



**PERSPECTIVES  
THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: DECEMBER 31, 2023**

Investment Performance Review for

**Kern County Employees' Retirement Association**

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Investment Landscape

TAB I

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Investment Performance  
Review

TAB II

A decorative geometric pattern of overlapping triangles in shades of blue and green is overlaid on the left side of the image. A large white triangle is positioned to the left of the main text.

**PERSPECTIVES  
THAT DRIVE  
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SUCCESS**

1<sup>ST</sup> QUARTER 2024  
Investment Landscape

# Verus business update

## Since our last Investment Landscape webinar:

- Verus hired Adam Babson, *Director of Portfolio Management* (Seattle)
- JC Faubion, CFA, *Senior Consulting Associate*, obtained the CAIA charter
- James Wadner, *Performance Analyst*, recently passed his CFA level I exam
- We celebrated our 38th anniversary. Wurts Johnson & Company (founding name) was established in January 1986.
- Recent research, found at [verusinvestments.com/research](https://verusinvestments.com/research):
  - *Is now the time to de-risk?*
  - *Liquidity needs during market drawdowns*
  - *2024 Annual Capital Market Assumptions*

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# Recent Verus research

Visit: [verusinvestments.com/research](https://verusinvestments.com/research)

## Topics of interest

### LIQUIDITY NEEDS DURING MARKET DRAWDOWNS

*What is the fundamental reason why investors should care about liquidity? In short, investors want to avoid being forced to sell high-returning assets that have fallen in value in order to pay for benefits, philanthropic spending, expenses, and cover capital calls for their private asset programs. We first touch on the different definitions of liquidity and illustrate how these relate to institutional portfolios. Second, we examine those liquidity characteristics in times of market stress, the way in which illiquid assets often behave, and how that impacts investors. Lastly, we outline a tool that we have created and discuss how this can be used to assist clients with gauging the appropriate level of liquidity in their own portfolios. Overall, we believe investors should put much thought and care into portfolio liquidity decisions.*

### IS NOW THE TIME TO DE-RISK?

*Is now a good time to engage in de-risking strategies? The combination of rising interest rates and relatively strong risk asset performance since 2020 seem to suggest so. We aim to give plan sponsors a better appreciation of the potential benefits of de-risking strategies and examine when it would be most prudent to adopt these strategies. ERISA plan sponsors that have frozen benefits or report actuarial obligations with a market-based interest rate will find this paper most applicable to them.*

## Annual research

### 2024 CAPITAL MARKET ASSUMPTIONS

Capital Market Assumptions guide our advice and recommendations. They reflect the best judgments of our research and investment teams regarding the expected long-term behavior of capital markets.

**Investment Landscape**

1st Quarter 2024

# 4<sup>th</sup> quarter summary

## THE ECONOMIC CLIMATE

- Real GDP increased at a 2.9% pace from a year ago in Q3 (4.9% quarter-over-quarter annualized rate). The economy has remained relatively strong while inflation now appears likely to fall closer to the Fed's 2% target in 2024. These expectations contributed to a dovish pivot from the Fed, a sharp drop in interest rates, and a notable market rally as the possibility of a soft landing has risen.
- Unemployment fell slightly from 3.8% to 3.7%, though the labor participation rate dropped sharply towards the end of the year. The labor market remains surprisingly resilient after roughly a full year of higher interest rates.

## PORTFOLIO IMPACTS

- Consumer sentiment has been incredibly poor, and one of the greatest concerns for Americans is inflation. Although inflation has fallen considerably, prices of goods and services remain high, placing strain on budgets. Because inflation measures the rate of change of prices, rather than the level of prices, lower inflation has failed to ease the financial pressure that many households face.
- The Cboe VIX implied volatility index moved even lower during Q4, from 17.5 to 12.5. At the same time, bond market volatility was very high, as indicated by the "MOVE" Index. Uncertainty around inflation, the Federal Reserve's possible interest rate path and the extent of rate cuts, potential recession, and fears around the U.S. fiscal situation are likely contributing to market shakiness.

## THE INVESTMENT CLIMATE

- An abrupt change in Federal Reserve communication regarding interest rate cuts during the quarter coincided with sharply lower bond yields, higher equity valuations, and further tightening of credit spreads.
- U.S. headline inflation fell during the quarter, from 3.7% to 3.3% year-over-year. Core CPI (ex-food & energy) declined from 4.1% to 3.9%. Low inflation numbers in October and November (0.0% and 0.1% month-over-month) were counterbalanced by a surprisingly high inflation number in December (0.3% month-over-month).

## ASSET ALLOCATION ISSUES

- U.S. equities (S&P 500 +11.7%) led international developed equities (MSCI EAFE +10.4%) and emerging market equities (MSCI EM +7.9%) during the quarter. Domestic equities also led non-U.S. equities over the full year while emerging markets lagged. Wide sector performance differences contributed to U.S. leadership given a much heavier tech focus of the domestic market.
- Style factor performance was mixed during Q4. Small cap outperformed large cap by +2.0%. Value underperformed Growth by -3.2%. Over the full year, small caps underperformed large caps by -9.6% while value stocks underperformed growth by a whopping -31.2%. Besides an extreme period of value underperformance during 2020, calendar year 2023 was the worst 1-year rolling period in more than two decades.

Risk assets rallied in Q4 following a dovish pivot from the Federal Reserve and recent economic data suggesting a greater chance of a soft landing

# What drove the market in Q4?

## “A Soft Landing is in View as Inflation Drops”

### HEADLINE CPI MONTH-OVER-MONTH CHANGES

| July | Aug  | Sept | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|
| 0.2% | 0.6% | 0.4% | 0.0% | 0.1% | 0.3% |

Article Source: WSJ, November 14<sup>th</sup>, 2023

## “U.S. Labor Market Resilience Keeps Economy Afloat as Year Ends”

### U-3 UNEMPLOYMENT RATE

| July | Aug  | Sept | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|
| 3.5% | 3.8% | 3.8% | 3.8% | 3.7% | 3.7% |

Article Source: Reuters, December 21<sup>st</sup>, 2023

## “U.S. Consumer Spending, Inflation Slow in Sign of Cooling Economy”

### U.S. NOMINAL RETAIL SALES (YEAR-OVER-YEAR)

| July | Aug  | Sept | Oct  | Nov  | Dec  |
|------|------|------|------|------|------|
| 2.8% | 2.8% | 4.0% | 2.2% | 4.0% | 5.6% |

Article Source: Bloomberg, November 30<sup>th</sup>, 2023

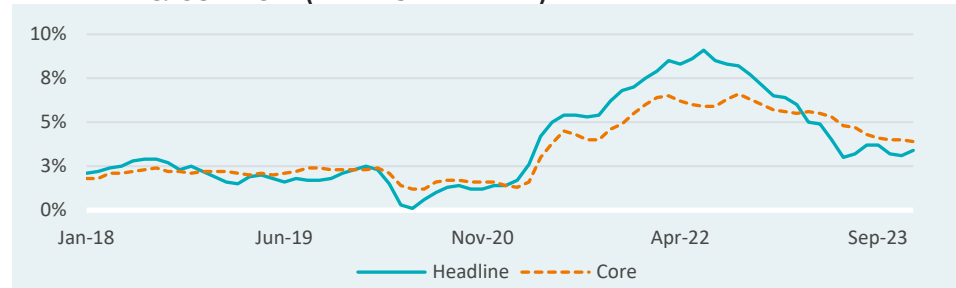
## “Fed Holds Rates Steady, Indicating Three Cuts Coming in 2024”

### FOMC PROJECTED END OF 2023 FED FUNDS RATE

| Sep 22 SEP | Dec 22 SEP | Mar 23 SEP | June 23 SEP | Sept 23 SEP | Dec 23 SEP |
|------------|------------|------------|-------------|-------------|------------|
| 4.60%      | 5.10%      | 5.10%      | 5.60%       | 5.60%       | 5.40%      |

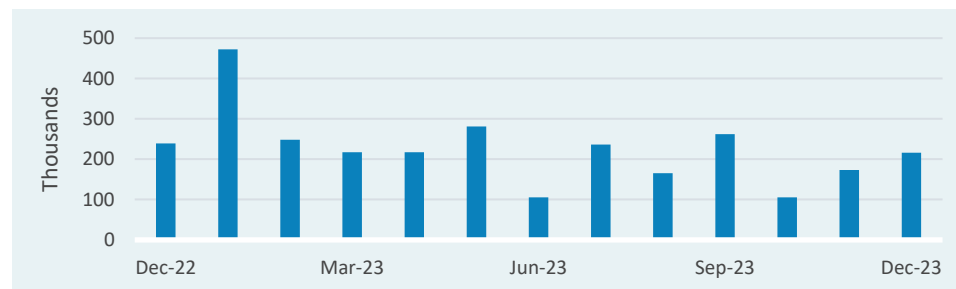
Article Source: CNBC, December 13<sup>th</sup>, 2023

### HEADLINE & CORE CPI (YEAR-OVER-YEAR)



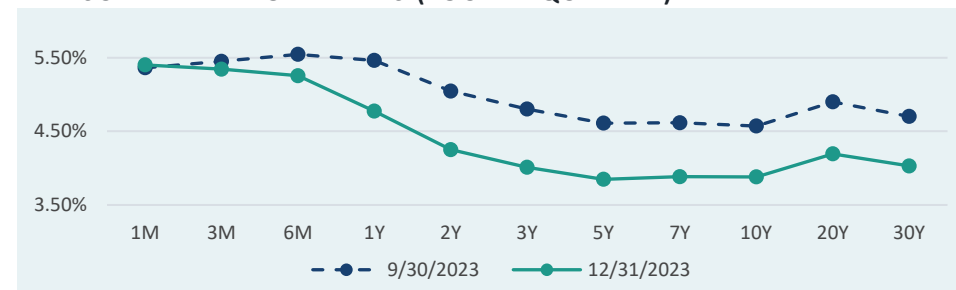
Source: BLS, as of 12/31/23

### CHANGE IN NONFARM PAYROLLS



Source: BLS, as of 12/31/23

### TREASURY YIELD MOVEMENTS (FOURTH QUARTER)



Source: Bloomberg, as of 12/31/23



# Economic environment

# U.S. economics summary

- Real GDP increased at a 2.9% pace year-over-year in Q3 (4.9% quarter-over-quarter annualized rate). The economy has remained relatively strong while inflation appears more likely to fall closer to the Fed’s target in 2024. These expectations contributed to a dovish pivot from the Federal Reserve in December, a sharp drop in interest rates, and a notable market rally as the possibility of a soft landing has risen.
- U.S. headline inflation fell during the quarter, from 3.7% to 3.3% year-over-year. Core CPI (ex-food & energy) declined further from 4.1% to 3.9%. Low inflation numbers in October and November (0.0% and 0.1% month-over-month) were counterbalanced by a surprisingly high inflation number in December (0.3% month-over-month).
- Consumer spending has been stable, with real personal consumption expenditures up +2.7% year-over-year in November, the strongest growth figure since early 2022. However, strong spending appears to be at the expense

of a low household savings rate (4.1% in November) and may be partly driven by necessity (higher prices of goods & services) rather than by a positive financial or economic outlook.

- The job market has shown mixed signals, increasing in total size during 2023 but arguably with some weakness around the edges. Unemployment rose during the year but fell slightly in Q4 from 3.8% to 3.7%. This historic mismatch between jobs available and workers available has been slowly closing.

- Consumer sentiment improved slightly but remains incredibly poor. Inflation is a central concern for Americans. Although inflation has fallen considerably, prices of goods and services remain high, placing strain on budgets. Because inflation measures the rate of change of prices, rather than the level of prices, lower inflation has failed to ease the financial pressure that many households face.

