.3

Performance shown is net of fees. Calculation is based on monthly periodicity. Parentheses contain percentile rankings. Fiscal year begins on July 1. Plan Sponsor Peer Group shown is net of fees.

## Asset Class Performance: Gross of Fees | As of December 31, 2023

	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
<b>OPFRS Total Plan (Gross)</b>	<b>435,955,522</b>	<b>100.0</b>	<b>8.4</b>	<b>5.3</b>	<b>13.8</b>	<b>3.6</b>	<b>8.1</b>	<b>6.8</b>	<b>6.7</b>	<b>Dec-88</b>
<i>OPFRS Policy Benchmark</i>			<i>8.7</i>	<i>5.4</i>	<i>15.1</i>	<i>3.6</i>	<i>8.0</i>	<i>6.8</i>	<i>7.9</i>	
Excess Return			-0.3	-0.1	-1.3	0.0	0.1	0.0	-1.2	
<b>Domestic Equity (Gross)</b>	<b>183,174,978</b>	<b>42.0</b>	<b>12.1</b>	<b>7.9</b>	<b>20.3</b>	<b>7.8</b>	<b>14.1</b>	<b>10.9</b>	<b>9.0</b>	<b>Jun-97</b>
<i>Russell 3000 (Blend)</i>			<i>12.1</i>	<i>8.4</i>	<i>26.0</i>	<i>8.5</i>	<i>15.2</i>	<i>11.5</i>	<i>9.3</i>	
Excess Return			0.0	-0.5	-5.7	-0.7	-1.1	-0.6	-0.3	
<b>International Equity (Gross)</b>	<b>56,347,608</b>	<b>12.9</b>	<b>9.6</b>	<b>7.2</b>	<b>20.2</b>	<b>4.2</b>	<b>9.1</b>	<b>5.3</b>	<b>5.5</b>	<b>Jan-98</b>
<i>MSCI ACWI ex US (Blend)</i>			<i>9.8</i>	<i>5.6</i>	<i>15.6</i>	<i>1.5</i>	<i>7.1</i>	<i>3.8</i>	<i>5.1</i>	
Excess Return			-0.2	1.6	4.6	2.7	2.0	1.5	0.4	
<b>Fixed Income (Gross)</b>	<b>107,983,596</b>	<b>24.8</b>	<b>6.8</b>	<b>3.4</b>	<b>6.3</b>	<b>-2.6</b>	<b>1.7</b>	<b>2.4</b>	<b>4.8</b>	<b>Jan-94</b>
<i>Bloomberg Universal (Blend)</i>			<i>6.8</i>	<i>3.8</i>	<i>6.2</i>	<i>-3.0</i>	<i>1.4</i>	<i>2.1</i>	<i>4.6</i>	
Excess Return			0.0	-0.4	0.1	0.4	0.3	0.3	0.2	
<b>Credit (Gross)</b>	<b>9,697,822</b>	<b>2.2</b>	<b>4.1</b>	<b>5.7</b>	<b>13.3</b>	<b>4.7</b>	<b>5.4</b>	<b>--</b>	<b>5.6</b>	<b>Feb-15</b>
<i>Blmbg. U.S. Corp: High Yield Index</i>			<i>7.2</i>	<i>7.7</i>	<i>13.4</i>	<i>2.0</i>	<i>5.4</i>	<i>4.6</i>	<i>4.8</i>	
Excess Return			-3.1	-2.0	-0.1	2.7	0.0	--	0.8	
<b>Covered Calls (Gross)</b>	<b>23,783,695</b>	<b>5.5</b>	<b>7.3</b>	<b>5.5</b>	<b>20.3</b>	<b>9.5</b>	<b>12.3</b>	<b>--</b>	<b>9.3</b>	<b>Apr-14</b>
<i>CBOE S&amp;P 500 Buy Write Index</i>			<i>4.2</i>	<i>1.2</i>	<i>11.8</i>	<i>6.1</i>	<i>6.2</i>	<i>5.7</i>	<i>5.5</i>	
Excess Return			3.1	4.3	8.5	3.4	6.1	--	3.8	
<b>Crisis Risk Offset (Gross)</b>	<b>39,468,172</b>	<b>9.1</b>	<b>0.4</b>	<b>-0.9</b>	<b>1.0</b>	<b>-6.3</b>	<b>-6.7</b>	<b>--</b>	<b>-7.4</b>	<b>Aug-18</b>
<i>Crisis Risk Offset Benchmark</i>			<i>2.1</i>	<i>-0.3</i>	<i>2.4</i>	<i>4.9</i>	<i>0.4</i>	<i>--</i>	<i>0.0</i>	
Excess Return			-1.7	-0.6	-1.4	-11.2	-7.1	--	-7.4	
<b>Cash (Gross)</b>	<b>15,499,650</b>	<b>3.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>Mar-11</b>

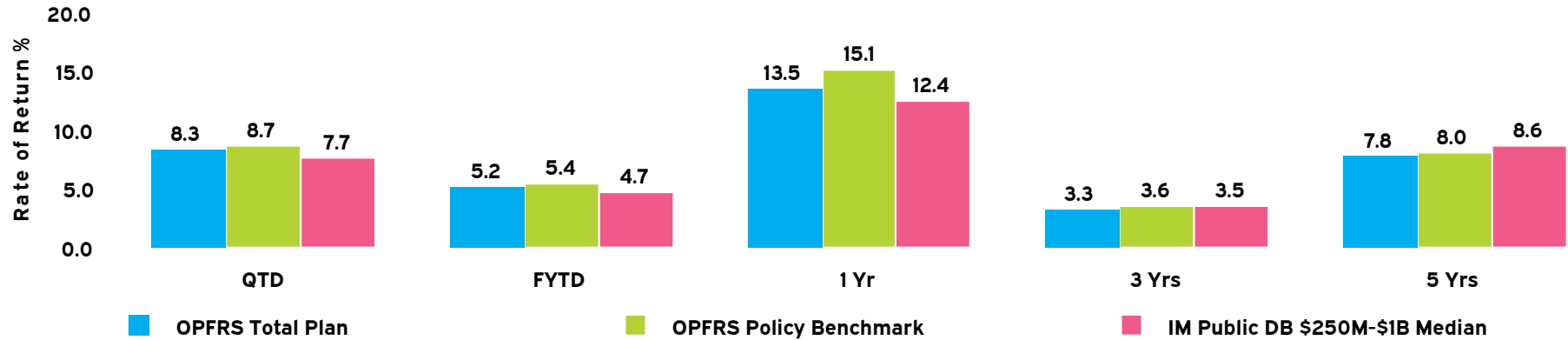
Performance shown is gross of fees. Since inception date and performance begin in the month following an investments initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.

## Asset Class Performance: Net of Fees | As of December 31, 2023

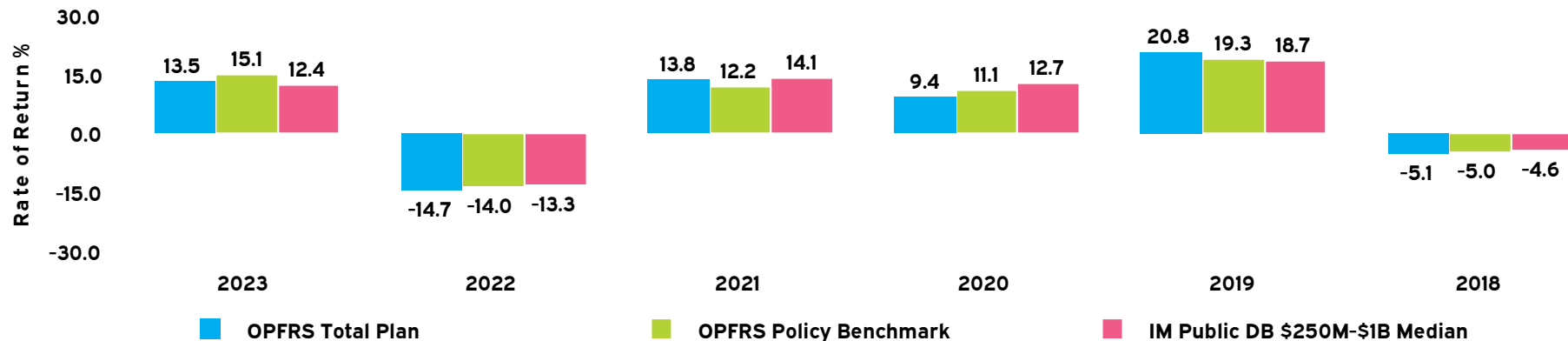
	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
<b>OPFRS Total Plan (Net)</b>	<b>435,955,522</b>	<b>100.0</b>	<b>8.3</b>	<b>5.2</b>	<b>13.5</b>	<b>3.3</b>	<b>7.8</b>	<b>6.5</b>	<b>6.6</b>	<b>Dec-88</b>
<i>OPFRS Policy Benchmark</i>			8.7	5.4	15.1	3.6	8.0	6.8	7.9	
Excess Return			-0.4	-0.2	-1.6	-0.3	-0.2	-0.3	-1.3	
<i>IM Public DB \$250M-\$1B Median (Net)</i>			7.7	4.7	12.4	3.5	8.6	6.3	--	
IM Public DB \$250M-\$1B Median (Net) Rank			33	29	32	62	66	45	--	
<b>Domestic Equity (Net)</b>	<b>183,174,978</b>	<b>42.0</b>	<b>12.0</b>	<b>7.7</b>	<b>19.9</b>	<b>7.4</b>	<b>13.8</b>	<b>10.6</b>	<b>8.9</b>	<b>Jun-97</b>
<i>Russell 3000 (Blend)</i>			12.1	8.4	26.0	8.5	15.2	11.5	9.3	
Excess Return			-0.1	-0.7	-6.1	-1.1	-1.4	-0.9	-0.4	
<b>International Equity (Net)</b>	<b>56,347,608</b>	<b>12.9</b>	<b>9.4</b>	<b>6.9</b>	<b>19.5</b>	<b>3.6</b>	<b>8.5</b>	<b>4.9</b>	<b>5.4</b>	<b>Jan-98</b>
<i>MSCI ACWI ex US (Blend)</i>			9.8	5.6	15.6	1.5	7.1	3.8	5.1	
Excess Return			-0.4	1.3	3.9	2.1	1.4	1.1	0.3	
<b>Fixed Income (Net)</b>	<b>107,983,596</b>	<b>24.8</b>	<b>6.7</b>	<b>3.3</b>	<b>6.1</b>	<b>-2.8</b>	<b>1.5</b>	<b>2.2</b>	<b>4.5</b>	<b>Jan-94</b>
<i>Bloomberg Universal (Blend)</i>			6.8	3.8	6.2	-3.0	1.4	2.1	4.6	
Excess Return			-0.1	-0.5	-0.1	0.2	0.1	0.1	-0.1	
<b>Credit (Net)</b>	<b>9,697,822</b>	<b>2.2</b>	<b>3.9</b>	<b>5.4</b>	<b>12.7</b>	<b>4.1</b>	<b>4.8</b>	<b>--</b>	<b>4.9</b>	<b>Feb-15</b>
<i>Blmbg. U.S. Corp: High Yield Index</i>			7.2	7.7	13.4	2.0	5.4	4.6	4.8	
Excess Return			-3.3	-2.3	-0.7	2.1	-0.6	--	0.1	
<b>Covered Calls (Net)</b>	<b>23,783,695</b>	<b>5.5</b>	<b>7.3</b>	<b>5.4</b>	<b>20.0</b>	<b>9.2</b>	<b>12.1</b>	<b>--</b>	<b>9.0</b>	<b>Apr-14</b>
<i>CBOE S&amp;P 500 Buy Write Index</i>			4.2	1.2	11.8	6.1	6.2	5.7	5.5	
Excess Return			3.1	4.2	8.2	3.1	5.9	--	3.5	
<b>Crisis Risk Offset (Net)</b>	<b>39,468,172</b>	<b>9.1</b>	<b>0.4</b>	<b>-1.0</b>	<b>0.8</b>	<b>-6.4</b>	<b>-6.9</b>	<b>--</b>	<b>-7.6</b>	<b>Aug-18</b>
<i>Crisis Risk Offset Benchmark</i>			2.1	-0.3	2.4	4.9	0.4	--	0.0	
Excess Return			-1.7	-0.7	-1.6	-11.3	-7.3	--	-7.6	
<b>Cash (Net)</b>	<b>15,499,650</b>	<b>3.6</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.7</b>	<b>0.7</b>	<b>0.5</b>	<b>Mar-11</b>

Performance shown is net of fees, except for Total Plan, Domestic Equity, and International Equity composites which have a mix of gross and net of fees performance. Please see the Addendum for more details. Since inception date and performance begin in the month following an investments initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.

