

March 21, 2024

Q4 2023 Performance Report

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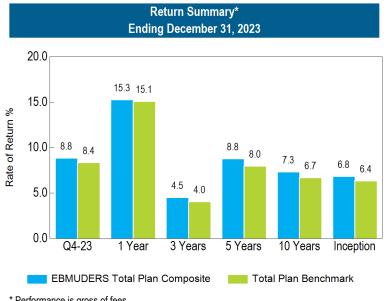
Agenda

- 1. Introduction
- 2. Economic and Market Update as of January 31, 2024
- 3. Fourth Quarter Performance Review
- 4. Gross Performance Update as of January 31, 2024
- 5. Manager Watch Screens
- 6. Manager Compliance Certification Responses
- 7. Appendix

Introduction



EBMUDERS Total Plan Composite | As of December 31, 2023



Summary of Cash Flows						
	Fourth Quarter	One Year				
Beginning Market Value	\$2,177,281,164	\$2,072,510,001				
Net Cash Flow	-\$9,080,214	-\$25,027,401				
Capital Appreciation	\$191,814,431	\$312,532,781				
Ending Market Value	\$2,360,015,381	\$2,360,015,381				

* Performance is gross of fees.

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)
EBMUDERS Total Plan Composite - Gross	8.8	15.3	4.5	8.8	7.3	7.4
EBMUDERS Total Plan Composite - Net	8.8	15.1	4.4	8.6	7.1	
Total Plan Benchmark	8.4	15.1	4.0	8.0	6.7	7.0
InvMetrics Public DB > \$1B Gross Median	6.8	11.4	4.4	8.4	6.7	6.9

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

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



EBMUDERS Total Plan Composite | As of December 31, 2023

	Performance Summ	ary						
	Market Value (\$)	% of Portfolio	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	20 Yrs (%)
EBMUDERS Total Plan Composite	2,360,015,381	100.0	8.8	15.3	4.5	8.8	7.3	7.4
Total Plan Benchmark			8.4	15.1	4.0	8.0	6.7	7.0
US Equity Composite	637,264,789	27.0	12.1	25.9	8.6	15.1	11.7	9.6
Russell 3000 Hybrid			12.1	26.0	<u>8.5</u>	<i>15.2</i>	11.5	9.7
Non-US Equity Composite	576,089,495	24.4	9.8	15.7	2.1	7.5	3.8	6.2
MSCI ACWI xUS (blend)			9.8	16.2	2.0	7.6	4.3	5.9
Covered Calls Composite	475,550,997	20.2	6.5	17.4	7.6	9.9		
CBOE S&P 500 BuyWrite USD			4.2	11.8	6.1	6.2		
Real Estate Composite	122,972,815	5.2	7.0	-0.4	7.5	7.9	9.0	
Real Estate Composite Benchmark			7.4	2.7	7.3	7.0	8.0	
Fixed Income Composite	546,083,686	23.1	6.9	6.4	-1.0	2.3	2.4	3.7
Fixed Income Composite Benchmark			6.3	6.1	-1.3	2.0	2.3	3.5
Cash Composite	2,053,598	0.1	1.0	4.8	2.0	2.1	1.4	1.8
FTSE T-Bill 3 Months TR			1.4	5.3	2.2	1.9	1.3	1.4

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

Economic and Market Update

Data as of January 31, 2024

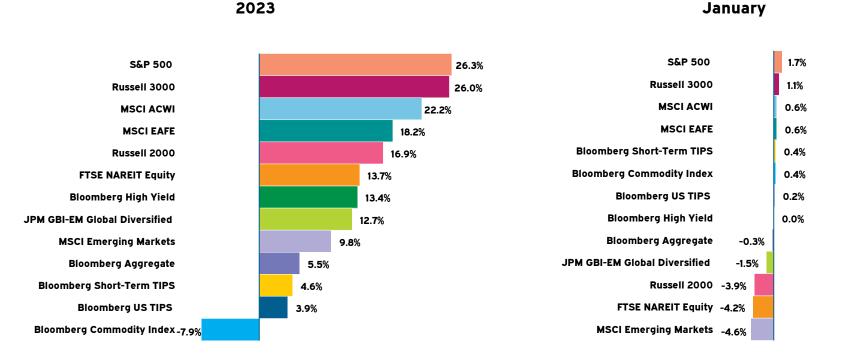


Commentary

 \rightarrow Markets were mixed in January after posting strong returns in 2023.

- Major central banks have largely paused interest rate hikes with expectations for many to cut rates this year. During the month there were signs though that many central banks, including the US, might not cut rates as soon as expected given strong economic data.
- In general inflation pressures have receded in most countries, but some uncertainty remains. Headline inflation fell in January in the US, but core inflation remained unchanged and elevated. China moved further into deflationary territory (-0.8%) in January.
- US equity markets (Russell 3000 index) rose 1.1% in January after a very strong 2023 (26.0%). There were mixed results across sectors, but technology continued to do well.
- Non-US developed equity markets gained 0.6% in January but 2.6% in local terms as the US dollar reversed course and strengthened during the month. The appreciation of the dollar was largely driven by strong economic data and related expectations that the Fed may delay policy rate cuts this year.
- Emerging market equity returns were also negatively influenced by the strong US dollar, but the biggest headwind in January was China (-10.6%). Emerging market equities had the weakest results for the month, down 4.6%.
- Bonds experienced selling pressure over the month, but ultimately finished the month nearly unchanged. The broad US bond market (Bloomberg Aggregate) declined (0.3%) in January.
- → Looking to the rest of this year, the paths of inflation and monetary policy, China's economic disorder and slowing economic growth, the many looming elections, and the wars in Ukraine and Israel, will be key.

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Index Returns¹

- → After a strong market performance in 2023, the start of 2024 saw US large cap growth stocks continue their rally causing the S&P 500 to lead the way. Emerging market equity was the worst performer, dragged down by the continued sell-off of Chinese stocks.
- → Better than expected economic news in the US weighed on bond markets for the month with the broad US bond market (Bloomberg Aggregate) down slightly.

¹ Source: Bloomberg. Data is as of January 31, 2024.



Domestic Equity	January (%)	Q4 2023 (%)	1 YR (%)	З YR (%)	5 YR (%)	10 YR (%)
S&P 500	1.7	11.7	20.8	11.0	14.3	12.6
Russell 3000	1.1	12.1	19.1	9.1	13.5	12.0
Russell 1000	1.4	12.0	20.2	9.8	14.0	12.3
Russell 1000 Growth	2.5	14.2	35.0	10.0	18.0	15.5
Russell 1000 Value	0.1	9.5	6.1	9.2	9.3	8.8
Russell MidCap	-1.4	12.8	6.7	5.5	10.1	9.5
Russell MidCap Growth	-0.5	14.5	15.1	1.2	11.2	10.7
Russell MidCap Value	-1.8	12.1	2.4	7.8	8.6	8.2
Russell 2000	-3.9	14.0	2.4	-0.8	6.8	7.0
Russell 2000 Growth	-3.2	12.7	4.5	-6.0	6.2	7.0
Russell 2000 Value	-4.5	15.3	-0.1	4.5	6.7	6.7

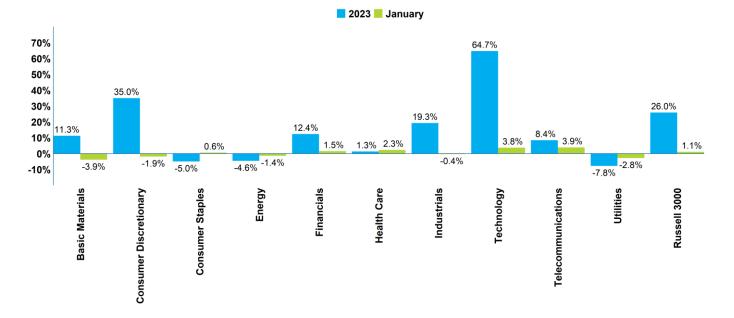
Domestic Equity Returns¹

US Equities: The Russell 3000 increased 1.1% in January with a one-year return of 19.1%.

- → US equities built on their large gains from last year in January. Strong corporate earnings, economic data suggesting a soft landing might be achievable, and hopes for significant interest rate cuts (for most of the month) all drove results.
- → Large cap stocks accounted for all the US equity market gains in January. NVIDIA, Microsoft, and Meta Platforms made up nearly 90% of the increase in the Russell 1000 index. Growth stocks outperformed value stocks across the market cap spectrum.
- → While US equities advanced as a group, small and mid-cap stocks both declined in January. Banks contributed to this dynamic after a surprise loss at New York Community Bancorp rekindled fears regarding the banking system.

¹ Source: Bloomberg. Data is as of January 31, 2024.





Russell 3000 Sector Returns¹

- → In January, telecommunications (3.9%), technology stocks (3.8%), and health care (2.3%) outperformed other sectors. Traditionally defensive sector utilities (-2.8%) trailed along with basic materials (-3.9%) and energy stocks (-1.4%).
- \rightarrow In 2023, technology (64.7%) and consumer discretionary (35.0%) sectors had the best results, helped respectively by artificial intelligence optimism and a healthy US consumer.

¹ Source: Bloomberg. Data is as of January 31, 2024.

Foreign Equity	January (%)	Q4 2023 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
MSCI ACWI ex. US	-1.0	9.8	5.9	1.1	5.3	4.2
MSCI EAFE	0.6	10.4	10.0	4.6	6.9	4.8
MSCI EAFE (Local Currency)	2.6	5.0	12.1	9.7	8.9	7.2
MSCI EAFE Small Cap	-1.6	11.1	3.6	-1.1	4.6	4.8
MSCI Emerging Markets	-4.6	7.9	-2.9	-7.5	1.0	2.9
MSCI Emerging Markets (Local Currency)	-3.5	5.6	-0.5	-4.9	3.2	5.3
MSCI China	-10.6	-4.2	-29.0	-23.2	-6.9	0.4

Foreign Equity Returns¹

Foreign Equity: Developed international equities (MSCI EAFE) gained 0.6% in January and had a one-year return of 10.0%. Emerging market equities (MSCI EM) fell -4.6% in January, and -2.9% for the trailing year.

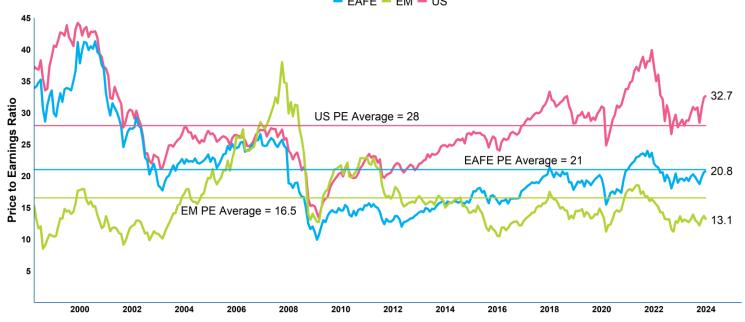
- → International developed equities saw slight gains for the month, while emerging market equities saw large losses for the same period; both were hampered by the US dollar reversing its sell-off from the end of last year. Outside of emerging markets, growth outperformed value for the month.
- → Eurozone equities performed well, benefiting from ECB policy expectations, developments in the tech sector, and promising manufacturing data. U.K. equities stalled, as an unexpected increase in inflation pushed out the expected timing of rate cuts. Japan continues to see the highest returns globally over optimism on structural changes, January being no exception.
- \rightarrow EM equities continue to be bogged down by China (-10.6%) despite news of further stimulus by the PBOC.