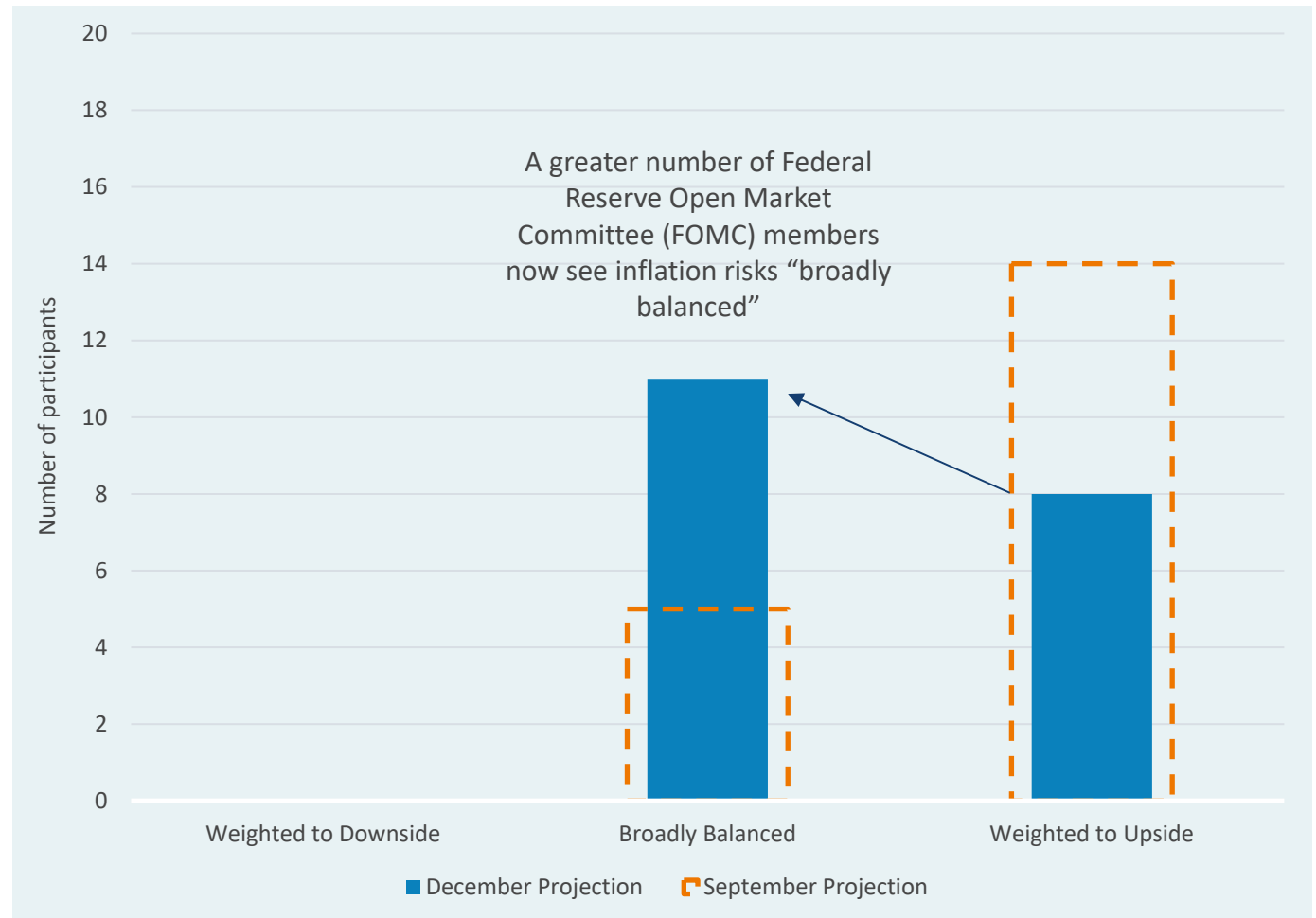
|                                      | Most Recent            | 12 Months Prior        |
|--------------------------------------|------------------------|------------------------|
| Real GDP (YoY)                       | 2.9%<br>9/30/23        | 1.7%<br>9/30/22        |
| Inflation (CPI YoY, Core)            | 3.9%<br>12/31/23       | 6.4%<br>12/31/22       |
| Expected Inflation (5yr-5yr forward) | 2.2%<br>12/31/23       | 2.3%<br>12/31/22       |
| Fed Funds Target Range               | 5.25–5.50%<br>12/31/23 | 4.25–4.50%<br>12/31/22 |
| 10-Year Rate                         | 3.88%<br>12/31/23      | 3.88%<br>12/31/22      |
| U-3 Unemployment                     | 3.7%<br>12/31/23       | 3.5%<br>12/31/22       |
| U-6 Unemployment                     | 7.1%<br>12/31/23       | 6.5%<br>12/31/22       |

# Shifting signaling from the Federal Reserve

## December 2023 risks to core inflation: FOMC participants

On December 13<sup>th</sup>, the Fed's tone shifted. Powell spoke to a much rosier inflation picture and described a greater focus on both sides of its dual mandate—price stability and full employment.

Although optimistic, Powell's comments emphasized a cautious view of the restrictive policy's impact, *"Our actions have moved our policy rate well into restrictive territory, meaning that tight policy is putting downward pressure on economic activity and inflation, and the full effects of our tightening likely have not yet been felt... Given how far we have come, along with the uncertainties and risks that we face, the Committee is proceeding carefully."*



Source: Federal Reserve December 2023 Summary of Economic Projections

# Inflation

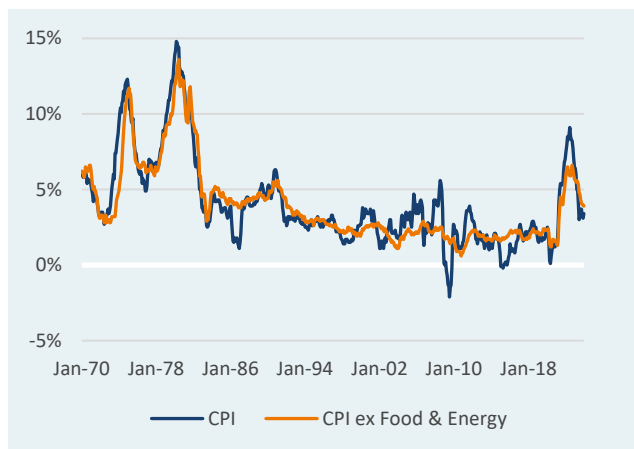
U.S. headline inflation fell during the quarter, from 3.7% to 3.3% year-over-year in December. Core CPI (ex-food & energy) declined further from 4.1% to 3.9%. It is not yet clear how long it will take for inflation to return to the Federal Reserve's 2% target, or how bumpy that ride might be. Low inflation numbers in October and November (0.0% and 0.1% month-over-month) were counterbalanced by a surprisingly high inflation release in December (0.3% month-over-month).

Most of the largest initial drivers of U.S. inflation, such as food, energy, and used autos, are now moderating in price and helping to bring inflation down towards the Fed's 2% target.

Additionally, the largest component of the inflation "basket" of goods and services is shelter prices (the cost of rents or renter's equivalent). The calculation of shelter for official government data purposes tends to reflect market rent movements with a lag. Market-based rent indexes reflect much lower rent inflation. For example, the series published by Zillow indicates 3.3% year-over-year inflation as of December. This suggests that as government shelter data catches up with true market rent prices, the greatest support to current inflation levels (shelter costs) will drop materially, potentially bringing inflation officially back to around a 2% level.

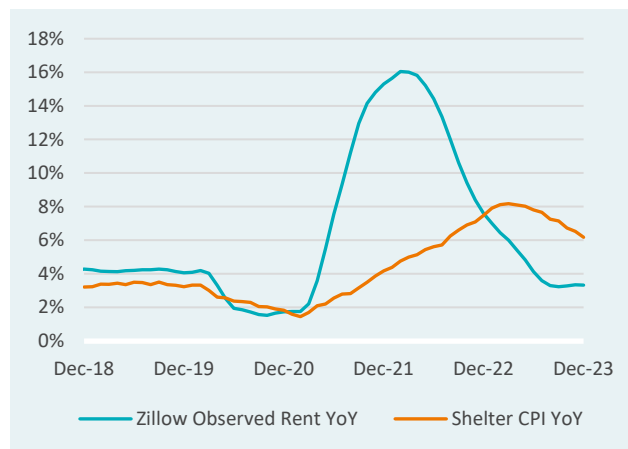
**Inflation & other economic data released in Q4 suggests a path for inflation to fall towards 2% in 2024**

**U.S. CPI (YOY)**



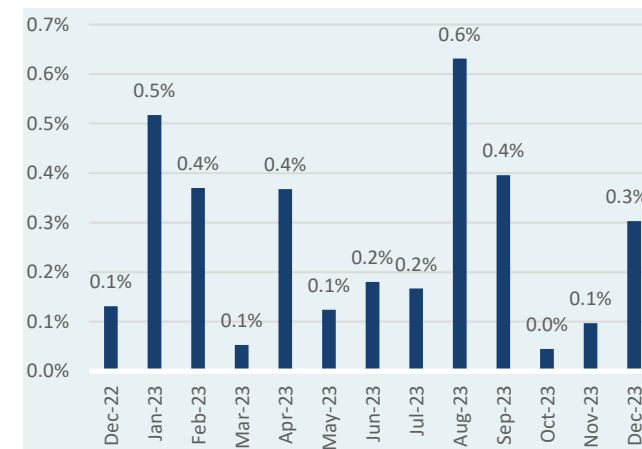
Source: BLS, as of 12/31/23

**ZILLOW OBSERVED RENT VS. SHELTER CPI (YOY)**



Source: Zillow Observed Rent Index, as of 12/31/23

**MONTHLY PRICE MOVEMENT (CPI)**



Source: BLS, as of 12/31/23

# GDP growth

Real GDP increased at a 2.9% pace from a year ago in the third quarter (4.9% quarter-over-quarter annualized rate). The large uptick was driven by consumption, which continues to show resiliency. While many investors have expected high inflation and weaker wage growth to impact spending, a combination of pandemic related excess savings and a strong decade of household wealth expansion is likely providing a cushion against an economic slowdown. Outside of consumption, all major categories, besides net exports, positively contributed to GDP growth.

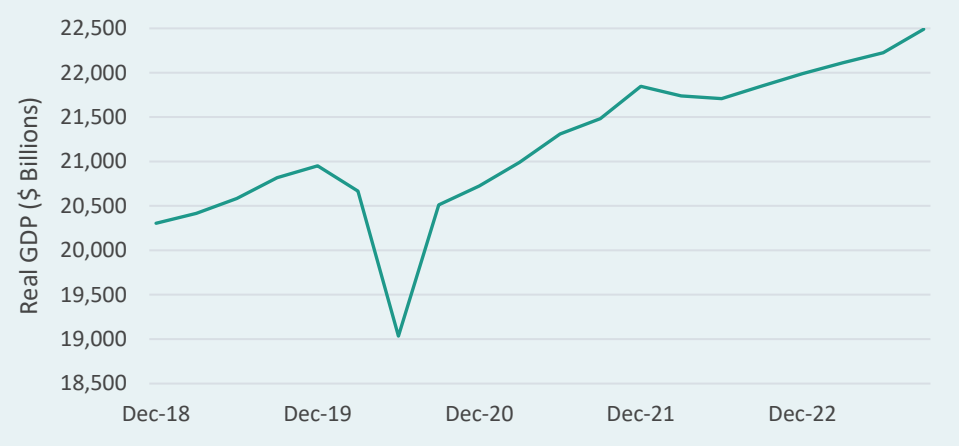
The economy has remained relatively strong while inflation

now appears likely to fall closer to the Fed target in 2024. These expectations contributed to a sharp drop in interest rates towards the end of 2023, and a notable market rally, as the possibility of a soft landing has risen.

A string of positive economic news occurred throughout the fourth quarter. The economic outlook has improved along with this new information, though we continue to believe economic bumpiness is on the horizon—perhaps in mid-2024. However, U.S. markets appear to be fully pricing in the soft-landing narrative, which likely limits the upside if that were to come to fruition.

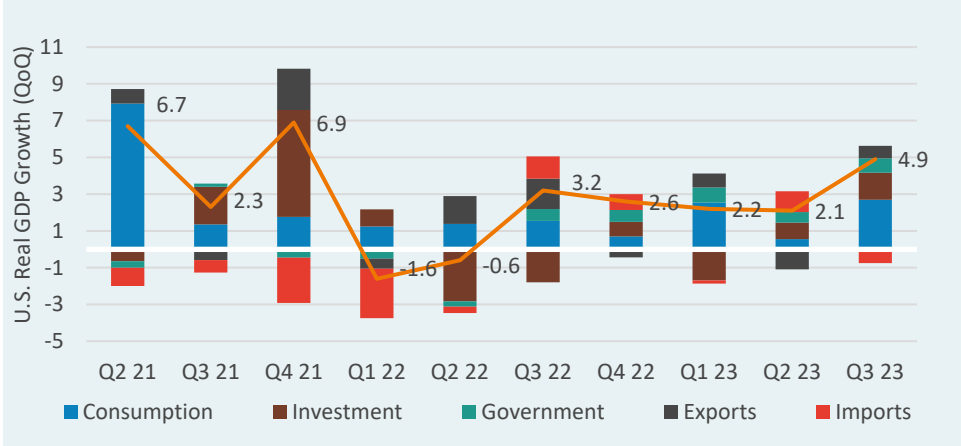
The U.S. economy continues to show resilience despite aggressive monetary tightening & low consumer confidence