#### Trailing Period Performance Ending December 31, 2023



#### Calendar Year Performance Ending December 31, 2023



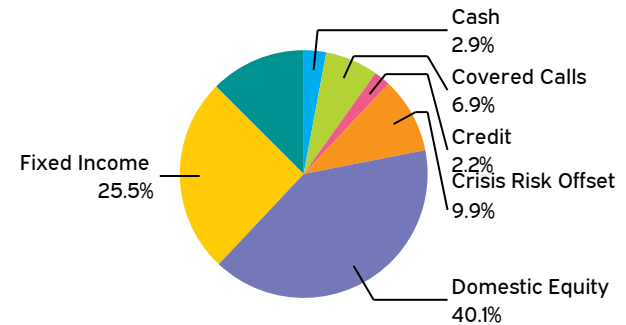
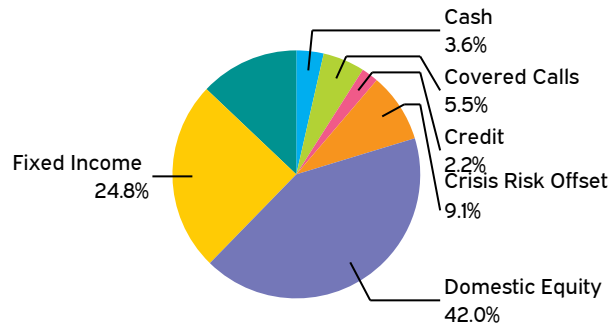
Total Plan performance is a mix of gross and net of fees; performance is gross of fees prior to January 2016 and thereafter. Fiscal year begins on July 1.

### Asset Allocation | As of December 31, 2023

	Current Balance (\$)	Current Allocation (%)	Policy (%)	Difference (%)	Policy Range (%)	Within IPS Range?
Domestic Equity	183,174,978	42.0	40.0	2.0	30.0 - 50.0	Yes
International Equity	56,347,608	12.9	12.0	0.9	8.0 - 14.0	Yes
Fixed Income	107,983,596	24.8	31.0	-6.2	25.0 - 40.0	No
Credit	9,697,822	2.2	2.0	0.2	1.0 - 3.0	Yes
Covered Calls	23,783,695	5.5	5.0	0.5	5.0 - 10.0	Yes
Crisis Risk Offset	39,468,172	9.1	10.0	-0.9	5.0 - 15.0	Yes
Cash	15,499,650	3.6	0.0	3.6	0.0 - 5.0	Yes
<b>Total</b>	<b>435,955,522</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>		

December 31, 2023: \$435,955,521.5

December 31, 2022: \$406,308,110.42



Cash account market value includes cash balances held in ETF accounts at the custodian and residuals from terminated managers. Target weights reflect the Plan's evolving asset allocation (effective 05/31/2017).

## Manager Performance - Net of Fees | As of December 31, 2023

	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
<b>Domestic Equity</b>	<b>183,174,978</b>	<b>100.0</b>	<b>12.0</b>	<b>7.7</b>	<b>19.9</b>	<b>7.4</b>	<b>13.8</b>	<b>10.6</b>	<b>8.9</b>	<b>Jun-97</b>
<i>Russell 3000 (Blend)</i>			12.1	8.4	26.0	8.5	15.2	11.5	9.3	
Excess Return			-0.1	-0.7	-6.1	-1.1	-1.4	-0.9	-0.4	
Northern Trust Russell 1000	88,252,834	48.2	12.0	8.5	26.5	8.8	15.4	11.7	13.5	Jun-10
<i>Russell 1000 Index</i>			12.0	8.4	26.5	9.0	15.5	11.8	13.6	
Excess Return			0.0	0.1	0.0	-0.2	-0.1	-0.1	-0.1	
EARNEST Partners	42,300,855	23.1	12.7	7.6	16.8	7.0	15.1	11.1	9.4	Apr-06
<i>Russell Midcap Index</i>			12.8	7.5	17.2	5.9	12.7	9.4	8.8	
Excess Return			-0.1	0.1	-0.4	1.1	2.4	1.7	0.6	
eV US Mid Cap Core Equity Rank			29	42	52	64	20	14	28	
Wellington Select Quality Equity	24,458,953	13.4	9.8	4.6	10.2	--	--	--	6.5	May-22
<i>Russell 1000 Index</i>			12.0	8.4	26.5	9.0	15.5	11.8	10.7	
Excess Return			-2.2	-3.8	-16.3	--	--	--	-4.2	
eV US Large Cap Core Equity Rank			80	90	94	--	--	--	82	
Brown Fundamental Small Cap Value	12,835,326	7.0	12.9	13.8	17.5	--	--	--	6.7	Apr-21
<i>Russell 2000 Value Index</i>			15.3	11.8	14.6	7.9	10.0	6.8	1.4	
Excess Return			-2.4	2.0	2.9	--	--	--	5.3	
eV US Small Cap Value Equity Rank			45	14	39	--	--	--	21	
Rice Hall James	15,327,009	8.4	13.4	4.0	14.1	-0.3	7.5	--	6.6	Aug-17
<i>Russell 2000 Growth Index</i>			12.7	4.5	18.7	-3.5	9.2	7.2	7.1	
Excess Return			0.7	-0.5	-4.6	3.2	-1.7	--	-0.5	
eV US Small Cap Growth Equity Rank			13	45	68	35	95	--	90	

Performance shown is net of fees, except for the Domestic Equity composite which has a mix of gross and net of fees performance. Please see the Addendum for more details. Since inception date and performance begin in the month following an investments initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.



### Manager Performance - Net of Fees | As of December 31, 2023

	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
<b>International Equity</b>	<b>56,347,608</b>	<b>100.0</b>	<b>9.4</b>	<b>6.9</b>	<b>19.5</b>	<b>3.6</b>	<b>8.5</b>	<b>4.9</b>	<b>5.4</b>	<b>Jan-98</b>
<i>MSCI ACWI ex US (Blend)</i>			<i>9.8</i>	<i>5.6</i>	<i>15.6</i>	<i>1.5</i>	<i>7.1</i>	<i>3.8</i>	<i>5.1</i>	
Excess Return			-0.4	1.3	3.9	2.1	1.4	1.1	0.3	
Vanguard Developed Markets ETF	16,040,034	28.5	11.0	5.8	17.9	3.7	--	--	7.5	Sep-19
<i>FTSE Developed All Cap ex-U.S. Index</i>			<i>10.9</i>	<i>6.5</i>	<i>18.3</i>	<i>3.9</i>	<i>8.7</i>	<i>4.8</i>	<i>7.8</i>	
Excess Return			0.1	-0.7	-0.4	-0.2	--	--	-0.3	
SGA ACWI ex-U.S. Equity	40,307,575	71.5	8.8	7.3	20.5	3.5	--	--	4.4	Dec-19
<i>MSCI AC World ex USA (Net)</i>			<i>9.8</i>	<i>5.6</i>	<i>15.6</i>	<i>1.5</i>	<i>7.1</i>	<i>3.8</i>	<i>4.8</i>	
Excess Return			-1.0	1.7	4.9	2.0	--	--	-0.4	
eV ACWI ex-US All Cap Core Eq Rank			77	18	7	29	--	--	71	

Performance shown is net of fees, except for the International Equity composite which has a mix of gross and net of fees performance. Please see the Addendum for more details. Since inception date and performance begin in the month following an investments initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.

### Manager Performance - Net of Fees | As of December 31, 2023

	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
<b>Fixed Income</b>	<b>107,983,596</b>	<b>100.0</b>	<b>6.7</b>	<b>3.3</b>	<b>6.1</b>	<b>-2.8</b>	<b>1.5</b>	<b>2.2</b>	<b>4.5</b>	<b>Jan-94</b>
<i>Bloomberg Universal (Blend)</i>			6.8	3.8	6.2	-3.0	1.4	2.1	4.6	
Excess Return			-0.1	-0.5	-0.1	0.2	0.1	0.1	-0.1	
Ramirez	73,247,942	67.8	6.6	3.2	5.9	-2.8	1.4	--	1.7	Jan-17
<i>Blmbg. U.S. Aggregate Index</i>			6.8	3.4	5.5	-3.3	1.1	1.8	1.3	
Excess Return			-0.2	-0.2	0.4	0.5	0.3	--	0.4	
eV US Core Fixed Inc Rank			70	78	48	22	53	--	29	
Wellington Core Bond	6,993,592	6.5	7.3	4.0	7.1	--	--	--	-2.5	Apr-21
<i>Blmbg. U.S. Aggregate Index</i>			6.8	3.4	5.5	-3.3	1.1	1.8	-2.4	
Excess Return			0.5	0.6	1.6	--	--	--	-0.1	
eV US Core Fixed Inc Rank			11	13	5	--	--	--	78	
Reams	27,742,062	25.7	7.0	3.2	6.5	-2.7	3.6	3.1	4.9	Feb-98
<i>Bloomberg Universal (Blend)</i>			6.8	3.8	6.2	-3.0	1.4	2.1	4.2	
Excess Return			0.2	-0.6	0.3	0.3	2.2	1.0	0.7	
eV US Core Plus Fixed Inc Rank			49	86	52	40	2	7	24	

Performance shown is net of fees. Since inception date and performance begin in the month following an investments initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.

### Manager Performance - Net of Fees | As of December 31, 2023

	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
<b>Credit</b>	<b>9,697,822</b>	<b>100.0</b>	<b>3.9</b>	<b>5.4</b>	<b>12.7</b>	<b>4.1</b>	<b>4.8</b>	<b>--</b>	<b>4.9</b>	<b>Feb-15</b>
<i>Blmbg. U.S. Corp: High Yield Index</i>			<i>7.2</i>	<i>7.7</i>	<i>13.4</i>	<i>2.0</i>	<i>5.4</i>	<i>4.6</i>	<i>4.8</i>	
Excess Return			<i>-3.3</i>	<i>-2.3</i>	<i>-0.7</i>	<i>2.1</i>	<i>-0.6</i>	<i>--</i>	<i>0.1</i>	
<b>Polen Capital</b>	<b>9,697,822</b>	<b>100.0</b>	<b>3.9</b>	<b>5.4</b>	<b>12.7</b>	<b>4.1</b>	<b>4.8</b>	<b>--</b>	<b>4.9</b>	<b>Feb-15</b>
<i>ICE BofA High Yield Master II</i>			<i>7.1</i>	<i>7.6</i>	<i>13.5</i>	<i>2.0</i>	<i>5.2</i>	<i>4.5</i>	<i>4.7</i>	
Excess Return			<i>-3.2</i>	<i>-2.2</i>	<i>-0.8</i>	<i>2.1</i>	<i>-0.4</i>	<i>--</i>	<i>0.2</i>	
eV US High Yield Fixed Inc Rank			94	90	39	9	64	--	21	

Performance shown is net of fees. Since inception date and performance begin in the month following an investment's initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.

### Manager Performance - Net of Fees | As of December 31, 2023

	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Since Inception	Inception Date
<b>Covered Calls</b>	<b>23,783,695</b>	<b>100.0</b>	<b>7.3</b>	<b>5.4</b>	<b>20.0</b>	<b>9.2</b>	<b>12.1</b>	--	<b>9.0</b>	<b>Apr-14</b>
<i>CBOE S&amp;P 500 Buy Write Index</i>			4.2	1.2	11.8	6.1	6.2	5.7	5.5	
Excess Return			3.1	4.2	8.2	3.1	5.9	--	3.5	
Parametric BXM	11,662,453	49.0	5.0	4.0	15.8	7.5	8.9	--	7.1	Apr-14
<i>CBOE S&amp;P 500 Buy Write Index</i>			4.2	1.2	11.8	6.1	6.2	5.7	5.5	
Excess Return			0.8	2.8	4.0	1.4	2.7	--	1.6	
Parametric DeltaShift	12,121,242	51.0	9.6	6.8	24.3	10.7	15.0	--	11.1	Apr-14
<i>CBOE S&amp;P 500 Buy Write Index</i>			4.2	1.2	11.8	6.1	6.2	5.7	5.5	
Excess Return			5.4	5.6	12.5	4.6	8.8	--	5.6	

Performance shown is net of fees. Since inception date and performance begin in the month following an investment's initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.