¹ Source: Bloomberg. Data is as of January 31, 2024.

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Equity Cyclically Adjusted P/E Ratios¹



– EAFE – EM – US

- \rightarrow In January, the US equity price-to-earnings ratio increased further above its 21st century average.
- → International market valuations were mixed in January and remain below the US. In the case of developed markets, valuations increased slightly to just below their long-term average, while emerging market valuations declined, remaining well below their average.

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 January 2023. The average line is the long-term average of the US, EM, and EAFE PE values from April 1998 to the recent month-end respectively.

Fixed Income	January (%)	Q4 2023 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)	Current Yield (%)	Duration (Years)
Bloomberg Universal	-0.2	6.8	2.7	-2.8	1.1	1.9	4.9	6.0
Bloomberg Aggregate	-0.3	6.8	2.1	-3.2	0.8	1.6	4.6	6.2
Bloomberg US TIPS	0.2	4.7	2.2	-1.0	2.9	2.2	4.2	6.9
Bloomberg Short-term TIPS	0.4	2.6	4.3	2.3	3.3	2.0	4.4	2.6
Bloomberg High Yield	0.0	7.2	9.3	1.9	4.4	4.5	7.8	3.7
JPM GBI-EM Global Diversified (USD)	-1.5	8.1	6.4	-3.3	-0.2	0.4	6.3	5.0

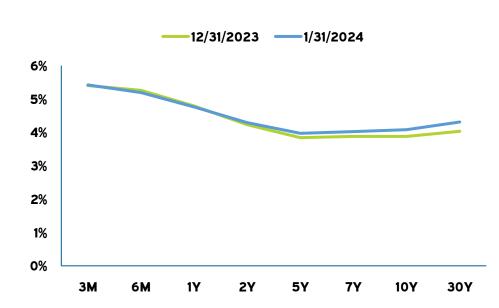
Fixed Income Returns¹

Fixed Income: The Bloomberg Universal index fell -0.2% in January but gained 2.7% on a one-year basis.

- → Strong economic data in January and comments toward the end of the month by Federal Reserve Chair Jerome Powell hinting that rate cuts were not imminent drove rates up over the month, weighing on bonds.
- → The broad US bond market (Bloomberg Aggregate) declined 0.3% for the month. The broader TIPS index rose 0.2%, while the less interest-rate-sensitive short-term TIPS index rose 0.4%.
- → High yield bonds ended the month unchanged, while emerging market debt declined by 1.5%. Both asset classes produced double-digit gains last year.

¹ Source: Bloomberg. JPM GBI-EM data is from InvestorForce. Data is as of January 31, 2024. The yield and duration data from Bloomberg is defined as the index's yield to worst and modified duration respectively.

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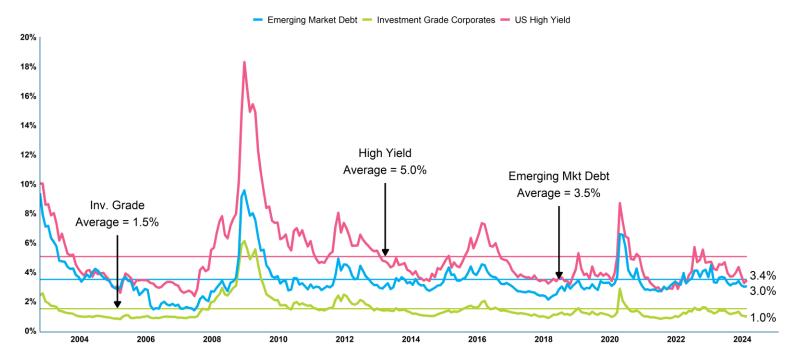
US Yield Curve¹

- → Both short-term and longer-term maturities ended the month largely unchanged, however, yields were volatile over the month on surprisingly strong economic data and shifts in monetary policy expectations.
- → For the month, two-year Treasury yields ended at 4.2% (around 1% below the peak from October) while 10-year Treasury yields ended at 3.9%.
- → The yield curve remained inverted at month-end despite a recent flattening trend. The yield spread between the two-year and ten-year Treasury was -0.3% at the end of January.

¹ Source: Bloomberg. Data is as of January 31, 2024.



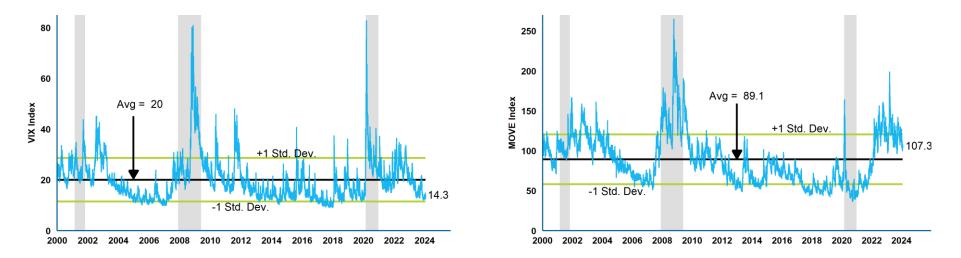
Credit Spreads vs. US Treasury Bonds¹



- → Credit spreads widened slightly for high yield in January (3.2% to 3.4%) while spreads for investment grade corporate and emerging market bonds remained the same.
- → Expectations of peaking policy rates and the corresponding increase in risk appetite has recently benefited credit, with spreads (the added yield above a comparable maturity Treasury) narrowing.
- \rightarrow All spreads remain below their respective long run averages, particularly within high yield.

¹ Sources: Bloomberg. Data is as of January 31, 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.



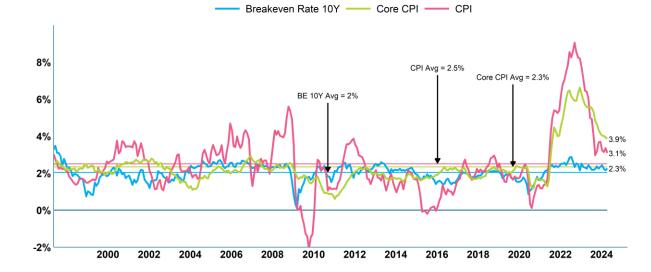


Equity and Fixed Income Volatility¹

- → Volatility in equities (VIX) remains close to one standard deviation below the long-term average as the focus shifted late last year to peaking policy rates and the potential for a soft landing.
- → Volatility in the bond market (MOVE) came down over the month (114.6 to 107.3) but remains elevated and well above its long-run average (89.1). The bond market remained on edge for most of 2023, driven largely by uncertainty about the ultimate path of monetary policy, as well as continued (and surprising) strength in economic data.

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 January 2024. The average line indicated is the average of the VIX and MOVE values between January 2020 and January 2024.





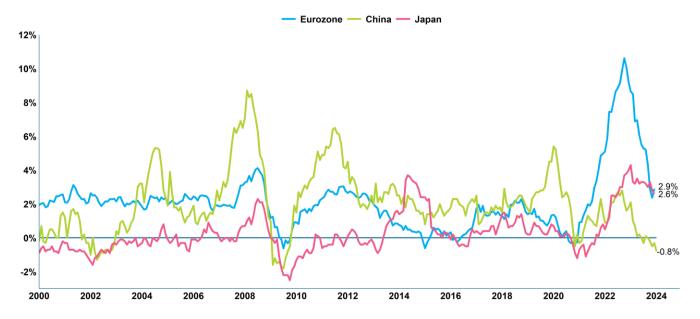
US Ten-Year Breakeven Inflation and CPI¹

- → Year-over-year headline inflation declined in January (3.4% to 3.1%) but not by as much as expected (expectations were for a 2.9% reading). Month-over-month inflation came in at 0.3%, the same as last month and slightly above expectations of 0.2%. Shelter continues to keep inflation elevated, increasing 6.0% from a year prior. Food rose 2.6% over the same period, while downward pressure on energy prices continued, falling 4.6%.
- → Core inflation excluding food and energy remained unchanged at 3.9% year-over-year (expectations were for a decline to 3.7%), with shelter costs again driving the total core index increase.
- → Inflation expectations (breakevens) have remained relatively stable despite the recent significant volatility in inflation.

¹ Source: FRED. Data is as January 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.







 \rightarrow Outside the US, inflation is also falling across major economies with China slipping further into deflation.

- → In the eurozone, inflation experienced a dramatic decline last year. In January inflation rose slightly (2.8% to 2.9%) remaining below the 3.1% year-over-year level in the US.
- → Inflation in Japan has slowly declined from the early 2023 peak, but it remains near levels not seen in almost a decade, largely driven by higher food prices.

¹ Source: FRED for United States CPI and Eurozone CPI. Source: Bloomberg for Japan CPI, China CPI, and Eurozone CPI. Data is as January 31, 2024, except Japan which is as of December 31, 2023.

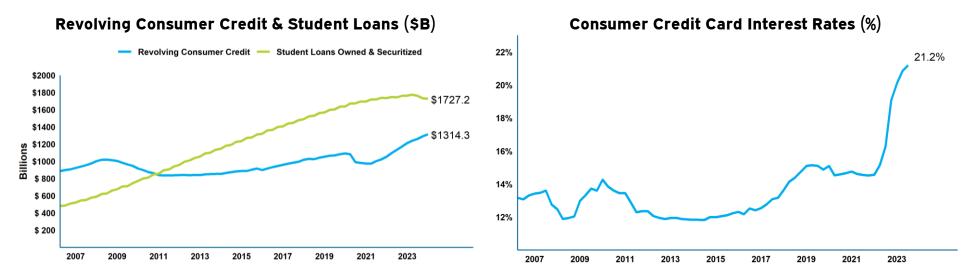




- \rightarrow Overall, the US labor market remains healthy with the unemployment rate relatively low, wage growth now positive in real terms, and initial claims for unemployment staying subdued.
- → In January, the number of jobs added in the US were stronger than expected (353,000 versus 185,000) with the unemployment rate remaining at 3.7%. Payrolls from November and December of last year were also revised upward. Business and professional, health care, and retail sales jobs rose the most in January.
- → The labor force participation remained relatively stable at 62.5%, well off the lows of the pandemic (60.1%) but not back to pre-pandemic levels (63.3%).
- \rightarrow The pace of hourly wage growth has declined from its peak of close to 6.0% but is above the 3.1% level of inflation. Wage growth rose at 4.5% year-on-year in January, an increase from the 4.1% level in December and above expectations of 4.1%.

¹ Source: FRED. Data is as January 31, 2024.