U.S. REAL GROSS DOMESTIC PRODUCT



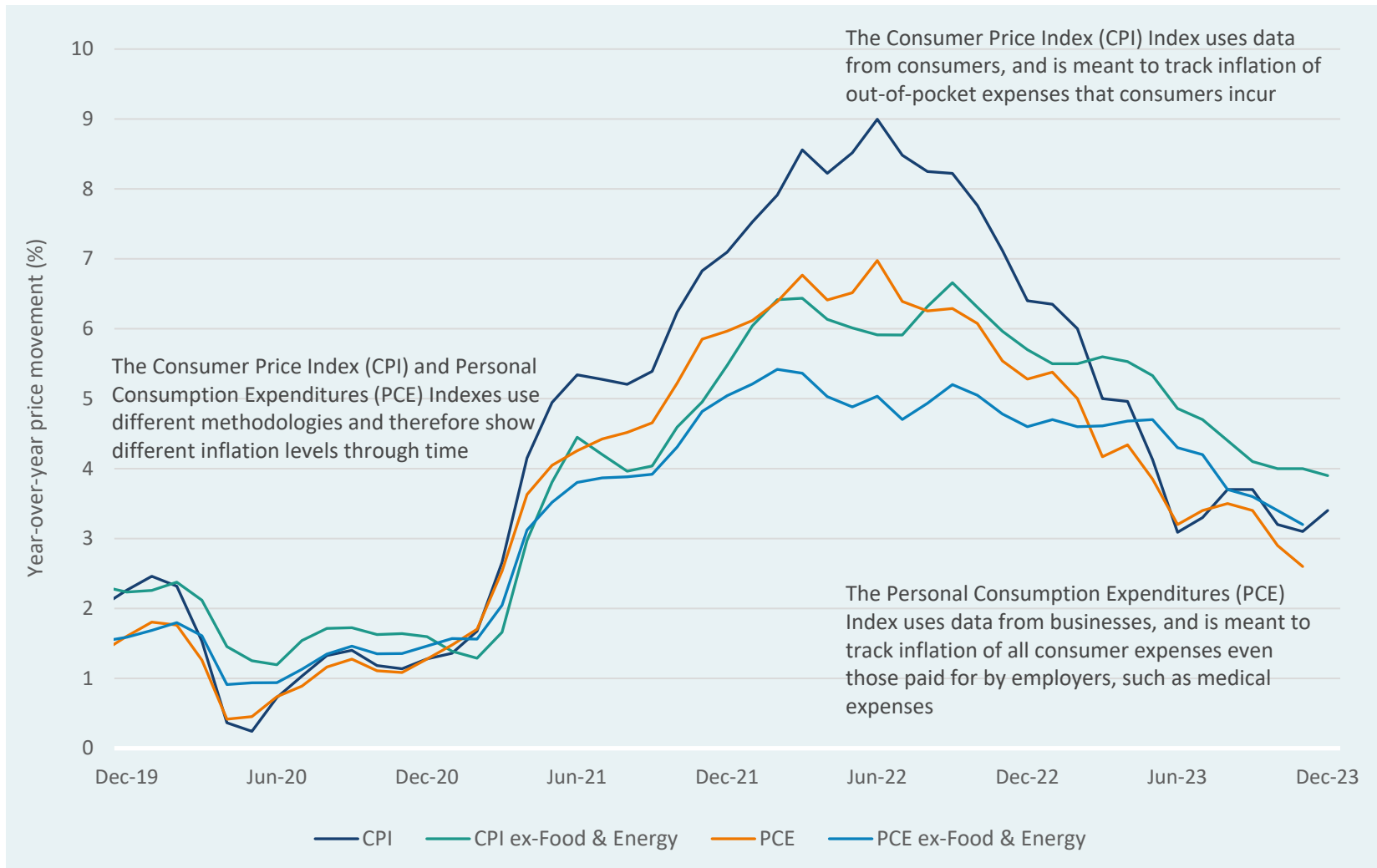
Source: FRED, as of 9/30/23

U.S. REAL GDP COMPONENTS (QOQ)



Source: FRED, as of 9/30/23

# How are inflation conditions evolving?



Recent price trends suggest inflation may move closer to the Fed's 2% target in 2024

A moderation of shelter prices, which tend to be lagged in official statistics, could be the most notable driver of lower inflation in future quarters

Source: FRED, Verus, PCE data as of 11/30/23, CPI data as of 12/31/23

# Labor market

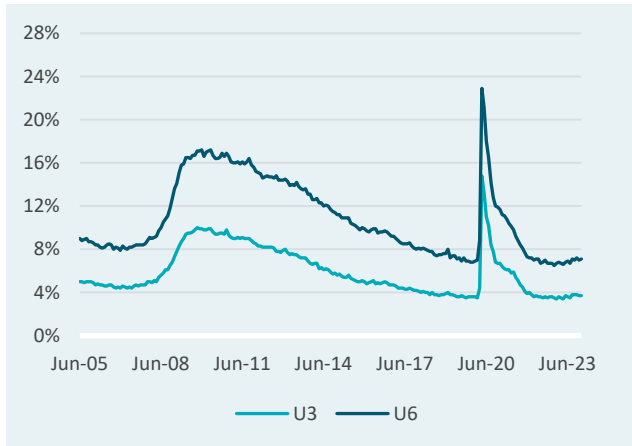
Unemployment fell slightly in Q4 from 3.8% to 3.7%, though the labor participation rate dropped sharply towards the end of the year from 62.8% to 62.5%. According to most available metrics, the labor market remains surprisingly resilient. While throughout history higher interest rates, and yield curve inversion in particular, have typically been followed by recession, the economy has been strong in the face of higher interest rates for roughly a full year. These dynamics have fueled hope that the economy may achieve a soft landing.

Some mixed signals have appeared in recent months. The labor participation rate has fallen for both younger and older

workers, potentially a sign of stalling of strong post-pandemic job growth. Rebalancing within the labor market continued, as the mismatch between the number of *workers available* and the number of *available jobs* closes. This gap was 5.5 million at the beginning of the year and fell to 2.5 million in November. This rebalancing appears to be due to positive factors (a growing workforce) rather than negative factors (fewer jobs available), as more Americans are seeking employment and finding jobs that had previously gone unfilled.

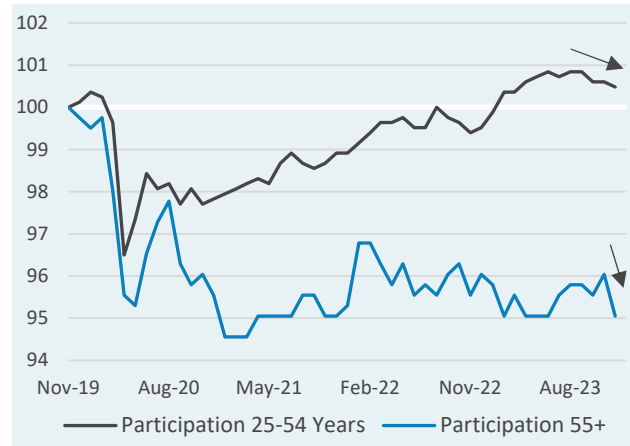
The gap between *available jobs* and *available workers* was cut in half during 2023, as the labor market moves into balance

U.S. UNEMPLOYMENT



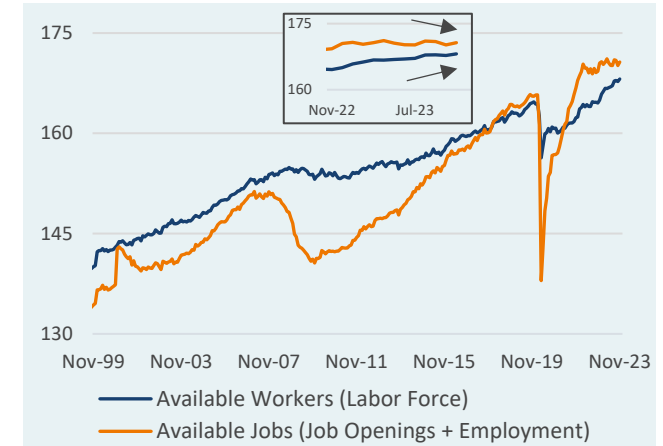
Source: FRED, as of 12/31/23

LABOR FORCE PARTICIPATION RATE BY AGE



Source: FRED, as of 12/31/23

WORKERS AVAILABLE VS. AVAILABLE JOBS



Source: BLS, Verus, as of 11/30/23

# The consumer

We believe there are two important sides to the U.S. consumer picture. First, spending has been stable, as real (inflation-adjusted) personal consumption expenditures continued at a moderate pace, at 2.7% year-over-year in November—the strongest growth figure since early 2022. But second, strong spending appears to be coming at the expense of household savings (very low at 4.1% in November) and may be partly driven by necessity (higher prices of goods and services) rather than driven by a positive financial or economic outlook. This latter point is supported by incredibly poor consumer sentiment.

As discussed in last quarter’s report, wealth for the majority of

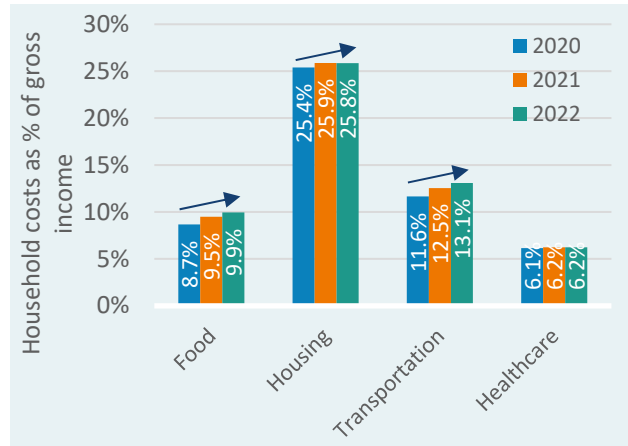
Americans has greatly expanded over the past decade, fueled by higher home prices, a bull market for stocks, and broad economic strength. However, this stands in stark contrast to reports of widespread financial difficulties of Americans. For example, a Lending Club survey conducted in November 2023 indicated that 62% of consumers are living paycheck to paycheck. In this unique environment, it is difficult to gauge the extent to which greater wealth, though often illiquid, might help extend strong spending into future quarters, or whether spending is set to slow as households reset their spending to lower levels to try and return to more conservative budgets with an appropriate savings rate.

## REAL PERSONAL SPENDING



Source: FRED, as of 11/30/23

## HIGHER COSTS EATING INTO BUDGETS



Source: BLS, Verus, as of 9/8/23 – household costs as % of gross income

## PERSONAL SAVINGS RATE



Source: FRED, as of 11/30/23



# Sentiment

Sentiment readings were up slightly during Q4 but remain pessimistic. The University of Michigan Consumer Sentiment survey improved from 67.9 to 69.7 on reports that households believe inflation is on a better trajectory.

A confusing aspect of the consumer picture is the large disconnect between economic data (good in many respects) and sentiment readings (very poor overall). For example, inflation has mostly normalized but many Americans continue to express deep concerns about high inflation and difficulties in making ends meet. A major driver of this disconnect is what we might call the “lower inflation conundrum”. As displayed below, prices surged substantially in recent years, meaning inflation was high, but then prices plateaued, which led inflation to come down. *Why hasn't*

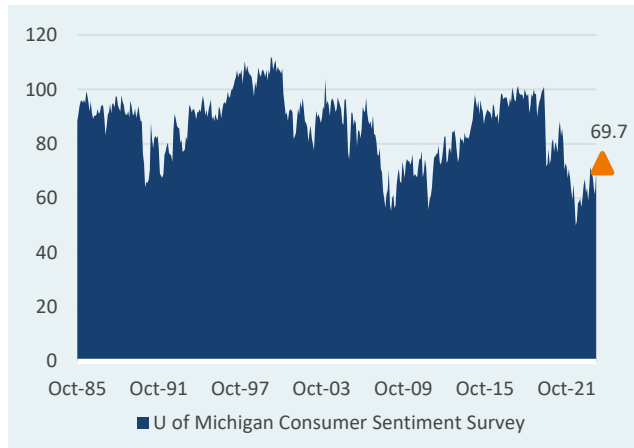
*lower inflation led Americans to feel better about the economy?* This is because inflation measures the *rate of change* in the price of goods and services, not the overall level. Prices are currently very high while the rate of inflation is fairly low.

The NFIB Small Business Optimism index improved slightly during Q4, with the gains occurring in December. The index has now been below the 50-year average level for two years. According to the report, 23% of business owners reported inflation as the most important issue for business operations—now a greater concern than the labor shortage. Small businesses remain very pessimistic about conditions and do not expect these conditions to improve in 2024.

Sentiment improved slightly during the quarter

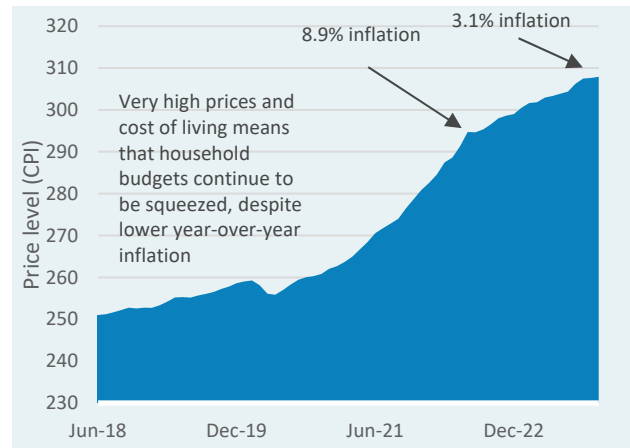
Inflation remains very poor

## CONSUMER SENTIMENT



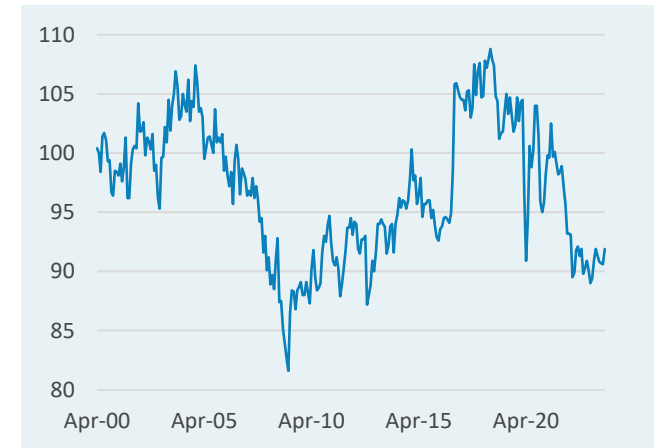
Source: University of Michigan, as of 12/31/23

## THE “LOWER INFLATION” CONUNDRUM



Source: FRED, as of 11/30/23

## NFIB SMALL BUSINESS SENTIMENT



Source: NFIB, as of 12/31/23

# Housing

Home prices increased 3.0% in the third quarter, with ongoing support from very low housing inventory levels. It is possible that low inventories, high costs of new construction, a lack of forced sales (home sales due to financial stress), and an unwillingness of current homeowners to sell and sacrifice their existing low mortgage rate, could act as an ongoing support to high home prices despite extreme unaffordability.

