

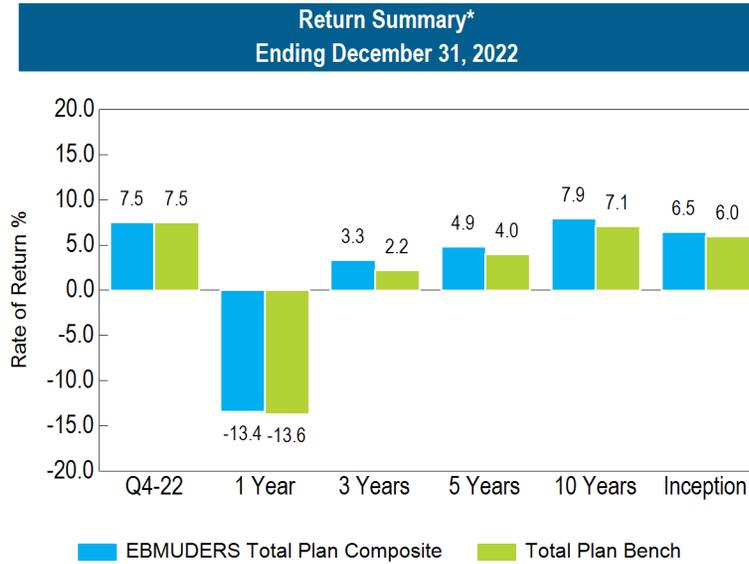
East Bay Municipal Utility District Employees' Retirement System

March 9, 2023

Q4 2022 Performance Report

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Introduction



* Performance is gross of fees.

| | Fourth Quarter | One Year |
|------------------------|-----------------|-----------------|
| Beginning Market Value | \$1,937,045,018 | \$2,412,073,190 |
| Net Cash Flow | -\$9,533,798 | -\$15,117,839 |
| Capital Appreciation | \$144,998,781 | -\$324,445,351 |
| Ending Market Value | \$2,072,510,001 | \$2,072,510,001 |

| | QTD (%) | 1 Yr (%) | 3 Yrs (%) | 5 Yrs (%) | 10 Yrs (%) | 20 Yrs (%) |
|--|------------|--------------|------------|------------|------------|------------|
| EBMUDERS Total Plan Composite - Gross | 7.5 | -13.4 | 3.3 | 4.9 | 7.9 | 7.9 |
| EBMUDERS Total Plan Composite - Net | 7.5 | -13.4 | 3.2 | 4.7 | 7.7 | -- |
| <i>Total Plan Bench</i> | <i>7.5</i> | <i>-13.6</i> | <i>2.2</i> | <i>4.0</i> | <i>7.1</i> | <i>7.5</i> |
| <i>InvMetrics Public DB > \$1B Gross Median</i> | <i>5.3</i> | <i>-11.1</i> | <i>4.9</i> | <i>5.8</i> | <i>7.6</i> | <i>7.6</i> |

Historical net returns for the Total Portfolio Aggregate are currently available from 2Q 2011.

InvMetrics Public DB > \$1B Universe includes BNY Mellon Public > \$1B Fund Universe and IM client data.

| Performance Summary | | | | | | | | |
|--------------------------------------|----------------------|-------------------|-------------|--------------|--------------|--------------|---------------|---------------|
| | Market Value (\$) | % of Portfolio | QTD (%) | 1 Yr (%) | 3 Yrs (%) | 5 Yrs (%) | 10 Yrs (%) | 20 Yrs (%) |
| EBMUDERS Total Plan Composite | 2,072,510,001 | 100.0 | 7.5 | -13.4 | 3.3 | 4.9 | 7.9 | 7.9 |
| <i>Total Plan Bench</i> | | | <i>7.5</i> | <i>-13.6</i> | <i>2.2</i> | <i>4.0</i> | <i>7.1</i> | <i>7.5</i> |
| US Equity Composite | 515,811,676 | 24.9 | 7.2 | -19.2 | 7.1 | 9.1 | 12.3 | 10.0 |
| <i>Russell 3000 Hybrid</i> | | | <i>7.2</i> | <i>-19.2</i> | <i>7.1</i> | <i>8.8</i> | <i>12.1</i> | <i>10.1</i> |
| NonUS Equity Composite | 498,042,717 | 24.0 | 15.3 | -15.5 | 0.6 | 0.9 | 4.3 | 7.1 |
| <i>MSCI ACWI xUS (blend)</i> | | | <i>14.4</i> | <i>-15.6</i> | <i>0.5</i> | <i>1.4</i> | <i>4.3</i> | <i>6.9</i> |
| Covered Calls Composite | 439,290,023 | 21.2 | 7.7 | -12.0 | 4.6 | 5.7 | -- | -- |
| <i>CBOE S&P 500 BuyWrite USD</i> | | | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> | -- | -- |
| Real Estate Composite | 124,970,255 | 6.0 | 1.4 | -3.0 | 7.5 | 8.2 | 9.9 | -- |
| <i>NCREIF NPI Lag</i> | | | <i>3.0</i> | <i>-5.3</i> | <i>5.7</i> | <i>6.8</i> | <i>8.4</i> | -- |
| Fixed Income Composite | 491,093,655 | 23.7 | 2.3 | -8.4 | -1.0 | 1.3 | 1.6 | 3.8 |
| <i>Fixed Income Composite Bench</i> | | | <i>1.9</i> | <i>-9.1</i> | <i>-1.3</i> | <i>0.9</i> | <i>1.5</i> | <i>3.4</i> |
| Cash Composite | 3,301,673 | 0.2 | 0.4 | 0.8 | 1.1 | 1.5 | 1.0 | 1.7 |
| <i>FTSE T-Bill 3 Months TR</i> | | | <i>0.9</i> | <i>1.5</i> | <i>0.7</i> | <i>1.2</i> | <i>0.7</i> | <i>1.2</i> |

Benchmark composition and history provided at the end of this report.

Economic and Market Update

Data as of December 31, 2022

Commentary

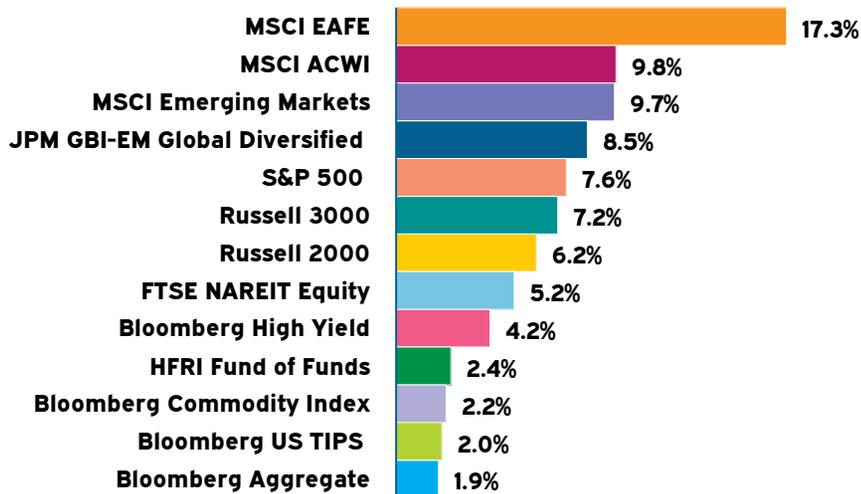
→ Ending a very tough year, most asset classes posted gains in the fourth quarter on signs that policy tightening would slow given cooling inflation.

- 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.

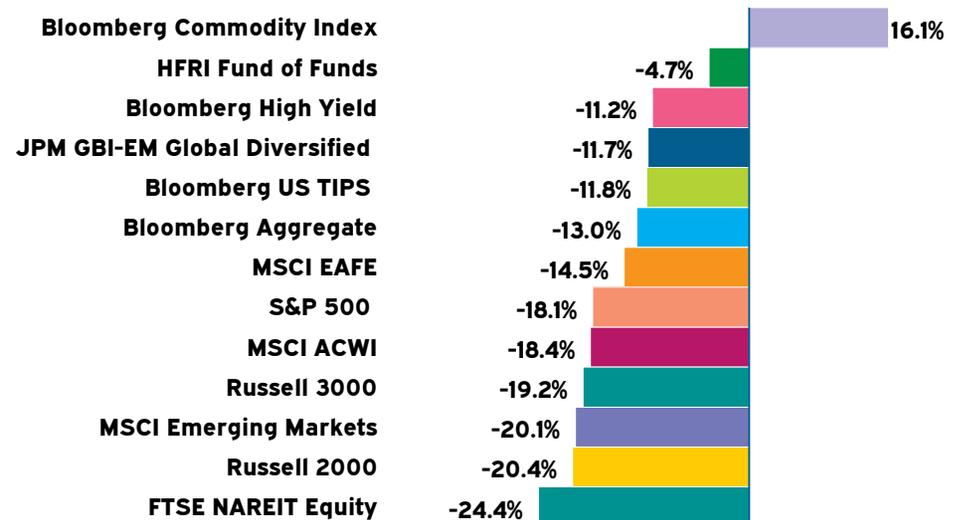
→ Looking to 2023, the path of inflation and monetary policy, slowing growth globally, China reopening its economy, and the war in Ukraine will all be key.

Index Returns¹

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.

¹ Source: Bloomberg and FactSet. Data is as of December 31, 2022.

Domestic Equity Returns¹

| 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.

¹ Source: Bloomberg. Data is as of December 31, 2022.

Foreign Equity Returns¹

| 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.

¹ Source: Bloomberg. Data is as of December 31, 2022.

Fixed Income Returns¹

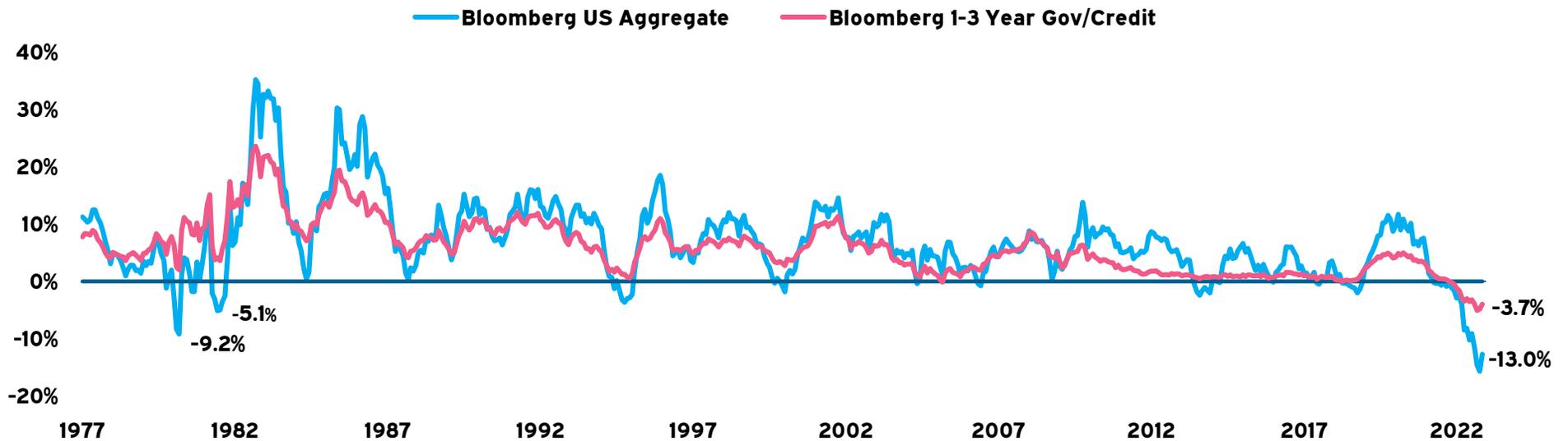
| Fixed Income | December (%) | Q4 (%) | 1 YR (%) | 3 YR (%) | 5 YR (%) | 10 YR (%) | Current Yield (%) | Duration (Years) |
|-------------------------------------|--------------|--------|----------|----------|----------|-----------|-------------------|------------------|
| Bloomberg Universal | -0.3 | 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.

¹ 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.

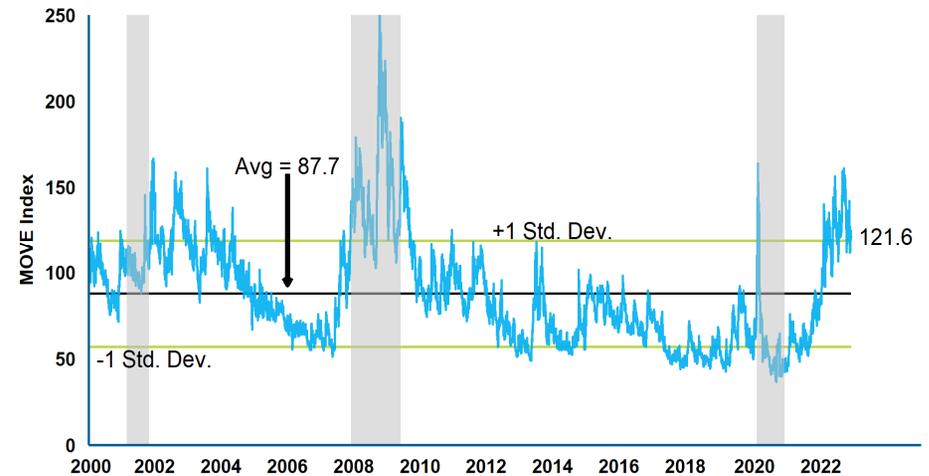
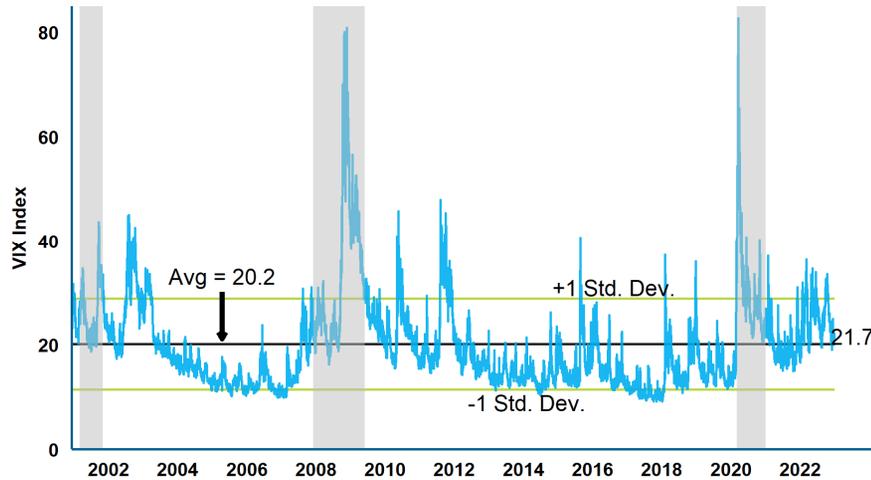
**Fixed Income
Rolling One-year Returns¹**



- 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.

¹ Source: Bloomberg. Data is as of December 31, 2022.

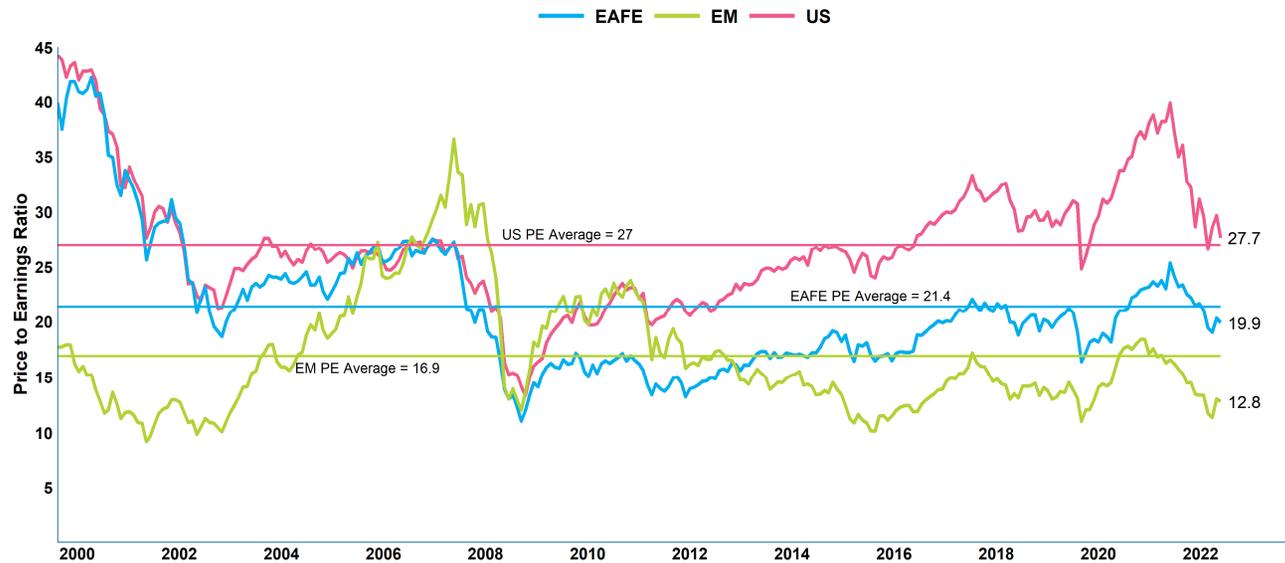
Equity and Fixed Income Volatility¹



- 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.

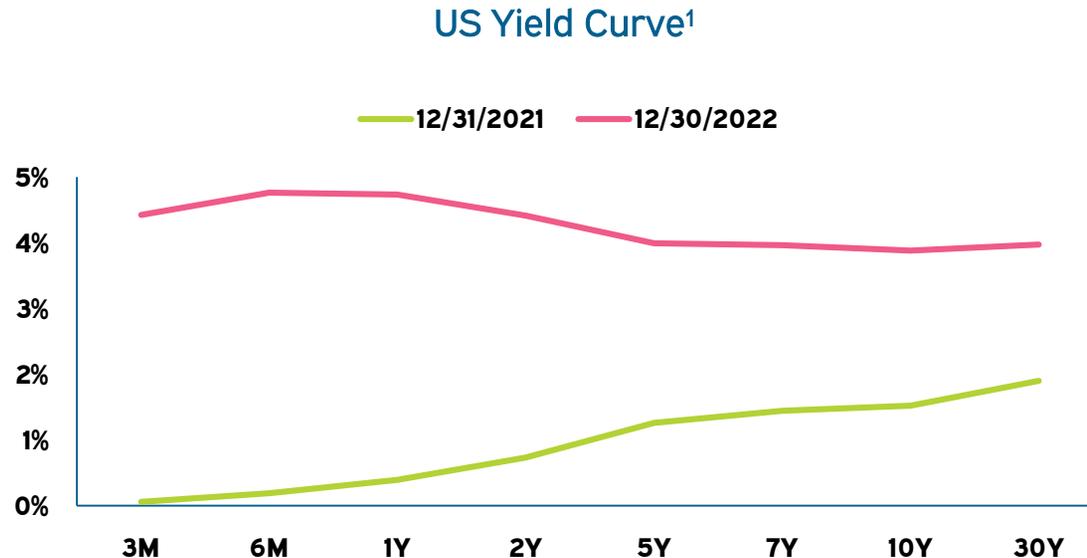
¹ Equity and Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of December 2022. The average line indicated is the average of the VIX and MOVE values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

Equity Cyclically Adjusted P/E Ratios¹



- 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.

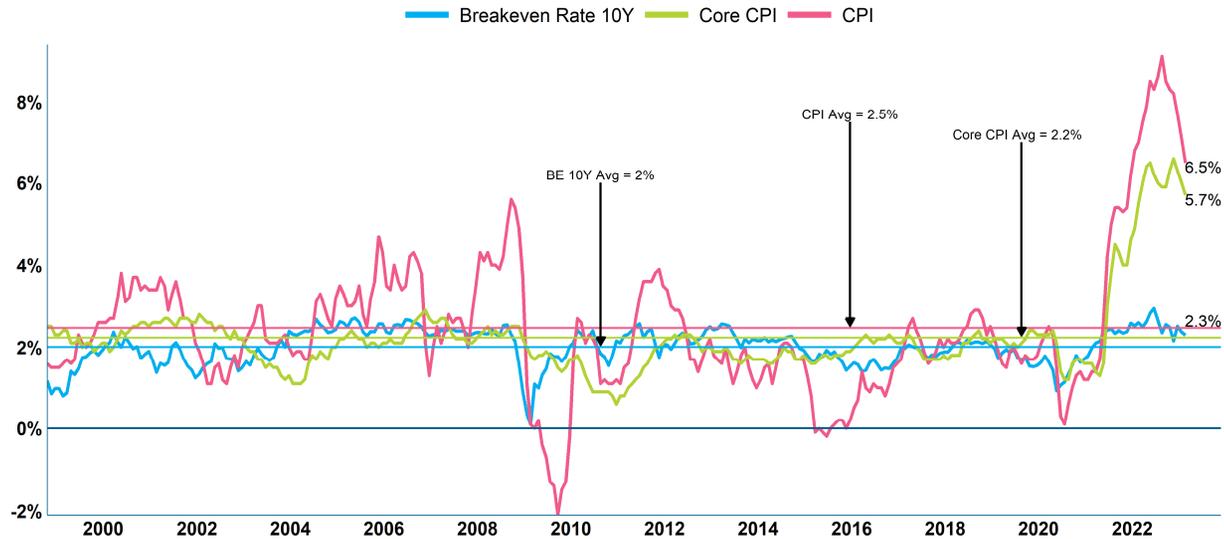
¹ US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group. Developed and Emerging Market Equity (MSCI EAFE and EM Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” 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.

¹ Source: Bloomberg. Data is as of December 31, 2022.

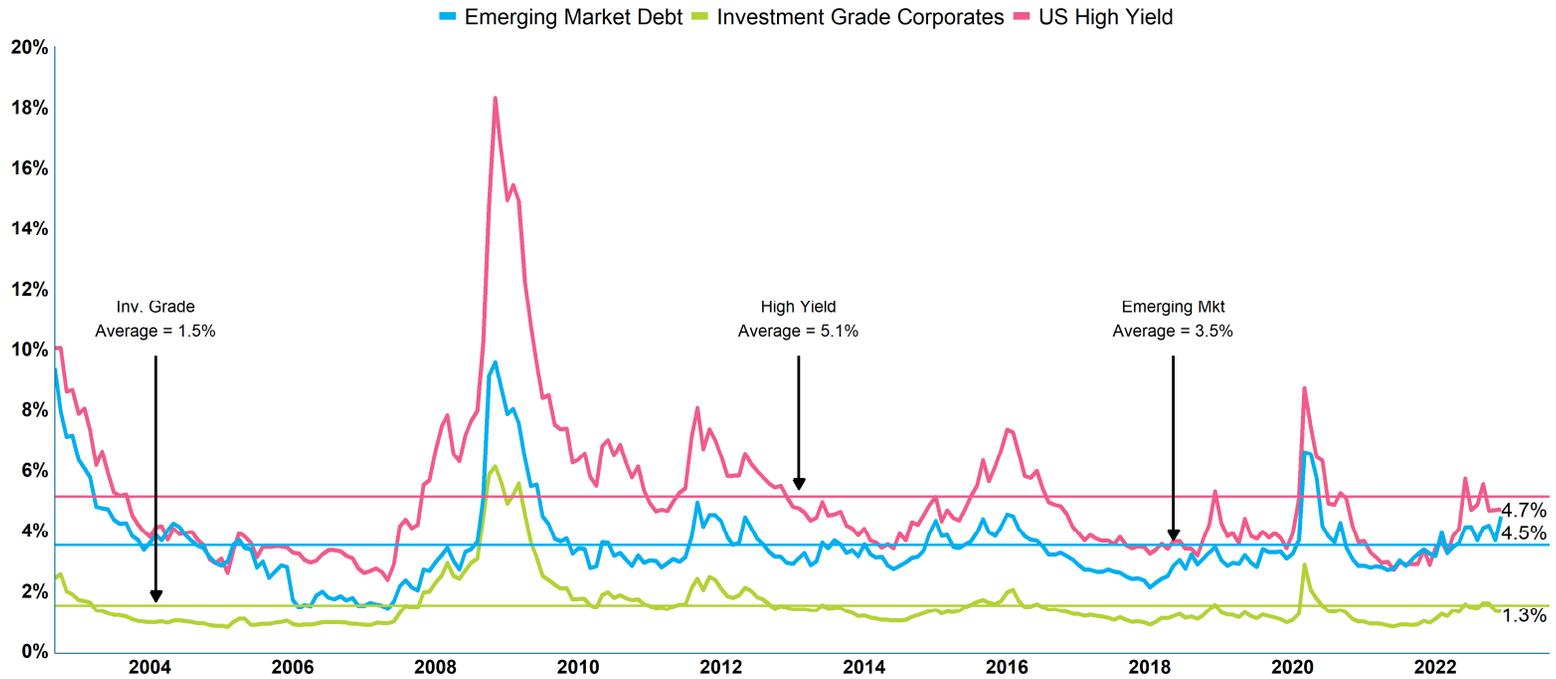
Ten-Year Breakeven Inflation and CPI¹



- 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.

¹ 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.