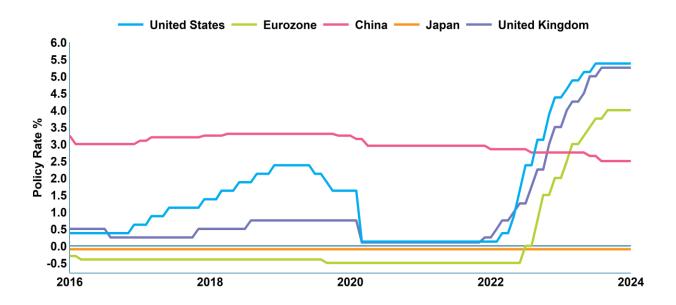


US Consumer Under Stress?¹

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

¹ Source: FRED. Data is as of December 31, 2023. Consumer Credit Card Rate data is as of September 30, 2023. Revolving Consumer Credit data is seasonally adjusted to remove distortions during the holiday season.

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Policy Rates¹

- → The Fed has been on hold since July 2023 when it raised rates to a range of 5.25%-5.50%. Markets are now pricing in around four rate cuts this year down from close to seven late last year as economic data has come in above expectations. There remains a gap between the amount of rate cuts the Fed is predicting compared to the market's expectations, but it has significantly narrowed.
- → The European and UK central banks also recently paused their rate increases on slowing inflation with cuts likely to follow there too. In Japan, the BoJ has further relaxed its yield curve control on the 10-year bond, and expectations for further policy normalization are rising.
- → The central bank in China has maintained interest rates at record low levels and continues to inject liquidity into the banking system, as weaker than expected economic data appears to indicate a widespread slowdown.

¹ Source: Bloomberg. Data is as of January 2024.





- \rightarrow Overall, the dollar finished last year only slightly below where it started but it was a volatile year for the US currency as expectations related to monetary policy evolved.
- → Strong economic data in the US may delay policy rate cuts this year which could contribute to upward pressure on the dollar as other countries pivot to rate cuts.

¹ Source: Bloomberg. Data as of January 31, 2024.



Summary

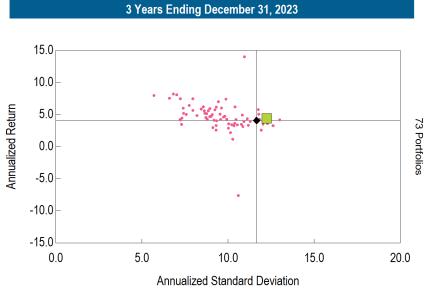
Key Trends:

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

Fourth Quarter Performance Review



EBMUDERS Total Plan Composite | As of December 31, 2023



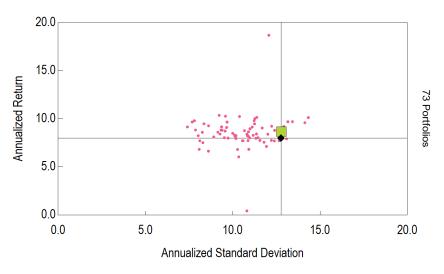
Annualized Return vs. Annualized Standard Deviation

EBMUDERS Total Plan Composite
InvMetrics Public DB > \$1B Gross

Total Plan Benchmark

3 Years Ending December 31, 2023							
Anlzd Anlzd Standard Return Deviation							
EBMUDERS Total Plan Composite	4.51%	12.24%	0.19				
Total Plan Benchmark	4.05%	11.65%	0.16				





EBMUDERS Total Plan Composite
 InvMetrics Public DB > \$1B Gross
 Total Plan Benchmark

5 Years Ending December 31, 2023								
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio					
EBMUDERS Total Plan Composite	8.78%	12.78%	0.55					
Total Plan Benchmark	7.97%	12.76%	0.48					

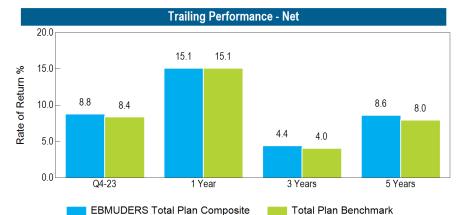




EBMUDERS Total Plan Composite

EBMUDERS Total Plan Composite - Gross

EBMUDERS Total Plan Composite | As of December 31, 2023



14.2

13.3

14.9

11.2

9.2

11.5

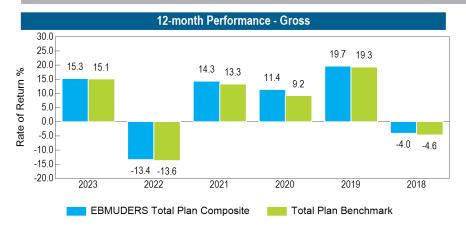
19.5

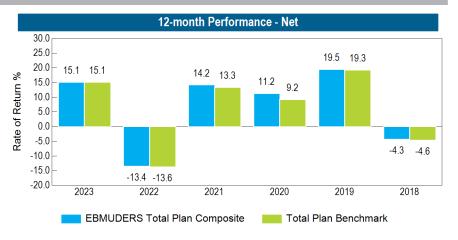
19.3

16.7

Total Plan Benchmark 10 Yrs 2023 2022 2021 2020 2019 QTD 1Yr 3 Yrs 5 Yrs 8.8 15.3 4.5 8.8 7.3 15.3 -13.4 14.3 11.4 19.7

EBMUDERS Total Plan Composite - Net 8.8 15.1 4.4 8.6 7.1 15.1 -13.4 Total Plan Benchmark 8.4 15.1 4.0 8.0 6.7 15.1 -13.6 InvMetrics Public DB > \$1B Gross Median 6.8 11.4 44 8.4 6.7 11.4 -11.1





2018

-4.0

-4.3

-4.6

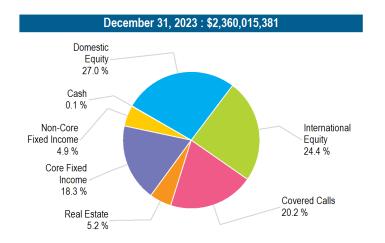
-3.7

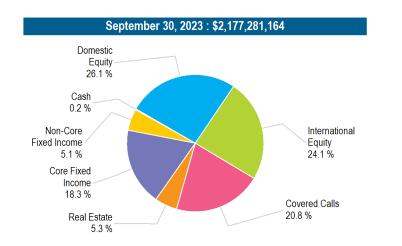


EBMUDERS Total Plan Composite | As of December 31, 2023

Asset Allocation vs. Target								
	Current (\$)	Current (%)	Policy (%)	Difference* (%)	Within Range			
Domestic Equity	637,264,789	27.0	25.0	2.0	Yes			
International Equity	576,089,495	24.4	25.0	-0.6	Yes			
Covered Calls	475,550,997	20.2	20.0	0.2	Yes			
Real Estate	122,972,815	5.2	5.0	0.2	Yes			
Core Fixed Income	430,801,175	18.3	20.0	-1.7	Yes			
Non-Core Fixed Income	115,282,512	4.9	5.0	-0.1	Yes			
Cash	2,053,599	0.1	0.0	0.1	Yes			
Total	2,360,015,381	100.0	100.0					

*Difference between Policy and Current Allocation





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



Manager Performance - Gross of Fees | As of December 31, 2023

Domestic and International Equity								
	Market Value	QTD	1 Yr	3 Yrs	5 Yrs			
US Equity Composite	637,264,789	12.1	25.9	8.6	15.1			
Russell 3000 Hybrid		12.1	26.0	8.5	15.2			
Northern Trust Russell 3000	636,378,648	12.1	26.0	8.6	15.1			
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Northern Trust ACWI ex US	576,089,495	9.8	15.7	1.9	7.2			
MSCI ACWI ex USA Gross		9.8	16.2	2.0	7.6			



Manager Performance - Gross of Fees | As of December 31, 2023

	Market Value	QTD	1 Yr	3 Yrs	5 Yrs
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CBOE S&P 500 BuyWrite USD		4.2	11.8	6.1	6.2
Parametric BXM	157,293,472	4.9	15.7	7.7	9.1
CBOE S&P 500 BuyWrite USD		4.2	11.8	6.1	6.2
Parametric Delta Shift	163,660,893	9.0	23.8	9.6	14.3
CBOE S&P 500 BuyWrite USD		4.2	11.8	6.1	6.2
Van Hulzen	154,596,632	5.7	12.6	5.5	6.3
CBOE S&P 500 BuyWrite USD		4.2	11.8	6.1	6.2



Manager Performance - Gross of Fees | As of December 31, 2023

Fixed Income Composite							
	Market Value	QTD	1 Yr	3 Yrs	5 Yrs		
Fixed Income Composite	546,083,686	6.9	6.4	-1.0	2.3		
Fixed Income Composite Benchmark		6.3	6.1	-1.3	2.0		
CS McKee	217,018,747	7.6	6.5	-3.0	1.5		
Bloomberg US Aggregate TR		6.8	5.5	-3.3	1.1		
Garcia Hamilton	213,782,428	8.1	4.3	-1.4			
Garcia Hamilton Custom Benchmark		6.8	4.3	-1.9			
MacKay Shields (HY)	59,479,539	4.5	10.9	4.6			
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr		5.6	11.5	3.4			
Federated Investment Counseling (Bank Loans)	55,802,973	2.3	9.5	2.7			
60% CredSuisLevLoan/40% BBStGovCorp		2.3	9.8	4.2			

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



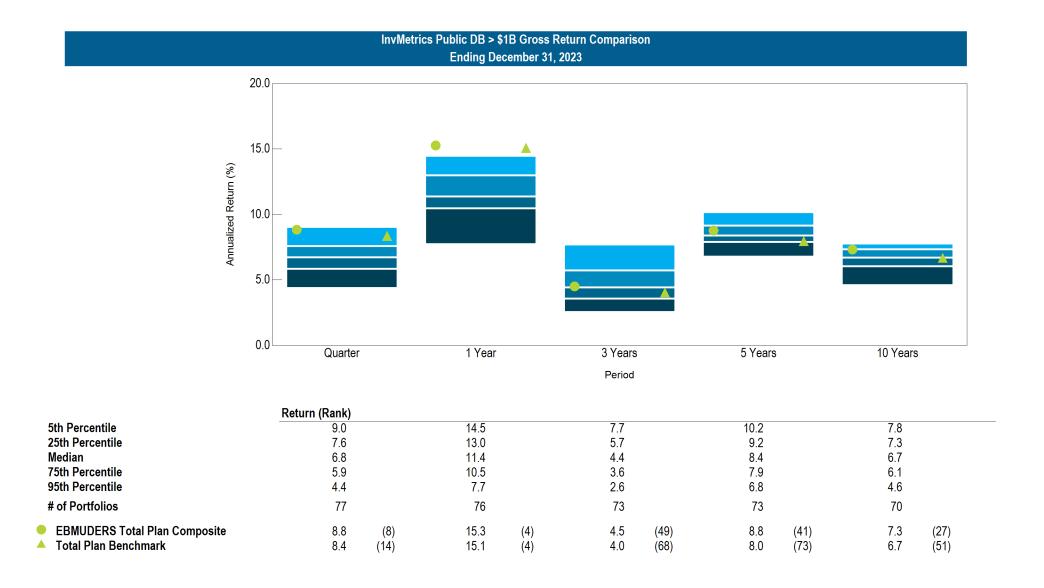
Manager Performance - Gross of Fees | As of December 31, 2023

Real Estate Composite								
	Market Value	QTD	1 Yr	3 Yrs	5 Yrs			
Real Estate Composite	122,972,815	7.0	-0.4	7.5	7.9			
Real Estate Composite Benchmark		7.4	2.7	7.3	7.0			
RREEF America II Lag	58,937,302	-1.5	-12.7	7.3	6.1			
NCREIF NPI Mo 1 Qtr Lag		-1.4	-8.3	6.2	5.4			
CenterSquare	64,035,513	16.3	14.6	7.4	8.6			
FTSE NAREIT Equity REIT		16.2	13.7	7.2	7.4			

RREEF American II Performance results are lagged one quarter.