On a brighter note, housing affordability on the margin may be moving in a better direction. Despite mild gains in home prices, the 30-year average fixed mortgage rate has fallen from a 23-year high of 7.3% to 6.6% at the

end of December. A moderation in mortgage rates, with expectations for a handful of Federal Reserve rate cuts in 2023, could help affordability and provide a support to home demand in the near-term.

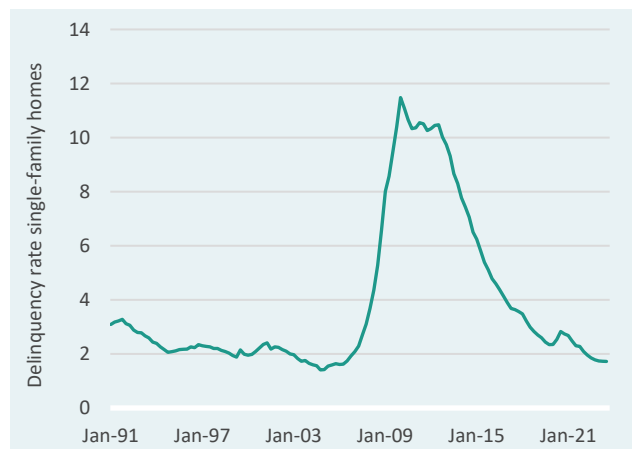
Mortgage delinquency levels of single-family homeowners continue to be muted, at 1.7% as of Q3. Surprisingly, mortgage delinquency rates have consistently declined since the pandemic. This may be a reflection of significant home equity built up for the average homeowner, the ability of homeowners to draw on that equity to help make financial ends meet, and a hesitance to default on a loan if the loan is not underwater.

**30-YEAR MORTGAGE RATE (%)**



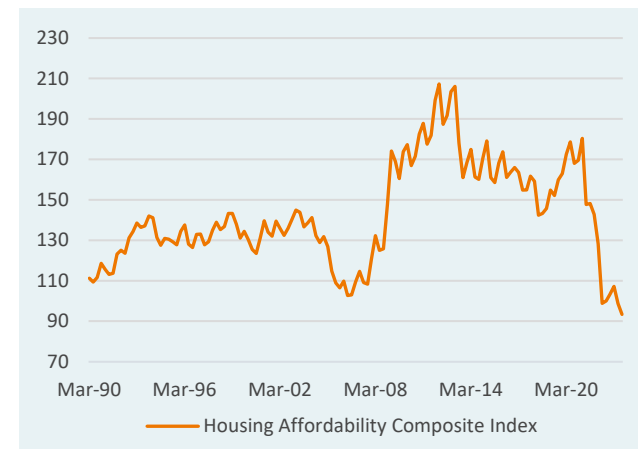
Source: FRED, as of 12/31/23

**SINGLE-FAMILY HOME DELINQUENCY RATE (%)**



Source: FRED, as of 9/30/23

**HOUSING AFFORDABILITY**



Source: FRED, as of 9/30/23 – Housing affordability is calculated as the cost of a median priced single-family home at the current mortgage rate, as a percentage of the median family income

# International economics summary

- The ongoing threat of inflation, and central banks' tightrope act of working to battle that inflation without tipping economies into recession, was expected to be a key risk of 2024. However, in the fourth quarter inflation has fallen more quickly than expected, while economic growth has generally been more resilient. The global growth picture seems to have improved, all else equal, although growth is still expected to slow materially in the coming quarters.
- Conflicts within the Middle East have led to heightened geopolitical tensions, and broader escalation is a notable risk. While military action has been relatively confined, further conflict could have a material impact on global supply chains and energy markets. The war in Ukraine, which played a large part in initially driving inflation across developed economies, is still fresh in many investors' minds.
- Inflation fell significantly in the Eurozone and U.K., helping to take

some pressure off the ECB and BOE (headline inflation receded to 3.4% and 4.0% across the Eurozone and U.K., respectively). Despite the easing of price pressures, interest rates sit at multi-decade highs at both central banks which does little to change expectations for stagnant and potentially even negative economic growth.

- China reported GDP growth of 5.2% in 2023, exceeding the 5% growth target set by the CCP. While the reported figure is slightly above the CCP's target, growth has disappointed investors and economists alike, especially following a nearly three-year COVID-19 lockdown. The country continues to face a variety of challenges including incredibly dire demographic trends, geopolitical tension with the U.S., slowing growth, financial distress amongst the property sector and local government financing vehicles, a heavy national debt burden, and deflation.

| Area          | GDP<br>(Real, YoY) | Inflation<br>(CPI, YoY) | Unemployment     |
|---------------|--------------------|-------------------------|------------------|
| United States | 2.9%<br>9/30/23    | 3.4%<br>12/31/23        | 3.7%<br>12/31/23 |
| Eurozone      | 0.0%<br>9/30/23    | 2.9%<br>12/31/23        | 6.4%<br>11/30/23 |
| Japan         | 1.5%<br>9/30/23    | 2.4%<br>12/31/23        | 2.4%<br>11/30/23 |
| BRICS Nations | 5.0%<br>9/30/23    | 1.5%<br>12/31/23        | 4.8%<br>12/31/22 |
| Brazil        | 2.0%<br>9/30/23    | 4.6%<br>12/31/23        | 7.5%<br>11/30/23 |
| Russia        | 5.5%<br>9/30/23    | 7.4%<br>12/31/23        | 2.9%<br>11/30/23 |
| India         | 7.6%<br>9/30/23    | 5.7%<br>12/31/23        | 8.7%<br>12/31/23 |
| China         | 5.2%<br>12/31/23   | -0.3%<br>12/31/23       | 5.1%<br>12/31/23 |

NOTE: India lacks reliable government unemployment data. Unemployment rate shown above is estimated from the Centre for Monitoring Indian Economy. The Chinese unemployment rate represents the monthly surveyed urban unemployment rate in China.

# International economics

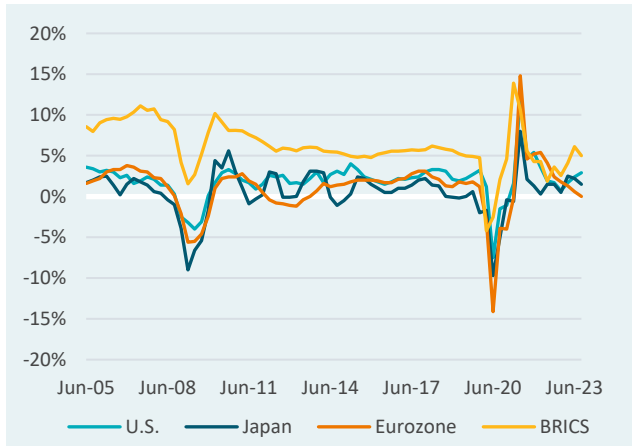
The ongoing threat of inflation, and central banks' tightrope act of working to battle that inflation without tipping economies into recession, was expected to be a key risk of 2024. However, in the fourth quarter inflation has fallen more quickly than expected, while economic growth has generally been more resilient. The global growth picture seems to have improved, all else equal, although growth is still expected to slow materially in the coming quarters.

Although broad macroeconomic conditions improved, additional risks surfaced throughout the quarter, as conflicts within the Middle East escalated. Tensions remain high and concerns around global supply chains

and energy markets have been at the forefront—though impacts across commodity markets have been muted so far.

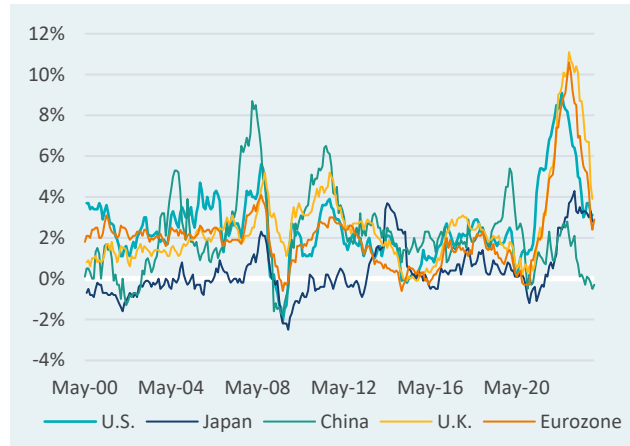
The outlook remains uncertain. Geopolitical tension is still high, especially as the U.S. and China compete for dominance in the technology sector. Developed economies in the Eurozone and Japan are projected by the World Bank to grow less than 1% in 2024, far below historical long-term averages. On the flip side, emerging and developing economies still boast strong growth targets. India is a highlight, as growth expectations for both 2024 and 2025 sit above six-percent.

**REAL GDP GROWTH (YEAR-OVER-YEAR)**



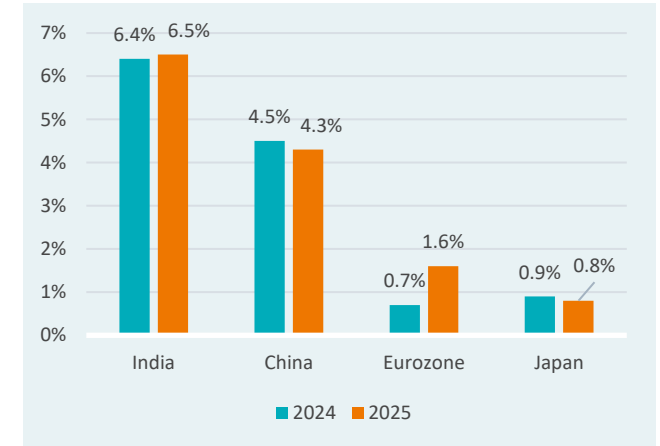
Source: Bloomberg, as of 9/30/23

**INFLATION (CPI YEAR-OVER-YEAR)**



Source: Bloomberg, as of 12/31/23 – or most recent release

**WORLD BANK REAL GDP FORECASTS**



Source: World Bank Global Economic Prospects, as of 1/9/24

# Fixed income rates & credit

# Fixed income environment

- The 10-year U.S. Treasury yield reversed its gains from the prior quarter, falling from 4.58% to 3.88% in Q4, as the market reassessed inflation conditions and the Federal Reserve’s likely path. Further signs that inflation is moderating toward target, along with surprisingly upbeat economic news, likely contributed to the Federal Reserve’s “dovish pivot” as it has been referred to. The 10-year yield ended 2023 unchanged.
- During Q4, credit markets delivered strong results, led by lower-quality bonds such as high yield and bank loans. High yield gained +7.2% (Bbg U.S. Corporate High Yield), while bank loans rose +2.8% (S&P/LSTA Leveraged Loan). Longer duration investment grade corporate bonds (Bloomberg U.S. Long Corporate Credit) rose 14.0% during the quarter as both falling interest rates and narrower credit spreads acted as a tailwind.
- The U.S. yield curve has remained inverted for 1.5 years, which is

among the most extended periods in modern history. This is indicated by the 10-year minus 2-year Treasury yield—ending the year at -35bps, up from -44bps in Q3. Unique attributes of the current economic environment suggest that this curve inversion may not coincide with a near-term recession.