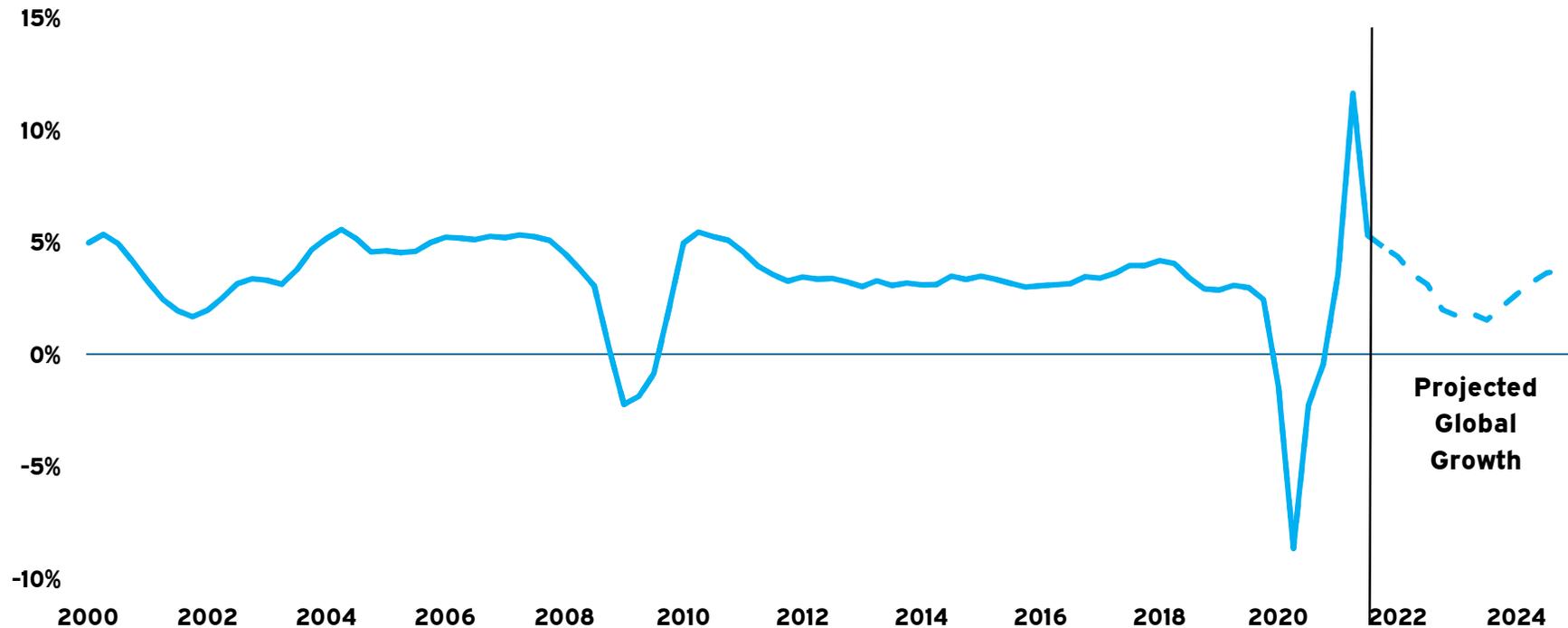
Credit Spreads vs. US Treasury Bonds¹



- 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.

¹ 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) Growth¹

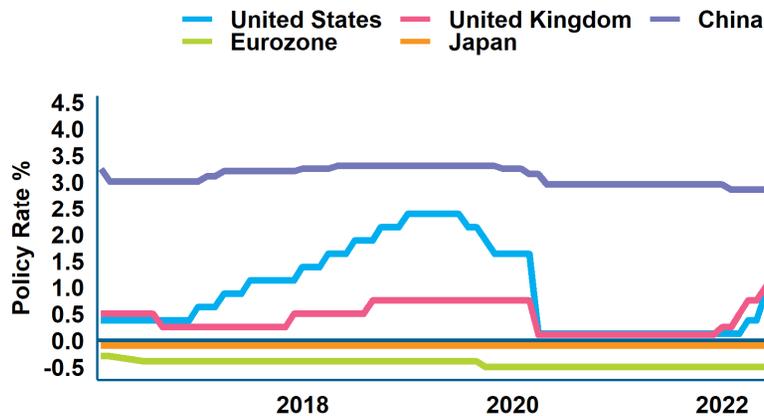


- Global economies are expected to slow in 2023 compared to 2022, with risks of recession increasing given persistently high inflation and related tighter monetary policy.
- The delicate balancing act of central banks trying to reduce inflation without dramatically impacting growth will remain key.

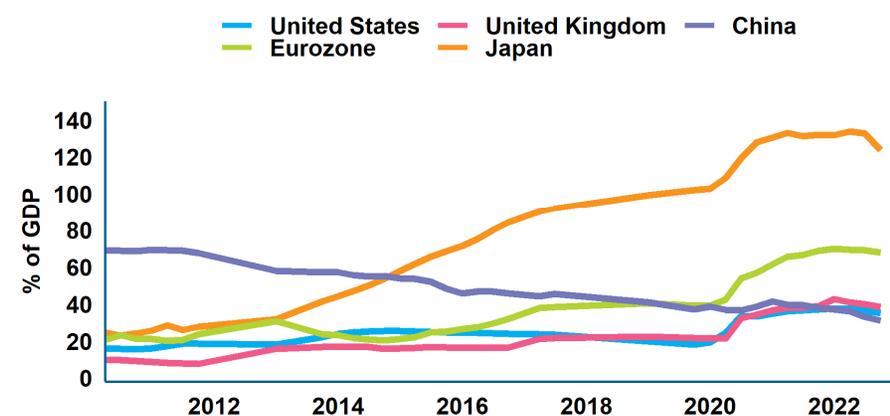
¹ Source: Oxford Economics (World GDP, US\$ prices & PPP exchange rate, real, % change YoY). Updated December 2022.

Central Bank Response¹

Policy Rates



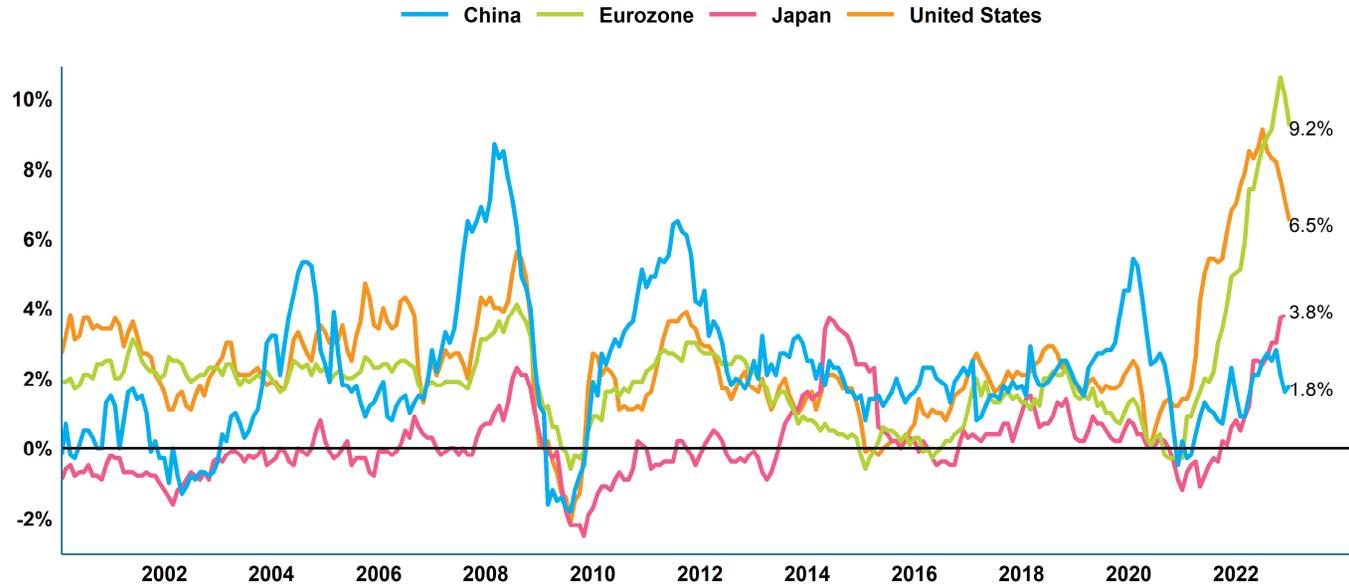
Balance Sheet as % of GDP



- 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.

¹ 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.

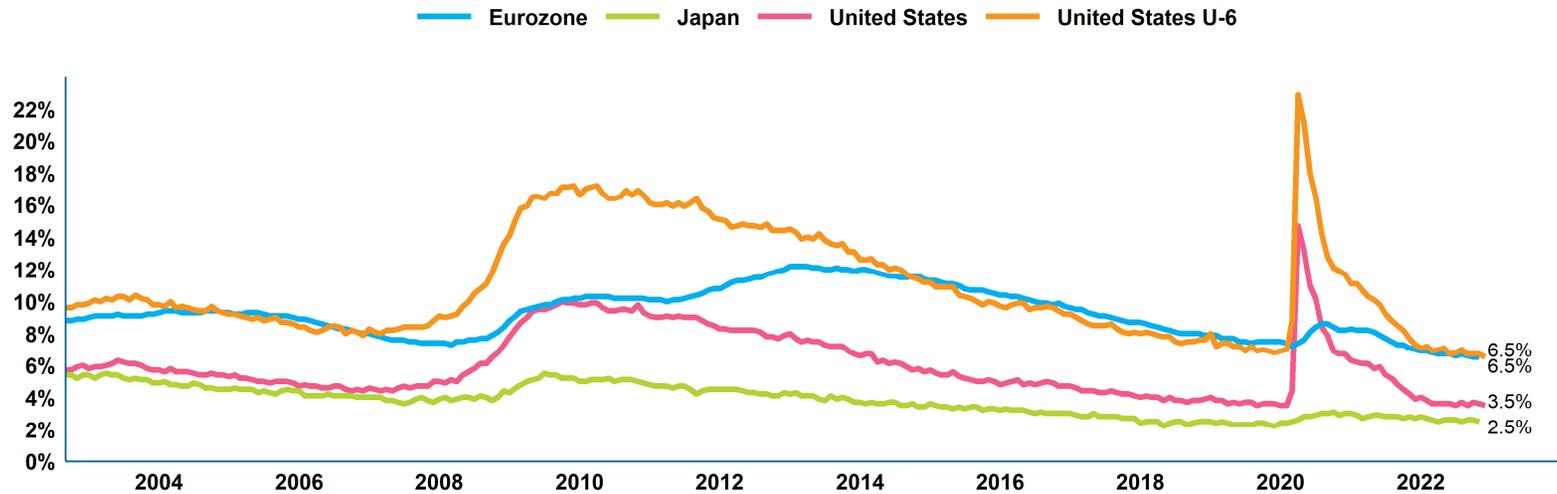
Inflation (CPI Trailing Twelve Months)¹



- 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.

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

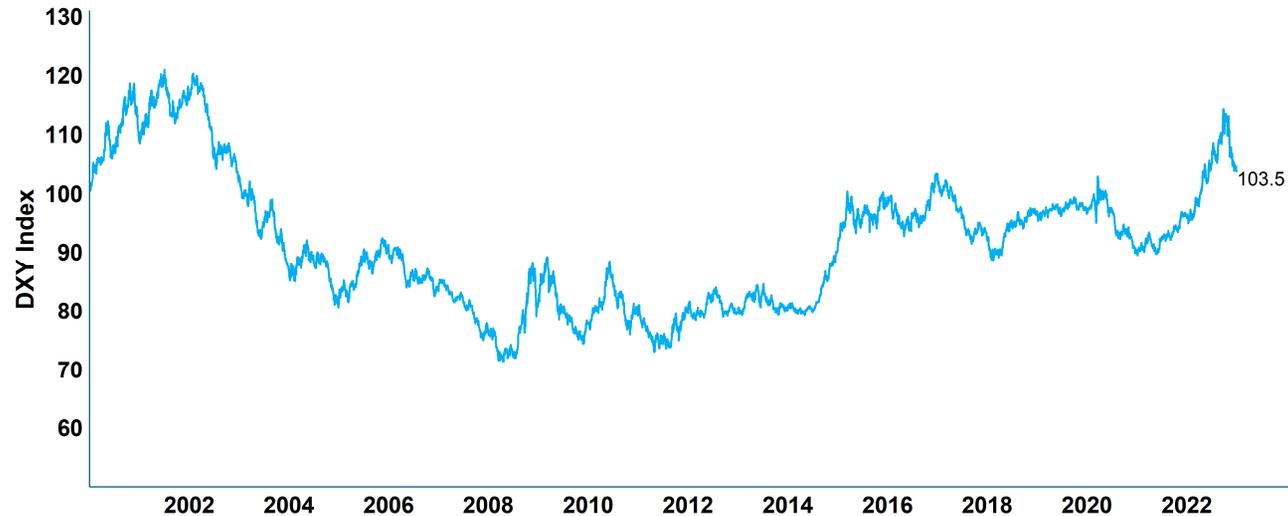
Unemployment¹



- 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.

¹ 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 Currencies¹



- 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.

¹ Source: Bloomberg. Data as of December 31, 2022.

Summary

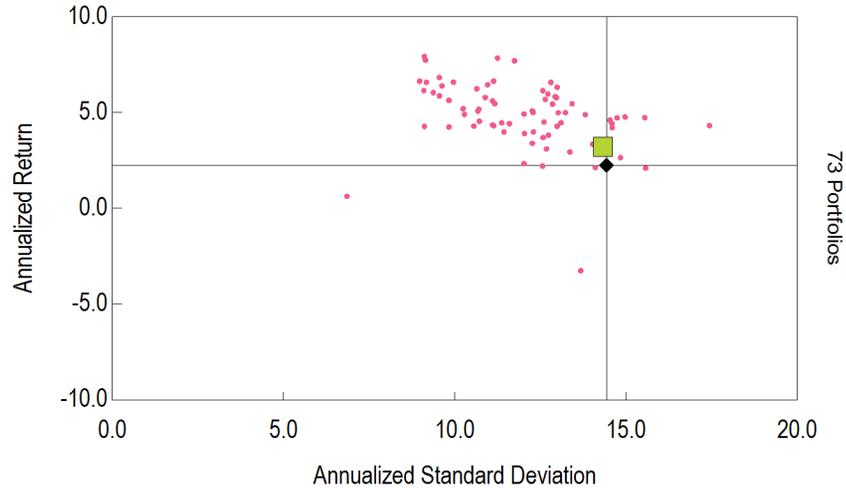
Key Trends:

- 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.

EBMUDERS Portfolio Review

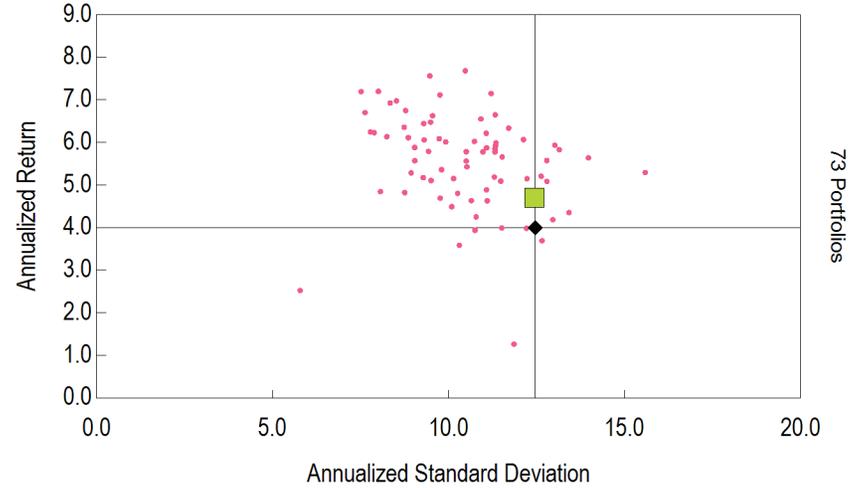
Fourth Quarter Performance Review

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



■ EBMUDERS Total Plan Composite ● InvMetrics Public DB > \$1B Gross
◆ Total Plan Bench

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

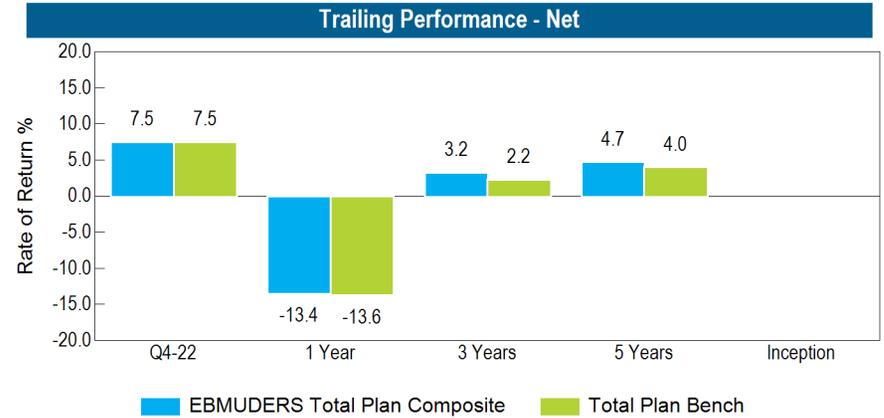
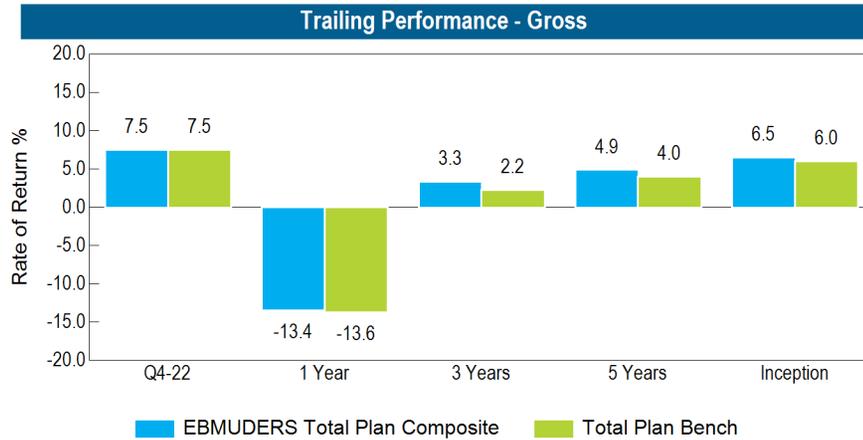


■ EBMUDERS Total Plan Composite ● InvMetrics Public DB > \$1B Gross
◆ Total Plan Bench

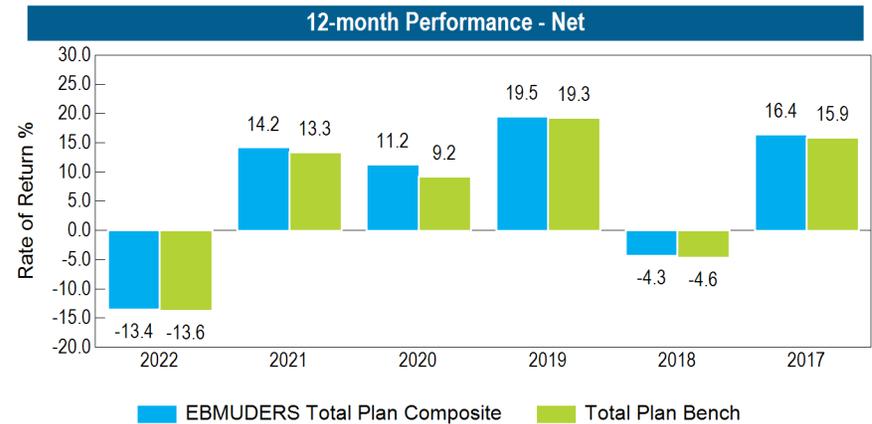
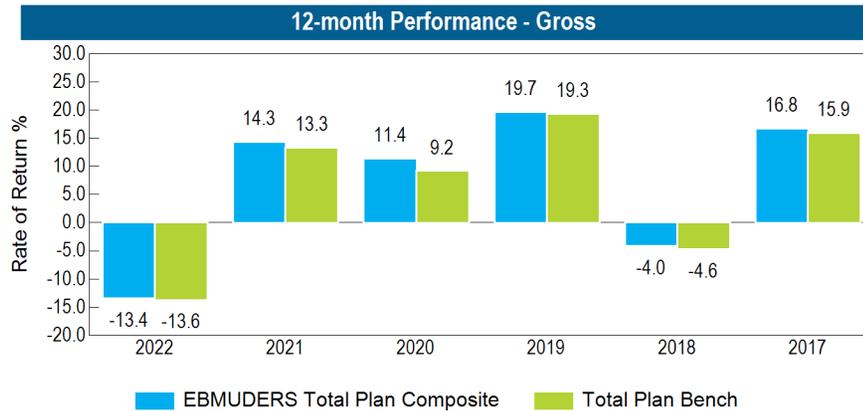
| 3 Years Ending December 31, 2022 | | | |
|----------------------------------|--------------|--------------------------|--------------|
| | Anlzd Return | Anlzd Standard Deviation | Sharpe Ratio |
| EBMUDERS Total Plan Composite | 3.34% | 14.31% | 0.19 |
| Total Plan Bench | 2.24% | 14.44% | 0.11 |

| 5 Years Ending December 31, 2022 | | | |
|----------------------------------|--------------|--------------------------|--------------|
| | Anlzd Return | Anlzd Standard Deviation | Sharpe Ratio |
| EBMUDERS Total Plan Composite | 4.86% | 12.44% | 0.30 |
| Total Plan Bench | 3.99% | 12.46% | 0.23 |

EBMUDERS Total Plan Composite | As of December 31, 2022



| | QTD | 1 Yr | 3 Yrs | 5 Yrs | 10 Yrs | 2022 | 2021 | 2020 | 2019 | 2018 | 2017 |
|--|------------|--------------|------------|------------|------------|--------------|-------------|-------------|-------------|-------------|-------------|
| EBMUDERS Total Plan Composite - Gross | 7.5 | -13.4 | 3.3 | 4.9 | 7.9 | -13.4 | 14.3 | 11.4 | 19.7 | -4.0 | 16.8 |
| EBMUDERS Total Plan Composite - Net | 7.5 | -13.4 | 3.2 | 4.7 | 7.7 | -13.4 | 14.2 | 11.2 | 19.5 | -4.3 | 16.4 |
| <i>Total Plan Bench</i> | <i>7.5</i> | <i>-13.6</i> | <i>2.2</i> | <i>4.0</i> | <i>7.1</i> | <i>-13.6</i> | <i>13.3</i> | <i>9.2</i> | <i>19.3</i> | <i>-4.6</i> | <i>15.9</i> |
| <i>InvMetrics Public DB > \$1B Gross Median</i> | <i>5.3</i> | <i>-11.1</i> | <i>4.9</i> | <i>5.8</i> | <i>7.6</i> | <i>-11.1</i> | <i>14.9</i> | <i>11.5</i> | <i>16.7</i> | <i>-3.7</i> | <i>16.2</i> |

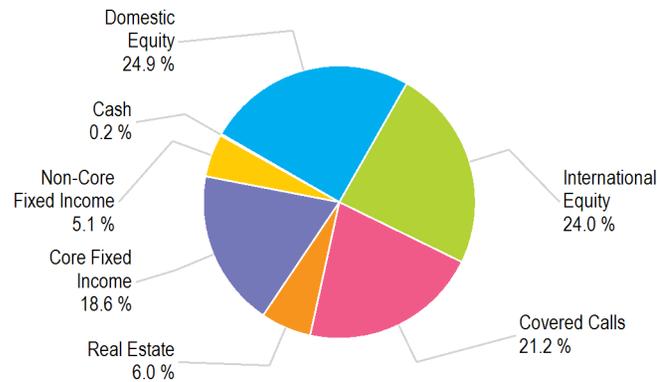


Asset Allocation vs. Target

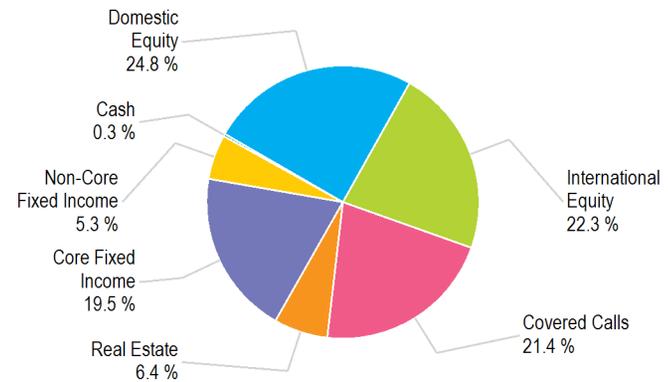
| | Current (\$) | Current (%) | Policy (%) | Difference* (%) | Within Range |
|-----------------------|----------------------|--------------|--------------|-----------------|--------------|
| Domestic Equity | 515,811,676 | 24.9 | 25.0 | -0.1 | Yes |
| International Equity | 498,042,717 | 24.0 | 25.0 | -1.0 | Yes |
| Covered Calls | 439,290,023 | 21.2 | 20.0 | 1.2 | Yes |
| Real Estate | 124,970,255 | 6.0 | 5.0 | 1.0 | Yes |
| Core Fixed Income | 386,235,651 | 18.6 | 20.0 | -1.4 | Yes |
| Non-Core Fixed Income | 104,858,005 | 5.1 | 5.0 | 0.1 | Yes |
| Cash | 3,301,674 | 0.2 | 0.0 | 0.2 | Yes |
| Total | 2,072,510,001 | 100.0 | 100.0 | | |

*Difference between Policy and Current Allocation

December 31, 2022 : \$2,072,510,001



September 30, 2022 : \$1,937,045,018



Policy rebalancing ranges shown are for non-turbulent market periods. The Plan also has established rebalancing ranges to be in effect during turbulent market periods.

| Domestic and International Equity | | | | | | |
|-----------------------------------|--------------------|-------------|--------------|------------|------------|--|
| | Market Value | QTD | 1 Yr | 3 Yrs | 5 Yrs | |
| US Equity Composite | 515,811,676 | 7.2 | -19.2 | 7.1 | 9.1 | |
| <i>Russell 3000 Hybrid</i> | | <i>7.2</i> | <i>-19.2</i> | <i>7.1</i> | <i>8.8</i> | |
| Northern Trust Russell 3000 | 514,812,457 | 7.2 | -19.1 | 7.1 | -- | |
| <i>Russell 3000</i> | | <i>7.2</i> | <i>-19.2</i> | <i>7.1</i> | -- | |
| NonUS Equity Composite | 498,042,717 | 15.3 | -15.5 | 0.6 | 0.9 | |
| <i>MSCI ACWI xUS (blend)</i> | | <i>14.4</i> | <i>-15.6</i> | <i>0.5</i> | <i>1.4</i> | |
| Northern Trust ACWI ex US | 498,042,717 | 15.3 | -15.5 | 0.2 | -- | |
| <i>MSCI ACWI ex USA Gross</i> | | <i>14.4</i> | <i>-15.6</i> | <i>0.5</i> | -- | |

The EBMUDERS Domestic Equity portfolio is currently 100% passively managed.