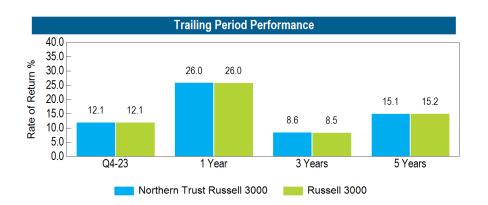


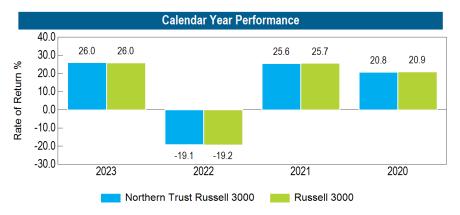
EBMUDERS Total Plan Composite | As of December 31, 2023

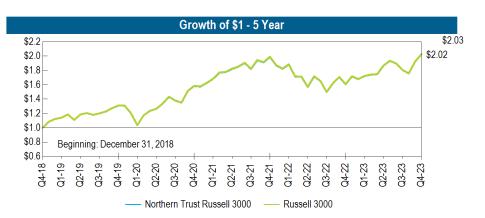


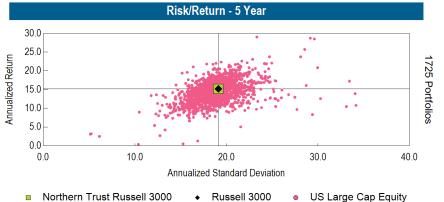
Northern Trust Russell 3000 | As of December 31, 2023

5 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Northern Trust Russell 3000	0.00%	1.00	-0.45	0.70	0.06%	1.00	99.61%	99.89%
Russell 3000	0.00%	1.00		0.70	0.00%	1.00	100.00%	100.00%





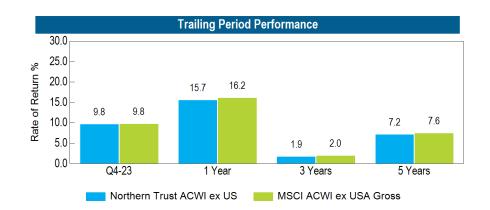


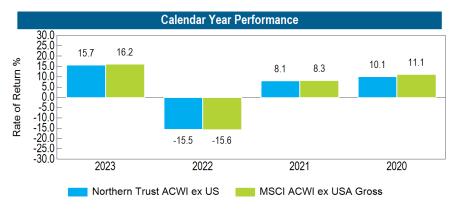


NorthernTrust Russell 3000 has an inception date of June 2018.

Northern Trust ACWI ex US | As of December 31, 2023

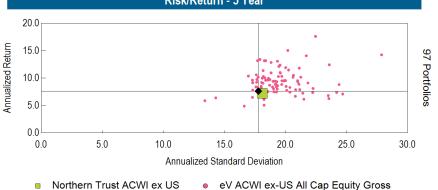
5 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Northern Trust ACWI ex US	-0.04%	1.01	-0.23	0.30	1.81%	0.99	102.45%	101.98%
MSCI ACWI ex USA Gross	0.00%	1.00		0.33	0.00%	1.00	100.00%	100.00%











Northern Trust ACWI ex US • eV ACWI ex-US All Cap MSCI ACWI ex USA Gross

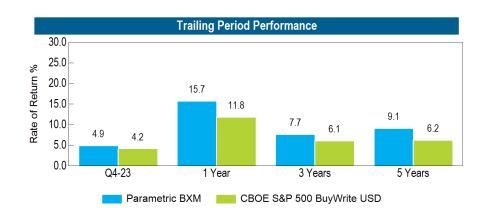
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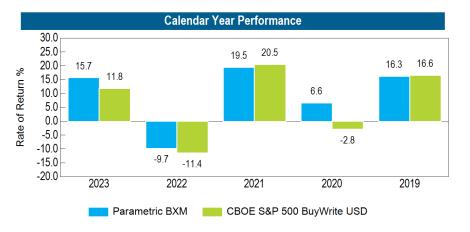
Northern Trust ACWI ex US has an inception date of June 2018.

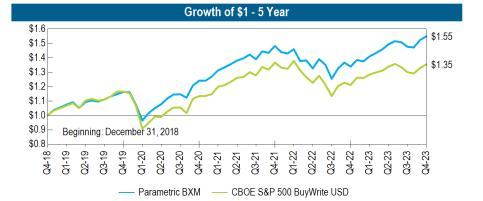
MEKETA INVESTMENT GROUP

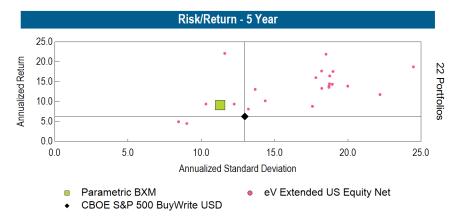
Parametric BXM | As of December 31, 2023

5 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Parametric BXM	0.29%	0.83	0.65	0.63	4.17%	0.90	97.41%	84.73%
CBOE S&P 500 BuyWrite USD	0.00%	1.00		0.34	0.00%	1.00	100.00%	100.00%





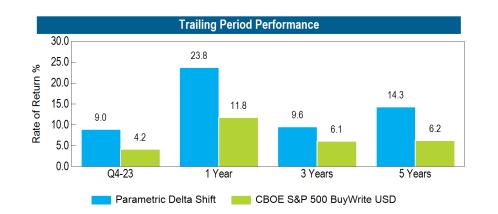


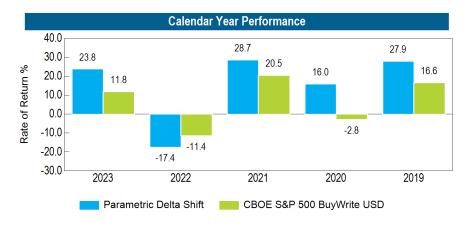


Parametric BXM has an inception date of March 2014.

Parametric Delta Shift | As of December 31, 2023

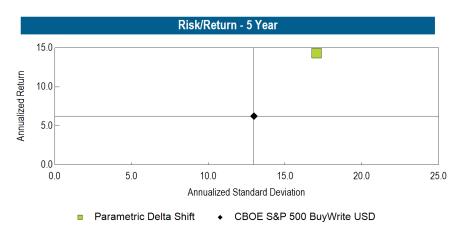
5 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Parametric Delta Shift	0.53%	1.19	1.02	0.72	7.60%	0.82	211.84%	116.56%
CBOE S&P 500 BuyWrite USD	0.00%	1.00		0.34	0.00%	1.00	100.00%	100.00%





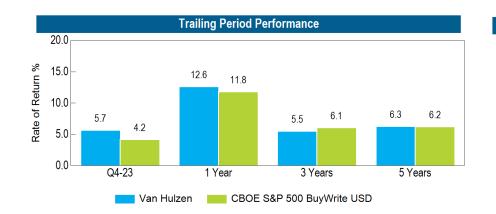
Parametric Delta Shift has an inception date of March 2014.

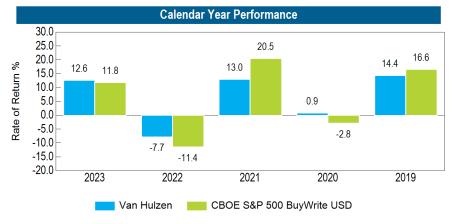




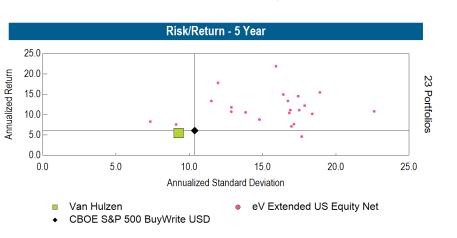
Van Hulzen | As of December 31, 2023

5 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Van Hulzen	0.12%	0.71	-0.04	0.42	5.51%	0.84	75.46%	83.04%
CBOE S&P 500 BuyWrite USD	0.00%	1.00		0.34	0.00%	1.00	100.00%	100.00%





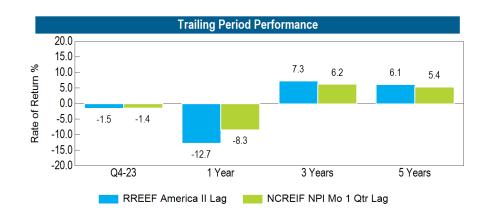




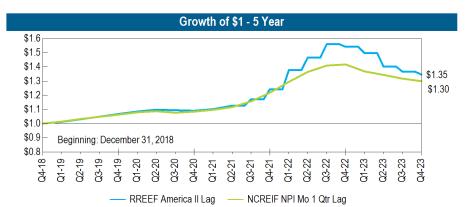
Van Hulzen has an inception date of March 2014.

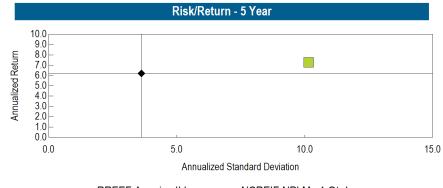
RREEF America II Lag | As of December 31, 2023

		5	5 Year Statistics	Summary				
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
RREEF America II Lag	-0.18%	1.42	-0.03	0.44	6.69%	0.28	114.22%	149.60%
NCREIF NPI Mo 1 Qtr Lag	0.00%	1.00		1.25	0.00%	1.00	100.00%	100.00%





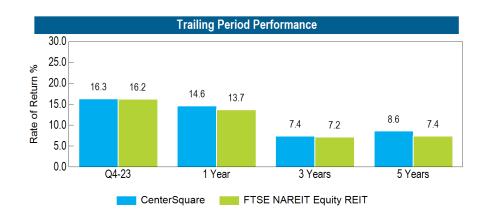


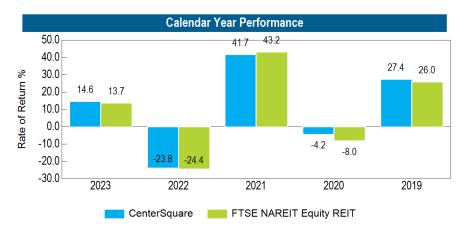


RREEF American II Performance results are lagged one quarter. RREEF America II Lag has an inception date of January 2007.