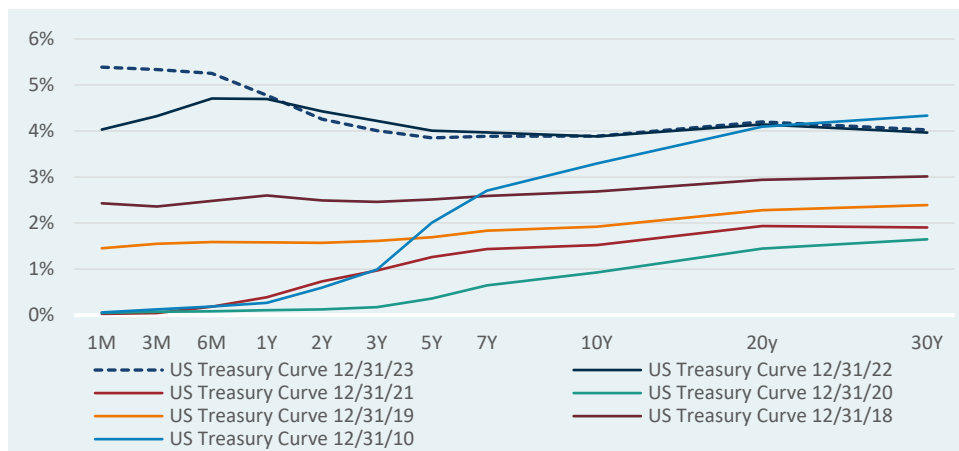
- US interest rates remained steady during the quarter as inflation continued to moderate towards the Federal Reserve Bank's 2.0% target. Importantly, expectations for future rate cuts increased following the statement made by Chairman Powell that future rate hikes may not be required.
- With inflation and economic growth continuing to moderate during the quarter, market expectations for future rate cuts by the Federal Reserve increased. As a result, interest rates across the US Treasury curve declined meaningfully, with shorter-term rates declining more than longer-term rates.

|  | QTD Total Return | 1 Year Total Return |
|--|------------------|---------------------|
| Core Fixed Income (Bloomberg U.S. Aggregate)               | 6.8%             | 5.5%                |
| Core Plus Fixed Income (Bloomberg U.S. Universal)          | 6.8%             | 6.2%                |
| U.S. Treasuries (Bloomberg U.S. Treasury)                  | 5.7%             | 4.1%                |
| U.S. Treasuries: Long (Bloomberg U.S. Treasury 20+)        | 13.4%            | 2.7%                |
| U.S. High Yield (Bloomberg U.S. Corporate HY)              | 7.2%             | 13.4%               |
| Bank Loans (S&P/LSTA Leveraged Loan)                       | 2.8%             | 13.3%               |
| Emerging Market Debt Local (JPM GBI-EM Global Diversified) | 8.1%             | 12.7%               |
| Emerging Market Debt Hard (JPM EMBI Global Diversified)    | 9.2%             | 11.1%               |
| Mortgage-Backed Securities (Bloomberg MBS)                 | 7.5%             | 5.0%                |

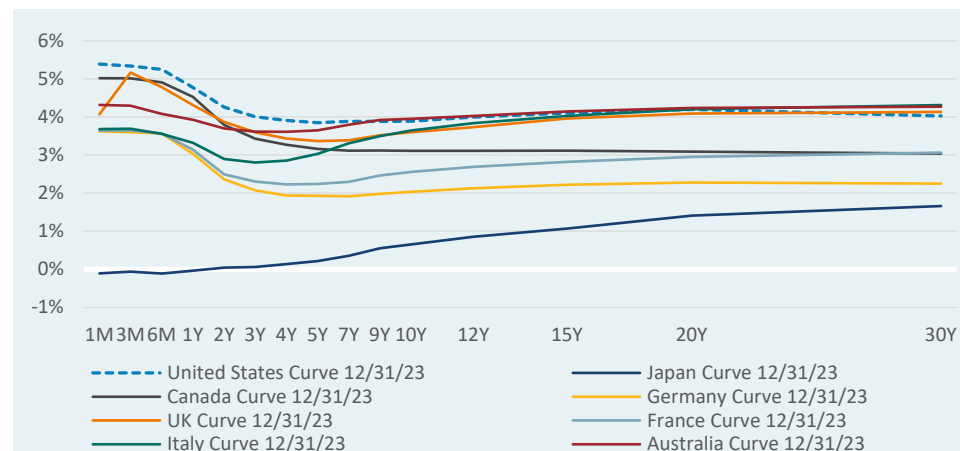
Source: Bloomberg, as of 12/31/23

# Yield environment

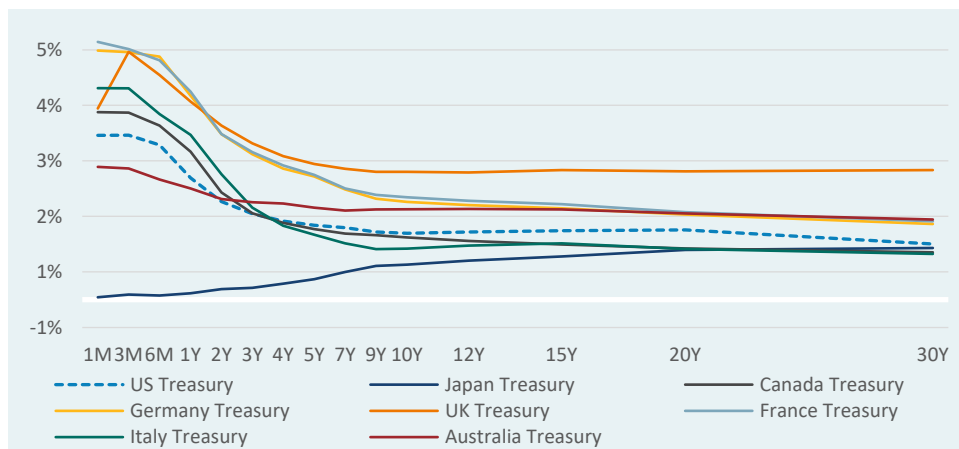
## U.S. YIELD CURVE



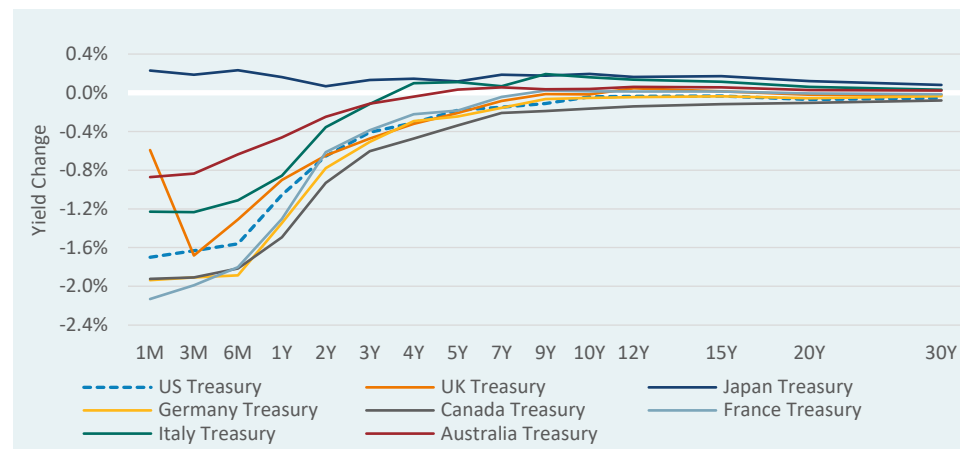
## GLOBAL GOVERNMENT YIELD CURVES



## YIELD CURVE CHANGES OVER LAST FIVE YEARS



## IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/23

# Credit environment

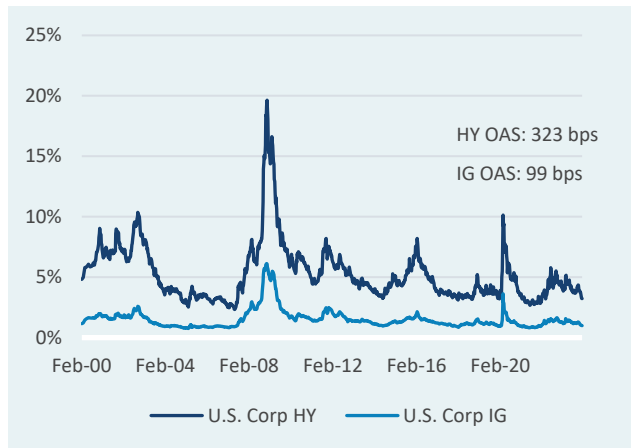
During the fourth quarter, credit markets delivered strong positive results, led by lower-quality credits such as high yield bonds and bank loans. High yield bonds delivered strong results gaining 7.2% (Bbg U.S. Corporate High Yield), while bank loans rose 2.8% (CS Leveraged Loans). Longer duration investment grade corporate bonds (Bloomberg U.S. Long Corporate Credit) rose 14.0% during the quarter as both falling interest rates and narrower credit spreads acted as a tailwind.

Higher-quality BB-rated bonds outperformed lower quality credits during the period returning 7.3% compared to 6.8% and 6.6% for B-rated and CCC-rated bonds, respectively. While absolute returns were positive, bank loans delivered a less-than-impressive 2.8%, primarily due to the

combination of falling interest rates and expectations that the Federal Reserve Bank would begin cutting rates in the future.

Credit spreads narrowed during the quarter despite concerns related to an economic slowdown, weakening corporate fundamentals, and rising geopolitical tensions. Lower-quality, high yield bond spreads fell by 0.6% to roughly 3.2%, while investment grade spreads decreased by roughly 0.2% to 1.0%. Broadly, spreads remain below their long-term historical averages, which suggests that investors remain confident about the ability of those companies to service their debt. That said, slower U.S. economic growth could lead to wider credit spreads as investors seek safety in higher quality assets.

## SPREADS



Source: Barclays, Bloomberg, as of 12/31/23

## HIGH YIELD BONDS MONTHLY INCOME RETURN



Source: Bloomberg, as of 12/31/23

## CREDIT SPREAD (OAS)

| Market              | 12/31/23 | 12/31/22 |
|---------------------|----------|----------|
| Long U.S. Corp      | 1.2%     | 1.6%     |
| U.S. Inv Grade Corp | 1.0%     | 1.3%     |
| U.S. High Yield     | 3.2%     | 4.7%     |
| U.S. Bank Loans*    | 5.0%     | 5.9%     |

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/23

\*Discount margin (4-year life)



# Default & issuance

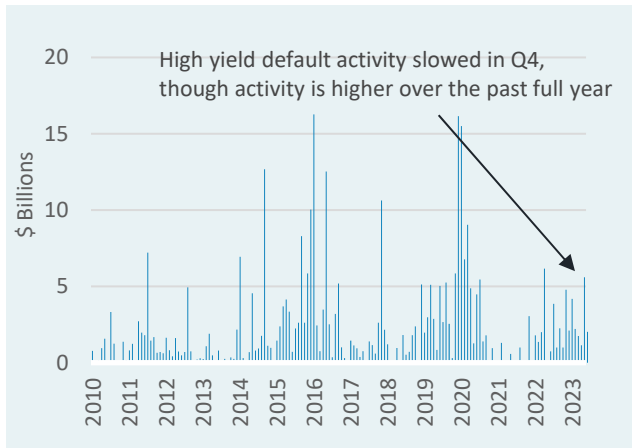
Default activity increased during Q4 as increased borrowing costs acted as a headwind. Eighteen companies defaulted, which were concentrated in the retail, telecommunications, and financial sectors. A total of \$15.8 billion of bank loan and high yield bonds were affected by default or distressed exchanges, up from \$11.5 billion in the prior quarter. Notable company defaults included Rite Aid (Retail), Ligado Networks (Telecommunications), and WeWork (Financial).

For 2023, both the number of defaults and volume increased meaningfully year-over-year. During the period, 88 companies defaulted on \$83.7 billion in high-yield bonds and bank loans compared to 35 companies and \$47.8 billion in 2022. High yield bond default rates have

increased to roughly 2.8%, up from 1.7% a year earlier, but are still below the long-term annual average of roughly 3.2%. High-yield default recovery rates ended the year at 32.8%, down sharply from 55.3% a year ago at the same time.

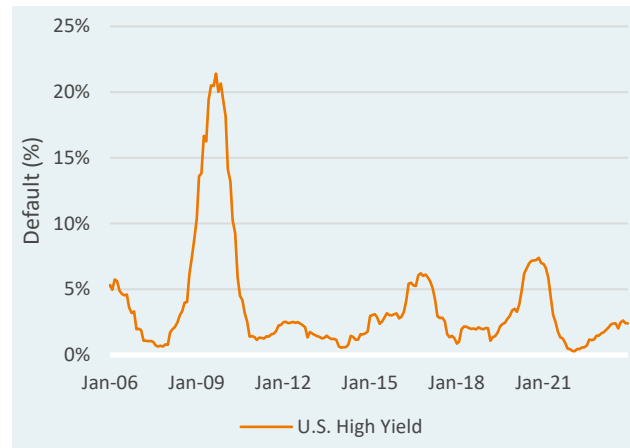
The issuance of investment grade credit slowed from the prior quarter, down to \$204 billion from \$275 billion. With borrowing costs falling as interest rates declined, high-yield bond issuance climbed slightly to \$42 billion, up from \$40 billion in Q3. On a year-over-year basis, the volume of both investment-grade and high yield issuance increased, up \$69.1 billion and \$5.3 billion, respectively.