→ The Northern Trust Russell 3000 fund has performed as expected and has historically tracked the Russell 3000 index.

The EBMUDERS International Equity portfolio is currently 100% passively managed.

→ The Northern Trust ACWI ex US fund has also performed roughly in line with the index. A greater degree of variation is expected in these funds due to Fair Value Adjustment (FVA) which occurs due to mismatches in international market timing.

| | Covered Calls | | | | |
|--------------------------------------|--------------------|------------|--------------|------------|------------|
| | Market Value | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| Covered Calls Composite | 439,290,023 | 7.7 | -12.0 | 4.6 | 5.7 |
| <i>CBOE S&P 500 BuyWrite USD</i> | | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |
| Parametric BXM | 149,588,197 | 6.7 | -9.7 | 4.8 | 5.2 |
| <i>CBOE S&P 500 BuyWrite USD</i> | | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |
| Parametric Delta Shift | 152,190,831 | 8.3 | -17.4 | 7.2 | 8.3 |
| <i>CBOE S&P 500 BuyWrite USD</i> | | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |
| Van Hulzen | 137,510,996 | 7.9 | -7.7 | 1.7 | 3.3 |
| <i>CBOE S&P 500 BuyWrite USD</i> | | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |

Over the latest quarter ending December 31, 2022, covered call strategies outperformed the CBOE S&P 500 BuyWrite USD index.

- The Parametric BXM strategy slightly trailed the CBOE BXM Index over the most recent quarter, returning 6.7% versus the index return of 6.8%. The Buy-Write Portfolio is implemented by writing at-the money options and diversifying option expiration dates which eliminates the path-dependency of the mechanical, passive BXM Index.
- Parametric Delta Shift (+8.3%) outperformed the benchmark (6.8%) during the fourth quarter. The Delta Shift strategy has trailed the benchmark over the trailing 12-month period but has maintained strong outperformance over the 3-, and 5-year trailing periods.
- Van Hulzen, outperformed the CBOE BXM Index in the fourth quarter by 1.1%. The Van Hulzen covered call strategy uses call options with the goal of reducing portfolio volatility and creating incremental income. Van Hulzen's strategy continues to benefit from the value tilt and focus on high quality. Additionally, we expect covered call strategies to do well during periods of heightened market volatility as observed during the 2022 calendar year.

| Fixed Income Composite | | | | | |
|--|--------------------|------------|--------------|-------------|------------|
| | Market Value | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| Fixed Income Composite | 491,093,655 | 2.3 | -8.4 | -1.0 | 1.3 |
| <i>Fixed Income Composite Bench</i> | | <i>1.9</i> | <i>-9.1</i> | <i>-1.3</i> | <i>0.9</i> |
| CS McKee | 186,045,755 | 2.1 | -12.9 | -2.6 | 0.2 |
| <i>Bloomberg US Aggregate TR</i> | | <i>1.9</i> | <i>-13.0</i> | <i>-2.7</i> | <i>0.0</i> |
| Garcia Hamilton | 200,189,895 | 2.5 | -6.4 | -0.9 | -- |
| <i>Bloomberg US Intermediate Gov/Cred</i> | | <i>1.5</i> | <i>-8.2</i> | <i>-1.3</i> | <i>--</i> |
| MacKay Shields (HY) | 53,692,069 | 3.4 | -1.8 | 3.2 | -- |
| <i>ICE BofA ML US Corp Cash Pay BB-B 1-5Yr</i> | | <i>3.7</i> | <i>-4.8</i> | <i>0.9</i> | <i>--</i> |
| Federated Investment Counseling (Bank Loans) | 51,165,936 | 1.3 | -5.0 | 0.1 | -- |
| <i>60% CredSuisLevLoan/40% BBStGovCorp</i> | | <i>1.8</i> | <i>-0.3</i> | <i>1.8</i> | <i>--</i> |

Over the latest quarter ending December 31, 2022, the EBMUDERS core (CS McKee) and intermediate (Garcia Hamilton) mandates outperformed their respective benchmarks. The portfolio's high yield manager, MacKay Shields, underperformed their benchmark as did bank loans manager, Federated Investment Counseling.

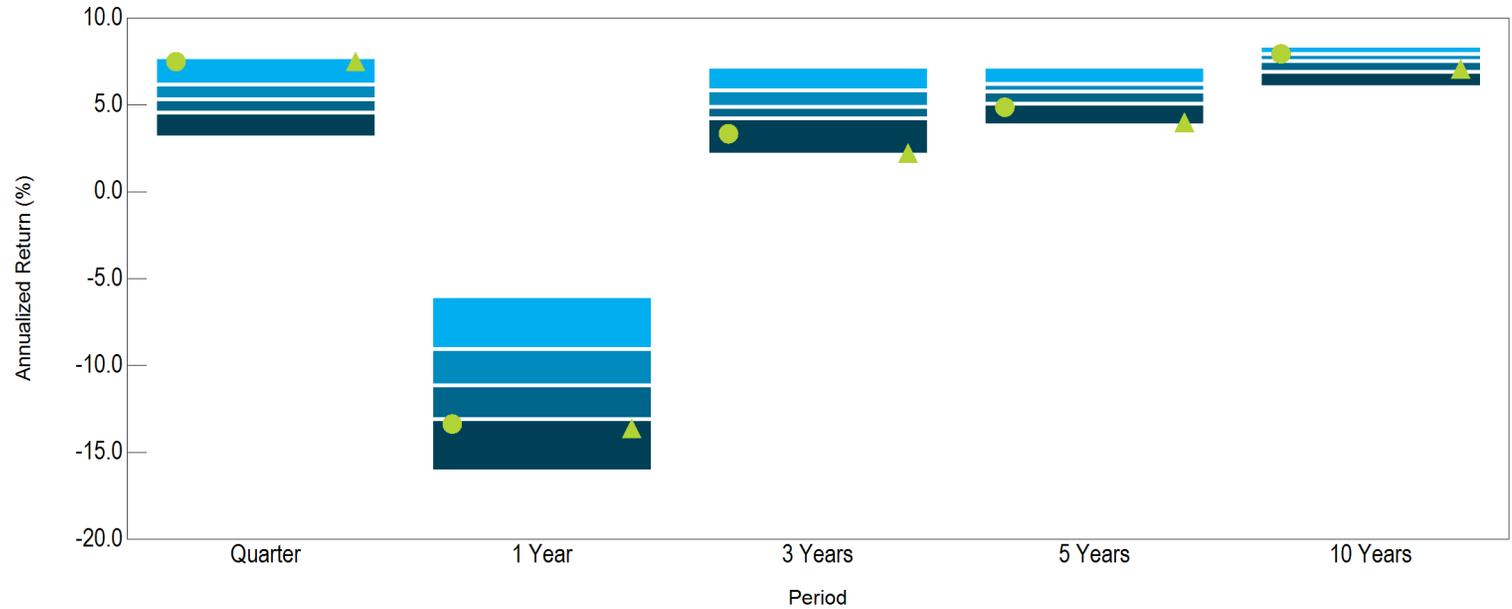
- CS McKee returned 2.1% in the most recent quarter versus the Bloomberg US Aggregate Index return of 1.9%. The longer duration and overweight to corporates boosted returns for the quarter.
- Garcia Hamilton outpaced the Bloomberg US Intermediate Gov/Cred benchmark by 100 bps during the fourth quarter. Outperformance was driven by longer duration holdings as yields fell modestly in the fourth quarter. The overweight to the MBS sector also provided more income to the fund than the benchmark.
- MacKay Shields underperformed the ICE BofAML US Corp Cash Pay BB-B 1-5Yr Index by 0.3% over the quarter. Energy and Healthcare overweights detracted from benchmark relative returns for the quarter.
- Federated Investment Counseling (Bank Loans) underperformed the 60% CredSuisLevLoan/40% BBStGovCorp benchmark over the most recent quarter. Underperformance was largely driven by Bank Loans as lower quality bonds saw price declines during the quarter.

| Real Estate Composite | | | | | |
|--------------------------------|--------------------|------------|--------------|-------------|------------|
| | Market Value | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| Real Estate Composite | 124,970,255 | 1.4 | -3.0 | 7.5 | 8.2 |
| <i>NCREIF NPI Lag</i> | | <i>3.0</i> | <i>-5.3</i> | <i>5.7</i> | <i>6.8</i> |
| RREEF America II Lag | 69,046,277 | -1.2 | 24.1 | 13.0 | 11.1 |
| <i>NCREIF NPI Mo 1 Qtr Lag</i> | | <i>0.6</i> | <i>16.4</i> | <i>10.1</i> | <i>8.7</i> |
| CenterSquare | 55,923,978 | 4.7 | -23.8 | 1.2 | 4.7 |
| <i>FTSE NAREIT Equity REIT</i> | | <i>5.2</i> | <i>-24.4</i> | <i>-0.1</i> | <i>3.7</i> |

- EBMUDERS Real Estate manager, RREEF II (reported on a one month lag), underperformed its benchmark, the NCREIF Property Index, over the third quarter. During the lagged 12-month period, RREEF America REIT II operations generated an income return of 3.9% before fees. Same store net operating income increased 8.5% since September 2021. Occupancy at the end of the quarter remained steady at 93% overall.
- CenterSquare, EBMUDERS REIT manager, underperformed the FTSE NAREIT Equity REITs Index for the fourth quarter. Underweights to Regional Malls (+32.8%) and the Diversified sector (+12.8%) were the largest detractors to benchmark relative performance.

RREEF American II Performance results are lagged one quarter.

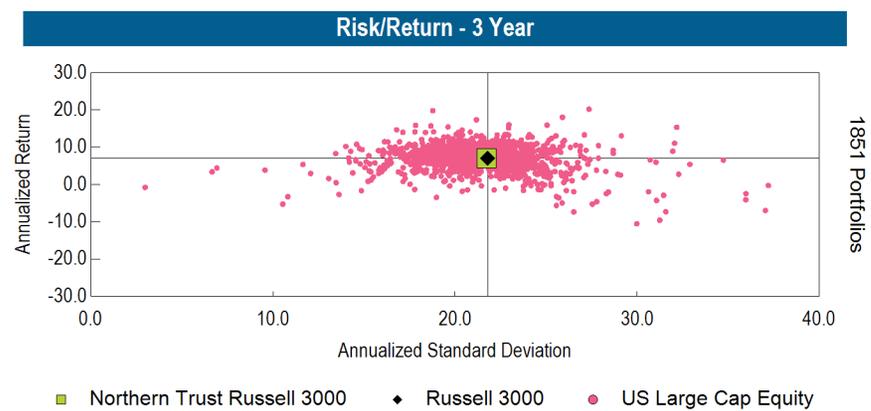
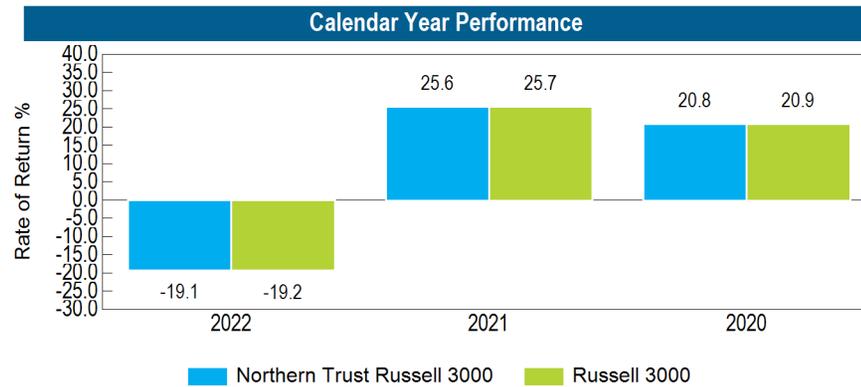
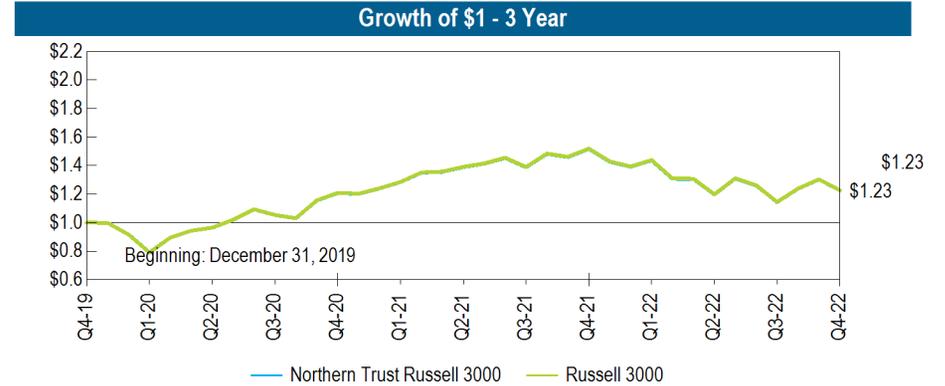
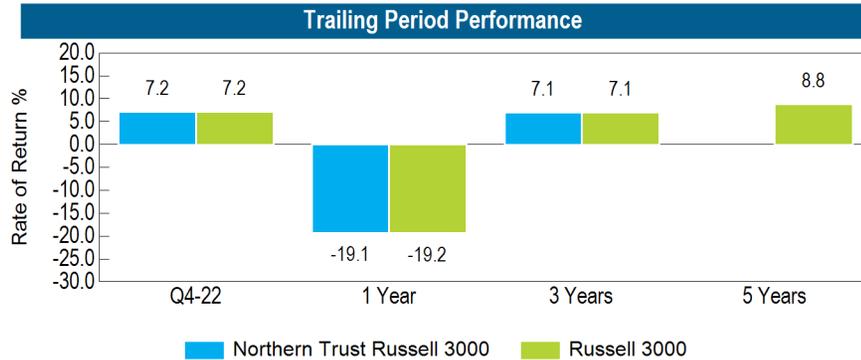
InvMetrics Public DB > \$1B Gross Return Comparison
Ending December 31, 2022



| | Quarter | | 1 Year | | 3 Years | | 5 Years | | 10 Years | |
|---------------------------------|---------|-----|--------|------|---------|------|---------|------|----------|------|
| Return (Rank) | 7.7 | (7) | -6.0 | (78) | 7.2 | (87) | 7.2 | (78) | 8.4 | (25) |
| 5th Percentile | 7.7 | (7) | -6.0 | (78) | 7.2 | (87) | 7.2 | (78) | 8.4 | (25) |
| 25th Percentile | 6.2 | (7) | -9.0 | (80) | 5.9 | (95) | 6.2 | (92) | 7.9 | (73) |
| Median | 5.3 | (7) | -11.1 | (80) | 4.9 | (95) | 5.8 | (92) | 7.6 | (73) |
| 75th Percentile | 4.6 | (7) | -13.1 | (80) | 4.2 | (95) | 5.1 | (92) | 6.9 | (73) |
| 95th Percentile | 3.1 | (7) | -16.1 | (80) | 2.2 | (95) | 3.8 | (92) | 6.0 | (73) |
| # of Portfolios | 75 | | 75 | | 73 | | 73 | | 68 | |
| ● EBMUDERS Total Plan Composite | 7.5 | (7) | -13.4 | (78) | 3.3 | (87) | 4.9 | (78) | 7.9 | (25) |
| ▲ Total Plan Bench | 7.5 | (7) | -13.6 | (80) | 2.2 | (95) | 4.0 | (92) | 7.1 | (73) |

3 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|-----------------------------|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| Northern Trust Russell 3000 | 0.00% | 1.00 | -0.38 | 0.29 | 0.07% | 1.00 | 99.60% | 99.86% |
| Russell 3000 | 0.00% | 1.00 | -- | 0.29 | 0.00% | 1.00 | 100.00% | 100.00% |

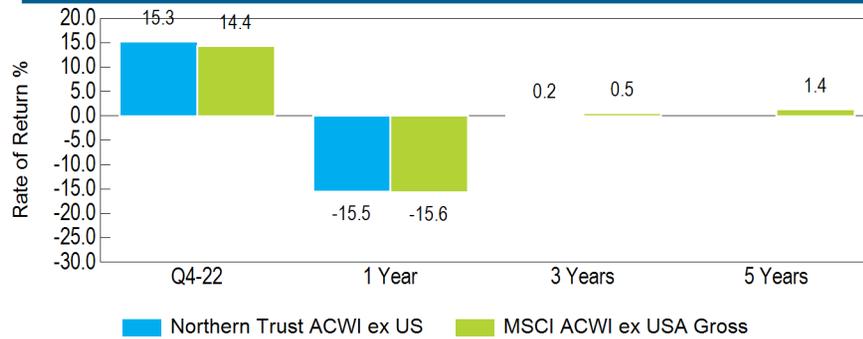


NorthernTrust Russell 3000 has an inception date of June 2018.

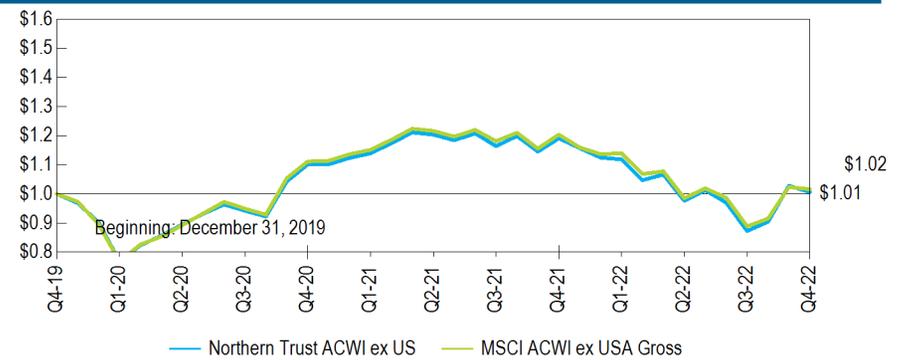
3 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|---------------------------|--------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| Northern Trust ACWI ex US | -0.03% | 1.01 | -0.17 | -0.02 | 2.22% | 0.99 | 102.80% | 102.27% |
| MSCI ACWI ex USA Gross | 0.00% | 1.00 | -- | -0.01 | 0.00% | 1.00 | 100.00% | 100.00% |

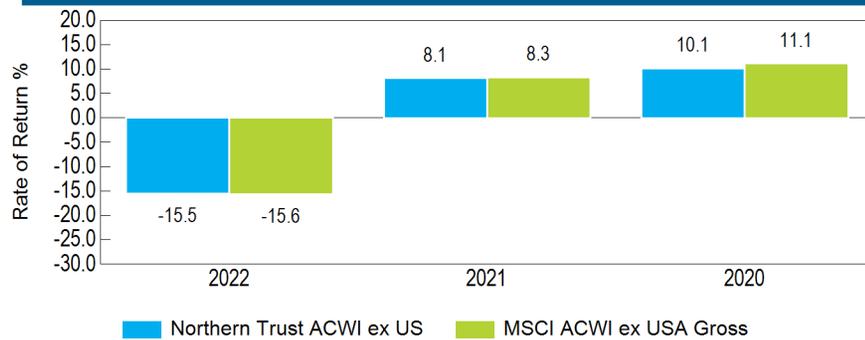
Trailing Period Performance



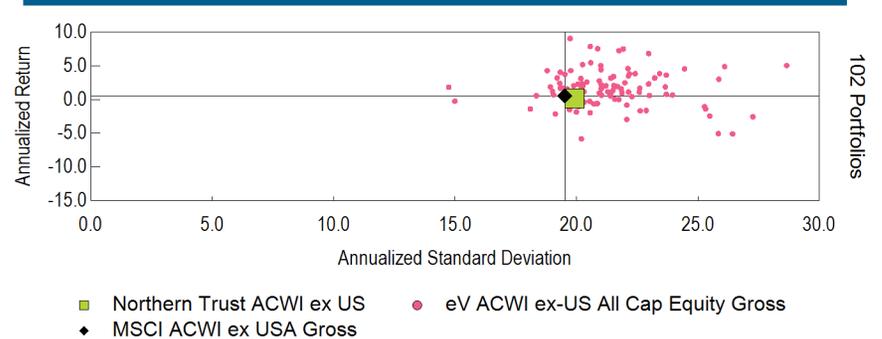
Growth of \$1 - 3 Year



Calendar Year Performance



Risk/Return - 3 Year

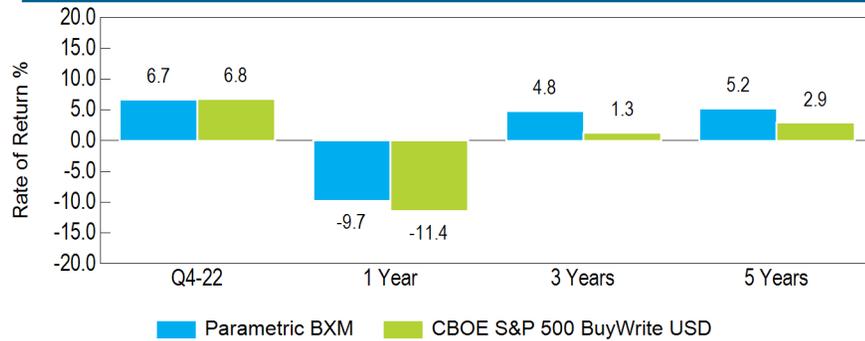


Northern Trust ACWI ex US has an inception date of June 2018

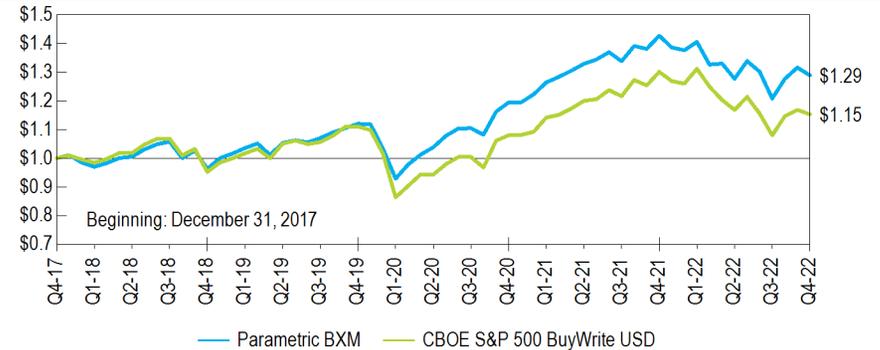
5 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|---------------------------|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| Parametric BXM | 0.20% | 0.84 | 0.51 | 0.32 | 4.22% | 0.91 | 95.03% | 88.46% |
| CBOE S&P 500 BuyWrite USD | 0.00% | 1.00 | -- | 0.13 | 0.00% | 1.00 | 100.00% | 100.00% |

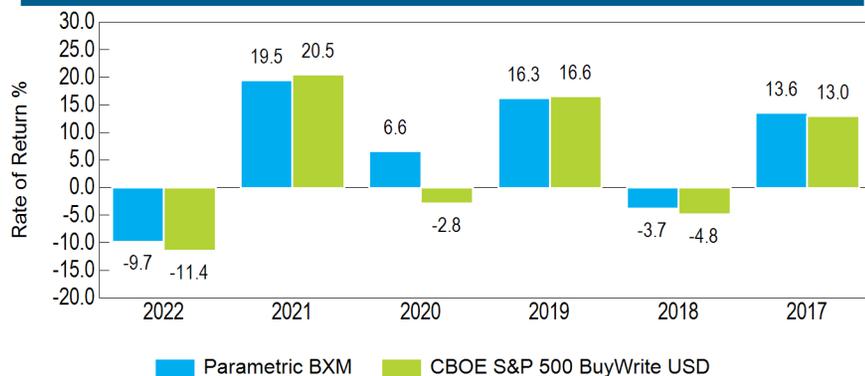
Trailing Period Performance



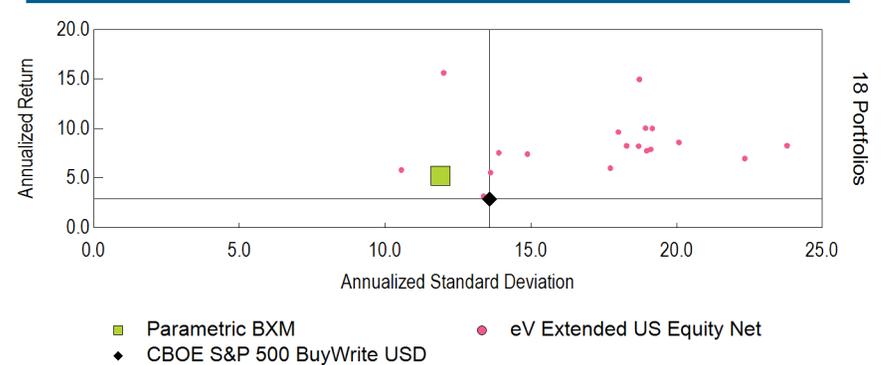
Growth of \$1 - 5 Year



Calendar Year Performance



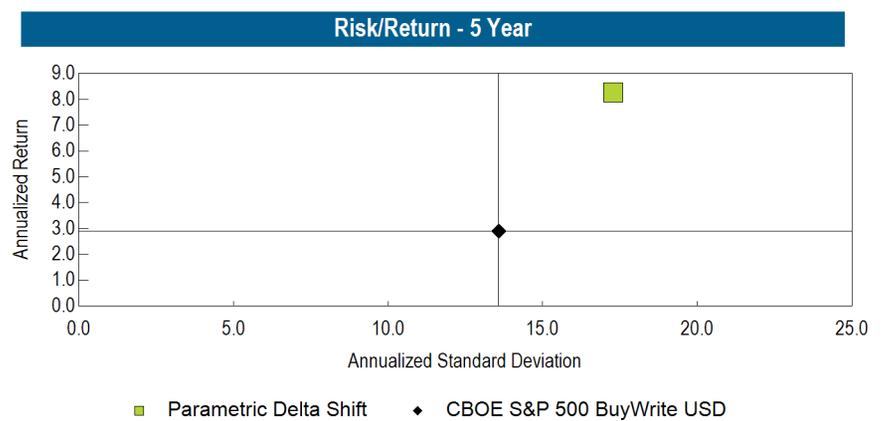
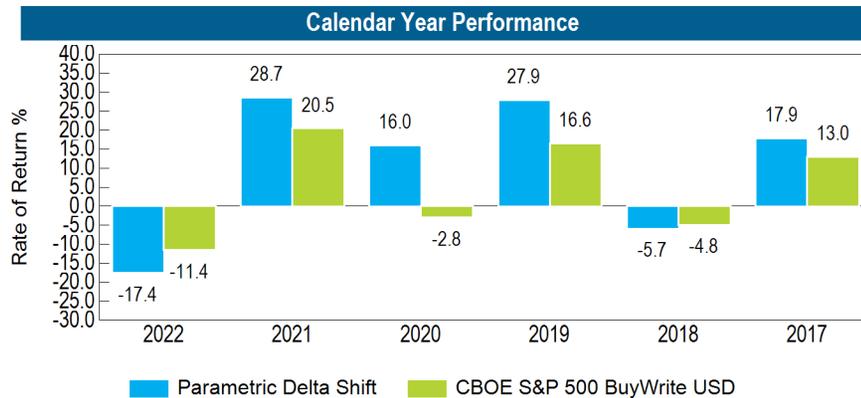
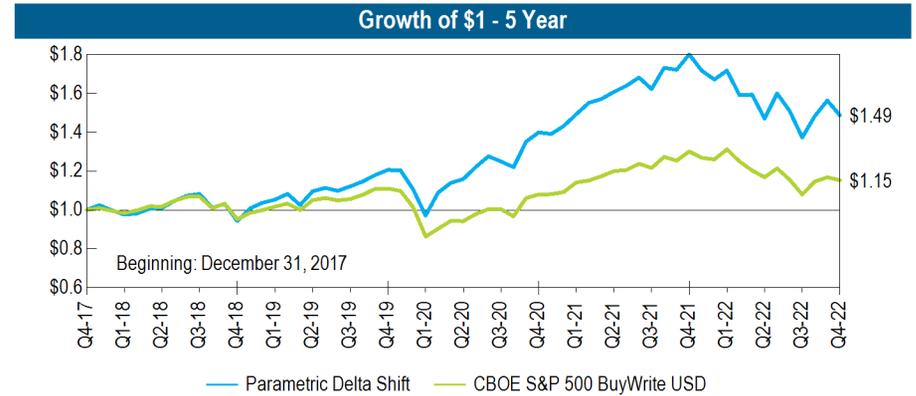
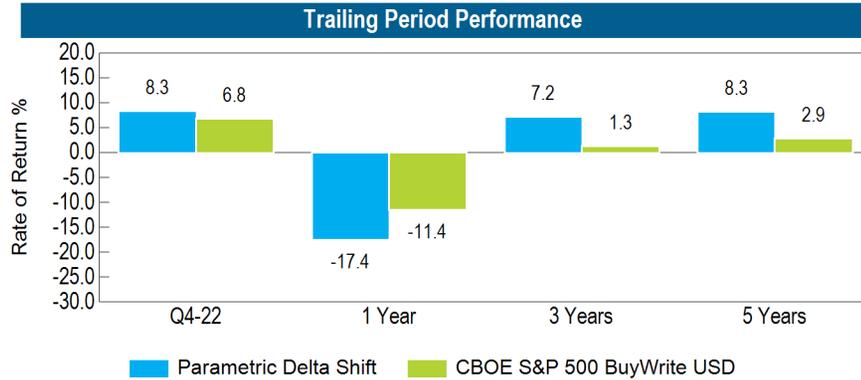
Risk/Return - 5 Year



Parametric BXM has an inception date of March 2014.

