

# Metropolitan Government of Nashville and Davidson County

December 31, 2022

Performance Report

## Agenda

1. Economic and Market Update
2. Performance Report as of December 31, 2022
3. Disclaimer, Glossary, and Notes

# **Economic and Market Update**

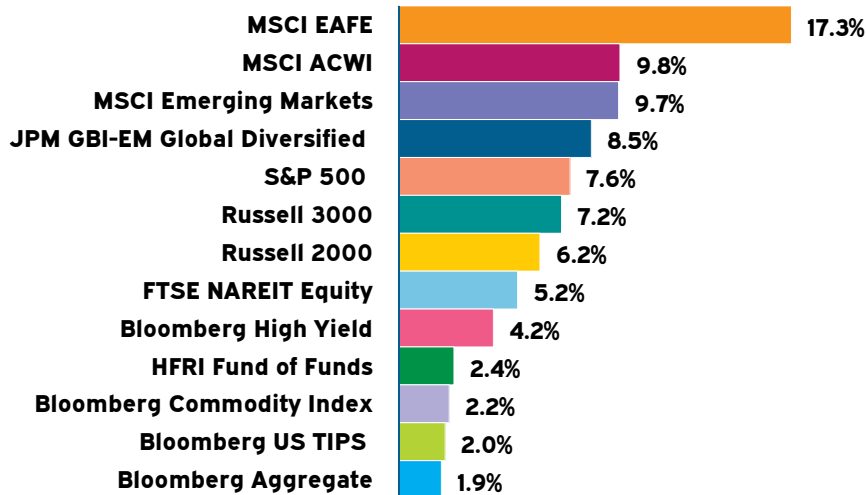
Data as of December 31, 2022

### Commentary

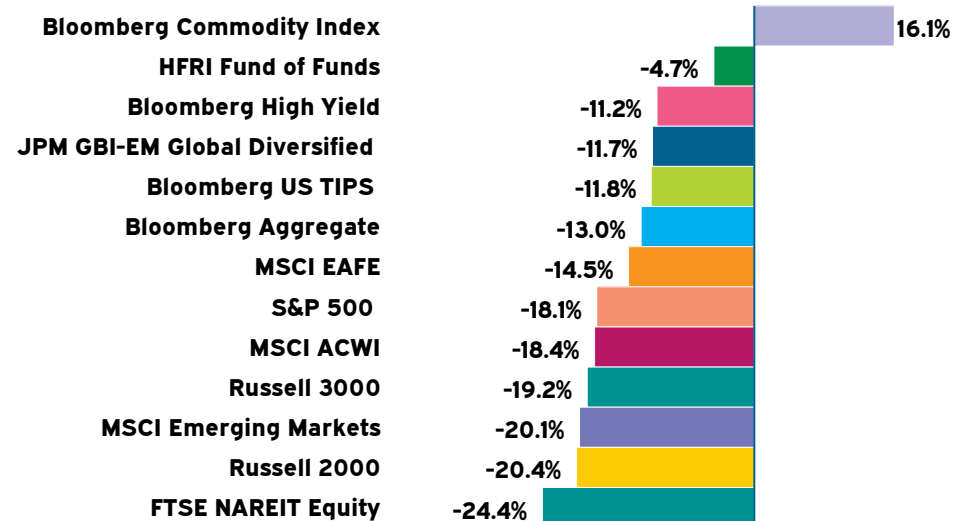
- Ending a very tough year, most asset classes posted gains in the fourth quarter on signs that policy tightening would slow given cooling inflation.
- Chairman Powell's testimony in November reiterated previous messaging on persistent and high inflation and the need for an extended period of monetary tightening weighing on assets in December. Markets remained focused though on signs that inflation is falling and that the size of future Fed rate hikes could be lower.
  - US equity markets sold off (-5.9%) in December but returned 7.2% in the fourth quarter as investors balanced the Fed's caution with improving inflation data.
  - In developed equity markets outside the US, sentiment deteriorated somewhat in December, but they posted a strong fourth quarter return of 17.3% driven by a falling US dollar and results in Europe where inflation started to slow.
  - Emerging market equities declined in December too (-1.4%) but less than the US and also had a strong fourth quarter (+9.7%). A weaker US dollar, declining inflation globally, and signs of China reopening its economy all contributed to the results.
  - Bonds experienced one of the worst years on record given inflation levels and the rapid rise in interest rates. Optimism over declining inflation and a slower pace of policy tightening benefited bonds overall in the fourth quarter though.
- Looking to 2023, the path of inflation and monetary policy, slowing growth globally, China reopening its economy, and the war in Ukraine will all be key.

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

#### Fourth Quarter



#### 2022



→ After broad declines in Q3 driven by expectations for further policy tightening, most major asset classes were up in the fourth quarter on hopes of inflation and policy tightening peaking.

→ Outside of commodities, all other public market asset classes declined in 2022. It was the first time since the 1960s that both stocks and bonds declined together in a calendar year.

<sup>1</sup> Source: Bloomberg and FactSet. Data is as of December 31, 2022.

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

Domestic Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	-5.8	7.6	-18.1	7.7	9.4	12.6
Russell 3000	-5.9	7.2	-19.2	7.1	8.8	12.1
Russell 1000	-5.8	7.2	-19.1	7.3	9.1	12.4
Russell 1000 Growth	-7.7	2.2	-29.1	7.8	11.0	14.1
Russell 1000 Value	-4.0	12.4	-7.5	6.0	6.7	10.3
Russell MidCap	-5.4	9.2	-17.3	5.9	7.1	11.0
Russell MidCap Growth	-6.0	6.9	-26.7	3.9	7.6	11.4
Russell MidCap Value	-5.1	10.5	-12.0	5.8	5.7	10.1
Russell 2000	-6.5	6.2	-20.4	3.1	4.1	9.0
Russell 2000 Growth	-6.4	4.1	-26.4	0.6	3.5	9.2
Russell 2000 Value	-6.6	8.4	-14.5	4.7	4.1	8.5

**US Equities: Russell 3000 Index declined 5.9% for December but gained 7.2% for the quarter. Historic inflation and rapidly rising interest rates led to significant declines (-19.2%) for the full year.**

- US stocks fell broadly in December on the Federal Reserve signaling its continued resolve to raise rates but gained overall for the quarter on hopes that interest rates could be peaking soon given slowing inflation.
- All sectors declined during December, led by consumer discretionary and technology with defensive sectors declining less. For the quarter though, most sectors were up led by energy and industrials.
- In a continuation on the overall trend in 2022 value stocks outperformed growth stocks in the fourth quarter given higher interest rates and slowing growth.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2022.

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

Foreign Equity	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-0.7	14.3	-16.0	0.1	0.9	3.8
MSCI EAFE	0.1	17.3	-14.5	0.9	1.5	4.7
MSCI EAFE (Local Currency)	-3.0	8.7	-7.0	3.6	3.8	7.6
MSCI EAFE Small Cap	1.1	15.8	-21.4	-0.9	0.0	6.2
MSCI Emerging Markets	-1.4	9.7	-20.1	-2.7	-1.4	1.4
MSCI Emerging Markets (Local Currency)	-2.0	6.6	-15.5	0.1	1.3	4.6
MSCI China	5.2	13.5	-21.9	-7.5	-4.5	2.4

Developed international equities (MSCI EAFE) rose 0.1% in December and an impressive 17.3% in the fourth quarter. Emerging markets (MSCI EM) fell -1.4% in December but gained 9.7% for the quarter. Inflation and rising rates also weighed on international equities last year, as well as a strong US dollar for most of the year.

- International developed market equities, specifically Europe, held up better relative to the rest of the world in December with the MSCI EAFE up 0.1%. In the fourth quarter, they returned a significant 17.3% due in part to the recent weakness in the US dollar (they returned only 8.7% in local terms) leading to lower declines for the year.
- In December emerging markets outperformed the US but trailed developed market equities as China’s rally was not enough to offset weakness elsewhere (e.g., India -5.5%). For the quarter, a weakening US dollar and China reopening led to strong results (+9.7%), but emerging markets remained the weakest for 2022 due to China.
- Like the US, value outpaced growth globally in 2022.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2022.

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

Fixed Income	December (%)	Q4 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-0.3	2.2	-13.0	-2.5	0.2	1.3	5.1	6.2
Bloomberg Aggregate	-0.5	1.9	-13.0	-2.7	0.0	1.1	4.7	6.4
Bloomberg US TIPS	-1.0	2.0	-11.8	1.2	2.1	1.1	4.4	6.7
Bloomberg High Yield	-0.6	4.2	-11.2	0.0	2.3	4.0	9.0	4.4
JPM GBI-EM Global Diversified (USD)	2.2	8.5	-11.7	-6.1	-2.5	-2.0	5.8	4.9

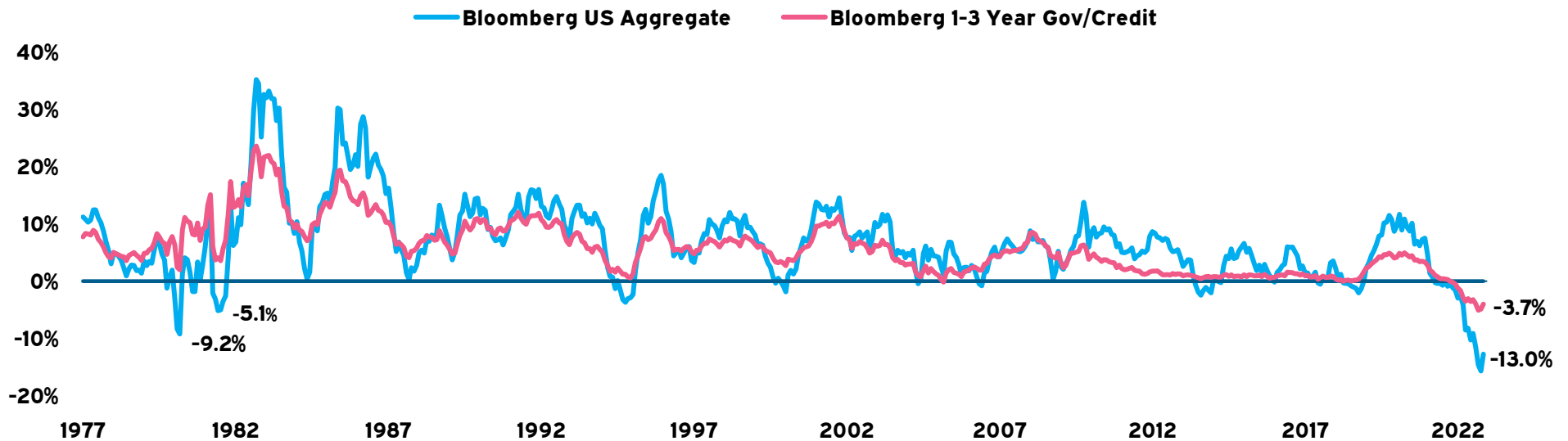
**Fixed Income: The Bloomberg Universal fell -0.3% in December but rose 2.2% for the fourth quarter. Last year was one of the worst on record, with the broad bond market declining 13%.**

- The Federal Reserve reconfirming its commitment to tighten policy in the face of high inflation weighed on US fixed income in December. For the quarter though the broad US bond market (Bloomberg Aggregate) was up 1.9% on hopes that inflation would continue to decline and corresponding expectations for the slowing of policy rate hikes.
- TIPS produced similar results to the broad US bond market for the quarter but outperformed for the year given their inflation adjustment.
- Riskier bonds outperformed for the quarter due to improving risk sentiment with emerging market bonds performing particularly well.

<sup>1</sup> Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of December 31, 2022. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.



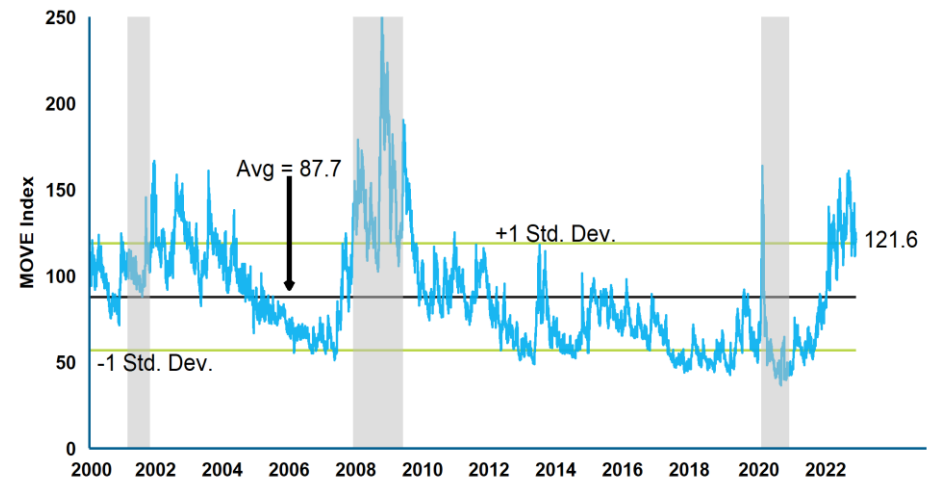
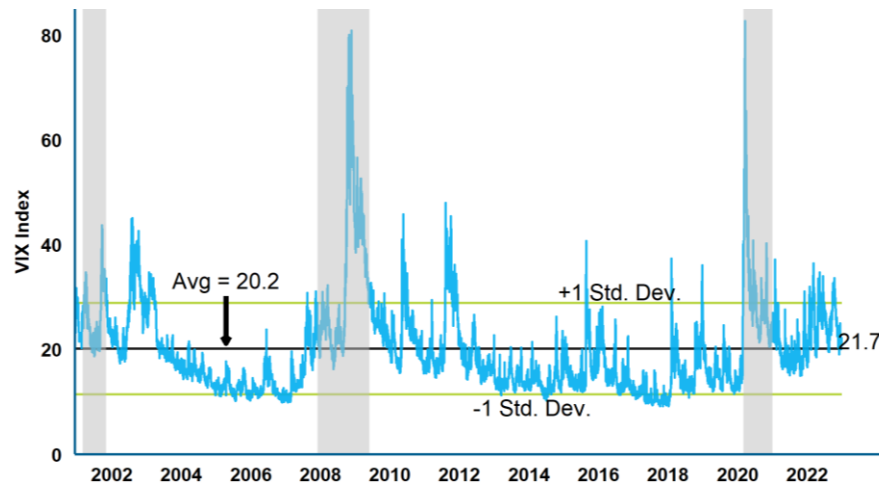
Fixed Income  
Rolling One-year Returns<sup>1</sup>



- Last year was one of the worst return periods for the US bond market given the historic inflation levels and the corresponding rapid rise in interest rates.
- The broad bond market (Bloomberg US Aggregate) declined 13% in 2022 making it one of the worst periods on record.
- Short-term bond declines were far smaller (-3.7%) last year, but also were one of the worst on record.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2022.

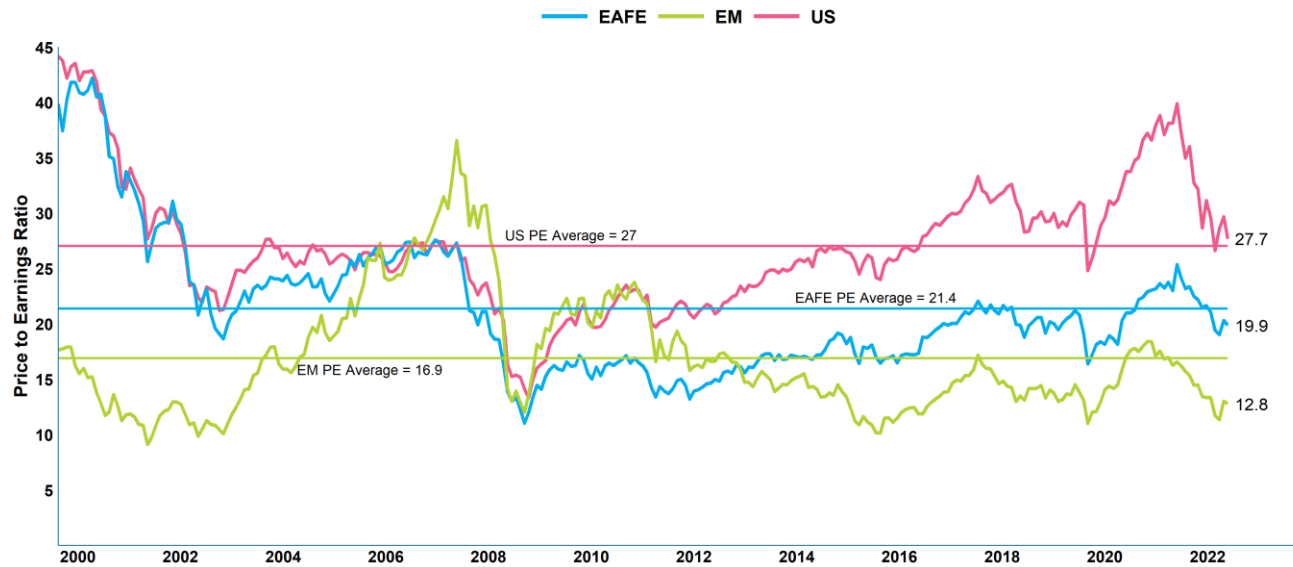
### Equity and Fixed Income Volatility<sup>1</sup>



- Volatility in equities (VIX) finished the year down from its highs and near its long run average as investors anticipated the potential end of Fed rate hikes this year.
- Fixed income (MOVE) remained elevated and well above its long-run average at year-end due to the uncertain path of US interest rates as the Federal Reserve continues its hawkish stance on inflation.

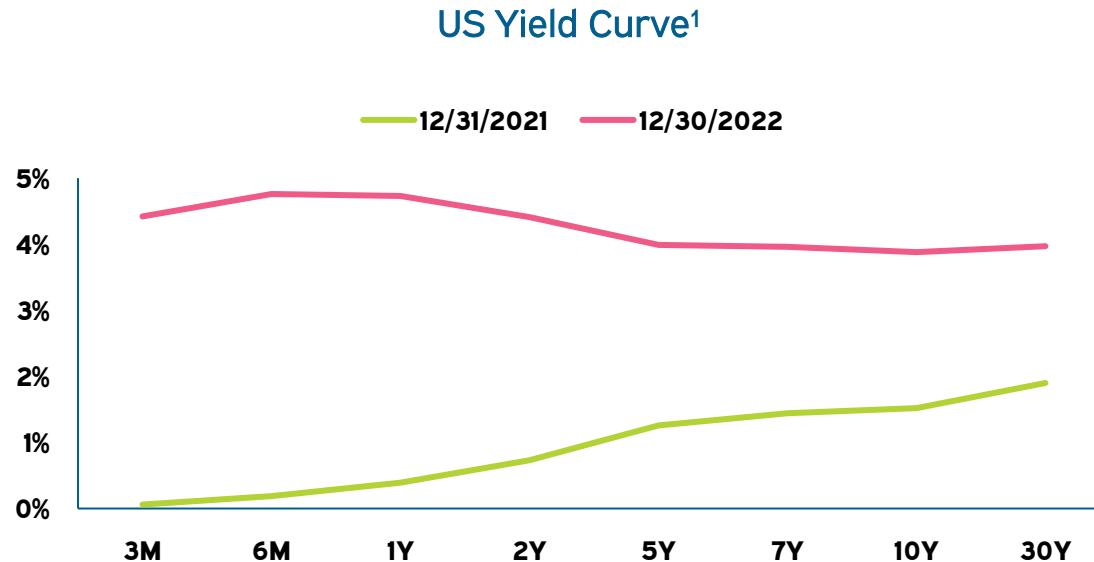
<sup>1</sup> Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of December 2022. The average line indicated is the average of the VIX and MOVE values between January 2000 and the recent month-end respectively.

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



- After December’s sell-off, US equity price-to-earnings ratio finished the year near its long-term (21st century) average.
- International developed market valuations rose but remain below their own long-term average, with those for emerging markets the lowest and well under the long-term average.
- Price declines have been the main driver of recent multiple compression as earnings have remained resilient. Concerns remain over whether earnings strength will continue in the face of slowing growth.

