



East Bay Municipal Utility District Employees' Retirement System

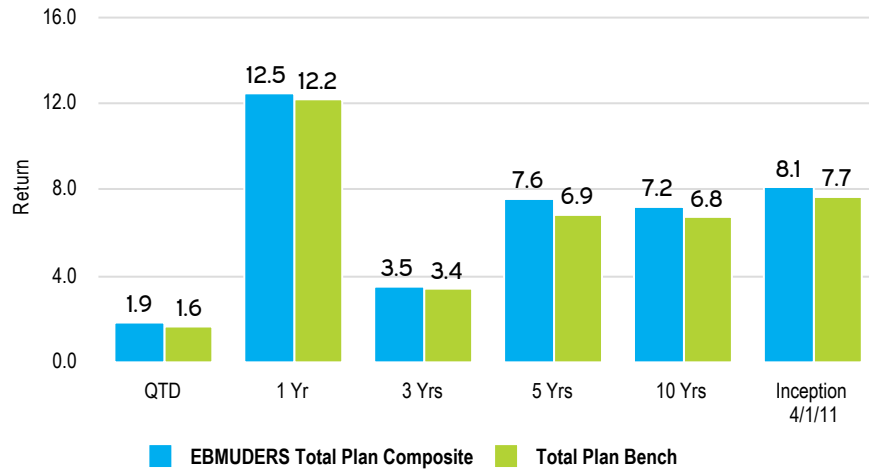
September 19, 2024

Q2 2024 Performance Report

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Introduction

Return Summary



Summary of Cash Flows

QTD

1 Yr

EBMUDERS Total Plan Composite

Beginning Market Value	\$2,467,112,853	\$2,248,004,762
Net Cash Flow	-\$8,450,594	-\$24,101,926
Net Investment Change	\$46,366,949	\$281,126,372
Ending Market Value	\$2,505,029,208	\$2,505,029,208

	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)
EBMUDERS Total Plan Composite - Net	1.9	12.5	3.5	7.6	7.2	--
EBMUDERS Total Plan Composite - Gross	1.9	12.6	3.6	7.7	7.4	7.6
<i>Total Plan Bench</i>	<i>1.6</i>	<i>12.2</i>	<i>3.4</i>	<i>6.9</i>	<i>6.8</i>	<i>7.2</i>
InvMetrics Public DB > \$1B Median	1.0	10.0	3.2	7.4	6.6	7.0

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

EBMUDERS | As of June 30, 2024

	Market Value \$	% of Portfolio	3 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
EBMUDERS Total Plan Composite	2,505,029,208	100.0	1.9	6.6	12.5	3.5	7.6	7.2	8.1	Apr-11
<i>Total Plan Bench</i>			<i>1.6</i>	<i>6.7</i>	<i>12.2</i>	<i>3.4</i>	<i>6.9</i>	<i>6.8</i>	<i>7.7</i>	
US Equity Composite	709,103,394	28.3	3.2	13.5	23.1	8.1	14.1	12.3	12.9	Apr-11
<i>Russell 3000 Hybrid</i>			<i>3.2</i>	<i>13.6</i>	<i>23.1</i>	<i>8.1</i>	<i>14.1</i>	<i>12.1</i>	<i>12.9</i>	
Non-US Equity Composite	609,493,614	24.3	1.1	5.8	11.7	0.8	5.9	3.7	6.3	Jul-95
<i>MSCI ACWI xUS (blend)</i>			<i>1.2</i>	<i>6.0</i>	<i>12.2</i>	<i>1.0</i>	<i>6.1</i>	<i>4.3</i>	<i>5.5</i>	
Covered Calls Composite	517,281,110	20.6	3.0	8.6	13.9	6.3	9.2	8.3	9.2	Feb-14
<i>Cboe S&P 500 Buy Write Index</i>			<i>1.5</i>	<i>7.6</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>	<i>5.8</i>	<i>6.3</i>	
Real Estate Composite	118,857,470	4.7	0.2	-3.0	-1.5	1.8	4.4	6.8	5.4	Jan-07
<i>NCREIF NPI Lag</i>			<i>-1.0</i>	<i>-4.0</i>	<i>-7.2</i>	<i>3.6</i>	<i>3.8</i>	<i>6.4</i>	<i>6.2</i>	
Fixed Income Composite	546,776,301	21.8	0.4	0.1	3.8	-0.9	1.0	1.8	2.5	Apr-11
<i>Fixed Income Composite Bench</i>			<i>0.5</i>	<i>0.2</i>	<i>4.0</i>	<i>-1.1</i>	<i>0.9</i>	<i>1.9</i>	<i>2.5</i>	
Cash Composite	3,517,318	0.1	1.1	2.2	4.2	2.6	2.3	1.6	1.3	Aug-10
<i>FTSE 3 Month T-Bill</i>			<i>1.4</i>	<i>2.8</i>	<i>5.6</i>	<i>3.2</i>	<i>2.2</i>	<i>1.5</i>	<i>1.1</i>	

Economic and Market Update

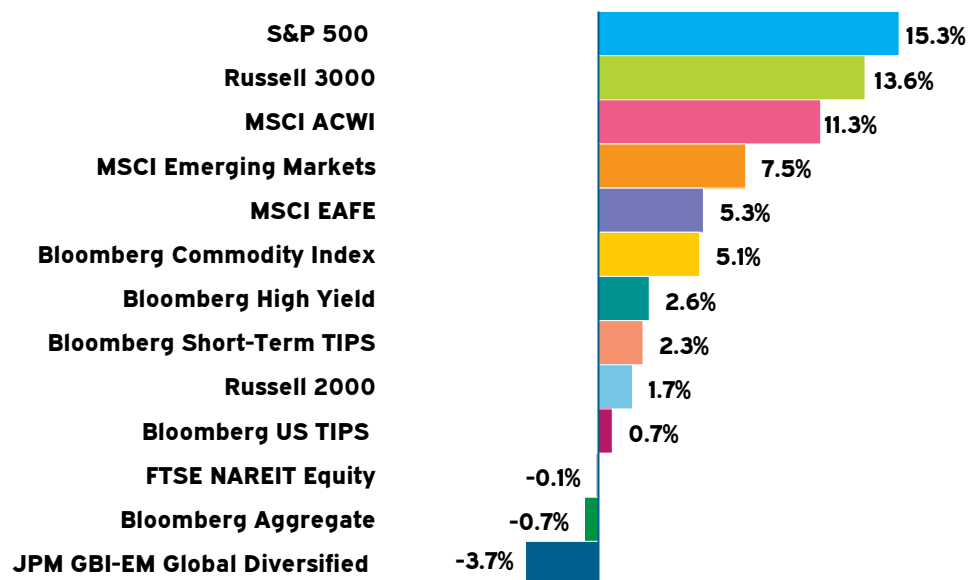
As of June 30, 2024

Commentary

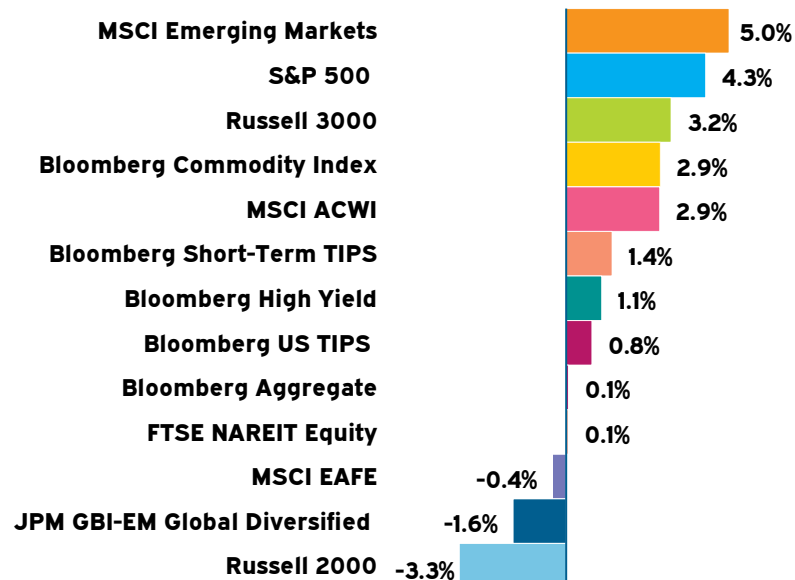
- Softening economic data, increased hopes of interest rate cuts, and ongoing AI optimism drove most asset classes higher in the second quarter.
- While the Fed remains data dependent, improvements in inflation and a cooling labor market may clear the way for several rate cuts this year.
 - Inflation pressures have eased in most countries from their pandemic peaks, but some uncertainty remains and levels are still above most central bank targets. In the second quarter, headline and core inflation measures in the US both fell, with most readings coming in below expectations.
 - The US equity markets (Russell 3000 index) added to its gains in the second quarter, rising 3.2%. Technology continued to drive results in the quarter due to AI demand and investment.
 - Non-US developed equity markets fell in the second quarter (-0.4%) on continued strength in the US dollar and political uncertainty in Europe.
 - Emerging market equities rallied (5.0%), for the quarter. Chinese stocks were up 7.1% as coordinated buying of Chinese exchange traded funds (ETFs) by state-backed financial services companies helped boost stock prices.
 - US interest rates rose over the quarter but finished off their highs. Income offset capital losses though, leading to the broad US bond market rising 0.1% in the second quarter.
- Looking to the rest of this year, the paths of inflation and monetary policy, China's economic disorder and slowing economic growth, and the many looming elections will be key factors.

Index Returns¹

YTD



Q2



→ Declining inflation, resilient growth, and strong corporate earnings supported most asset classes in the second quarter.

→ Mid-way through 2024, US stocks have significantly outperformed other asset classes on a year-to-date basis.

¹ Source: Bloomberg. Data is as of June 30, 2024.

Domestic Equity Returns¹

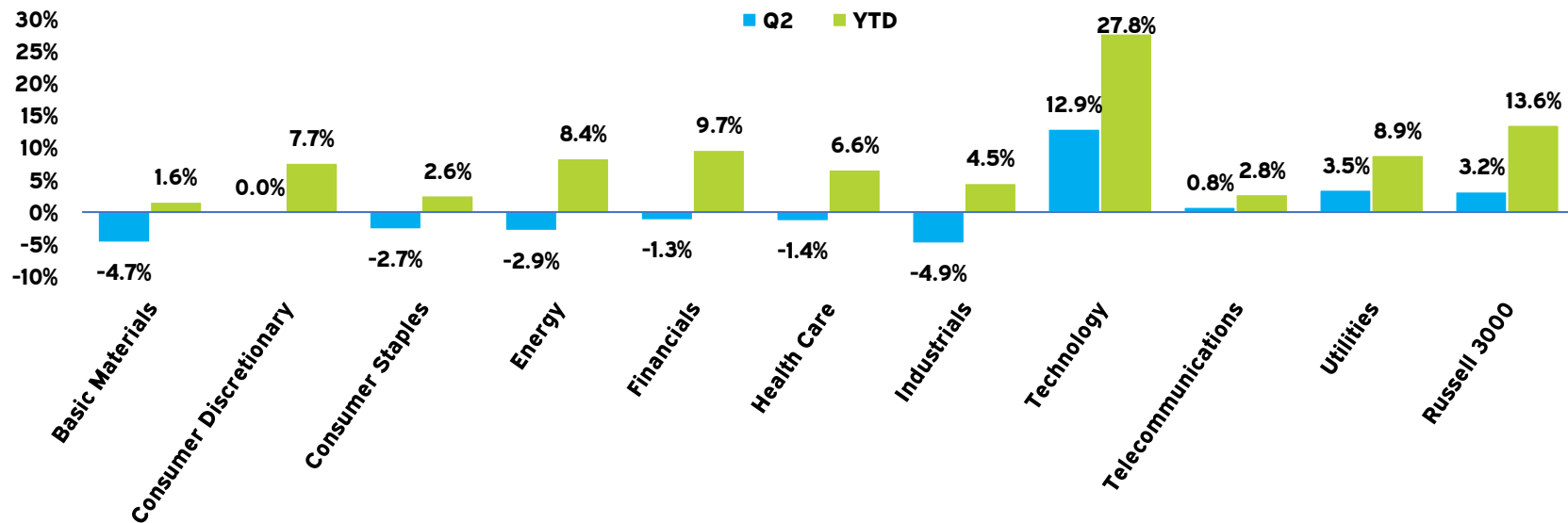
Domestic Equity	June (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
S&P 500	3.6	4.3	15.3	24.6	10.0	15.1	12.9
Russell 3000	3.1	3.2	13.6	23.1	8.1	14.2	12.1
Russell 1000	3.3	3.6	14.2	23.9	8.8	14.6	12.5
Russell 1000 Growth	6.7	8.3	20.7	33.5	11.3	19.4	16.3
Russell 1000 Value	-0.9	-2.2	6.6	13.1	5.5	9.0	8.2
Russell MidCap	-0.7	-3.3	5.0	12.9	2.4	9.5	9.0
Russell MidCap Growth	1.7	-3.2	6.0	15.1	-0.1	9.9	10.5
Russell MidCap Value	-1.6	-3.4	4.5	12.0	3.7	8.5	7.6
Russell 2000	-0.9	-3.3	1.7	10.1	-2.6	6.9	7.0
Russell 2000 Growth	-0.2	-2.9	4.4	9.1	-4.9	6.2	7.4
Russell 2000 Value	-1.7	-3.6	-0.8	10.9	-0.5	7.1	6.2

US Equities: The Russell 3000 rose 3.2% in the second quarter, bringing the year-to-date results to 13.6%.

- US stocks continued their rise in June driven by on-going AI optimism. Nearly all the quarterly market gains in the S&P 500 were driven by large cap technology stocks, with the S&P 500 equal weighted index down 3.1% for the quarter.
- US large cap stocks continue to outperform small cap stocks. This dynamic is driven by the large technology stocks like NVIDIA, Apple, and Alphabet and the underperformance of small cap biopharma companies and banks.
- Growth outperformed value for the quarter, with the most pronounced outperformance in the large cap space (8.3% versus -2.2%).

¹ Source: Bloomberg. Data is as of June 30, 2024.

Russell 3000 Sector Returns¹



- Unlike first quarter performance, where all sectors gained, the second quarter saw mixed results across the major sectors.
- Technology (+12.9%) continued to drive results fueled by on-going AI optimism. Utilities were a distant second increasing 3.5%, on expectations of increased demand from AI-related companies.
- Many other sectors fell, including financials (-1.3%), health care (-1.4%), consumer staples (-2.7%), energy (-2.9%), materials (-4.7%), and industrials (-4.9%).
- All sectors have positive returns for the year-to-date period. Technology stocks (+27.8%) continue to lead the broader market, followed by financials (9.7%).

¹ Source: Bloomberg. Data is as of June 30, 2024.

Foreign Equity Returns¹

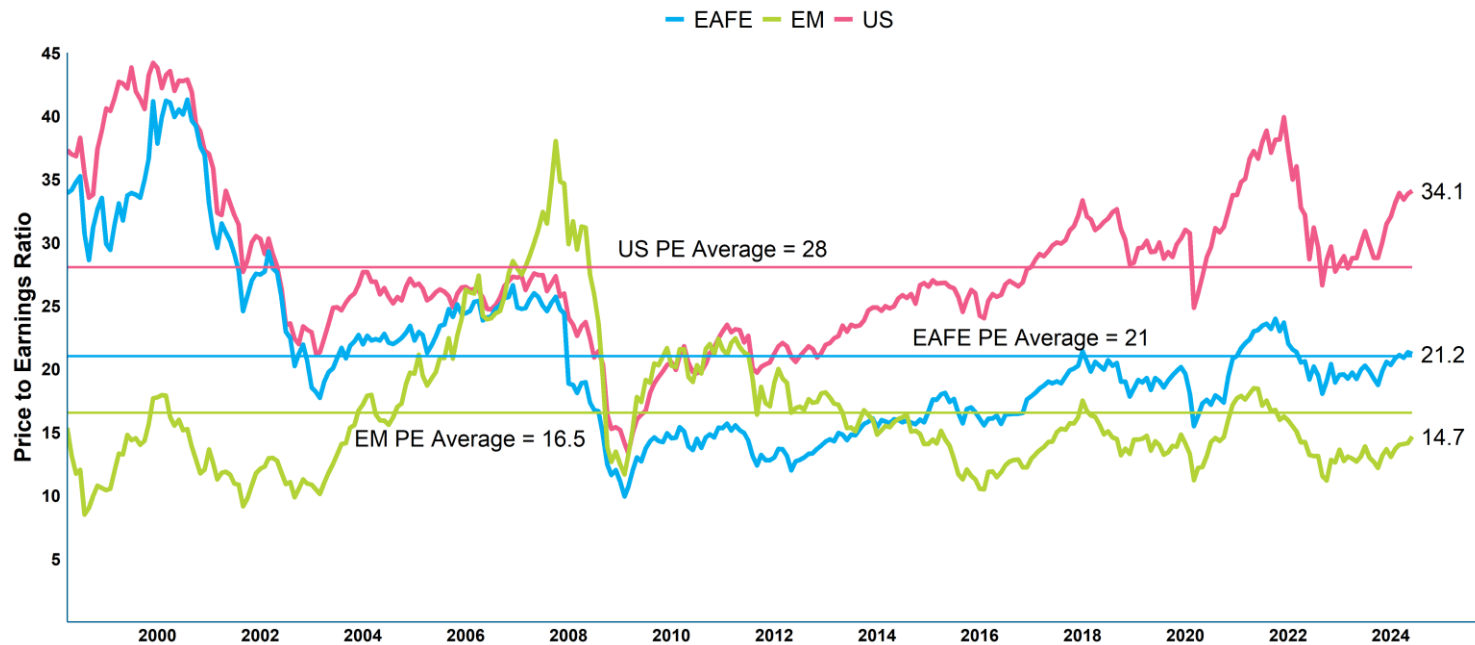
Foreign Equity	June (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-0.1	1.0	5.7	11.6	0.5	5.6	3.8
MSCI EAFE	-1.6	-0.4	5.3	11.5	2.9	6.5	4.3
MSCI EAFE (Local Currency)	-0.6	1.0	11.1	15.1	8.1	9.0	7.4
MSCI EAFE Small Cap	-3.0	-1.8	0.5	7.8	-3.4	4.2	4.3
MSCI Emerging Markets	3.9	5.0	7.5	12.5	-5.1	3.1	2.8
MSCI Emerging Markets (Local Currency)	4.3	6.2	11.0	15.5	-1.6	5.6	5.8
MSCI EM ex. China	6.1	4.2	8.4	18.5	1.4	6.7	3.9
MSCI China	-1.9	7.1	4.7	-1.6	-17.7	-4.3	1.4

Foreign Equity: Developed international equities (MSCI EAFE) fell 0.4% in the second quarter, while emerging market equities (MSCI Emerging Markets) gained 5.0%.

- For the second quarter, developed market equities declined driven by continued strength in the US dollar and regional political risks particularly in France. UK and Japanese equities made new all-time highs during the quarter, but this was not enough to offset losses in Europe.
- Emerging market equities outpaced developed market equities during the quarter given strong results in China (7.1%). China equities moved into positive territory for the year (4.7%) due to government purchases of shares, improving economic data, and returning foreign investors.

¹ Source: Bloomberg. Data is as of June 30, 2024.

Equity Cyclically Adjusted P/E Ratios¹



- At the end of the second quarter, the US equity price-to-earnings ratio remained elevated and above its 21st century average.
- International equity market valuations remain well below the US. International developed market valuations have increased to slightly above their long-term average, while emerging market equities remain below their long-term average despite recent gains.

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: Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years. Data is as of June 2024. The average line is the long-term average of the US, EM, and EAFE PE values from April 1998 to the recent month-end respectively.

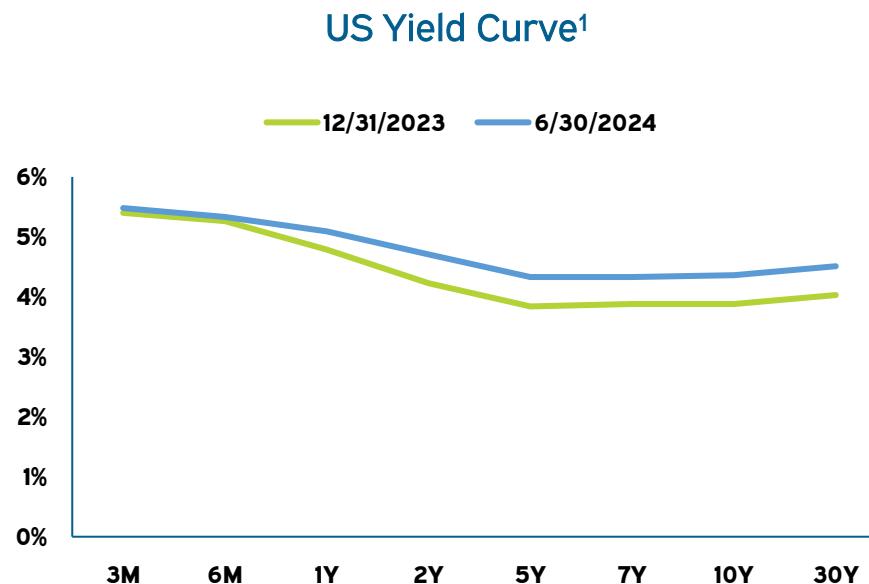
Fixed Income Returns¹

Fixed Income	June (%)	Q2 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	0.9	0.2	-0.3	3.5	-2.7	0.1	1.6	5.3	6.0
Bloomberg Aggregate	0.9	0.1	-0.7	2.6	-3.0	-0.2	1.3	5.0	6.2
Bloomberg US TIPS	0.8	0.8	0.7	2.7	-1.3	2.1	1.9	4.8	6.6
Bloomberg Short-term TIPS	0.6	1.4	2.3	5.4	2.2	3.2	2.0	5.1	2.4
Bloomberg High Yield	0.9	1.1	2.6	10.4	1.6	3.9	4.3	7.9	3.7
JPM GBI-EM Global Diversified (USD)	-1.1	-1.6	-3.7	0.7	-3.3	-1.3	-0.9	--	--

Fixed Income: The Bloomberg Universal index rose 0.2% in the second quarter, reducing the year-to-date decline to -0.3%.