5 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|---------------------------|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| Parametric Delta Shift | 0.39% | 1.17 | 0.70 | 0.39 | 7.16% | 0.85 | 186.91% | 113.78% |
| CBOE S&P 500 BuyWrite USD | 0.00% | 1.00 | -- | 0.13 | 0.00% | 1.00 | 100.00% | 100.00% |

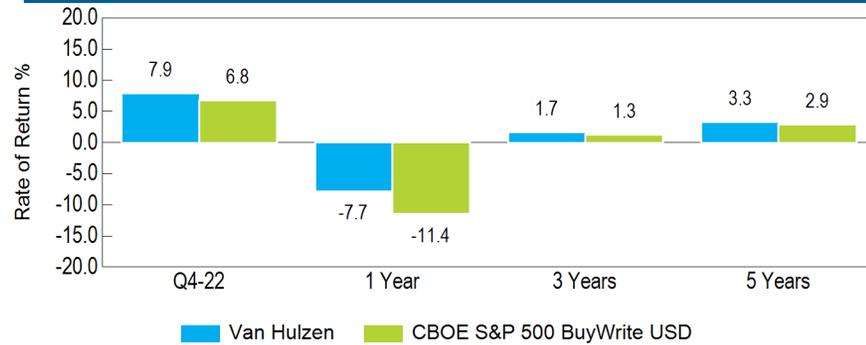


Parametric Delta Shift has an inception date of March 2014.

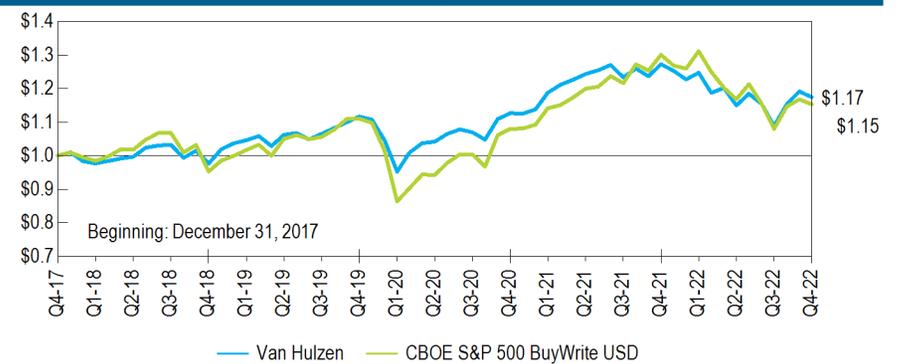
5 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|---------------------------|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| Van Hulzen | 0.07% | 0.69 | 0.02 | 0.18 | 5.70% | 0.85 | 71.21% | 82.10% |
| CBOE S&P 500 BuyWrite USD | 0.00% | 1.00 | -- | 0.13 | 0.00% | 1.00 | 100.00% | 100.00% |

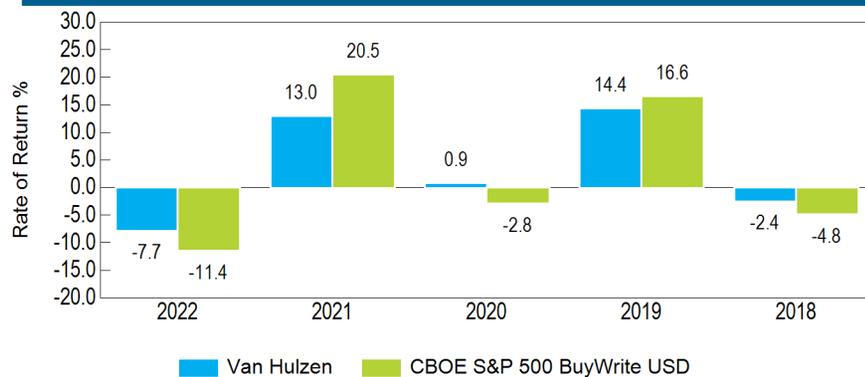
Trailing Period Performance



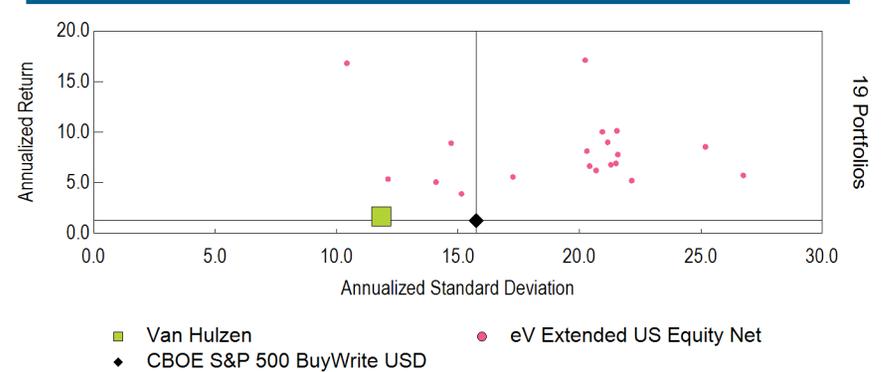
Growth of \$1 - 5 Year



Calendar Year Performance



Risk/Return - 5 Year

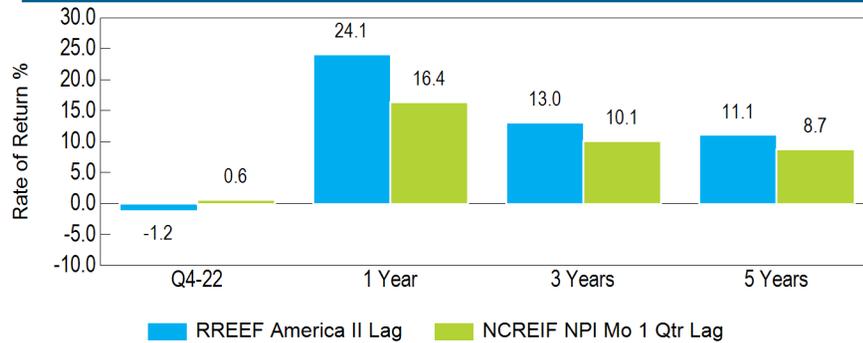


Van Hulzen has an inception date of March 2014.

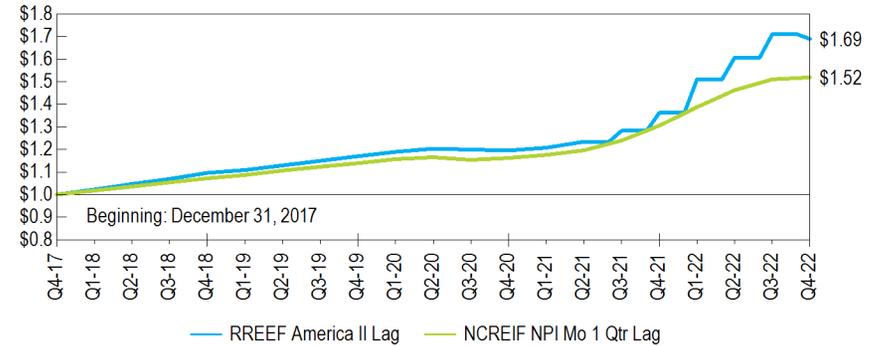
5 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|-------------------------|--------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| RREEF America II Lag | -0.24% | 1.51 | 0.22 | 1.35 | 5.91% | 0.21 | 116.18% | 58.26% |
| NCREIF NPI Mo 1 Qtr Lag | 0.00% | 1.00 | -- | 3.77 | 0.00% | 1.00 | 100.00% | 100.00% |

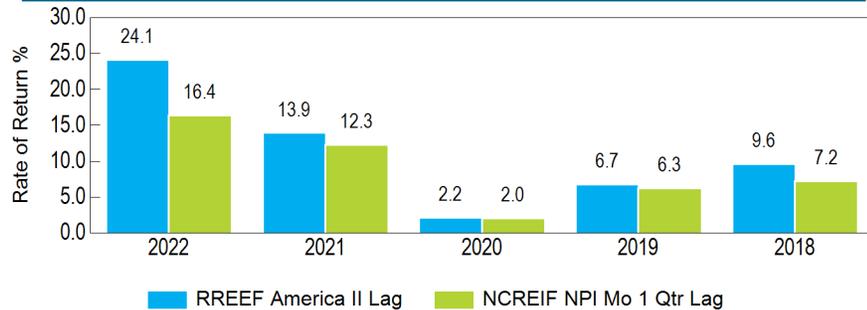
Trailing Period Performance



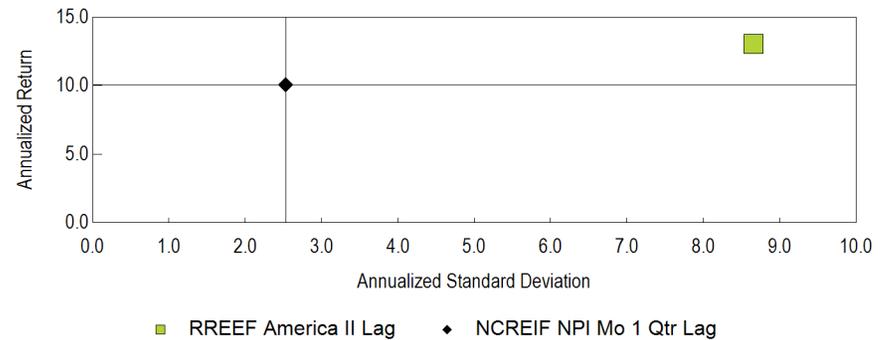
Growth of \$1 - 5 Year



Calendar Year Performance



Risk/Return - 5 Year

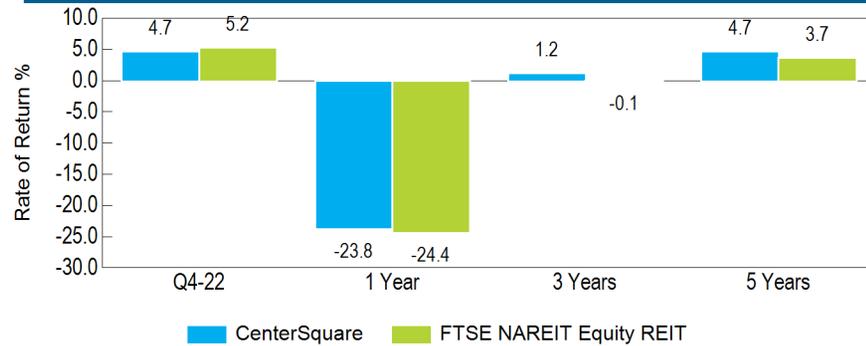


RREEF American II Performance results are lagged one quarter.
RREEF America II Lag has an inception date of January 2007.

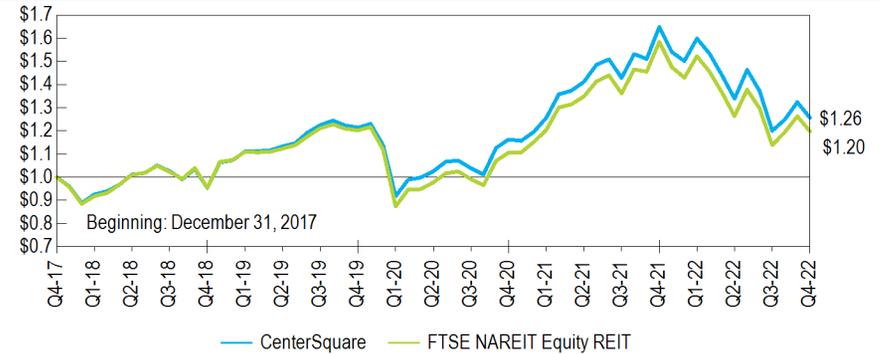
5 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|-------------------------|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| CenterSquare | 0.06% | 0.97 | 0.42 | 0.16 | 1.71% | 0.99 | 98.58% | 98.20% |
| FTSE NAREIT Equity REIT | 0.00% | 1.00 | -- | 0.12 | 0.00% | 1.00 | 100.00% | 100.00% |

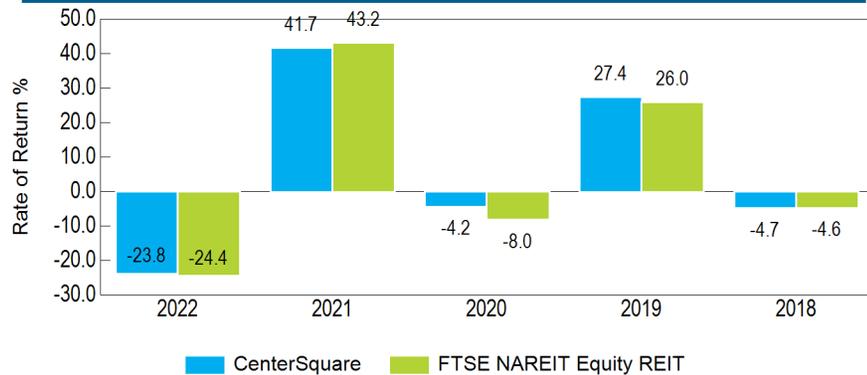
Trailing Period Performance



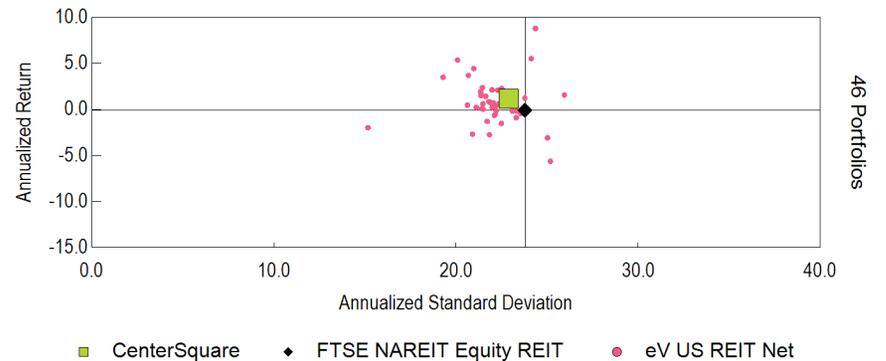
Growth of \$1 - 5 Year



Calendar Year Performance

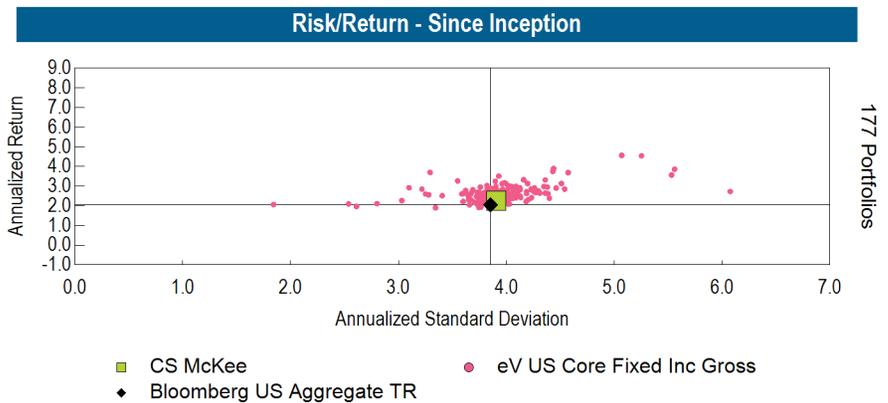
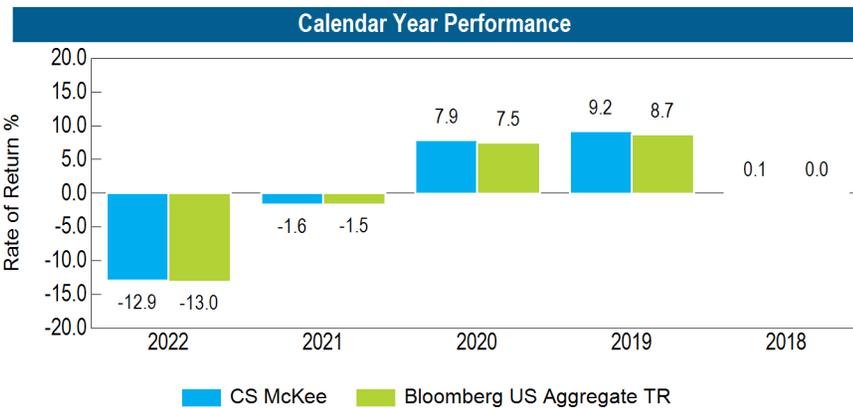
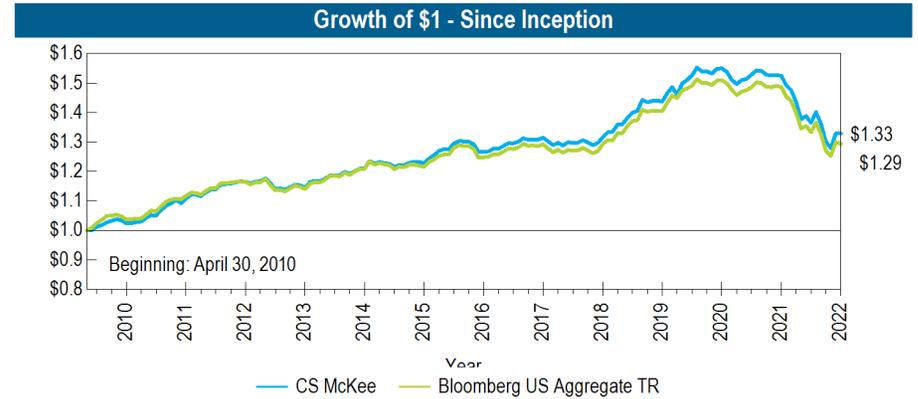
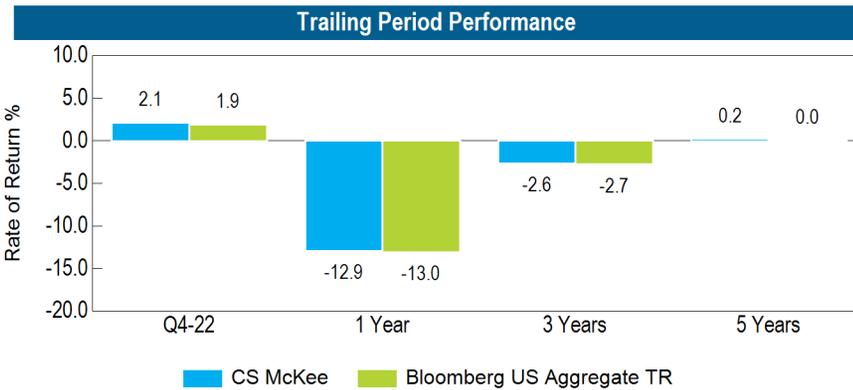


Risk/Return - 5 Year



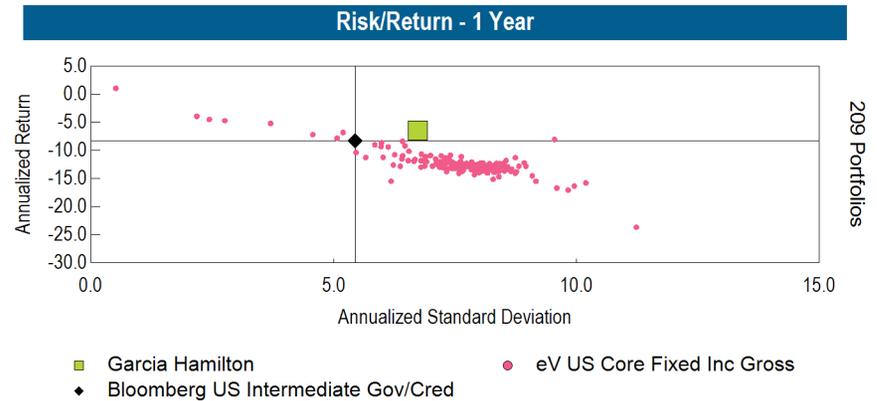
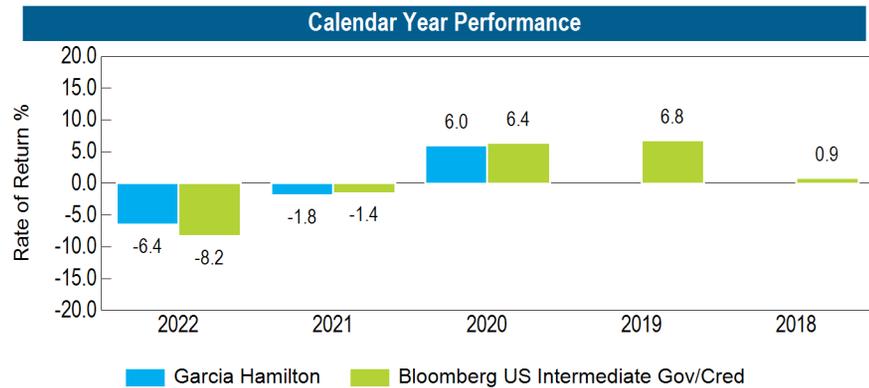
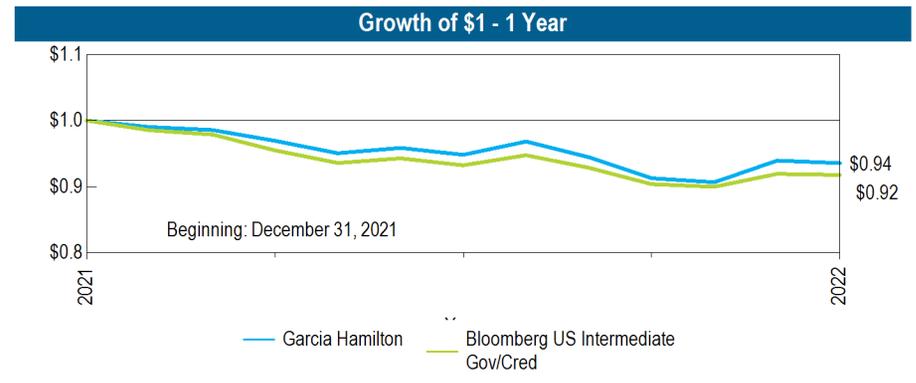
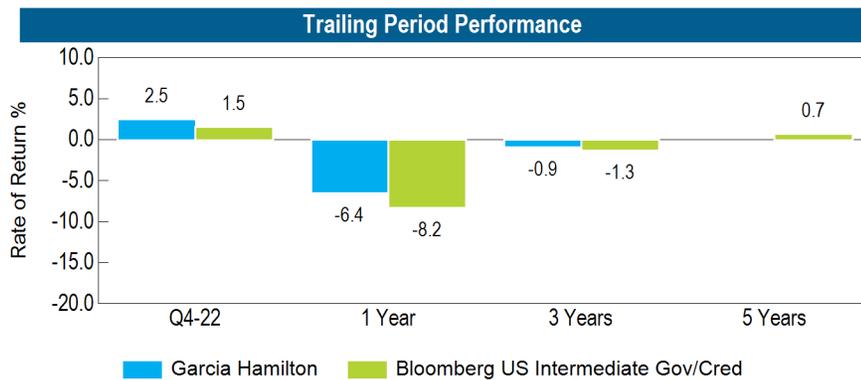
CenterSquare has an inception date of October 2011.

| 5 Year Statistics Summary | | | | | | | | | |
|---------------------------|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|--|
| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio | |
| CS McKee | 0.02% | 0.99 | 0.25 | 0.43 | 0.85% | 0.95 | 102.62% | 97.94% | |
| Bloomberg US Aggregate TR | 0.00% | 1.00 | -- | 0.38 | 0.00% | 1.00 | 100.00% | 100.00% | |



CS McKee has an inception date of April 2010.