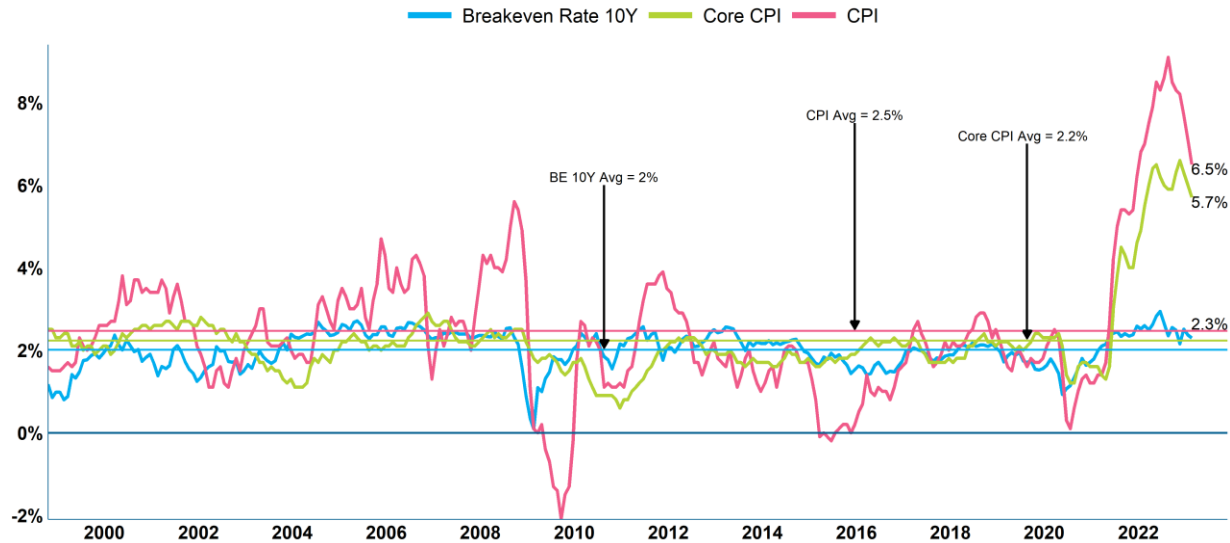
<sup>1</sup> US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of December 2022. The average line is the long-term average of the US, EM, and EAFE PE values from December 1999 to the recent month-end respectively.



- In December, policy-sensitive interest rates at the front-end of the curve continued to rise with the two-year Treasury yield increasing from 4.3% to 4.4%. Longer dated ten-year Treasury yields also increased (3.6% to 3.9%). For the year, the yield curve rose dramatically across maturities and moved from steep to inverted.
- The Fed remains strongly committed to fighting inflation, as it increased rates another 50 basis points to a range of 4.0% to 4.5% at its December meeting. This brought the total number of increases for 2022 to seven.
- The yield spread between two-year and ten-year Treasuries narrowed somewhat to -0.54% after finishing November at -0.70%. The more closely watched measure by the Fed of three-month and ten-year Treasuries also remained inverted. Historically, inversions in the yield curve have often preceded recessions.

<sup>1</sup> Source: Bloomberg. Data is as of December 31, 2022.

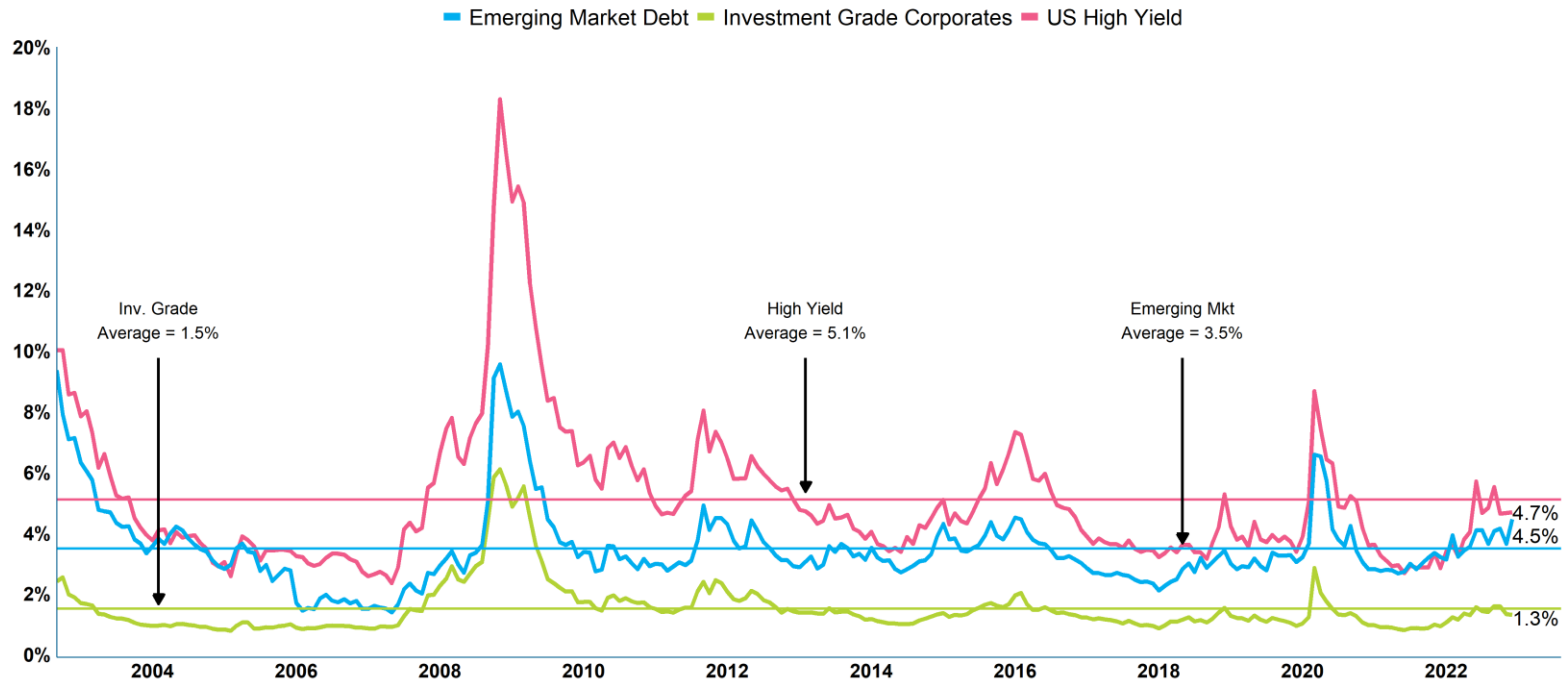
**Ten-Year Breakeven Inflation and CPI<sup>1</sup>**



- In December inflation continued to decline (6.5% versus 7.1%) matching expectations and providing support for the Fed to slow the pace of policy tightening. Energy prices fell again for the month but remain up 7.3% from a year prior, while food prices fell slightly, and stickier service prices continued to increase.
- Core inflation – excluding food and energy – also continued to decline in December (5.7% versus 6.0%) and matched estimates.
- Inflation expectations (breakevens) declined slightly for the month (2.3% versus 2.4%) and remain well below current inflation levels as investors anticipate a significant moderation in inflation.

<sup>1</sup> Source: Bloomberg. Data is as of December 2022. The CPI and 10 Year Breakeven average lines denote the average values from August 1998 to the present month-end respectively. Breakeven values represent month-end values for comparative purposes.

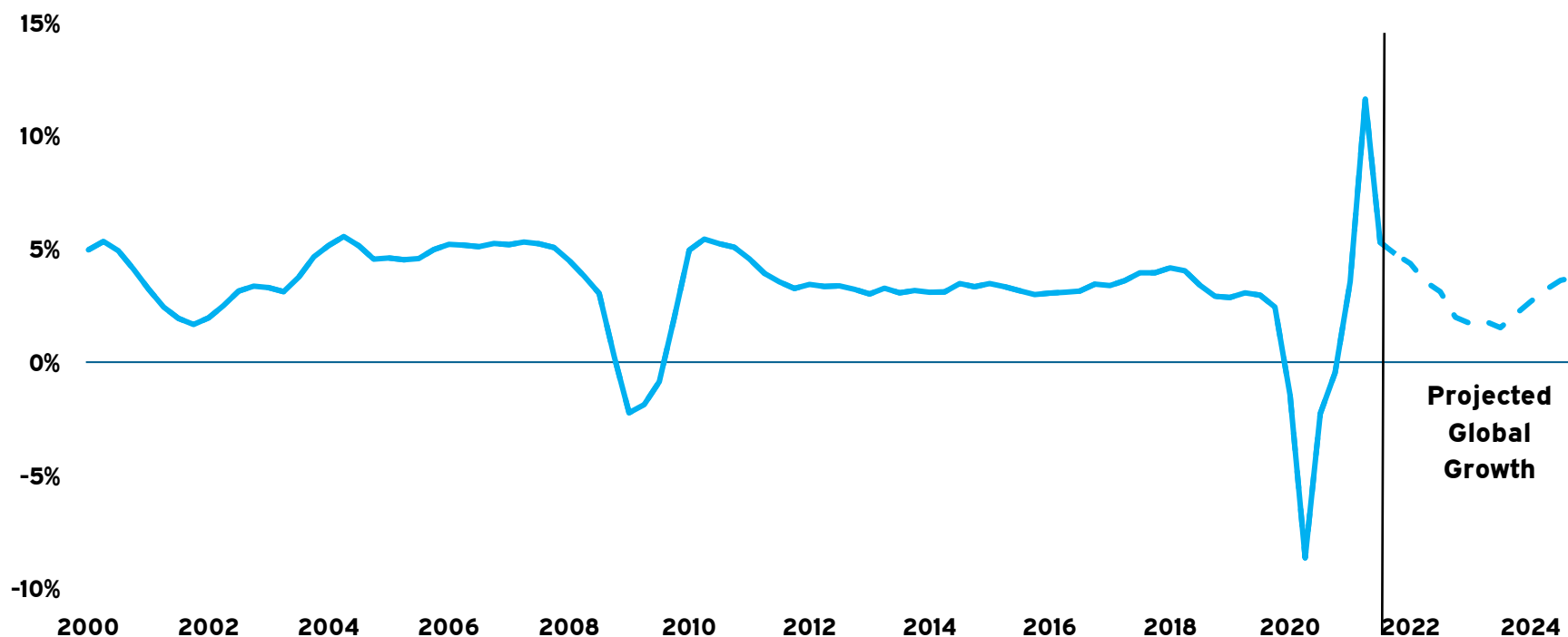
**Credit Spreads vs. US Treasury Bonds<sup>1</sup>**



- High yield spreads (the added yield above a comparable maturity Treasury) finished December at 4.7% (the same as the end of November) remaining below their long-run average.
- Investment grade spreads also held steady at 1.3% as attractive yields and strong balance sheets continued to attract investors, while emerging market spreads rose (4.5% versus 3.6%) due to concerns regarding slower growth and lower commodity prices.

<sup>1</sup> Sources: Bloomberg. Data is as of December 31, 2022. Average lines denote the average of the investment grade, high yield, and emerging market spread values from August 2000 to the recent month-end respectively.

### Global Real Gross Domestic Product (GDP) Growth<sup>1</sup>

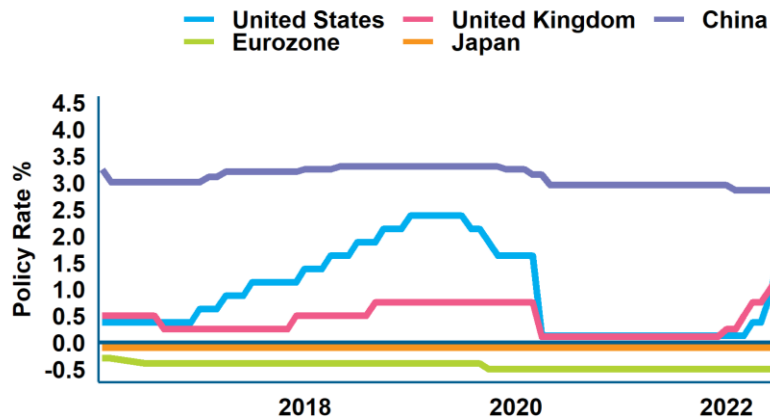


- Global economies are expected to slow in 2023 compared to 2022, with risks of recession increasing given persistently high inflation and related tighter monetary policy.
- The delicate balancing act of central banks trying to reduce inflation without dramatically impacting growth will remain key.

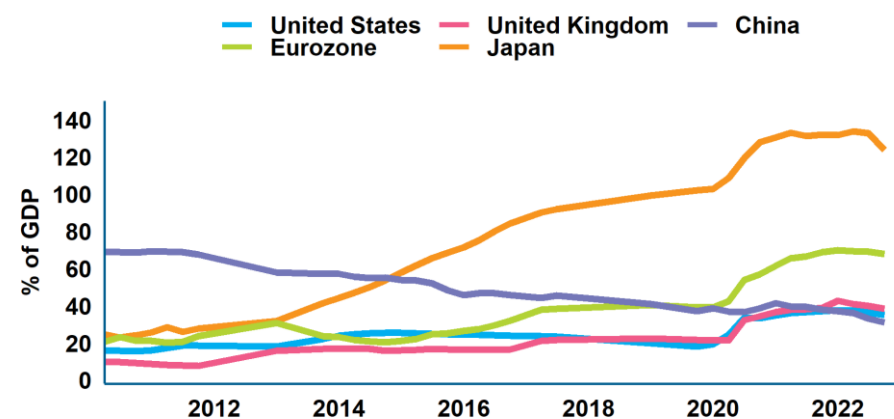
<sup>1</sup> Source: Oxford Economics (World GDP, US\$ prices & PPP exchange rate, real, % change YoY). Updated December 2022.

### Central Bank Response<sup>1</sup>

#### Policy Rates



#### Balance Sheet as % of GDP

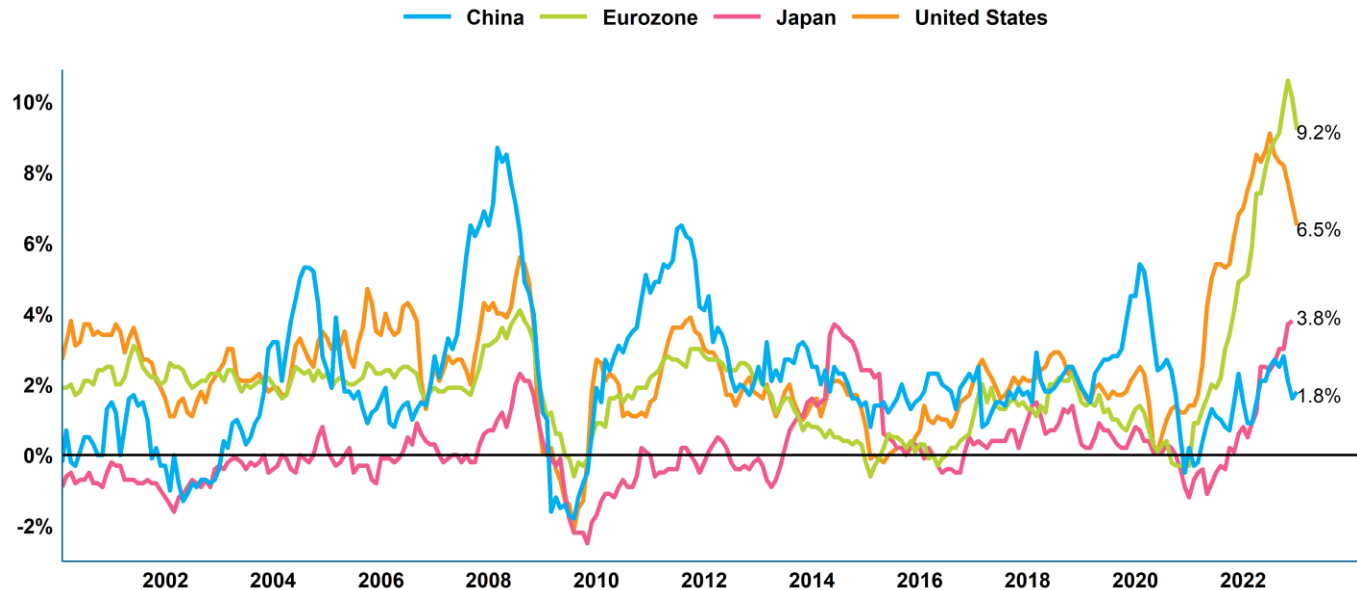


- In 2022 many central banks aggressively reduced pandemic-era policy support in the face of high inflation with the US taking a more aggressive approach.
- In December, the Bank of Japan relaxed its target yield for the 10-year bond which may mark an incremental step toward policy normalization after eight years of quantitative easing.
- The one notable central bank outlier is China, where the central bank has lowered rates and reserve requirements in response to slowing growth.
- The risk remains for a policy error, particularly overtightening, as record inflation and aggressive tightening to date could heavily weigh on global growth. The Federal Reserve's policy rate path could diverge from others this year given their strong early start to tightening.

<sup>1</sup> Source: Bloomberg. Policy rate data is as of December 31, 2022. China policy rate is defined as the medium-term lending facility 1 year interest rate. Balance sheet as % of GDP is based on quarterly data and is as of December 31, 2022.



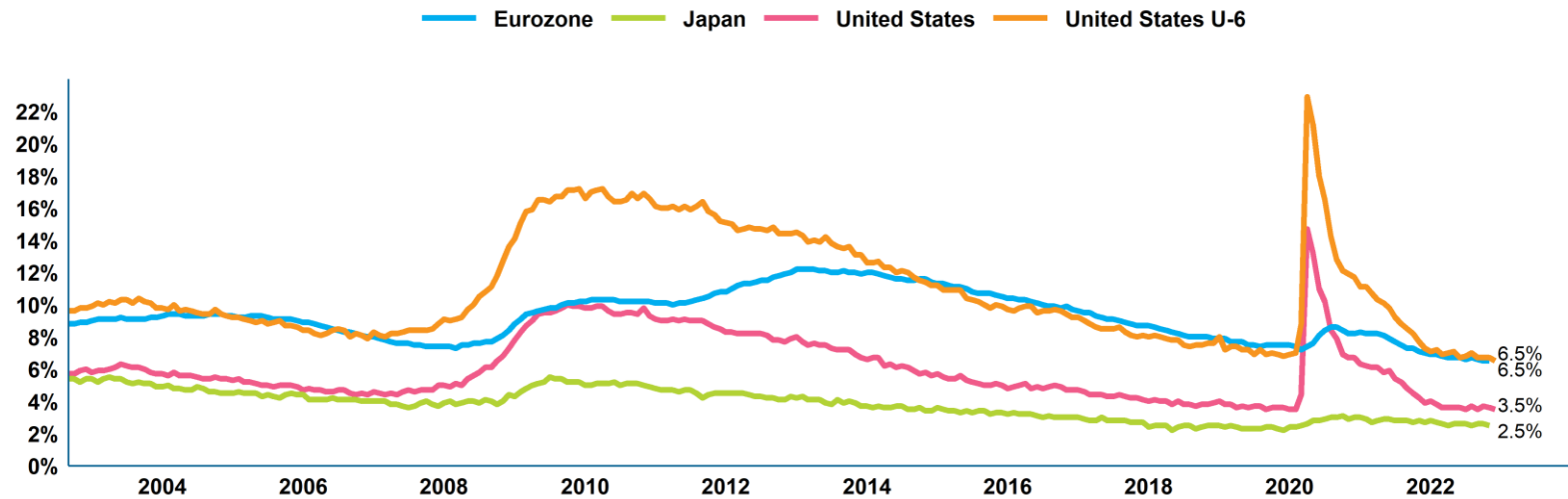
**Inflation (CPI Trailing Twelve Months)<sup>1</sup>**



- Inflation increased dramatically from the lows of the pandemic, particularly in the US and Eurozone where it has reached levels not seen in many decades.
- Inflation pressures are slowly declining in the US, but they remain elevated, while in Europe they have reached historic levels due to skyrocketing energy prices and a weak euro.
- Supply issues related to the pandemic, record monetary and fiscal stimulus, strict COVID-19 restrictions in China, and higher commodity prices driven by the war in Ukraine have been key global drivers of inflation.

<sup>1</sup> Source: Bloomberg. Data is as of December 2022. The most recent Japanese inflation data is as of November 2022.

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



- As economies have largely reopened, helped by vaccines for the virus, improvements have been seen in the labor market.
- Despite slowing growth and high inflation, the US labor market remains a bright spot. Unemployment in the US, which experienced the steepest rise from the pandemic, has remained in a tight 3.5%-3.7% range for most of the year.
- The strong labor market and higher wages, although beneficial for workers, motivates the Fed's efforts to fight inflation, likely leading to higher unemployment.

<sup>1</sup> Source: Bloomberg. Data is as December 31, 2022, for the US. The most recent data for Eurozone and Japanese unemployment is as of November 30, 2022.

### US Dollar versus Broad Currencies<sup>1</sup>



- Overall, the US dollar continued to weaken from its recent peak in December as declining inflation supported the case for the Federal Reserve to slow its tightening.
- The dollar finished the year much higher than it started though due to the increased pace of policy tightening, stronger relative growth, and safe-haven flows.
- As we look to 2023, the track of inflation across economies and the corresponding monetary policy will likely be key drivers of currency moves.