- Bonds finished the quarter slightly up as May and June gains offset the April declines.
- The broad US bond market (Bloomberg Aggregate) rose 0.1% in the second quarter, with the broad TIPS market gaining 0.8%. The less interest rate sensitive short-term TIPS index increased 1.4% for the quarter, leading to the best results.
- High yield bonds (1.1%) also rose, as risk appetite remains strong.

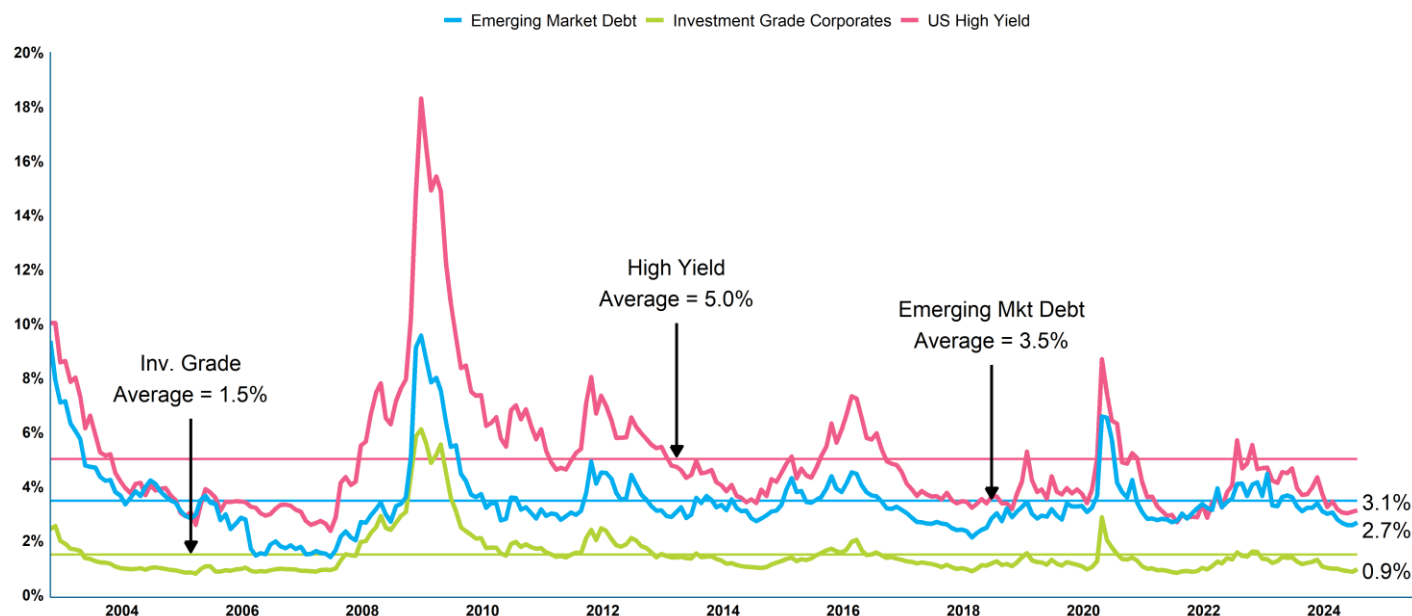
¹ Source: Bloomberg. Data is as of June 30, 2024. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively. JPM GBI-EM data is from J.P. Morgan. Current yield and duration data is not available.



- After rates significantly increased in April on strong inflation data, they then declined in May and June. Chair Powell confirming that the FOMC would not raise rates again this year as economic data appears to be returning to long-run trends led to rates declining from the April highs.
- The more policy sensitive 2-year Treasury yield finished the quarter roughly 0.2% higher at 4.76% but well off its peak of over 5.0%. The 10-year Treasury rose by a similar amount during the quarter finishing at 4.39%; also, off its April peak of 4.68%.
- The yield curve remained inverted at month-end, with the spread between the 2-year and 10-year Treasury at roughly -35 basis points.

¹ Source: Bloomberg. Data is as of June 30, 2024.

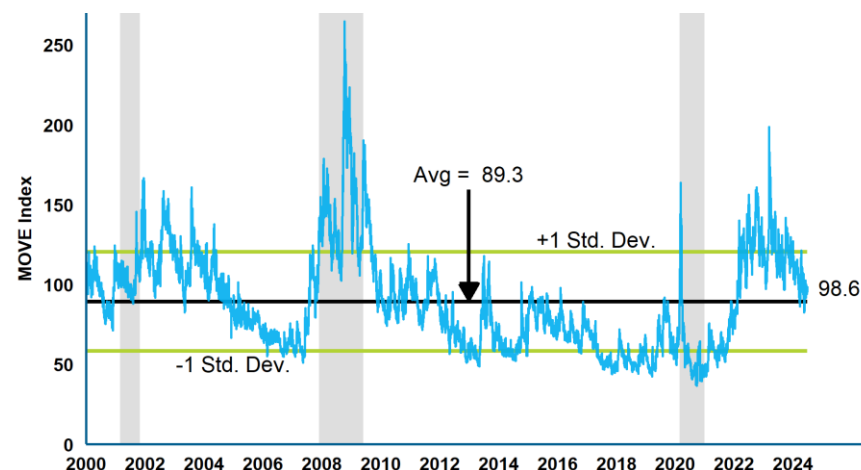
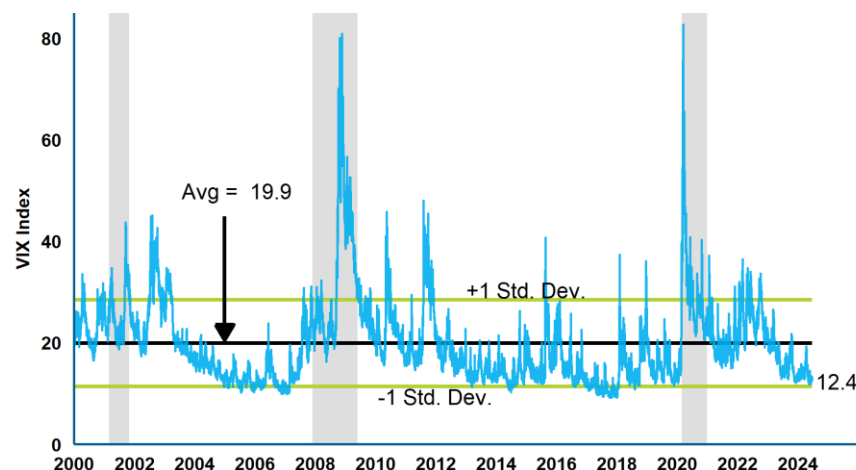
Credit Spreads vs. US Treasury Bonds¹



- Despite rising rates, investor demand for risk exposure in credit markets remained strong in Q2 given measured weakness in the economic outlook and expectations of lower interest rates by year-end.
- Spreads (the yield above a comparable maturity Treasury) stayed relatively steady over the quarter, near post-pandemic lows. All spreads remained below their respective long-run averages, particularly high yield.
- Although spreads are relatively tight, yields remain at above-average levels compared to the last two decades, particularly for short-term issues.

¹ Source: Bloomberg. Data is as of June 30, 2024. Average lines denote the average of the investment grade, high yield, and emerging market spread values from September 2002 to the recent month-end, respectively.

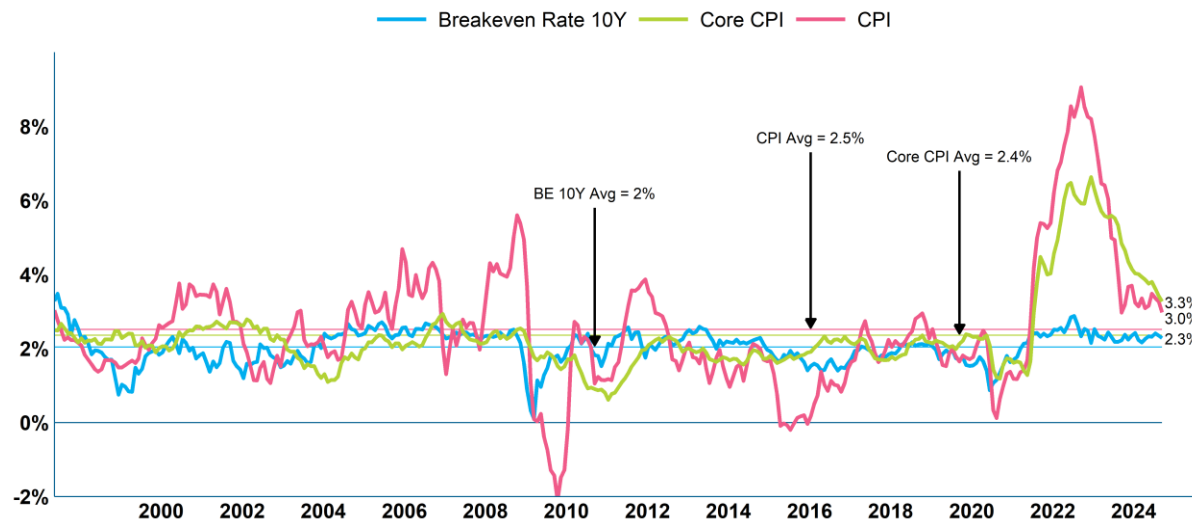
Equity and Fixed Income Volatility¹



- Volatility in equities was around one standard deviation below its long-term average at the end of the quarter as continued strength in technology stocks and weakening economic data has moderated fear in the markets.
- Volatility in bonds (MOVE) ended June higher than where it started the quarter (98.6 versus 86.4) and above its long-run average.

¹ Equity Volatility – Source: FRED. Fixed Income Volatility – Source: Bloomberg. Implied volatility as measured using VIX Index for equity markets and the MOVE Index to measure interest rate volatility for fixed income markets. Data is as of June 2024. The average line indicated is the average of the VIX and MOVE values between January 2000 and June 2024.

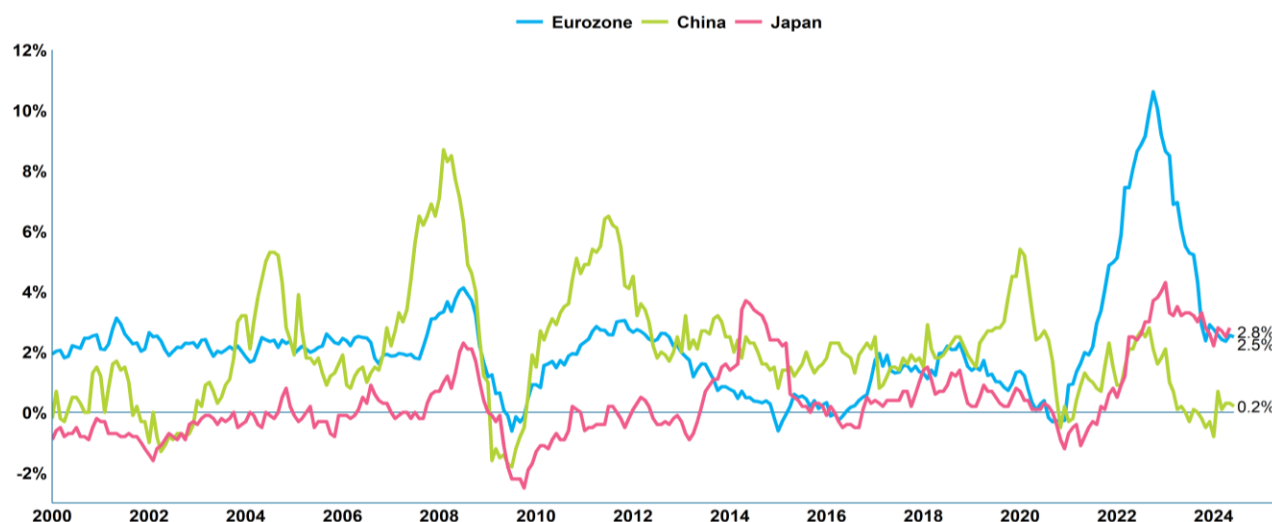
US Ten-Year Breakeven Inflation and CPI¹



- Year-over-year headline inflation continued to fall in June (3.3% to 3.0%) and again came in below expectations. Over the quarter, inflation fell by a total of 0.5%.
- Month-over-month inflation was negative for the first time since March 2020, largely because of price declines in energy and core goods.
- Core inflation (excluding food and energy) also declined in June (3.4% to 3.3%) and came in below expectations. A drop in used car prices, transportation services, and a slowing of the pace of shelter price increases all contributed to the decline.
- Inflation expectations (breakevens) have been volatile, but they finished the quarter largely where they started.

¹ Source: FRED. Data is as June 2024. The CPI and 10 Year Breakeven average lines denote the average values from February 1997 to the present month-end, respectively. Breakeven values represent month-end values for comparative purposes.

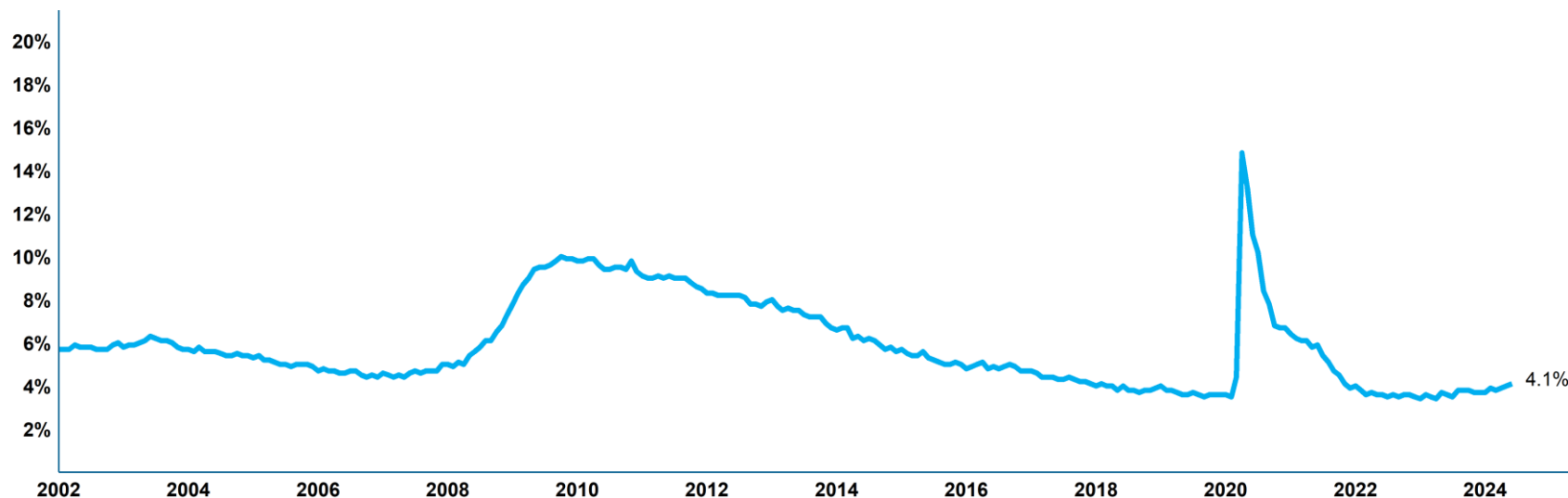
Global Inflation (CPI Trailing Twelve Months)¹



- Outside the US, inflation is also easing from the recent peaks.
- In the eurozone, inflation experienced a dramatic decline last year but remains above the central bank's 2% target. In June, inflation fell slightly from 2.6% to 2.5% year-over-year.
- Inflation in Japan has slowly dropped from the early 2023 peak of 4.3%, but it remains near levels not seen in a decade. In the most recent reading (May), inflation rose modestly from 2.5% to 2.8% as fuel and utility prices increased.
- China appears to have emerged from deflationary pressures, but inflation levels remain well below other major economies due to slowing economic growth. Annual inflation levels have been positive for the last five readings signaling improvement in domestic demand. The June year-over-year number came in at 0.2%, slightly lower than the prior reading of 0.3%.

¹ Source: Bloomberg. Data is June 30, 2024, except Japan which is as of May 31, 2024.

US Unemployment¹

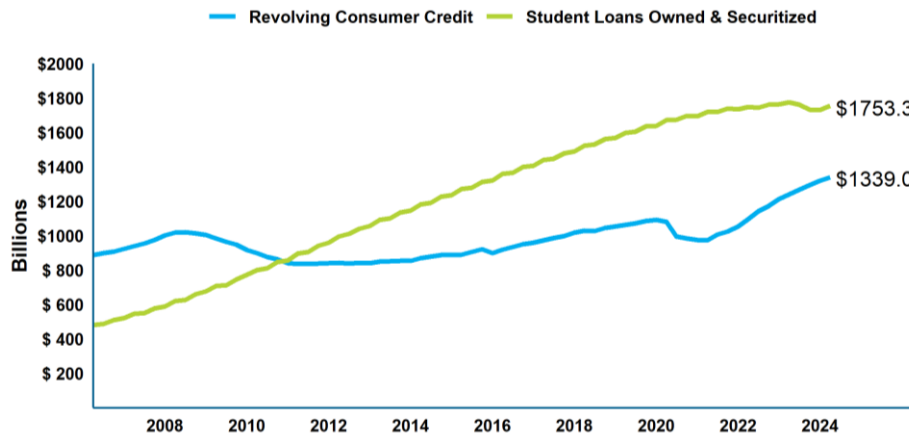


- Overall, the US labor market remains healthy, but there have been some recent signs of softening.
- The unemployment rate came in above expectations in June reaching 4.1%, a level not seen since early 2022. Over the second quarter unemployment increased 0.3%.
- Wage growth remains strong though (around 3.9% annually), and initial claims for unemployment are still subdued.
- Despite significant downward revisions to job gains in April and May, in June the economy added 206,000 jobs (above expectations). The government added the most jobs (70,000), followed by the healthcare sector (49,000).

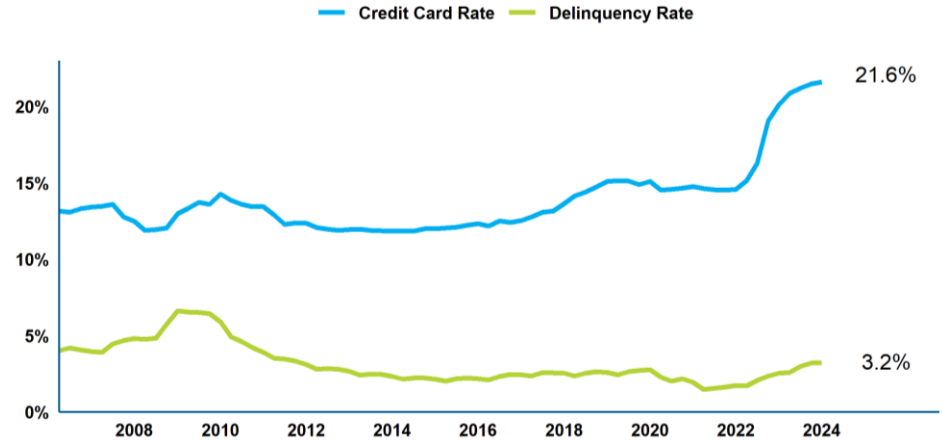
¹ Source: FRED. Data is as June 30, 2024.

US Consumer Under Stress?¹

Revolving Consumer Credit & Student Loans (\$B)



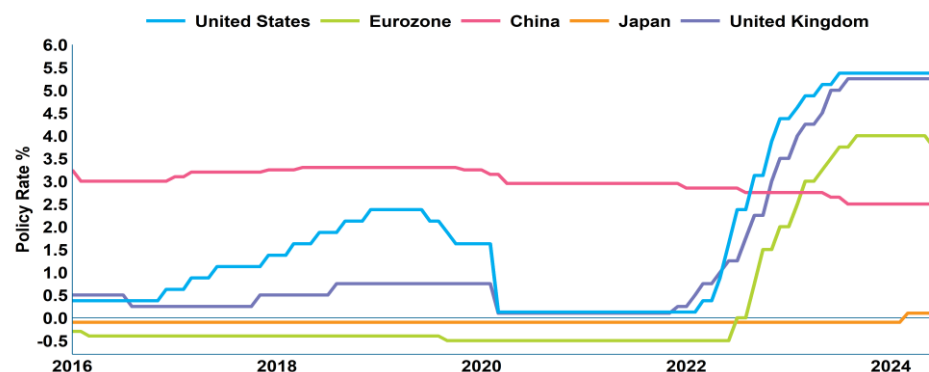
Consumer Credit Card Interest Rates (%)



- Despite the strong labor market and higher wages, pressures are building on the US consumer. This is an important consideration as consumer spending has been a key driver of economic growth.
- Revolving consumer credit surged to new highs in 2023 even as credit card interest rates hit levels not seen before (the prior peak was around 19% in the 1980s). Recently, we have also seen payment delinquencies on credit cards and auto loans start to increase, particularly for younger people.
- The return of student loan repayments after a three-year pandemic-related reprieve could add to pressures on consumers' budgets. This might be partially mitigated by recently initiated repayment and forgiveness programs.
- It is worth noting though that many people locked in low-rate fixed mortgages before rates increased and many corporations issued debt at extremely low levels, reducing the sensitivity to higher rates.

¹ Source: FRED. Data is as of March 31, 2024. Revolving Consumer Credit data is seasonally adjusted to remove distortions during the holiday season.