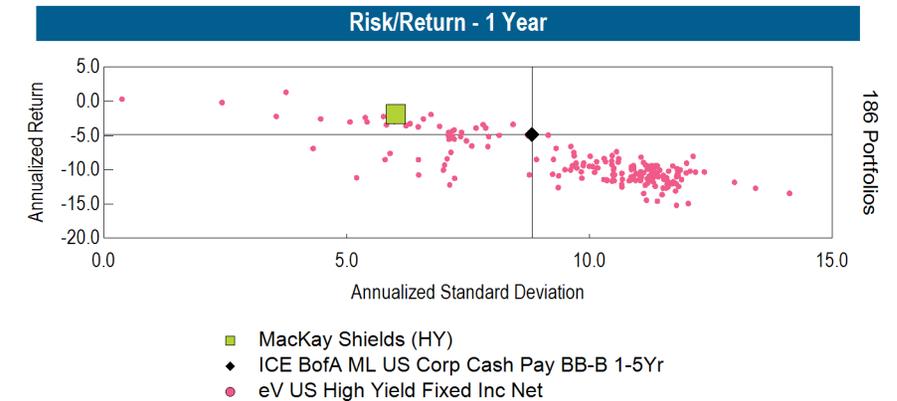
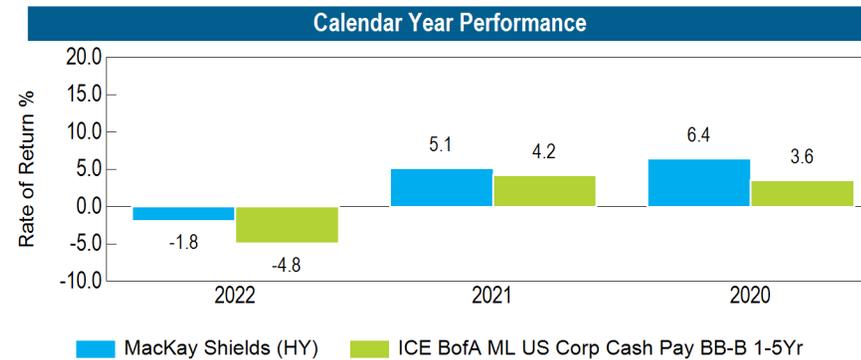
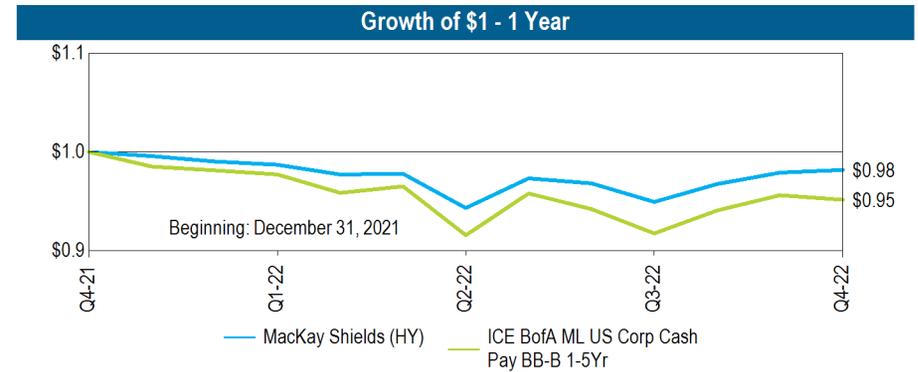
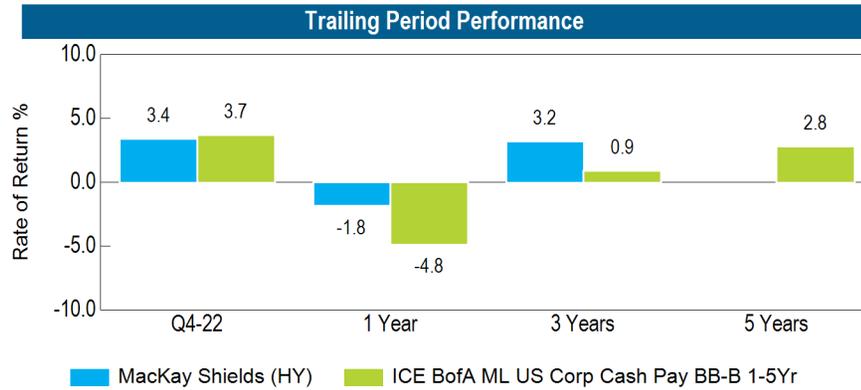
| 5 Year Statistics Summary | | | | | | | | | |
|------------------------------------|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|----|
| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio | |
| Garcia Hamilton | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Bloomberg US Intermediate Gov/Cred | 0.00% | 1.00 | -- | -0.13 | 0.00% | 1.00 | 100.00% | 100.00% | |



Garcia Hamilton has an inception date of November 2019. 5 Year risk statistics are not available at this time.

5 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|---|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| MacKay Shields (HY) | -- | -- | -- | -- | -- | -- | -- | -- |
| ICE BofA ML US Corp Cash Pay BB-B 1-5Yr | 0.00% | 1.00 | -- | 0.22 | 0.00% | 1.00 | 100.00% | 100.00% |

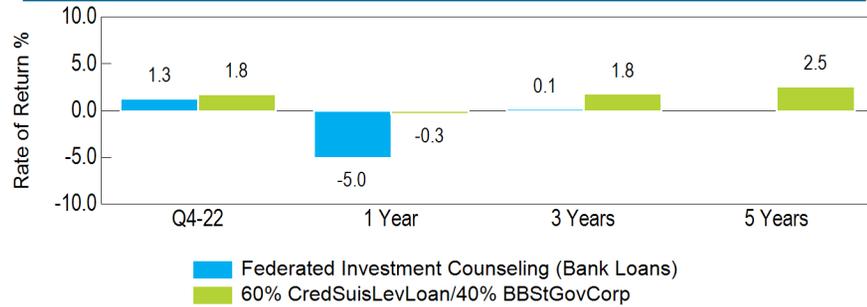


MacKay Shields has an inception date of February 2019.
5 Year Risk statistics are not available at this time.

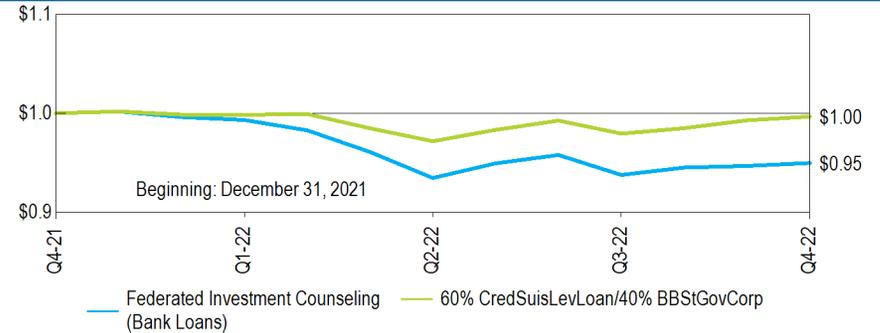
5 Year Statistics Summary

| | Alpha | Beta | Information Ratio | Sharpe Ratio | Tracking Error | R-Squared | Up Mkt Capture Ratio | Down Mkt Capture Ratio |
|--|-------|------|-------------------|--------------|----------------|-----------|----------------------|------------------------|
| Federated Investment Counseling (Bank Loans) | -- | -- | -- | -- | -- | -- | -- | -- |
| 60% CredSuisLevLoan/40% BBStGovCorp | 0.00% | 1.00 | -- | 0.32 | 0.00% | 1.00 | 100.00% | 100.00% |

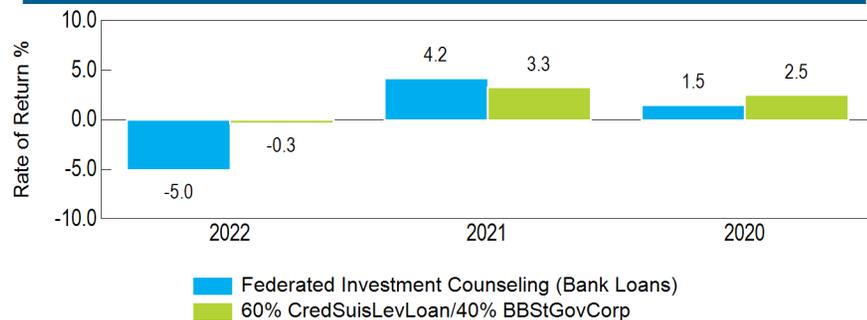
Trailing Period Performance



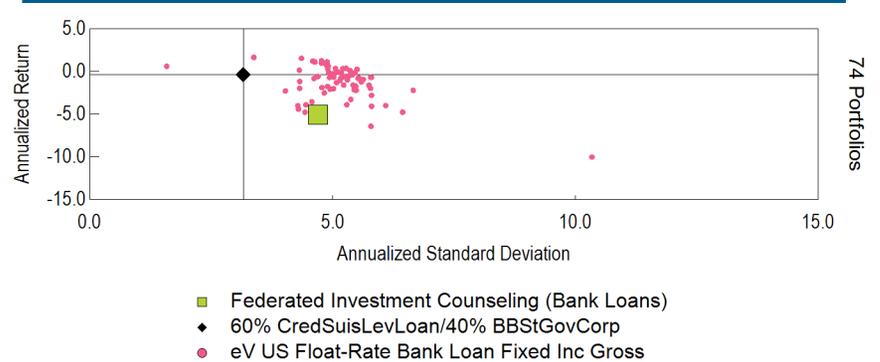
Growth of \$1 - 1 Year



Calendar Year Performance



Risk/Return - 1 Year



Federated Investment Counseling has an inception date of February 2019.
5 Year Risk statistics are not available at this time.

Asset Class Returns - Net of Fees | As of December 31, 2022

| | QTD | 1 Yr | 3 Yrs | 5 Yrs |
|--------------------------------------|-------------|--------------|-------------|------------|
| | (%) | (%) | (%) | (%) |
| EBMUDERS Total Plan Composite | 7.5 | -13.4 | 3.2 | 4.7 |
| <i>Total Plan Bench</i> | <i>7.5</i> | <i>-13.6</i> | <i>2.2</i> | <i>4.0</i> |
| US Equity Composite | 7.2 | -19.2 | 7.0 | 9.1 |
| <i>Russell 3000 Hybrid</i> | <i>7.2</i> | <i>-19.2</i> | <i>7.1</i> | <i>8.8</i> |
| NonUS Equity Composite | 15.3 | -15.5 | 0.6 | 0.7 |
| <i>MSCI ACWI xUS (blend)</i> | <i>14.4</i> | <i>-15.6</i> | <i>0.5</i> | <i>1.4</i> |
| Covered Calls Composite | 7.7 | -12.1 | 4.5 | 5.5 |
| <i>CBOE S&P 500 BuyWrite USD</i> | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |
| Real Estate Composite | 1.2 | -3.4 | 7.0 | 7.6 |
| <i>NCREIF NPI Lag</i> | <i>3.0</i> | <i>-5.3</i> | <i>5.7</i> | <i>6.8</i> |
| Fixed Income Composite | 2.3 | -8.5 | -1.1 | 1.1 |
| <i>Fixed Income Composite Bench</i> | <i>1.9</i> | <i>-9.1</i> | <i>-1.3</i> | <i>0.9</i> |
| Cash Composite | 0.4 | 0.8 | 1.1 | 1.5 |
| <i>FTSE T-Bill 3 Months TR</i> | <i>0.9</i> | <i>1.5</i> | <i>0.7</i> | <i>1.2</i> |

Benchmark composition and history provided at the end of this report.

| | QTD (%) | 1 Yr (%) | 3 Yrs (%) | 5 Yrs (%) |
|--------------------------------------|-------------|--------------|--------------|--------------|
| US Equity Composite | 7.2 | -19.2 | 7.0 | 9.1 |
| <i>Russell 3000 Hybrid</i> | <i>7.2</i> | <i>-19.2</i> | <i>7.1</i> | <i>8.8</i> |
| Northern Trust Russell 3000 | 7.2 | -19.2 | 7.0 | -- |
| <i>Russell 3000</i> | <i>7.2</i> | <i>-19.2</i> | <i>7.1</i> | -- |
| NonUS Equity Composite | 15.3 | -15.5 | 0.6 | 0.7 |
| <i>MSCI ACWI xUS (blend)</i> | <i>14.4</i> | <i>-15.6</i> | <i>0.5</i> | <i>1.4</i> |
| Northern Trust ACWI ex US | 15.3 | -15.5 | 0.2 | -- |
| <i>MSCI ACWI ex USA Gross</i> | <i>14.4</i> | <i>-15.6</i> | <i>0.5</i> | -- |
| Covered Calls Composite | 7.7 | -12.1 | 4.5 | 5.5 |
| <i>CBOE S&P 500 BuyWrite USD</i> | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |
| Parametric BXM | 6.7 | -9.8 | 4.6 | 5.0 |
| <i>CBOE S&P 500 BuyWrite USD</i> | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |
| Parametric Delta Shift | 8.3 | -17.6 | 6.9 | 7.9 |
| <i>CBOE S&P 500 BuyWrite USD</i> | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |
| Van Hulzen | 7.9 | -7.9 | 1.4 | 3.0 |
| <i>CBOE S&P 500 BuyWrite USD</i> | <i>6.8</i> | <i>-11.4</i> | <i>1.3</i> | <i>2.9</i> |

| | QTD (%) | 1 Yr (%) | 3 Yrs (%) | 5 Yrs (%) |
|---|------------|--------------|--------------|--------------|
| Real Estate Composite | 1.2 | -3.4 | 7.0 | 7.6 |
| <i>NCREIF NPI Lag</i> | <i>3.0</i> | <i>-5.3</i> | <i>5.7</i> | <i>6.8</i> |
| RREEF America II Lag | -1.4 | 22.9 | 12.0 | 10.0 |
| <i>NCREIF NPI Mo 1 Qtr Lag</i> | <i>0.6</i> | <i>16.4</i> | <i>10.1</i> | <i>8.7</i> |
| CenterSquare | 4.6 | -24.0 | 0.9 | 4.4 |
| <i>FTSE NAREIT Equity REIT</i> | <i>5.2</i> | <i>-24.4</i> | <i>-0.1</i> | <i>3.7</i> |
| Fixed Income Composite | 2.3 | -8.5 | -1.1 | 1.1 |
| <i>Fixed Income Composite Bench</i> | <i>1.9</i> | <i>-9.1</i> | <i>-1.3</i> | <i>0.9</i> |
| Fixed Income Core Fixed Income Composite | 2.3 | -9.7 | -1.8 | 0.6 |
| <i>Fixed Income Core Composite Bench</i> | <i>1.7</i> | <i>-10.6</i> | <i>-2.0</i> | <i>--</i> |
| CS McKee | 2.1 | -13.0 | -2.8 | 0.0 |
| <i>Bloomberg US Aggregate TR</i> | <i>1.9</i> | <i>-13.0</i> | <i>-2.7</i> | <i>0.0</i> |
| Garcia Hamilton | 2.5 | -6.6 | -1.0 | -- |
| <i>Bloomberg US Intermediate Gov/Cred</i> | <i>1.5</i> | <i>-8.2</i> | <i>-1.3</i> | <i>--</i> |
| Fixed Income Non-Core Fixed Income Composite | 2.3 | -3.6 | 1.4 | 2.3 |
| <i>Fixed Income Non-Core Composite Bench</i> | <i>2.7</i> | <i>-2.5</i> | <i>1.4</i> | <i>2.4</i> |
| MacKay Shields (HY) | 3.3 | -2.2 | 2.8 | -- |
| <i>ICE BofA ML US Corp Cash Pay BB-B 1-5Yr</i> | <i>3.7</i> | <i>-4.8</i> | <i>0.9</i> | <i>--</i> |
| Federated Investment Counseling (Bank Loans) | 1.2 | -5.5 | -0.4 | -- |
| <i>60% CredSuisLevLoan/40% BBStGovCorp</i> | <i>1.8</i> | <i>-0.3</i> | <i>1.8</i> | <i>--</i> |

Benchmark History

As of December 31, 2022

EBMUDERS Total Plan Composite

| | | |
|-----------|------------|---|
| 12/1/2019 | Present | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 10% Bloomberg US Intermediate Gov/Cred / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 3/1/2019 | 11/30/2019 | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 7/1/2018 | 2/28/2019 | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 4/1/2014 | 6/30/2018 | 40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 3/1/2014 | 3/31/2014 | 40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 11/1/2011 | 2/28/2014 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT |
| 1/1/2008 | 10/31/2011 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 5% NCREIF NPI Mo 1 Qtr Lag |
| 1/1/2007 | 12/31/2007 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Aggregate TR / 5% NCREIF Property Index |
| 10/1/2005 | 12/31/2006 | 50% Russell 3000 / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag / 20% MSCI EAFE |
| 4/1/2005 | 9/30/2005 | 30% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 20% MSCI EAFE / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag |
| 9/1/1998 | 3/31/2005 | 33% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 17% MSCI EAFE / 30% Bloomberg US Aggregate TR |
| 3/31/1996 | 8/31/1998 | 30% S&P 500 / 15% Wilshire 5000 / 15% MSCI EAFE / 30% Bloomberg US Aggregate TR / 5% NCREIF Property Index / 5% FTSE T-Bill 3 Months TR |

Benchmark History

As of December 31, 2022

Fixed Income Composite

| | | |
|-----------|------------|--|
| 12/1/2019 | Present | 40% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 40% Bloomberg US Intermediate Gov/Cred / 10% 60% CredSuisLevLoan/40% BBStGovCorp |
| 3/1/2019 | 11/30/2019 | 60% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% 60% CredSuisLevLoan/40% BBStGovCorp |
| 7/1/2018 | 2/28/2019 | 60% Bloomberg US Aggregate TR / 10% Morningstar LSTA US Performing Loans Index / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% Bloomberg US High Yield 1-5Yr Cash Pay 2% |
| 4/1/2014 | 6/30/2018 | 50% Bloomberg US Aggregate TR / 12.5% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US Govt/Credit 1-3 Yr. TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% |
| 3/1/2014 | 3/31/2014 | 75% Bloomberg US Aggregate TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 12.5% Morningstar LSTA US Performing Loans Index |
| 1/1/2008 | 2/28/2014 | Bloomberg US Universal TR |
| 1/1/1976 | 12/31/2007 | Bloomberg US Aggregate TR |

Fixed Income Core Fixed Income Composite

| | | |
|-----------|---------|--|
| 12/1/2019 | Present | 50% Bloomberg US Aggregate TR / 50% Bloomberg US Intermediate Gov/Cred |
|-----------|---------|--|

Fixed Income Non-Core Fixed Income Composite

| | | |
|-----------|------------|--|
| 12/1/2019 | Present | 50% 60% CredSuisLevLoan/40% BBStGovCorp / 50% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr |
| 3/1/2019 | 11/30/2019 | 25% 60% CredSuisLevLoan/40% BBStGovCorp / 25% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 50% Bloomberg US Govt/Credit 1-3 Yr. TR |
| 3/1/2014 | 2/28/2019 | 25% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 50% Bloomberg US Govt/Credit 1-3 Yr. TR |

| Benchmark History | | |
|---|------------|------------------------|
| As of December 31, 2022 | | |
| NonUS Equity Composite | | |
| 1/1/2007 | Present | MSCI ACWI ex USA Gross |
| 1/1/1970 | 12/31/2006 | MSCI EAFE |
| Northern Trust ACWI ex US | | |
| | Present | MSCI ACWI ex USA Gross |
| NonUSE Developed Markets Composite | | |
| 1/1/2007 | Present | MSCI ACWI ex USA Gross |
| 1/1/1970 | 12/31/2006 | MSCI EAFE |

Gross of Fees Performance Snapshot as of January 31, 2023

| Performance Summary | | | | | | | | |
|--------------------------------------|----------------------|-------------------|-------------|-------------|--------------|--------------|---------------|---------------|
| | Market Value (\$) | % of Portfolio | 1 Mo (%) | 1 Yr (%) | 3 Yrs (%) | 5 Yrs (%) | 10 Yrs (%) | 20 Yrs (%) |
| EBMUDERS Total Plan Composite | 2,183,503,131 | 100.0 | 5.5 | -5.4 | 5.3 | 5.3 | 8.1 | 8.2 |
| <i>Total Plan Bench</i> | | | <i>5.5</i> | <i>-5.6</i> | <i>4.3</i> | <i>4.5</i> | <i>7.3</i> | <i>7.9</i> |
| US Equity Composite | 551,293,411 | 25.2 | 6.9 | -8.2 | 9.5 | 9.3 | 12.6 | 10.5 |
| <i>Russell 3000 Hybrid</i> | | | <i>6.9</i> | <i>-8.2</i> | <i>9.5</i> | <i>9.1</i> | <i>12.3</i> | <i>10.6</i> |
| NonUS Equity Composite | 539,771,437 | 24.7 | 8.4 | -5.8 | 4.5 | 1.4 | 4.7 | 7.7 |
| <i>MSCI ACWI xUS (blend)</i> | | | <i>8.1</i> | <i>-5.2</i> | <i>4.1</i> | <i>1.8</i> | <i>4.7</i> | <i>7.5</i> |
| Covered Calls Composite | 449,907,473 | 20.6 | 4.0 | -5.5 | 6.2 | 6.2 | -- | -- |
| <i>CBOE S&P 500 BuyWrite USD</i> | | | <i>4.2</i> | <i>-5.3</i> | <i>3.0</i> | <i>3.5</i> | -- | -- |
| Real Estate Composite | 130,916,571 | 6.0 | 4.8 | 5.5 | 8.9 | 9.7 | 10.2 | -- |
| <i>NCREIF NPI Lag</i> | | | <i>4.8</i> | <i>1.6</i> | <i>7.0</i> | <i>8.2</i> | <i>8.7</i> | -- |
| Fixed Income Composite | 504,724,710 | 23.1 | 2.8 | -4.7 | -0.5 | 1.9 | 2.0 | 3.9 |
| <i>Fixed Income Composite Bench</i> | | | <i>2.4</i> | <i>-5.3</i> | <i>-0.9</i> | <i>1.5</i> | <i>1.8</i> | <i>3.5</i> |
| Cash Composite | 6,889,528 | 0.3 | 1.7 | 2.5 | 1.4 | 1.8 | 1.1 | 1.8 |
| <i>FTSE T-Bill 3 Months TR</i> | | | <i>0.4</i> | <i>1.9</i> | <i>0.8</i> | <i>1.3</i> | <i>0.8</i> | <i>1.2</i> |

¹ Policy Benchmark consists of 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% BBgBarc US Aggregate TR / 10% BBgBarc US Intermediate Gov/Cred / 2.5% ICE BofAML US Corp Cash Pay BB -B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% S&P/LSTA Performing Loan TR USD index 12/1/2019 - present; see Appendix for historical Policy Benchmark composition.

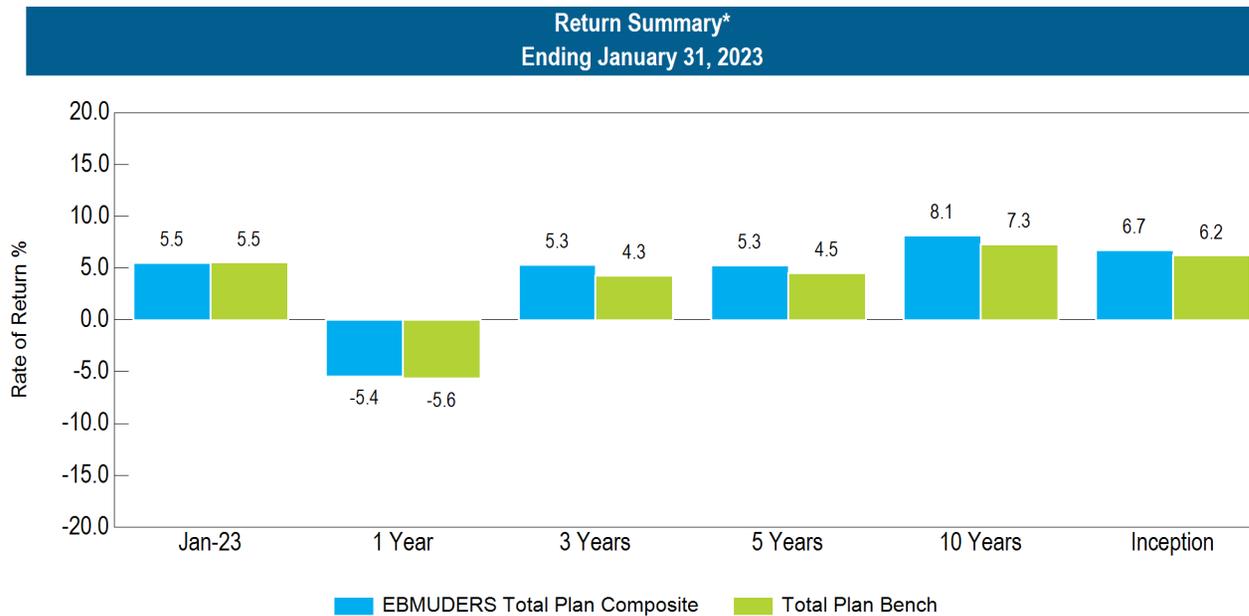
² Russell 3000 as of 10/1/05. Prior: 30% S&P500, 10% S&P400, 10% Russell 2000 (4/1/05-9/30/05); 33% S&P500, 10% S&P400, 10% Russell 2000 (9/1/98-3/31/05); 30% S&P500, 15% Wilshire 5000 (4/1/96-8/31/98).