### Manager Performance - Net of Fees | As of December 31, 2023

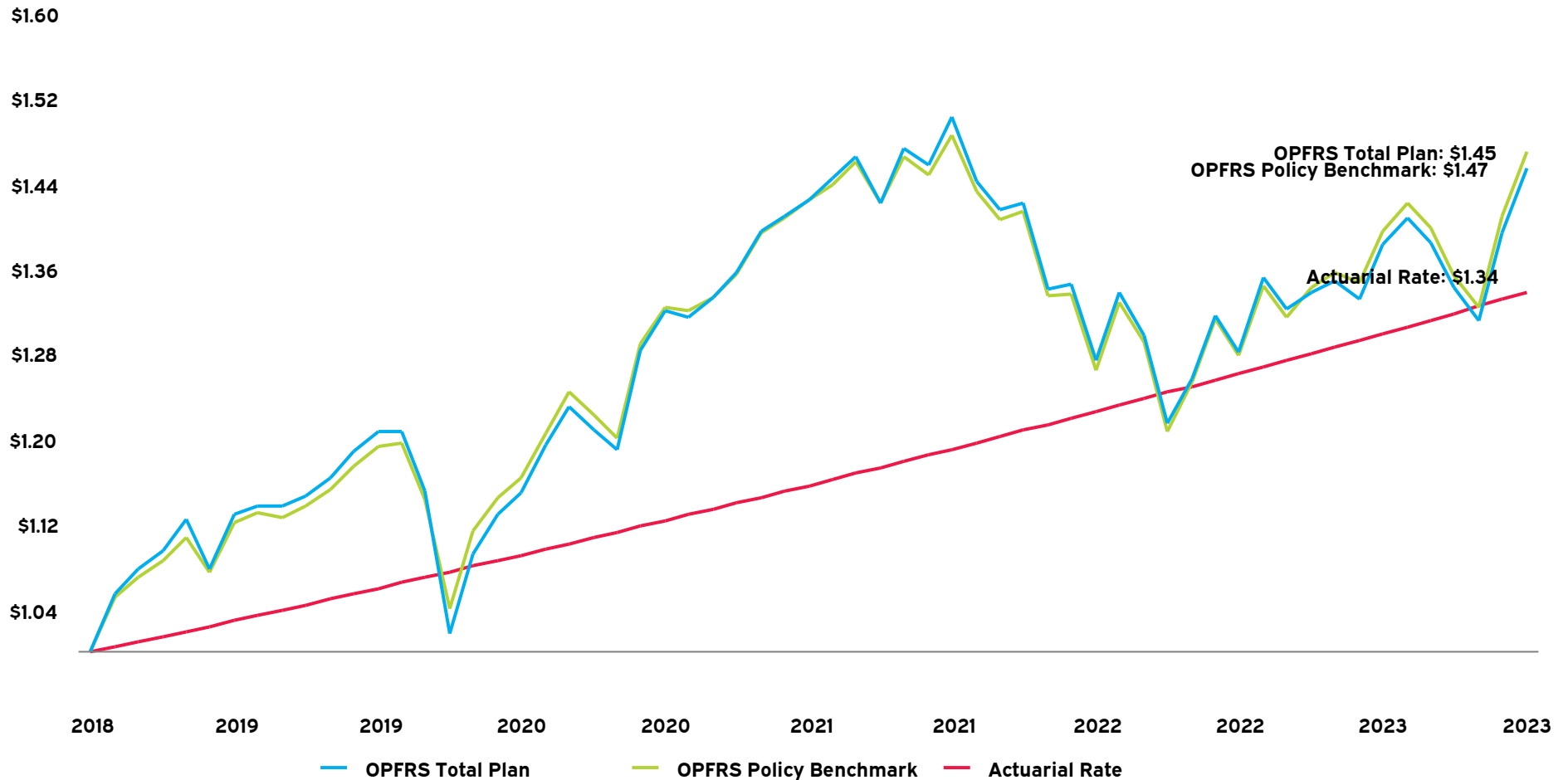
	Market Value (\$)	% of Portfolio	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Crisis Risk Offset</b>	<b>39,468,172</b>	<b>100.0</b>	<b>0.4</b>	<b>-1.0</b>	<b>0.8</b>	<b>-6.4</b>	<b>-6.9</b>	<b>--</b>	<b>-7.6</b>	<b>Aug-18</b>
<i>Crisis Risk Offset Benchmark</i>			<i>2.1</i>	<i>-0.3</i>	<i>2.4</i>	<i>4.9</i>	<i>0.4</i>	<i>--</i>	<i>0.0</i>	
Over/Under			<i>-1.7</i>	<i>-0.7</i>	<i>-1.6</i>	<i>-11.3</i>	<i>-7.3</i>	<i>--</i>	<i>-7.6</i>	
<b>Kepos Alternative Risk Premia</b>	<b>10,884,494</b>	<b>27.6</b>	<b>-0.8</b>	<b>3.9</b>	<b>10.6</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>4.5</b>	<b>Feb-22</b>
<i>SG Multi Alternative Risk Premia Index</i>			<i>-1.4</i>	<i>2.8</i>	<i>6.4</i>	<i>6.3</i>	<i>1.2</i>	<i>--</i>	<i>5.4</i>	
Over/Under			<i>0.6</i>	<i>1.1</i>	<i>4.2</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>-0.9</i>	
<b>Versor Trend Following</b>	<b>14,897,129</b>	<b>37.7</b>	<b>-7.9</b>	<b>-4.2</b>	<b>-6.7</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-0.4</b>	<b>Apr-22</b>
<i>SG Trend Index</i>			<i>-5.1</i>	<i>-4.3</i>	<i>-4.2</i>	<i>10.0</i>	<i>9.1</i>	<i>5.0</i>	<i>2.1</i>	
Over/Under			<i>-2.8</i>	<i>0.1</i>	<i>-2.5</i>	<i>--</i>	<i>--</i>	<i>--</i>	<i>-2.5</i>	
<b>Vanguard Long-Term Treasury ETF</b>	<b>13,686,549</b>	<b>34.7</b>	<b>12.3</b>	<b>-1.1</b>	<b>2.8</b>	<b>-11.6</b>	<b>--</b>	<b>--</b>	<b>-3.9</b>	<b>Jul-19</b>
<i>Blmbg. U.S. Government: Long Term Bond Index</i>			<i>12.7</i>	<i>-0.6</i>	<i>3.1</i>	<i>-11.3</i>	<i>-1.2</i>	<i>2.3</i>	<i>-3.6</i>	
Over/Under			<i>-0.4</i>	<i>-0.5</i>	<i>-0.3</i>	<i>-0.3</i>	<i>--</i>	<i>--</i>	<i>-0.3</i>	

Performance shown is net of fees. Since inception date and performance begin in the month following an investments initial funding. Fiscal year begins on July 1. Please see Benchmark History section for custom benchmark compositions.

**Cash Flow Summary  
Quarter To Date**

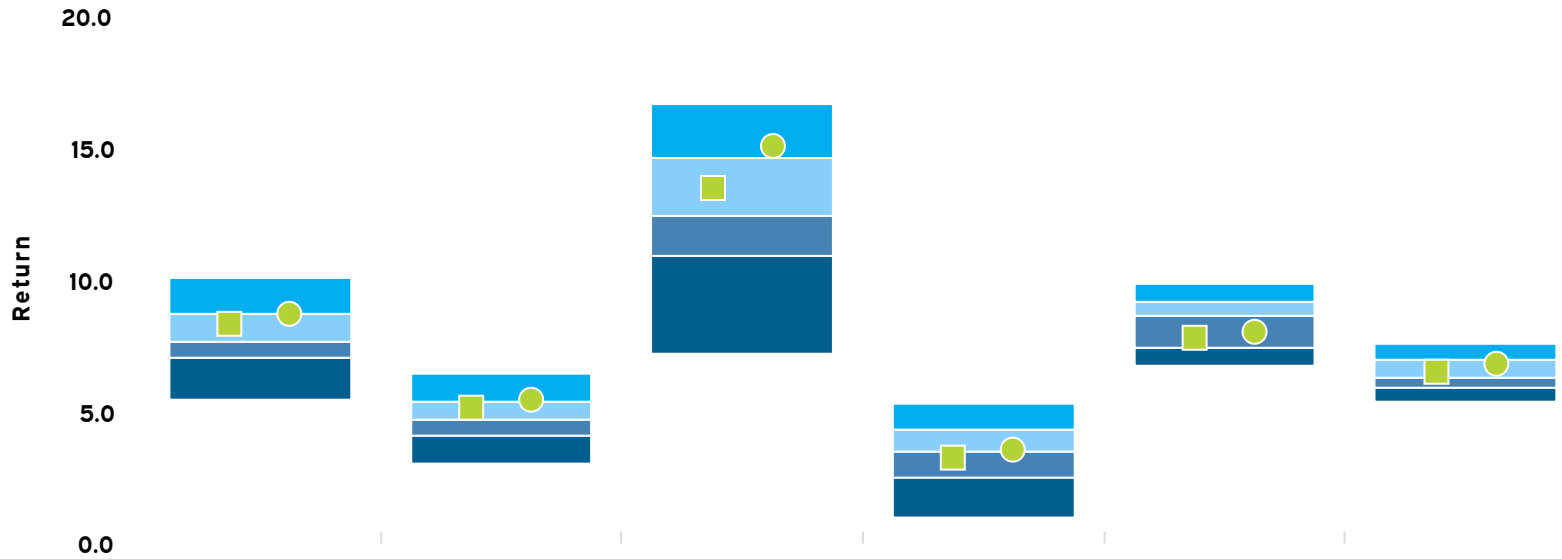
	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Northern Trust Russell 1000	78,815,151	-	9,437,683	88,252,834
EARNEST Partners	39,440,769	-2,000,000	4,860,086	42,300,855
Wellington Select Quality Equity	22,275,787	-	2,183,166	24,458,953
Brown Fundamental Small Cap Value	11,370,103	-	1,465,223	12,835,326
Rice Hall James	13,489,312	-	1,837,698	15,327,009
Vanguard Developed Markets ETF	14,640,298	-204,167	1,603,903	16,040,034
SGA ACWI ex-U.S. Equity	36,967,020	-	3,340,554	40,307,575
Ramirez	68,697,575	-	4,550,367	73,247,942
Wellington Core Bond	6,517,141	-	476,451	6,993,592
Reams	25,907,515	-	1,834,547	27,742,062
Polen Capital	9,329,974	-	367,848	9,697,822
Parametric BXM	11,106,210	-	556,243	11,662,453
Parametric DeltaShift	11,051,591	-	1,069,650	12,121,242
Kepos Alternative Risk Premia	10,968,295	-	-83,801	10,884,494
Versor Trend Following	16,170,216	-	-1,273,086	14,897,129
Vanguard Long-Term Treasury ETF	12,347,478	-58,772	1,397,843	13,686,549
Cash - Money Market	5,644,014	-551,364	-	5,092,650
Cash - Treasury	10,405,000	2,000	-	10,407,000
Securities Lending Northern Trust	-	-38,516	38,516	-
<b>OPFRS Total Plan</b>	<b>405,143,449</b>	<b>-2,850,819</b>	<b>33,662,891</b>	<b>435,955,522</b>

#### Growth of a Dollar 5 Years ending December 31, 2023



The actuarial expected rate of return was 8% through 6/30/2009, 7.5% through 6/30/2010, 7% through 6/30/2011, 6.75% through 6/30/2014, 6.5% through 2/31/2017 and 6.0% currently.