**U.S. HY MONTHLY DEFAULTS (PAR WEIGHTED)**



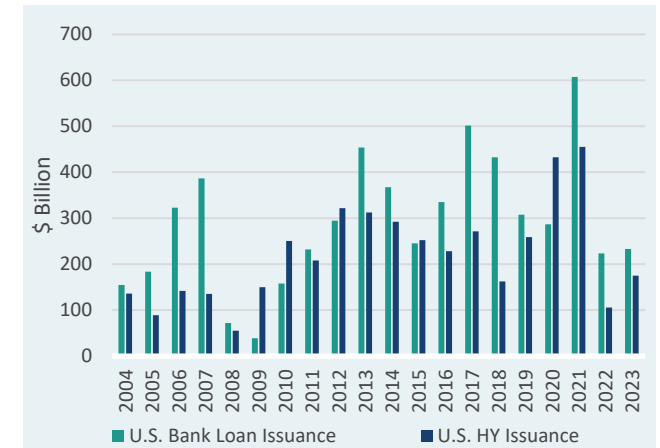
Source: BofA Merrill Lynch, as of 12/31/23

**U.S. HY SECTOR DEFAULTS (LAST 12 MONTHS)**



Source: BofA Merrill Lynch, as of 12/31/23 – par weighted

**DEVELOPED MARKET ISSUANCE (\$ BILLIONS)**



Source: BofA Merrill Lynch, all developed markets, as of 12/31/23

# Equity

# Equity environment

- Domestic equities delivered a strong rally to finish Q4, driven by a combination of better-than-expected Q3 earnings and signals of easing from the Federal Reserve. The S&P 500 Index gained +26.3% during 2023.
- U.S. equities (S&P 500 +11.7%) led international developed equities (MSCI EAFE +10.4%) and emerging market equities (MSCI EM +7.9%) during the quarter. Domestic equities also led non-U.S. equities over the full year, while emerging markets were laggards. Wide sector performance differences contributed to U.S. leadership, given the much heavier tech focus of the domestic market.
- The U.S. dollar fell sharply, as investors reassessed Federal Reserve policy and interest rates retraced lower. This move created a tailwind for investors with unhedged exposure to foreign currencies. On a trade-weighted basis, the value of the U.S. dollar fell -4.3%. However, over the full calendar year investors with unhedged currency exposure saw moderate losses, due to wide fluctuations of the dollar.
- Style factor investing delivered mixed performance for investors in Q4. Over the full year, style investing suffered substantially. Small cap underperformed by -9.6% while value stocks underperformed growth by a whopping -31.2%. Besides an extreme period during 2020, calendar year 2023 was the worst 1-year rolling period in more than two decades.
- The Cboe VIX implied volatility index moved even lower during the fourth quarter, from 17.5 to 12.5 in December. Priced volatility is incredibly low—at a level that has historically tended to coincide with very strong economic and market conditions.

|  | QTD TOTAL RETURN |          | 1 YEAR TOTAL RETURN |          |
|--|------------------|----------|---------------------|----------|
|  | (unhedged)       | (hedged) | (unhedged)          | (hedged) |
| U.S. Large Cap (S&P 500)                 | 11.7%            |          | 26.3%               |          |
| U.S. Small Cap (Russell 2000)            | 14.0%            |          | 16.9%               |          |
| U.S. Equity (Russell 3000)               | 12.1%            |          | 26.0%               |          |
| U.S. Large Value (Russell 1000 Value)    | 9.5%             |          | 11.5%               |          |
| US Large Growth (Russell 1000 Growth)    | 14.2%            |          | 42.7%               |          |
| Global Equity (MSCI ACWI)                | 11.0%            | 9.7%     | 22.2%               | 22.7%    |
| International Large (MSCI EAFE)          | 10.4%            | 6.0%     | 18.2%               | 19.9%    |
| Eurozone (EURO STOXX 50)                 | 13.3%            | 9.3%     | 26.5%               | 25.6%    |
| U.K. (FTSE 100)                          | 6.9%             | 2.5%     | 14.3%               | 8.8%     |
| Japan (TOPIX)                            | 8.2%             | 3.6%     | 19.3%               | 35.7%    |
| Emerging Markets (MSCI Emerging Markets) | 7.9%             | 5.7%     | 9.8%                | 10.1%    |

Source: Russell Investments, MSCI, STOXX, FTSE, JPX, as of 12/31/23

# Domestic equity

Domestic equities finished the fourth quarter with a strong rally, driven by a combination of better-than-expected Q3 earnings and signals of easing from the Federal Reserve. The S&P 500 Index delivered a gain of +26.3% over 2023, boosted by a +11.7% rise over the final quarter of the year. Shares in the U.S. outperformed international developed and emerging markets over the calendar year.

Third-quarter earnings surprised to the upside, driven by large earnings beats in the communication services and consumer discretionary sectors. Per FactSet, in Q3 earnings grew by 4.9% year-over-year, in contrast to initial expectations of a -0.3% decline at the beginning of the quarter.

From a sector perspective gains were broad, outside of energy. Real estate and information technology outperformed—driven by easing rates on the long-end of the curve and strong demand within the accelerated computing and artificial intelligence space.

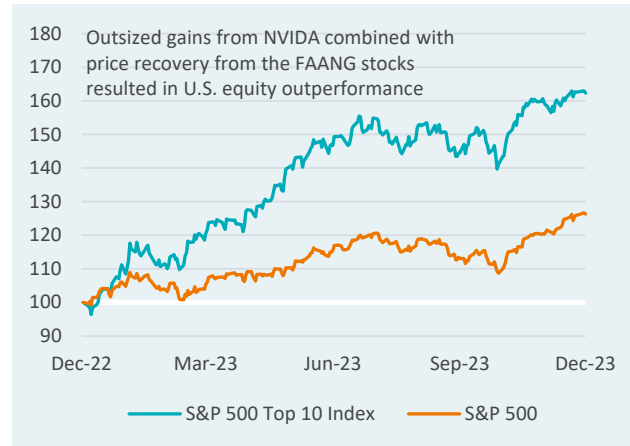
Going forward, domestic equities likely face a challenging environment to build off of the large gains seen in 2023. Valuations remain elevated as the S&P 500 Index approaches a new all-time high. At the same time, earnings growth has been modest, with Q4 earnings expected to come in at +1.3% per FactSet. Although the outlook remains challenged, growth catalysts such as stable inflation, monetary easing, and greater chance of a soft-landing present investors with upside opportunity.

**S&P 500 PRICE INDEX**



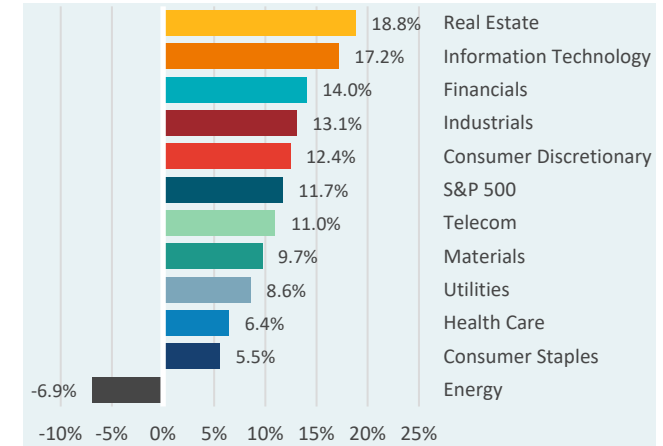
Source: Bloomberg, as of 12/31/23

**2023 PERFORMANCE (INDEX 100)**



Source: Bloomberg, S&P, as of 12/31/23

**Q4 2023 SECTOR PERFORMANCE**



Source: Morningstar, as of 12/31/23

# Domestic equity size & style

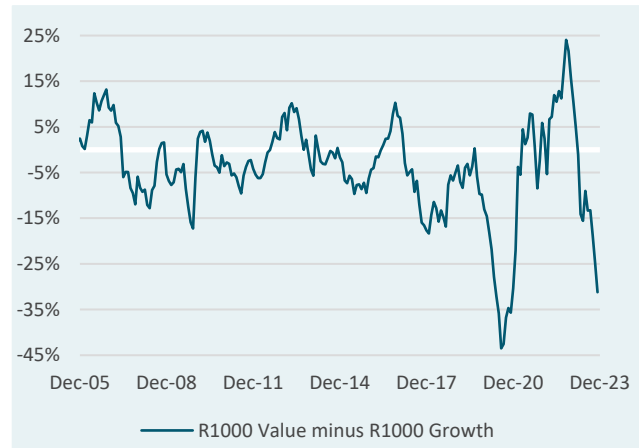
Style factor investing delivered mixed performance for investors in the fourth quarter. Small cap outperformed large cap by +2.0% during Q4 (Russell 2000 vs. Russell 1000). Value underperformed Growth by -3.2% (Russell 1000 Value vs. Russell 1000 Growth). Over the full year, style investing suffered substantially. Small cap underperformed by -9.6% while value stocks underperformed growth by a whopping -31.2%. Besides an extreme period during 2020, calendar year 2023 was the worst 1-year rolling period in more than two decades.

The wide variability of style investing continues to be fueled by extreme sector volatility. For example, the information technology sector, which tends to be more concentrated in growth stocks, performed +57.8% in

2023. Meanwhile, utilities and energy sectors, which tend to be more concentrated in value stocks, performed -7.1% and -1.3%, respectively. Mega cap growth stocks have propelled the U.S. market higher in 2023—a reversal from significant losses in 2022. Many market-leading stocks are concentrated in technology and telecom sectors, which have outperformed the overall index (+57.8% and +55.8%, respectively).

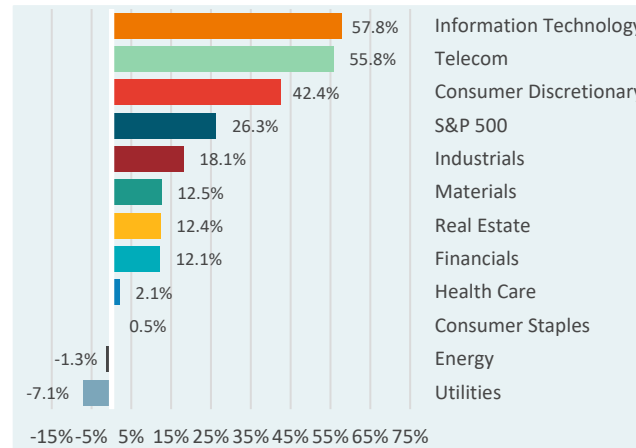
We believe sector variability and the way this has contributed to style factor volatility is further evidence that style investing should be a long-term decision. Short-term factor timing decisions should typically be pursued only in the rare occasion of obvious market mispricing and a foreseen catalyst for price correction.

## VALUE VS. GROWTH 1-YR ROLLING



Source: FTSE, as of 12/31/23

## VALUE VS GROWTH (YOY)



Source: Morningstar, as of 12/31/23

## 1-YEAR SIZE & STYLE PERFORMANCE

|           | Value | Core  | Growth |
|-----------|-------|-------|--------|
| Large Cap | 11.5% | 26.5% | 42.7%  |
| Mid Cap   | 12.7% | 17.2% | 25.9%  |
| Small Cap | 14.6% | 16.9% | 18.7%  |

Source: FTSE, as of 12/31/23

# International developed equity

International developed equities also benefited from shifting expectations around Federal Reserve policy in the fourth quarter, with the MSCI EAFE Index delivering a +10.4% gain in unhedged currency terms. Fading dollar strength provided a large boost, as expectations for potential easing from the Federal Reserve contrasted against shifting policy from the ECB and BOE.

In terms of relative performance, international developed shares trailed the U.S., but outperformed emerging market equities. Sector weightings played the largest role, as gains from mega-cap technology names drove domestic

performance, contrasting against the heavier financials and industrial sector composition of the MSCI EAFE index.

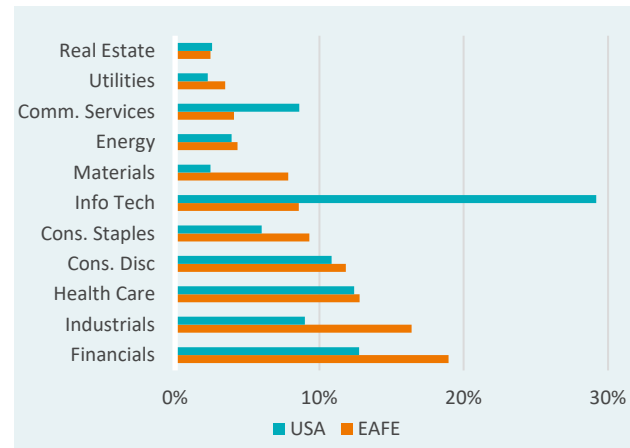
Despite macroeconomic challenges, international developed equities saw strong performance in 2023, up +18.2% in unhedged dollar terms. Japanese shares continued to benefit from zero-interest rate policy and shifting investment away from China and into Japan. European shares were lifted by better-than-expected global growth and the ability for companies to pass off higher prices – resulting in strong earnings.

## INTERNATIONAL DEVELOPED EQUITY



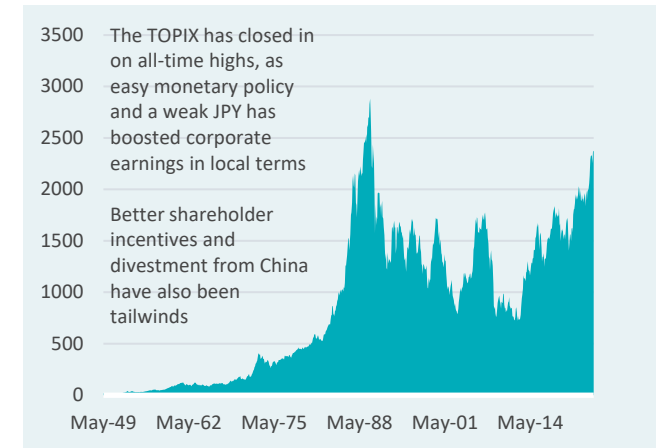
Source: MSCI, as of 12/31/23

## MSCI EAFE VS. USA SECTOR WEIGHTING



Source: MSCI, as of 12/31/23

## JAPAN TOPIX PRICE INDEX



Source: Tokyo Stock Exchange, as of 12/31/23

# Emerging market equity

Emerging markets saw a positive end to 2023, rising +7.9% in the fourth quarter – helping to notch a +9.8% gain for the index over the 2023 calendar year. While rebounding from losses seen last year (-20.1% decline in 2022), emerging market equities underperformed both domestic and international developed equities for the second straight year.