³ MSCI ACWIxU.S. as of 1/1/07; MSCI EAFE ND thru 12/31/06.

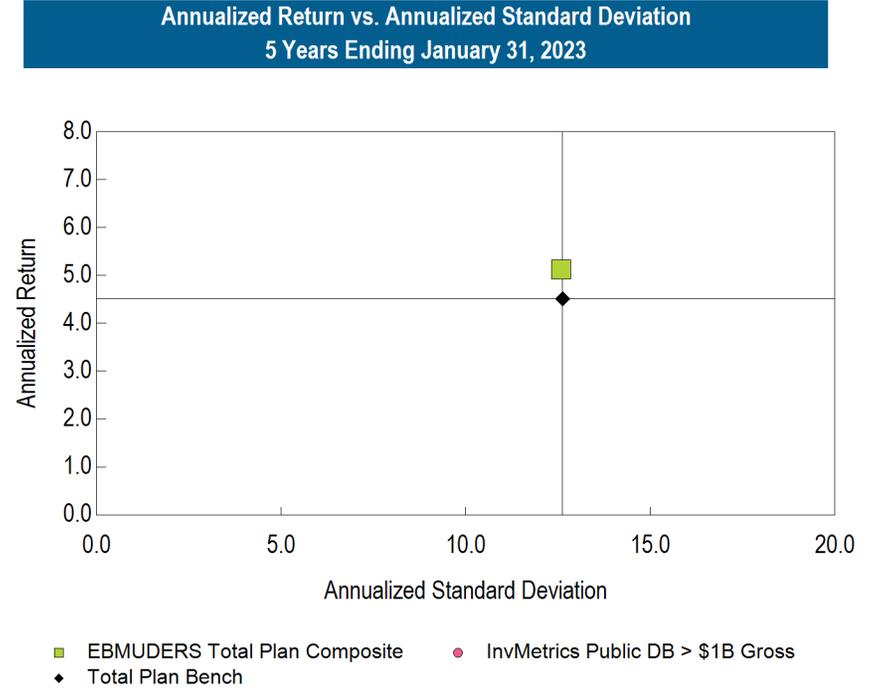
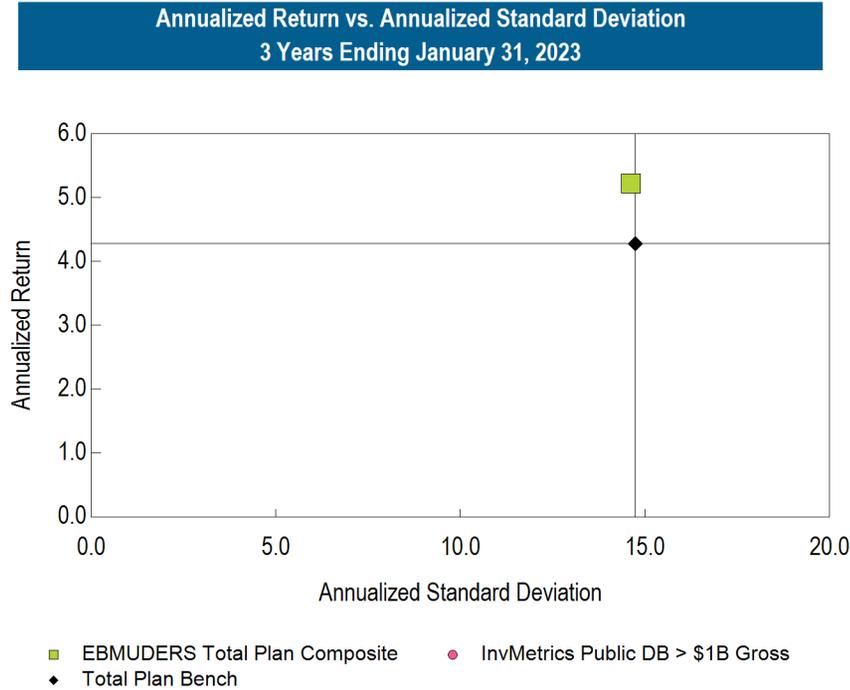
⁴ 50% NCREIF (lagged), 50% FTSE NAREIT Equity REITs Index as of 11/1/11; NCREIF (lagged) thru 10/31/11.

⁵ 40% BB Aggregate, 40% BBgBarc US Intermediate Gov/Cred, 10% ICE BofA ML U.S. Corp Cash Pay BB-B 1-5 Year, and 10% Blend 60% Credit Suisse Leverage Loan/40% BBg BC Short Term Gov/Corp 12/1/2019-present. See Appendix for historical Composite benchmark.

| Summary of Cash Flows | | |
|------------------------|-----------------|-----------------|
| | Quarter-To-Date | One Year |
| Beginning Market Value | \$2,072,510,001 | \$2,327,914,301 |
| Net Cash Flow | -\$3,160,428 | -\$15,858,618 |
| Capital Appreciation | \$114,153,559 | -\$128,552,552 |
| Ending Market Value | \$2,183,503,131 | \$2,183,503,131 |



¹Policy Benchmark consists of 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% BBgBarc US Aggregate TR / 10% BBgBarc US Intermediate Gov/Cred / 2.5% ICE BofAML US Corp Cash Pay BB -B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% S&P/LSTA Performing Loan TR USD index 12/1/2019 - present; see Appendix for historical Policy Benchmark composition.



| 3 Years Ending January 31, 2023 | | | |
|---------------------------------|--------------|--------------------------|--------------|
| | Anlzd Return | Anlzd Standard Deviation | Sharpe Ratio |
| EBMUDERS Total Plan Composite | 5.34% | 14.61% | 0.32 |
| Total Plan Bench | 4.28% | 14.74% | 0.24 |

| 5 Years Ending January 31, 2023 | | | |
|---------------------------------|--------------|--------------------------|--------------|
| | Anlzd Return | Anlzd Standard Deviation | Sharpe Ratio |
| EBMUDERS Total Plan Composite | 5.28% | 12.57% | 0.32 |
| Total Plan Bench | 4.51% | 12.62% | 0.26 |

Asset Allocation vs. Target

| | Current (\$) | Current (%) | Policy (%) | Difference* (%) | Policy Range (%) | Within Range |
|-----------------------|----------------------|--------------|--------------|-----------------|------------------|--------------|
| Domestic Equity | 551,293,411 | 25.2 | 25.0 | 0.2 | 20.0 - 30.0 | Yes |
| International Equity | 539,771,437 | 24.7 | 25.0 | -0.3 | 20.0 - 30.0 | Yes |
| Covered Calls | 449,907,473 | 20.6 | 20.0 | 0.6 | 17.0 - 23.0 | Yes |
| Real Estate | 130,916,571 | 6.0 | 5.0 | 1.0 | 3.0 - 7.0 | Yes |
| Core Fixed Income | 397,597,334 | 18.2 | 20.0 | -1.8 | 17.0 - 23.0 | Yes |
| Non-Core Fixed Income | 107,127,376 | 4.9 | 5.0 | -0.1 | 3.0 - 7.0 | Yes |
| Cash | 6,889,529 | 0.3 | 0.0 | 0.3 | 0.0 - 5.0 | Yes |
| Total | 2,183,503,131 | 100.0 | 100.0 | | | |

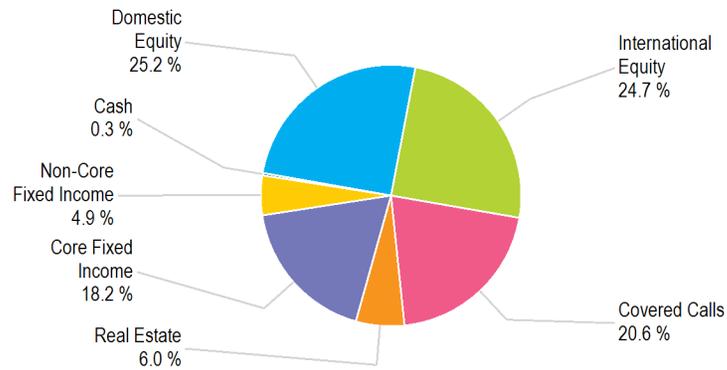
*Difference between Policy and Current Allocation

¹Current policy target allocations elected by the Board in January 2019 took effect March 2019 upon the transition to the new long-term strategic allocation.

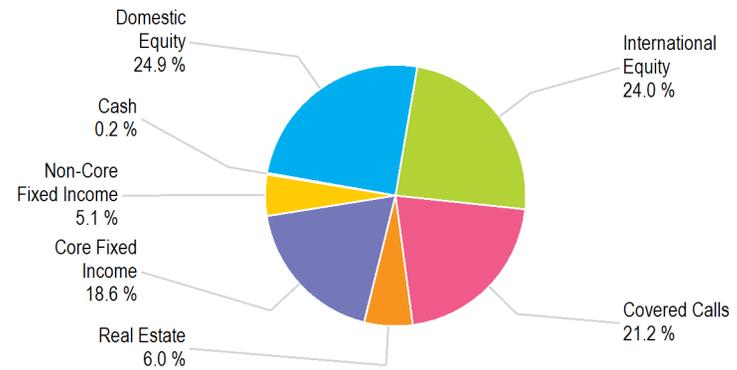
²Policy rebalancing ranges shown are for non-turbulent market periods. The Plan also has established rebalancing ranges to be in effect during turbulent market periods

³RREEF results are lagged 1 quarter

January 31, 2023 : \$2,183,503,131



December 31, 2022 : \$2,072,510,001



| | Market Value | 1 Mo | 1 Yr | 3 Yrs | 5 Yrs |
|--------------------------------------|--------------------|-------------|--------------|------------|------------|
| Domestic Equity | 551,293,411 | | | | |
| Northern Trust Russell 3000 | 550,278,796 | 6.9 | -8.2 | 9.5 | -- |
| <i>Russell 3000</i> | | <i>6.9</i> | <i>-8.2</i> | <i>9.5</i> | -- |
| International Equity | 539,771,437 | | | | |
| Northern Trust ACWI ex US | 539,771,437 | 8.4 | -5.8 | 4.0 | -- |
| <i>MSCI ACWI ex USA Gross</i> | | <i>8.1</i> | <i>-5.2</i> | <i>4.1</i> | -- |
| Covered Calls | 449,907,473 | | | | |
| Parametric BXM | 152,678,435 | 3.4 | -3.8 | 6.0 | 5.7 |
| <i>CBOE S&P 500 BuyWrite USD</i> | | <i>4.2</i> | <i>-5.3</i> | <i>3.0</i> | <i>3.5</i> |
| Parametric Delta Shift | 156,523,175 | 6.1 | -8.0 | 9.5 | 9.0 |
| <i>CBOE S&P 500 BuyWrite USD</i> | | <i>4.2</i> | <i>-5.3</i> | <i>3.0</i> | <i>3.5</i> |
| Van Hulzen | 140,705,863 | 2.3 | -4.1 | 2.8 | 3.5 |
| <i>CBOE S&P 500 BuyWrite USD</i> | | <i>4.2</i> | <i>-5.3</i> | <i>3.0</i> | <i>3.5</i> |
| Real Estate | 130,916,571 | | | | |
| RREEF America II Lag | 69,046,277 | 0.0 | 24.1 | 12.8 | 10.9 |
| <i>NCREIF NPI Mo 1 Qtr Lag</i> | | <i>-1.2</i> | <i>12.7</i> | <i>9.5</i> | <i>8.3</i> |
| CenterSquare | 61,870,294 | 10.6 | -9.8 | 4.2 | 7.7 |
| <i>FTSE NAREIT Equity REIT</i> | | <i>10.7</i> | <i>-10.1</i> | <i>2.9</i> | <i>6.7</i> |

¹RREEF results are lagged 1 quarter

| | Market Value | 1 Mo | 1 Yr | 3 Yrs | 5 Yrs |
|--|--------------------|------------|-------------|-------------|------------|
| Core Fixed Income | 397,597,334 | | | | |
| CS McKee | 191,231,502 | 2.8 | -8.5 | -2.3 | 1.0 |
| <i>Bloomberg US Aggregate TR</i> | | <i>3.1</i> | <i>-8.4</i> | <i>-2.3</i> | <i>0.9</i> |
| Garcia Hamilton | 206,365,832 | 3.1 | -2.6 | -0.3 | -- |
| <i>Bloomberg US Intermediate Gov/Cred</i> | | <i>1.9</i> | <i>-5.1</i> | <i>-1.1</i> | <i>--</i> |
| Non-Core Fixed Income | 107,127,376 | | | | |
| MacKay Shields (HY) | 54,927,622 | 2.3 | 0.9 | 3.9 | -- |
| <i>ICE BofA ML US Corp Cash Pay BB-B 1-5Yr</i> | | <i>2.9</i> | <i>-0.6</i> | <i>1.9</i> | <i>--</i> |
| Federated Investment Counseling (Bank Loans) | 52,199,754 | 2.0 | -3.3 | 0.7 | -- |
| <i>60% CredSuisLevLoan/40% BBStGovCorp</i> | | <i>1.7</i> | <i>1.2</i> | <i>2.2</i> | <i>--</i> |
| Cash | 6,889,529 | | | | |
| Cash LAIF | 6,889,528 | 1.7 | 2.5 | 1.4 | 1.8 |
| <i>FTSE T-Bill 3 Months TR</i> | | <i>0.4</i> | <i>1.9</i> | <i>0.8</i> | <i>1.3</i> |

Benchmark History As of January 31, 2023

EBMUDERS Total Plan Composite

| | | |
|-----------|------------|---|
| 12/1/2019 | Present | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 10% Bloomberg US Intermediate Gov/Cred / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 3/1/2019 | 11/30/2019 | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 7/1/2018 | 2/28/2019 | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 4/1/2014 | 6/30/2018 | 40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 3/1/2014 | 3/31/2014 | 40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 11/1/2011 | 2/28/2014 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT |
| 1/1/2008 | 10/31/2011 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 5% NCREIF NPI Mo 1 Qtr Lag |
| 1/1/2007 | 12/31/2007 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Aggregate TR / 5% NCREIF Property Index |
| 10/1/2005 | 12/31/2006 | 50% Russell 3000 / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag / 20% MSCI EAFE |
| 4/1/2005 | 9/30/2005 | 30% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 20% MSCI EAFE / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag |
| 9/1/1998 | 3/31/2005 | 33% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 17% MSCI EAFE / 30% Bloomberg US Aggregate TR |
| 3/31/1996 | 8/31/1998 | 30% S&P 500 / 15% Wilshire 5000 / 15% MSCI EAFE / 30% Bloomberg US Aggregate TR / 5% NCREIF Property Index / 5% FTSE T-Bill 3 Months TR |

| EBMUDERS Total Plan x Securities Lending Composite | | |
|--|------------|---|
| 12/1/2019 | Present | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 10% Bloomberg US Intermediate Gov/Cred / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 3/1/2019 | 11/30/2019 | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 7/1/2018 | 2/28/2019 | 25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 4/1/2014 | 6/30/2018 | 40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 3/1/2014 | 3/31/2014 | 40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index |
| 11/1/2011 | 2/28/2014 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT |
| 1/1/2008 | 10/31/2011 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 5% NCREIF NPI Mo 1 Qtr Lag |
| 1/1/2007 | 12/31/2007 | 50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Aggregate TR / 5% NCREIF Property Index |
| 10/1/2005 | 12/31/2006 | 50% Russell 3000 / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag / 20% MSCI EAFE |
| 4/1/2005 | 9/30/2005 | 30% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 20% MSCI EAFE / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag |
| 9/1/1998 | 3/31/2005 | 33% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 17% MSCI EAFE / 30% Bloomberg US Aggregate TR |
| 3/31/1996 | 8/31/1998 | 30% S&P 500 / 15% Wilshire 5000 / 15% MSCI EAFE / 30% Bloomberg US Aggregate TR / 5% NCREIF Property Index / 5% FTSE T-Bill 3 Months TR |
| Public Equity Composite | | |
| 1/1/2007 | Present | 71.43% Russell 3000 / 28.57% MSCI ACWI ex USA Gross |
| 10/1/2005 | 12/31/2006 | 28.57% MSCI EAFE / 71.43% Russell 3000 |
| 4/1/2005 | 9/30/2005 | 42.86% S&P 500 / 14.285% S&P 400 MidCap / 14.285% Russell 2000 / 28.57% MSCI EAFE |
| 9/1/1998 | 3/31/2005 | 47.14% S&P 500 / 14.285% S&P 400 MidCap / 14.285% Russell 2000 / 24.29% MSCI EAFE |

| | | |
|---|------------|---|
| 1/1/1994 | 8/31/1998 | 50% S&P 500 / 25% Wilshire 5000 / 25% MSCI EAFE |
| US Equity Composite | | |
| 10/1/2005 | Present | Russell 3000 |
| 4/1/2005 | 9/30/2005 | 60% S&P 500 / 20% S&P 400 MidCap / 20% Russell 2000 |
| 9/1/1998 | 3/31/2005 | 62.23% S&P 500 / 18.87% S&P 400 MidCap / 18.87% Russell 2000 |
| 4/1/1996 | 8/31/1998 | 33.3% Wilshire 5000 / 66.6% S&P 500 |
| US Equity Large Cap Composite | | |
| 10/1/2005 | Present | Russell 1000 Value |
| 6/1/1994 | 9/30/2005 | S&P 500 |
| NonUS Equity Composite | | |
| 1/1/2007 | Present | MSCI ACWI ex USA Gross |
| 1/1/1970 | 12/31/2006 | MSCI EAFE |
| NonUSE Developed Markets Composite | | |
| 1/1/2007 | Present | MSCI ACWI ex USA Gross |
| 1/1/1970 | 12/31/2006 | MSCI EAFE |
| Covered Calls Composite | | |
| | Present | CBOE S&P 500 BuyWrite USD |
| Real Estate Composite | | |
| 11/1/2011 | Present | 50% FTSE NAREIT Equity REIT / 50% NCREIF NPI Mo 1 Qtr Lag |
| 10/1/1998 | 10/31/2011 | NCREIF NPI Mo 1 Qtr Lag |
| 4/1/1978 | 9/30/1998 | NCREIF Property Index |
| Fixed Income Composite | | |
| 12/1/2019 | Present | 40% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 40% Bloomberg US Intermediate Gov/Cred / 10% 60% CredSuisLevLoan/40% BBStGovCorp |
| 3/1/2019 | 11/30/2019 | 60% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% 60% CredSuisLevLoan/40% BBStGovCorp |

| | | |
|---|------------|--|
| 7/1/2018 | 2/28/2019 | 60% Bloomberg US Aggregate TR / 10% Morningstar LSTA US Performing Loans Index / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% Bloomberg US High Yield 1-5Yr Cash Pay 2% |
| 4/1/2014 | 6/30/2018 | 50% Bloomberg US Aggregate TR / 12.5% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US Govt/Credit 1-3 Yr. TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% |
| 3/1/2014 | 3/31/2014 | 75% Bloomberg US Aggregate TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 12.5% Morningstar LSTA US Performing Loans Index |
| 1/1/2008 | 2/28/2014 | Bloomberg US Universal TR |
| 1/1/1976 | 12/31/2007 | Bloomberg US Aggregate TR |
| Fixed Income Core Fixed Income Composite | | |
| 12/1/2019 | Present | 50% Bloomberg US Aggregate TR / 50% Bloomberg US Intermediate Gov/Cred |
| Fixed Income Non-Core Fixed Income Composite | | |
| 12/1/2019 | Present | 50% 60% CredSuisLevLoan/40% BBStGovCorp / 50% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr |
| 3/1/2019 | 11/30/2019 | 25% 60% CredSuisLevLoan/40% BBStGovCorp / 25% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 50% Bloomberg US Govt/Credit 1-3 Yr. TR |
| 3/1/2014 | 2/28/2019 | 25% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 50% Bloomberg US Govt/Credit 1-3 Yr. TR |
| Cash Composite | | |
| | Present | FTSE T-Bill 3 Months TR |

Manager Watch Screens

Performance Monitoring Summary

| Portfolio | Violation Type (Window) ¹ | Date of Initial Violation | Correction Action(s) | Current Status | Current Status | | | |
|-----------------------|--------------------------------------|---------------------------|---------------------------|----------------|----------------------------------|-----------------------------|--|-------|
| | | | | | Est. Beg. Date of Current Status | Months Since Est. Beg. Date | Performance Since Est. Beg. Date ²³ | |
| Van Hulzen | Short-Term | 8/31/2021 | Placed on Watch (3/31/22) | Watch | 3/31/2022 | 9 | -6.0 | |
| CBOE S&P 500 BuyWrite | | | | | | | | -12.1 |

→ Van Hulzen was placed on a performance based watch at the March 2022 meeting after breaching the short term performance threshold.

¹ Defined as: Short-Term (12 months), Medium-Term (36 months), Long-Term (60 months).

² Annualized for periods greater than 12 months.

³ Performance figures not yet available.

Quantitative Compliance Monitoring per Watch Criteria

Active Management Criteria

- Active investment managers are expected to outperform their respective passive benchmarks related to both their asset class and investment style.
- Relative excess performance that falls below the red acceptable threshold stated in the Watch Criteria for six consecutive months may be a trigger for Watch status.

Passive Management Criteria

- Passive investment managers are expected to track the performance of their respective passive benchmarks related to both their asset class and their investment style.
- Tracking error is a measure of how closely a portfolio follows the index to which it is benchmarked.
- For short- and medium-term performance monitoring, a portfolio with tracking error that is above the red acceptable threshold stated in the Watch Criteria for six consecutive months may be a trigger for Watch status.
- For long-term performance monitoring, relative excess performance that falls below the red acceptable threshold stated in the Watch Criteria for six consecutive months may be a trigger for Watch status.

Quantitative Monitoring Results - Overall Status Summary

| | Prior Qtr Status | Current Qtr Status |
|--------------------------------|------------------|--------------------|
| Northern Trust – R3000 | Acceptable | Acceptable |
| Northern Trust – ACWixUS | N/A | Acceptable |
| Parametric – BXM | Acceptable | Acceptable |
| Parametric – Delta Shift | Acceptable | Acceptable |
| Van Hulzen | Caution | Caution |
| CS McKee | Acceptable | Acceptable |
| Garcia Hamilton | Acceptable | Acceptable |
| Mackay Shields – Short Term HY | Acceptable | Acceptable |
| Federated – Bank Loans | Acceptable | Acceptable |
| CenterSquare | Acceptable | Acceptable |

Investment Performance Criteria by Asset Class

| Asset Class | Short-term (rolling 12-month periods) | Medium-term (rolling 36-month periods) | Long-term (60+ months) |
|-------------------------------|--|--|---|
| Domestic Equity - Passive | Tracking error > 0.30% | Tracking error > 0.25% for 6 consecutive months | Fund annualized return < benchmark annualized return -0.40% for 6 consecutive months |
| Non-US Equity - Passive | Tracking error > 1.75% | Tracking error > 1.5% for 6 consecutive months | Fund annualized return < benchmark annualized return - 0.50% for 6 consecutive months |
| Covered Calls - Active | Fund return < benchmark return - 3.5% | Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months | VRR < 0.97 for 6 consecutive months |
| Covered Calls - Replication | Fund return < benchmark return - 3.5% | Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months | Fund annualized return < benchmark annualized return - 0.40% for 6 consecutive months |
| Fixed Income - Core – Active | Fund return < benchmark return - 1.5% | Fund annualized return < benchmark annualized return -1.0% for 6 consecutive months | VRR < 0.98 for 6 consecutive months |
| Fixed Income - Core – Passive | Tracking error > 0.25% | Tracking error > 0.20% for 6 consecutive months | Fund annualized return < benchmark annualized return - 0.30% for 6 consecutive months |
| Fixed Income - Non-Core | Fund return < benchmark return - 4.5% | Fund annualized return < benchmark annualized return - 2.0% for 6 consecutive months | VRR < 0.97 for 6 consecutive months |

All criteria are on an annualized basis.