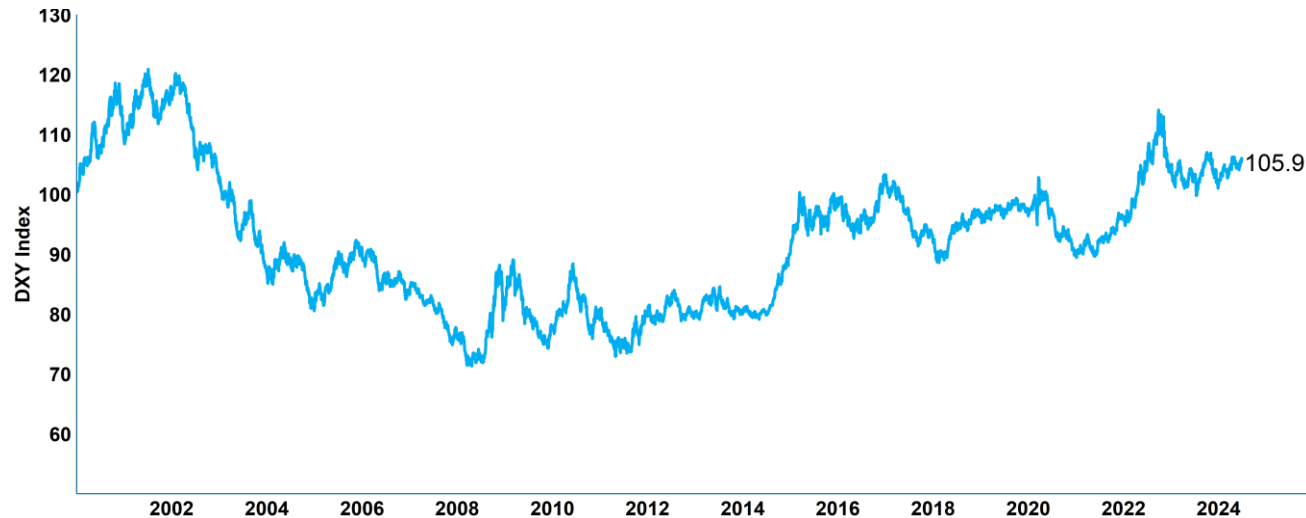
Policy Rates¹



- In the US interest rates have remained at current levels (5.25%-5.50%) for a year now. The most recent “dot plot” (the Fed’s expectation on the path of rates) showed a median expectation of roughly one rate cut this year. Markets are now pricing in two to three rate cuts in 2024 given the improving inflation data with the probability of a cut around 100% in September and slightly over 90% for December.
- The European Central Bank (ECB) cut its policy rate by 25 basis points at the beginning of June, as expected. Like the US, cuts are also anticipated at the September and December meetings.
- After ending the last negative interest rate policy given higher inflation levels, the Bank of Japan (BOJ) has since kept rates at slightly above 0%. Policy is expected to tighten going forward with the BOJ announcing at their recent meeting they would also start reducing their bond purchases. Interest rate futures markets are pricing in roughly two rate hikes (of 10 basis points) through the end of the year.
- The central bank in China has maintained interest rates at record low levels and continues to inject liquidity into the banking system, to support economic growth.

¹ Source: Bloomberg. Data is as of June 30, 2024. United States rate is the mid-point of the Federal Funds Target Rate range. Eurozone rate is the ECB Deposit Facility Announcement Rate. Japan rate is the Bank of Japan Unsecured Overnight Call Rate Expected. China rate is the China Central Bank 1-Year Medium Term Interest Rate. UK rate is the UK Bank of England Official Bank Rate.

US Dollar vs. Broad Currencies¹



- Overall, the dollar rose in the second quarter (104.5 to 105.9) versus a basket of currencies of major trading partners.
- China and the ECB cutting policy rates, stronger relative growth, and the weakening of the Japanese yen, have all collectively helped strengthen the dollar.

¹ Source: Bloomberg. Data as of June 30, 2024.

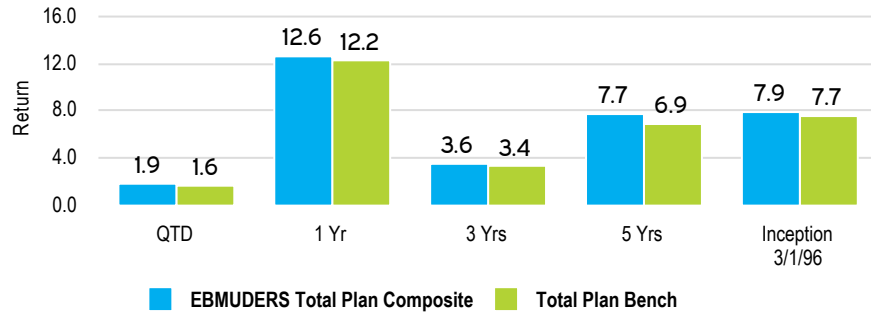
Summary

Key Trends:

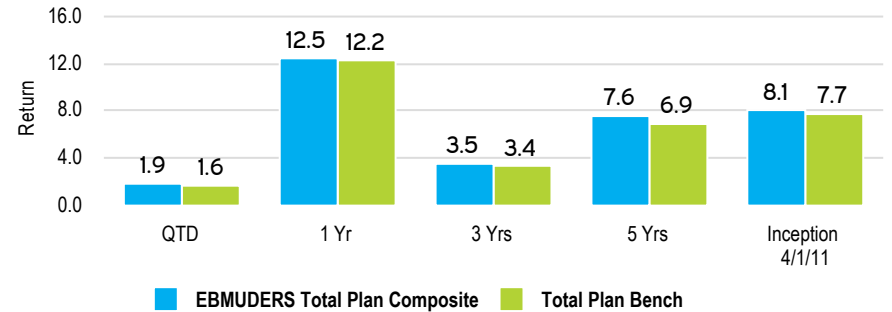
- According to the International Monetary Fund's (IMF) April report, global growth this year is expected to match the 2023 estimate at around 3.2% with most major economies predicted to avoid a recession. Continued strong economic growth does run the risk of inflation and interest rates staying higher for longer.
- Key economic data in the US has largely weakened and come in below expectations, causing markets to expect between two and three rate cuts this year. Uncertainty remains though regarding the timing and pace of interest rate cuts in the coming year.
- We have started to see some divergences in monetary policy with other central banks, such as the European Central Bank (ECB), starting to cut interest rates while the Fed remains on hold. This disparity will likely influence investment flows and currencies.
- US consumers could feel pressure as certain components of inflation (e.g., shelter) remain high, borrowing costs are elevated, and the job market may weaken.
- A focus for US equities going forward will be whether earnings can remain resilient if growth slows. Also, the future paths of the large technology companies that have driven market gains will be important.
- Equity valuations remain lower in emerging and developed markets, but risks remain, including China's economic uncertainty and ongoing weakness in the real estate sector. Japan's recent tightening of monetary policy along with changes in corporate governance in the country could influence relative results.

First Quarter Performance Review

Trailing Performance - Gross

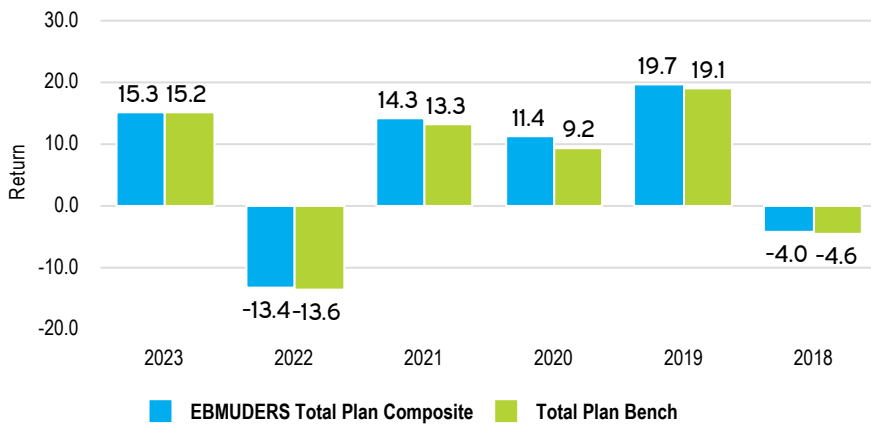


Trailing Performance - Net

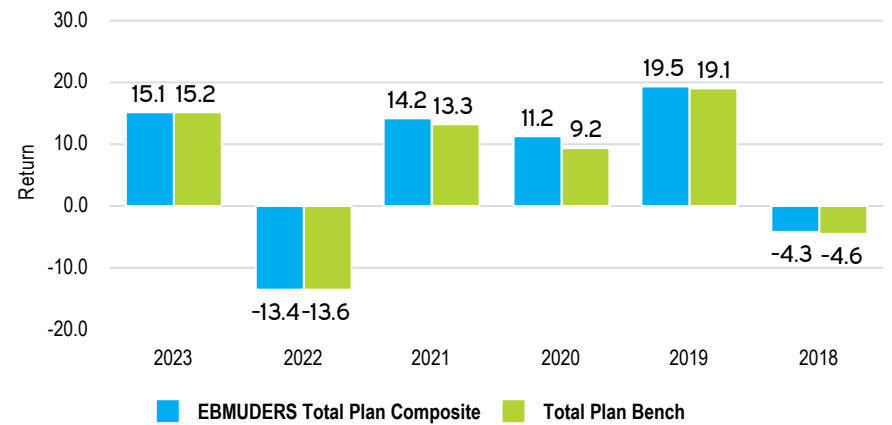


	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)
EBMUDERS Total Plan Composite	1.9	12.5	3.5	7.6	7.2	15.1	-13.4	14.2	11.2	19.5	-4.3
EBMUDERS Total Plan Composite	1.9	12.6	3.6	7.7	7.4	15.3	-13.4	14.3	11.4	19.7	-4.0
<i>Total Plan Bench</i>	<i>1.6</i>	<i>12.2</i>	<i>3.4</i>	<i>6.9</i>	<i>6.8</i>	<i>15.2</i>	<i>-13.6</i>	<i>13.3</i>	<i>9.2</i>	<i>19.1</i>	<i>-4.6</i>
InvMetrics Public DB > \$1B Median	1.0	10.0	3.2	7.4	6.6	11.4	-10.4	15.6	11.7	17.2	-3.2

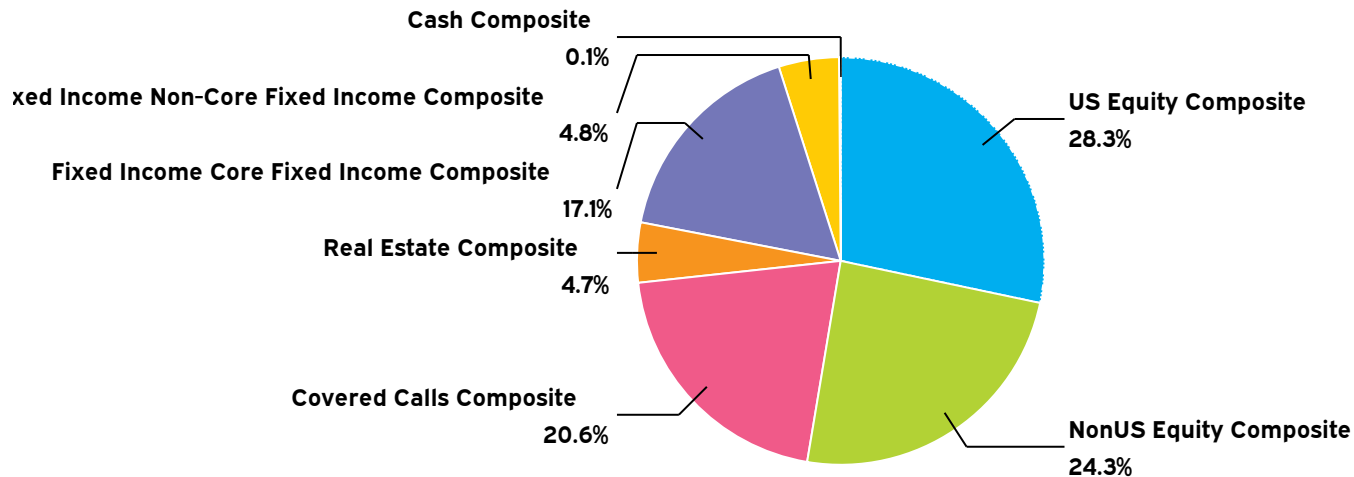
12-month Performance - Gross



12-month Performance - Net

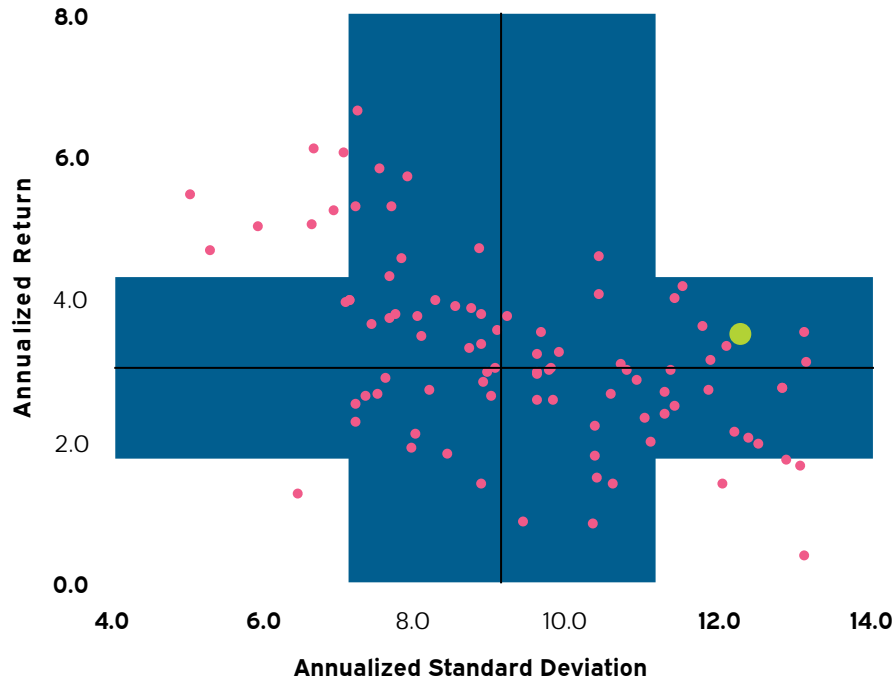


Allocation vs. Targets and Policy				
	Current Balance (\$)	Current Allocation (%)	Policy Range (%)	Within IPS Range?
Domestic Equity	\$709,103,394	28	20 - 30	Yes
International Equity	\$609,493,614	24	20 - 30	Yes
Covered Calls	\$517,281,110	21	17 - 23	Yes
Real Estate	\$118,857,470	5	3 - 7	Yes
Core Fixed Income	\$427,176,552	17	17 - 23	Yes
Non-Core Fixed Income	\$119,599,750	5	3 - 7	Yes
Cash	\$3,517,318	0	0 - 5	Yes
Total	\$2,505,029,208	100		

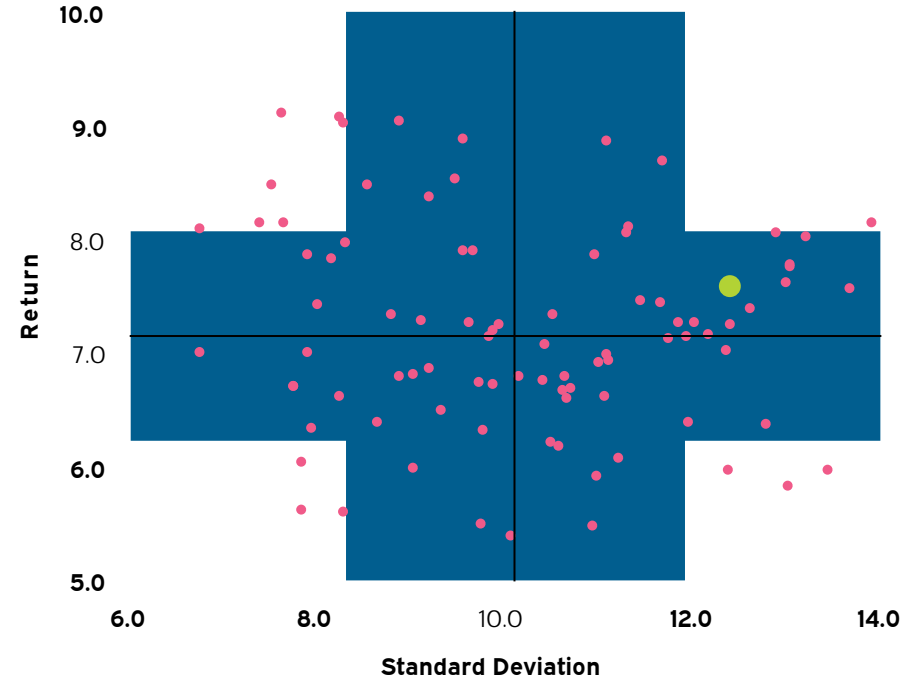


EBMUDERS | As of June 30, 2024

Annualized Return vs. Annualized Standard Deviation
3 Years Ending June 30, 2024



Annualized Return vs. Annualized Standard Deviation
5 Years Ending June 30, 2024



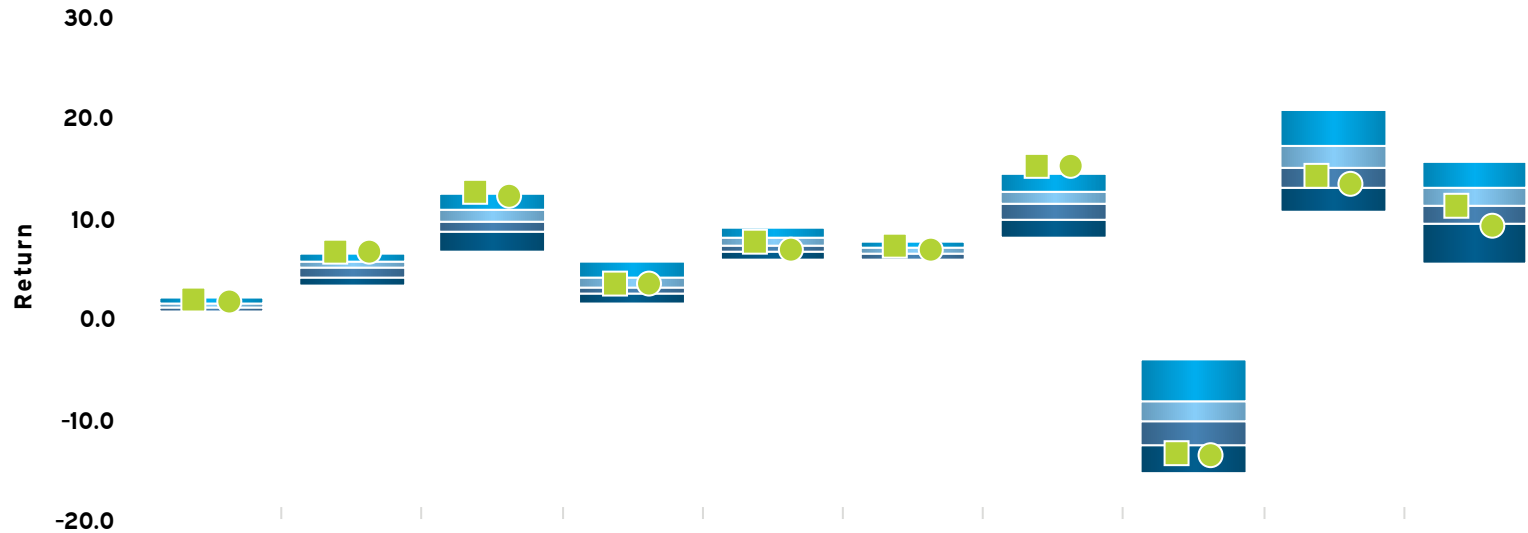
3 Years Ending June 30, 2024

	Return	Standard Deviation	Sharpe Ratio
EBMUDERS Total Plan Composite	3.5	12.2	0.1
Total Plan Bench	3.4	11.6	0.1

5 Years Ending June 30, 2024

	Return	Standard Deviation	Sharpe Ratio
EBMUDERS Total Plan Composite	7.6	12.4	0.5
Total Plan Bench	6.9	12.3	0.4

InvMetrics Public Plans > \$1B Return Comparison June 30, 2024



	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	2023	2022	2021	2020
■ EBMUDERS Total Plan Composite	1.9 (7)	6.6 (4)	12.5 (5)	3.5 (39)	7.6 (32)	7.2 (18)	15.1 (4)	-13.4 (84)	14.2 (60)	11.2 (50)
● Total Plan Bench	1.6 (13)	6.7 (4)	12.2 (8)	3.4 (40)	6.9 (62)	6.8 (30)	15.2 (4)	-13.6 (85)	13.3 (72)	9.2 (77)
5th Percentile	2.0	6.4	12.4	5.6	8.9	7.6	14.3	-4.0	20.7	15.5
1st Quartile	1.4	5.6	10.8	3.9	7.9	6.9	12.5	-8.2	17.2	13.0
Median	1.0	5.0	9.6	3.0	7.2	6.3	11.3	-10.3	15.0	11.1
3rd Quartile	0.7	4.1	8.6	2.4	6.6	5.8	9.7	-12.7	12.9	9.3
95th Percentile	0.3	3.3	6.6	1.3	5.7	5.5	7.9	-15.5	10.5	5.5
Population	96	96	96	91	88	83	174	173	206	220

Parentheses contain percentile rankings.
Calculation based on monthly periodicity.