Most countries within the index saw positive returns in the last quarter of the year, fueled by the broader rally in risk assets as U.S. monetary policy expectations eased. China was the outlier, declining -4.2%.

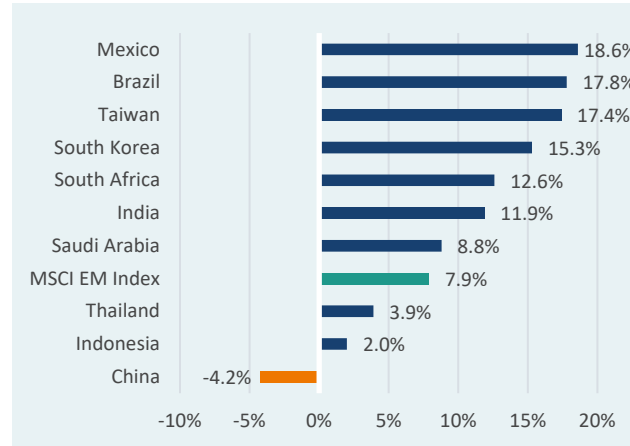
Chinese shares remain the elephant in the room within emerging markets. The MSCI EM ex China Index outperformed the flagship index by more than 10% in 2023, which highlights the large drag that China has caused, given its nearly 30% country weight in the index. The country continues to face a variety of challenges including incredibly dire demographic trends, geopolitical tension with the U.S., slowing growth, financial distress amongst the property sector and local government financing vehicles, a heavy national debt burden, and deflation. Combined with further consolidation of power within the CCP, the cheap pricing of Chinese equities may be justified.

**EMERGING MARKET EQUITY**



Source: MSCI, as of 12/31/23

**Q4 2023 MSCI EM COUNTRY RETURNS (USD)**



Source: Bloomberg, MSCI, as of 12/31/23

**MSCI EM VS. EM EX CHINA (GROWTH \$100K)**



Source: Bloomberg, MSCI, as of 12/31/23

# Equity valuations

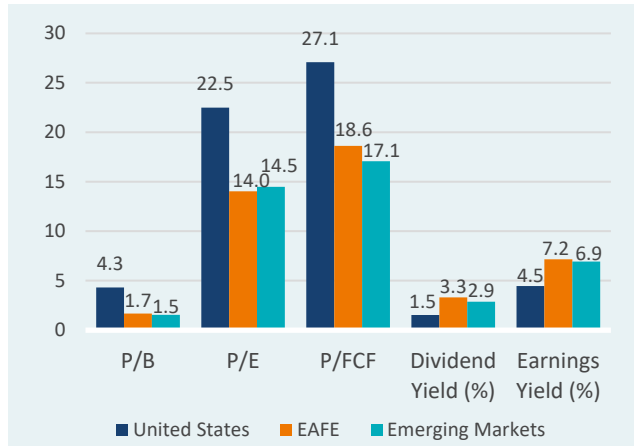
U.S. equity valuation drifted further above those of non-U.S. equities during the quarter. The domestic market is priced at a historic 71% premium over emerging market equities, up from a 59% premium in the third quarter. A portion of the U.S. pricing premium is due to a larger U.S. technology sector, which tends to demand higher valuations, though the valuation gap remains wide even after adjusting for sector composition.

The lower valuations of international developed equities may be at least partly justified due to weaker growth potential and unique challenges in those markets, though rising valuations create a high bar for future profit growth. In order for U.S. equities to justify high valuations over the

longer-term, business will need to generate supernormal earnings growth, and/or stock multiples will need to move upward even further.

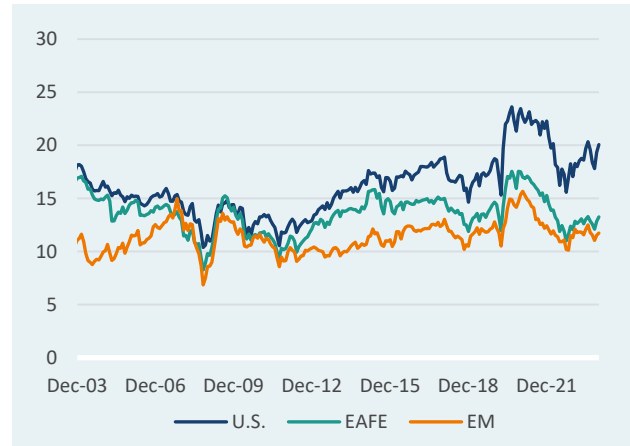
U.S. equity market valuations seem to have defied rising interest rates. Theoretically (and historically) speaking, equities should be fairly sensitive to sharply higher interest rates—the present value of stocks is less when rates are high due to the discounting effect, higher interest rates damage profits as financing is more expensive, and the overall economy tends to slow as borrowing costs rise which bodes poorly for profits. At least for now, the U.S. market remains richly valued and median bank forecasts are for a healthy 2024 S&P 500 return.

**MSCI VALUATION METRICS (3-MONTH AVG)**



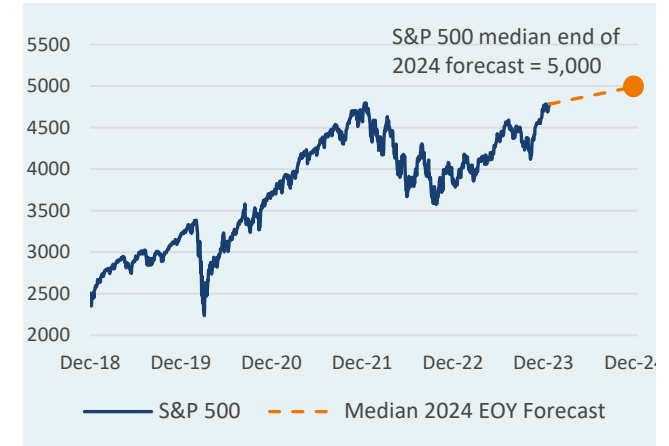
Source: Bloomberg, as of 12/31/23

**FORWARD PRICE/EARNINGS RATIO**



Source: MSCI, Bloomberg, as of 12/31/23

**2024 S&P 500 MEDIAN FORECAST**



Source: Bloomberg, as of 1/10/24. Banks included in forecast include J.P. Morgan, Goldman Sachs, Bank of America, Citibank, Morgan Stanley, Deutsche Bank, and UBS.



# Market volatility

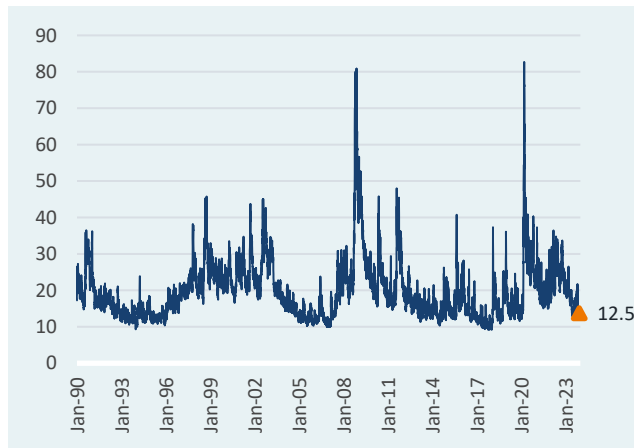
The Cboe VIX implied volatility index moved even lower during the fourth quarter, from 17.5 to 12.5 in December. Priced volatility is incredibly low—at a level that has historically tended to coincide with very strong economic and market conditions.

Realized volatility of global equity markets over the past year has also moderated. The relative volatility of markets has moved back in line with historical behavior—U.S. equities showing the lowest volatility, followed closely by international developed equities, and with emerging market

equities delivering greater risk. This behavior is a reversal of recent years when emerging market volatility was lower than that of developed markets—an uncommon occurrence historically speaking.

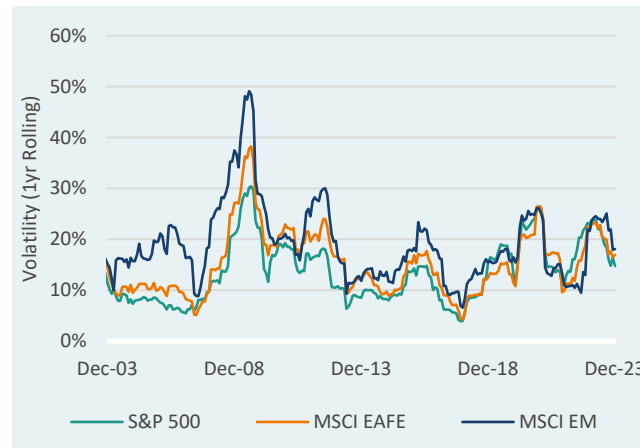
Bond markets remain shaky, as indicated by the “MOVE” Index—which calculates the implied volatility of U.S. Treasury securities. Uncertainty around inflation, the Federal Reserve’s interest rate path and the extent of rate cuts, potential recession, and fears around the U.S. fiscal situation, are likely to act as an ongoing support to volatility.