#### Plan Sponsor Peer Group Performance Comparison vs. InvMetrics Public DB \$250M-\$1B Net



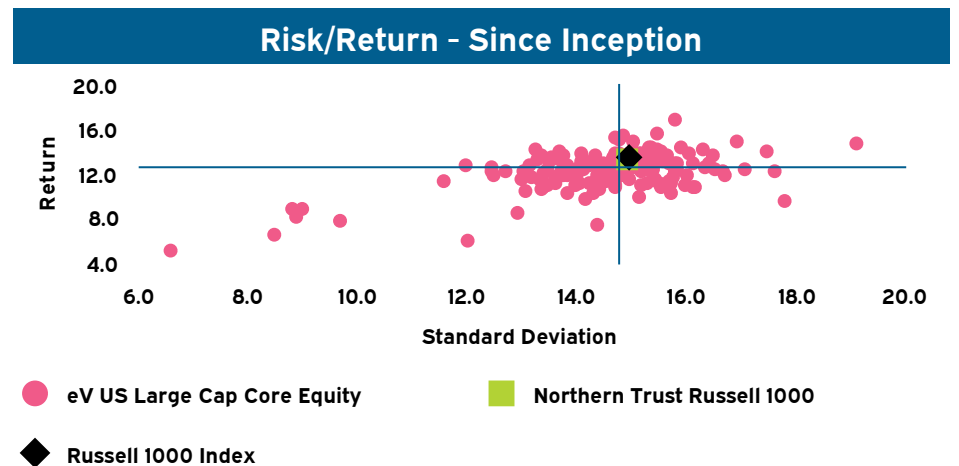
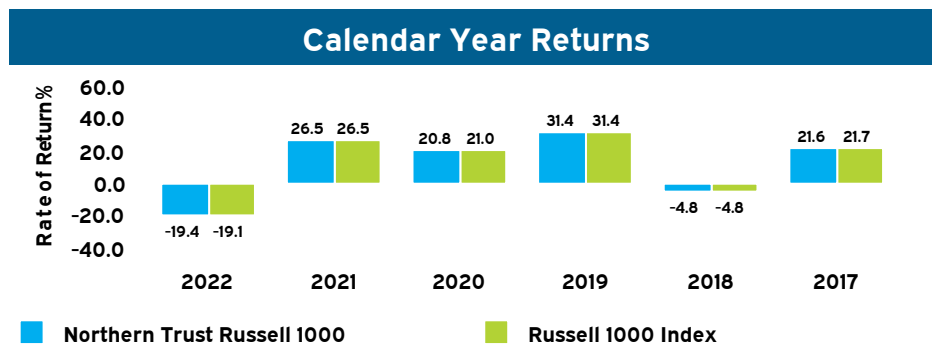
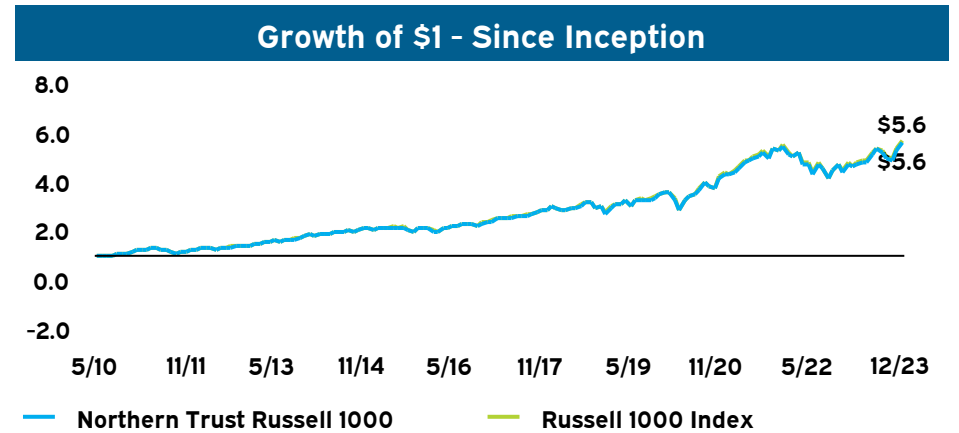
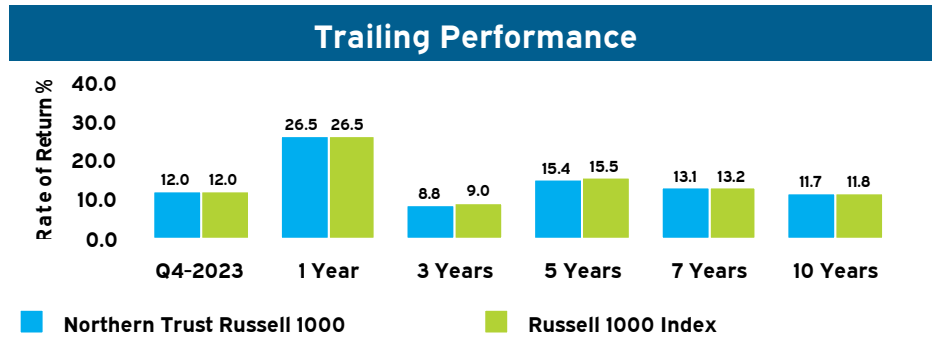
	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)
■ OPFRS Total Plan	8.3 (33)	5.2 (29)	13.5 (32)	3.3 (62)	7.8 (66)	6.5 (45)
● OPFRS Policy Benchmark	8.7 (27)	5.4 (24)	15.1 (21)	3.6 (49)	8.0 (63)	6.8 (35)
5th Percentile	10.1	6.4	16.7	5.3	9.8	7.5
1st Quartile	8.7	5.4	14.6	4.3	9.1	7.0
Median	7.7	4.7	12.4	3.5	8.6	6.3
3rd Quartile	7.0	4.1	10.9	2.5	7.4	5.9
95th Percentile	5.4	3.0	7.2	1.0	6.7	5.4
Population	93	90	85	78	78	67

Total Plan performance is a mix of gross and net of fees; performance is gross of fees prior to January 2016 and net of fees thereafter. Parentheses contain percentile rankings. Calculation based on monthly periodicity. Fiscal year begins on July 1.



## **Portfolio Characteristics & Manager Profiles**

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Northern Trust Russell 1000	0.00	1.00	0.28	0.72	0.01	1.00	100.03	99.99
Russell 1000 Index	0.00	1.00	-	0.72	0.00	1.00	100.00	100.00



	QTD Return	QTD Risk
Northern Trust Russell 1000	11.97	4.85
Russell 1000 Index	11.96	4.85

Performance shown is net of fees. Risk is measured as Standard Deviation.

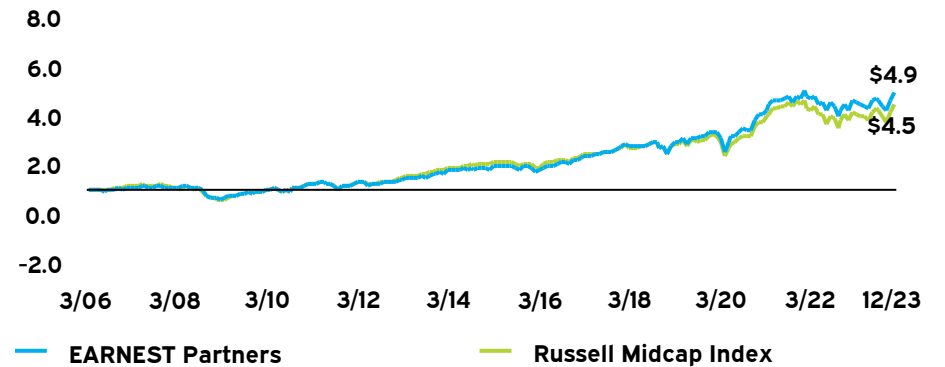
EARNEST Partners | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
EARNEST Partners	0.55	0.85	-0.08	0.66	1.01	1.00	91.86	75.68
Russell Midcap Index	0.00	1.00	-	0.58	0.00	1.00	100.00	100.00

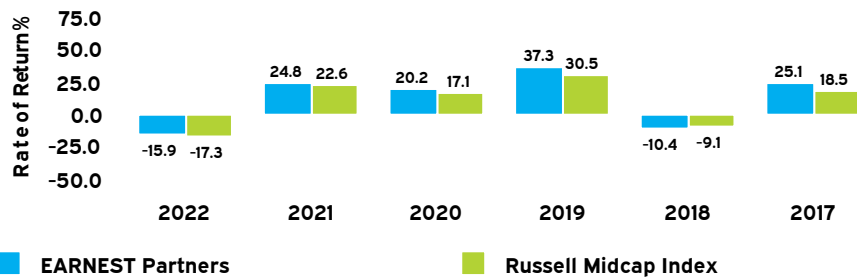
### Trailing Performance



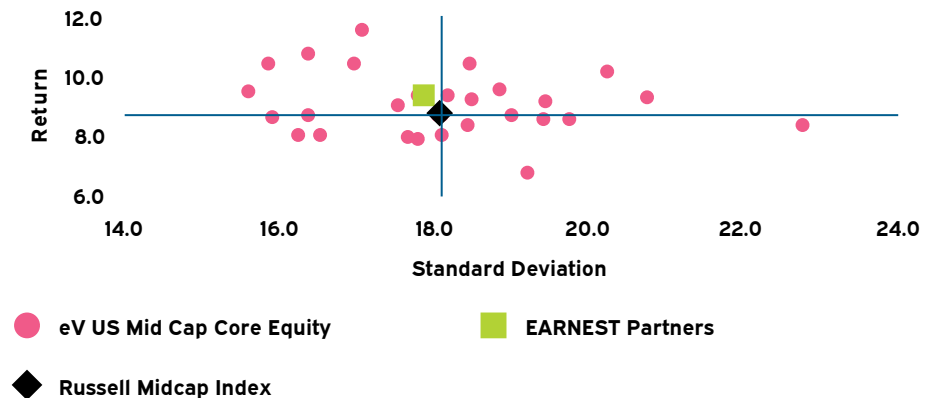
### Growth of \$1 - Since Inception



### Calendar Year Returns



### Risk/Return - Since Inception



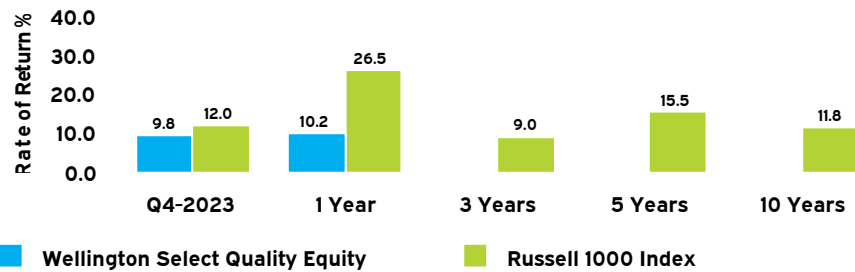
	QTD Return	QTD Risk
EARNEST Partners	12.74	5.70
Russell Midcap Index	12.82	6.67

Performance shown is net of fees. Risk is measured as Standard Deviation.