	Market Value \$	QTR (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
EBMUDERS Total Plan Composite	2,505,029,208	1.9	12.6	3.6	7.7
<i>Total Plan Bench</i>		<i>1.6</i>	<i>12.2</i>	<i>3.4</i>	<i>6.9</i>
US Equity Composite	709,103,394	3.2	23.1	8.1	14.1
<i>Russell 3000 Hybrid</i>		<i>3.2</i>	<i>23.1</i>	<i>8.1</i>	<i>14.1</i>
Northern Trust Russell 3000	708,236,423	3.2	23.2	8.1	14.1
<i>Russell 3000 Index</i>		<i>3.2</i>	<i>23.1</i>	<i>8.1</i>	<i>14.1</i>
Non US Equity Composite	609,493,614	1.1	11.8	0.9	6.0
<i>MSCI ACWI xUS (blend)</i>		<i>1.2</i>	<i>12.2</i>	<i>1.0</i>	<i>6.1</i>
Northern Trust ACWI ex US	609,493,614	1.1	11.8	0.8	5.7
<i>MSCI AC World ex USA index</i>		<i>1.2</i>	<i>12.2</i>	<i>1.0</i>	<i>6.1</i>

	Market Value \$	QTR (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Covered Calls Composite	517,281,110	3.0	14.1	6.5	9.4
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>
Parametric BXM	170,292,801	2.6	12.1	6.6	8.9
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>
Parametric Delta Shift	182,095,223	4.5	18.2	8.4	13.3
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>
Van Hulzen	164,893,086	2.0	12.0	4.3	5.9
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>

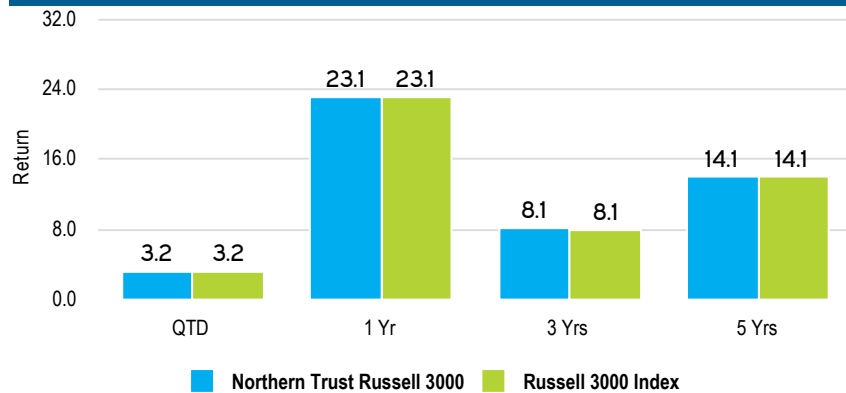
	Market Value \$	QTR (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Core Fixed Income Composite	427,176,552	0.0	2.6	-2.0	0.3
<i>Fixed Income Core Composite Bench</i>		<i>0.4</i>	<i>3.4</i>	<i>-2.1</i>	<i>--</i>
CS McKee	216,525,400	0.1	3.9	-2.6	0.2
<i>Blmbg. U.S. Aggregate Index</i>		<i>0.1</i>	<i>2.6</i>	<i>-3.0</i>	<i>-0.2</i>
Garcia Hamilton	210,651,152	-0.1	1.2	-1.4	--
<i>Blmbg. U.S. Aggregate Index</i>		<i>0.1</i>	<i>2.6</i>	<i>-3.0</i>	<i>-0.2</i>
Non-Core Fixed Income Composite	119,599,750	1.8	9.6	3.9	4.4
<i>Fixed Income Non-Core Composite Bench</i>		<i>2.0</i>	<i>9.7</i>	<i>4.2</i>	<i>4.1</i>
Mackay Shields (HY)	61,473,768	1.6	9.8	4.6	5.5
<i>ICE BofA ML US Corp Cash Pay BB-B 1-5Yr</i>		<i>2.3</i>	<i>10.6</i>	<i>3.7</i>	<i>4.2</i>
Federated Investment Counseling (Bank Loans)	58,125,982	2.2	9.4	3.2	3.3
<i>60% CredSuisLevLoan/40% BBStGovCorp</i>		<i>1.6</i>	<i>8.8</i>	<i>4.7</i>	<i>4.1</i>

	Market Value \$	QTR (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Real Estate Composite	118,857,470	0.4	-0.9	2.3	4.9
<i>Real Estate Composite Benchmark</i>		<i>-0.4</i>	<i>0.6</i>	<i>2.6</i>	<i>4.5</i>
RREEF America II Lag	54,680,547	0.0	-9.7	4.0	4.2
<i>NCREIF NPI Lag</i>		<i>-1.0</i>	<i>-7.2</i>	<i>3.6</i>	<i>3.8</i>
CenterSquare	64,176,923	0.7	8.2	0.8	5.0
<i>FTSE NAREIT Equity REIT Index</i>		<i>0.1</i>	<i>7.8</i>	<i>0.3</i>	<i>3.9</i>

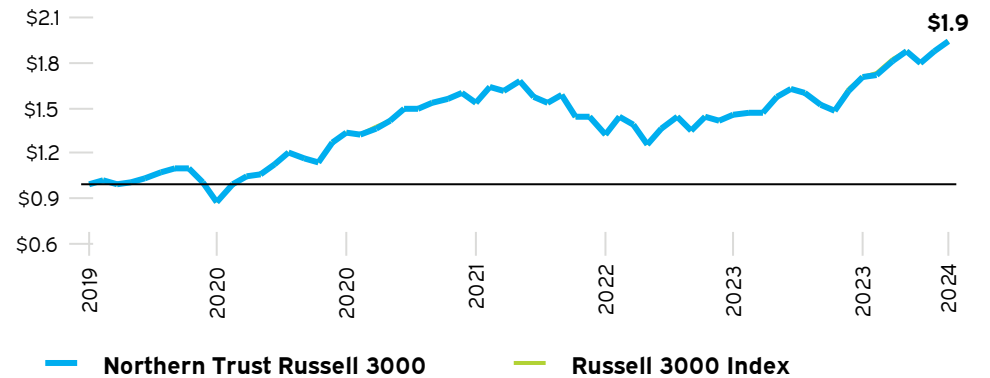
Statistics Summary 5 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Northern Trust Russell 3000	0.0	1.0	-0.4	0.7	0.1	1.0	99.8	99.8
Russell 3000 Index	0.0	1.0	-	0.7	0.0	1.0	100.0	100.0

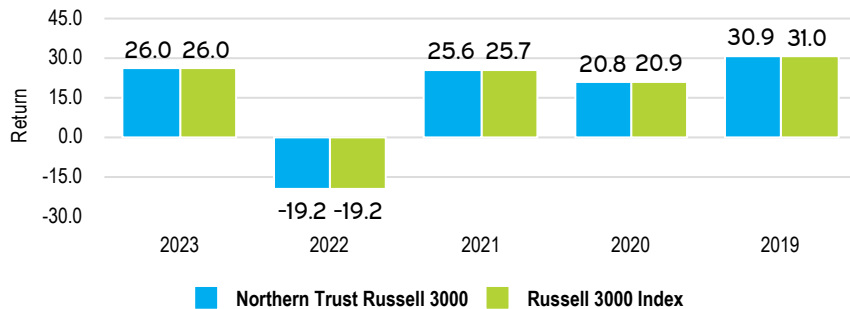
Return Summary



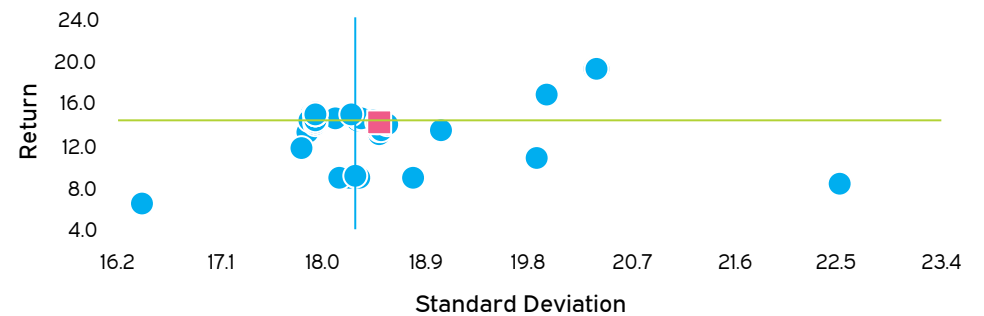
Investment Growth



Return Summary



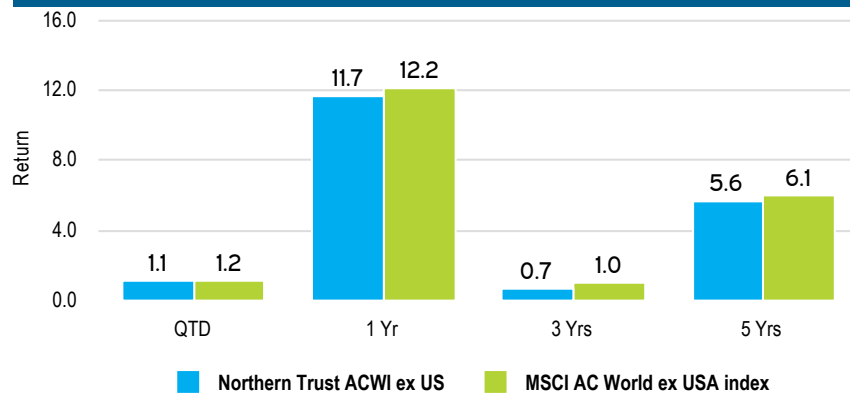
Risk Reward



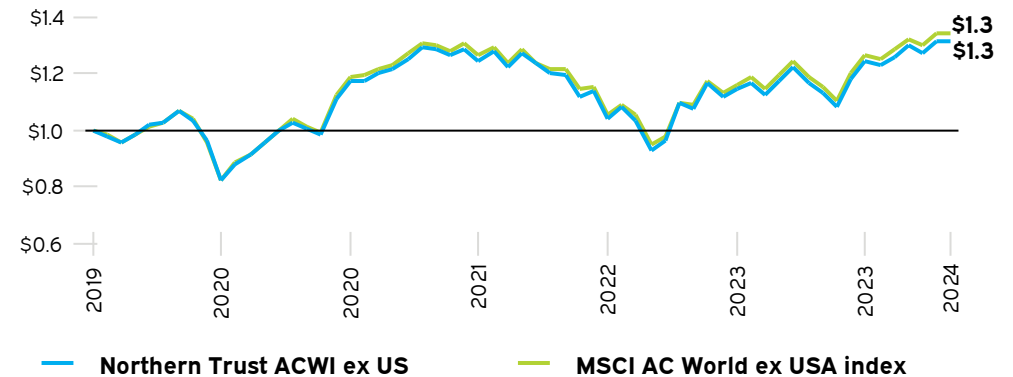
Statistics Summary 5 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Northern Trust ACWI ex US	-0.4	1.0	-0.2	0.3	1.8	1.0	101.5	103.8
MSCI AC World ex USA index	0.0	1.0	-	0.3	0.0	1.0	100.0	100.0

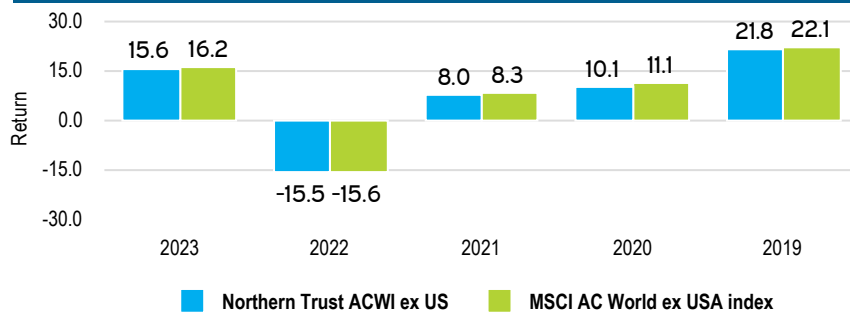
Return Summary



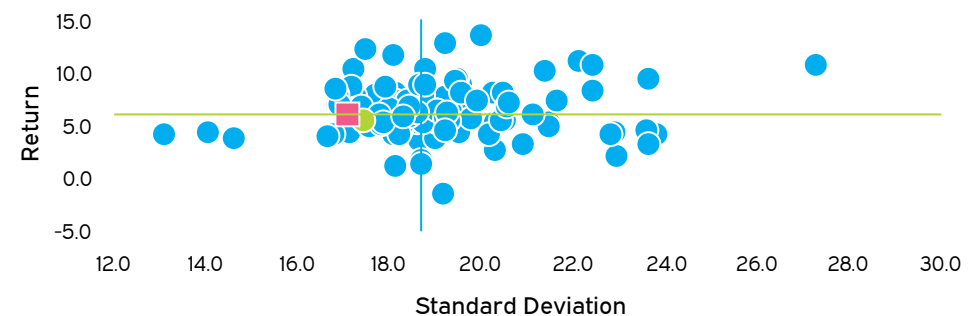
Investment Growth



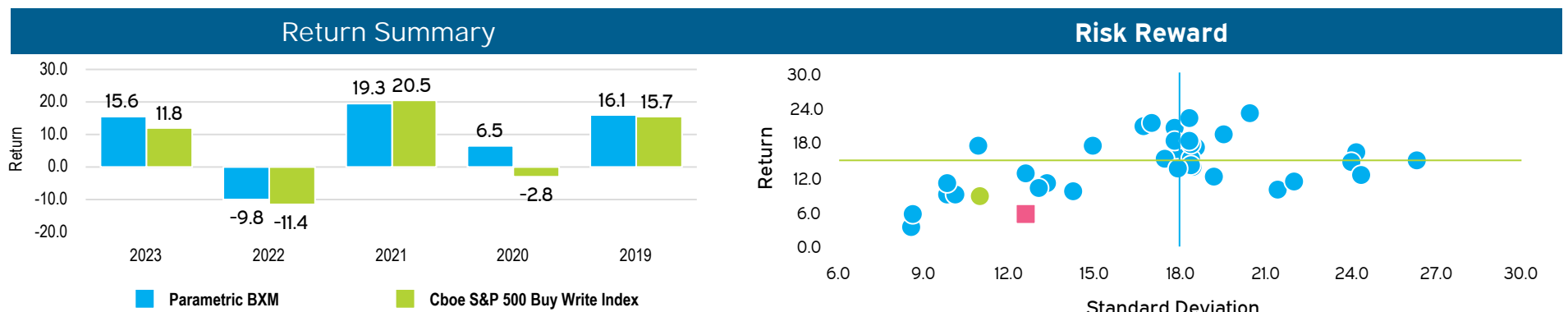
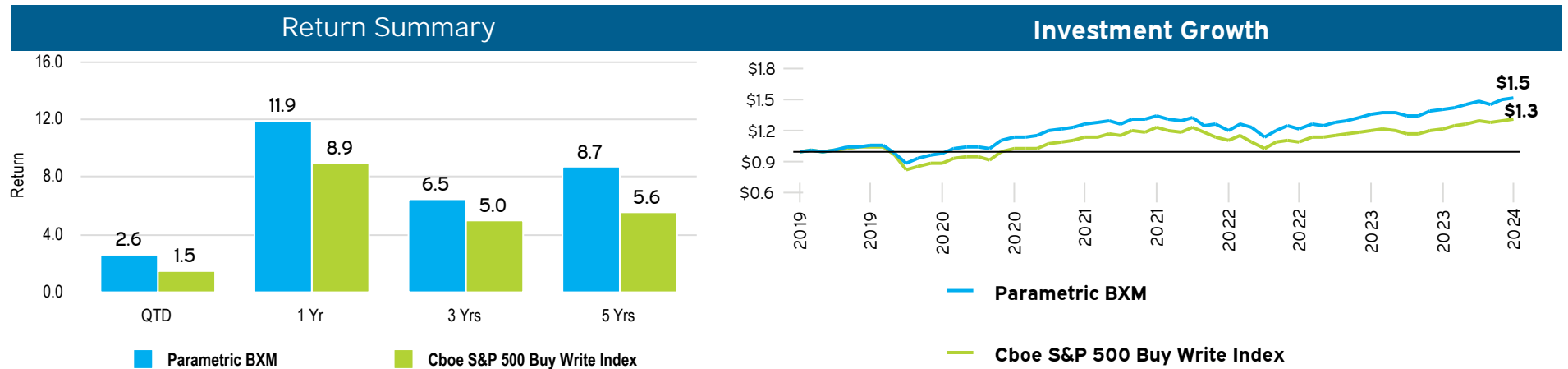
Return Summary



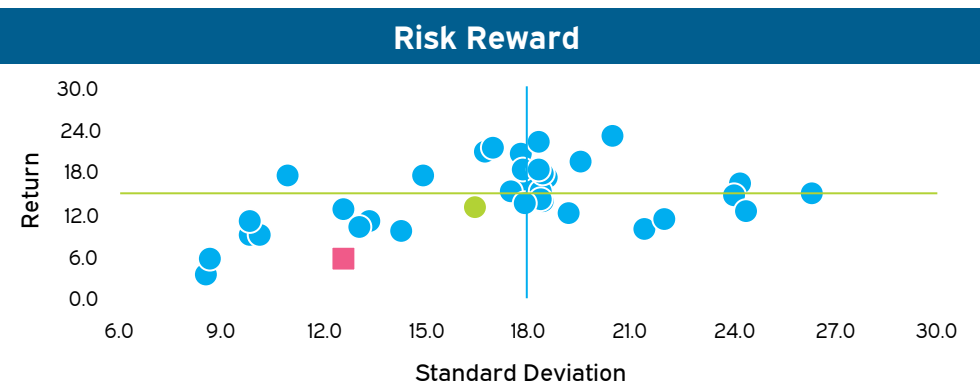
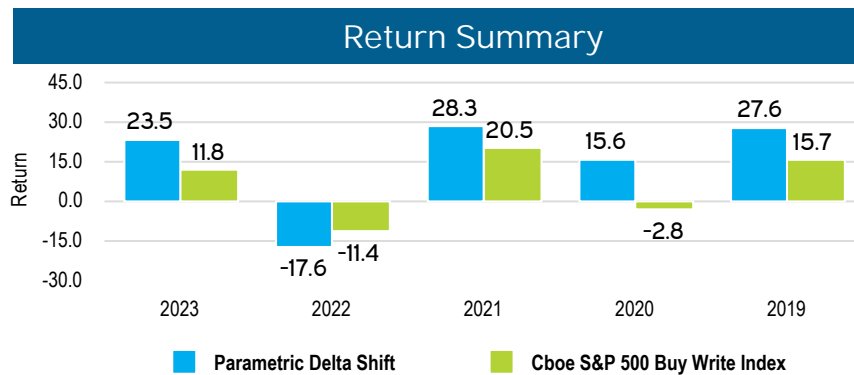
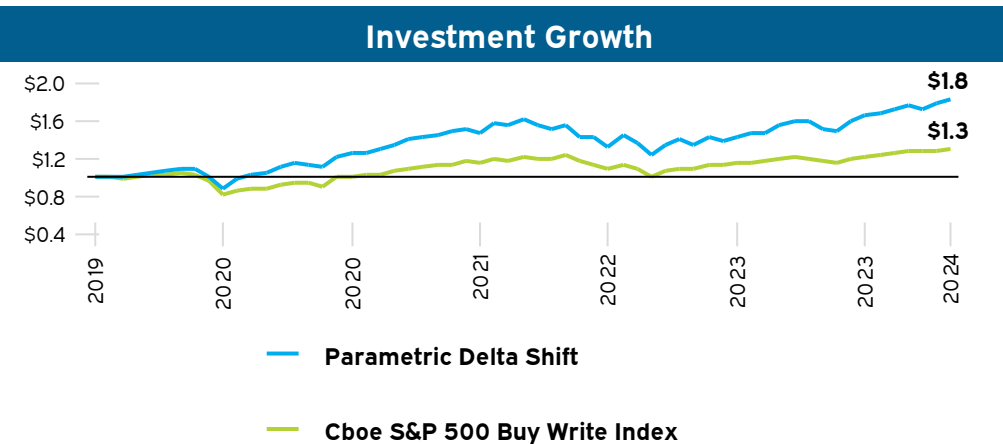
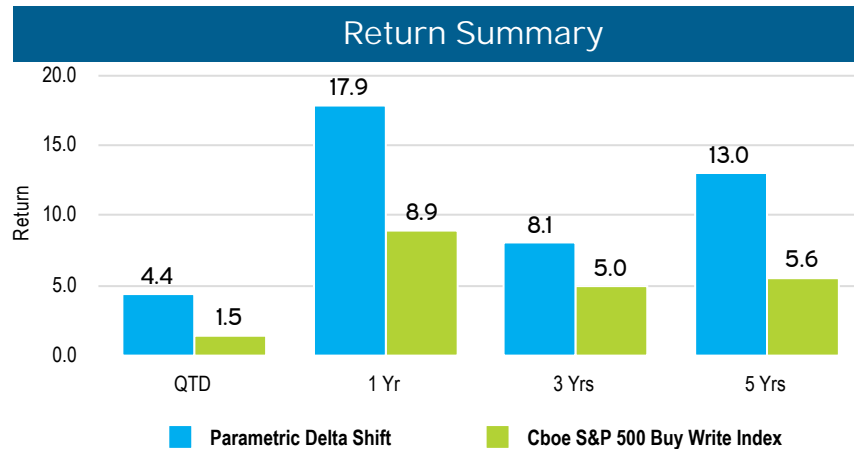
Risk Reward



Statistics Summary 5 Years Ending June 30, 2024									
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture	
Parametric BXM	3.9	0.8	0.7	0.6	4.1	0.9	99.9	78.8	
Cboe S&P 500 Buy Write Index	0.0	1.0	-	0.3	0.0	1.0	100.0	100.0	



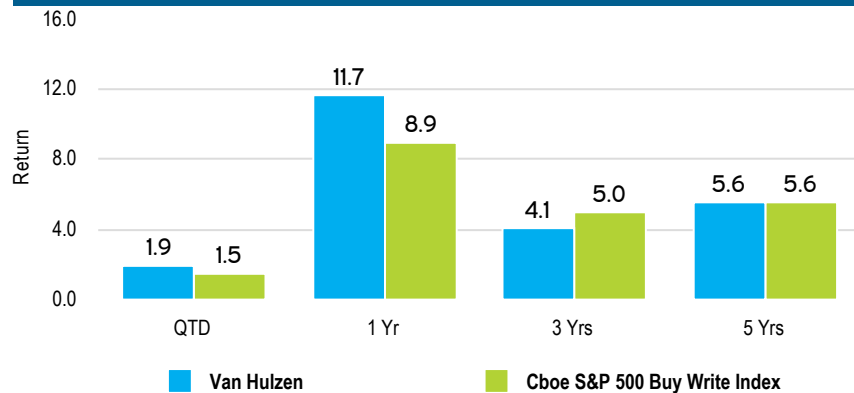
Statistics Summary 5 Years Ending June 30, 2024								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Parametric Delta Shift	6.5	1.2	1.0	0.7	7.4	0.8	155.2	124.9
Cboe S&P 500 Buy Write Index	0.0	1.0	-	0.3	0.0	1.0	100.0	100.0