<sup>1</sup> Source: Bloomberg. Data as of December 31, 2022.

## Summary

### Key Trends:

- The impacts of record high inflation will remain key, with market volatility likely to stay high.
- Monetary policy could diverge in 2023 with the Fed pausing and others continuing to tighten. The risk of policy errors in both directions remains.
- Growth will continue to slow globally next year, with many economies likely falling into recessions. Inflation, monetary policy, and the war will all be key.
- In the US the end of many fiscal programs is expected to put the burden of continued growth on consumers. Higher energy and food prices could weigh on consumer spending.
- Valuations have significantly declined in the US to around long-term averages, largely driven by price declines. The key going forward will be whether earnings can remain resilient if growth continues to slow.
- Outside the US, equity valuations remain lower in both emerging and developed markets, but risks remain, including potential continued strength in the US dollar, higher inflation particularly weighing on Europe, and China's rushed exit from COVID-19 restrictions and on-going weakness in the real estate sector.

## **Executive Summary**

#### → Asset Growth

- The Metropolitan Government of Nashville and Davidson County Plan was valued at \$4.1 billion at the end of 4Q22, an increase of approximately \$65.8 million over the three-month period, despite net cash outflows of \$30.8 million in the quarter.

#### → Asset Allocation

- All asset classes are within policy ranges. (As previously approved, private equity has until 2026 to get below the top end of policy range).
- Meketa and Staff have reviewed pacing plans for all private markets. These will be shared today with the Investment Committee members.
- The Risk Survey results will also be discussed with the Investment Committee – this will serve as the starting point of an asset allocation analysis in the coming months.

#### → Performance

	3 YR	5 YR	10 YR
Metro Nashville (net)	8.1%	8.0%	8.7%
Policy Benchmark	3.2%	4.3%	6.6%
Excess Return	4.9%	3.7%	2.1%
Peer Ranking	1 <sup>st</sup>	1 <sup>st</sup>	2 <sup>nd</sup>

- The plan generated positive 2.4% return in 4Q22, net of fees, and -9.0% for calendar 2022 period.

#### → Positive notables during the quarter

- Absolute performance was driven by public equities. International equity was up 13.8%, net of fees, in 4Q22, while domestic equity was up 5.8%, net of fees.
- Small Cap Equity and Fixed Income outperformed their benchmarks by 2.9% and 0.8%, respectively.
- Real Assets and Real Estate outperformed their benchmarks by 3.2% and 0.4%, respectively.




#### → Negative notables during the quarter

- Private equity generated a negative absolute return (-2.8%) and trailed its benchmark by 9.0% over the quarter (despite very positive long term absolute and relative performance).
- Large Cap Equity underperformed the S&P 500 Index by 3.0%.

#### → Upcoming Priorities

- The road map of investment priorities for 2023 is listed on the following page.

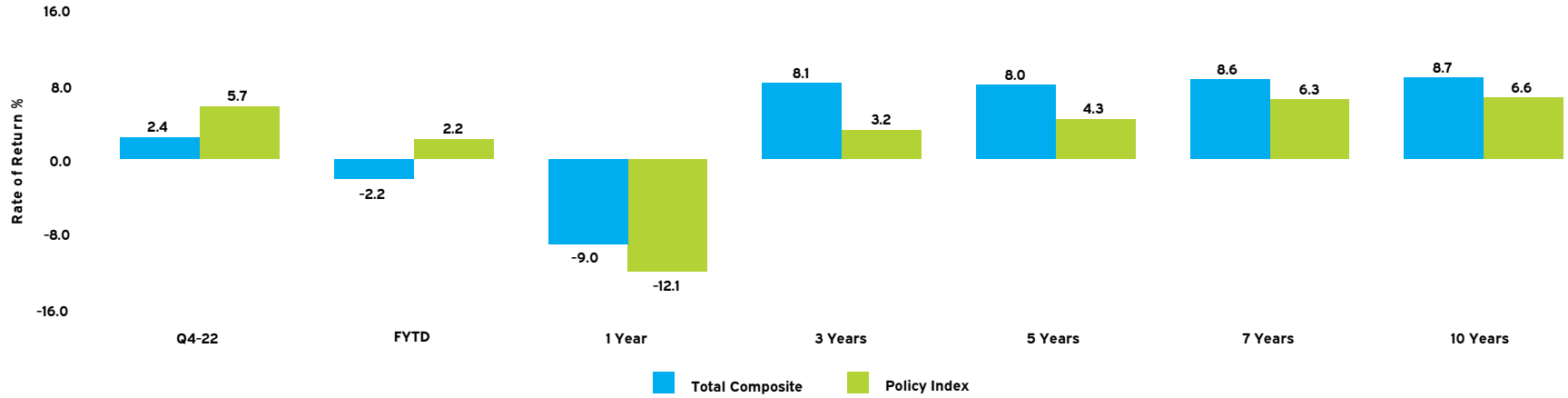
Investment Priorities for the Year

Task		Estimated Timeline	Status
1	Private Equity pacing study	March	
2	Fixed Income Alternatives pacing study	March	
3	Real Estate/Real Assets pacing study	March	
4	Asset allocation/Asset Liability Study	2Q23	
5	Investment Policy Statement revisions	After Asset Allocation	Reviewed
6	SMA / Evergreen accounts due-diligence and recommendations	2023	
7	Education session(s) – Topic(s) TBD	August 2023	

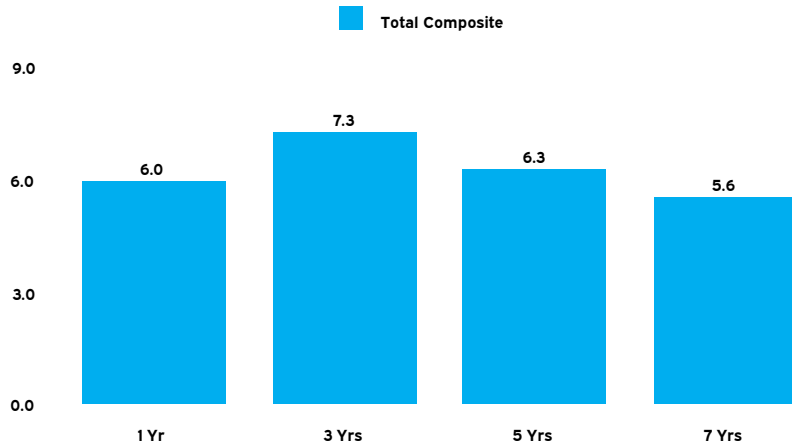


## **Performance Report as of December 31, 2022**

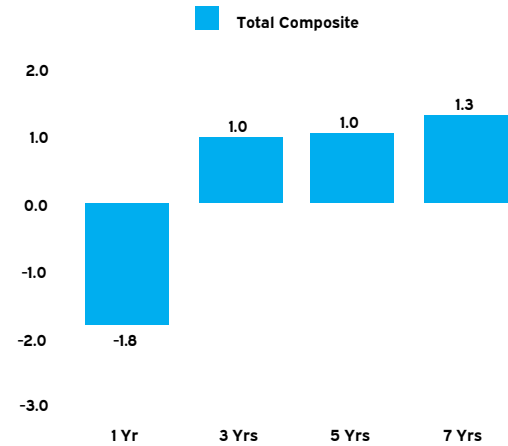
#### Net Return Summary



#### Annualized Standard Deviation

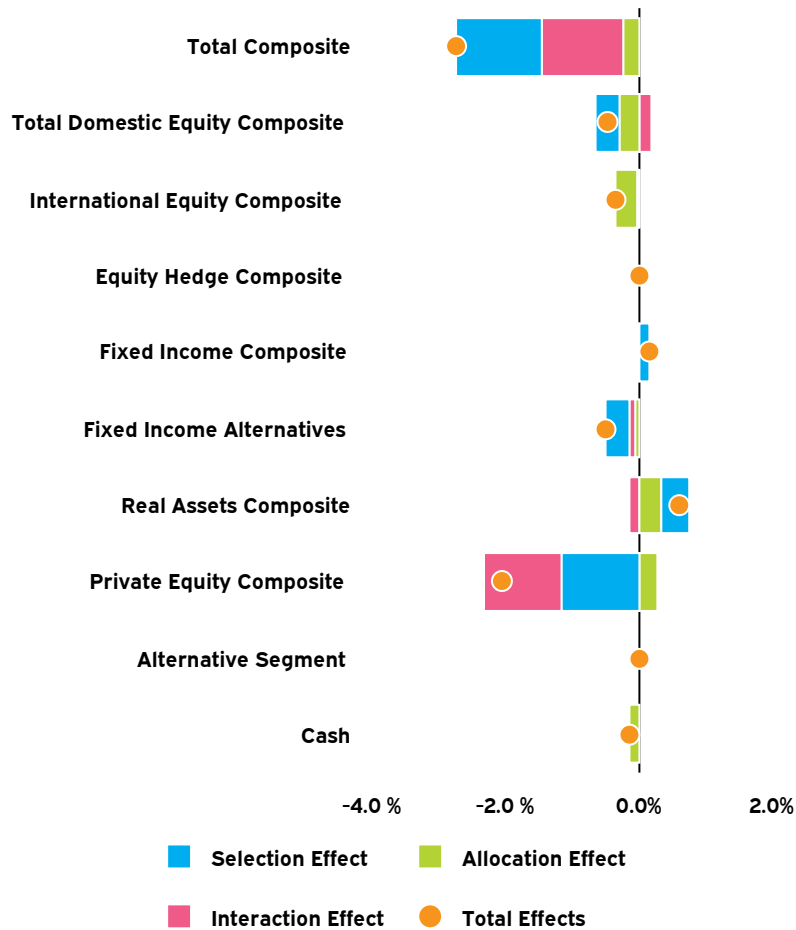


#### Sharpe Ratio



All returns in report are net of fees unless explicitly noted otherwise.

#### Attribution Effects 1 Quarter Ending December 31, 2022

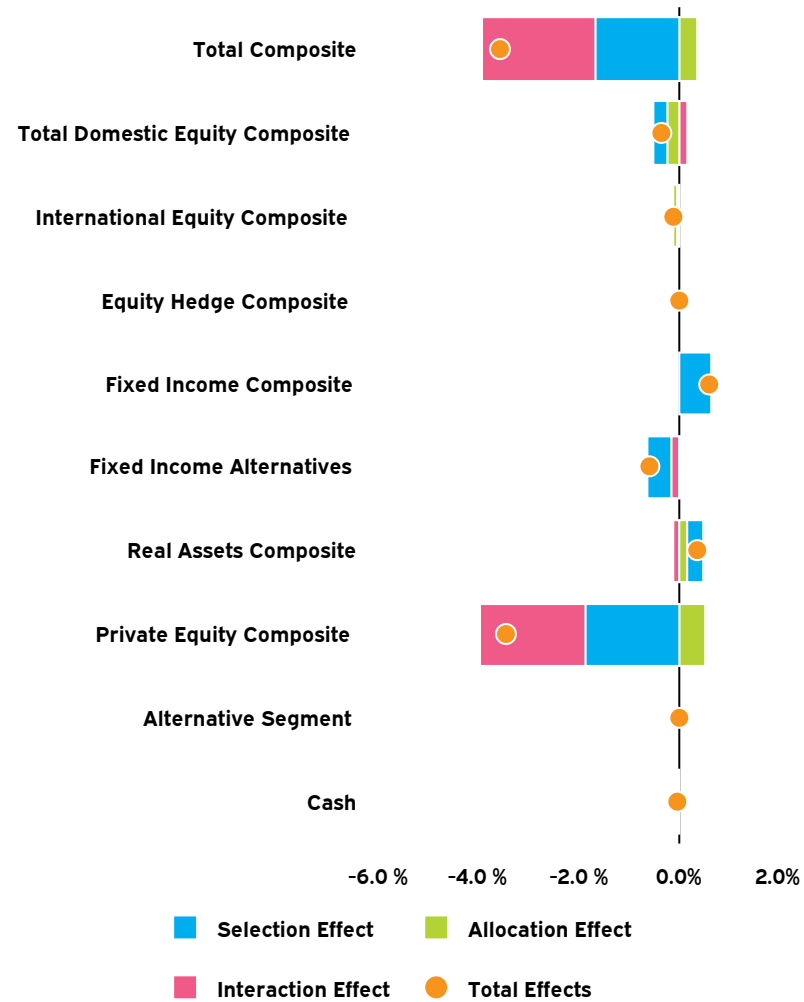


#### Attribution Summary 1 Quarter Ending December 31, 2022

	Wtd. Actual Return (%)	Wtd. Index Return (%)	Excess Return (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Total Effect (%)
Total Domestic Equity Composite	5.8	7.2	-1.3	-0.2	-0.3	0.2	-0.5
International Equity Composite	13.8	14.3	-0.4	0.0	-0.3	0.0	-0.3
Equity Hedge Composite	-0.6	4.3	-4.8	0.0	0.0	0.0	0.0
Fixed Income Composite	2.7	1.9	0.8	0.2	0.0	0.0	0.1
Fixed Income Alternatives	2.0	4.0	-2.0	-0.4	-0.1	-0.1	-0.5
Real Assets Composite	-0.3	-3.5	3.2	0.3	0.3	-0.1	0.6
Private Equity Composite	-2.8	6.2	-9.0	-2.3	0.3	-1.2	-2.1
Alternative Segment	0.0	0.8	-0.8	0.0	0.0	0.0	0.0
Cash	0.2	0.9	-0.6	0.0	-0.2	0.0	-0.2
<b>Total Composite</b>	<b>2.4</b>	<b>5.1</b>	<b>-2.7</b>	<b>-2.5</b>	<b>-0.2</b>	<b>-1.2</b>	<b>-2.7</b>

The performance calculation methodology in attribution tables is different from the standard time weighted returns (geometric linkage of monthly returns) found throughout the rest of the report. In attribution tables, the average weight of each asset class (over the specified time period) is multiplied by the time period performance of that asset class and summed. Values may not sum due to rounding.

#### Attribution Effects Fiscal Year to Date



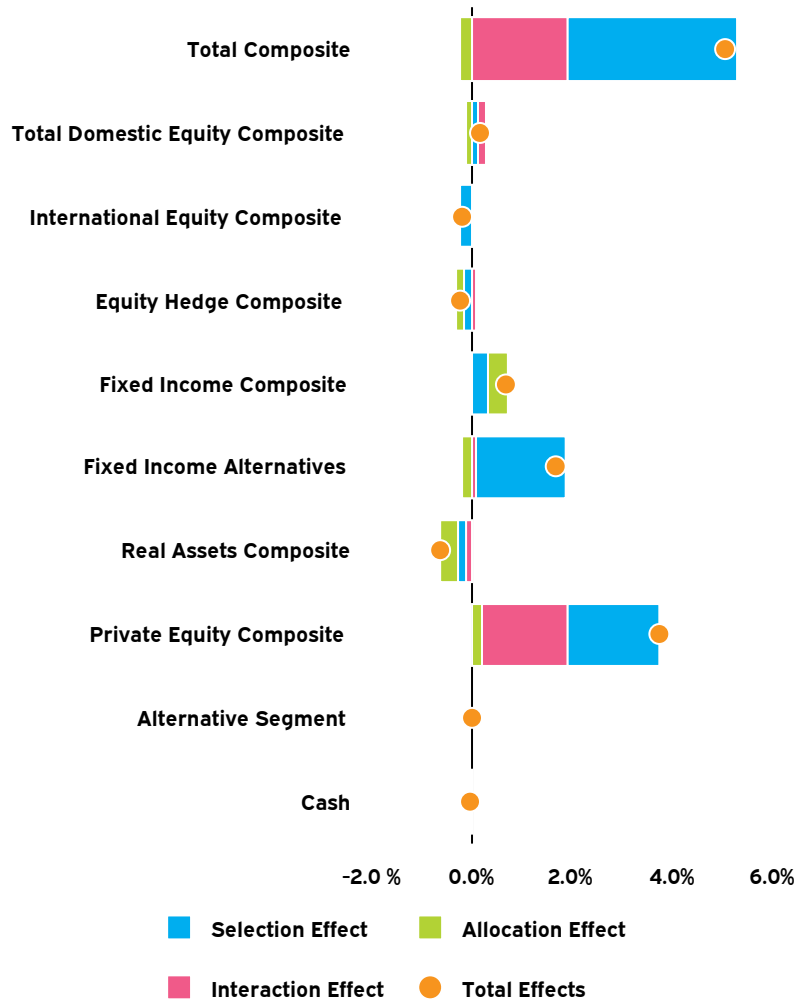
#### Attribution Summary Fiscal Year to Date

	Wtd. Actual Return (%)	Wtd. Index Return (%)	Excess Return (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Total Effect (%)
Total Domestic Equity Composite	1.4	2.4	-1.0	-0.1	-0.2	0.2	-0.4
International Equity Composite	2.4	3.0	-0.5	0.0	-0.1	0.0	-0.1
Equity Hedge Composite	-3.6	1.8	-5.4	0.0	0.0	0.0	0.0
Fixed Income Composite	0.0	-3.0	3.0	0.6	0.0	0.0	0.6
Fixed Income Alternatives	0.3	3.3	-2.9	-0.6	0.0	-0.2	-0.6
Real Assets Composite	-0.2	-3.0	2.8	0.2	0.1	-0.1	0.4
Private Equity Composite	-10.7	3.9	-14.6	-4.0	0.5	-2.1	-3.5
Alternative Segment	-54.2	1.3	-55.5	0.0	0.0	0.0	0.0
Cash	0.5	1.3	-0.9	0.0	0.0	0.0	0.0
<b>Total Composite</b>	<b>-2.2</b>	<b>1.4</b>	<b>-3.6</b>	<b>-4.0</b>	<b>0.3</b>	<b>-2.2</b>	<b>-3.6</b>

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### Total Plan Attribution | 3 Years Ending December 31, 2022

#### Attribution Effects 3 Years Ending December 31, 2022

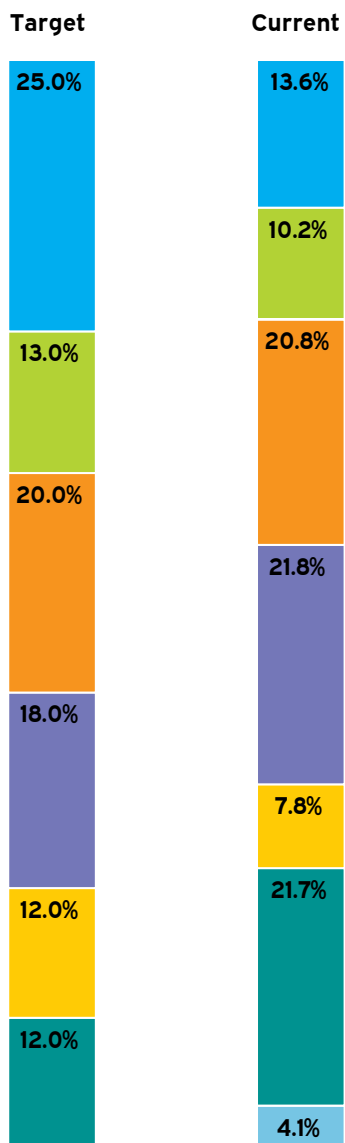


#### Attribution Summary 3 Years Ending December 31, 2022

	Wtd. Actual Return (%)	Wtd. Index Return (%)	Excess Return (%)	Selection Effect (%)	Allocation Effect (%)	Interaction Effects (%)	Total Effect (%)
Total Domestic Equity Composite	9.1	7.1	2.1	0.3	-0.1	0.1	0.1
International Equity Composite	-1.9	0.1	-2.0	-0.2	0.0	0.0	-0.2
Equity Hedge Composite	-1.0	5.8	-6.8	-0.1	-0.2	0.1	-0.2
Fixed Income Composite	-1.1	-2.7	1.6	0.3	0.4	0.0	0.7
Fixed Income Alternatives	9.0	-0.2	9.2	1.9	-0.2	0.1	1.7
Real Assets Composite	6.0	8.1	-2.1	-0.3	-0.4	-0.1	-0.7
Private Equity Composite	20.2	3.1	17.1	3.6	0.2	1.7	3.8
Alternative Segment	-51.3	0.7	-52.0	0.0	0.0	0.0	0.0
Cash	1.2	0.7	0.5	0.0	0.0	0.0	0.0
<b>Total Composite</b>	<b>8.1</b>	<b>3.0</b>	<b>5.0</b>	<b>5.3</b>	<b>-0.3</b>	<b>1.9</b>	<b>5.0</b>

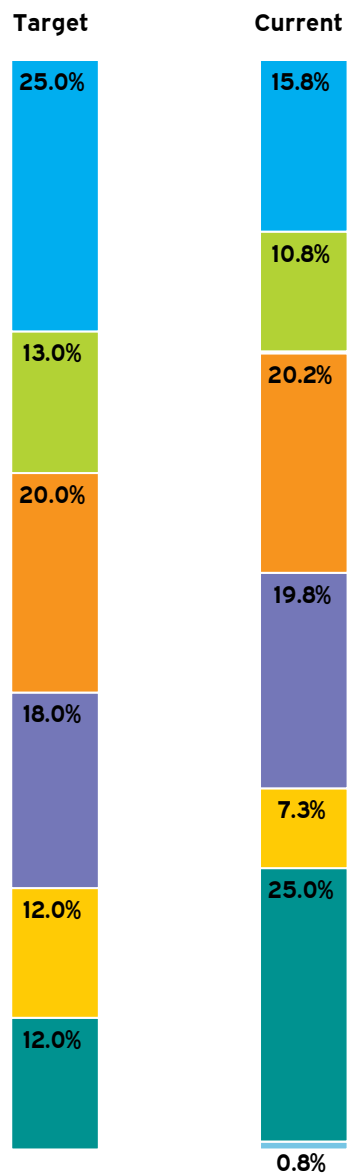
The performance calculation methodology in attribution tables is different from the standard time weighted returns (geometric linkage of monthly returns) found throughout the rest of the report. In attribution tables, the average weight of each asset class (over the specified time period) is multiplied by the time period performance of that asset class and summed. Values may not sum due to rounding.