VRR – Value Relative Ratio – is calculated as: manager cumulative return / benchmark cumulative return.

| Manager Performance | | | |
|-----------------------------|-----|-------|-------|
| | QTD | 1 Yr | 3 Yrs |
| Northern Trust Russell 3000 | 7.2 | -19.2 | 7.0 |
| <i>Russell 3000</i> | 7.2 | -19.2 | 7.1 |

Short-Term Criteria (rolling 12-month periods)

Tracking error > 0.30% for 6 consecutive months

Current Status: **Acceptable**

Medium-Term Criteria (rolling 36-month periods)

Tracking error > 0.25% for 6 consecutive months

Current Status: **Acceptable**

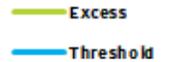
Long-Term Criteria (60+ months)

Fund annualized return < benchmark annualized return -0.40% for 6 consecutive months

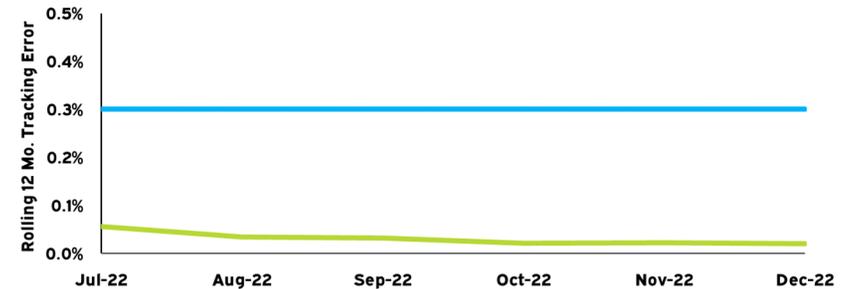
Current Status: Not Applicable

Overall Status:

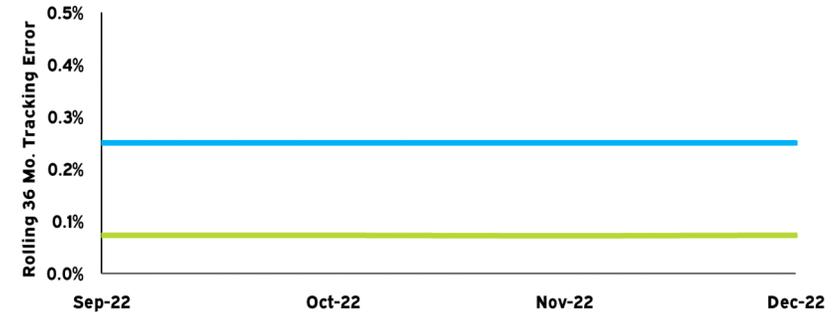
Acceptable



Short-Term Performance Evaluation



Medium-Term Performance Evaluation



| Manager Performance | | | |
|---------------------------|------|-------|-------|
| | QTD | 1 Yr | 3 Yrs |
| Northern Trust ACWI ex US | 15.3 | -15.5 | 0.2 |
| MSCI ACWI ex USA Gross | 14.4 | -15.6 | 0.5 |

Short-Term Criteria (rolling 12-month periods)

Tracking error > 1.75% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Tracking error > 1.5% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

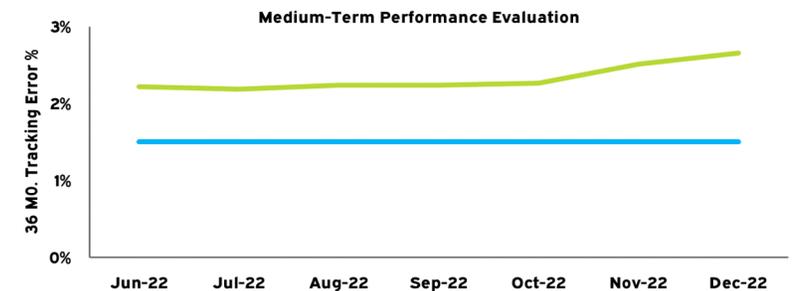
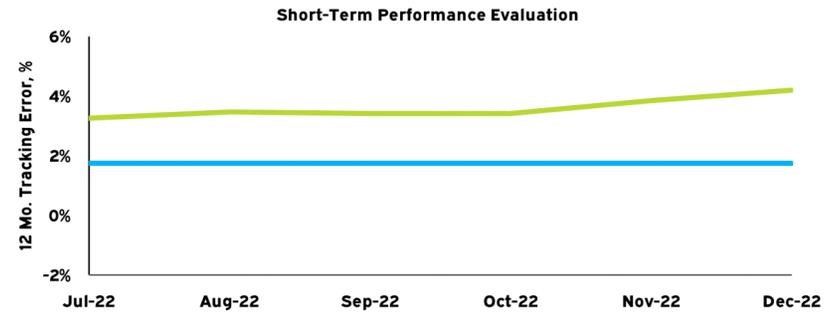
Fund annualized return < benchmark annualized return -0.50% for 6 consecutive months

Current Status: Not Applicable

Overall Status:

Acceptable

Excess
Threshold



| Manager Performance | | | | |
|---------------------------|-----|-------|-------|-------|
| | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| Parametric BXM | 6.7 | -9.8 | 4.6 | 5.0 |
| CBOE S&P 500 BuyWrite USD | 6.8 | -11.4 | 1.3 | 2.9 |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

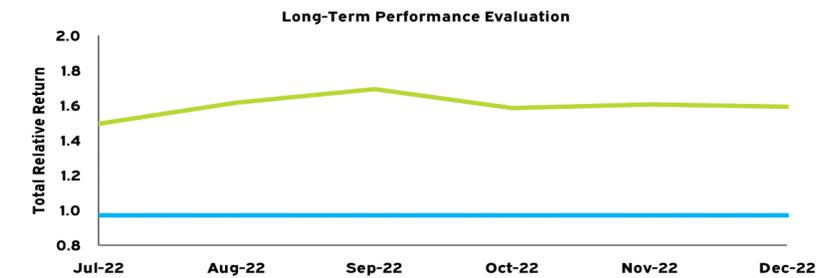
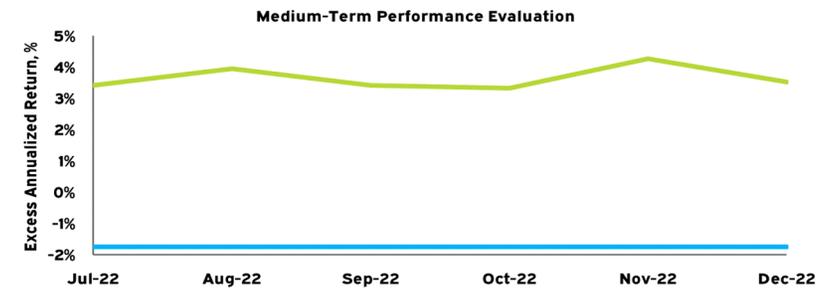
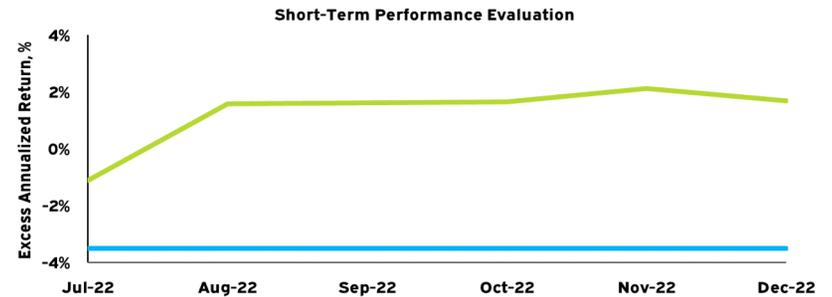
Current Status: Acceptable

Parametric is on watch for qualitative reasons.

Overall Status:

Acceptable

Excess
Threshold



| Manager Performance | | | | |
|--------------------------------------|-----|-------|-------|-------|
| | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| Parametric Delta Shift | 8.3 | -17.6 | 6.9 | 7.9 |
| <i>CBOE S&P 500 BuyWrite USD</i> | 6.8 | -11.4 | 1.3 | 2.9 |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

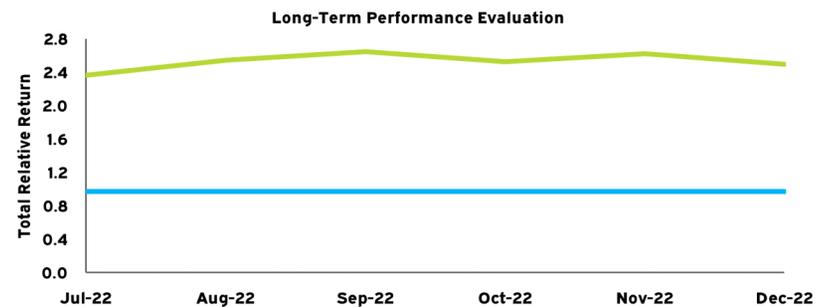
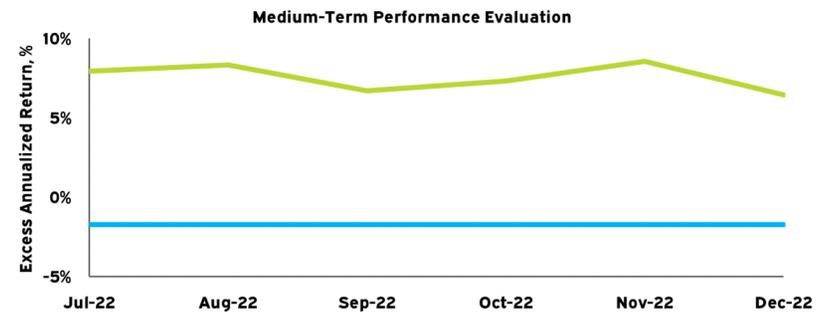
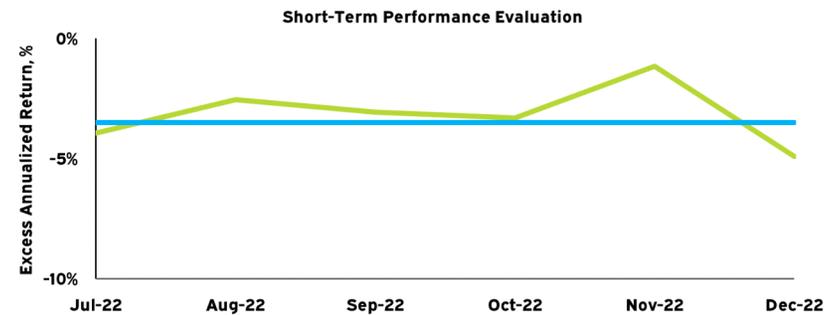
Current Status: Acceptable

Parametric is on watch for qualitative reasons.

Overall Status:

Acceptable

Excess
Threshold



| Manager Performance | | | | |
|--------------------------------------|-----|-------|-------|-------|
| | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| Van Hulzen | 7.9 | -7.7 | 1.7 | 3.3 |
| <i>CBOE S&P 500 BuyWrite USD</i> | 6.8 | -11.4 | 1.3 | 2.9 |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

Current Status: Caution

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

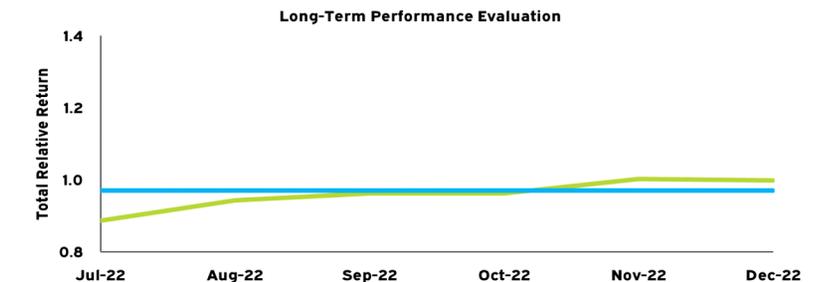
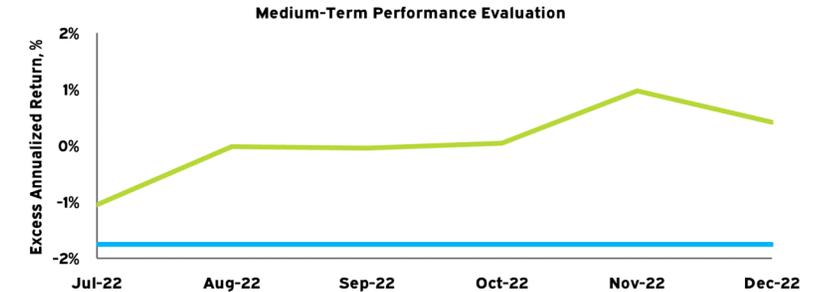
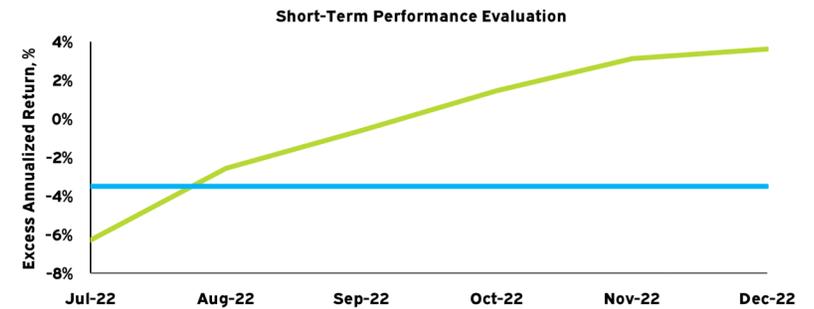
Current Status: Acceptable

Overall Status:

Caution

Excess

Threshold



| Manager Performance | | | | |
|----------------------------------|------------|--------------|-------------|------------|
| | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| CS McKee | 2.1 | -13.0 | -2.8 | 0.0 |
| <i>Bloomberg US Aggregate TR</i> | <i>1.9</i> | <i>-13.0</i> | <i>-2.7</i> | <i>0.0</i> |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -1.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.0% for 6 consecutive months

Current Status: Acceptable

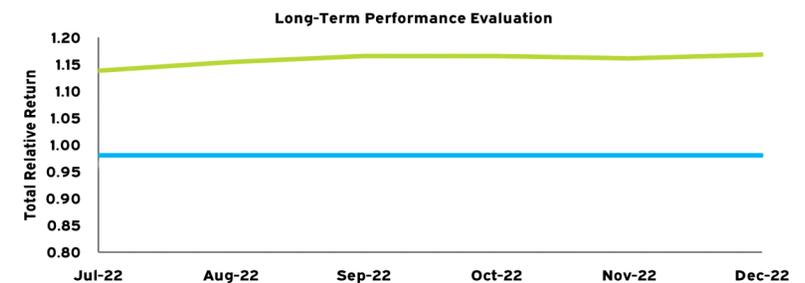
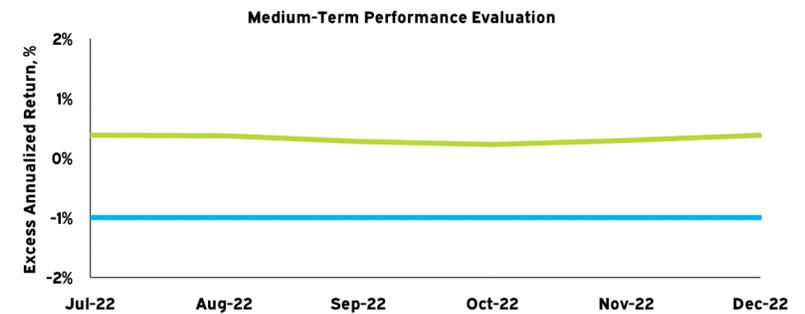
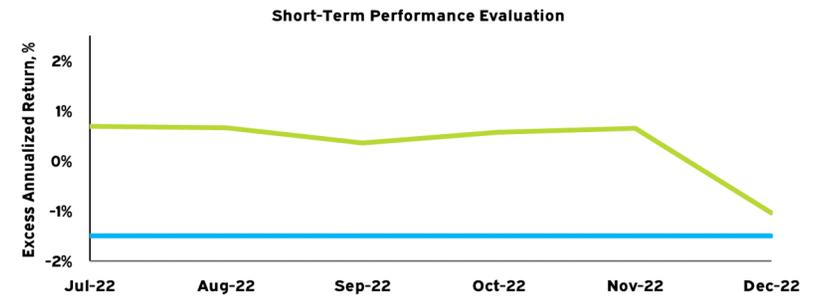
Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

Current Status: Acceptable

Overall Status:
Acceptable

— Excess
— Threshold



| Manager Performance | | | |
|---|-----|------|-------|
| | QTD | 1 Yr | 3 Yrs |
| Garcia Hamilton | 2.5 | -6.6 | -1.0 |
| <i>Bloomberg US Intermediate Gov/Cred</i> | 1.5 | -8.2 | -1.3 |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -1.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.0% for 6 consecutive months

Current Status: Acceptable

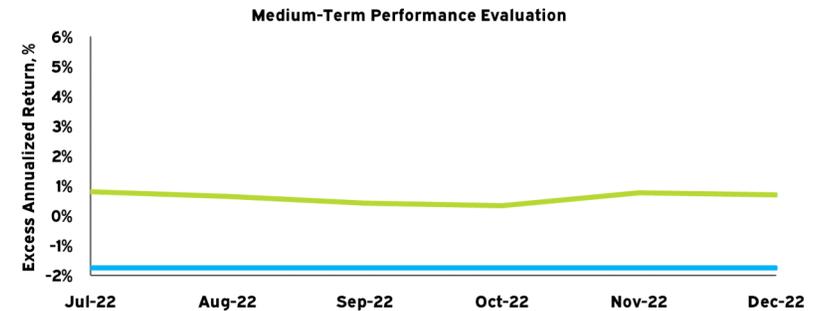
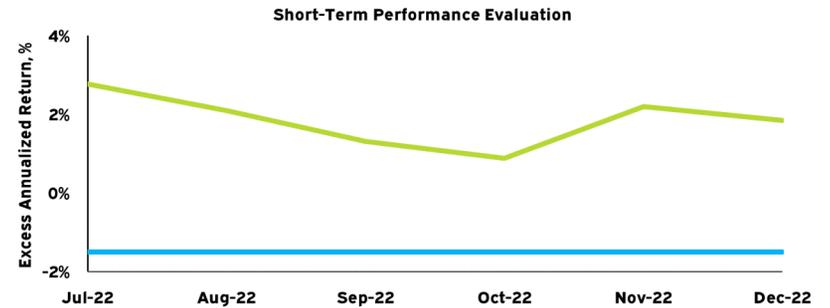
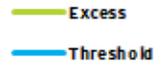
Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

Current Status: Not Applicable

Overall Status:

Acceptable



| Manager Performance | | | |
|---|-----|------|-------|
| | QTD | 1 Yr | 3 Yrs |
| MacKay Shields (HY) | 3.3 | -2.2 | 2.8 |
| ICE BofA ML US Corp Cash Pay BB-B 1-5Yr | 3.7 | -4.8 | 0.9 |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -4.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -2.0% for 6 consecutive months

Current Status: Acceptable

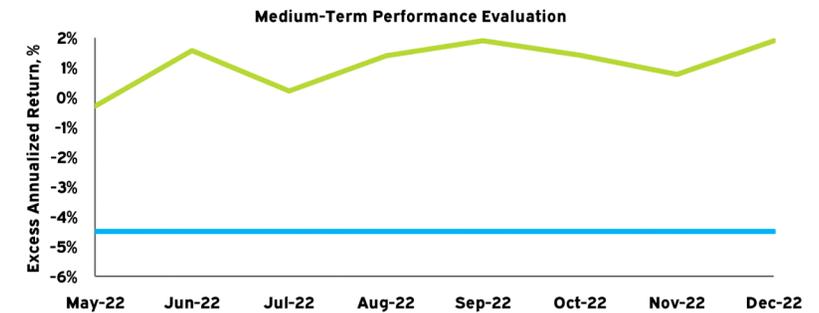
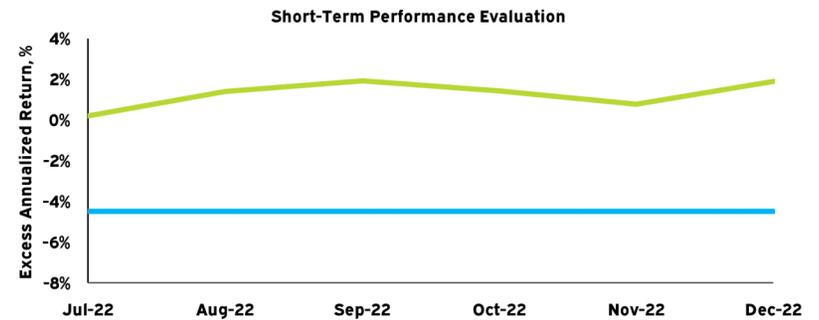
Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Not Applicable

Overall Status:
Acceptable

— Excess
— Threshold



| Manager Performance | | | |
|--|-----|------|-------|
| | QTD | 1 Yr | 3 Yrs |
| Federated Investment Counseling (Bank Loans) | 1.2 | -5.5 | -0.4 |
| 60% CredSuisLevLoan/40% BBStGovCorp | 1.8 | -0.3 | 1.8 |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -4.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -2.0% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

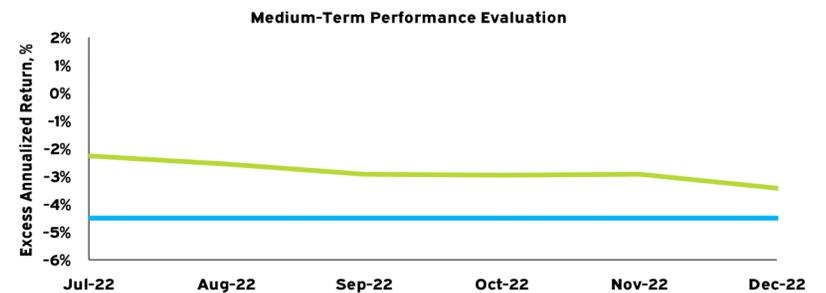
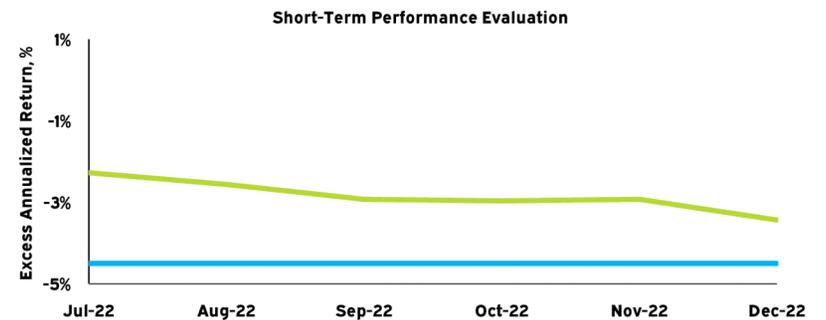
VRR < 0.97 for 6 consecutive months

Current Status: Not Applicable

Overall Status:

Acceptable

— Excess
— Threshold



| Manager Performance | | | | |
|--------------------------------|------------|--------------|-------------|------------|
| | QTD | 1 Yr | 3 Yrs | 5 Yrs |
| CenterSquare | 4.6 | -24.0 | 0.9 | 4.4 |
| <i>FTSE NAREIT Equity REIT</i> | <i>5.2</i> | <i>-24.4</i> | <i>-0.1</i> | <i>3.7</i> |

Short-Term Criteria (rolling 12-month periods)

Fund return < benchmark return -3.5% for 6 consecutive months

Current Status: Acceptable

Medium-Term Criteria (rolling 36-month periods)

Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

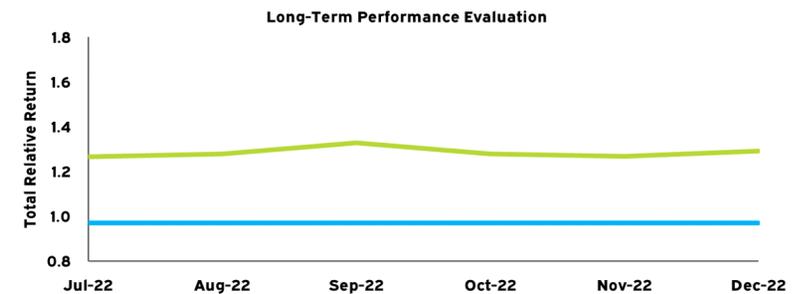
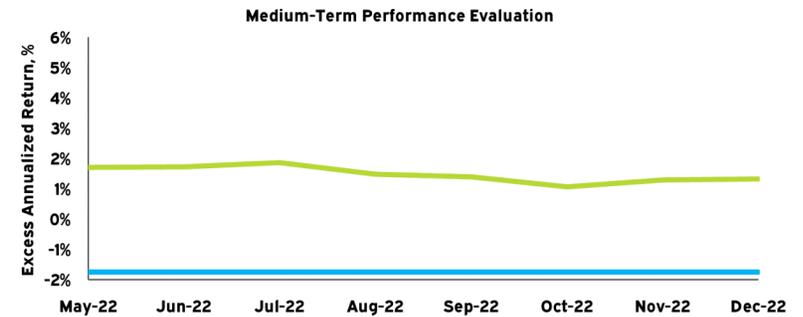
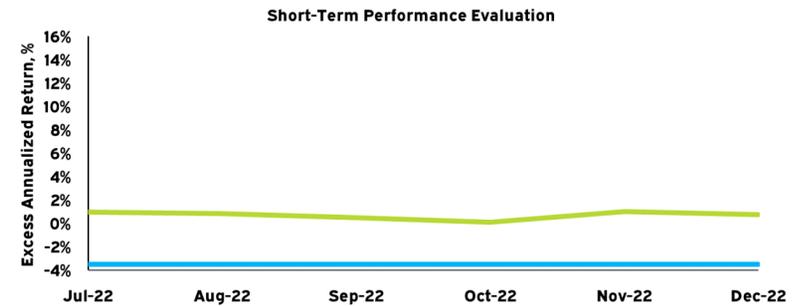
VRR < 0.97 for 6 consecutive months

Current Status: Acceptable

Overall Status:

Acceptable

— Excess
— Threshold



Manager Compliance Certification Responses

Manager Compliance Certification Responses

Qualitative Compliance Monitoring per EBMUDERS Investment Policy

Each of EBMUDERS managers is required to respond to a questionnaire on a quarterly basis to certify their compliance with EBMUDERS Investment Policy Statement and provide an update on specific qualitative indicators to be evaluated.

These indicators include:

- Compliance with the guidelines of 'Eligible Investments' for the manager's specific mandate
- Any litigation or governmental regulatory proceedings involving the firm/manager
- Changes to the manager's investment outlook, investment strategy, and/or portfolio structure
- Personnel changes to the investment team responsible for the EBMUDERS mandate
- Significant personnel changes at the management level of the firm
- Material client terminations
- Compliance with EBMUDERS current Investment Policy Statement

The manager's responses are rated based on the potential effects these factors could pose to the performance and management of the EBMUDERS portfolio.

Reasons for heightened concern triggering Watch status include, but are not limited to:

- Instability of key members of the portfolio management team and organization
- Changes in investment strategy and style
- Failure to comply with investment guidelines

A summary of manager responses as of the latest quarter-end is provided below.