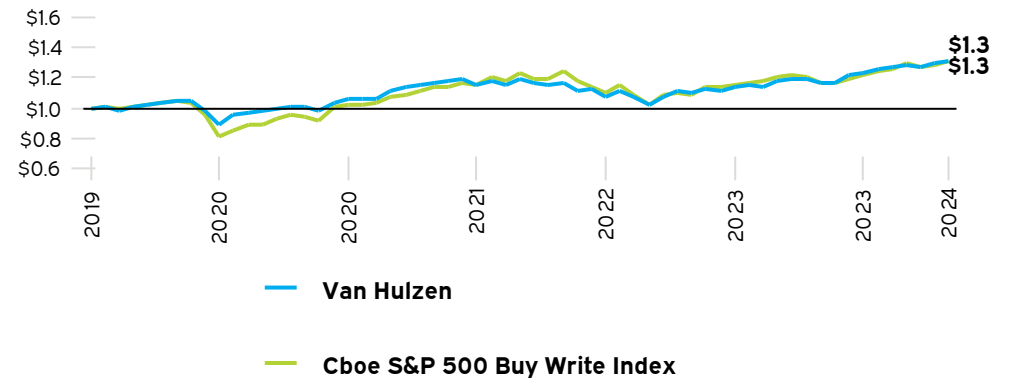
Statistics Summary 5 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Van Hulzen	1.5	0.7	-0.1	0.4	5.4	0.8	84.2	78.8
Cboe S&P 500 Buy Write Index	0.0	1.0	-	0.3	0.0	1.0	100.0	100.0

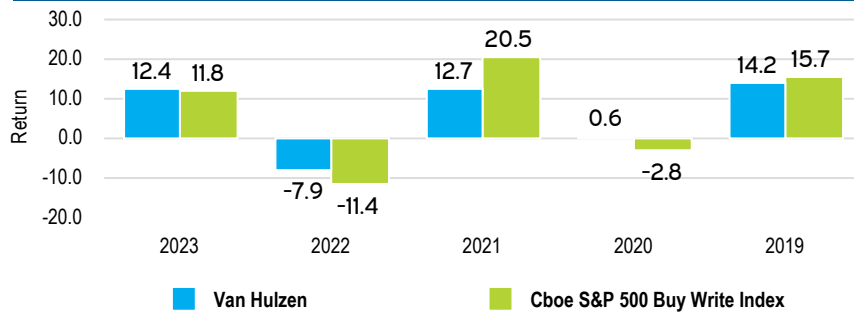
Return Summary



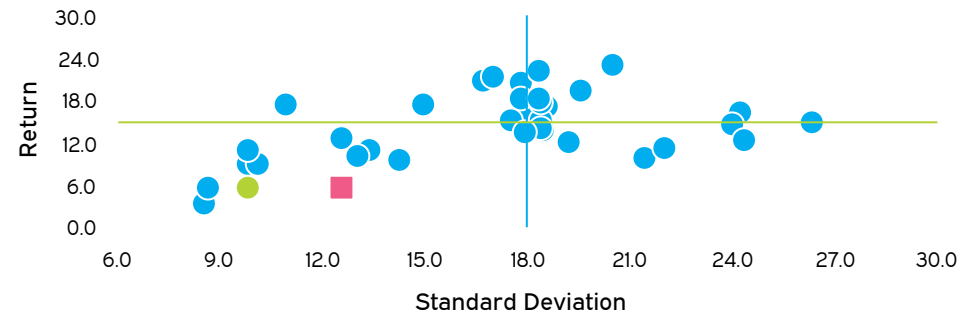
Investment Growth



Return Summary



Risk Reward

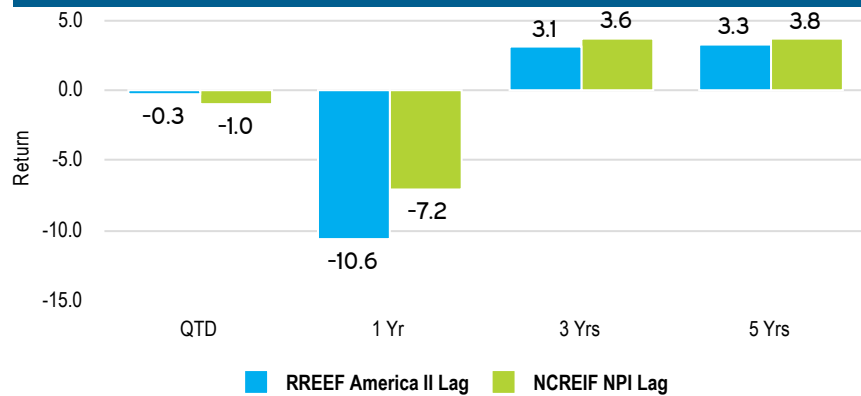


Statistics Summary

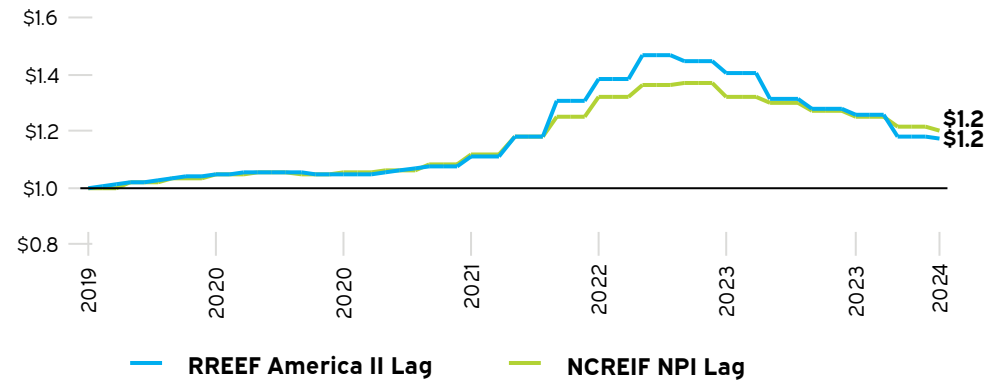
5 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
RREEF America II Lag	-1.6	1.3	-0.1	0.2	3.9	0.8	116.5	150.8
NCREIF NPI Lag	0.0	1.0	-	0.3	0.0	1.0	100.0	100.0

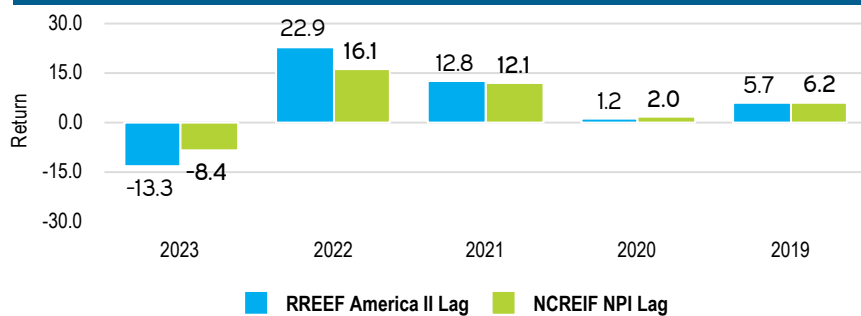
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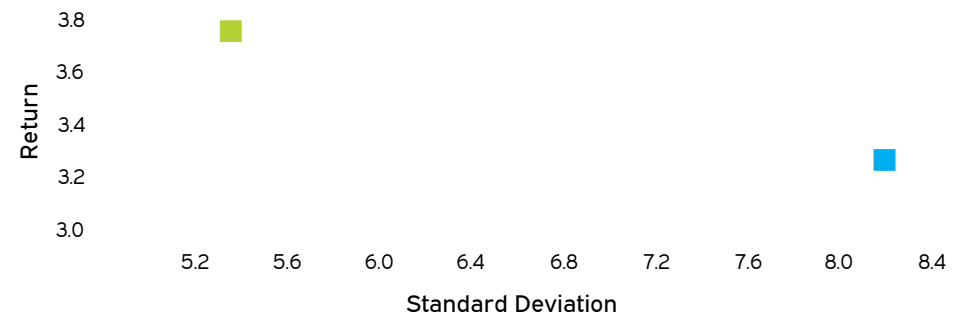
Investment Growth



Return Summary



Risk Reward

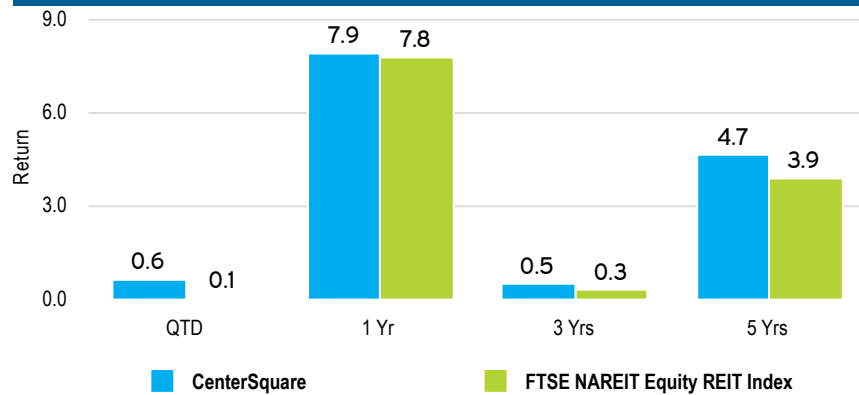


Statistics Summary

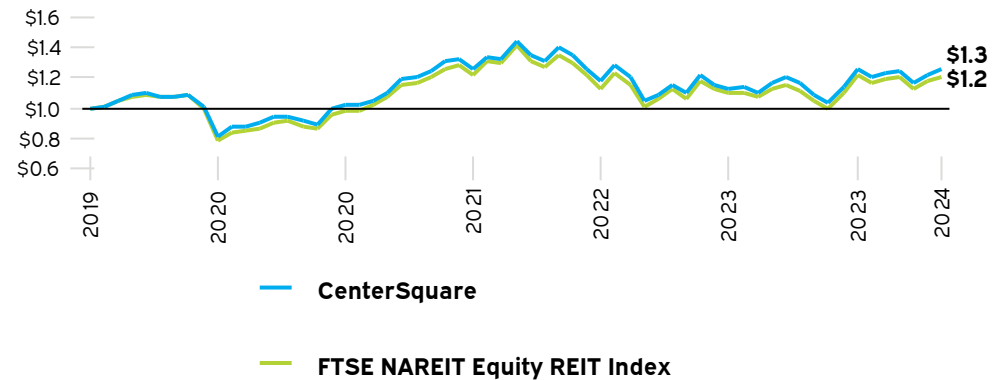
5 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
CenterSquare	0.8	1.0	0.4	0.2	1.7	1.0	99.9	97.5
FTSE NAREIT Equity REIT Index	0.0	1.0	-	0.2	0.0	1.0	100.0	100.0

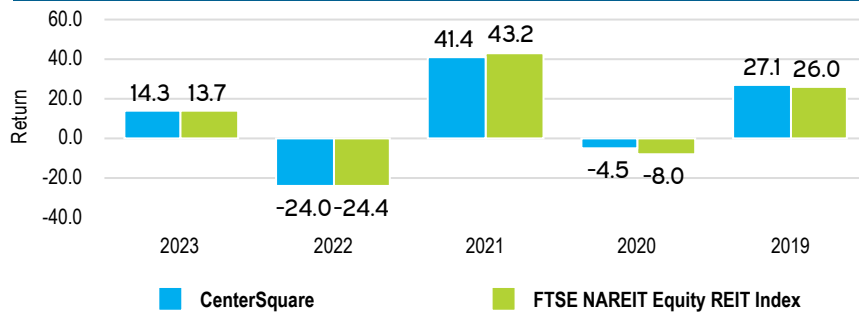
Return Summary



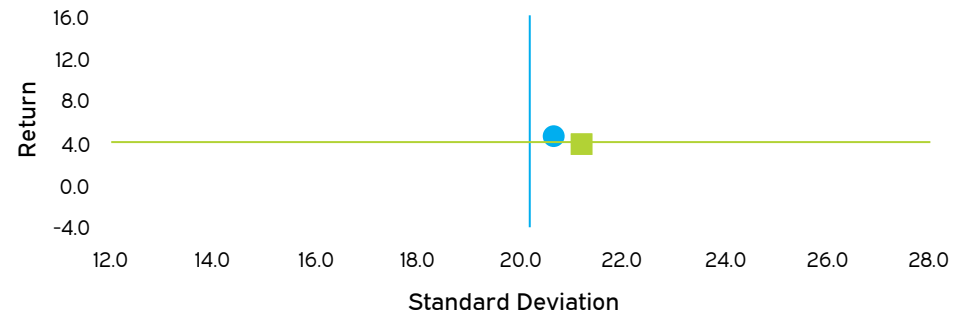
Investment Growth



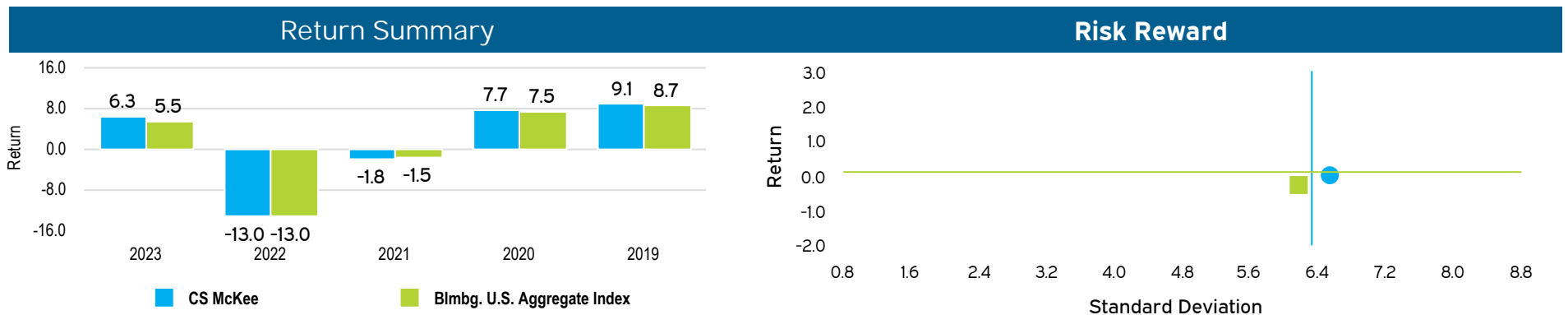
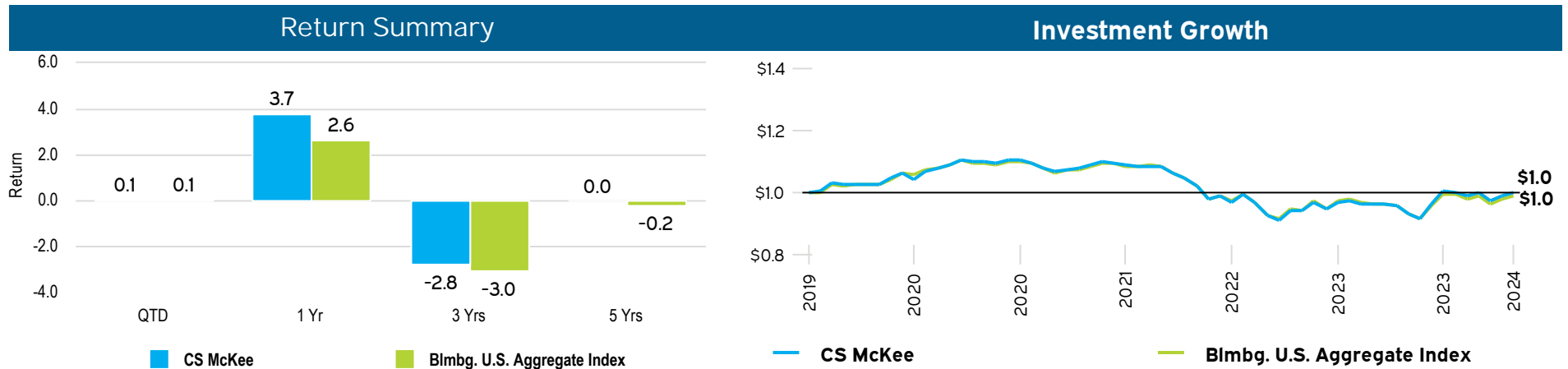
Return Summary



Risk Reward



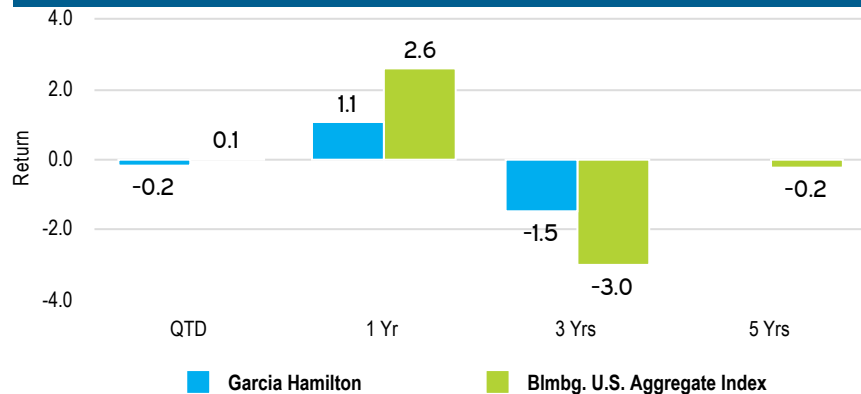
Statistics Summary 5 Years Ending June 30, 2024									
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture	
CS McKee	0.3	1.0	0.3	-0.3	0.9	1.0	106.7	103.4	
Blmbg. U.S. Aggregate Index	0.0	1.0	-	-0.4	0.0	1.0	100.0	100.0	



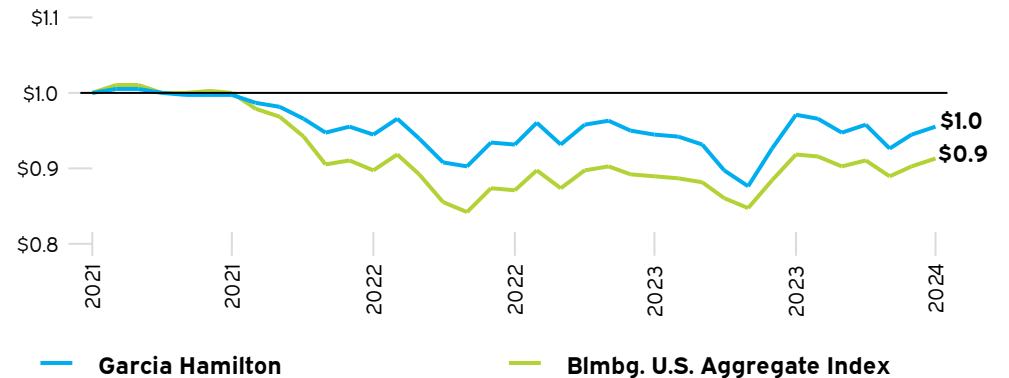
Statistics Summary 3 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Garcia Hamilton	1.5	1.0	0.7	-0.6	2.2	0.9	108.1	92.6
Blmbg. U.S. Aggregate Index	0.0	1.0	-	-0.8	0.0	1.0	100.0	100.0

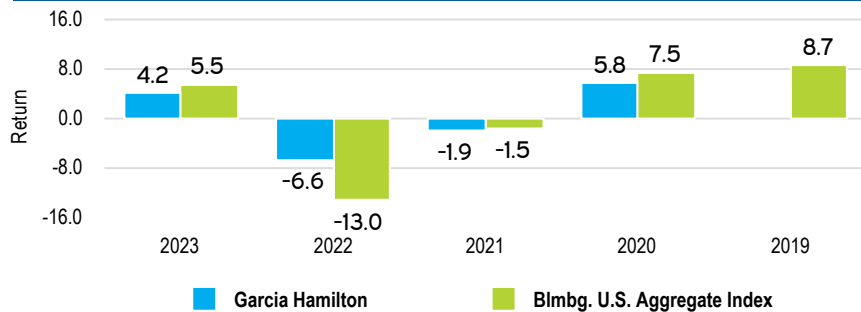
Return Summary



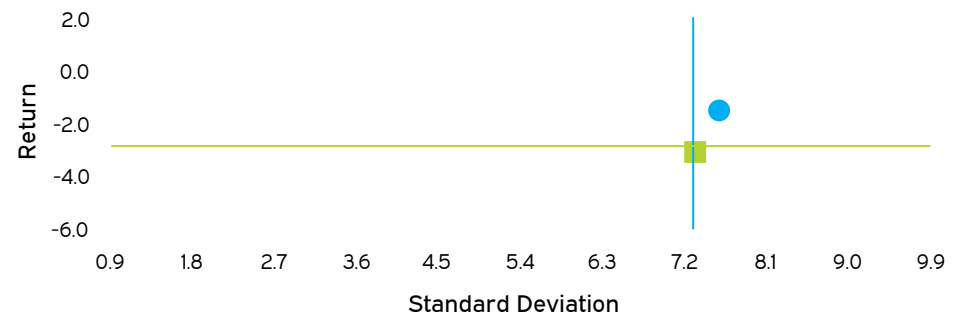
Investment Growth



Return Summary



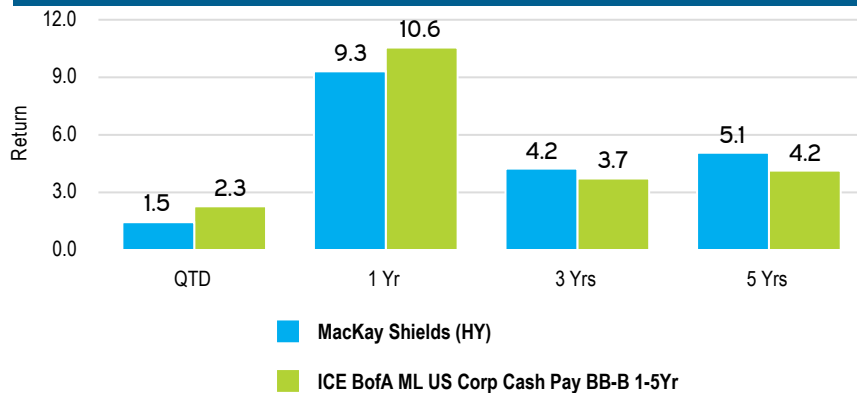
Risk Reward



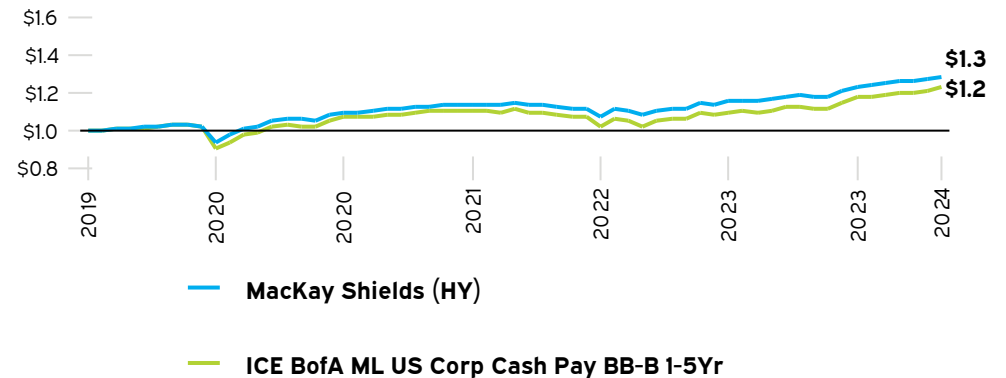
Statistics Summary 5 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Mackay Shields (HY)	1.9	0.7	0.3	0.5	2.3	1.0	84.2	61.0
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	0.0	1.0	-	0.3	0.0	1.0	100.0	100.0