### Asset Allocation vs. Policy | As of December 31, 2022



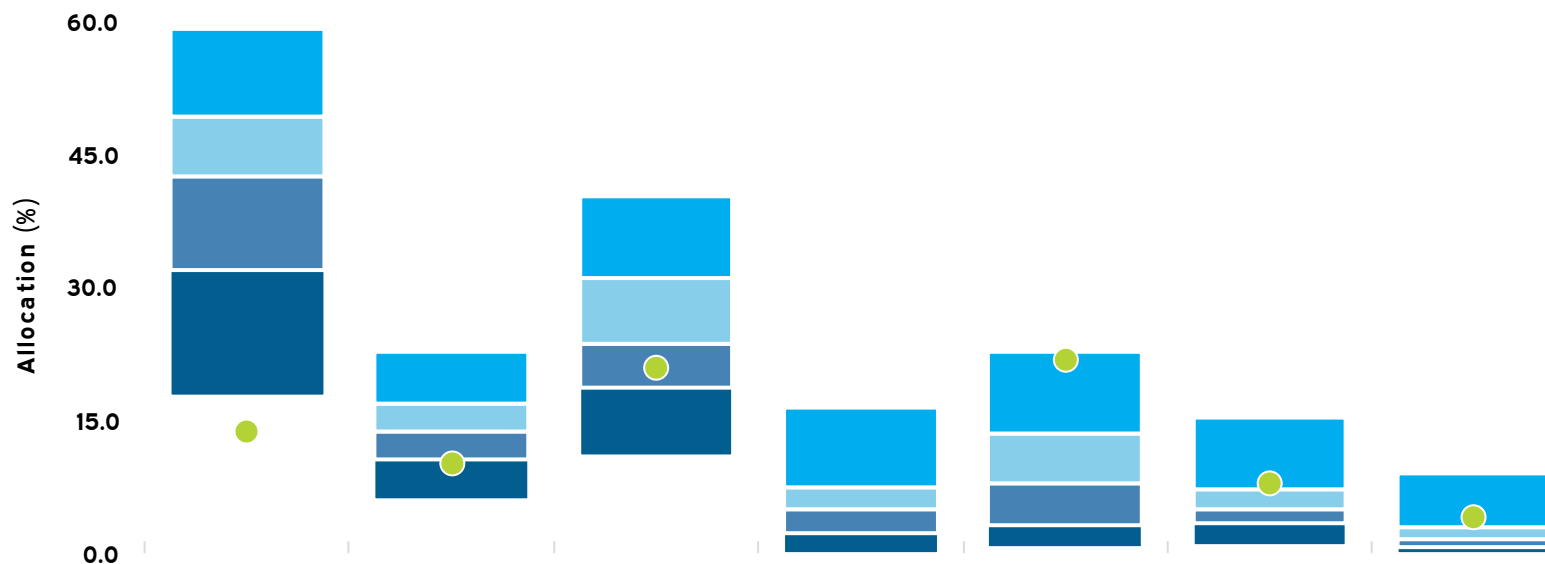
Allocation vs. Policy				
	Current Balance	Current Allocation (%)	Policy (%)	Difference (%)
Domestic Equity	\$552,282,372	13.6	25.0	-11.4
International Equity	\$411,636,560	10.2	13.0	-2.8
Equity Hedge	\$157,135	0.0	0.0	0.0
Fixed Income	\$842,974,919	20.8	20.0	0.8
Fixed Income Alternatives	\$885,804,271	21.8	18.0	3.8
Real Assets	\$316,395,226	7.8	12.0	-4.2
Private Equity	\$880,764,286	21.7	12.0	9.7
Alternative Segment	\$32,611	0.0	0.0	0.0
Cash	\$165,148,987	4.1	0.0	4.1
<b>Total Composite</b>	<b>\$4,055,196,366</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>

### Asset Allocation vs. Policy | As of December 31, 2021



Allocation vs Policy				
	Current Balance	Current Allocation (%)	Policy (%)	Difference (%)
Domestic Equity	\$723,211,888	15.8	25.0	-9.2
International Equity	\$494,612,943	10.8	13.0	-2.2
Equity Hedge	\$11,312,624	0.2	0.0	0.2
Fixed Income	\$921,367,733	20.2	20.0	0.2
Fixed Income Alternatives	\$906,360,377	19.8	18.0	1.8
Real Assets	\$332,581,184	7.3	12.0	-4.7
Private Equity	\$1,142,750,016	25.0	12.0	13.0
Alternative Segment	\$284,659	0.0	0.0	0.0
Cash	\$37,087,076	0.8	0.0	0.8
<b>Total Composite</b>	<b>\$4,569,568,499</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>

#### Asset Allocation vs. All Public DB Plans

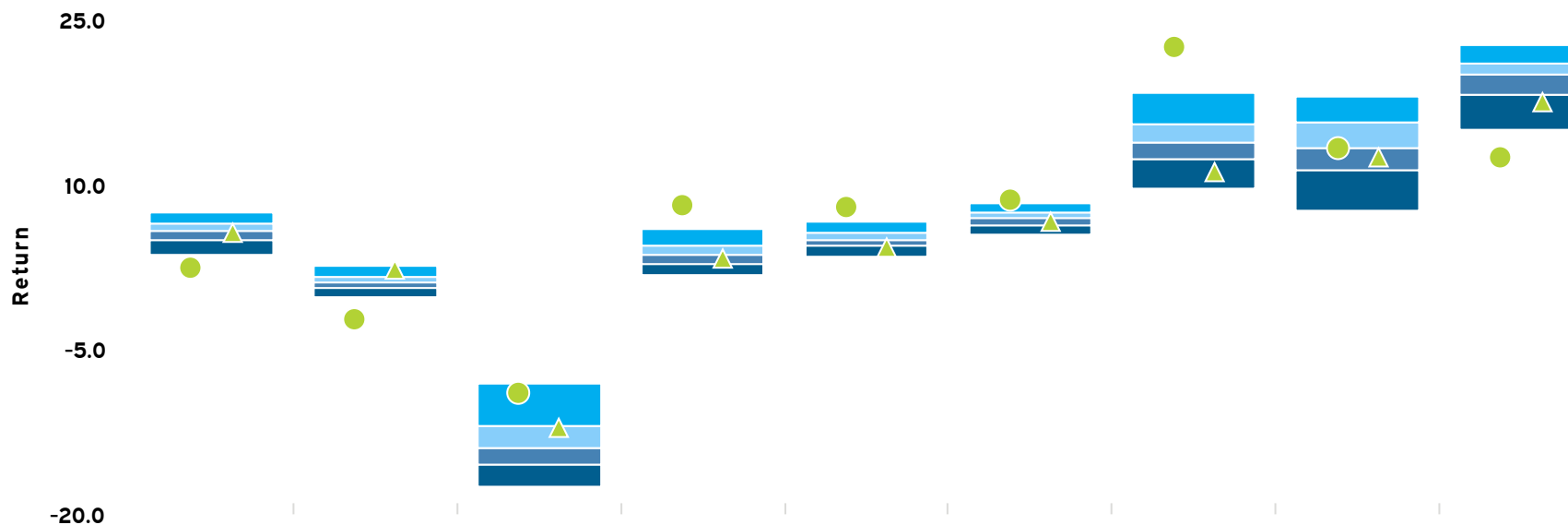


	US Equity	Global ex-US Equity	US Fixed	Hedge Funds	Private Equity	Real Assets/Commod	Cash & Equivalents	Other
● Total Composite	13.6 (97)	10.2 (78)	20.8 (63)	-	21.7 (8)	7.8 (23)	4.1 (17)	21.8 (100)
5th Percentile	59.0	22.6	40.3	16.4	22.6	15.3	9.0	-
1st Quartile	49.3	16.8	31.1	7.3	13.4	7.1	3.0	-
Median	42.5	13.7	23.6	5.0	7.8	4.9	1.5	-
3rd Quartile	32.0	10.6	18.7	2.2	3.2	3.4	0.7	-
95th Percentile	17.8	6.1	10.9	0.1	0.6	0.8	0.1	-
Population	530	506	517	103	166	95	456	0

Other represents Alternative Fixed Income allocation.



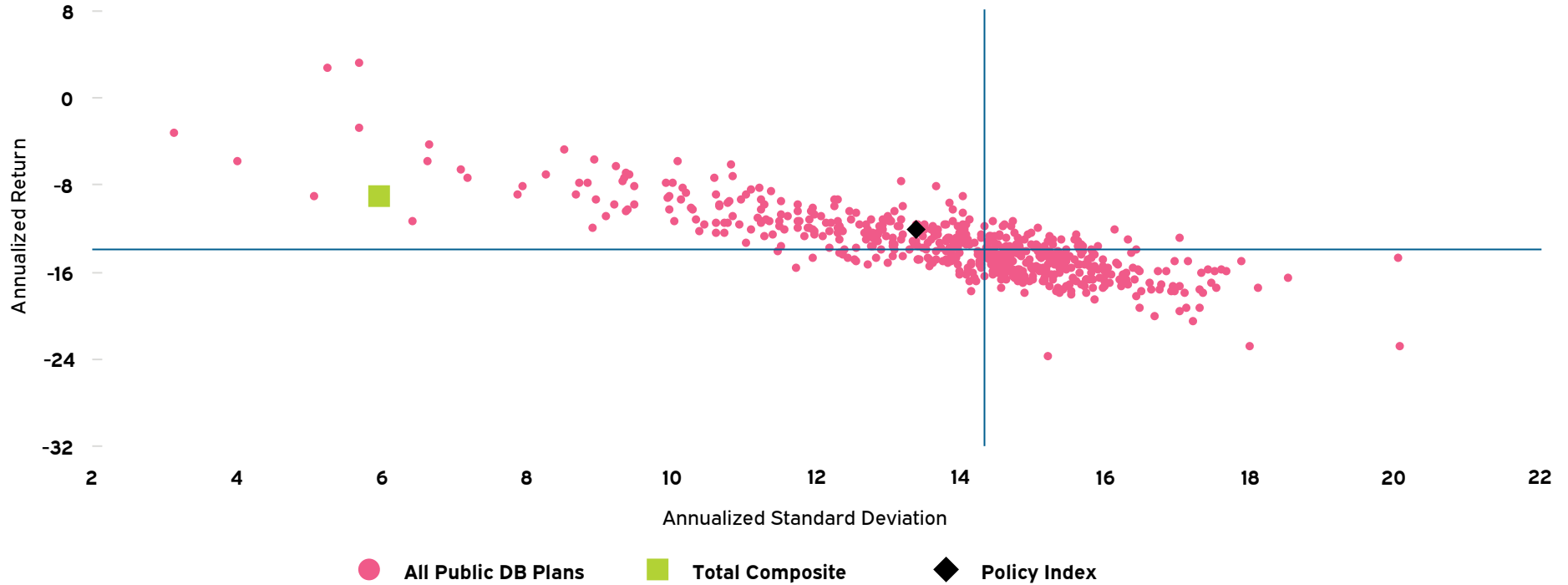
#### Net Performance vs. All Public DB Plans



	QTD (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	2021	2020	2019
● Total Composite	2.4 (99)	-2.2 (100)	-9.0 (7)	8.1 (1)	8.0 (1)	8.7 (2)	22.6 (1)	13.2 (52)	12.4 (99)
▲ Policy Index	5.7 (52)	2.2 (9)	-12.1 (27)	3.2 (65)	4.3 (76)	6.6 (64)	11.1 (89)	12.4 (61)	17.5 (82)
5th Percentile	7.4	2.6	-8.2	5.9	6.6	8.2	18.4	18.0	22.6
1st Quartile	6.5	1.5	-12.0	4.4	5.6	7.4	15.5	15.6	21.0
Median	5.7	1.0	-13.9	3.6	4.9	6.9	13.8	13.3	19.9
3rd Quartile	5.0	0.5	-15.5	2.8	4.3	6.3	12.4	11.3	18.2
95th Percentile	3.6	-0.3	-17.5	1.8	3.4	5.4	9.6	7.6	14.9
Population	590	589	577	557	538	446	926	986	735

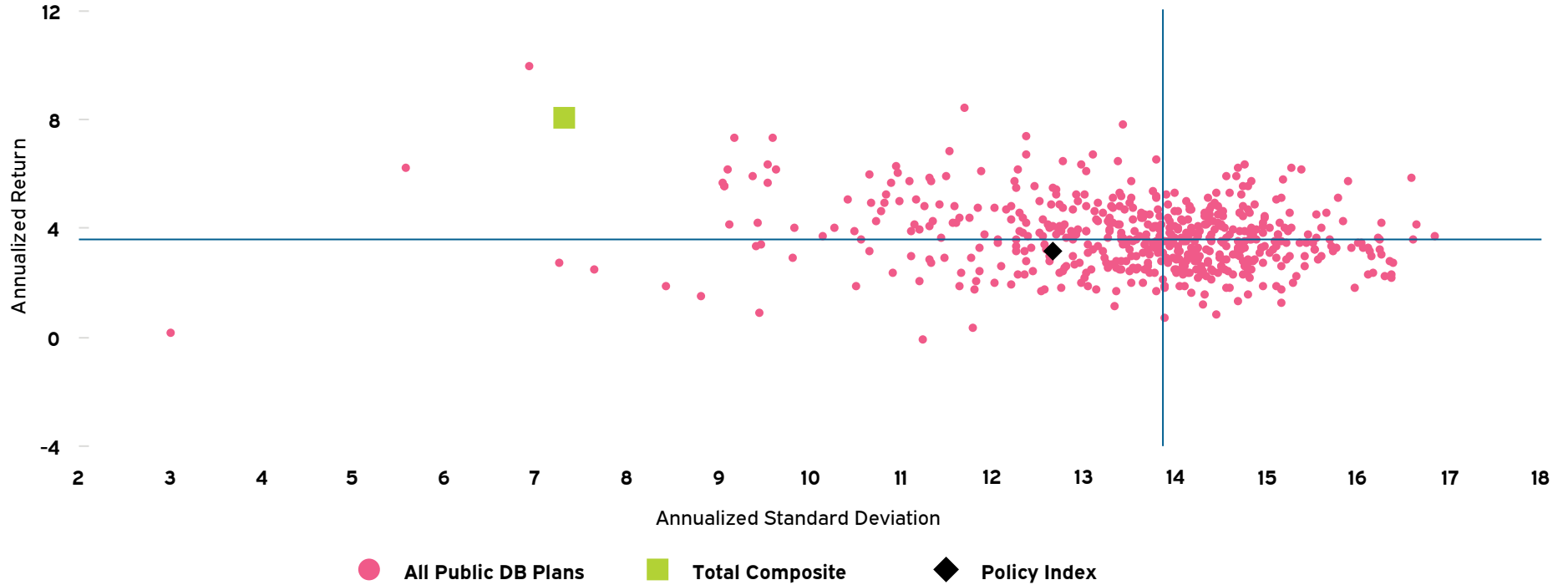
Parentheses contain percentile rankings. Calculation based on monthly periodicity.

#### Annualized Return vs. Annualized Standard Deviation 1 Year Ending December 31, 2022



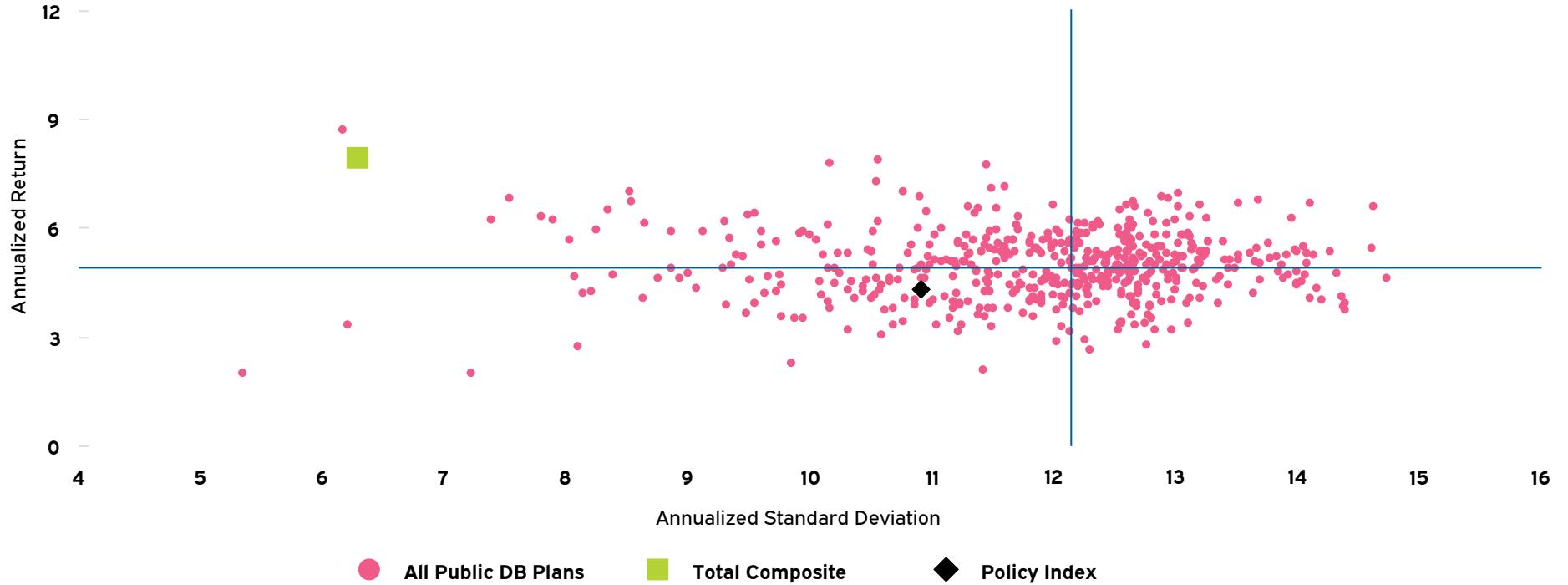
	1 Year Return	1 Year Standard Deviation	1 Year Sharpe Ratio	1 Year Information Ratio
Total Composite	-9.0 (7)	6.0 (1)	-1.8 (100)	0.3 (17)
All Public DB Plans Median	-13.9	14.3	-1.1	-0.8
Policy Index	-12.1	13.4	-1.0	-

### Annualized Return vs. Annualized Standard Deviation 3 Years Ending December 31, 2022



	3 Years Return	3 Years Standard Deviation	3 Years Sharpe Ratio	3 Years Information Ratio
Total Composite	8.1 (1)	7.3 (1)	1.0 (1)	0.5 (21)
All Public DB Plans Median	3.6	13.8	0.3	0.2
Policy Index	3.2	12.6	0.3	-

#### Annualized Return vs. Annualized Standard Deviation 5 Years Ending December 31, 2022



	5 Years Return	5 Years Standard Deviation	5 Years Sharpe Ratio	5 Years Information Ratio
Total Composite	8.0 (1)	6.3 (1)	1.0 (1)	0.5 (29)
All Public DB Plans Median	4.9	12.1	0.4	0.3
Policy Index	4.3	10.9	0.3	-