Manager Compliance Certification Responses

| Manager | Asset Class | Question 1 Compliance with 'Eligible Investments' for mandate | Question 2 Good standing as Registered Investment Advisor | Question 3 Litigation? | Question 4 Changes in manager's investment outlook, strategy, structure | Question 5 Investment team personnel changes | Question 6 Management level personnel changes | Question 7 Material business changes | Question 8 Compliance with IPS |
|---------------------------|------------------------------|--|--|---------------------------|--|---|--|---|-----------------------------------|
| Northern Trust R3000 | Domestic Equity – All Cap | Yes | Yes | No | No | No | Yes* | No | Yes |
| Northern Trust ACWI ex US | International Equity | Yes | Yes | No | No | No | Yes* | No | Yes |
| Parametric | Covered Calls | Yes | Yes | Yes* | No | No | Yes* | Yes* | Yes |
| Van Hulzen | Covered Calls | Yes | Yes | No | No | No | No | No | Yes |
| CS McKee | Fixed Income – Core | Yes | Yes | No | No | No | No | No | Yes |
| Garcia Hamilton | Fixed Income – Core | Yes | Yes | No | No | No | No | No | Yes |
| Mackay Shields | Fixed Income – Short-term HY | Yes* | Yes | No | No | No | Yes* | No | Yes |
| Federated | Fixed Income – Bank Loans | Yes | Yes | No | No | No | No | No | Yes |
| RREEF | Real Estate | Yes | Yes | No | No | No | No | No | Yes |
| CenterSquare | Real Estate | Yes | Yes | Yes* | No | No | No | No | Yes |

■ no concern
 ■ low concern
 ■ high concern (Watch status)

* see detailed manager response below

Northern Trust – R3000 and ACWI ex US**Question 3: Is there any litigation or governmental regulatory proceedings involving your Firm, the Manager?**

→ As one of the world's largest asset managers, Northern Trust Investments, Inc. (NTI) is occasionally named as a defendant in asset management-related litigation. NTI is not currently party to any litigation that has had (or will have) a material effect on its ability to perform services for its clients. At this time, there are no significant pending cases. As one of the world's leading providers of asset servicing, Northern Trust and its subsidiaries occasionally receive requests for information from government and regulatory agencies. Northern Trust frequently does not know if such requests are related to a formal government or regulatory investigations or, assuming an investigation is underway, whether Northern Trust is a target of such investigation or simply thought to be in possession of information pertinent to such investigation. Northern Trust is not currently involved in any government or regulatory investigation or proceeding that would have a material impact on its ability to provide advisory services to its clients.

Northern Trust – R3000 and ACWI ex US (cont.)**Question 6: Have there been any significant personnel changes at the management level of the Firm during the quarter?**

→ As a result of the constantly changing landscape of asset management, we believe the occasional organizational changes are a natural progression and necessary in order to adapt to new market and regulatory environments.

→ The most recent changes to senior personnel are the following:

- 2022 December:
 - Steve Carroll was appointed Chief Financial Officer for Northern Trust Asset Management replacing Ryan Wickert.
 - Timothy McGregor, Director of Municipal Fixed Income, retired. Tim Blair, who was been with Northern Trust for 30 years, was appointed Head of Municipal Bond Portfolio Management & Research.
 - Concurrently, Adam Shane was appointed Co-Head of Municipal Bond Portfolio Management alongside Mike O’Leary who was appointed Co-Head of Municipal Bond Research.
 - Mark Sodergren took on the role of Head of Quantative Strategies, previously held by Mike Hunstad. Sri Kancharla replaced Mark Sodergren as Head of Large Cap Quantitative Portfolio Management.
- October:
 - Tory Hinton joined NTAM as Senior Vice President, Senior Strategic Product Manager for Liquidity. Tory will be responsible for developing and delivering on NTAM’s global product strategy for Liquidity.
 - Antulio Bomfim, Ph.D., joined Northern Trust Asset Management as the Head of Global Macro, a newly created position within the Global Fixed Income group. The addition of Antulio is part of the expansion of the taxable Global Fixed Income team and is designed to enhance and add to the team’s capabilities as they continue to serve the evolving needs of fixed income investors worldwide.

Parametric**Question 3: Is there any litigation or governmental regulatory proceedings involving your Firm, the Manager?**

→ Parametric is part of Morgan Stanley Investment Management, the asset management division of Morgan Stanley. The distinct investment brands of Eaton Vance Management, Parametric, Atlanta Capital and Calvert, have from time to time, been plaintiffs or defendants in various lawsuits and arbitrations that are incidental to their businesses and are or were handled in the ordinary course of business. From time to time, Parametric and its affiliates are subject to periodic audits, regulatory and governmental examinations, information-gathering requests, investigations, and proceedings both formal and informal which have the potential to result in findings, conclusions, recommendations, or various forms of sanction. Parametric believes that these actions have not and will not have a material adverse effect on its consolidated financial condition, liquidity, results of operations or the ability to manage client assets.

Question 6: Have there been any significant personnel changes at the management level of the Firm during the quarter?

- Effective January 1, 2023, Tom Lee and Ranjit Kapila each added the title of Co-President to their current roles of CIO and COO respectively. The firm created these two new positions to expand Parametric's executive capacity as the firm continues to grow and evolve. As Co-Presidents, Tom and Ranjit will be involved in leading additional functional areas and increasingly contribute to overall firm management. Brian Langstraat will remain Parametric's CEO, and Ranjit and Tom will continue to report to him.
- As part of this evolution, also as of January 1, 2023, Jon Rocafort, Managing Director, Head of Fixed Income Fixed Income, reports to Tom Lee, and Melissa Fell, Managing Director, Human Resources, reports to Ranjit.
- As Tom and Ranjit organize their teams to accommodate new responsibilities, both have hired key senior leaders.
- Brian Herscovici joined Tom's team as COO, Investments, on November 28, 2022. Greg Thompson will start on Ranjit's team as the Head of Operations on January 30, 2023. Greg will lead Parametric's operations teams including client relations and investment operations.

Parametric (cont.)**Question 7: Have there been any material changes in your firm's business during the quarter?**

→ As announced in March, over the course of 2022, Parametric will recalibrate its approach to the Australian market to bring it in line with the sales/service approach similar to what it has in the EMEA region. This will include increasing leverage of its MSIM (Morgan Stanley Investment Management) support teams and a reconfiguration of the Parametric direct resourcing model. The firm remains committed to its clients and prospects in the Australian market.

MacKay Shields**Question 6: Have there been any significant personnel changes at the management level of the Firm during the quarter?**

→ ADV brochure update:

→ MacKay Shields LLC is updating this Brochure to reflect certain material changes since the last annual update of the Brochure that was filed in March 31, 2022:

- John Loffredo, Executive Vice President and Co-Head of MacKay Municipal Managers, has been named Vice Chairman of MacKay Shields with oversight responsibilities for MacKay Shields' investment teams.
- Janelle Woodward, President of MacKay Shields, will be leaving the firm at the end of 2022.

→ Additionally, while we do not consider this to be a material change, MacKay Shields LLC no longer offers its Passive Equity Investment Strategy. MacKay Shields assigned all advisory agreements for client accounts managed pursuant to this strategy to IndexIQ Advisors LLC, which is an affiliate of MacKay Shields effective as of June 10, 2022. Accordingly, references to the Passive Equity Investment Strategy and the Passive Equity Investment Team have been removed from this Brochure.

CenterSquare**Question 3: Is there any litigation or governmental regulatory proceedings involving your Firm, the Manager?**

→ CenterSquare is aware of a slip and fall lawsuit regarding a property which is owned by one of our separate account clients. A writ of summons was sent to the insurance company that is handling the response on behalf of the property owner and an attorney has been assigned to the case which is currently in the discovery period. On January 4, 2023, a Line of Dismissal as to CenterSquare was issued by the Circuit Court for Montgomery County, Maryland as it had neither management responsibility nor ownership interest in the property.

Required California AB 2833 Disclosure – RREEF AMERICA II

Effective January 1, 2017 RREEF America REIT II, Inc. (“alternative investment vehicle”) is required to provide to the East Bay Municipal Utility District (“public investment fund” or “District”) specific information at least annually pursuant to Section 7514.7 of the California Government Code (“Section 7514.7”).

1. The fees and expenses that the public investment fund pays directly to the alternative investment vehicle, the fund manager, or related parties.

EBMUD asset management fees – January 2020 – December 2021 = \$509,740.99

2. The public investment fund’s pro rata share of fees and expenses not included in paragraph (1) that are paid from the alternative investment vehicle to the fund manager or related parties.

\$0.00

3. The public investment fund’s pro rata share of carried interest distributed to the fund manager or related parties.

N/A

4. The public investment fund’s pro rata share of aggregate fees and expenses paid by all of the portfolio companies held within the alternative investment vehicle to the fund manager or related parties.

EBMUDERS asset management fees – January 2020 – December 2021 = \$509,740.99

5. Any additional information described in subdivision (b) of Section 6254.26.

N/A

6. The gross and net rate of return of each alternative investment vehicle since inception.

Gross = 7.3% Net = 6.5% (as of December 31, 2021)¹

7. Any other information required to be collected pursuant to Section 7514.7.

N/A

¹Please note that since inception returns provided represent the client’s time frame in the Fund, and not the returns of the Fund as a whole.

Appendix

Glossary of Terms

Alpha: The premium an investment earns above a set standard. This is usually measured in terms of a common index (i.e., how the stock performs independent of the market). An Alpha is usually generated by regressing a security's excess return on the S&P 500 excess return.

Annualized Performance: The annual rate of return that when compounded t times generates the same t -period holding return as actually occurred from period 1 to period t .

Batting Average: Percentage of periods a portfolio outperforms a given index.

Beta: The measure of an asset's risk in relation to the Market (for example, the S&P 500) or to an alternative benchmark or factors. Roughly speaking, a security with a Beta of 1.5 will have moved, on average, 1.5 times the market return.

Bottom-up: A management style that de-emphasizes the significance of economic and market cycles, focusing instead on the analysis of individual stocks.

Dividend Discount Model: A method to value the common stock of a company that is based on the present value of the expected future dividends.

Growth Stocks: Common stock of a company that has an opportunity to invest money and earn more than the opportunity cost of capital.

Information Ratio: The ratio of annualized expected residual return to residual risk. A central measurement for active management, value added is proportional to the square of the information ratio.

R-Squared: Square of the correlation coefficient. The proportion of the variability in one series that can be explained by the variability of one or more other series a regression model. A measure of the quality of fit. 100% R-square means perfect predictability.

Standard Deviation: The square root of the variance. A measure of dispersion of a set of data from its mean.

Sharpe Ratio: A measure of a portfolio's excess return relative to the total variability of the portfolio.

Style Analysis: A returns-based analysis using a multi-factor attribution model. The model calculates a product's average exposure to particular investment styles over time (i.e., the product's normal style benchmark).

Top-down: Investment style that begins with an assessment of the overall economic environment and makes a general asset allocation decision regarding various sectors of the financial markets and various industries.

Tracking Error: The standard deviation of the difference between the performance of a portfolio and an appropriate benchmark.

Turnover: For mutual funds, a measure of trading activity during the previous year, expressed as a percentage of the average total assets of the fund. A turnover rate of 25% means that the value of trades represented one-fourth of the assets of the fund.

Value Stocks: Stocks with low price/book ratios or price/earnings ratios. Historically, value stocks have enjoyed higher average returns than growth stocks (stocks with high price/book or P/E ratios) in a variety of countries.

Definition of Benchmarks

BC Aggregate: an index comprised of approximately 6,000 publicly traded investment-grade bonds including U.S. Government, mortgage-backed, corporate, and yankee bonds with an approximate average maturity of 10 years.

BC High Yield: covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeroes, step-up coupon structures, 144-As and pay-in-kind bonds (PIKs, as of October 1, 2009) are also included. Must be rated high-yield (Ba1/BB+ or lower) by at least two of the following ratings agencies: Moody's, S&P, Fitch. If only two of the three agencies rate the security, the lower rating is used to determine index eligibility. All issues must have at least one year to final maturity regardless of call features and have at least \$150 million par amount outstanding.

BC Multiverse Non-US Hedged: provides a broad-based measure of the international fixed-income bond market. The index represents the union of the BC Global Aggregate Index and the BC Global High Yield Index. In this sense, the term "Multiverse" refers to the concept of multiple universes in a single macro index.

BC US Credit: includes publicly issued U.S. corporate and foreign debentures and secured notes that which are rated investment grade or higher by Moody's Investor Services, Standard and Poor's Corporation, or Fitch Investor's Service, with all issues having at least one year to maturity and an outstanding par value of at least \$250 million. Issues must be publicly issued, dollar-denominated and non-convertible.

BC US Government: includes treasuries (i.e., public obligations of the U.S. Treasury that have remaining maturities of more than one year) and agencies (i.e., publicly issued debt of U.S. Government agencies, quasi-federal corporations, and corporate or foreign debt guaranteed by the U.S. Government).

BC Universal: includes market coverage by the Aggregate Bond Index fixed rate debt issues, which are rated investment grade or higher by Moody's Investor Services, Standard and Poor's Corporation, or Fitch Investor's Service, with all issues having at least one year to maturity and an outstanding par value of at least \$100 million) and includes exposures to high yield CMBS securities. All returns are market value weighted inclusive of accrued interest.

Citigroup 3-Month Treasury Bills (T-bills): tracks the performance of U.S. Treasury bills with 3-month maturity.

MSCI ACWI x US ND: comprises both developed and emerging markets less the United States. As of August 2008, the index consisted of 23 countries classified as developed markets and 25 classified as emerging markets. This series approximates the minimum possible dividend reinvestment. The dividend is reinvested after deduction of withholding tax, applying the rate to non-resident individuals who do not benefit from double taxation treaties. MSCI Barra uses withholding tax rates applicable to Luxembourg holding companies, as Luxembourg applies the highest rates.

MSCI EAFE Free (Europe, Australasia, Far East) ND: is a free float-adjusted market capitalization index that is designed to measure developed market equity performance, excluding the US & Canada. This series approximates the minimum possible dividend reinvestment. The dividend is reinvested after deduction of withholding tax, applying the rate to non-resident individuals who do not benefit from double taxation treaties. MSCI Barra uses withholding tax rates applicable to Luxembourg holding companies, as Luxembourg applies the highest rates.

MSCI EM (Emerging Markets) GD: is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. This series approximates the maximum possible dividend reinvestment. The amount reinvested is the entire dividend distributed to individuals resident in the country of the company, but does not include tax credits.

MSCI Europe is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in Europe. As of June 2007, this index consisted of the following 16 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

MSCI Pacific is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in the Pacific region. As of June 2007, this index consisted of the following 5 Developed Market countries: Australia, Hong Kong, Japan, New Zealand, and Singapore.

NAREIT Index: consists of all tax-qualified REITs listed on the New York Stock Exchange, American Stock Exchange, and the NASDAQ National Market System. The data is market weighted.

NCREIF Property Index: the NPI contains investment-grade, non-agricultural, income-producing properties which may be financed in excess of 5% gross market value; were acquired on behalf of tax exempt institutions; and are held in a fiduciary environment. Returns are gross of fees; including income, realized gains/losses, and appreciation/depreciation; and are market value weighted. Index is lagged one quarter.

Russell 1000: measures the performance of the 1,000 largest securities in the Russell 3000 Index. Russell 1000 is highly correlated with the S&P 500 Index and capitalization-weighted.

Russell 1000 Growth: measures the performance of those Russell 1000 securities with a greater-than-average growth orientation. Securities in this index tend to exhibit higher price-to-book and price-earnings ratios, lower dividend yields and higher forecasted growth values than the Value universe.

Russell 1000 Value: measures the performance of those Russell 1000 securities with a less-than-average growth orientation. Securities in this index tend to exhibit lower price-to-book and price-earnings ratios, higher dividend yields and lower forecasted growth values than the Growth universe.

Russell 2000: measures the performance of the 2,000 smallest companies in the Russell 3000 Index, which represents approximately 8% of the total market capitalization of the Russell 3000 Index.

Russell 2000 Growth: measures the performance of those Russell 2000 securities with a greater-than-average growth orientation. Securities in this index tend to exhibit higher price-to-book and price-to-earnings ratios.

Russell 2000 Value: measures the performance of those Russell 2000 securities with a less-than-average growth orientation. Securities in this index tend to exhibit lower price-to-book and price-to-earnings ratios.

Russell 3000: represents the largest 3,000 US companies based on total market capitalization, representing approximately 98% of the investable US equity market.

Value Relative Ratio (VRR): Performance metric used to evaluate long-term manager performance relative to a benchmark and to highlight compounded over/under performance data over a certain time frame. VRR is calculated by the growth of a dollar invested with the manager divided by the growth of a dollar invested in the benchmark for the same time period.

Risk Metric Description – Rationale for Selection and Calculation Methodology**US Equity Markets**

Metric: P/E ratio = Price / "Normalized" earnings for the S&P 500 Index

To represent the price of US equity markets, we have chosen the S&P 500 index. This index has the longest published history of price, is well known, and also has reliable, long-term, published quarterly earnings. The price= P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the S&P 500 index). Equity markets are very volatile. Prices fluctuate significantly during normal times and extremely during periods of market stress or euphoria. Therefore, developing a measure of earnings power (E) which is stable is vitally important, if the measure is to provide insight. While equity prices can and do double, or get cut in half, real earnings power does not change nearly as much. Therefore, we have selected a well known measure of real, stable earnings power developed by Yale Professor Robert Shiller known as the Shiller E-10. The calculation of E-10 is simply the average real annual earnings over the past 10 years. Over 10 years, the earnings shenanigans and boom and bust levels of earnings tend to even out (and often times get restated). Therefore, this earnings statistic gives a reasonably stable, slow-to-change estimate of average real earnings power for the index. Professor Shiller's data and calculation of the E-10 are available on his website at <http://www.econ.yale.edu/~shiller/data.htm>. We have used his data as the base for our calculations. Details of the theoretical justification behind the measure can be found in his book *Irrational Exuberance* [Princeton University Press 2000, Broadway Books 2001, 2nd ed., 2005].

Developed Equity Markets Excluding the US

Metric: P/E ratio = Price / "Normalized" earnings for the MSCI EAFE Index

To represent the price of non-US developed equity markets, we have chosen the MSCI EAFE index. This index has the longest published history of price for non-US developed equities. The price= P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the MSCI EAFE index). The price level of this index is available starting in December 1969. Again, for the reasons described above, we elected to use the Shiller E-10 as our measure of earnings (E). Since 12/1972, a monthly price earnings ratio is available from MSCI. Using this quoted ratio, we have backed out the implied trailing-twelve month earnings of the EAFE index for each month from 12/1972 to the present. These annualized earnings are then inflation adjusted using CPI-U to represent real earnings in US dollar terms for each time period. The Shiller E-10 for the EAFE index (10 year average real earnings) is calculated in the same manner as detailed above.

However, we do not believe that the pricing and earnings history of the EAFE markets are long enough to be a reliable representation of pricing history for developed market equities outside of the US. Therefore, in constructing the Long-Term Average Historical P/E for developed ex-US equities for comparison purposes, we have elected to use the US equity market as a developed market proxy, from 1881 to 1982. This lowers the Long-Term Average Historical P/E considerably. We believe this methodology provides a more realistic historical comparison for a market with a relatively short history.

Emerging Market Equity Markets

Metric: Ratio of Emerging Market P/E Ratio to Developed Market P/E Ratio

To represent the Emerging Markets P/E Ratio, we have chosen the MSCI Emerging Market Free Index, which has P/E data back to January 1995 on Bloomberg. To represent the Developed Markets PE Ratio, we have chosen the MSCI World Index, which also has data back to January 1995 on Bloomberg. Although there are issues with published, single time period P/E ratios, in which the denominator effect can cause large movements, we feel that the information contained in such movements will alert investors to market activity that they will want to interpret.

US Private Equity Markets

Metrics: S&P LCD Average EBITDA Multiples Paid in LBOs and US Quarterly Deal Volume

The Average Purchase Price to EBITDA multiples paid in LBOs is published quarterly by S&P in their LCD study. This is the total price paid (both equity and debt) over the trailing-twelve month EBITDA (earnings before interest, taxes, depreciation and amortization) as calculated by S&P LCD. This is the relevant, high-level pricing metric that private equity managers use in assessing deals. Data is published monthly.

US quarterly deal volume for private equity is the total deal volume in \$ billions (both equity and debt) reported in the quarter by Thomson Reuters Buyouts. This metric gives a measure of the level of activity in the market. Data is published quarterly.

US Private Real Estate Markets

Metrics: US Cap Rates, Cap Rate Spreads, and Transactions as a % of Market Value

Real estate cap rates are a measure of the price paid in the market to acquire properties versus their annualized income generation before financing costs (NOI=net operating income). The data, published by NCREIF, describes completed and leased properties (core) on an unleveraged basis. We chose to use current value cap rates. These are capitalization rates from properties that were revalued during the quarter. This data relies on estimates of value and therefore tends to be lagging (estimated prices are slower to rise and slower to fall than transaction prices). The data is published quarterly.

Spreads between the cap rate (described above) and the 10-year nominal Treasury yield, indicate a measure of the cost of properties versus a current measure of the cost of financing.

Transactions as a % of Market Value Trailing-Four Quarters is a measure of property turnover activity in the NCREIF Universe. This quarterly metric is a measure of activity in the market.

Credit Markets Fixed Income

Metric: Spreads

The absolute level of spreads over treasuries and spread trends (widening / narrowing) are good indicators of credit risk in the fixed income markets. Spreads incorporate estimates of future default, but can also be driven by technical dislocations in the fixed income markets. Abnormally narrow spreads (relative to historical levels) indicate higher levels of valuation risk, wide spreads indicate lower levels of valuation risk and / or elevated default fears. Investment grade bond spreads are represented by the Barclays Capital US Corporate Investment Grade Index Intermediate Component. The high yield corporate bond spreads are represented by the Barclays Capital US Corporate High Yield Index.

Measure of Equity Market Fear / Uncertainty

Metric: VIX – Measure of implied option volatility for US equity markets

The VIX is a key measure of near-term volatility conveyed by implied volatility of S&P 500 index option prices. VIX increases with uncertainty and fear. Stocks and the VIX are negatively correlated. Volatility tends to spike when equity markets fall.

Measure of Monetary Policy

Metric: Yield Curve Slope

We calculate the yield curve slope as the 10 year treasury yield minus the 1 year treasury yield. When the yield curve slope is zero or negative, this is a signal to pay attention. A negative yield curve slope signals lower rates in the future, caused by a contraction in economic activity. Recessions are typically preceded by an inverted (negatively sloped) yield curve. A very steep yield curve (2 or greater) indicates a large difference between shorter-term interest rates (the 1 year rate) and longer-term rates (the 10 year rate). This can signal expansion in economic activity in the future, or merely higher future interest rates.

Measures of US Inflation Expectations

Metrics: Breakeven Inflation and Inflation Adjusted Commodity Prices

Inflation is a very important indicator impacting all assets and financial instruments. Breakeven inflation is calculated as the 10 year nominal treasury yield minus the 10 year real yield on US TIPS (treasury inflation protected securities). Abnormally low long-term inflation expectations are indicative of deflationary fears. A rapid rise in breakeven inflation indicates an acceleration in inflationary expectations as market participants sell nominal treasuries and buy TIPS. If breakeven inflation continues to rise quarter over quarter, this is a signal of inflationary worries rising, which may cause Fed action and / or dollar decline.

Commodity price movement (above the rate of inflation) is an indication of anticipated inflation caused by real global economic activity putting pressure on resource prices. We calculate this metric by adjusted in the Dow Jones UBS Commodity Index (formerly Dow Jones AIG Commodity Index) by US CPI-U. While rising commodity prices will not necessarily translate to higher US inflation, higher US inflation will likely show up in higher commodity prices, particularly if world economic activity is robust.

These two measures of anticipated inflation can, and often are, conflicting.

Measures of US Treasury Bond Interest Rate Risk

Metrics: 10-Year Treasury Forward-Looking Real Yield and 10-Year Treasury Duration

The expected annualized real yield of the 10 year US Treasury Bond is a measure of valuation risk for US Treasuries. A low real yield means investors will accept a low rate of expected return for the certainty of receiving their nominal cash flows. Meketa estimates the expected annualized real yield by subtracting an estimate of expected 10 year inflation (produced by the Survey of Professional Forecasters as collected by the Federal Reserve Bank of Philadelphia), from the 10 year Treasury constant maturity interest rate.

Duration for the 10-Year Treasury Bond is calculated based on the current yield and a price of 100. This is a measure of expected percentage movements in the price of the bond based on small movements in percentage yield. We make no attempt to account for convexity.

Definition of "Extreme" Metric Readings

A metric reading is defined as "extreme" if the metric reading is in the top or bottom decile of its historical readings. These "extreme" reading should cause the reader to pay attention. These metrics have reverted toward their mean values in the past.

RISK METRICS DESCRIPTION – Meketa Market Sentiment Indicator**What is the Meketa Market Sentiment Indicator (MMSI)?**

The MMSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The MMSI takes into account the momentum¹ (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

¹ Momentum is defined as the persistence of relative performance. There is a significant amount of academic evidence indicating that positive momentum (e.g., strong performing stocks over the recent past continue to post strong performance into the near future) exists over near-to-intermediate holding periods. See, for example, "Understanding Momentum," *Financial Analysts Journal*, Scowcroft, Sefton, March, 2005.

How do I read the Meketa Market Sentiment Indicator (MMSI) graph?

Simply put, the MMSI is a color coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the MMSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the MMSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.

How is the Meketa Market Sentiment Indicator (MMSI) Constructed?

The MMSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:

1. Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
2. Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration U.S. Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight). The scale of this measure is adjusted to match that of the stock return momentum measure.

The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure. The color reading on the graph is determined as follows:

1. If both stock return momentum and bond spread momentum are positive = GREEN (positive)
2. If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
3. If both stock return momentum and bond spread momentum are negative = RED (negative)

What does the Meketa Market Sentiment Indicator (MMSI) mean? Why might it be useful?

There is strong evidence that time series momentum is significant and persistent.¹ In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12 month period. The MMSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

¹ "Time Series Momentum" Moskowitz, Ooi, Pedersen, August 2010 <http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf>

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