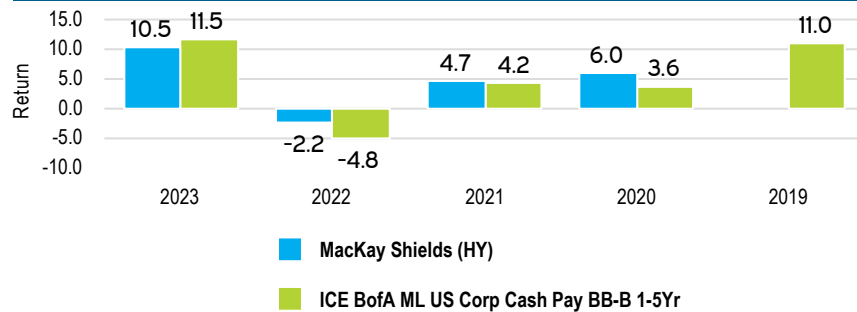
Return Summary



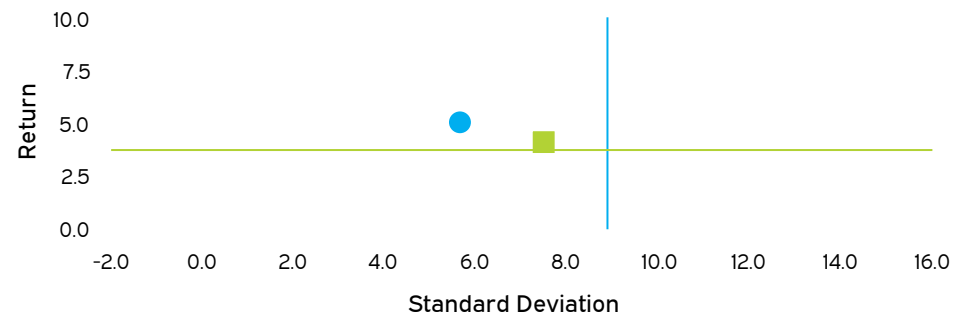
Investment Growth



Return Summary



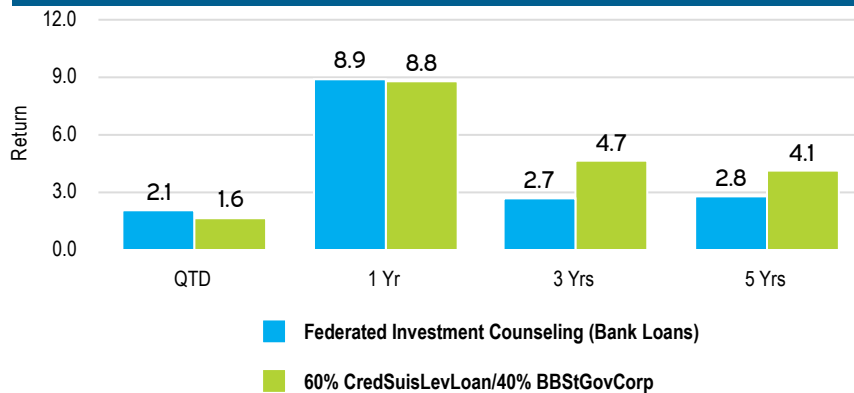
Risk Reward



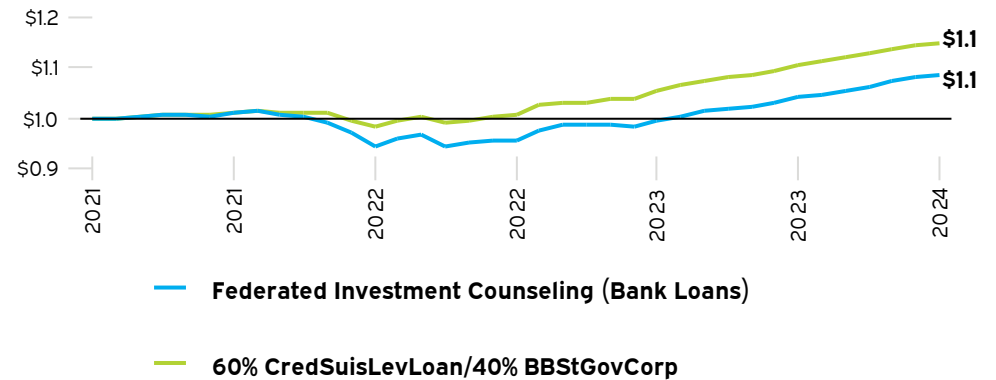
Statistics Summary 3 Years Ending June 30, 2024

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Capture	Down Capture
Federated Investment Counseling (Bank Loans)	-3.5	1.4	-1.2	-0.1	1.5	0.9	90.0	183.5
60% CredSuisLevLoan/40% BBStGovCorp	0.0	1.0	-	0.8	0.0	1.0	100.0	100.0

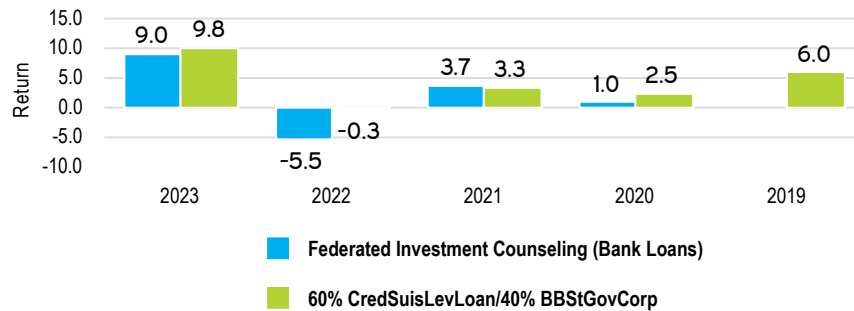
Return Summary



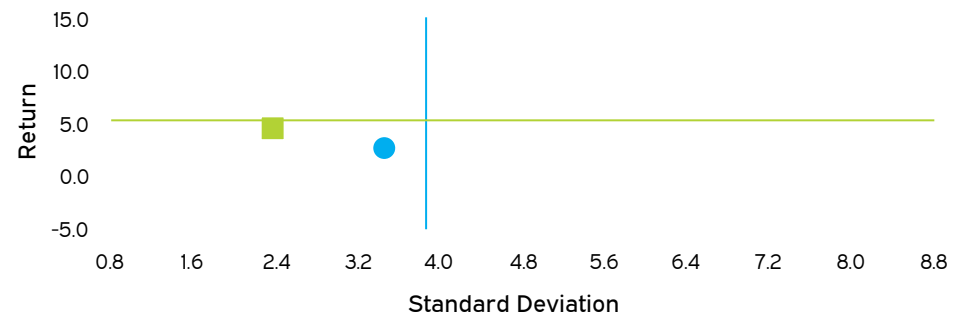
Investment Growth



Return Summary



Risk Reward



	Market Value \$	QTR (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
EBMUDERS Total Plan Composite	2,505,029,208	1.9	12.5	3.5	7.6
<i>Total Plan Bench</i>		<i>1.6</i>	<i>12.2</i>	<i>3.4</i>	<i>6.9</i>
US Equity Composite	709,103,394	3.2	23.1	8.1	14.1
<i>Russell 3000 Hybrid</i>		<i>3.2</i>	<i>23.1</i>	<i>8.1</i>	<i>14.1</i>
Northern Trust Russell 3000	708,236,423	3.2	23.1	8.1	14.1
<i>Russell 3000 Index</i>		<i>3.2</i>	<i>23.1</i>	<i>8.1</i>	<i>14.1</i>
Non US Equity Composite	609,493,614	1.1	11.7	0.8	5.9
<i>MSCI ACWI xUS (blend)</i>		<i>1.2</i>	<i>12.2</i>	<i>1.0</i>	<i>6.1</i>
Northern Trust ACWI ex US	609,493,614	1.1	11.7	0.7	5.6
<i>MSCI AC World ex USA index</i>		<i>1.2</i>	<i>12.2</i>	<i>1.0</i>	<i>6.1</i>
Covered Calls Composite	517,281,110	3.0	13.9	6.3	9.2
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>
Parametric BXM	170,292,801	2.6	11.9	6.5	8.7
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>
Parametric Delta Shift	182,095,223	4.4	17.9	8.1	13.0
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>
Van Hulzen	164,893,086	1.9	11.7	4.1	5.6
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.5</i>	<i>8.9</i>	<i>5.0</i>	<i>5.6</i>

	Market Value \$	QTR (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Core Fixed Income Composite	427,176,552	0.0	2.4	-2.1	0.2
<i>Fixed Income Core Composite Bench</i>		<i>0.4</i>	<i>3.4</i>	<i>-2.1</i>	<i>--</i>
CS McKee	216,525,400	0.1	3.7	-2.8	0.0
<i>Blmbg. U.S. Aggregate Index</i>		<i>0.1</i>	<i>2.6</i>	<i>-3.0</i>	<i>-0.2</i>
Garcia Hamilton	210,651,152	-0.2	1.1	-1.5	--
<i>Blmbg. U.S. Aggregate Index</i>		<i>0.1</i>	<i>2.6</i>	<i>-3.0</i>	<i>-0.2</i>
Non-Core Fixed Income Composite	119,599,750	1.8	9.1	3.5	4.0
<i>Fixed Income Non-Core Composite Bench</i>		<i>2.0</i>	<i>9.7</i>	<i>4.2</i>	<i>4.1</i>
Mackay Shields (HY)	61,473,768	1.5	9.3	4.2	5.1
<i>ICE BofA ML US Corp Cash Pay BB-B 1-5Yr</i>		<i>2.3</i>	<i>10.6</i>	<i>3.7</i>	<i>4.2</i>
Federated Investment Counseling (Bank Loans)	58,125,982	2.1	8.9	2.7	2.8
<i>60% CredSuisLevLoan/40% BBStGovCorp</i>		<i>1.6</i>	<i>8.8</i>	<i>4.7</i>	<i>4.1</i>
Real Estate Composite	118,857,470	0.2	-1.5	1.8	4.4
<i>Real Estate Composite Benchmark</i>		<i>-0.4</i>	<i>0.6</i>	<i>2.6</i>	<i>4.5</i>
RREEF America II Lag	54,680,547	-0.3	-10.6	3.1	3.3
<i>NCREIF NPI Lag</i>		<i>-1.0</i>	<i>-7.2</i>	<i>3.6</i>	<i>3.8</i>
CenterSquare	64,176,923	0.6	7.9	0.5	4.7
<i>FTSE NAREIT Equity REIT Index</i>		<i>0.1</i>	<i>7.8</i>	<i>0.3</i>	<i>3.9</i>

	Market Value \$	QTR (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Cash Composite	3,517,318	1.1	4.2	2.6	2.3
Cash LAIF	3,517,318	1.1	4.2	2.6	2.3
<i>FTSE 3 Month T-Bill</i>		<i>1.4</i>	<i>5.6</i>	<i>3.2</i>	<i>2.2</i>

Benchmark History

From Date	To Date	Benchmark
EBMUDERS Total Plan Composite		
12/01/2019	Present	2.5% FTSE NAREIT Equity REIT Index, 25.0% Russell 3000 Index, 10.0% Blmbg. Intermed. U.S. Government/Credit, 10.0% Blmbg. U.S. Aggregate Index, 25.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 20.0% Cboe S&P 500 Buy Write Index, 2.5% 60% CredSuisLevLoan/40% BBStGovCorp, 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2019	12/01/2019	2.5% FTSE NAREIT Equity REIT Index, 25.0% Russell 3000 Index, 5.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 15.0% Blmbg. U.S. Aggregate Index, 25.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 20.0% Cboe S&P 500 Buy Write Index, 2.5% 60% CredSuisLevLoan/40% BBStGovCorp, 2.5% 50% BBG EM Hard Cur Agg: Sovereign/50% BBG EM USD Aggregate Corporate TR
07/01/2018	03/01/2019	2.5% FTSE NAREIT Equity REIT Index, 25.0% Russell 3000 Index, 5.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 15.0% Blmbg. U.S. Aggregate Index, 25.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 2.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%, 20.0% Cboe S&P 500 Buy Write Index, 2.5% NCREIF NPI Lag
04/01/2014	07/01/2018	2.5% FTSE NAREIT Equity REIT Index, 40.0% Russell 3000 Index, 5.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 10.0% Blmbg. U.S. Aggregate Index, 15.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 2.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%, 20.0% Cboe S&P 500 Buy Write Index, 2.5% NCREIF NPI Lag
03/01/2014	04/01/2014	2.5% FTSE NAREIT Equity REIT Index, 40.0% Russell 3000 Index, 15.0% Blmbg. U.S. Aggregate Index, 15.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 2.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%, 20.0% Cboe S&P 500 Buy Write Index, 2.5% NCREIF NPI Lag
11/01/2011	03/01/2014	2.5% FTSE NAREIT Equity REIT Index, 50.0% Russell 3000 Index, 20.0% MSCI AC World ex USA index, 25.0% Blmbg. U.S. Universal Index, 2.5% NCREIF NPI Lag
01/01/2008	11/01/2011	50.0% Russell 3000 Index, 20.0% MSCI AC World ex USA index, 25.0% Blmbg. U.S. Universal Index, 5.0% NCREIF NPI Lag
01/01/2007	01/01/2008	50.0% Russell 3000 Index, 25.0% Blmbg. U.S. Aggregate Index, 20.0% MSCI AC World ex USA index, 5.0% NCREIF NPI Lag
10/01/2005	01/01/2007	50.0% Russell 3000 Index, 25.0% Blmbg. U.S. Aggregate Index, 20.0% MSCI EAFE (Net), 5.0% NCREIF NPI Lag
04/01/2005	10/01/2005	10.0% Russell 2000 Index, 30.0% S&P 500 Index, 10.0% S&P MidCap 400 Index, 25.0% Blmbg. U.S. Aggregate Index, 20.0% MSCI EAFE (Net), 5.0% NCREIF NPI Lag
09/01/1998	04/01/2005	10.0% Russell 2000 Index, 33.0% S&P 500 Index, 10.0% S&P MidCap 400 Index, 30.0% Blmbg. U.S. Aggregate Index, 17.0% MSCI EAFE (Net)
07/01/1978	09/01/1998	30.0% S&P 500 Index, 30.0% Blmbg. U.S. Aggregate Index, 5.0% FTSE 3 Month T-Bill, 15.0% MSCI EAFE (Net), 5.0% NCREIF NPI Lag, 15.0% Wilshire 5000 Total Market Index

From Date	To Date	Benchmark
Fixed Income Composite		
02/01/2023	Present	80.0% Blmbg. U.S. Aggregate Index, 10.0% 60% CredSuisLevLoan/40% BBStGovCorp, 10.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
12/01/2019	02/01/2023	40.0% Blmbg. Intermed. U.S. Government/Credit, 40.0% Blmbg. U.S. Aggregate Index, 10.0% 60% CredSuisLevLoan/40% BBStGovCorp, 10.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2019	12/01/2019	20.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 60.0% Blmbg. U.S. Aggregate Index, 10.0% 60% CredSuisLevLoan/40% BBStGovCorp, 10.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
07/01/2018	03/01/2019	20.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 60.0% Blmbg. U.S. Aggregate Index, 10.0% Morningstar LSTA U.S. Performing Loans, 10.0% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
04/01/2014	07/01/2018	25.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 50.0% Blmbg. U.S. Aggregate Index, 12.5% Morningstar LSTA U.S. Performing Loans, 12.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
03/01/2014	04/01/2014	75.0% Blmbg. U.S. Aggregate Index, 12.5% Morningstar LSTA U.S. Performing Loans, 12.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
01/01/2008	03/01/2014	100.0% Blmbg. U.S. Universal Index
01/01/1976	01/01/2008	100.0% Blmbg. U.S. Aggregate Index
Fixed Income Core Fixed Income Composite		
12/01/2019	Present	50.0% Blmbg. Intermed. U.S. Government/Credit, 50.0% Blmbg. U.S. Aggregate Index
Fixed Income Non-Core Fixed Income Composite		
12/01/2019	Present	50.0% 60% CredSuisLevLoan/40% BBStGovCorp, 50.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2019	12/01/2019	50.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 25.0% 60% CredSuisLevLoan/40% BBStGovCorp, 25.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2014	03/01/2019	50.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 25.0% Morningstar LSTA U.S. Performing Loans, 25.0% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
Real Estate Composite		
11/01/2011	Present	50.0% NCREIF NPI Lag, 50.0% FTSE NAREIT Equity REIT Index
10/01/1998	11/01/2011	100.0% NCREIF NPI Lag
04/01/1978	10/01/1998	100.0% NCREIF Property Index



From Date		To Date	Benchmark
Garcia Hamilton			
11/01/2019	Present		Blmbg. U.S. Aggregate Index

Manager Watch Screens

Performance Monitoring Summary

				Current Status			
Portfolio	Violation Type (Window) ¹	Date of Initial Violation	Correction Action(s)	Current Status	Est. Beg. Date of Current Status	Months Since Est. Beg. Date	Performance Since Est. Beg. Date ^{2,3}
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→ No managers are currently on watch

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	Acceptable	Acceptable
Parametric – BXM	Acceptable	Acceptable
Parametric – Delta Shift	Acceptable	Acceptable
Van Hulzen	Acceptable	Acceptable
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	3.2	23.1	8.1
Russell 3000 Index	3.2	23.1	8.1

Overall Status:

Acceptable

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)

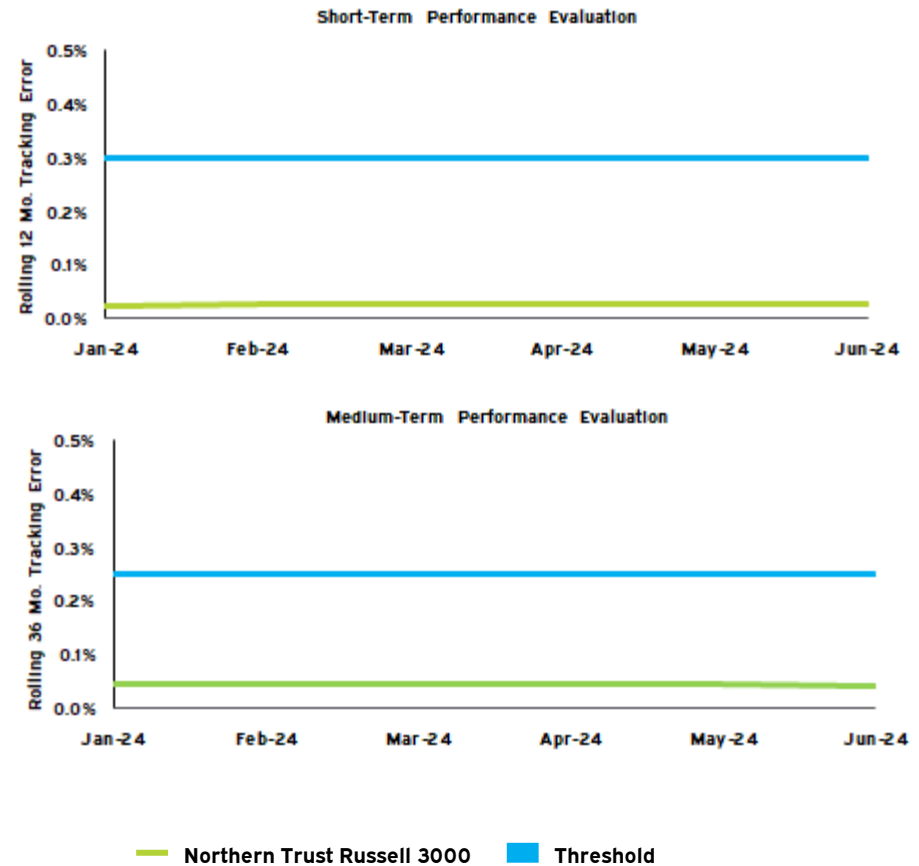
Tracking Error > 0.25% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

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

Current Status: Not available



Manager Performance			
	QTD	1 Yr	3 Yrs
Northern Trust ACWI ex US	1.1	11.7	0.7
MSCI AC World ex USA index	1.2	12.2	1.0