Total Plan (Net Returns)										
	Market Value (\$)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Composite</b>	4,055,196,366	100.0	2.4 (99)	-2.2 (100)	-9.0 (7)	8.1 (1)	8.0 (1)	8.7 (2)	8.4 (14)	Jun-91
<i>Policy Index</i>			5.7 (52)	2.2 (9)	-12.1 (27)	3.2 (65)	4.3 (76)	6.6 (64)	--	
Over/Under			-3.3	-4.4	3.1	4.9	3.7	2.1	--	
<b>Total Equity Composite</b>	963,918,932	23.8	9.1	1.9	-20.8	4.4	5.2	8.7	7.0	Apr-01
<b>Domestic Equity</b>	552,282,372	13.6	5.8 (75)	1.4 (68)	-23.6 (71)	9.1 (17)	9.6 (19)	13.0 (10)	8.5 (34)	Apr-01
<i>Russell 3000 Index</i>			7.2 (63)	2.4 (59)	-19.2 (56)	7.1 (38)	8.8 (29)	12.1 (22)	7.9 (55)	
Over/Under			-1.4	-1.0	-4.4	2.0	0.8	0.9	0.6	
<b>Large Cap Equity</b>	332,557,200	8.2	4.6 (81)	-0.3 (80)	-22.5 (74)	12.3 (2)	11.3 (7)	14.4 (3)	7.9 (96)	Jul-91
<i>S&amp;P 500 Index</i>			7.6 (65)	2.3 (63)	-18.1 (62)	7.7 (37)	9.4 (30)	12.6 (24)	9.9 (56)	
Over/Under			-3.0	-2.6	-4.4	4.6	1.9	1.8	-2.0	
<b>Mid Cap Equity</b>	156,597,282	3.9	7.3 (64)	2.7 (73)	-26.3 (73)	6.1 (48)	9.6 (13)	13.0 (7)	7.2 (84)	Jan-08
<i>Russell Midcap Index</i>			9.2 (47)	5.4 (46)	-17.3 (53)	5.9 (50)	7.1 (51)	11.0 (42)	8.4 (47)	
Over/Under			-1.9	-2.7	-9.0	0.2	2.5	2.0	-1.2	
<b>Small Cap Equity</b>	63,127,890	1.6	9.1 (47)	8.0 (17)	-22.4 (69)	3.8 (75)	5.2 (58)	9.8 (56)	10.3 (80)	Jul-91
<i>Russell 2000 Index</i>			6.2 (72)	3.9 (58)	-20.4 (64)	3.1 (80)	4.1 (77)	9.0 (71)	9.2 (99)	
Over/Under			2.9	4.1	-2.0	0.7	1.1	0.8	1.1	
<b>International Equity</b>	411,636,560	10.2	13.8 (64)	2.4 (72)	-16.8 (41)	-1.9 (83)	-0.5 (85)	2.8 (95)	6.7 (56)	Jul-93
<i>International Equity Policy Index</i>			14.3 (56)	3.0 (63)	-16.0 (36)	0.1 (64)	0.9 (64)	3.8 (82)	5.1 (100)	
Over/Under			-0.5	-0.6	-0.8	-2.0	-1.4	-1.0	1.6	
<b>Equity Hedge</b>	157,135	0.0	-0.6	-3.6	-10.7	-1.0	0.5	4.0	3.5	Jul-11
<i>HFRI Equity Hedge (Total) Index</i>			4.3	1.8	-10.1	5.8	4.6	5.6	4.6	
Over/Under			-4.9	-5.4	-0.6	-6.8	-4.1	-1.6	-1.1	

## Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (\$)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Fixed Income</b>	<b>842,974,919</b>	<b>20.8</b>	<b>2.7 (34)</b>	<b>0.0 (40)</b>	<b>-9.3 (50)</b>	<b>-1.1 (57)</b>	<b>1.1 (42)</b>	<b>2.7 (23)</b>	<b>5.5 (22)</b>	<b>Aug-91</b>
<i>Blmbg. U.S. Aggregate Index</i>			1.9 (52)	-3.0 (81)	-13.0 (74)	-2.7 (85)	0.0 (85)	1.1 (73)	4.9 (48)	
Over/Under			0.8	3.0	3.7	1.6	1.1	1.6	0.6	
<b>Fixed Income Alternatives</b>	<b>885,804,271</b>	<b>21.8</b>	<b>2.0 (91)</b>	<b>0.3 (96)</b>	<b>2.9 (1)</b>	<b>9.0 (1)</b>	<b>7.7 (1)</b>	<b>8.1 (1)</b>	<b>13.4 (1)</b>	<b>Jan-09</b>
<i>Fixed Income Alternatives Policy Index</i>			4.0 (48)	3.3 (63)	-11.3 (77)	-0.2 (69)	2.1 (56)	3.6 (63)	3.8 (100)	
Over/Under			-2.0	-3.0	14.2	9.2	5.6	4.5	9.6	
<b>Total Distressed Composite</b>	<b>244,532,004</b>	<b>6.0</b>	<b>2.6</b>	<b>2.5</b>	<b>10.1</b>	<b>7.9</b>	<b>7.3</b>	<b>8.2</b>	<b>13.8</b>	<b>Jan-09</b>
<i>ICE BofA High Yield Master II</i>			4.0	3.3	-11.3	-0.2	2.1	3.9	8.7	
Over/Under			-1.4	-0.8	21.4	8.1	5.2	4.3	5.1	
<b>Income Strategies</b>	<b>641,272,267</b>	<b>15.8</b>	<b>1.8</b>	<b>-0.5</b>	<b>0.1</b>	<b>9.4</b>	<b>7.9</b>	<b>7.8</b>	<b>7.8</b>	<b>May-11</b>
<b>Real Assets</b>	<b>316,395,226</b>	<b>7.8</b>	<b>-0.3</b>	<b>-0.2</b>	<b>9.1</b>	<b>6.0</b>	<b>5.5</b>	<b>7.3</b>	<b>6.3</b>	<b>Jul-01</b>
<i>NCREIF Property Index</i>			-3.5	-3.0	5.5	8.1	7.5	8.8	8.4	
Over/Under			3.2	2.8	3.6	-2.1	-2.0	-1.5	-2.1	
<b>Real Estate Composite</b>	<b>233,958,114</b>	<b>5.8</b>	<b>-3.1</b>	<b>-3.9</b>	<b>2.7</b>	<b>4.8</b>	<b>6.6</b>	<b>8.7</b>	<b>7.1</b>	<b>Jul-01</b>
<i>NCREIF Property Index</i>			-3.5	-3.0	5.5	8.1	7.5	8.8	8.4	
Over/Under			0.4	-0.9	-2.8	-3.3	-0.9	-0.1	-1.3	
<b>Infrastructure Composite</b>	<b>14,690,137</b>	<b>0.4</b>	<b>4.6</b>	<b>8.3</b>	<b>12.0</b>	<b>-4.3</b>	<b>0.4</b>	<b>1.5</b>	<b>2.6</b>	<b>Jul-09</b>
<b>Private Equity</b>	<b>880,764,286</b>	<b>21.7</b>	<b>-2.8</b>	<b>-10.7</b>	<b>-11.6</b>	<b>20.2</b>	<b>19.7</b>	<b>16.9</b>	<b>12.8</b>	<b>Oct-01</b>
<i>Russell 2000 Index</i>			6.2	3.9	-20.4	3.1	4.1	9.0	8.6	
Over/Under			-9.0	-14.6	8.8	17.1	15.6	7.9	4.2	
<b>Alternative Segment</b>	<b>32,611</b>	<b>0.0</b>	<b>0.0</b>	<b>-54.2</b>	<b>-88.5</b>	<b>-51.3</b>	<b>-37.2</b>	<b>-19.3</b>	<b>-8.4</b>	<b>Jul-09</b>
<b>Cash</b>	<b>165,148,987</b>	<b>4.1</b>	<b>0.2</b>	<b>0.5</b>	<b>0.5</b>	<b>1.2</b>	<b>0.8</b>	<b>0.4</b>	<b>4.3</b>	<b>Jul-09</b>
<i>FTSE 3 Month T-Bill</i>			0.9	1.3	1.5	0.7	1.2	0.7	0.6	
Over/Under			-0.7	-0.8	-1.0	0.5	-0.4	-0.3	3.7	

Trailing Net Performance										
	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Total Composite</b>	<b>4,055,196,366</b>	<b>100.0</b>	<b>2.4 (99)</b>	<b>-2.2 (100)</b>	<b>-9.0 (7)</b>	<b>8.1 (1)</b>	<b>8.0 (1)</b>	<b>8.7 (2)</b>	<b>8.4 (14)</b>	<b>Jun-91</b>
<i>Policy Index</i>			<i>5.7 (52)</i>	<i>2.2 (9)</i>	<i>-12.1 (27)</i>	<i>3.2 (65)</i>	<i>4.3 (76)</i>	<i>6.6 (64)</i>	--	
Over/Under			-3.3	-4.4	3.1	4.9	3.7	2.1	--	
<b>Total Equity Composite</b>	<b>963,918,932</b>	<b>23.8</b>	<b>9.1 (71)</b>	<b>1.9 (70)</b>	<b>-20.8 (61)</b>	<b>4.4 (48)</b>	<b>5.2 (52)</b>	<b>8.7 (39)</b>	<b>7.0 (53)</b>	<b>Apr-01</b>
<b>Domestic Equity</b>	<b>552,282,372</b>	<b>13.6</b>	<b>5.8 (75)</b>	<b>1.4 (68)</b>	<b>-23.6 (71)</b>	<b>9.1 (17)</b>	<b>9.6 (19)</b>	<b>13.0 (10)</b>	<b>8.5 (34)</b>	<b>Apr-01</b>
<i>Russell 3000 Index</i>			<i>7.2 (63)</i>	<i>2.4 (59)</i>	<i>-19.2 (56)</i>	<i>7.1 (38)</i>	<i>8.8 (29)</i>	<i>12.1 (22)</i>	<i>7.9 (55)</i>	
Over/Under			-1.4	-1.0	-4.4	2.0	0.8	0.9	0.6	
<b>Large Cap Equity</b>	<b>332,557,200</b>	<b>8.2</b>	<b>4.6 (81)</b>	<b>-0.3 (80)</b>	<b>-22.5 (74)</b>	<b>12.3 (2)</b>	<b>11.3 (7)</b>	<b>14.4 (3)</b>	<b>7.9 (96)</b>	<b>Jul-91</b>
<i>S&amp;P 500 Index</i>			<i>7.6 (65)</i>	<i>2.3 (63)</i>	<i>-18.1 (62)</i>	<i>7.7 (37)</i>	<i>9.4 (30)</i>	<i>12.6 (24)</i>	<i>9.9 (56)</i>	
Over/Under			-3.0	-2.6	-4.4	4.6	1.9	1.8	-2.0	
BlackRock Large Cap ETF	1,214,554	0.0	7.2 (68)	2.2 (64)	-17.5 (59)	7.5 (40)	9.2 (34)	12.4 (29)	12.2 (41)	Aug-10
<i>S&amp;P 500 Index</i>			<i>7.6 (65)</i>	<i>2.3 (63)</i>	<i>-18.1 (62)</i>	<i>7.7 (37)</i>	<i>9.4 (30)</i>	<i>12.6 (24)</i>	<i>12.8 (22)</i>	
Over/Under			-0.4	-0.1	0.6	-0.2	-0.2	-0.2	-0.6	
PIMCO Managed Volatility	331,321,476	8.2	4.6 (81)	-0.3 (80)	-22.5 (74)	12.3 (2)	11.4 (7)	--	12.2 (4)	Jan-15
<i>S&amp;P 500 Index</i>			<i>7.6 (65)</i>	<i>2.3 (63)</i>	<i>-18.1 (62)</i>	<i>7.7 (37)</i>	<i>9.4 (30)</i>	<i>12.6 (24)</i>	<i>10.2 (25)</i>	
Over/Under			-3.0	-2.6	-4.4	4.6	2.0	--	2.0	
<b>Mid Cap Equity</b>	<b>156,597,282</b>	<b>3.9</b>	<b>7.3 (64)</b>	<b>2.7 (73)</b>	<b>-26.3 (73)</b>	<b>6.1 (48)</b>	<b>9.6 (13)</b>	<b>13.0 (7)</b>	<b>7.2 (84)</b>	<b>Jan-08</b>
<i>Russell Midcap Index</i>			<i>9.2 (47)</i>	<i>5.4 (46)</i>	<i>-17.3 (53)</i>	<i>5.9 (50)</i>	<i>7.1 (51)</i>	<i>11.0 (42)</i>	<i>8.4 (47)</i>	
Over/Under			-1.9	-2.7	-9.0	0.2	2.5	2.0	-1.2	
Champlain Mid Cap Core	156,597,282	3.9	7.3 (64)	2.7 (73)	-26.3 (73)	6.1 (48)	9.6 (13)	13.0 (7)	12.7 (17)	Dec-09
<i>Russell Midcap Index</i>			<i>9.2 (47)</i>	<i>5.4 (46)</i>	<i>-17.3 (53)</i>	<i>5.9 (50)</i>	<i>7.1 (51)</i>	<i>11.0 (42)</i>	<i>11.9 (38)</i>	
Over/Under			-1.9	-2.7	-9.0	0.2	2.5	2.0	0.8	
<b>Small Cap Equity</b>	<b>63,127,890</b>	<b>1.6</b>	<b>9.1 (47)</b>	<b>8.0 (17)</b>	<b>-22.4 (69)</b>	<b>3.8 (75)</b>	<b>5.2 (58)</b>	<b>9.8 (56)</b>	<b>10.3 (80)</b>	<b>Jul-91</b>
<i>Russell 2000 Index</i>			<i>6.2 (72)</i>	<i>3.9 (58)</i>	<i>-20.4 (64)</i>	<i>3.1 (80)</i>	<i>4.1 (77)</i>	<i>9.0 (71)</i>	<i>9.2 (99)</i>	
Over/Under			2.9	4.1	-2.0	0.7	1.1	0.8	1.1	
William Blair SMID	63,078,875	1.6	9.1 (51)	8.0 (15)	-22.4 (69)	3.8 (75)	7.6 (34)	12.5 (11)	12.3 (15)	Dec-12
<i>Russell 2500 Growth Index</i>			<i>4.7 (85)</i>	<i>4.6 (53)</i>	<i>-26.2 (80)</i>	<i>2.9 (82)</i>	<i>6.0 (58)</i>	<i>10.6 (41)</i>	<i>10.7 (41)</i>	
Over/Under			4.4	3.4	3.8	0.9	1.6	1.9	1.6	

## Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>International Equity</b>	<b>411,636,560</b>	<b>10.2</b>	<b>13.8 (60)</b>	<b>2.4 (71)</b>	<b>-16.8 (41)</b>	<b>-1.9 (84)</b>	<b>-0.5 (83)</b>	<b>2.8 (91)</b>	<b>6.7 (51)</b>	<b>Jul-93</b>
<i>International Equity Policy Index</i>			<i>14.3 (53)</i>	<i>3.0 (64)</i>	<i>-16.0 (37)</i>	<i>0.1 (67)</i>	<i>0.9 (65)</i>	<i>3.8 (82)</i>	<i>5.1 (100)</i>	
Over/Under			-0.5	-0.6	-0.8	-2.0	-1.4	-1.0	1.6	
Grantham, Mayo, Van Otterloo & Co.	118,623,200	2.9	15.2 (38)	2.6 (70)	-18.9 (52)	-2.2 (85)	-1.0 (90)	2.6 (95)	3.6 (94)	Sep-09
<i>MSCI AC World ex USA (Net)</i>			<i>14.3 (56)</i>	<i>3.0 (63)</i>	<i>-16.0 (36)</i>	<i>0.1 (64)</i>	<i>0.9 (64)</i>	<i>3.8 (82)</i>	<i>4.4 (83)</i>	
Over/Under			0.9	-0.4	-2.9	-2.3	-1.9	-1.2	-0.8	
Lazard Freres Intl Value	128,752,377	3.2	14.1 (60)	3.3 (56)	-14.7 (29)	-1.1 (78)	0.2 (75)	3.7 (85)	6.2 (53)	Jan-95
<i>Lazard Freres Policy Index</i>			<i>14.3 (56)</i>	<i>3.0 (63)</i>	<i>-16.0 (36)</i>	<i>0.1 (64)</i>	<i>0.9 (64)</i>	<i>3.8 (82)</i>	<i>4.8 (97)</i>	
Over/Under			-0.2	0.3	1.3	-1.2	-0.7	-0.1	1.4	
GMO EM Domestic Opp	34,851,011	0.9	6.2 (88)	-5.6 (93)	-24.6 (78)	-5.5 (91)	-4.3 (97)	0.8 (86)	1.6 (90)	Aug-12
<i>MSCI Emerging Markets (Net)</i>			<i>9.7 (61)</i>	<i>-3.0 (73)</i>	<i>-20.1 (52)</i>	<i>-2.7 (64)</i>	<i>-1.4 (62)</i>	<i>1.4 (69)</i>	<i>2.4 (70)</i>	
Over/Under			-3.5	-2.6	-4.5	-2.8	-2.9	-0.6	-0.8	
Oaktree EM	129,368,489	3.2	14.5 (7)	3.9 (18)	-14.4 (22)	-1.4 (47)	1.2 (22)	--	2.6 (45)	Oct-13
<i>MSCI Emerging Markets (Net)</i>			<i>9.7 (61)</i>	<i>-3.0 (73)</i>	<i>-20.1 (52)</i>	<i>-2.7 (64)</i>	<i>-1.4 (62)</i>	<i>1.4 (69)</i>	<i>2.0 (62)</i>	
Over/Under			4.8	6.9	5.7	1.3	2.6	--	0.6	
<b>Equity Hedge</b>	<b>157,135</b>	<b>0.0</b>	<b>-0.6</b>	<b>-3.6</b>	<b>-10.7</b>	<b>-1.0</b>	<b>0.5</b>	<b>4.0</b>	<b>3.5</b>	<b>Jul-11</b>
<i>HFRI Equity Hedge (Total) Index</i>			<i>4.3</i>	<i>1.8</i>	<i>-10.1</i>	<i>5.8</i>	<i>4.6</i>	<i>5.6</i>	<i>4.6</i>	
Over/Under			-4.9	-5.4	-0.6	-6.8	-4.1	-1.6	-1.1	
Miro One Transition	175,212	0.0	0.0	0.0	-1.6	-14.7	-33.8	-19.8	-18.5	Mar-12
<i>MSCI AC World Index (Net)</i>			<i>9.8</i>	<i>2.3</i>	<i>-18.4</i>	<i>4.0</i>	<i>5.2</i>	<i>8.0</i>	<i>7.8</i>	
Over/Under			-9.8	-2.3	16.8	-18.7	-39.0	-27.8	-26.3	
Parthenon Two	-932,551	0.0	0.5	0.5	0.5	-233.6	-210.5	--	-201.3	Dec-13
<i>MSCI AC World Index (Net)</i>			<i>9.8</i>	<i>2.3</i>	<i>-18.4</i>	<i>4.0</i>	<i>5.2</i>	<i>8.0</i>	<i>6.6</i>	
Over/Under			-9.3	-1.8	18.9	-237.6	-215.7	--	-207.9	



### Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Fixed Income</b>	<b>842,974,919</b>	<b>20.8</b>	<b>2.7 (34)</b>	<b>0.0 (40)</b>	<b>-9.3 (50)</b>	<b>-1.1 (57)</b>	<b>1.1 (42)</b>	<b>2.7 (23)</b>	<b>5.5 (22)</b>	<b>Aug-91</b>
<i>Blmbg. U.S. Aggregate Index</i>			<i>1.9 (52)</i>	<i>-3.0 (81)</i>	<i>-13.0 (74)</i>	<i>-2.7 (85)</i>	<i>0.0 (85)</i>	<i>1.1 (73)</i>	<i>4.9 (48)</i>	
Over/Under			0.8	3.0	3.7	1.6	1.1	1.6	0.6	
PIMCO Core Plus Total Return	179,049,818	4.4	1.7 (67)	-2.9 (72)	-13.9 (69)	-2.1 (47)	0.2 (78)	1.2 (84)	3.7 (42)	Oct-06
<i>Blmbg. U.S. Aggregate Index</i>			<i>1.9 (57)</i>	<i>-3.0 (79)</i>	<i>-13.0 (36)</i>	<i>-2.7 (86)</i>	<i>0.0 (88)</i>	<i>1.1 (96)</i>	<i>3.0 (96)</i>	
Over/Under			-0.2	0.1	-0.9	0.6	0.2	0.1	0.7	
PIMCO Corporate Credit	233,615,831	5.8	4.4 (1)	0.5 (1)	-13.1 (52)	-1.4 (7)	1.6 (1)	3.4 (1)	5.4 (1)	Jun-09
<i>PIMCO Corporate Credit Policy Index</i>			<i>3.7 (1)</i>	<i>-0.1 (1)</i>	<i>-13.8 (82)</i>	<i>-2.0 (25)</i>	<i>1.0 (3)</i>	<i>2.4 (1)</i>	<i>4.5 (2)</i>	
Over/Under			0.7	0.6	0.7	0.6	0.6	1.0	0.9	
PIMCO Unconstrained Bond	397,613,443	9.8	2.3 (66)	1.1 (48)	-6.4 (40)	-0.9 (55)	1.1 (54)	--	2.2 (40)	Sep-13
<i>ICE BofA LIBOR 3-month Constant Maturity</i>			<i>0.9 (92)</i>	<i>1.2 (43)</i>	<i>1.2 (7)</i>	<i>0.8 (25)</i>	<i>1.4 (39)</i>	<i>1.0 (72)</i>	<i>1.0 (76)</i>	
Over/Under			1.4	-0.1	-7.6	-1.7	-0.3	--	1.2	
Marathon Loan Opportunities Fd	32,695,828	0.8	0.0	0.0	-1.3	1.4	1.3	--	3.2	Oct-14
<i>Morningstar LSTA US Leveraged Loan</i>			<i>2.6</i>	<i>4.0</i>	<i>-0.8</i>	<i>2.5</i>	<i>3.3</i>	<i>3.7</i>	<i>3.5</i>	
Over/Under			-2.6	-4.0	-0.5	-1.1	-2.0	--	-0.3	

## Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Fixed Income Alternatives</b>	<b>885,804,271</b>	<b>21.8</b>	<b>2.0 (91)</b>	<b>0.3 (96)</b>	<b>2.9 (1)</b>	<b>9.0 (1)</b>	<b>7.7 (1)</b>	<b>8.1 (1)</b>	<b>13.4 (1)</b>	<b>Jan-09</b>
<i>Fixed Income Alternatives Policy Index</i>			<i>4.0 (48)</i>	<i>3.3 (63)</i>	<i>-11.3 (77)</i>	<i>-0.2 (69)</i>	<i>2.1 (56)</i>	<i>3.6 (63)</i>	<i>3.8 (100)</i>	
Over/Under			-2.0	-3.0	14.2	9.2	5.6	4.5	9.6	
Garrison Distressed Fund II	32,424	0.0								
Oaktree EPOF III	7,158,149	0.2								
Garrison Opp. Fund III	2,367,501	0.1								
Waterfall Eden Fund	363,469	0.0								
Cyrus Opps Fund II	-203	0.0								
Courage Credit Opportunities Fund III	1	0.0								
Marathon European Credit Opps II	2,332,244	0.1								
Marathon European Credit Opps III	26,155,736	0.6								
Mount Logan Opportunities Fund IV	11,040,838	0.3								
Centerbridge Capital Partners III	29,474,034	0.7								
Oaktree Opps Fund X	43,456,247	1.1								
PIMCO COF III	39,970,785	1.0								
Hygieia SMA	82,180,780	2.0								
EIG-Energy Fund XV	4,576,584	0.1								
Accel Growth Fund, L.P.	21,425	0.0								
Cowen Healthcare Royalty II	938,790	0.0								
GSO Capital Opp. Fund II	1,708,157	0.0								
Energy Cap Mezz Opps Fund A	3,983,865	0.1								
Marathon CLO Managed	29,606,198	0.7								
Mount Logan Middle Market Funding	165,501	0.0								
EIG-Energy Fund XVI	19,305,433	0.5								
Anchorage Illiquid Opps IV	1,052,878	0.0								
Hayfin Direct Lending Fund	179,640	0.0								
Principal RE Debt	24,191	0.0								
OSP Value Fund	5,022,550	0.1								
Athyrium Opps Fund II	6,767,505	0.2								
Accel-KKR Growth Capital Partners II, L.P.	10,115,504	0.2								
PIMCO COF II	14,287,091	0.4								
Oaktree Euro Principal IV	22,529,746	0.6								
OSP Value Fund II	7,749,072	0.2								

### Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Accel-KKR Credit Partners, L.P. - Series 1	26,660,314	0.7								
Courage Capital IV	20,090,653	0.5								
Arcmont SMA	79,655,423	2.0								
PIMCO PL A B	105,967,005	2.6								
Oaktree European Principal Fund V	14,390,453	0.4								
Anchorage Illiquid Opps VII	53,649,941	1.3								
PIMCO Tactical Opportunities Fund	100,866,743	2.5								
OSP Value Fund III	27,100,242	0.7								
Anchorage Illiquid Opps V	28,654,373	0.7								
<b>Real Assets</b>	<b>316,395,226</b>	<b>7.8</b>	<b>-0.3</b>	<b>-0.2</b>	<b>9.1</b>	<b>6.0</b>	<b>5.5</b>	<b>7.3</b>	<b>6.3</b>	<b>Jul-01</b>
<i>NCREIF Property Index</i>			<i>-3.5</i>	<i>-3.0</i>	<i>5.5</i>	<i>8.1</i>	<i>7.5</i>	<i>8.8</i>	<i>8.4</i>	
Over/Under			<i>3.2</i>	<i>2.8</i>	<i>3.6</i>	<i>-2.1</i>	<i>-2.0</i>	<i>-1.5</i>	<i>-2.1</i>	
<b>Real Estate Composite</b>	<b>233,958,114</b>	<b>5.8</b>	<b>-3.1</b>	<b>-3.9</b>	<b>2.7</b>	<b>4.8</b>	<b>6.6</b>	<b>8.7</b>	<b>7.1</b>	<b>Jul-01</b>
<i>NCREIF Property Index</i>			<i>-3.5</i>	<i>-3.0</i>	<i>5.5</i>	<i>8.1</i>	<i>7.5</i>	<i>8.8</i>	<i>8.4</i>	
Over/Under			<i>0.4</i>	<i>-0.9</i>	<i>-2.8</i>	<i>-3.3</i>	<i>-0.9</i>	<i>-0.1</i>	<i>-1.3</i>	
<b>Infrastructure Composite</b>	<b>14,690,137</b>	<b>0.4</b>	<b>4.6</b>	<b>8.3</b>	<b>12.0</b>	<b>-4.3</b>	<b>0.4</b>	<b>1.5</b>	<b>2.6</b>	<b>Jul-09</b>
JP Morgan European Real Estate	161,000	0.0	7.4 (18)	-2.3 (95)	-5.9 (1)	0.6 (92)	-0.4 (100)	2.2 (100)	0.2 (100)	Apr-09
<i>NCREIF Property Index</i>			<i>-3.5 (99)</i>	<i>-3.0 (95)</i>	<i>5.5 (1)</i>	<i>8.1 (7)</i>	<i>7.5 (57)</i>	<i>8.8 (95)</i>	<i>8.3 (100)</i>	
Over/Under			<i>10.9</i>	<i>0.7</i>	<i>-11.4</i>	<i>-7.5</i>	<i>-7.9</i>	<i>-6.6</i>	<i>-8.1</i>	
ARES European RE IV	4,700,641	0.1								
Michelson Multifamily Fund, L.P.	18,796,228	0.5								
Soundmark Horizon	30,656,886	0.8								
Savanna Real Estate Fund III	3,765,436	0.1								
True North RE III	13,321,117	0.3								
AG Realty Fund VIII	4,833,934	0.1								
AG Realty Fund IX	19,360,844	0.5								
Stonelake Fund VI	15,197,428	0.4								
EIG Private Debt	8,204,018	0.2								
PIMCO Bravo	1	0.0								
True North HY II	1	0.0								
Oaktree European Capital Solutions Fund, L.P.	13,213,223	0.3								
PIMCO Bravo II	2,317,154	0.1								
PIMCO Bravo III	29,141,180	0.7								

Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Principal RE Debt II	5,283,469	0.1								
RCP II NEPC SYND P	3,050,240	0.1								
Riverstone CP II	9,955,064	0.2								
EIG Energy XVII	16,204,726	0.4								
AG Realty Fund X	15,581,120	0.4								
Oaktree European Capital Solutions Fund II, L.P	9,302,406	0.2								
Centerbridge RE II	3,896,879	0.1								
GSO Energy Select Opportunities Fund, L.P.	4,378,978	0.1								
Ares Energy Opp Fd	10,311,159	0.3								
Riverstone GL Energy & Power Fund V	11,852,293	0.3								
Sheridan Prod Ptrs III	11,091,000	0.3								
Chambers Energy III	24,386,341	0.6								
Riverstone GL Energy & Power Fund VI	20,417,341	0.5								

### Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
<b>Private Equity</b>	<b>880,764,286</b>	<b>21.7</b>	<b>-2.8</b>	<b>-10.7</b>	<b>-11.6</b>	<b>20.2</b>	<b>19.7</b>	<b>16.9</b>	<b>12.8</b>	<b>Oct-01</b>
<i>Russell 2000 Index</i>			<i>6.2</i>	<i>3.9</i>	<i>-20.4</i>	<i>3.1</i>	<i>4.1</i>	<i>9.0</i>	<i>8.6</i>	
Over/Under			<b>-9.0</b>	<b>-14.6</b>	<b>8.8</b>	<b>17.1</b>	<b>15.6</b>	<b>7.9</b>	<b>4.2</b>	
HarbourVest Dover Street VII	97,145	0.0								
HarbourVest International VI	--	0.0								
StepStone Global Partners V	48,863,361	1.2								
Fort Washington Fund VII	17,010,971	0.4								
StepStone Opportunities II	14,895,248	0.4								
Axiom Asia III	26,940,343	0.7								
HarbourVest 2013 Direct Fund	735,631	0.0								
HarbourVest Dover Street VIII	--	0.0								
LGT Crown Europe Small Buyout III	11,332,066	0.3								
LGT CESB IV	11,510,244	0.3								
StepStone Global Partners VI	81,560,219	2.0								
StepStone Global Partners VII	87,442,548	2.2								
StepStone Secondaries Fund I	12,726,642	0.3								
StepStone GE III	11,122,519	0.3								
StepStone Growth Equity IV	18,596,433	0.5								
Greycroft Growth	9,421,769	0.2								
LGT Co-Investment Fund	18,633,499	0.5								
StepStone Opportunities III	7,876,941	0.2								
Dyal Capital Partners II	7,500	0.0								
Helios Investors III	36,318,573	0.9								
Raine Partners II	39,068,620	1.0								
Columbia Capital VI	19,487,421	0.5								
Axiom Asia IV	68,142,766	1.7								
StepStone Opportunities IV	13,600,246	0.3								
Astorg VI	6,759,714	0.2								
LGT Crown Co Inv Opps II	11,320,215	0.3								
Axiom Asia Co-Investment I	11,152,847	0.3								
Columbia Capital VII	7,777,898	0.2								

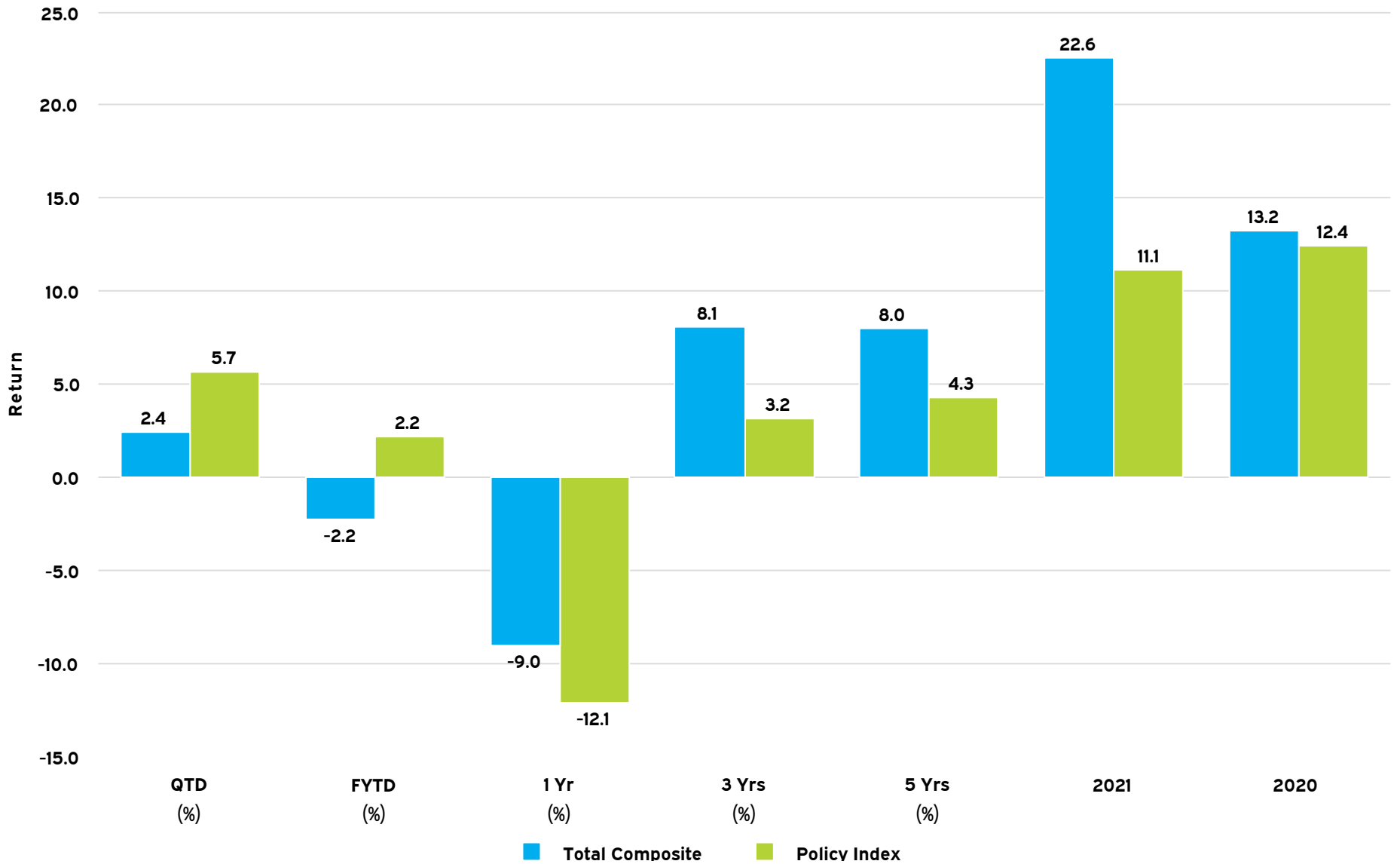
### Total Plan (Net of Fees) | As of December 31, 2022

	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Axiom Asia V	24,684,310	0.6								
StepStone Global Partners IX	46,045,114	1.1								
StepStone GE V	15,184,564	0.4								
Raine Partners III	11,516,799	0.3								
Openview V	12,391,900	0.3								
Accel-KKR Capital Partners V, L.P.	23,347,236	0.6								
Accel KKR Credit Partners VI	4,891,182	0.1								
StepStone Opportunities VI	20,759,173	0.5								
LGT Crown Europe Small Buyout V	3,065,305	0.1								
Openview Venture Partners VI	6,689,364	0.2								
StepStone Secondaries IV	27,873,710	0.7								
StepStone SPV IX	8,006,569	0.2								
StepStone Global Partners X	25,430,409	0.6								
Axiom Asia VI	14,730,418	0.4								
StepStone Growth Equity VI, Leaders	6,462,004	0.2								
StepStone Growth Equity VI, Redpoint	4,080,899	0.1								
StepStone Growth Equity VI	3,078,416	0.1								
Axiom Colnv Fund II	2,887,870	0.1								
Axiom Opportunities	4,396,827	0.1								
StepStone Secondaries V	14,860,506	0.4								
<b>Alternative Segment</b>	<b>32,611</b>	<b>0.0</b>	<b>0.0</b>	<b>-54.2</b>	<b>-88.5</b>	<b>-51.3</b>	<b>-37.2</b>	<b>-19.3</b>	<b>-8.4</b>	<b>Jul-09</b>
FCA Venture Partners III	32,611	0.0	0.0	-54.2	-88.5	-51.3	-37.2	-14.1	0.5	Apr-10
<i>Russell 3000 Index</i>			<i>7.2</i>	<i>2.4</i>	<i>-19.2</i>	<i>7.1</i>	<i>8.8</i>	<i>12.1</i>	<i>11.7</i>	
Over/Under			-7.2	-56.6	-69.3	-58.4	-46.0	-26.2	-11.2	

### Total Plan (Net of Fees) | As of December 31, 2022

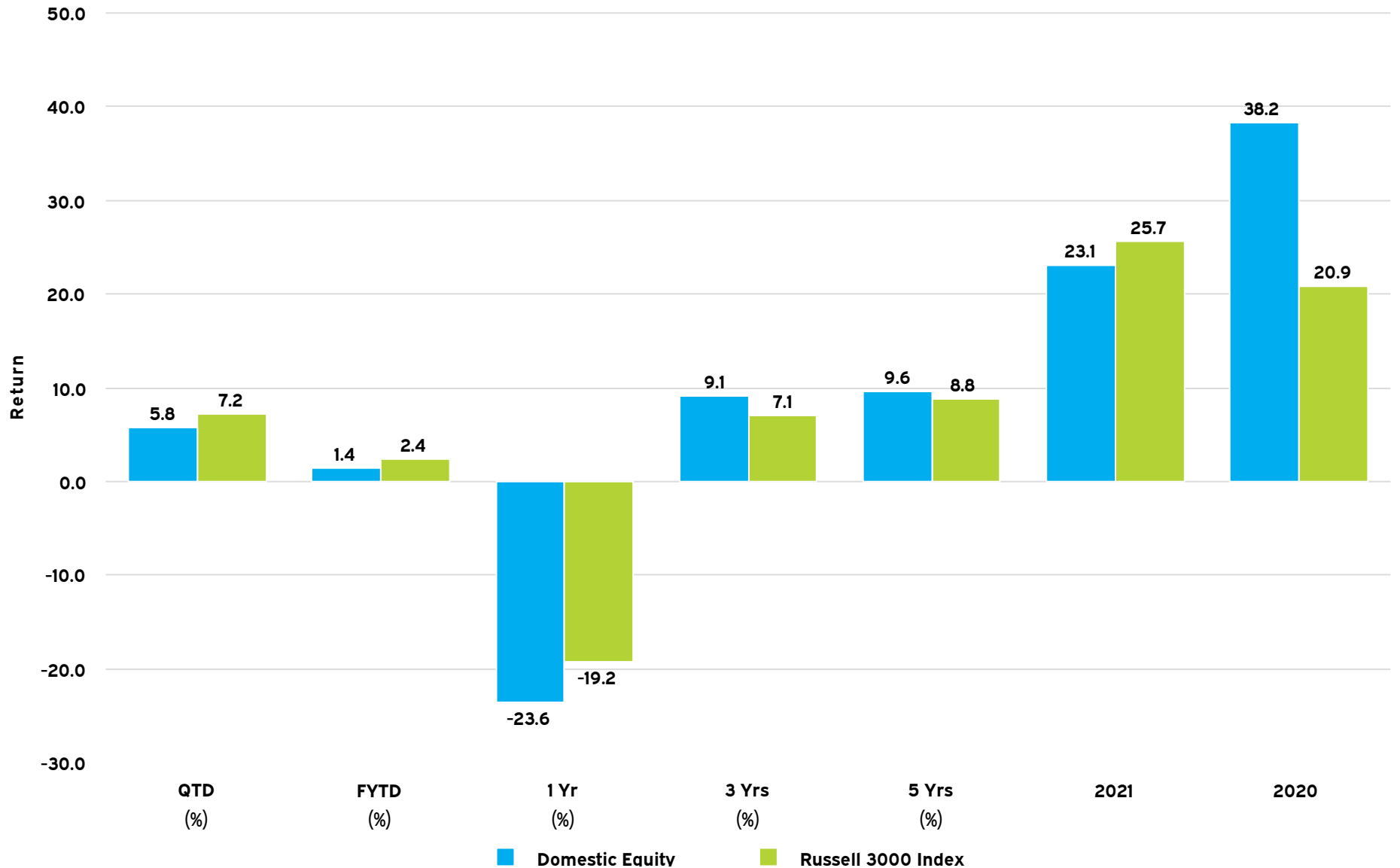
	Market Value (%)	% of Portfolio	3 Mo (%)	FYTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Cash	165,148,987	4.1	0.2	0.5	0.5	1.2	0.8	0.4	4.3	Jul-09
<i>FTSE 3 Month T-Bill</i>			0.9	1.3	1.5	0.7	1.2	0.7	0.6	
Over/Under			-0.7	-0.8	-1.0	0.5	-0.4	-0.3	3.7	
Cash Account	163,888,699	4.0	0.2	0.4	0.6	0.2	0.2	0.1	3.6	Jul-09
<i>FTSE 3 Month T-Bill</i>			0.9	1.3	1.5	0.7	1.2	0.7	0.6	
Over/Under			-0.7	-0.9	-0.9	-0.5	-1.0	-0.6	3.0	
Miscellaneous Cash	1,260,280	0.0	1.4	0.9	-2.0	6.4	4.2	2.3	3.1	May-12