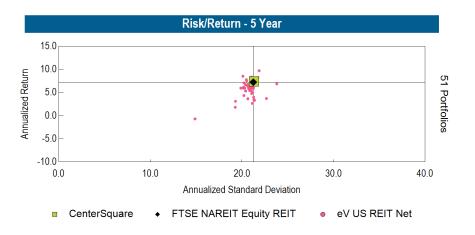
CenterSquare | As of December 31, 2023

5 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
CenterSquare	0.08%	0.97	0.56	0.31	1.65%	0.99	100.70%	98.49%
FTSE NAREIT Equity REIT	0.00%	1.00		0.26	0.00%	1.00	100.00%	100.00%





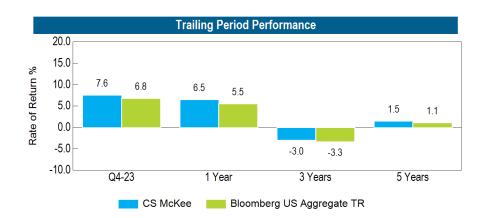


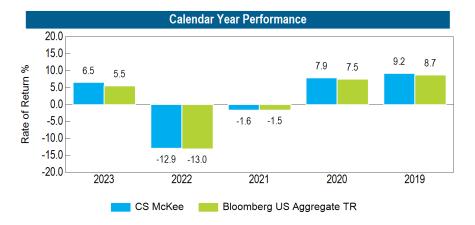


CenterSquare has an inception date of October 2011.

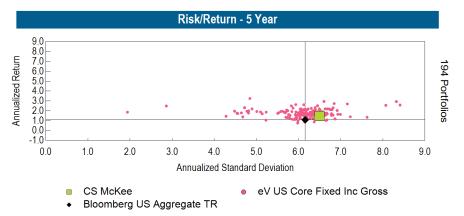
CS McKee | As of December 31, 2023

		5 ٢	ear Statistics	Summary				
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
CS McKee	0.02%	1.00	0.32	0.38	0.86%	0.96	103.16%	97.75%
Bloomberg US Aggregate TR	0.00%	1.00		0.32	0.00%	1.00	100.00%	100.00%





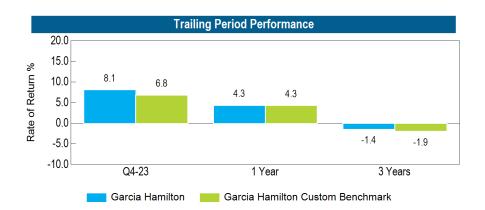




CS Mckee has an inception date of April 2010.

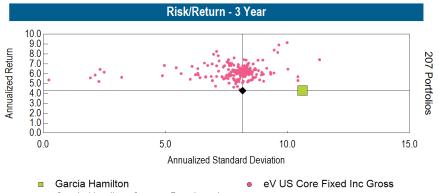
Garcia Hamilton | As of December 31, 2023

3 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Garcia Hamilton	0.08%	1.22	0.28	-0.49	1.92%	0.96	126.81%	110.32%
Garcia Hamilton Custom Benchmark	0.00%	1.00		-0.70	0.00%	1.00	100.00%	100.00%







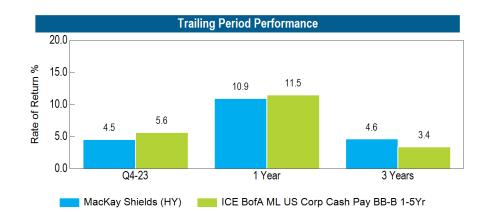


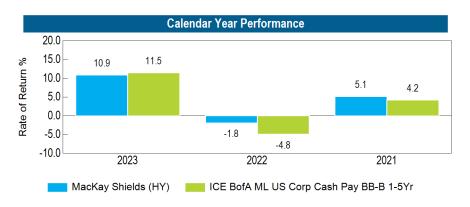
Garcia Hamilton Custom Benchmark

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

MacKay Shields (HY) | As of December 31, 2023

3 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
MacKay Shields (HY)	0.15%	0.67	0.35	0.48	2.22%	0.95	77.18%	57.36%
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	0.00%	1.00		0.21	0.00%	1.00	100.00%	100.00%









MacKay Shields (HY)

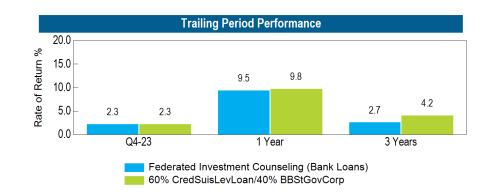
- ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
- eV US High Yield Fixed Inc Net

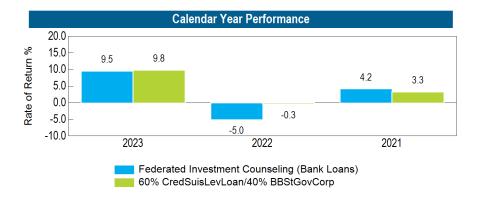
Mackay Shields has an inception date of February 2019. 5 Year Risk statistics are not available at this time.

East Bay Municipal Utility District Employees' Retirement System

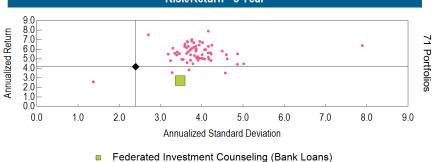
Federated Investment Counseling (Bank Loans) | As of December 31, 2023

3 Year Statistics Summary								
	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Federated Investment Counseling (Bank Loans)	-0.28%	1.34	-1.28	0.02	1.54%	0.86	88.03%	180.90%
60% CredSuisLevLoan/40% BBStGovCorp	0.00%	1.00		0.84	0.00%	1.00	100.00%	100.00%









60% CredSuisLevLoan/40% BBStGovCorp
 eV US Float-Rate Bank Loan Fixed Inc Gross

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

East Bay Municipal Utility District Employees' Retirement System

Asset Class Returns - Net of Fees | As of December 31, 2023

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
EBMUDERS Total Plan Composite	8.8	15.1	4.4	8.6
Total Plan Benchmark	8.4	15.1	4.0	8.0
US Equity Composite	12.1	25.9	8.6	15.1
Russell 3000 Hybrid	12.1	26.0	8.5	15.2
Non-US Equity Composite	9.8	15.6	2.1	7.4
MSCI ACWI xUS (blend)	9.8	16.2	2.0	7.6
Covered Calls Composite	6.5	17.1	7.5	9.8
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2
Real Estate Composite	6.9	-0.9	7.0	7.4
Real Estate Composite Benchmark	7.4	2.7	7.3	7.0
Fixed Income Composite	6.8	6.2	-1.2	2.1
Fixed Income Composite Benchmark	6.3	6.1	-1.3	2.0
Cash Composite	1.0	4.8	2.0	2.1
FTSE T-Bill 3 Months TR	1.4	<i>5.3</i>	2.2	1.9

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

East Bay Municipal Utility District Employees' Retirement System

Manager Returns - Net of Fees | As of December 31, 2023

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
US Equity Composite	12.1	25.9	8.6	15.1
Russell 3000 Hybrid	12.1	26.0	8.5	15.2
Northern Trust Russell 3000	12.1	26.0	8.6	15.1
Russell 3000	12.1	26.0	8.5	15.2
Non-US Equity Composite	9.8	15.6	2.1	7.4
MSCI ACWI xUS (blend)	9.8	16.2	2.0	7.6
Northern Trust ACWI ex US	9.8	15.6	1.8	7.2
MSCI ACWI ex USA Gross	9.8	16.2	2.0	7.6
Covered Calls Composite	6.5	17.1	7.5	9.8
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2
Parametric BXM	4.9	15.6	7.5	9.0
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2
Parametric Delta Shift	8.9	23.5	9.3	14.0
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2
Van Hulzen	5.6	12.4	5.2	6.0
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2

East Bay Municipal Utility District Employees' Retirement System

Manager Returns - Net of Fees | As of December 31, 2023

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
Real Estate Composite	6.9	-0.9	7.0	7.4
Real Estate Composite Benchmark	7.4	2.7	7.3	7.0
RREEF America II Lag	-1.7	-13.3	6.3	5.2
NCREIF NPI Mo 1 Qtr Lag	-1.4	-8.3	6.2	5.4
CenterSquare	16.2	14.3	7.1	8.3
FTSE NAREIT Equity REIT	16.2	13.7	7.2	7.4
Fixed Income Composite	6.8	6.2	-1.2	2.1
Fixed Income Composite Benchmark	6.3	6.1	-1.3	2.0
Fixed Income Core Fixed Income Composite	7.8	5.2	-2.3	1.6
Fixed Income Core Composite Bench	6.8	4.9	-2.6	
CS McKee	7.5	6.3	-3.2	1.3
Bloomberg US Aggregate TR	6.8	5.5	-3.3	1.1
Garcia Hamilton	8.1	4.2	-1.5	
Garcia Hamilton Custom Benchmark	6.8	4.3	-1.9	
Fixed Income Non-Core Fixed Income Composite	3.3	9.7	3.3	4.4
Fixed Income Non-Core Composite Bench	4.0	10.7	3.8	4.3
MacKay Shields (HY)	4.4	10.5	4.2	
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	5.6	11.5	3.4	
Federated Investment Counseling (Bank Loans)	2.2	9.0	2.2	
60% CredSuisLevLoan/40% BBStGovCorp	2.3	9.8	4.2	

EBMUDERS Total Plan Composite | As of December 31, 2023

	Benchmark History									
		As of December 31, 2023								
EBMUDERS To	EBMUDERS Total Plan Composite									
2/1/2023	Present	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 20% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index								
12/1/2019	1/31/2023	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% Bloomberg US Intermediate Gov/Cred / 10% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index								
3/1/2019	11/30/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index								
7/1/2018	2/28/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index								
4/1/2014	6/30/2018	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index								
3/1/2014	3/31/2014	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index								
11/1/2011	2/28/2014	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT								
1/1/2008	10/31/2011	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 5% NCREIF NPI Mo 1 Qtr Lag								
1/1/2007	12/31/2007	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Aggregate TR / 5% NCREIF Property Index								
10/1/2005	12/31/2006	50% Russell 3000 / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag / 20% MSCI EAFE								
4/1/2005	9/30/2005	30% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 20% MSCI EAFE / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag								



Fixed Income Composite | As of December 31, 2023

	Benchmark History						
		As of December 31, 2023					
Fixed Income C	Composite						
2/1/2023	Present	80% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 10% 60% CredSuisLevLoan/40% BBStGovCorp					
12/1/2019	1/31/2023	40% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 40% Bloomberg US Intermediate Gov/Cred / 10% 60% CredSuisLevLoan/40% BBStGovCorp					
3/1/2019	11/30/2019	60% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% 60% CredSuisLevLoan/40% BBStGovCorp					
7/1/2018	2/28/2019	60% Bloomberg US Aggregate TR / 10% Morningstar LSTA US Performing Loans Index / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% Bloomberg US High Yield 1-5Yr Cash Pay 2%					
4/1/2014	6/30/2018	50% Bloomberg US Aggregate TR / 12.5% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US Govt/Credit 1-3 Yr. TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2%					
3/1/2014	3/31/2014	75% Bloomberg US Aggregate TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 12.5% Morningstar LSTA US Performing Loans Index					
1/1/2008	2/28/2014	Bloomberg US Universal TR					
1/1/1976	12/31/2007	Bloomberg US Aggregate TR					
Fixed Income	e Core Fixed In	come Composite					
2/1/2023	Present	Bloomberg US Aggregate TR					
12/1/2019	1/31/2023	50% Bloomberg US Aggregate TR / 50% Bloomberg US Intermediate Gov/Cred					
Fixed Income	e Non-Core Fixe	ed Income Composite					
12/1/2019	Present	50% 60% CredSuisLevLoan/40% BBStGovCorp / 50% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr					
3/1/2019	11/30/2019	25% 60% CredSuisLevLoan/40% BBStGovCorp / 25% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 50% Bloomberg US Govt/Credit 1-3 Yr. TR					
3/1/2014	2/28/2019	25% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 50% Bloomberg US Govt/Credit 1-3 Yr. TR					