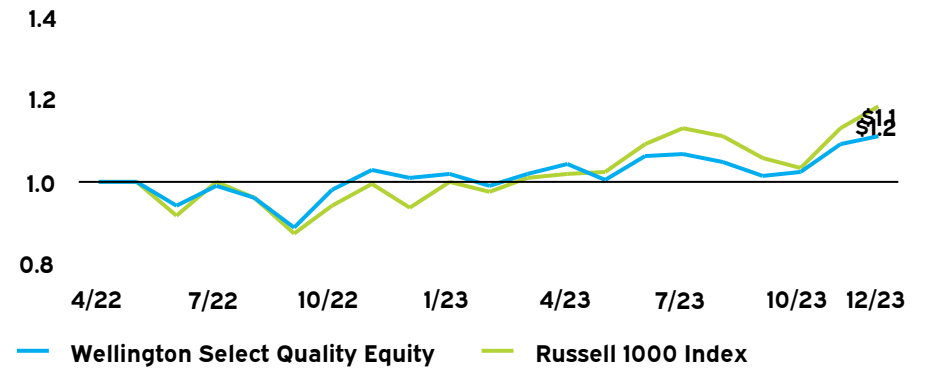
### Wellington Select Quality Equity | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Wellington Select Quality Equity	1.29	0.48	-0.26	1.01	2.87	0.74	61.29	-35.29
Russell 1000 Index	0.00	1.00	-	0.72	0.00	1.00	100.00	100.00

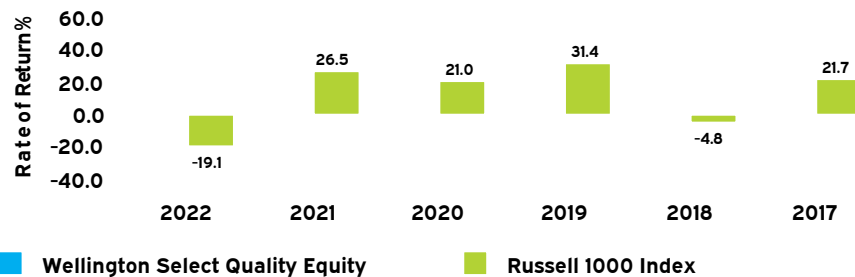
#### Trailing Performance



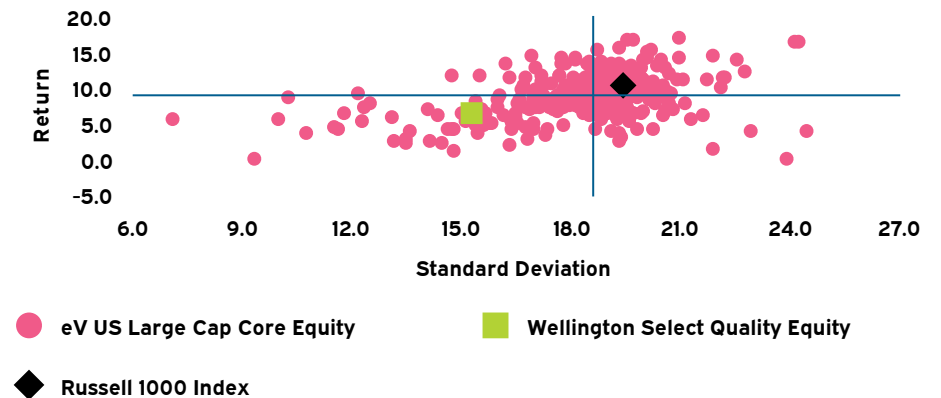
#### Growth of \$1 - Since Inception



#### Calendar Year Returns



#### Risk/Return - Since Inception



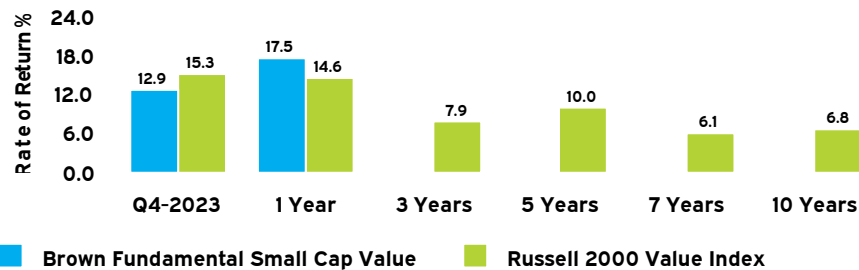
	QTD Return	QTD Risk
Wellington Select Quality Equity	9.80	2.72
Russell 1000 Index	11.96	4.85

Performance shown is net of fees. Risk is measured as Standard Deviation.

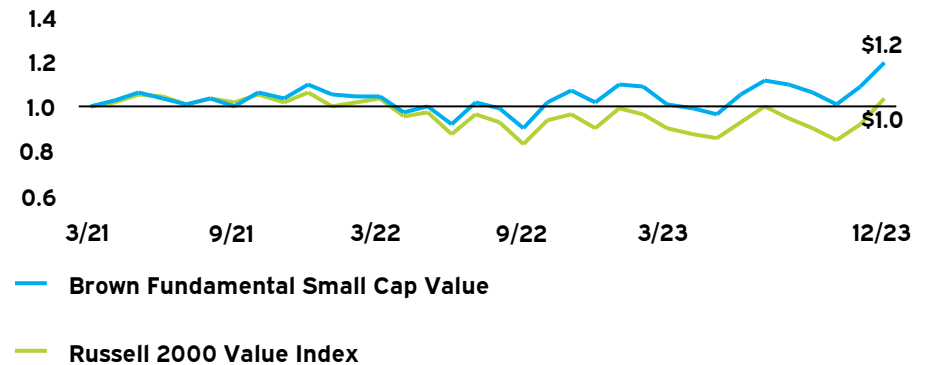
### Brown Fundamental Small Cap Value | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Brown Fundamental Small Cap Value	0.37	0.76	-0.45	0.63	1.90	1.00	79.94	70.84
Russell 2000 Value Index	0.00	1.00	-	0.59	0.00	1.00	100.00	100.00

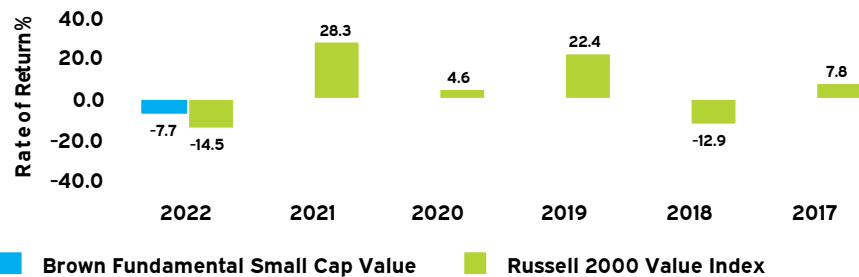
#### Trailing Performance



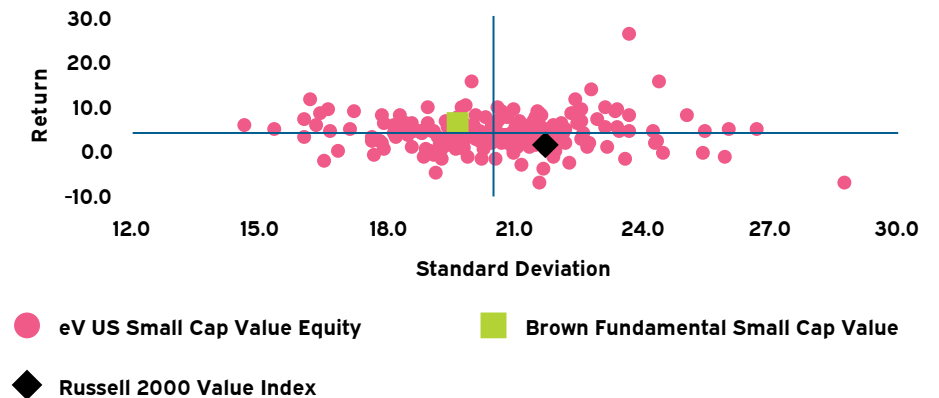
#### Growth of \$1 - Since Inception



#### Calendar Year Returns



#### Risk/Return - Since Inception



	QTD Return	QTD Risk
Brown Fundamental Small Cap Value	12.89	6.10
Russell 2000 Value Index	15.26	7.99

Performance shown is net of fees. Risk is measured as Standard Deviation.

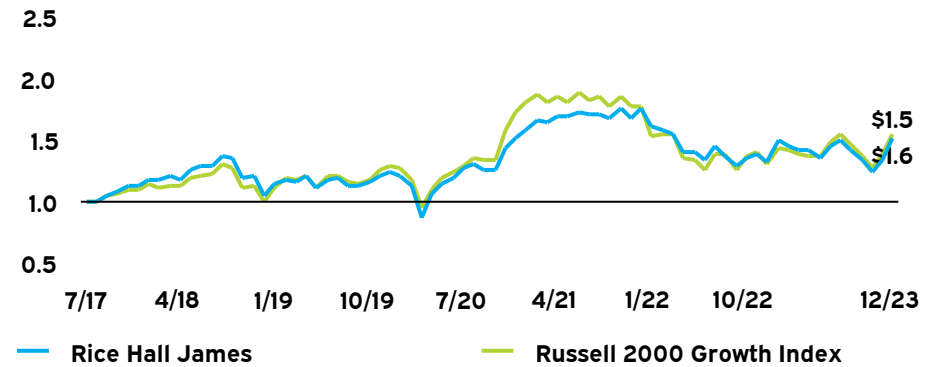
Rice Hall James | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Rice Hall James	0.54	0.91	0.09	0.52	1.33	0.98	94.78	81.06
Russell 2000 Growth Index	0.00	1.00	-	0.46	0.00	1.00	100.00	100.00

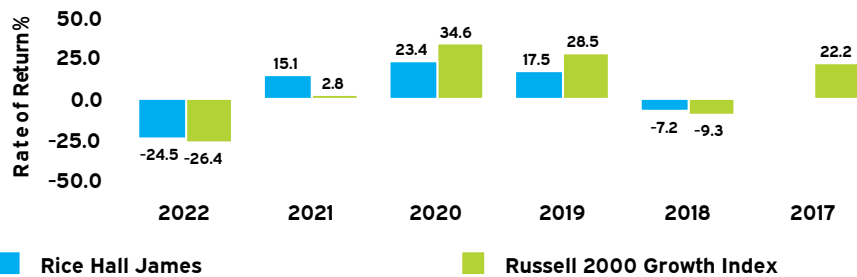
### Trailing Performance



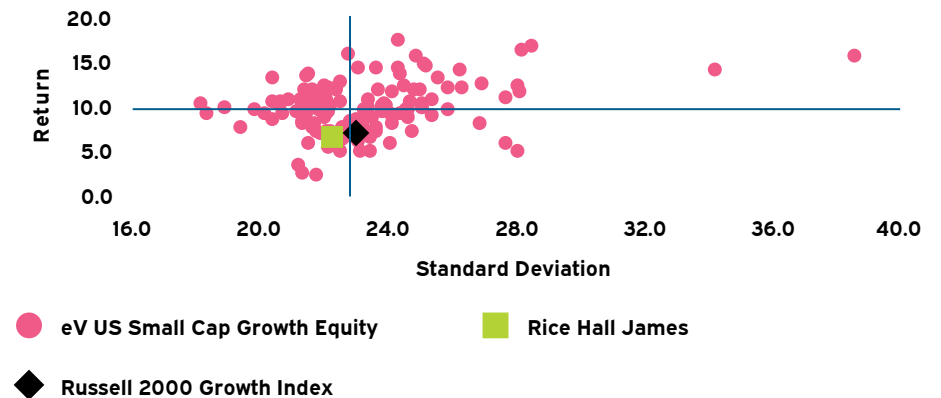
### Growth of \$1 - Since Inception



### Calendar Year Returns



### Risk/Return - Since Inception



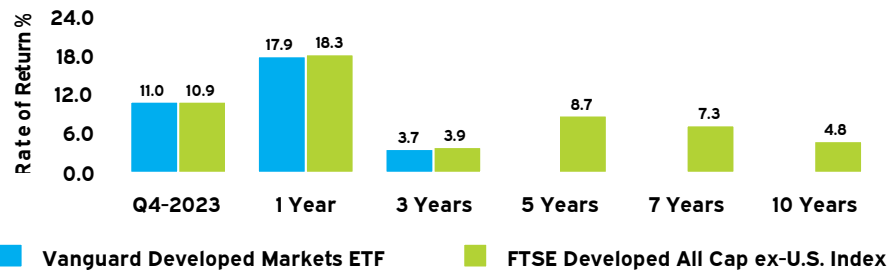
	QTD Return	QTD Risk
Rice Hall James	13.35	7.94
Russell 2000 Growth Index	12.75	8.68

Performance shown is net of fees. Risk is measured as Standard Deviation.