#### Total Plan Composite Return Summary (net of fees)

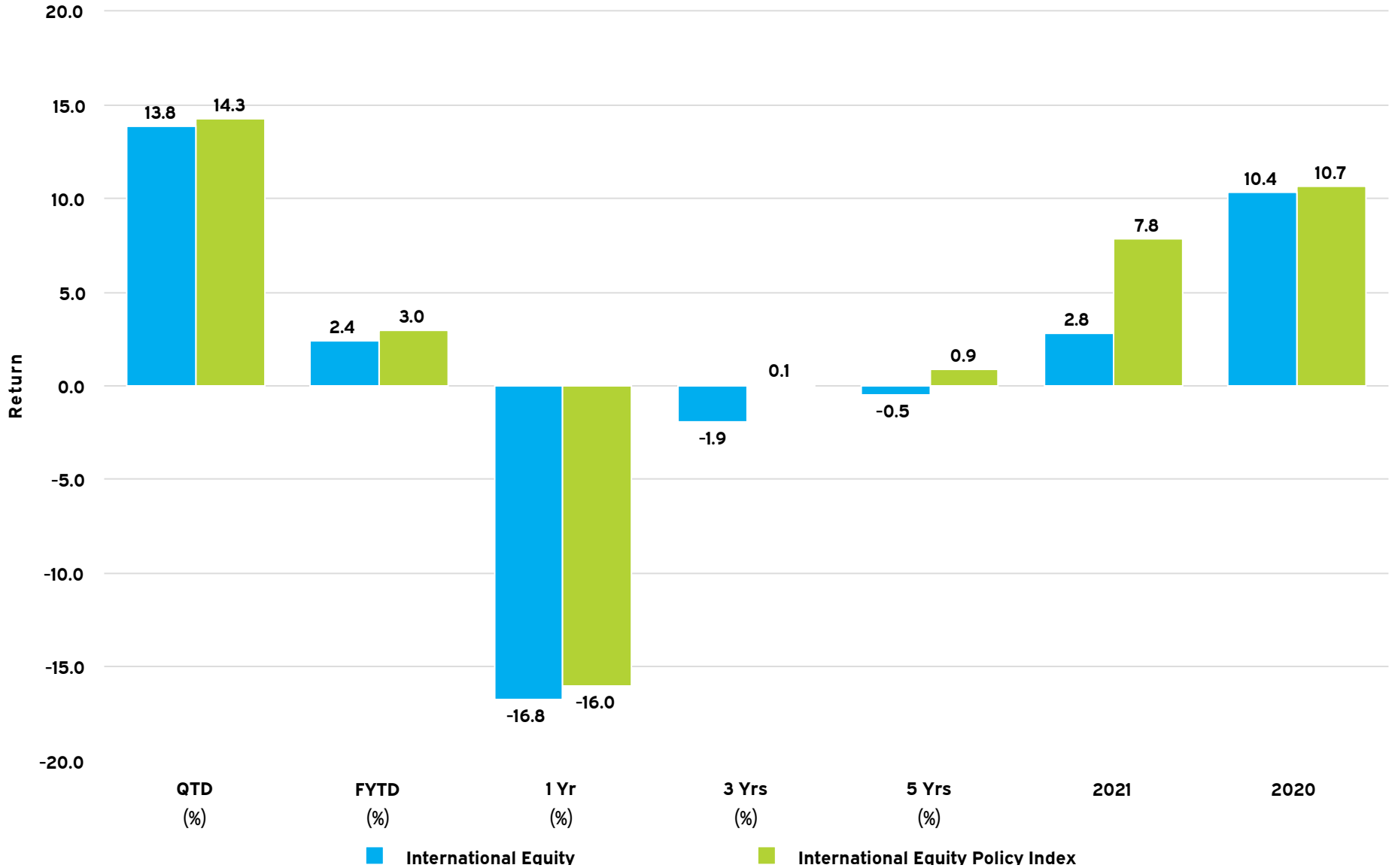




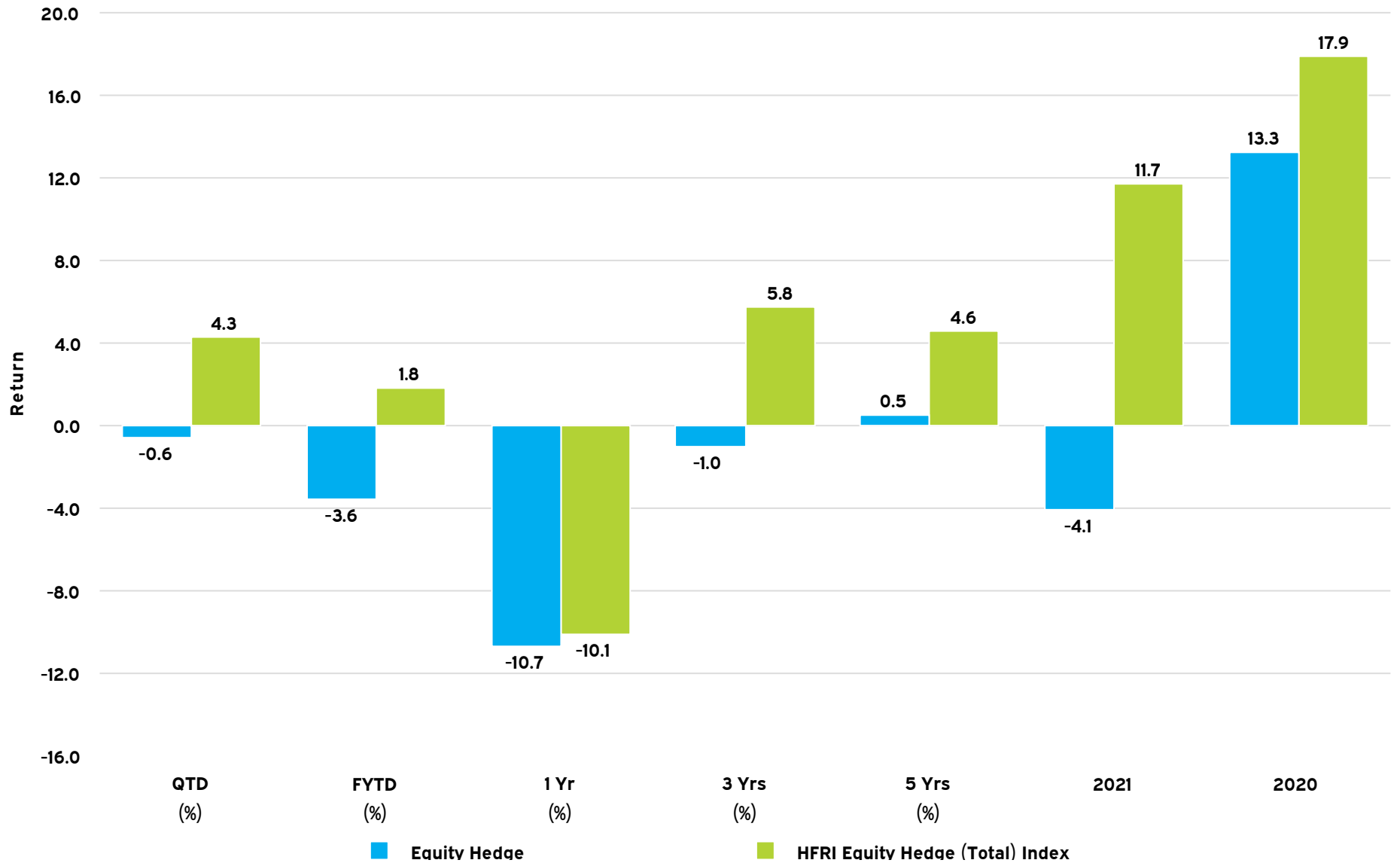
#### Total Domestic Equity Composite Return Summary (net of fees)



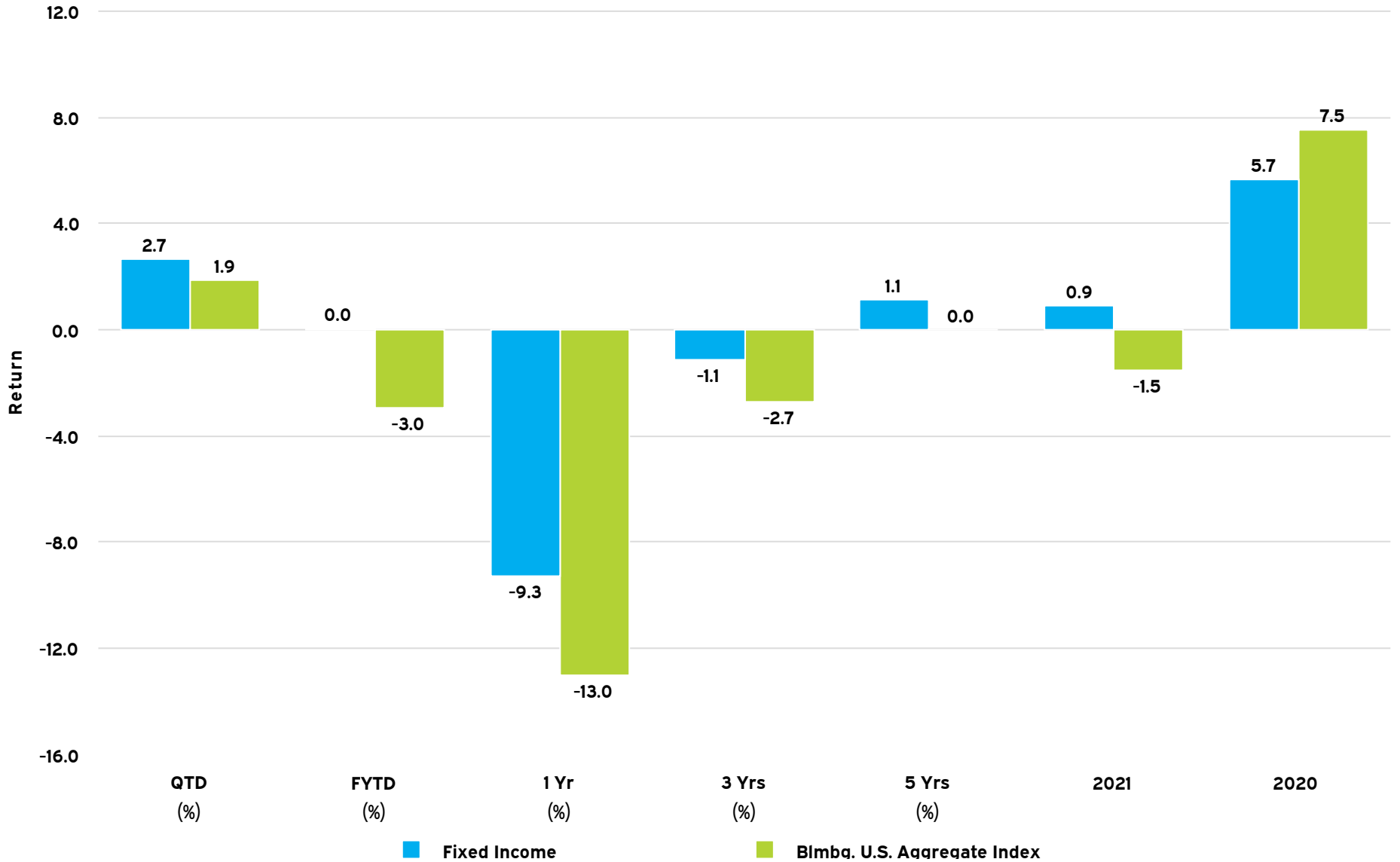
#### Total International Equity Return Summary (net of fees)



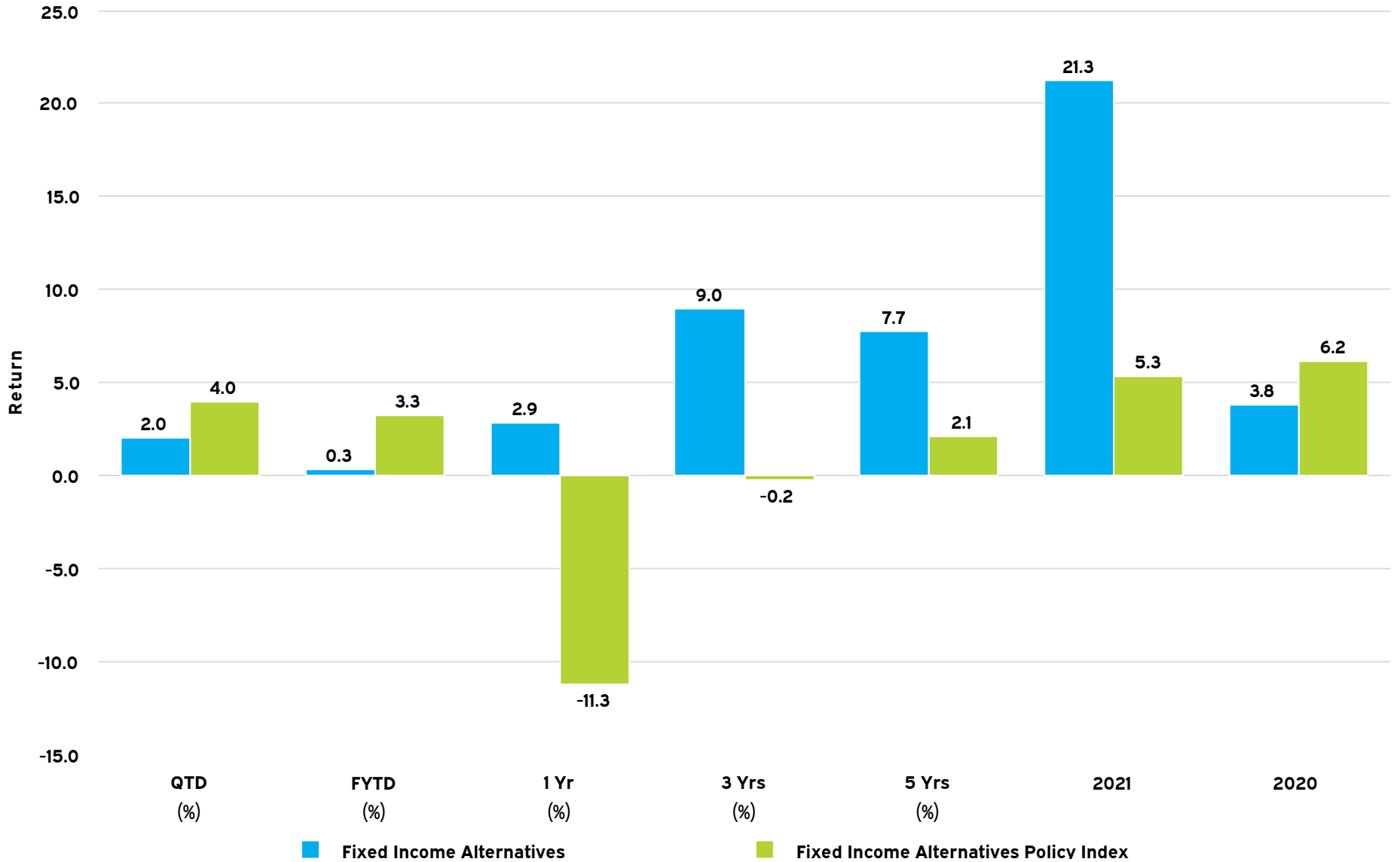
#### Total Equity Hedge Return Summary (net of fees)



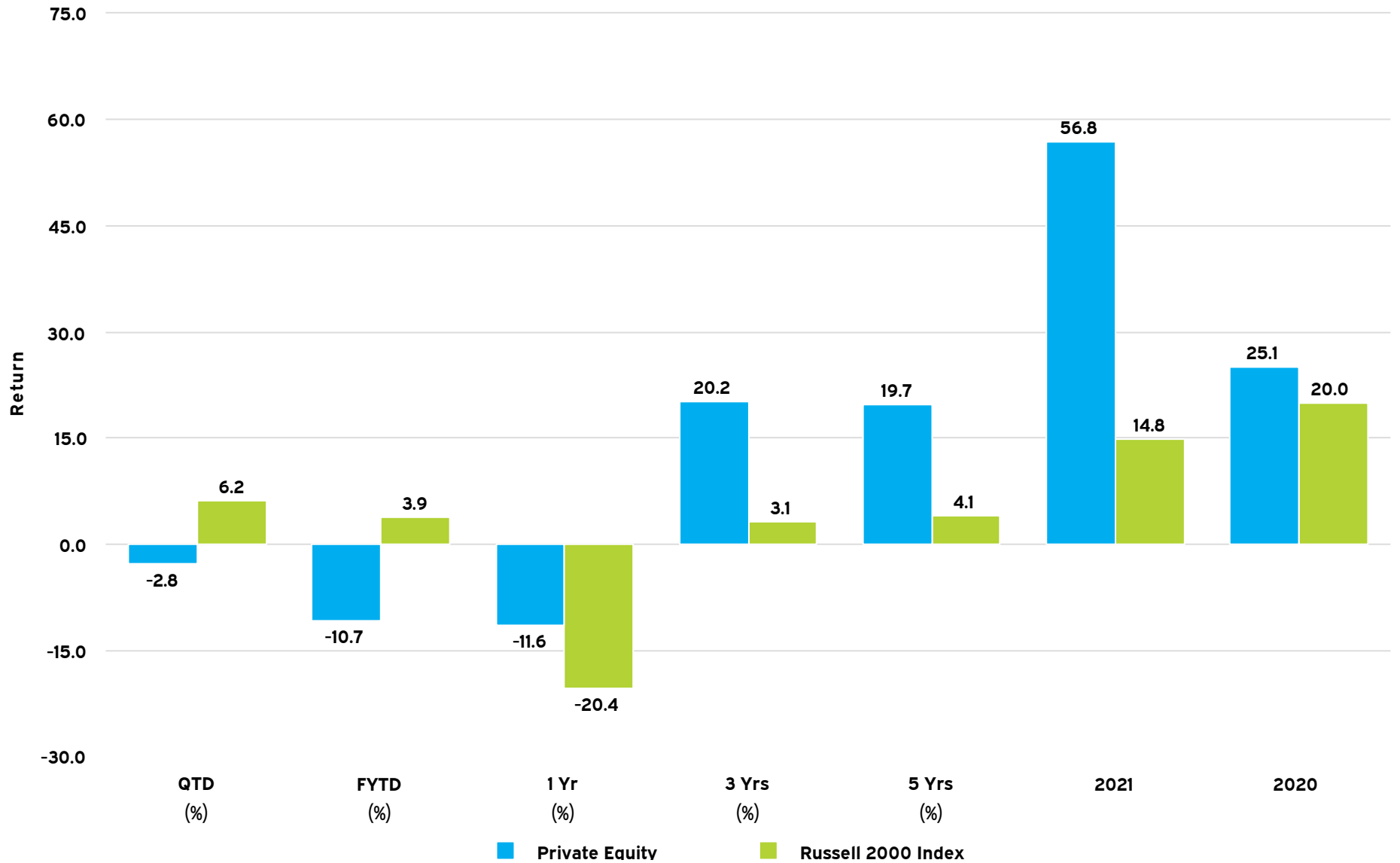
#### Total Fixed Income Composite Return Summary (net of fees)