Non-US Equity Composite | As of December 31, 2023

	Benchmark History As of December 31, 2023					
Real Estate Cor	Real Estate Composite					
11/1/2011	Present	50% FTSE NAREIT Equity REIT / 50% NCREIF NPI Mo 1 Qtr Lag				
10/1/1998	10/31/2011	NCREIF NPI Mo 1 Qtr Lag				
4/1/1978	9/30/1998	NCREIF Property Index				
Garcia Hamilto	Garcia Hamilton					
2/1/2023	Present	Bloomberg US Aggregate TR				
11/1/2019	1/31/2023	Bloomberg US Govt/Credit Int TR				

Gross Performance Update As of January 31, 2024

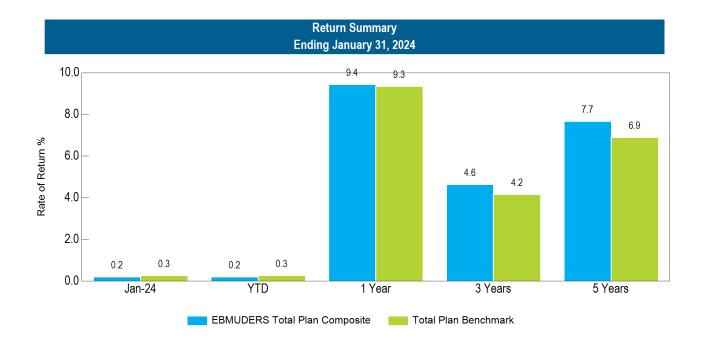


EBMUDERS Total Plan Composite | As of January 31, 2024

	Performance Summary						
	Market Value (\$)	% of Portfolio	1 Mo (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)
EBMUDERS Total Plan Composite	2,361,526,063	100.0	0.2	0.2	9.4	4.6	7.7
Total Plan Benchmark			0.3	0.3	9.3	4.2	6.9
US Equity Composite	637,550,747	27.0	1.1	1.1	19.2	9.1	13.5
Russell 3000 Hybrid			1.1	1.1	19.1	9.1	13.5
Non-US Equity Composite	569,642,807	24.1	-1.1	-1.1	5.5	1.7	5.7
MSCI ACWI xUS (blend)			-1.0	-1.0	6.4	1.6	5.8
Covered Calls Composite	482,662,088	20.4	1.5	1.5	14.6	8.3	9.2
CBOE S&P 500 BuyWrite USD			1.8	1.8	9.2	6.7	5.9
Real Estate Composite	120,446,247	5.1	-2.1	-2.1	-6.9	6.7	6.1
Real Estate Composite Benchmark			-2.6	-2.6	-4.5	6.3	5.2
Fixed Income Composite	545,255,097	23.1	-0.1	-0.1	3.4	-0.9	2.0
Fixed Income Composite Benchmark			-0.1	-0.1	3.4	-1.3	1.7
Cash Composite	5,969,077	0.3	1.0	1.0	4.1	2.3	2.2
FTSE T-Bill 3 Months TR			0.5	0.5	5.4	2.4	2.0

EBMUDERS Total Plan Composite | As of January 31, 2024

Summary of Cash Flows				
	Quarter-To-Date	One Year		
Beginning Market Value	\$2,360,015,381	\$2,183,503,131		
Net Cash Flow	-\$3,045,558	-\$24,912,531		
Capital Appreciation	\$4,556,240	\$202,935,463		
Ending Market Value	\$2,361,526,063	\$2,361,526,063		



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



EBMUDERS Total Plan Composite

Total Plan Benchmark

EBMUDERS Total Plan Composite | As of January 31, 2024

7.67%

6.90%

12.61%

12.59%



		Deviation	
EBMUDERS Total Plan Composite	4.64%	12.24%	0.19
Total Plan Benchmark	4.16%	11.65%	0.16

0.46

0.40

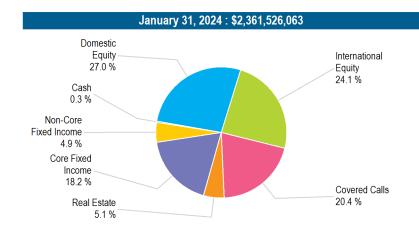
20.0

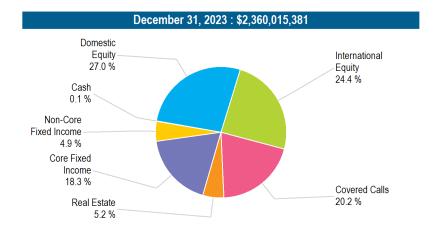
EBMUDERS Total Plan Composite | As of January 31, 2024

Asset Allocation vs. Target							
	Current (\$)	Current (%)	Policy (%)	Difference* (%)	Policy Range (%)	Within Range	
Domestic Equity	637,550,747	27.0	25.0	2.0	20.0 - 30.0	Yes	
International Equity	569,642,807	24.1	25.0	-0.9	20.0 - 30.0	Yes	
Covered Calls	482,662,088	20.4	20.0	0.4	17.0 - 23.0	Yes	
Real Estate	120,446,247	5.1	5.0	0.1	3.0 - 7.0	Yes	
Core Fixed Income	429,456,815	18.2	20.0	-1.8	17.0 - 23.0	Yes	
Non-Core Fixed Income	115,798,282	4.9	5.0	-0.1	3.0 - 7.0	Yes	
Cash	5,969,078	0.3	0.0	0.3	0.0 - 5.0	Yes	
Total	2,361,526,063	100.0	100.0				

*Difference between Policy and Current Allocation

¹Current policy target allocations elected by the Board in January 2019 took effect March 2019 upon the transition to the new long-term strategic allocation. ²Policy rebalancing ranges shown are for non-turbulent market periods. The Plan also has established rebalancing ranges to be in effect during turbulent market periods. ³RREEF results are lagged 1 quarter







Manager Performance - Gross of Fees | As of January 31, 2024

	Market Value	1 Mo	YTD	1 Yr	3 Yrs	5 Yrs
Domestic Equity	637,550,747					
Northern Trust Russell 3000	636,678,168	1.1	1.1	19.2	9.1	13.5
Russell 3000		1.1	1.1	19.1	9.1	13.5
International Equity	569,642,807					
Northern Trust ACWI ex US	569,642,807	-1.1	-1.1	5.5	1.5	5.4
MSCI ACWI ex USA Gross		-1.0	-1.O	6.4	1.6	5.8
Covered Calls	482,662,088					
Parametric BXM	159,630,828	1.5	1.5	13.5	8.2	8.6
CBOE S&P 500 BuyWrite USD		1.8	1.8	9.2	6.7	5.9
Parametric Delta Shift	165,855,261	1.3	1.3	18.3	10.3	13.1
CBOE S&P 500 BuyWrite USD		1.8	1.8	9.2	6.7	5.9
Van Hulzen	157,175,999	1.7	1.7	11.9	6.1	5.7
CBOE S&P 500 BuyWrite USD		1.8	1.8	9.2	6.7	5.9
Real Estate	120,446,247					
RREEF America II Lag	58,937,302	0.0	0.0	-12.7	7.1	6.0
NCREIF NPI Mo 1 Qtr Lag		-1.0	-1.O	-8.2	5.7	5.1
CenterSquare	61,508,945	-3.9	-3.9	-0.5	6.1	5.4
FTSE NAREIT Equity REIT		-4.2	-4.2	-1.5	5.7	4.1

¹RREEF results are lagged 1 quarter



Manager Performance - Gross of Fees | As of January 31, 2024

	Market Value	1 Mo	YTD	1 Yr	3 Yrs	5 Yrs
Core Fixed Income	429,456,815					
CS McKee	216,543,597	-0.2	-0.2	3.4	-2.8	1.2
Bloomberg US Aggregate TR		-0.3	-0.3	2.1	-3.2	0.8
Garcia Hamilton	212,913,218	-0.4	-0.4	0.8	-1.4	
Garcia Hamilton Custom Benchmark		-0.3	-0.3	2.1	-1.9	
Non-Core Fixed Income	115,798,282					
MacKay Shields (HY)	59,785,960	0.6	0.6	9.1	4.7	
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr		0.1	0.1	8.5	3.4	
Federated Investment Counseling (Bank Loans)	56,012,321	0.4	0.4	7.7	2.6	
60% CredSuisLevLoan/40% BBStGovCorp		0.6	0.6	8.7	4.1	
Cash	5,969,078					
Cash LAIF	5,969,077	1.0	1.0	4.1	2.3	2.2
FTSE T-Bill 3 Months TR		0.5	0.5	5.4	2.4	2.0

EBMUDERS Benchmark History | As of January 31, 2024

	Benchmark History							
	As of January 31, 2024							
EBMUDERS To	tal Plan Compo	site						
2/1/2023	Present	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 20% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index						
12/1/2019	1/31/2023	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 10% Bloomberg US Intermediate Gov/Cred / 10% Bloomberg US Aggregate TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index						
3/1/2019	11/30/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 2.5% 60% CredSuisLevLoan/40% BBStGovCorp / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index						
7/1/2018	2/28/2019	25% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 25% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index						
4/1/2014	6/30/2018	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 10% Bloomberg US Aggregate TR / 5% Bloomberg US Govt/Credit 1-3 Yr. TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index						
3/1/2014	3/31/2014	40% Russell 3000 / 20% CBOE S&P 500 BuyWrite USD / 15% MSCI ACWI ex USA Gross / 15% Bloomberg US Aggregate TR / 2.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT / 2.5% Morningstar LSTA US Performing Loans Index						
11/1/2011	2/28/2014	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 2.5% NCREIF NPI Mo 1 Qtr Lag / 2.5% FTSE NAREIT Equity REIT						
1/1/2008	10/31/2011	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Universal TR / 5% NCREIF NPI Mo 1 Qtr Lag						
1/1/2007	12/31/2007	50% Russell 3000 / 20% MSCI ACWI ex USA Gross / 25% Bloomberg US Aggregate TR / 5% NCREIF Property Index						
10/1/2005	12/31/2006	50% Russell 3000 / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag / 20% MSCI EAFE						
4/1/2005	9/30/2005	30% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 20% MSCI EAFE / 25% Bloomberg US Aggregate TR / 5% NCREIF NPI Mo 1 Qtr Lag						
9/1/1998	3/31/2005	33% S&P 500 / 10% S&P 400 MidCap / 10% Russell 2000 / 17% MSCI EAFE / 30% Bloomberg US Aggregate TR						
3/31/1996	8/31/1998	30% S&P 500 / 15% Wilshire 5000 / 15% MSCI EAFE / 30% Bloomberg US Aggregate TR / 5% NCREIF Property Index / 5% FTSE T-Bill 3 Months TR						