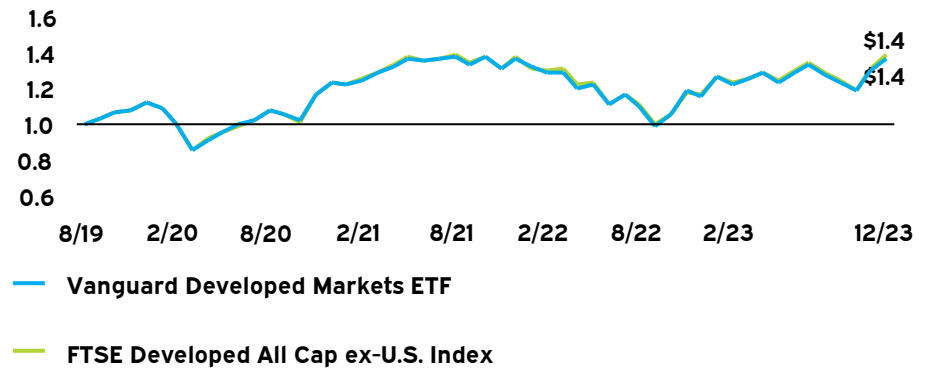
### Vanguard Developed Markets ETF | As of December 31, 2023

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Vanguard Developed Markets ETF	0.50	0.86	-0.01	0.62	0.84	1.00	92.79	75.72
FTSE Developed All Cap ex-U.S. Index	0.00	1.00	-	0.54	0.00	1.00	100.00	100.00

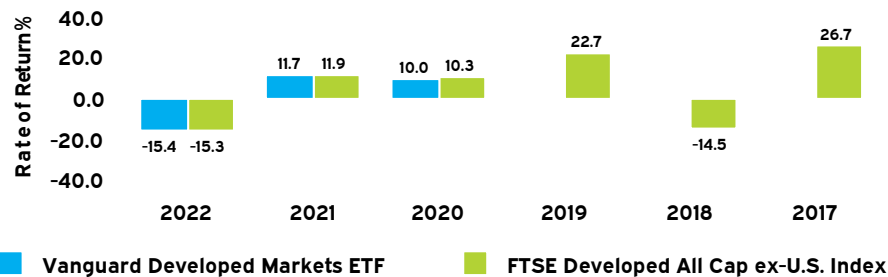
#### Trailing Performance



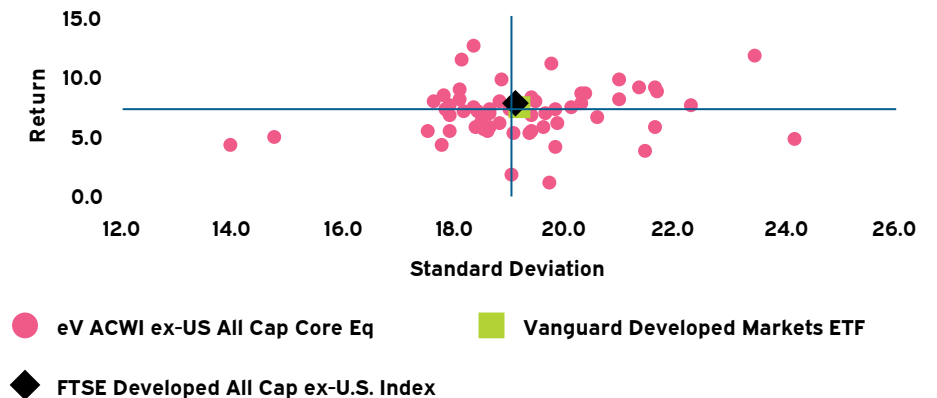
#### Growth of \$1 - Since Inception



#### Calendar Year Returns



#### Risk/Return - Since Inception

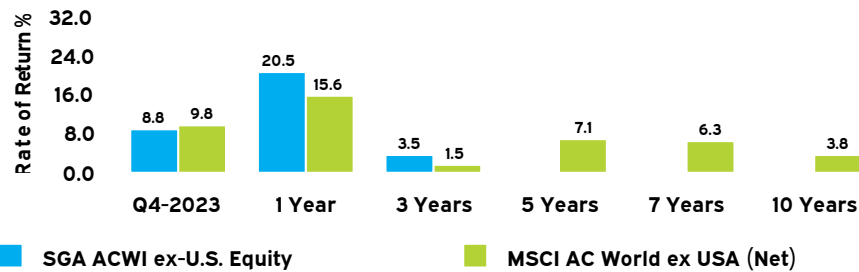


	QTD Return	QTD Risk
Vanguard Developed Markets ETF	10.98	5.16
FTSE Developed All Cap ex-U.S. Index	10.87	5.99

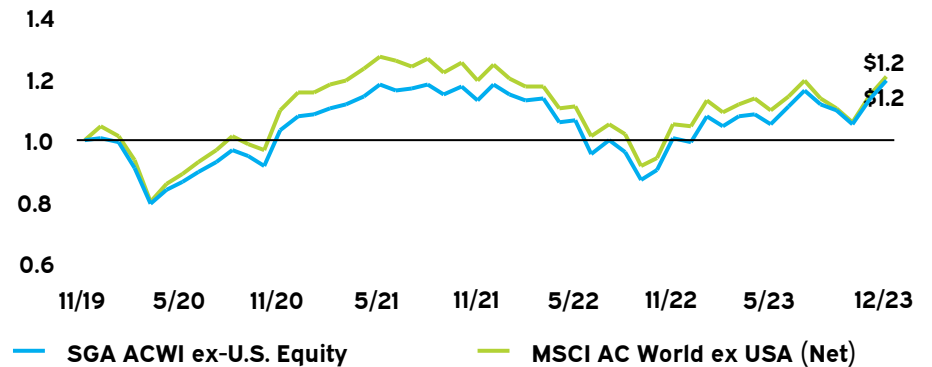
Performance shown is net of fees. Risk is measured as Standard Deviation.

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
SGA ACWI ex-U.S. Equity	-0.27	0.99	-1.94	0.47	0.15	1.00	95.67	106.99
MSCI AC World ex USA (Net)	0.00	1.00	-	0.52	0.00	1.00	100.00	100.00

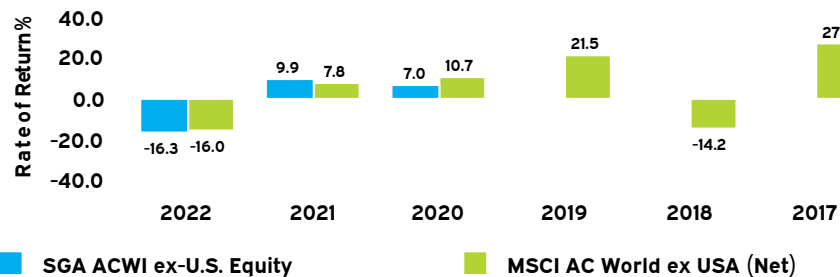
### Trailing Performance



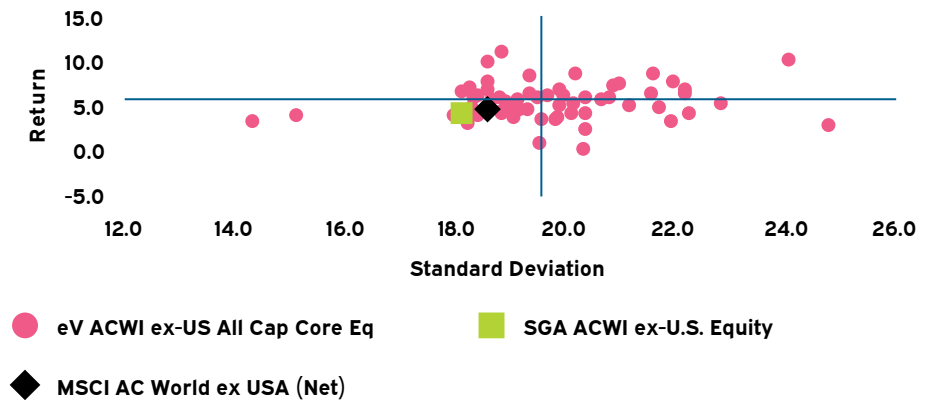
### Growth of \$1 - Since Inception



### Calendar Year Returns



### Risk/Return - Since Inception



	QTD Return	QTD Risk
SGA ACWI ex-U.S. Equity	8.81	5.45
MSCI AC World ex USA (Net)	9.75	5.50

Performance shown is net of fees. Risk is measured as Standard Deviation.



#### Account Information

Account Name	Ramirez
Account Structure	Separate Account
Inception Date	01/30/2017
Asset Class	US Fixed Income
Benchmark	Blmbg. U.S. Aggregate Index
Peer Group	eV US Core Fixed Inc

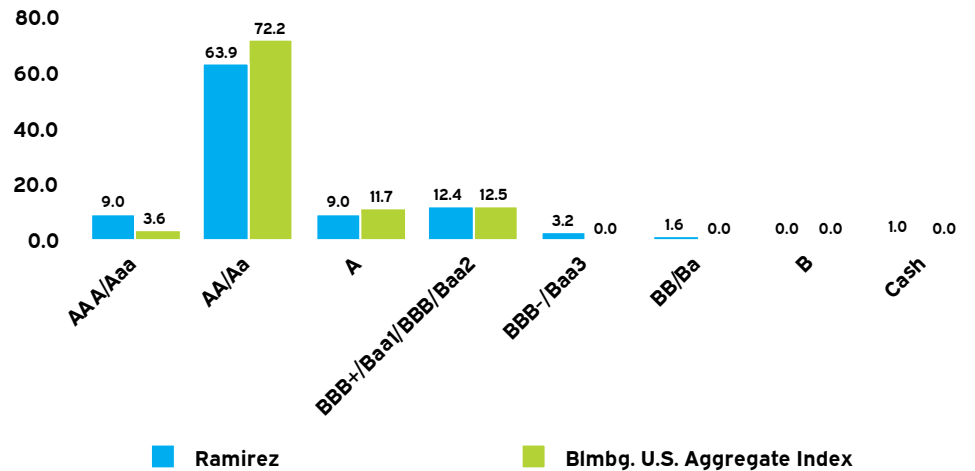
#### Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Ramirez	6.6	5.9	-2.8	1.4
Blmbg. U.S. Aggregate Index	6.8	5.5	-3.3	1.1

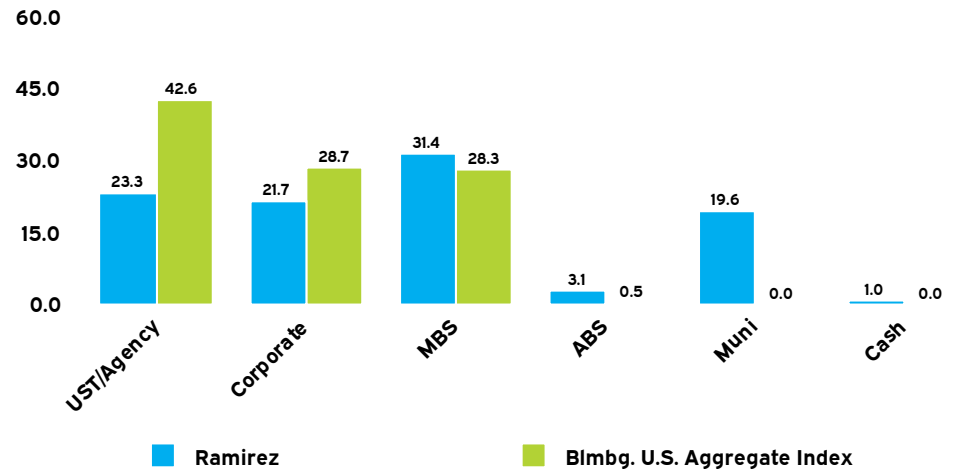
#### Portfolio Fixed Income Characteristics

	Q4-23 Portfolio	Q3-23 Portfolio
Yield To Maturity	4.9	5.7
Average Duration	5.8	6.2
Average Quality	AA	AA
Weighted Average Maturity	8.6	9.1

#### Credit Quality Allocation



#### Sector Allocation



Performance shown is net of fees.