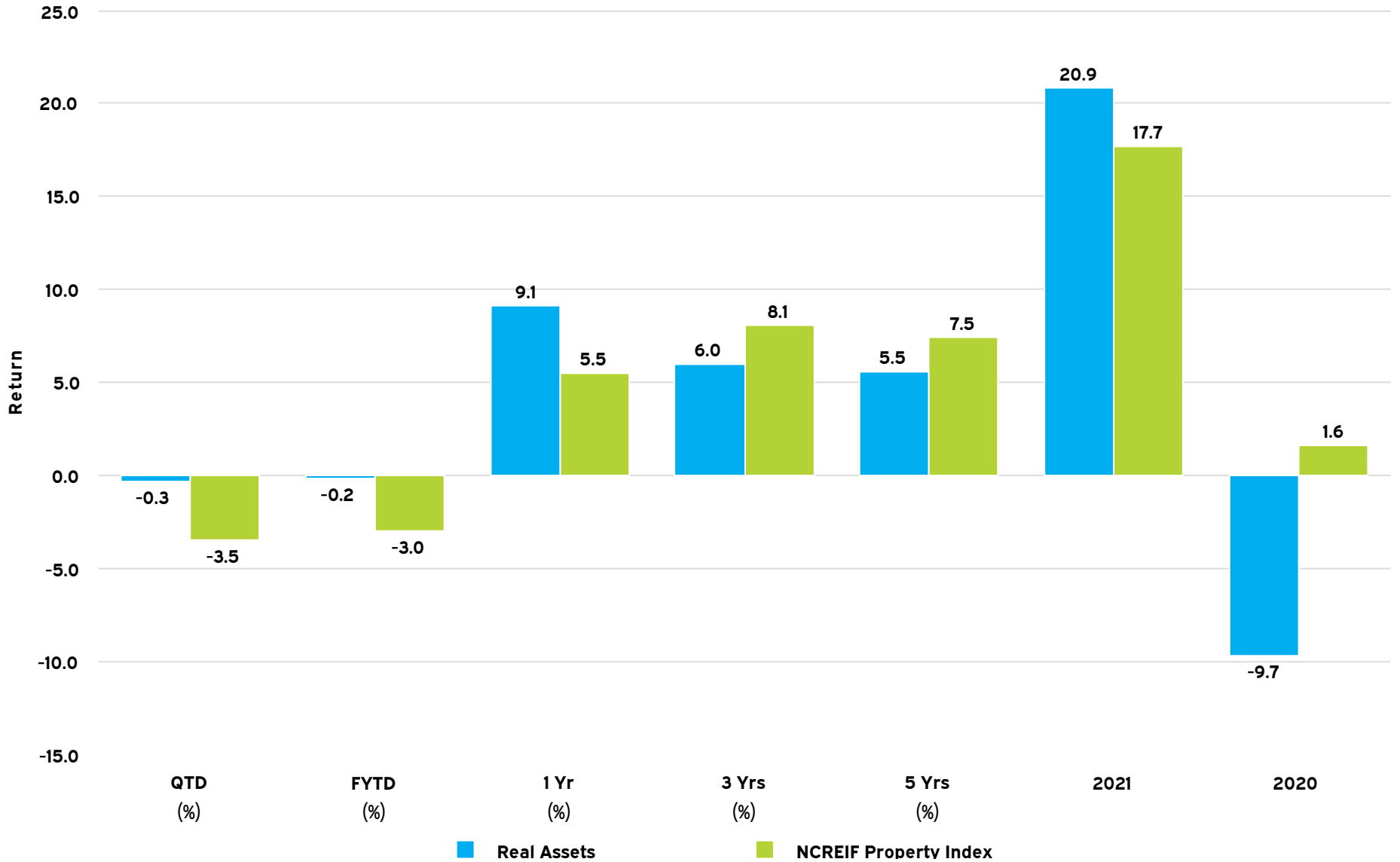
#### Total Fixed Income Alternatives Return Summary (net of fees)



#### Total Private Equity Composite (net of fees)



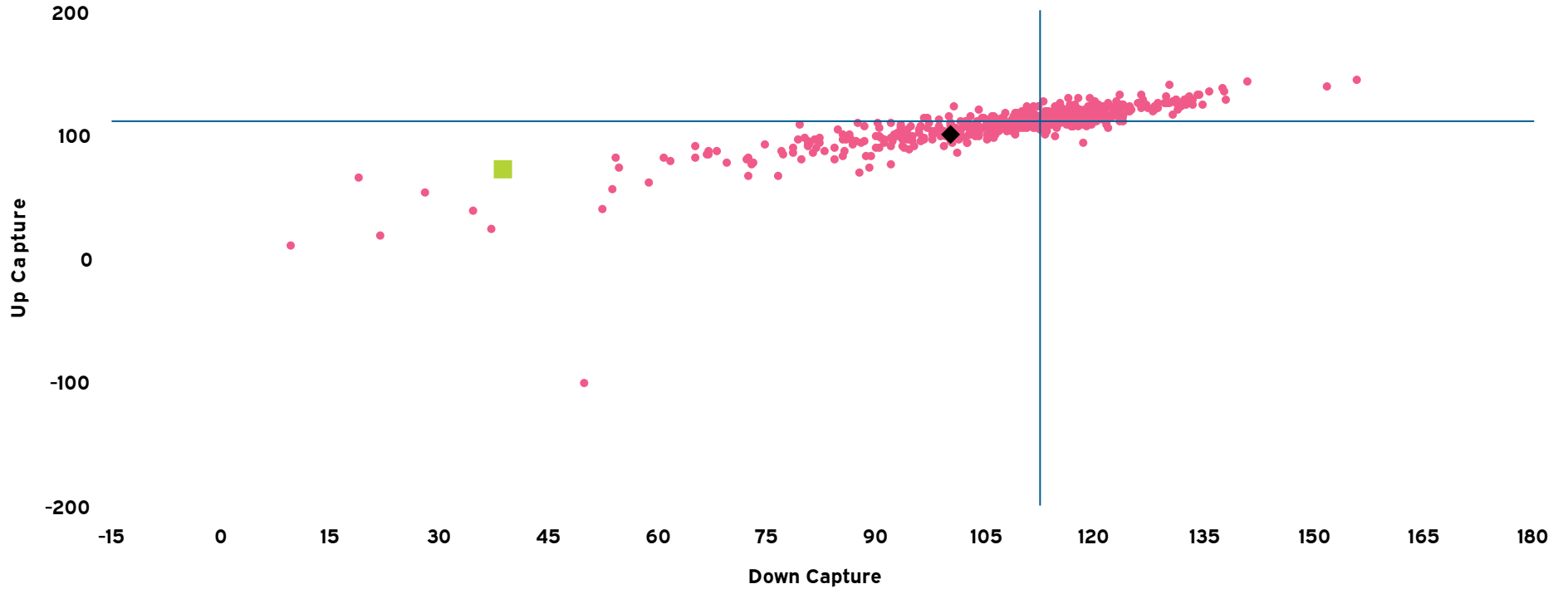
#### Total Real Assets Composite Return Summary (net of fees)



	Risk Return Statistics			
	3 Years		5 Yrs	
	Total Composite	Policy Index	Total Composite	Policy Index
<b>Return Summary Statistics</b>				
Maximum Return	5.8	7.8	5.8	7.8
Minimum Return	-4.3	-9.7	-4.3	-9.7
Return	8.1	3.2	8.0	4.3
Excess Return	7.3	3.2	6.6	3.6
Excess Performance	4.9	0.0	3.7	0.0
<b>Risk Summary Statistics</b>				
Beta	0.5	1.0	0.5	1.0
Up Capture	72.2	100.0	74.2	100.0
Down Capture	38.6	100.0	39.0	100.0
<b>Risk/Return Summary Statistics</b>				
Standard Deviation	7.3	12.6	6.3	10.9
Sortino Ratio	1.7	0.4	1.8	0.5
Alpha	6.3	0.0	5.7	0.0
Sharpe Ratio	1.0	0.3	1.0	0.3
Excess Risk	7.5	12.8	6.4	11.0
Tracking Error	7.6	0.0	6.4	0.0
Information Ratio	0.5	-	0.5	-
<b>Correlation Statistics</b>				
R-Squared	0.7	1.0	0.7	1.0
Actual Correlation	0.8	1.0	0.9	1.0

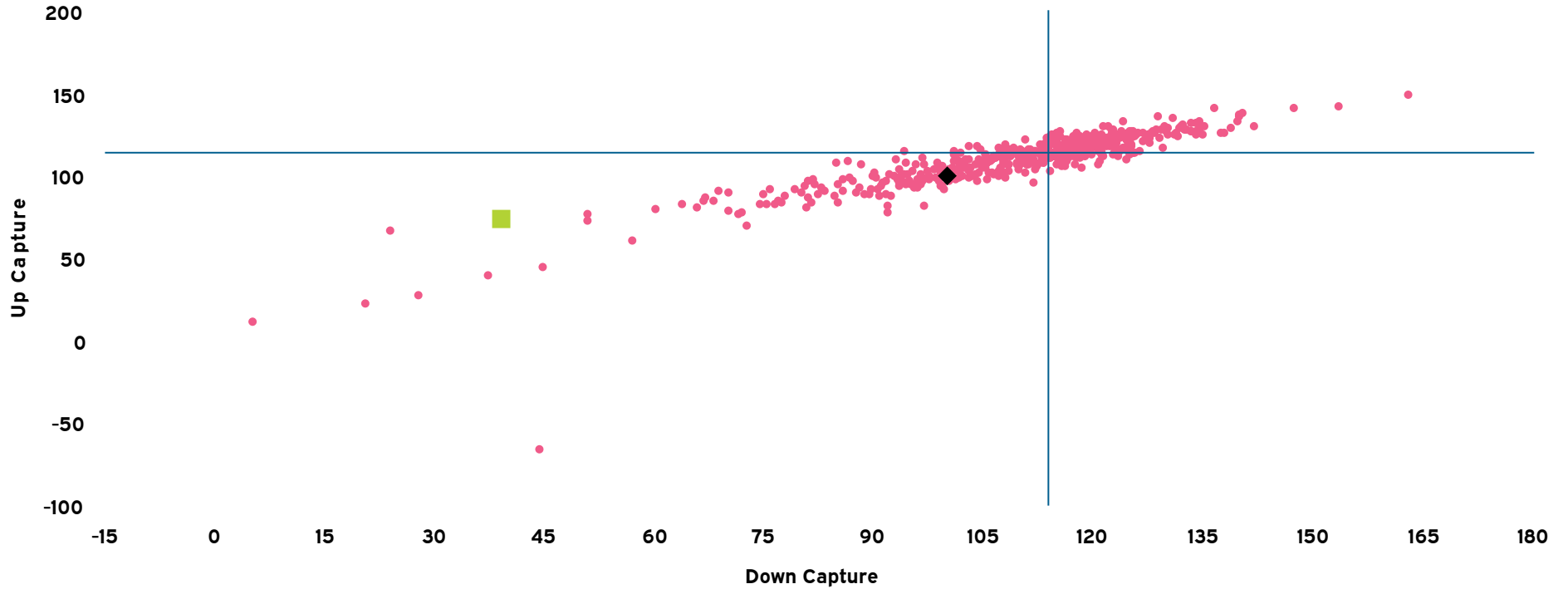


### Downside Capture vs. Upside Capture 3 Years Ending December 31, 2022



	3 Years Return	3 Years Up Capture	3 Years Down Capture
Total Composite	8.1	89.9	47.0
Policy Index	3.2	100.0	100.0

### Downside Capture vs. Upside Capture 5 Years Ending December 31, 2022



	5 Years Return	5 Years Up Capture	5 Years Down Capture
Total Composite	8.0	86.7	40.1
Policy Index	4.3	100.0	100.0

### April 2021

Russell 2000 Index	12.0%
Russell 3000 Index	25.0%
Blmbg. US Aggregate Index	20.0%
ICEBofa High Yield Master II	18.0%
NCREIF Property Index	12.0%
MSCI AC World ex USA (Net)	13.0%

### April 2018

Russell 2000 Index	12.0%
Russell 3000 Index	17.0%
Blmbg. US Aggregate Index	21.0%
ICEBofa High Yield Master II	15.0%
HFRI Equity Hedge (Total) Index	7.0%
NCREIF Property Index	12.0%
MSCI AC World ex USA (Net)	16.0%

### June 2017

Russell 2000 Index	12.0%
Russell 3000 Index	20.0%
Blmbg. US Aggregate Index	21.0%
ICEBofa High Yield Master II	15.0%
NCREIF Property Index	12.0%
MSCI AC World ex USA (Net)	13.0%

**Private Market Performance Summary**  
as of September 30, 2022

## Total Private Market Performance As of September 30, 2022

Asset Class	Committed (\$ MM)	Contributed (\$ MM)	Unfunded (\$ MM)	Distributed (\$ MM)	Remaining Value (\$ MM)	TVPI (X)	Net IRR (%)	PME <sup>1</sup> (%)
Fixed Income Alternatives	1,835.6	1,608.2	252.9	1,242.6	894.4	1.33	9.3%	4.7%
Private Equity	1,178.9	962.7	215.8	1,076.8	871.5	2.02	16.2%	6.3%
Real Estate and Real Assets	955.6	735.5	219.3	666.7	326.0	1.35	6.3%	8.9%
<b>Total</b>	<b>3,970.1</b>	<b>3,306.4</b>	<b>688.0</b>	<b>2,986.1</b>	<b>2,091.9</b>	<b>1.54</b>	<b>10.6%</b>	

<sup>1</sup> Public Market Equivalent benchmarks are: MSCI ACWI IMI Index for Private Equity, Merrill Lynch High Yield Index for Fixed Income Alternatives, and NCREIF NPI for Real Estate/Real Assets.

<sup>2</sup> Performance calculations based on manager provided 9/30/22 NAVs and cash flows.

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

WE HAVE PREPARED THIS REPORT FOR THE SOLE BENEFIT OF THE METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY.

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.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

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.

Private Markets Endnotes

Below are details on specific terminology and calculation methodologies used throughout this report:

<b>Committed</b>	The original commitment amount made to a given fund. Some funds may be denominated in non-USD currencies, and such commitment amounts represent the sum of fund contributions translated to USD at their daily conversion rates plus the unfunded balance translated at the rate as of the date of this report.
<b>Contributed</b>	The amount of capital called by a fund manager against the commitment amount. Contributions may be used for new or follow-on investments, fees, and expenses, as outlined in each fund’s limited partnership agreement. Some capital distributions from funds may reduce contributed capital balances. Some funds may be denominated in non-USD currencies, and such aggregate contributions represent the sum of each fund contribution translated to USD at its daily conversion rate.
<b>Distributed</b>	The amount of capital returned from a fund manager for returns of invested capital, profits, interest, and other investment related income. Some distributions may be subject to re-investment, as outlined in each fund’s limited partnership agreement. Some funds may be denominated in non-USD currencies, and such aggregate distributions represent the sum of each fund distribution translated to USD at its daily conversion rate.
<b>DPI</b>	Acronym for “Distributed-to-Paid-In”, which is a performance measurement for Private Market investments. The performance calculation equals Distributed divided by Contributed. DPIs for funds and groupings of funds are net of all fund fees and expenses as reported to by fund managers to Meketa.
<b>Exposure</b>	Represents the sum of the investor’s Unfunded and Remaining Value.
<b>IRR</b>	Acronym for “Internal Rate of Return”, which is a performance measurement for Private Market investments. IRRs are calculated by Meketa based on daily cash flows and Remaining Values as of the date of this report. IRRs for funds and groupings of funds are net of all fund fees and expenses as reported by fund managers to Meketa.
<b>NCV</b>	Acronym for “Net Change in Value”, which is a performance measurement for Private Market investments. The performance calculation equals the appreciation or depreciation over a time period neutralized for the impact of cash flows that occurred during the time period.
<b>NM</b>	Acronym for “Not Meaningful”, which indicates that a performance calculation is based on data over too short a timeframe to yet be meaningful or not yet possible due to inadequate data. Meketa begins reporting IRR calculations for investments once they have reached more than two years since first capital call. NM is also used within this report in uncommon cases where the manager has reported a negative Remaining Value for an investment.

Private Markets Endnotes

Peer Universe

The performance for a set of comparable private market funds. The peer returns used in this report are provided by Thomson ONE, based on data from Cambridge Associates as of the date of this report. Program-level peer universe performance represents the pooled return for a set of funds of corresponding vintages and strategies across all regions globally. Fund-level peer performance represents the median return for a set of funds of the same vintage and the program’s set of corresponding strategies across all regions globally. Data sets that include less than five funds display performance as “NM”. Meketa utilizes the following Thomson ONE strategies for peer universes:

Infrastructure: Infrastructure

Natural Resources: Private Equity Energy, Upstream Energy & Royalties, and Timber

Private Debt: Subordinated Capital, Credit Opportunities, Senior Debt, and Control-Oriented Distressed

Private Equity (including Private Debt): Venture Capital, Growth Equity, Buyout, Subordinated Capital, Credit Opportunities, Senior Debt, and Control-Oriented Distressed

Private Equity (excluding Private Debt): Venture Capital, Growth Equity, and Buyout

Real Assets (excluding Real Estate): Infrastructure, Private Equity Energy, Upstream Energy & Royalties, and Timber

Real Assets (including Real Estate): Infrastructure, Private Equity Energy, Upstream Energy & Royalties, Timber, and Real Estate

Real Estate: Real Estate

Public Market Equivalent (“PME”)

A calculation methodology that seeks to compare the performance of a portfolio of private market investments with public market indices. The figures presented in this report are based on the PME+ framework, which represents a net IRR value based on the actual timing and size of the private market program’s daily cash flows and the daily appreciation or depreciation of an equivalent public market index. Meketa utilizes the following indices for private market program PME+ calculations:

Infrastructure: Dow Jones Brookfield Global Infrastructure Index

Natural Resources: S&P Global Natural Resources Index

Private Debt: Meryl Lynch High Yield Master II Bond Index

Private Equity: MSCI ACWI Investable Market Index

Real Assets (excluding Real Estate): Equal blend of Dow Jones Brookfield Global Infrastructure Index and S&P Global Natural Resources Index

Private Markets Endnotes

	<p>Real Assets (including Real Estate): Equal blend of Dow Jones Brookfield Global Infrastructure Index, S&amp;P Global Natural Resources Index, and Dow Jones U.S. Select Real Estate Securities Index</p> <p>Real Estate: Dow Jones U.S. Select Real Estate Securities Index</p>
<p>Remaining Value</p>	<p>The investor’s value as reported by a fund manager on the investor’s capital account statement. All investor values in this report are as of the date of this report, unless otherwise noted. Some funds may be denominated in non-USD currencies, and such remaining values represent the fund’s local currency value translated to USD at the rate as of the date of this report.</p>
<p>TVPI</p>	<p>Acronym for “Total Value-to-Paid-In”, which is a performance measurement for Private Market investments. The performance calculations represents Distributed plus Remaining Value, then divided by Contributed. TVPIs for funds and groupings of funds are net of all fund fees and expenses as reported to by fund managers to Meketa.</p>
<p>Unfunded</p>	<p>The remaining balance of capital that a fund manager has yet to call against a commitment amount. Meketa updates unfunded balances for funds to reflect all information provided by fund managers provided in their cash flow notices. Some funds may be denominated in non-USD currencies, and such unfunded balances represent the fund’s local currency unfunded balance translated to USD at the rate as of the date of this report.</p>

**Disclaimer**

The material contained in this report is confidential and may not be reproduced, disclosed, or distributed, in whole or in part, to any person or entity other than the intended recipient. The data are provided for informational purposes only, may not be complete, and cannot be relied upon for any purpose other than for discussion.

Meketa Investment Group has prepared this report on the basis of sources believed to be reliable. The data are based on matters as they are known as of the date of preparation of the report, and not as of any future date, and will not be updated or otherwise revised to reflect information that subsequently becomes available.

If we manage your assets on a discretionary basis, please contact us if there are any changes in your financial situation or investment objectives, or if you want to impose any reasonable restrictions on our management of your account or reasonably modify existing restrictions.

In general, the valuation numbers presented in this report are prepared by the custodian bank for listed securities, and by the fund manager or appropriate General Partner in the case of unlisted securities. The data used in the market comparison sections of this report are sourced from various databases. These data are continuously updated and are subject to change.

This report does not contain all the information necessary to fully evaluate the potential risks of any of the investments described herein. Because of inherent uncertainties involved in the valuations of investments that are not publicly traded, any estimated fair values shown in this report may differ significantly from the values that would have been used had a ready market for the underlying securities existed, and the differences could be material.

This document may contain certain forward-looking statements, forecasts, estimates, projections, and opinions ("Forward Statements"). No representation is made or will be made that any Forward Statements will be achieved or will prove to be correct. A number of factors, in addition to any risk factors stated in this material, could cause actual future results to vary materially from the Forward Statements. No representation is given that the assumptions disclosed in this document upon which Forward Statements may be based are reasonable. There can be no assurance that the investment strategy or objective of any fund or investment will be achieved, or that the client will receive a return of the amount invested.

In some cases Meketa Investment Group assists the client in handling capital calls or asset transfers among investment managers. In these cases we do not make any representations as to the managers' use of the funds, but do confirm that the capital called or transferred is within the amounts authorized by the client.

Because there is no readily accessible market for private markets assets (companies and partnerships), the values placed on private markets assets are calculated by General Partners using conservative and industry standard pricing procedures. Annually, an independent auditor reviews the pricing procedures employed by the General Partner of each partnership.

The values of companies and partnerships are audited at year-end, and are not audited at other quarter-end periods. While financial information may be audited, there is some discretion as to the method employed to price private companies and, therefore, private markets partnerships. At all times, Meketa Investment Group expects General Partners to utilize conservative and industry standard pricing procedures, and requires the General Partners to disclose those procedures in their reports. However, because of the inherent uncertainty of valuation, these estimated values may differ from the values that would be used if a ready market for the investments existed, and the differences could be significant.