EBMUDERS Benchmark History | As of January 31, 2024

EBMUDERS 1	Total Plan x Sec	urities Lending Composite
		No Benchmark Selected
Public Equ	ity Composite	
1/1/2007	Present	71.43% Russell 3000 / 28.57% MSCI ACWI ex USA Gross
10/1/2005	12/31/2006	28.57% MSCI EAFE / 71.43% Russell 3000
4/1/2005	9/30/2005	42.86% S&P 500 / 14.285% S&P 400 MidCap / 14.285% Russell 2000 / 28.57% MSCI EAFE
9/1/1998	3/31/2005	47.14% S&P 500 / 14.285% S&P 400 MidCap / 14.285% Russell 2000 / 24.29% MSCI EAFE
1/1/1994	8/31/1998	50% S&P 500 / 25% Wilshire 5000 / 25% MSCI EAFE
US Equit	y Composite	
10/1/2005	Present	Russell 3000
4/1/2005	9/30/2005	60% S&P 500 / 20% S&P 400 MidCap / 20% Russell 2000
9/1/1998	3/31/2005	62.23% S&P 500 / 18.87% S&P 400 MidCap / 18.87% Russell 2000
4/1/1996	8/31/1998	33.3% Wilshire 5000 / 66.6% S&P 500
US Equ	uity Large Cap (Composite
10/1/2005	Present	Russell 1000 Value
6/1/1994	9/30/2005	S&P 500
Non-US	Equity Composi	te
1/1/2007	Present	MSCI ACWI ex USA Gross
1/1/1970	12/31/2006	MSCI EAFE
NonUS	E Developed M	arkets Composite
1/1/2007	Present	MSCI ACWI ex USA Gross
1/1/1970	12/31/2006	MSCI EAFE
Covered C	alls Composite	
	Present	CBOE S&P 500 BuyWrite USD



EBMUDERS Benchmark History | As of January 31, 2024

Real Estate	Composite	
11/1/2011	Present	50% FTSE NAREIT Equity REIT / 50% NCREIF NPI Mo 1 Qtr Lag
10/1/1998	10/31/2011	NCREIF NPI Mo 1 Qtr Lag
4/1/1978	9/30/1998	NCREIF Property Index
Fixed Incon	ne Composite	
2/1/2023	Present	80% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 10% 60% CredSuisLevLoan/40% BBStGovCorp
12/1/2019	1/31/2023	40% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 40% Bloomberg US Intermediate Gov/Cred / 10% 60% CredSuisLevLoan/40% BBStGovCorp
3/1/2019	11/30/2019	60% Bloomberg US Aggregate TR / 10% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% 60% CredSuisLevLoan/40% BBStGovCorp
7/1/2018	2/28/2019	60% Bloomberg US Aggregate TR / 10% Morningstar LSTA US Performing Loans Index / 20% Bloomberg US Govt/Credit 1-3 Yr. TR / 10% Bloomberg US High Yield 1-5Yr Cash Pay 2%
4/1/2014	6/30/2018	50% Bloomberg US Aggregate TR / 12.5% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US Govt/Credit 1-3 Yr. TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2%
3/1/2014	3/31/2014	75% Bloomberg US Aggregate TR / 12.5% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 12.5% Morningstar LSTA US Performing Loans Index
1/1/2008	2/28/2014	Bloomberg US Universal TR
1/1/1976	12/31/2007	Bloomberg US Aggregate TR
Fixed Inc	ome Core Fixed	d Income Composite
2/1/2023	Present	Bloomberg US Aggregate TR
12/1/2019	1/31/2023	50% Bloomberg US Aggregate TR / 50% Bloomberg US Intermediate Gov/Cred
Fixed Inc	ome Non-Core	Fixed Income Composite
12/1/2019	Present	50% 60% CredSuisLevLoan/40% BBStGovCorp / 50% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr
3/1/2019	11/30/2019	25% 60% CredSuisLevLoan/40% BBStGovCorp / 25% ICE BofA ML US Corp Cash Pay BB-B 1-5Yr / 50% Bloomberg US Govt/Credit 1-3 Yr. TR
3/1/2014	2/28/2019	25% Morningstar LSTA US Performing Loans Index / 25% Bloomberg US High Yield 1-5Yr Cash Pay 2% / 50% Bloomberg US Govt/Credit 1-3 Yr. TR
Cash Comp	oosite	
	Present	FTSE T-Bill 3 Months TR

Manager Watch Screens



Manager Watch Screens

Performance Monitoring Summary

					Current S	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 ²³

 \rightarrow As of December 31, 2023 there are no managers 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.



Manager Watch Screens

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.
- $\rightarrow\,$ 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		
Northern Trust – ACWIxUS	Acceptable	Acceptable
Parametric – BXM	Acceptable	Acceptable
Parametric – Delta Shift	Acceptable	Acceptable
Van Hulzen	Acceptable	Acceptable
CS McKee	Acceptable	Acceptable
Garcia Hamilton		
Mackay Shields – Short Term HY	Acceptable	Acceptable
Federated – Bank Loans		
CenterSquare	Acceptable	Acceptable



Manager Watch Screens

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.

Northern Trust Russell 3000 | As of December 31, 2023

Manager Performance					
	QTD	1 Yr	3 Yrs		
Northern Trust Russell 3000	12.1	26.0	8.6		
Russell 3000	12.1	26.0	8.5		

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)

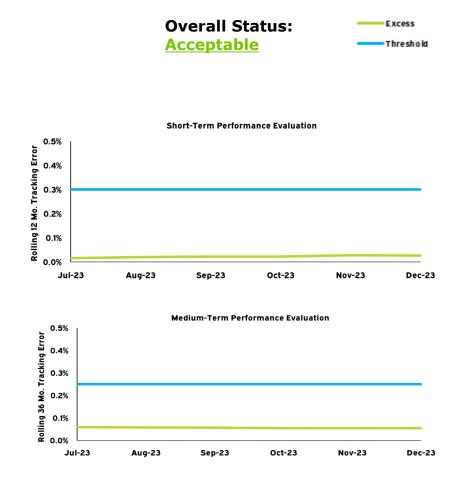
Tracking error > 0.25% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

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

Current Status: Not Applicable



Northern Trust ACWI ex US | As of December 31, 2023

Manager Performance					
	QTD	1 Yr	3 Yrs		
Northern Trust ACWI ex US	9.8	15.6	1.8		
MSCI ACWI ex USA Gross	9.8	16.2	2.0		

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)

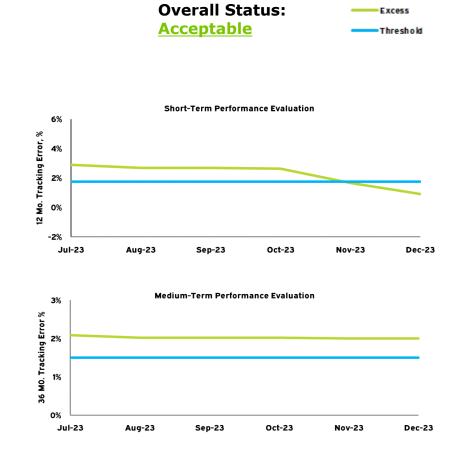
Tracking error > 1.5% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

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

Current Status: Not Applicable



Parametric BXM | As of December 31, 2023

Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs
Parametric BXM	4.9	15.6	7.5	9.0
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2

Short-Term Criteria (rolling 12-month periods)

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

Current Status: Acceptable

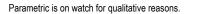
Medium-Term Criteria (rolling 36-month periods)

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

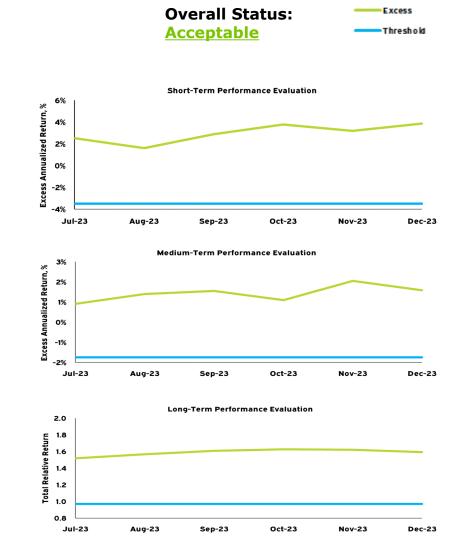
Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months







Parametric Delta Shift | As of December 31, 2023

Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs
Parametric Delta Shift	8.9	23.5	9.3	14.0
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2

Short-Term Criteria (rolling 12-month periods)

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

Current Status: Acceptable

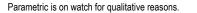
Medium-Term Criteria (rolling 36-month periods)

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

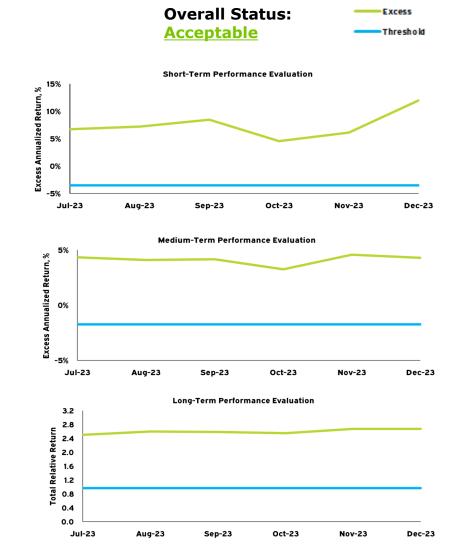
Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months







Van Hulzen | As of December 31, 2023

Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs
Van Hulzen	5.7	12.6	5.5	6.3
CBOE S&P 500 BuyWrite USD	4.2	11.8	6.1	6.2

Short-Term Criteria (rolling 12-month periods)

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

Current Status: Acceptable

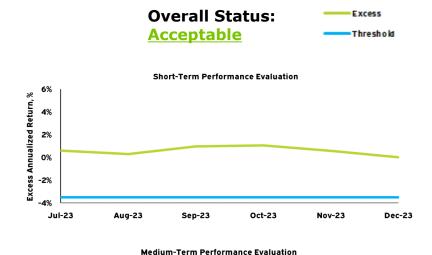
Medium-Term Criteria (rolling 36-month periods)

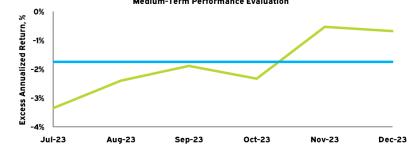
Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

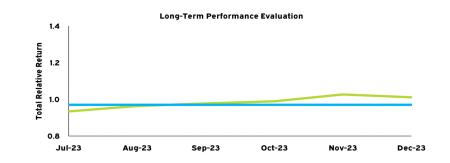
Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months







CS McKee | As of December 31, 2023

Manager Performance				
	QTD	1 Yr	3 Yrs	5 Yrs
CS McKee	7.5	6.3	-3.2	1.3
Bloomberg US Aggregate TR	6.8	5.5	-3.3	1.1

Short-Term Criteria (rolling 12-month periods)