#### Account Information

Account Name	Wellington Core Bond
Account Structure	Commingled Fund
Inception Date	04/01/2021
Asset Class	US Fixed Income
Benchmark	Blmbg. U.S. Aggregate Index
Peer Group	eV US Core Fixed Inc

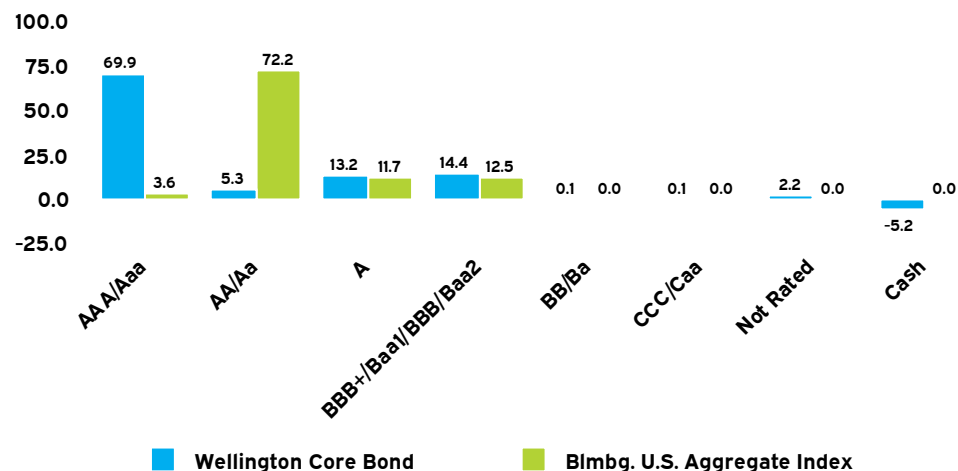
#### Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Wellington Core Bond	7.3	7.1	-	-
Blmbg. U.S. Aggregate Index	6.8	5.5	-3.3	1.1

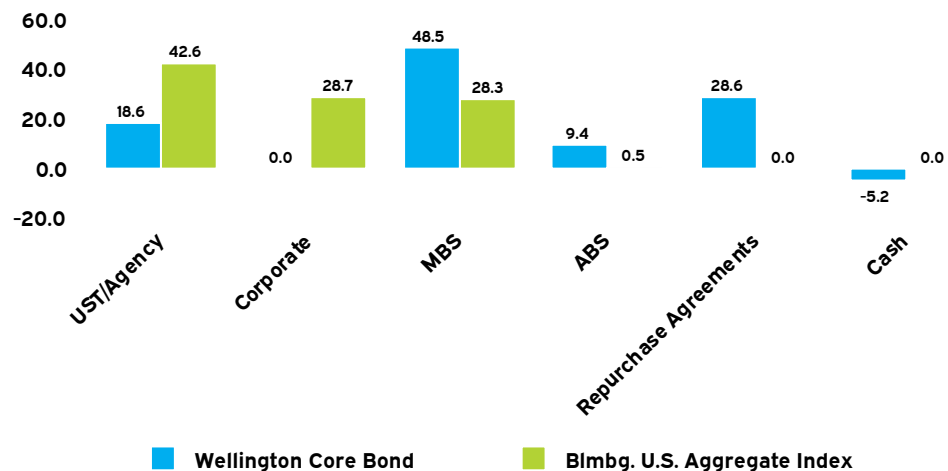
#### Portfolio Fixed Income Characteristics

	Q4-23 Portfolio	Q3-23 Portfolio
Yield To Maturity	4.9	5.3
Average Duration	6.5	6.7
Average Quality	AA	AA
Weighted Average Maturity	-	-

#### Credit Quality Allocation



#### Sector Allocation



Performance shown is net of fees.

#### Account Information

Account Name	Reams
Account Structure	Separate Account
Inception Date	01/01/1998
Asset Class	US Fixed Income
Benchmark	Bloomberg Universal (Blend)
Peer Group	eV US Core Plus Fixed Inc

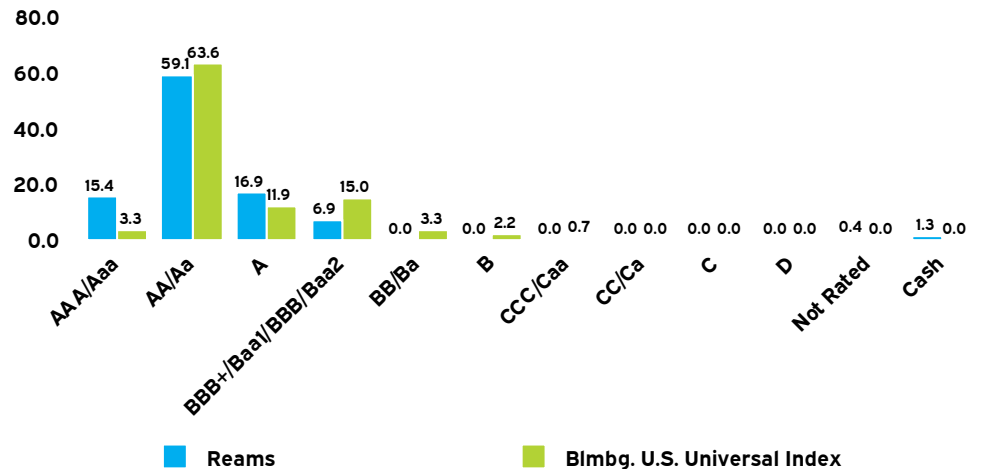
#### Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Reams	7.0	6.5	-2.7	3.6
Bimbg. U.S. Universal Index	6.8	6.2	-3.0	1.4

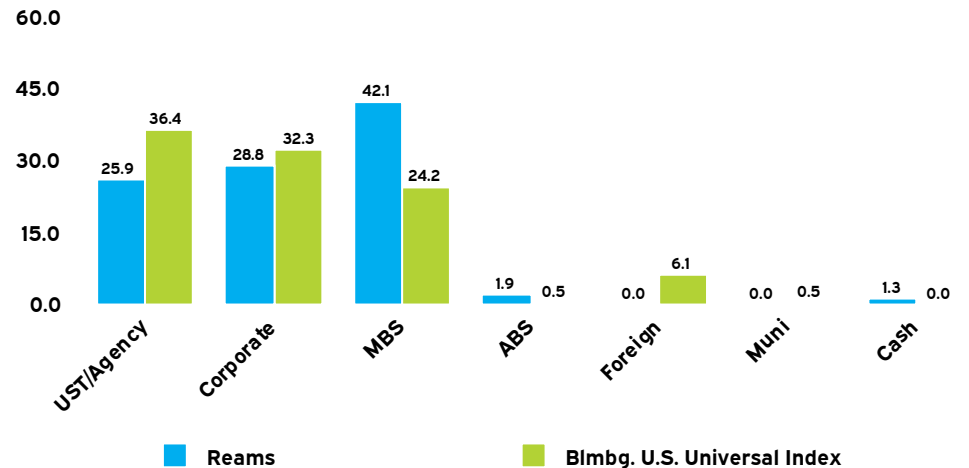
#### Portfolio Fixed Income Characteristics

	Q4-23 Portfolio	Q3-23 Portfolio
Yield To Maturity	5.1	6.4
Average Duration	6.2	6.9
Average Quality	AA	AA
Weighted Average Maturity	-	-

#### Credit Quality Allocation



#### Sector Allocation



Performance shown is net of fees.

#### Account Information

Account Name	Polen Capital
Account Structure	Commingled Fund
Inception Date	02/01/2015
Asset Class	US Fixed Income
Benchmark	ICE BofA High Yield Master II
Peer Group	eV US High Yield Fixed Inc

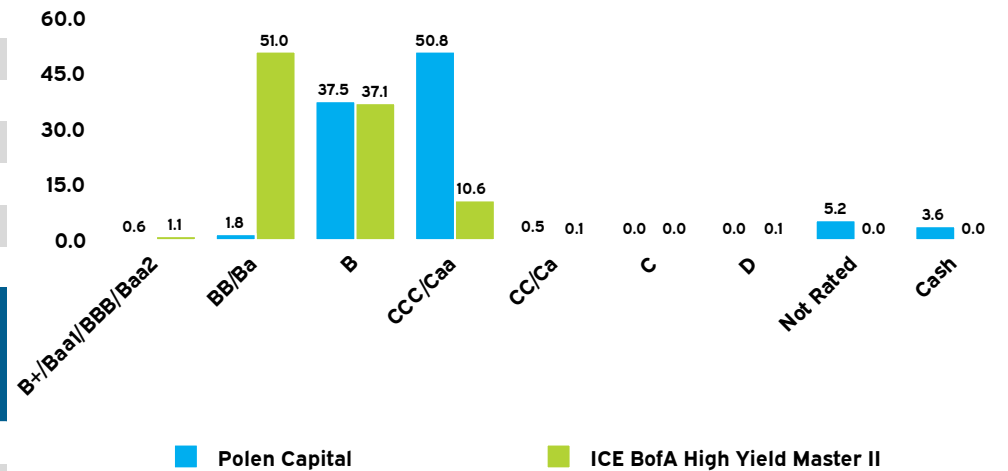
#### Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Polen Capital	3.9	12.7	4.1	4.8
ICE BofA High Yield Master II	7.1	13.5	2.0	5.2

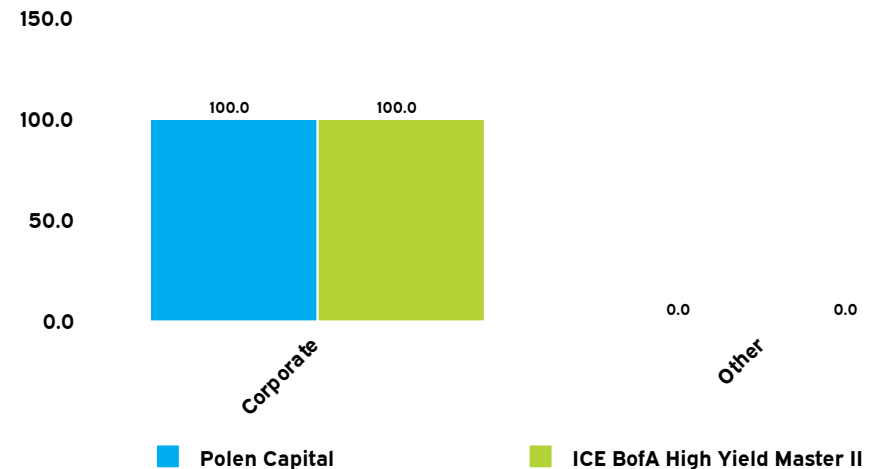
#### Portfolio Fixed Income Characteristics

	Q4-23 Portfolio	Q3-23 Portfolio
Yield To Maturity	9.7	10.8
Average Duration	1.5	1.8
Average Quality	CCC	BBB
Weighted Average Maturity	-	-

#### Credit Quality Allocation



#### Sector Allocation

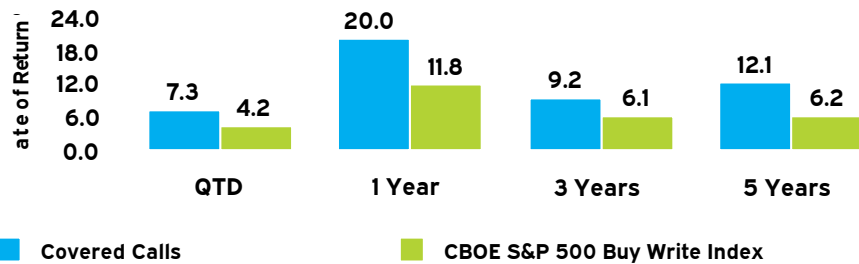


Performance shown is net of fees.