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**

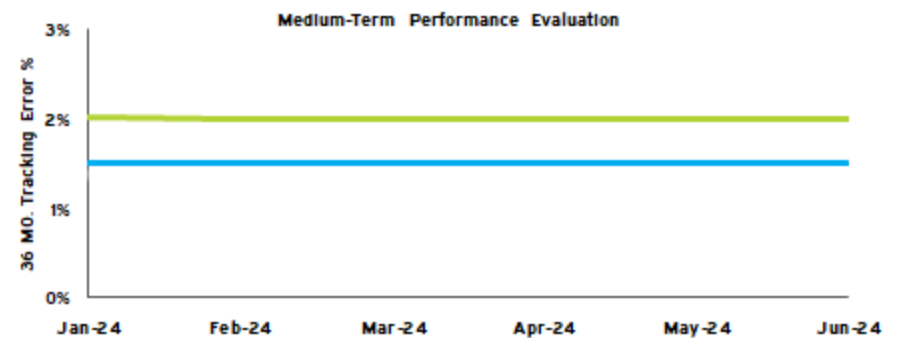
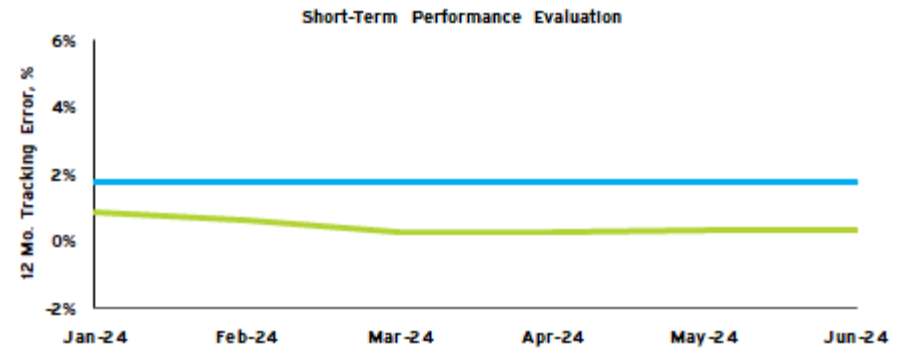
Long-Term Criteria (60+ months)

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

Current Status: **Not available**

Overall Status:

Acceptable



— Northern Trust ACWI ex US — Threshold

Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs
Parametric BXM	2.6	11.9	6.5	8.7
Cboe S&P 500 Buy Write Index	1.5	8.9	5.0	5.6

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**

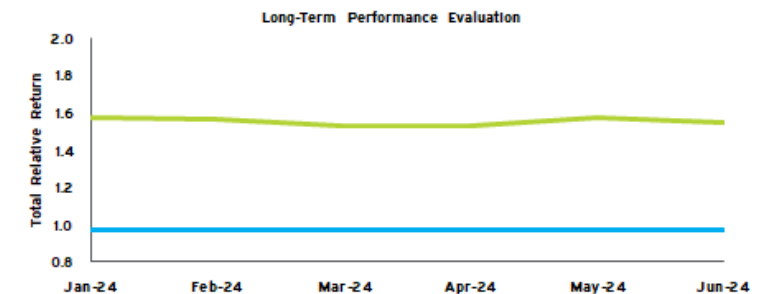
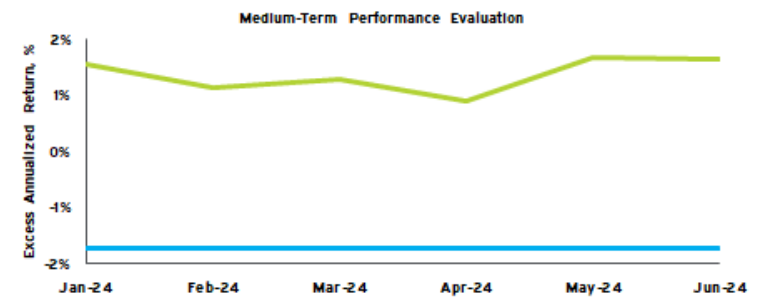
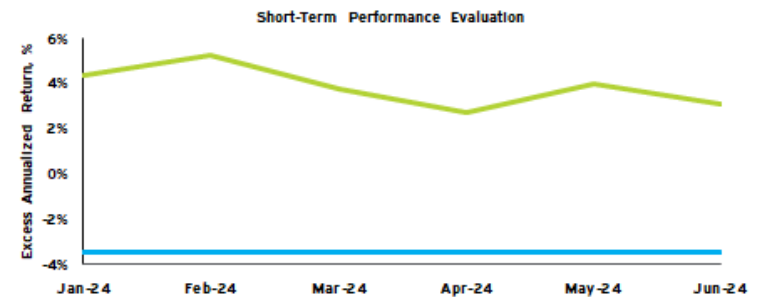
Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: **Acceptable**

Overall Status:

Acceptable



— Parametric BXM — Threshold

Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs (%)
Parametric Delta Shift	4.4	17.9	8.1	13.0
Cboe S&P 500 Buy Write Index	1.5	8.9	5.0	5.6

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**

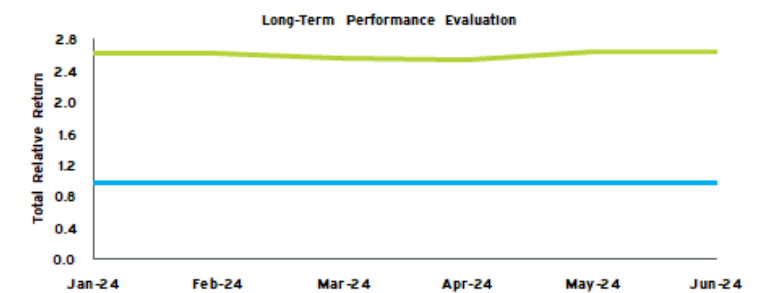
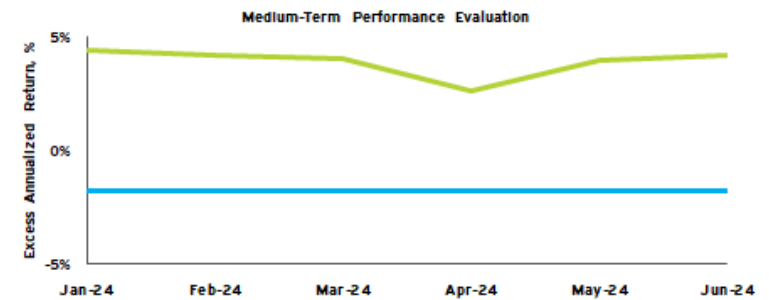
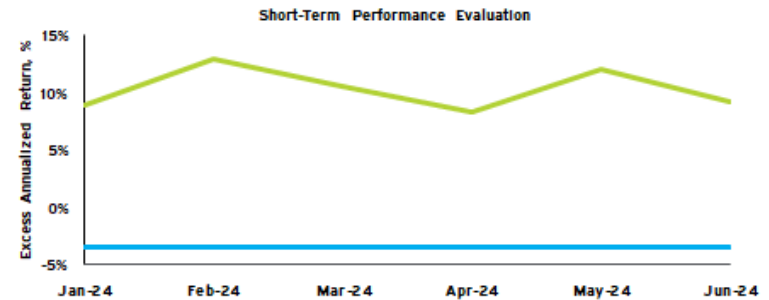
Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: **Acceptable**

Overall Status:

Acceptable



— Parametric Delta Shift ■ Threshold

Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs
Van Hulzen	1.9	11.7	4.1	5.6
Cboe S&P 500 Buy Write Index	1.5	8.9	5.0	5.6

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**

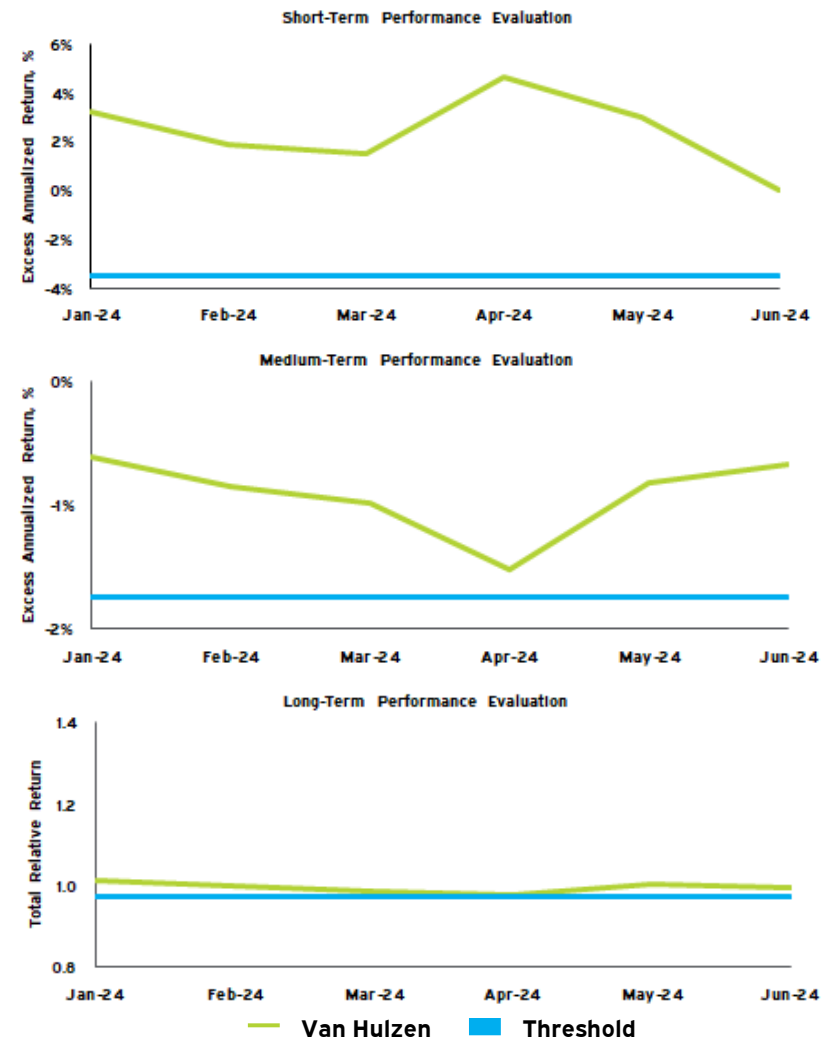
Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

Current Status: **Acceptable**

Overall Status:

Acceptable



Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs
CS McKee	0.1	3.7	-2.8	0.0
Blmbg. U.S. Aggregate Index	0.1	2.6	-3.0	-0.2

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**

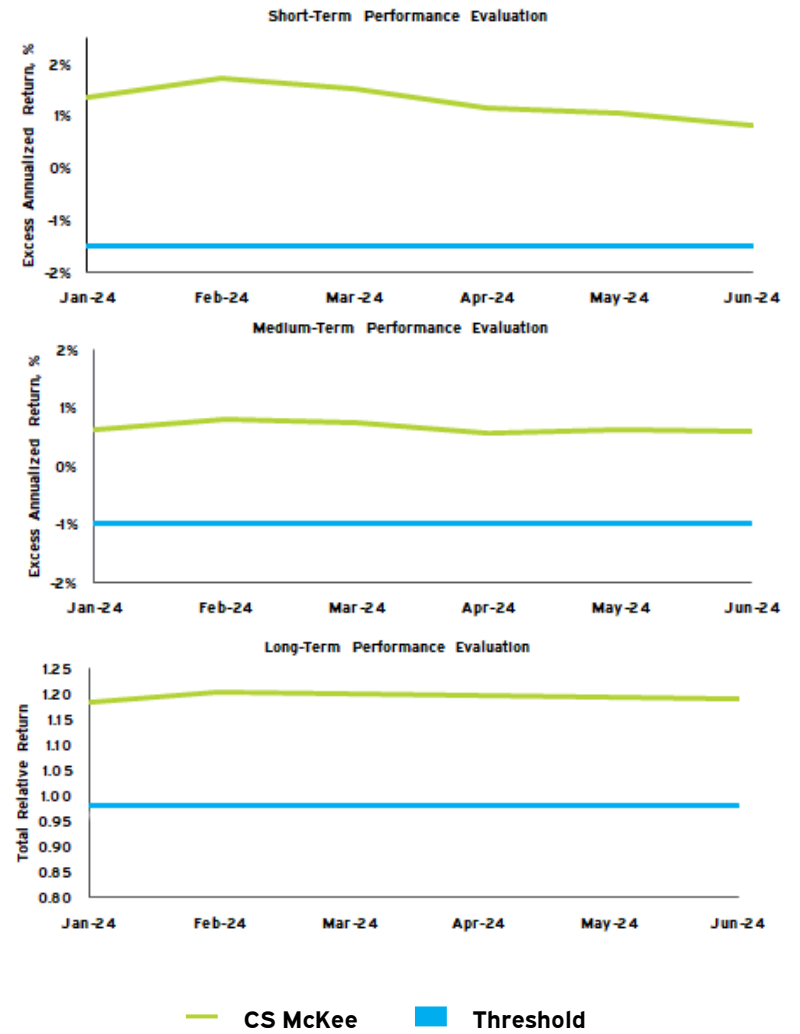
Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

Current Status: **Acceptable**

Overall Status:

Acceptable



Manager Performance			
	QTD	1 Yr	3 Yrs
Garcia Hamilton	-0.2	1.1	-1.5
Blmbg. U.S. Aggregate Index	0.1	2.6	-3.0

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)

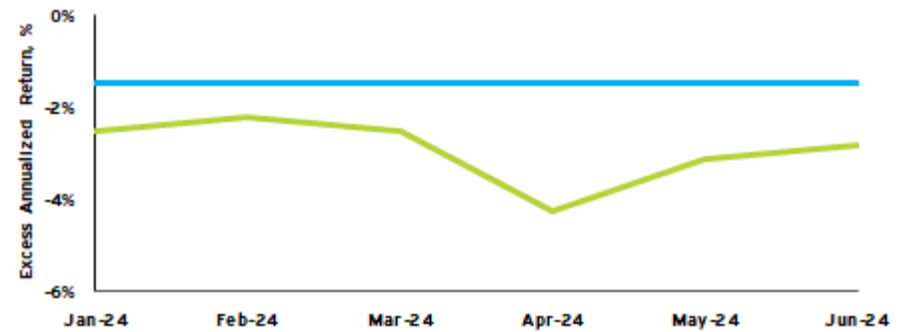
VRR < 0.98 for 6 consecutive months

Current Status: Not Applicable

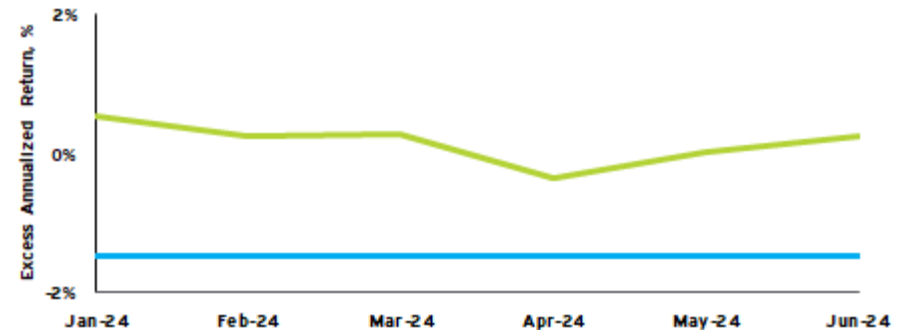
Overall Status:

Acceptable

Short-Term Performance Evaluation



Medium-Term Performance Evaluation



— Garcia Hamilton — Threshold

Manager Performance			
	QTD	1 Yr	3 Yrs
MacKay Shields (HY)	1.5	9.3	4.2
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	2.3	10.6	3.7

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**

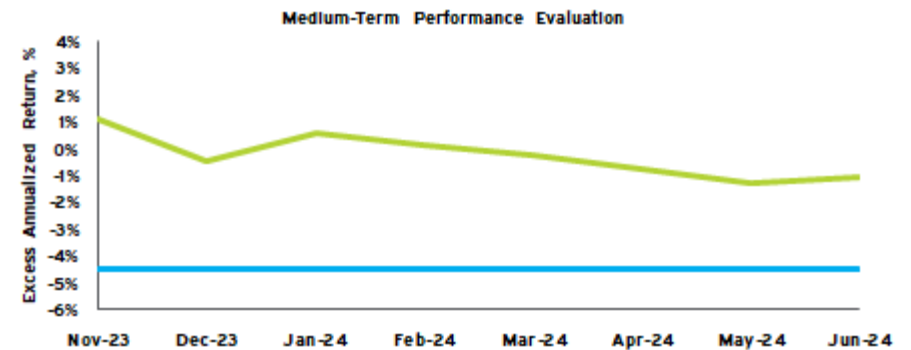
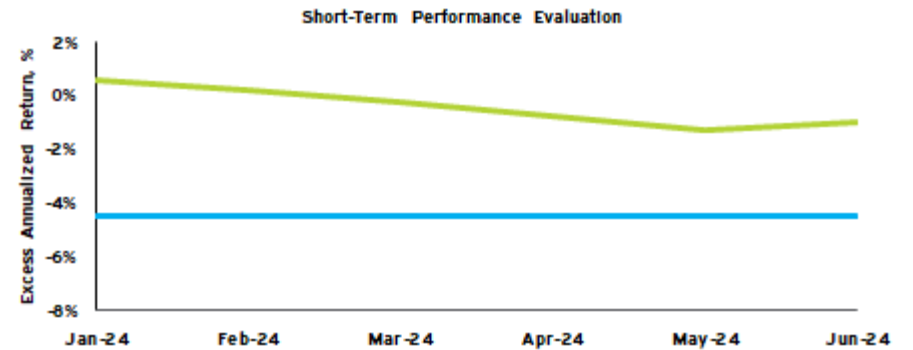
Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Not Applicable

Overall Status:

Acceptable



— MacKay Shields (HY) — Threshold

Manager Performance			
	QTD	1 Yr	3 Yrs
Federated Investment Counseling (Bank Loans)	2.1	8.9	2.7
60% CredSuisLevLoan/40% BBStGovCorp	1.6	8.8	4.7

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**

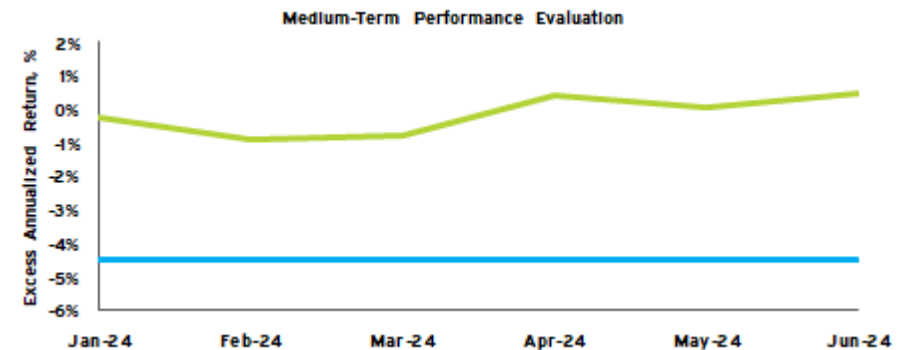
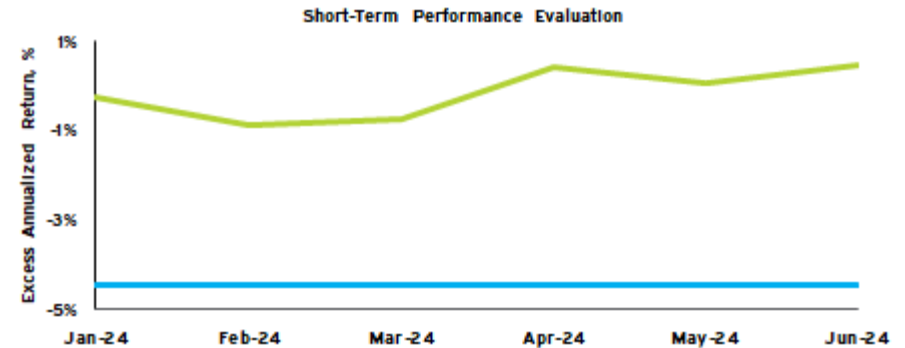
Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: **Acceptable**

Overall Status:

Acceptable



Federated Investment Counseling (Bank Loans)

Threshold

Manager Performance			
	QTD	1 Yr	3 Yrs
CenterSquare	0.6	7.9	0.5
FTSE NAREIT Equity REIT Index	0.1	7.8	0.3

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)

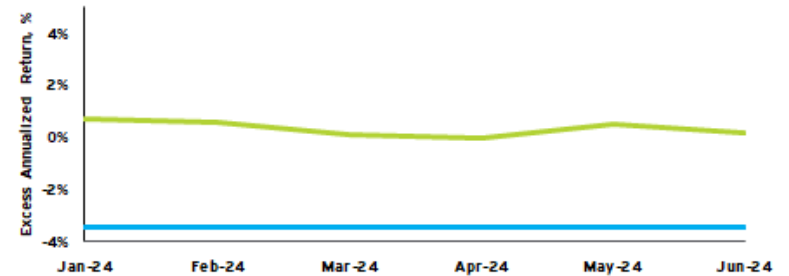
VRR < 0.97 for 6 consecutive months

Current Status: **Acceptable**

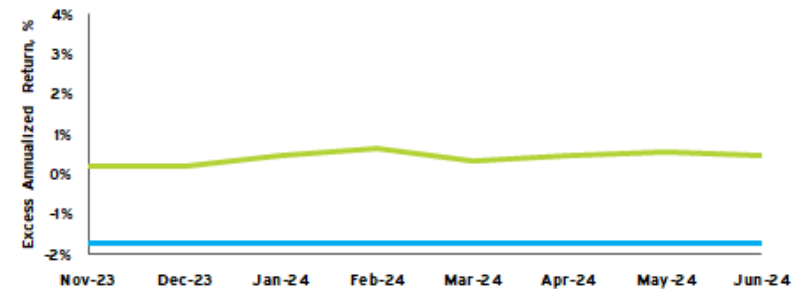
Overall Status:

Acceptable

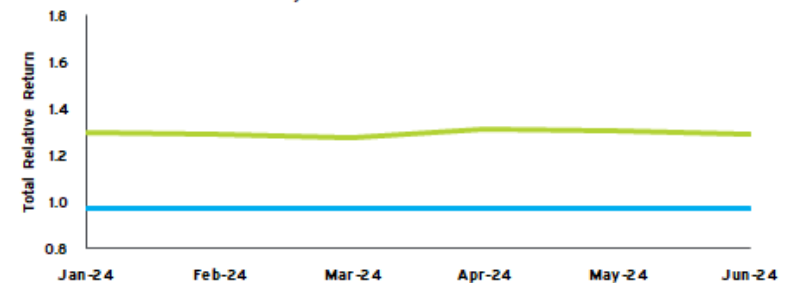
Short-Term Performance Evaluation



Medium-Term Performance Evaluation



Long-Term Performance Evaluation



CenterSquare 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	No	No	No	Yes*	No	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	Yes*	No	Yes
Mackay Shields	Fixed Income – Short-term HY	Yes	Yes	No	No	No	No	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	No	No	No	Yes*	No	Yes

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

* see detailed manager response below

Northern Trust – R3000 and ACWI ex US**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:

- June; David Abner joined NTAM as Head of Global ETFs & Funds. Dave will oversee the teams responsible for Mutual Fund and ETF product strategy, research & development, product management and capital markets, as well as fund services oversight and treasury functions. He will report to Paula Kar and join NTAM's Product Leadership.
- June; After nine years of service to Northern Trust, Maureen Bromwell, chief marketing officer for Asset Management (NTAM) has decided to leave to pursue other interests. The recruitment process for her successor will begin immediately. In the interim, Kelly Mannard, chief marketing and communications officer, will oversee the NTAM marketing team.
- April; After 37 years in the industry and serving Northern Trust for the past 8 years, John Abunassar, Head of our Global Institutional Client Group (GICG) has announced his decision to retire in June. A recruitment process for a new head of GICG is underway and will be filled by NTAM President, Daniel Gamba in the interim.
- April; Christian Roth, CFA joined NTAM as Chief Investment Officer for Global Fixed Income. Chris brings several years of experience managing fixed income investments and large teams of investment professionals since 1991. He will report directly to Angelo Manioudakis, Global CIO for Asset Management.