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

Current Status: Acceptable

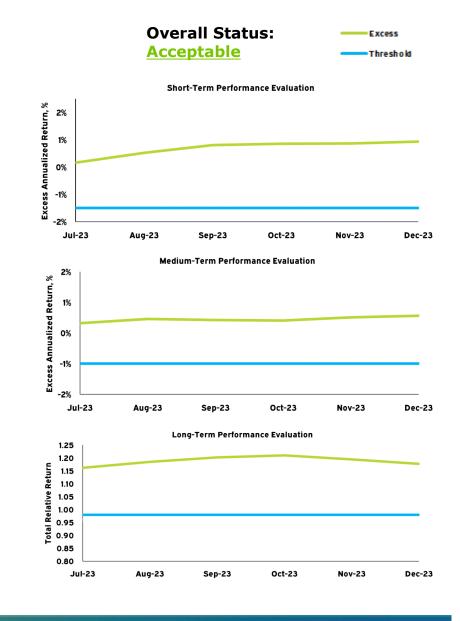
Medium-Term Criteria (rolling 36-month periods)

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



Garcia Hamilton | As of December 31, 2023

Manager Performance				
	QTD	1 Yr	3 Yrs	
Garcia Hamilton	8.1	4.2	-1.5	
Garcia Hamilton Custom Benchmark	6.8	4.3	-1.9	

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)

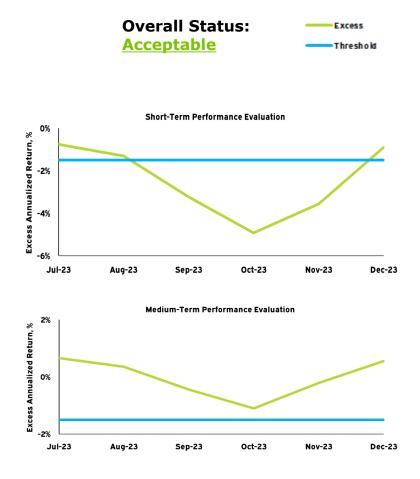
Fund annualized return < benchmark annualized return -1.0% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.98 for 6 consecutive months

Current Status: Not Applicable



May-23

Jun-23

Jul-23

MacKay Shields (HY) | As of December 31, 2023

Manager Performance					
	QTD	1 Yr	3 Yrs		
MacKay Shields (HY)	4.4	10.5	4.2		
ICE BofA ML US Corp Cash Pay BB-B 1-5Yr	5.6	11.5	3.4		

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)

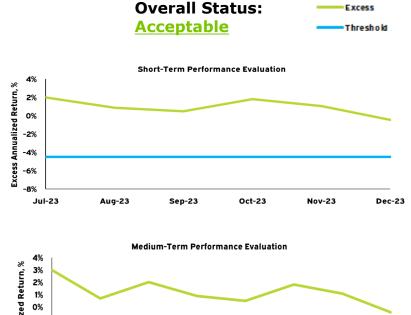
Fund annualized return < benchmark annualized return -2.0% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Not Applicable





Sep-23

Oct-23

Nov-23

Dec-23

Aug-23



Federated Investment Counseling (Bank Loans) | As of December 31, 2023

Manager Performance				
	QTD	1 Yr	3 Yrs	
Federated Investment Counseling (Bank Loans)	2.2	9.0	2.2	
60% CredSuisLevLoan/40% BBStGovCorp	2.3	9.8	4.2	

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)

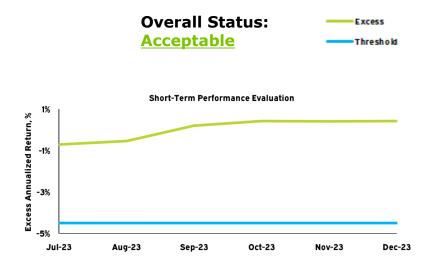
Fund annualized return < benchmark annualized return -2.0% for 6 consecutive months

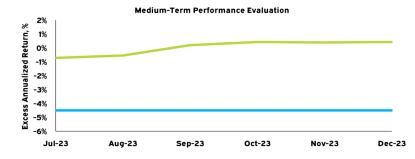
Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Not Applicable





CenterSquare | As of December 31, 2023

Manager Performance									
	QTD	1 Yr	3 Yrs	5 Yrs					
CenterSquare	16.2	14.3	7.1	8.3					
FTSE NAREIT Equity REIT	<i>16.2</i>	13.7	7.2	7.4					

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)

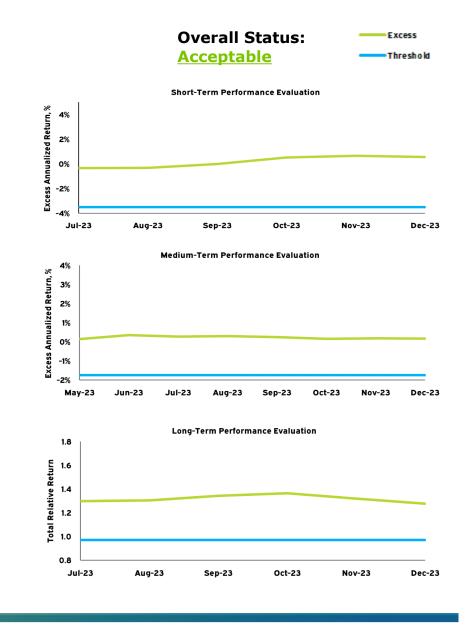
Fund annualized return < benchmark annualized return -1.75% for 6 consecutive months

Current Status: Acceptable

Long-Term Criteria (60+ months)

VRR < 0.97 for 6 consecutive months

Current Status: Acceptable



Manager Compliance Certification Responses



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:

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

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

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

Manager Compliance Certification Responses

		Question 1	Question 2	Question 3	Question 4	Question 5	Question 6	Question 7	Question 8
		Compliance with 'Eligible Investments'	Good standing as Registered		Changes in manager's investment outlook,	Investment team personnel	Management level personnel	Material business	Compliance
Manager	Asset Class	for mandate	Investment Advisor	Litigation?	strategy, structure	changes	changes	changes	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	Yes*	No	Yes*	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

Manager Compliance Certification Responses

no concern low concern high concern (Watch status)

* see detailed manager response below



Manager Compliance Certification Responses

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:
 - October; Sunitha Thomas, CFA, rejoined NTAM after spending more than 15 years managing client portfolios for Northern Trust Wealth Management. In this newly created role, Sunitha will co-head our Wealth Client Group. She has a BA in Economics from University of Chicago and an MBA from The Wharton School of the University of Pennsylvania. Sunitha will report directly to Daniel Gamba and join NTAM Executive Group.
 - November; Guido Baltussen joined NTAM as Head of Quantitative Strategies, International. Previously Head of Equity Factor Investing and Co-head of Quantitative Fixed Income in Robeco, Guido will report to Michael Hunstad, NTAM Deputy CIO and CIO Global Equities. He will be based in the Amsterdam office.
 - December; Jane Karpinski, previously Chief Audit Executive, will serve as Global Head of Regulatory Affairs. In this newly created role, Jane will be responsible for overseeing the enhancement of risk management and controls, remediation of regulatory and audit findings and administration of regulatory affairs. Jane will report to Mike O'Grady and become a member of the Corporation's Management Group. Lauren Allnutt, Corporate Controller, replaces Jane as Chief Audit Executive.
 - December; After more than 20 years with Northern Trust, Chris Shipley, Chief Investment Strategist for North America and co-portfolio manager for the Northern Funds Global Tactical Asset Allocation Fund (BBALX), is leaving Northern Trust to pursue other interests. As result, Anwiti Bahuguna, Ph.D., and Daniel B. Ballantine, CFA have been added to the fund as portfolio managers.
 - December; James Rippey has joined the Asset Management COO leadership team as COO of EMEA region (pending regulatory approval), reporting to Archana Kumar and John McCareins. James will continue to serve as International Chief Risk Officer covering EMEA and APAC during this transition period.



Manager Compliance Certification Responses

Northern Trust – R3000 and ACWI ex US (cont.)

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

• December; Garrett Cox has been named Chief of Staff for Asset Management, reporting directly to Daniel Gamba. Garrett will be responsible for overseeing all matters as it relates to the Office of the President, including helping drive strategic priorities and initiatives – across the firm – and overseeing engagements with key external and internal stakeholders



Manager Compliance Certification Responses

Parametric

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

→ As announced in early May 2023, Brian Langstraat transitioned out of the CEO role on December 31, 2023, and into a Senior Advisor role on January 1, 2024. Brian has worked at Parametric for over 33 years and served as CEO for over 22 years. As Senior Adviser, Brian supports Tom Lee, Co-President and Chief Investment Officer, Ranjit Kapila, Co-President and Chief Operating Officer, and the Parametric team as they expand their leadership roles.



Manager Compliance Certification Responses

Garcia Hamilton & Associates

Question 5: Have there been any personnel changes to the investment team responsible for the EBMUD portfolio during the quarter?

 \rightarrow We welcomed Justo Gonzalez, Director of Credit Research/Portfolio Manager in December 2023.

Question 7: Have there been any Have there been any material changes in your firm's business during the quarter, including but not limited to:

a. any client(s) that terminated its relationship whose terminated portfolio account represents > 1% of the Manager's aggregate portfolio on the day of notice of termination, and/or

b. any client(s) that terminates its relationship when the cumulative terminations for a calendar month is > 1% of the Manager's aggregate portfolio as of the first business day of the month.

→ During 4Q2023, we lost one Aggregate client with an account size of \$967.8 million, which was approximately 7.8% of the Firm's AUM for the Aggregate strategy. Due to the client being under an NDA, we are unable to disclose the reason for the termination. Furthermore, we made the decision to change some of our team members' titles to clarify the organizational structure of the investment team. Gilbert Andrew Garcia will now have the title of CIO, Karen Tass and Jeffrey Detwiler will each take on the title as Co-Deputy CIO, and Don Elsenbrook will take on the title of Chief Risk officer. Additionally, Charlotte Castro was promoted to Deputy Chief Compliance Officer. Charlotte's primary tole on the Compliance Team is to work closely with the CCO on the Firm's compliance program as well as with our Chief Risk Officer on the Firm's policies and procedures and signatory reporting. She also led the Firm in a second mock SEC audit last year. Charlotte joined the Firm in June 2022 as a Marketing Associate and later joined the Compliance Team in January 2023.



Manager Compliance Certification Responses

CenterSquare

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

→ Scott Crowe, President and Chief Investment Strategist, resigned from the firm on November 13. Scott's primary role was leading the firm's Capital Markets (capital raising) efforts and coordinating thought leadership. Scott Maguire, Head of Investor Relations, will be taking over Capital Markets, a position he held from 2007-2018. Coordination of thought leadership will move to Uma Moriarty who was promoted to Senior Investment Strategist in 2022.



Manager Compliance Certification Responses

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

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



Appendix

Glossary of Terms

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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



Appendix

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.



Appendix

MSCI ACWI x US ND: comprises both developed and emerging markets less the United States. As of August 2008, the index consisted of 23 counties 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.

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Appendix

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.



Appendix

Risk Metric Description – Rationale for Selection and Calculation Methodology

US Equity Markets

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

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

Developed Equity Markets Excluding the US

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

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



Appendix

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.

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 certainly 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 neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. 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)
- 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)



Appendix

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 <u>http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf</u>



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