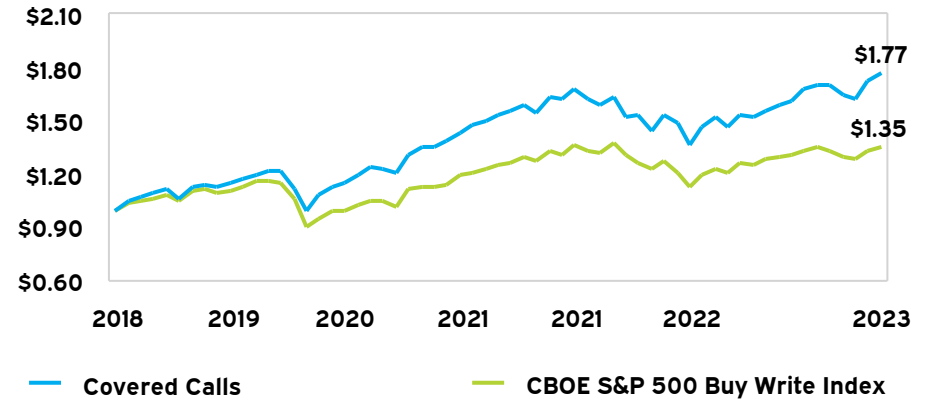
### Covered Calls | As of December 31, 2023

	Return	Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Capture	Down Capture	Inception Date
Covered Calls	9.0	11.5	3.2	1.0	0.8	4.0	124.2	105.0	04/01/2014
CBOE S&P 500 Buy Write Index	5.5	10.5	0.0	1.0	-	0.0	100.0	100.0	
Parametric BXM	7.1	9.4	2.2	0.9	0.4	3.2	99.3	85.4	04/01/2014
CBOE S&P 500 Buy Write Index	5.5	10.5	0.0	1.0	-	0.0	100.0	100.0	
Parametric DeltaShift	11.1	13.9	4.5	1.2	0.9	6.3	148.3	121.8	04/01/2014
CBOE S&P 500 Buy Write Index	5.5	10.5	0.0	1.0	-	0.0	100.0	100.0	

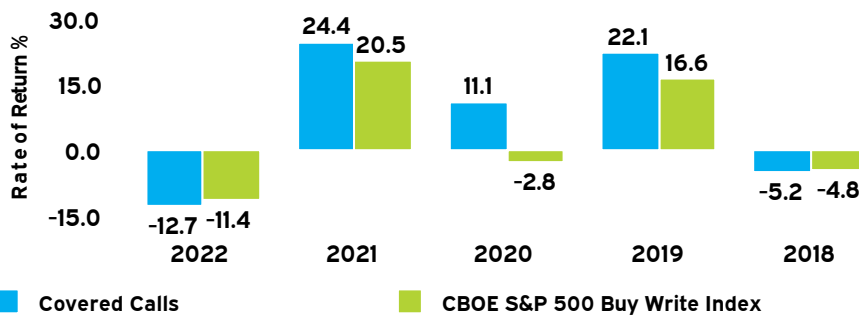
### Trailing Period Performance



### Growth of a Dollar



### Calendar Year Performance



Performance shown is net of fees.

### Crisis Risk Offset | As of December 31, 2023

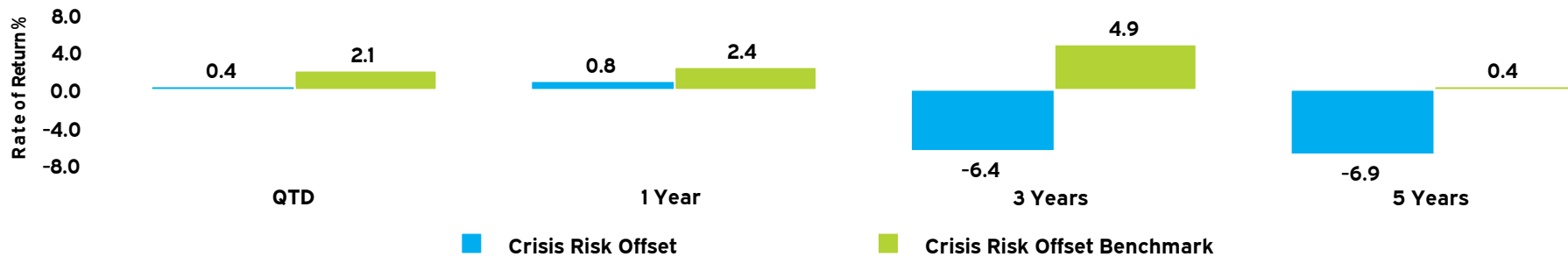
	Return	Standard Deviation	Alpha	Beta	Information Ratio	Tracking Error	Up Capture	Down Capture	Inception Date
Crisis Risk Offset	-7.6	11.1	-7.2	0.8	-0.7	10.3	28.1	129.9	08/01/2018
Crisis Risk Offset Benchmark	0.0	5.4	0.0	1.0	-	0.0	100.0	100.0	
Kepos Alternative Risk Premia	4.5	6.1	0.8	0.7	-0.2	5.1	74.3	62.3	02/01/2022
SG Multi Alternative Risk Premia Index	5.4	5.1	0.0	1.0	-	0.0	100.0	100.0	
Versor Trend Following	-0.4	15.8	-2.4	1.1	-0.3	6.8	98.8	111.6	04/01/2022
SG Trend Index	2.1	12.8	0.0	1.0	-	0.0	100.0	100.0	
Vanguard Long-Term Treasury ETF	-3.9	15.6	-0.2	1.0	-0.2	1.1	101.1	102.0	07/01/2019
Blmbg. U.S. Government: Long Term Bond Index	-3.6	15.4	0.0	1.0	-	0.0	100.0	100.0	

### Correlation Matrix

#### 3 Months Ending December 31, 2023

	Crisis Risk Offset	MSCI AC World Index Value	S&P 500 Index	Blmbg. Global Aggregate
Crisis Risk Offset	1.00			
MSCI AC World Index Value	1.00	1.00		
S&P 500 Index	0.98	0.97	1.00	
Blmbg. Global Aggregate	0.99	1.00	0.96	1.00

### Trailing Period Performance



Performance shown is net of fees.

## **Additional Information**

Benchmark History		
From Date	To Date	Benchmark
<b>OPFRS Total Plan</b>		
06/01/2022	Present	40.0% Russell 3000 Index, 12.0% MSCI AC World ex USA (Net), 31.0% Blmbg. U.S. Universal Index, 2.0% Blmbg. U.S. Corp: High Yield Index, 5.0% CBOE S&P 500 Buy Write Index, 10.0% Crisis Risk Offset Benchmark
01/01/2019	06/01/2022	40.0% Russell 3000 Index, 12.0% MSCI AC World ex USA index, 31.0% Blmbg. U.S. Universal Index, 5.0% CBOE S&P 500 Buy Write Index, 2.0% Blmbg. U.S. Treasury: Long, 10.0% Crisis Risk Offset Benchmark
05/01/2016	01/01/2019	48.0% Russell 3000 Index, 12.0% MSCI AC World ex USA index, 20.0% Blmbg. U.S. Universal Index, 20.0% CBOE BXM
10/01/2015	05/01/2016	43.0% Russell 3000 Index, 12.0% MSCI AC World ex USA index, 20.0% Blmbg. U.S. Universal Index, 15.0% CBOE BXM, 10.0% CPI - All Urban Consumers (unadjusted) +3%
01/01/2014	10/01/2015	48.0% Russell 3000 Index, 12.0% MSCI AC World ex USA index, 20.0% Blmbg. U.S. Universal Index, 10.0% CBOE BXM, 10.0% CPI - All Urban Consumers (unadjusted) +3%
03/01/2013	01/01/2014	40.0% Russell 3000 Index, 10.0% MSCI AC World ex USA index, 17.0% Blmbg. U.S. Universal Index, 33.0% ICE BofA 3 Month U.S. T-Bill
08/01/2012	03/01/2013	20.0% Russell 3000 Index, 7.0% MSCI AC World ex USA index, 18.0% Blmbg. U.S. Universal Index, 55.0% ICE BofA 3 Month U.S. T-Bill
10/01/2007	08/01/2012	53.0% Russell 3000 Index, 17.0% MSCI AC World ex USA index, 30.0% Blmbg. U.S. Universal Index
04/01/2006	10/01/2007	35.0% Russell 3000 Index, 15.0% MSCI AC World ex USA index, 50.0% Blmbg. U.S. Universal Index
01/01/2005	04/01/2006	35.0% Russell 3000 Index, 50.0% Blmbg. U.S. Aggregate Index, 15.0% MSCI AC World ex USA index
04/01/1998	01/01/2005	20.0% Russell 1000 Value Index, 10.0% Russell 1000 Index, 5.0% Russell Midcap Index, 50.0% Blmbg. U.S. Aggregate Index, 15.0% MSCI EAFE (Net)
09/01/1988	04/01/1998	40.0% S&P 500 Index, 55.0% Blmbg. U.S. Aggregate Index, 5.0% FTSE 3 Month T-Bill



**Benchmark History**

From Date	To Date	Benchmark
<b>Domestic Equity</b>		
01/01/2005	Present	100.0% Russell 3000 Index
04/01/1998	01/01/2005	57.1% Russell 1000 Value Index, 28.6% Russell 1000 Index, 14.3% Russell Midcap Index
09/01/1988	04/01/1998	100.0% S&P 500 Index
<b>International Equity</b>		
01/01/2005	Present	100.0% MSCI AC World ex USA (Net)
01/01/1998	01/01/2005	100.0% MSCI EAFE Index
<b>Fixed Income</b>		
04/01/2006	Present	100.0% Blmbg. U.S. Universal Index
01/01/1976	04/01/2006	100.0% Blmbg. U.S. Aggregate Index
<b>Covered Calls</b>		
04/01/2014	Present	CBOE S&P 500 Buy Write Index
<b>Crisis Risk Offset</b>		
01/01/2023	Present	33.3% SG Trend Index, 33.3% SG Multi Alternative Risk Premia Index, 33.3% Blmbg. U.S. Government: Long Term Bond Index
08/01/2018	01/01/2023	100.0% SG Multi Alternative Risk Premia Index
<b>Cash</b>		
03/01/2011	Present	FTSE 3 Month T-Bill

## **Manager Monitoring / Probation Status**

### Managers on Watch / Probation Status

Manager & Strategy	Concern Triggering Watch Status	Date of Corrective Action <sup>1</sup>	Months Since Placement	Performance <sup>2</sup> Since Placement	Peer Group Rank Since Placement
Versor Trend Following	Organization / Performance	9/27/2023	3	-7.9	N/A
<i>Benchmark: SG Trend Index</i>	--	--	--	-4.6	--

### Investment Manager Monitoring Criteria<sup>3</sup>

Investment managers are evaluated on ongoing and periodic basis using both quantitative performance criteria and qualitative aspects of the managers. The quantitative criteria for different asset classes are as follows.

Asset Class	Short-term (Rolling 12 months)	Medium-term (Rolling 36 months)	Long-term (60 + months)
Active Domestic Equity	Fund return < benchmark return by 3.5%	Annualized Fund return < benchmark return by 1.75% for 6 consecutive months	VRR <sup>4</sup> < 0.97 for 6 consecutive months
Active International Equity	Fund return < benchmark return by 4.5%	Annualized Fund return < benchmark return by 2.0% for 6 consecutive months	VRR < 0.97 for 6 consecutive months
Passive International Equity	Tracking Error > 0.50%	Tracking Error > 0.45% for 6 consecutive months	Annualized Fund return < benchmark return by 0.4% for 6 consecutive months
Fixed Income	Fund return < benchmark return by 1.5%	Annualized Fund return < benchmark return by 1.0% for 6 consecutive months	VRR < 0.98 for 6 consecutive months

<sup>1</sup> Date when the Board voted to either monitor a manager at a heightened level or place it on probation.

<sup>2</sup> Annualized performance if over one year. Performance shown is net of fees.

<sup>3</sup> Per Investment Policy Statement and Manager Guidelines, Revised 5/31/2023, section H.

<sup>4</sup> VRR (Value Relative Ratio) is calculated as manager cumulative return/ benchmark cumulative return.

# Appendix

### Additional Information

**Performance Return Types:** Performance shown is net of fees, except for OPFRS Total Plan, Domestic Equity, and International Equity Composites, which have a mix of gross and net of fees performance. Performance shown for OPFRS Total Plan and International Equity composite is gross of fees prior to January 2016. Performance shown for Domestic Equity composite is gross of fees prior to January 2017.

**Inception Date:** Since inception date and performance begin in the month following an investments initial funding.

**Fiscal Year:** Fiscal year begins on July 1.

**Fair Value Pricing Methodology:** Though Vanguard Developed Markets ETF is a passive strategy, short-term performance may appear to diverge from the index it tracks more than would be expected. This is due to Fair Value Pricing (FVP) adjustments that address the pricing discrepancies that may arise from time-zone differences among global securities markets. The resulting temporary divergence is expected to correct itself when the foreign markets reopen.

## **Disclaimer, Glossary, and Notes**

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

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CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM," "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD-LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.

The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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

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

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