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

- The Parametric Technology team revised its organizational structure to pursue the growing demands of technology to support business growth, integrate further with Morgan Stanley technology policies, and to innovate.
- The following are key changes that were effective May 1, 2024:
- Alan Moore joined Parametric on April 1, 2024 to lead Architecture, Data and AI for the Radius platform. This team is responsible for AI Engineering, Data Engineering, Data Governance and Services, and Reporting and Workflow Architecture.
 - Lane McLaughlin is leading a newly created team focused on Developer Experience with the significant focus on technology process integration with Morgan Stanley. This team is responsible for Platform Engineering, Software Development Lifecycle (SDLC), and Quality Assurance.
 - Shivani Patil continues to lead the Platform Solution Management (PSM) and Digital Platform teams.
 - Stephanie Nicolai continues to lead the Process Resilience and Execution organization including Production Support, Project Management Office, Business Continuity, Technical Integration, and Controls.
 - Vlad Gomelsky is leading the Trading and Core Platform team. This team aims to deliver scalable solutions across asset classes for Trading and Operations and will develop foundational Core services for the Radius platform. This team is responsible for Trading and Surveillance, Operations Technology, Core Radius Services, and Derivatives Investment Systems.
 - Christopher Richards is leading the Investment Systems and Client Activities team. This team is responsible for Client Activity, Restrictions and Client Instructions, Onboarding, Fixed Income Investment Systems, Workflow Automation and Management, Equity Investments Systems, and Investment Services. This team will now include Fixed Income Investment systems.

Garcia Hamilton

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

→ Janna Hamilton and Beth McWilliams (CCO) have elected to retire from GH&A after 30 years of service.

CenterSquare

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

→ After more than 21 years of devoted service to CenterSquare David Rabin, Executive Director, Private Real Estate, retired from his position on April 15, 2024.

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: includes asset management, intermediate, and partnership fees – January 2023 – December 2023 = \$579,085.91
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.
 - EBMUD: includes asset management, intermediate, and partnership fees – January 2023 – December 2023 = \$579,085.91
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.

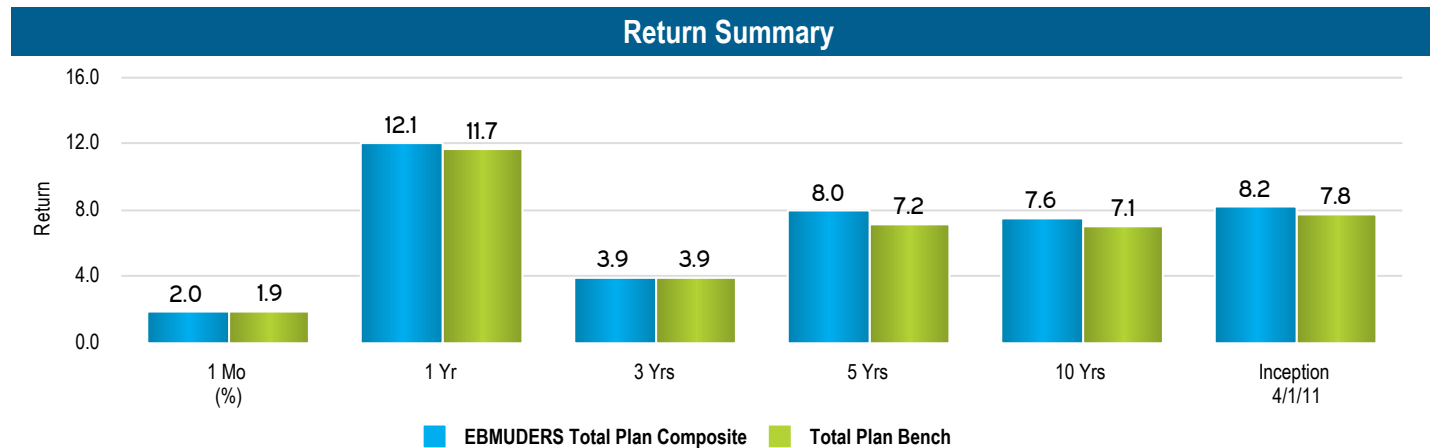
Gross = 6.0% Net = 5.2% (as of December 31, 2023)¹
7. Any other information required to be collected pursuant to Section 7514.7.

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.

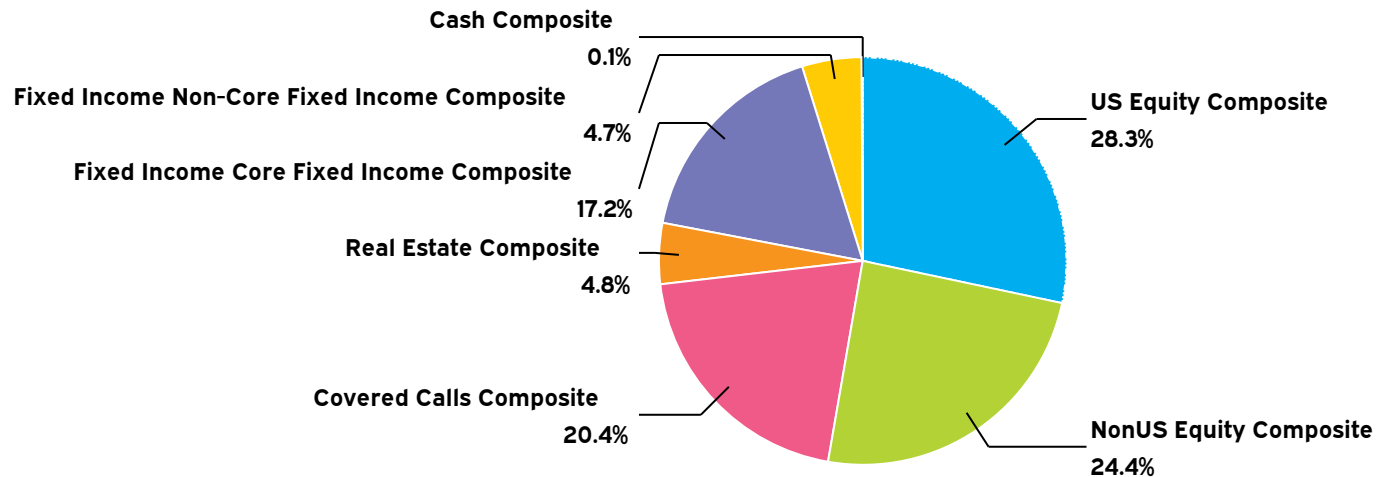
Gross of Fees Performance Snapshot as of July 31, 2024

Summary of Cash Flows		
	QTD	1 Yr
EBMUDERS Total Plan Composite		
Beginning Market Value	\$2,505,029,208	\$2,298,181,310
Net Cash Flow	-\$3,351,000	-\$24,614,926
Net Investment Change	\$49,325,694	\$277,437,518
Ending Market Value	\$2,551,003,903	\$2,551,003,903



Benchmark definitions are listed at the end of this report.

Allocation vs. Targets and Policy				
	Current Balance (\$)	Current Allocation (%)	Policy Range (%)	Within IPS Range?
Domestic Equity	\$722,248,308	28	20 - 30	Yes
International Equity	\$622,966,676	24	20 - 30	Yes
Covered Calls	\$521,303,038	20	17 - 23	Yes
Real Estate	\$123,157,561	5	3 - 7	Yes
Core Fixed Income	\$438,405,584	17	17 - 23	Yes
Non-Core Fixed Income	\$120,274,356	5	3 - 7	Yes
Cash	\$2,648,380	0	0 - 5	Yes
Total	\$2,551,003,903	100		



	Market Value \$	% of Portfolio	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)	Inception (%)	Inception Date
EBMUDERS Total Plan Composite	2,551,003,903	100.0	2.0	12.2	4.0	8.1	7.8	7.9	9.5	Aug-84
<i>Total Plan Benchmark</i>			<i>1.9</i>	<i>11.7</i>	<i>3.9</i>	<i>7.2</i>	<i>7.1</i>	<i>7.4</i>	<i>9.6</i>	
US Equity Composite	722,248,308	28.3	1.9	21.1	8.1	14.2	12.8	10.5	11.7	Aug-84
<i>Russell 3000 Hybrid</i>			<i>1.9</i>	<i>21.1</i>	<i>8.1</i>	<i>14.2</i>	<i>12.6</i>	<i>10.5</i>	<i>--</i>	
Non-US Equity Composite	622,966,676	24.4	2.2	9.8	2.0	6.9	4.5	6.6	6.6	Jul-95
<i>MSCI ACWI xUS (blend)</i>			<i>2.3</i>	<i>10.3</i>	<i>2.3</i>	<i>6.8</i>	<i>4.7</i>	<i>6.3</i>	<i>5.5</i>	
Covered Calls Composite	521,303,038	20.4	1.2	13.5	6.4	9.5	8.7	--	9.5	Feb-14
<i>Cboe S&P 500 Buy Write Index</i>			<i>1.1</i>	<i>8.6</i>	<i>5.2</i>	<i>5.6</i>	<i>5.9</i>	<i>5.6</i>	<i>6.4</i>	
Real Estate Composite	123,157,561	4.8	3.6	1.2	2.5	5.5	7.7	--	6.1	Jan-07
<i>Real Estate Composite Benchmark</i>			<i>3.1</i>	<i>2.2</i>	<i>2.8</i>	<i>5.0</i>	<i>7.0</i>	<i>8.0</i>	<i>6.7</i>	
Fixed Income Composite	558,679,940	21.9	2.2	6.3	-0.2	1.6	2.3	3.8	6.6	Aug-84
<i>Fixed Income Composite Benchmark</i>			<i>2.1</i>	<i>6.0</i>	<i>-0.7</i>	<i>1.3</i>	<i>2.2</i>	<i>3.5</i>	<i>6.4</i>	
Cash Composite	2,648,380	0.1	1.3	4.5	3.0	2.3	1.7	2.0	2.9	Apr-96
<i>FTSE 3 Month T-Bill</i>			<i>0.5</i>	<i>5.7</i>	<i>3.3</i>	<i>2.3</i>	<i>1.6</i>	<i>1.6</i>	<i>2.2</i>	

Benchmark definitions are listed at the end of this report.

	Market Value \$	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
EBMUDERS Total Plan Composite	2,551,003,903	2.0	12.2	4.0	8.1
<i>Total Plan Bench</i>		<i>1.9</i>	<i>11.7</i>	<i>3.9</i>	<i>7.2</i>
US Equity Composite	722,248,308	1.9	21.1	8.1	14.2
<i>Russell 3000 Hybrid</i>		<i>1.9</i>	<i>21.1</i>	<i>8.1</i>	<i>14.2</i>
Northern Trust Russell 3000	721,373,471	1.9	21.1	8.1	14.2
<i>Russell 3000 Index</i>		<i>1.9</i>	<i>21.1</i>	<i>8.1</i>	<i>14.2</i>
Non US Equity Composite	622,966,676	2.2	9.8	2.0	6.9
<i>MSCI ACWI xUS (blend)</i>		<i>2.3</i>	<i>10.3</i>	<i>2.3</i>	<i>6.8</i>
Northern Trust ACWI ex US	622,966,676	2.2	9.8	2.1	6.5
<i>MSCI AC World ex USA index</i>		<i>2.3</i>	<i>10.3</i>	<i>2.3</i>	<i>6.8</i>
Covered Calls Composite	521,303,038	1.2	13.5	6.4	9.5
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.1</i>	<i>8.6</i>	<i>5.2</i>	<i>5.6</i>
Parametric BXM	172,040,880	1.0	11.6	6.6	8.9
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.1</i>	<i>8.6</i>	<i>5.2</i>	<i>5.6</i>
Parametric Delta Shift	181,263,514	0.8	16.5	8.0	13.1
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.1</i>	<i>8.6</i>	<i>5.2</i>	<i>5.6</i>
Van Hulzen	167,998,644	1.9	12.3	4.7	6.2
<i>Cboe S&P 500 Buy Write Index</i>		<i>1.1</i>	<i>8.6</i>	<i>5.2</i>	<i>5.6</i>

	Market Value \$	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Core Fixed Income Composite	438,405,584	2.6	5.6	-1.4	0.8
<i>Fixed Income Core Composite Bench</i>		<i>2.1</i>	<i>5.5</i>	<i>-1.7</i>	<i>--</i>
CS McKee	221,660,191	2.4	6.6	-2.1	0.6
<i>Blmbg. U.S. Aggregate Index</i>		<i>2.3</i>	<i>5.1</i>	<i>-2.6</i>	<i>0.2</i>
Garcia Hamilton	216,745,393	2.9	4.6	-0.6	--
<i>Blmbg. U.S. Aggregate Index</i>		<i>2.3</i>	<i>5.1</i>	<i>-2.6</i>	<i>0.2</i>
Non-Core Fixed Income Composite	120,274,356	0.6	9.1	4.1	4.4
<i>Fixed Income Non-Core Composite Bench</i>		<i>1.1</i>	<i>9.7</i>	<i>4.6</i>	<i>4.3</i>
Mackay Shields (HY)	62,124,183	1.1	9.7	5.0	5.6
<i>ICE BofA ML US Corp Cash Pay BB-B 1-5Yr</i>		<i>1.5</i>	<i>10.9</i>	<i>4.2</i>	<i>4.4</i>
Federated Investment Counseling (Bank Loans)	58,150,173	0.1	8.6	3.3	3.1
<i>60% CredSuisLevLoan/40% BBStGovCorp</i>		<i>0.7</i>	<i>8.5</i>	<i>4.9</i>	<i>4.2</i>
Real Estate Composite	123,157,561	3.6	1.2	2.5	5.5
<i>Real Estate Composite Benchmark</i>		<i>3.1</i>	<i>2.2</i>	<i>2.8</i>	<i>5.0</i>
RREEF America II Lag	54,680,547	0.0	-9.7	4.0	4.1
<i>NCREIF NPI Lag</i>		<i>0.0</i>	<i>-7.2</i>	<i>3.6</i>	<i>3.8</i>
CenterSquare	68,477,014	6.7	12.1	1.2	6.1
<i>FTSE NAREIT Equity REIT Index</i>		<i>6.2</i>	<i>11.3</i>	<i>0.7</i>	<i>4.9</i>

	Market Value \$	1 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Cash Composite	2,648,380	1.3	4.5	3.0	2.3
Cash LAIF	2,648,380	1.3	4.5	3.0	2.3
<i>FTSE 3 Month T-Bill</i>		<i>0.5</i>	<i>5.7</i>	<i>3.3</i>	<i>2.3</i>

Benchmark History

From Date	To Date	Benchmark
EBMUDERS Total Plan Composite		
12/01/2019	Present	2.5% FTSE NAREIT Equity REIT Index, 25.0% Russell 3000 Index, 10.0% Blmbg. Intermed. U.S. Government/Credit, 10.0% Blmbg. U.S. Aggregate Index, 25.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 20.0% Cboe S&P 500 Buy Write Index, 2.5% 60% CredSuisLevLoan/40% BBStGovCorp, 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2019	12/01/2019	2.5% FTSE NAREIT Equity REIT Index, 25.0% Russell 3000 Index, 5.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 15.0% Blmbg. U.S. Aggregate Index, 25.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 20.0% Cboe S&P 500 Buy Write Index, 2.5% 60% CredSuisLevLoan/40% BBStGovCorp, 2.5% 50% BBG EM Hard Cur Agg: Sovereign/50% BBG EM USD Aggregate Corporate TR
07/01/2018	03/01/2019	2.5% FTSE NAREIT Equity REIT Index, 25.0% Russell 3000 Index, 5.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 15.0% Blmbg. U.S. Aggregate Index, 25.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 2.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%, 20.0% Cboe S&P 500 Buy Write Index, 2.5% NCREIF NPI Lag
04/01/2014	07/01/2018	2.5% FTSE NAREIT Equity REIT Index, 40.0% Russell 3000 Index, 5.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 10.0% Blmbg. U.S. Aggregate Index, 15.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 2.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%, 20.0% Cboe S&P 500 Buy Write Index, 2.5% NCREIF NPI Lag
03/01/2014	04/01/2014	2.5% FTSE NAREIT Equity REIT Index, 40.0% Russell 3000 Index, 15.0% Blmbg. U.S. Aggregate Index, 15.0% MSCI AC World ex USA index, 2.5% Morningstar LSTA U.S. Performing Loans, 2.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%, 20.0% Cboe S&P 500 Buy Write Index, 2.5% NCREIF NPI Lag
11/01/2011	03/01/2014	2.5% FTSE NAREIT Equity REIT Index, 50.0% Russell 3000 Index, 20.0% MSCI AC World ex USA index, 25.0% Blmbg. U.S. Universal Index, 2.5% NCREIF NPI Lag
01/01/2008	11/01/2011	50.0% Russell 3000 Index, 20.0% MSCI AC World ex USA index, 25.0% Blmbg. U.S. Universal Index, 5.0% NCREIF NPI Lag
01/01/2007	01/01/2008	50.0% Russell 3000 Index, 25.0% Blmbg. U.S. Aggregate Index, 20.0% MSCI AC World ex USA index, 5.0% NCREIF NPI Lag
10/01/2005	01/01/2007	50.0% Russell 3000 Index, 25.0% Blmbg. U.S. Aggregate Index, 20.0% MSCI EAFE (Net), 5.0% NCREIF NPI Lag
04/01/2005	10/01/2005	10.0% Russell 2000 Index, 30.0% S&P 500 Index, 10.0% S&P MidCap 400 Index, 25.0% Blmbg. U.S. Aggregate Index, 20.0% MSCI EAFE (Net), 5.0% NCREIF NPI Lag
09/01/1998	04/01/2005	10.0% Russell 2000 Index, 33.0% S&P 500 Index, 10.0% S&P MidCap 400 Index, 30.0% Blmbg. U.S. Aggregate Index, 17.0% MSCI EAFE (Net)
07/01/1978	09/01/1998	30.0% S&P 500 Index, 30.0% Blmbg. U.S. Aggregate Index, 5.0% FTSE 3 Month T-Bill, 15.0% MSCI EAFE (Net), 5.0% NCREIF NPI Lag, 15.0% Wilshire 5000 Total Market Index

From Date	To Date	Benchmark
Fixed Income Composite		
02/01/2023	Present	80.0% Blmbg. U.S. Aggregate Index, 10.0% 60% CredSuisLevLoan/40% BBStGovCorp, 10.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
12/01/2019	02/01/2023	40.0% Blmbg. Intermed. U.S. Government/Credit, 40.0% Blmbg. U.S. Aggregate Index, 10.0% 60% CredSuisLevLoan/40% BBStGovCorp, 10.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2019	12/01/2019	20.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 60.0% Blmbg. U.S. Aggregate Index, 10.0% 60% CredSuisLevLoan/40% BBStGovCorp, 10.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
07/01/2018	03/01/2019	20.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 60.0% Blmbg. U.S. Aggregate Index, 10.0% Morningstar LSTA U.S. Performing Loans, 10.0% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
04/01/2014	07/01/2018	25.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 50.0% Blmbg. U.S. Aggregate Index, 12.5% Morningstar LSTA U.S. Performing Loans, 12.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
03/01/2014	04/01/2014	75.0% Blmbg. U.S. Aggregate Index, 12.5% Morningstar LSTA U.S. Performing Loans, 12.5% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
01/01/2008	03/01/2014	100.0% Blmbg. U.S. Universal Index
01/01/1976	01/01/2008	100.0% Blmbg. U.S. Aggregate Index
Fixed Income Core Fixed Income Composite		
12/01/2019	Present	50.0% Blmbg. Intermed. U.S. Government/Credit, 50.0% Blmbg. U.S. Aggregate Index
Fixed Income Non-Core Fixed Income Composite		
12/01/2019	Present	50.0% 60% CredSuisLevLoan/40% BBStGovCorp, 50.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2019	12/01/2019	50.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 25.0% 60% CredSuisLevLoan/40% BBStGovCorp, 25.0% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
03/01/2014	03/01/2019	50.0% Bloomberg U.S. Gov/Credit 1-3 Year Index, 25.0% Morningstar LSTA U.S. Performing Loans, 25.0% Blmbg. U.S. High Yield 1-5 Yr Cash Pay 2%
Real Estate Composite		
11/01/2011	Present	50.0% NCREIF NPI Lag, 50.0% FTSE NAREIT Equity REIT Index
10/01/1998	11/01/2011	100.0% NCREIF NPI Lag
04/01/1978	10/01/1998	100.0% NCREIF Property Index



From Date		To Date	Benchmark
Garcia Hamilton			
11/01/2019		Present	Blmbg. U.S. Aggregate Index

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: $P/E \text{ ratio} = \text{Price} / \text{"Normalized" earnings for the S\&P 500 Index}$

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: $P/E \text{ ratio} = \text{Price} / \text{"Normalized" earnings for the MSCI EAFE Index}$

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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