**U.S. IMPLIED VOLATILITY (VIX)**



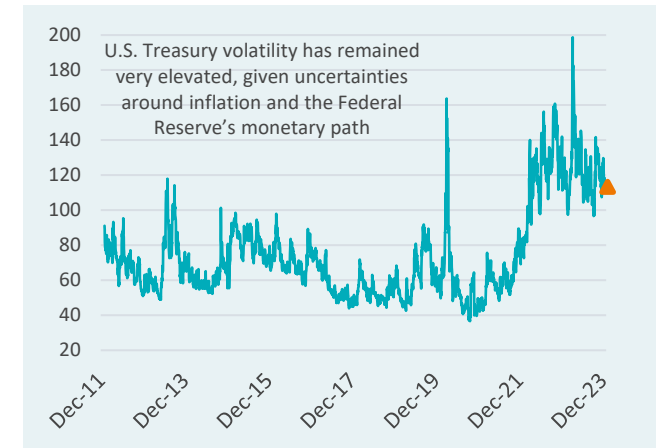
Source: Cboe, as of 12/31/23

**REALIZED VOLATILITY**



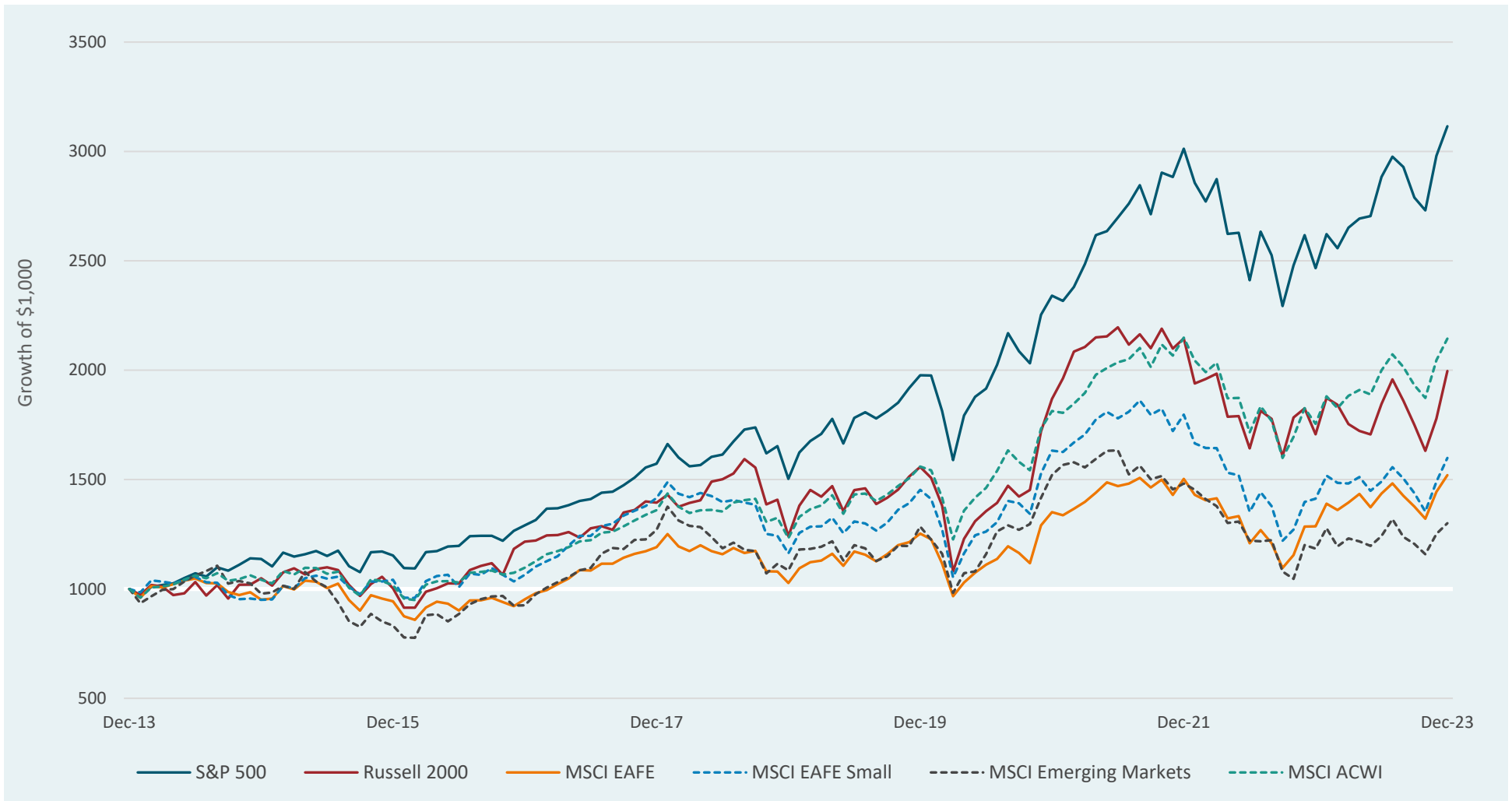
Source: S&P, MSCI, as of 12/31/23

**U.S. TREASURY IMPLIED VOL (“MOVE” INDEX)**



Source: Bloomberg, as of 12/31/23

# Long-term equity performance



Source: MPI, as of 12/31/23

# Other assets

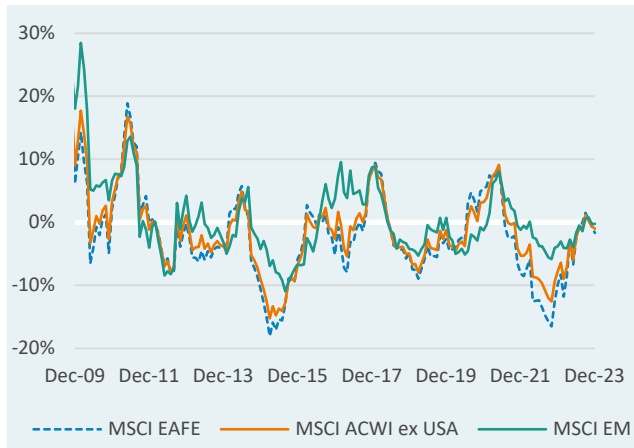
# Currency

The U.S. dollar fell sharply in the fourth quarter, as investors reassessed Federal Reserve policy and interest rates retraced lower. This move created a tailwind for investors with unhedged exposure to foreign currencies. On a trade-weighted basis, the value of the U.S. dollar fell -4.3%. However, following wide fluctuations of the dollar during 2023, and the performance volatility that resulted, investors with unhedged foreign currency exposure saw moderate losses. For investors with unhedged international developed equity exposure, this delivered a loss of -1.7%. Unhedged exposure to emerging market currencies resulted in a loss of -0.2%.

As investors evaluate market movements and performance of 2023, it may be worth reflecting on the benefits which a more thoughtful

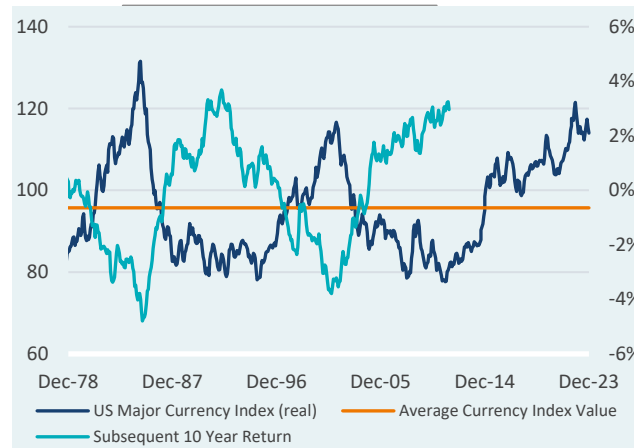
currency approach might deliver. A better approach may reduce the uncompensated risk of unhedged foreign currency exposure. Additionally, the MSCI Currency Factor Mix Index—a representation of a passive investment in the currency market, by investing in currencies with higher interest rates, currencies that are undervalued, and currencies that are showing positive price momentum—has shown a positive one-year rolling return over most periods with low volatility. This is what was delivered in 2023. During the year, an unhedged exposure to currency markets (assuming MSCI EAFE equity implementation) resulted in a loss of -1.7% and volatility of 7.5%. Meanwhile, an implementation to Currency Factor Mix delivered a gain of +1.4% and volatility of 2.5%.

## EFFECT OF CURRENCY (1-YEAR ROLLING)



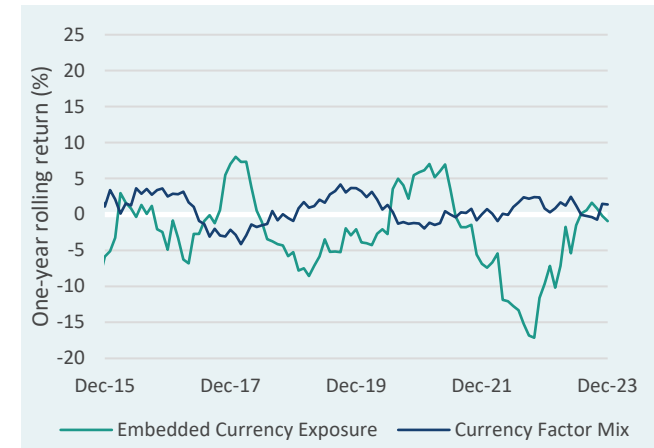
Source: MSCI, as of 12/31/23

## U.S. DOLLAR MAJOR CURRENCY INDEX



Source: Bloomberg, as of 12/31/23

## EMBEDDED CURRENCY VS CURRENCY FACTORS



Source: Bloomberg, MSCI, as of 12/31/23

# Event strategies lead in equity, credit

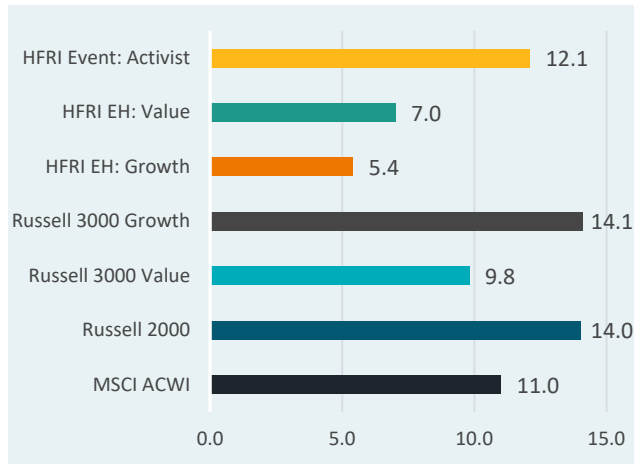
Stock and credit markets rallied in the fourth quarter, and directionally biased strategies within those markets outperformed non-directional peers. Within the equity focused strategy group:

- Activist strategies, which benefited from their smaller cap exposure, continued their run of strong performance with favorable up capture relative to L/S peers.
- Interestingly, value managers outperformed growth counterparts despite growth indexes outperforming value, likely due to a smaller cap bias.

Within the fixed income / credit focused strategy group:

- Event Driven credit strategies such as Distressed and Credit Arbitrage outperformed Relative Value credit strategies such as Structured Credit and Long/Short Credit, as market directionality paid off and economic optimism benefited special situation, catalyst-oriented positioning.
- Event Driven strategies have outperformed both stocks and high yield over the last few years after struggling to keep up in the decade following the Global Financial Crisis.

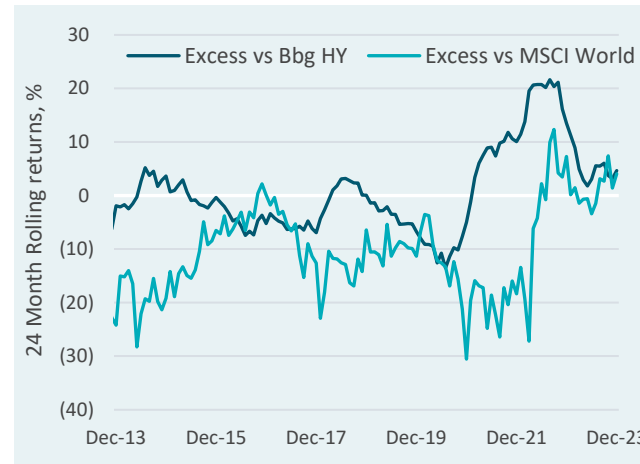
## 4Q RETURNS (%) FOR EQUITY STRATEGIES



Source: HFR, MPI. Data as of 12/31/23

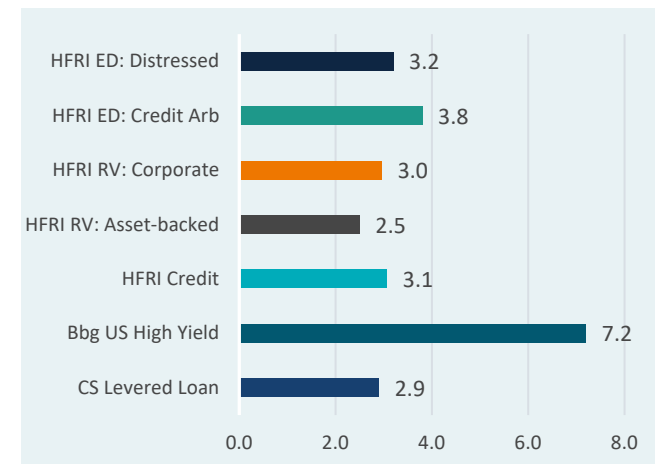
EH = Equity Hedge ED = Event Driven

## HFRI EVENT DRIVEN RETURNS VS STOCKS/HY



Source: HFR, MPI. Data as of 12/31/23 HFRI Event Driven (Total) vs Bloomberg US Corp HY & MSCI World Index

## 4Q RETURNS (%) FOR CREDIT STRATEGIES



Source: HFR, MPI. Data as of 12/31/23

ED = Event Driven RV = Relative Value

# Appendix

# Periodic table of returns

|                         | 2003 | 2004 | 2005 | 2006 | 2007 | 2008  | 2009  | 2010 | 2011  | 2012 | 2013 | 2014  | 2015  | 2016 | 2017 | 2018  | 2019 | 2020 | 2021 | 2022  | YTD  | 5-Year | 10-Year |
|-------------------------|------|------|------|------|------|-------|-------|------|-------|------|------|-------|-------|------|------|-------|------|------|------|-------|------|--------|---------|
| Large Cap Growth        | 56.3 | 26.0 | 34.5 | 32.6 | 39.8 | 5.2   | 79.0  | 29.1 | 14.3  | 18.6 | 43.3 | 13.5  | 13.3  | 31.7 | 37.3 | 6.7   | 36.4 | 38.5 | 28.3 | 16.1  | 42.7 | 19.5   | 14.9    |
| Large Cap Equity        | 48.5 | 22.2 | 21.4 | 26.9 | 16.2 | 1.4   | 37.2  | 26.9 | 7.8   | 18.1 | 38.8 | 13.2  | 5.7   | 21.3 | 30.2 | 1.9   | 31.4 | 34.6 | 27.6 | 9.4   | 26.5 | 15.5   | 11.8    |
| Small Cap Growth        | 47.3 | 20.7 | 20.1 | 23.5 | 15.8 | -6.5  | 34.5  | 24.5 | 2.6   | 17.9 | 34.5 | 13.0  | 0.9   | 17.3 | 25.0 | 0.0   | 28.5 | 21.0 | 27.1 | 1.5   | 18.7 | 10.9   | 8.4     |
| International Equity    | 46.0 | 18.3 | 14.0 | 22.2 | 11.8 | -21.4 | 32.5  | 19.2 | 1.5   | 17.5 | 33.5 | 11.8  | 0.6   | 12.1 | 22.2 | -1.5  | 26.5 | 20.0 | 26.5 | -4.7  | 18.2 | 10.0   | 7.4     |
| Small Cap Equity        | 39.2 | 16.5 | 7.5  | 18.4 | 11.6 | -25.9 | 28.4  | 16.8 | 0.4   | 16.4 | 33.1 | 6.0   | 0.0   | 11.8 | 21.7 | -3.5  | 25.5 | 18.3 | 25.2 | -7.5  | 16.9 | 10.0   | 7.2     |
| 60/40 Global Portfolio  | 30.0 | 14.5 | 7.1  | 16.6 | 10.9 | -28.9 | 27.2  | 16.7 | 0.1   | 16.3 | 32.5 | 5.6   | -0.4  | 11.3 | 17.1 | -4.8  | 22.4 | 14.0 | 17.7 | -13.0 | 15.4 | 9.2    | 7.2     |
| Small Cap Value         | 29.9 | 14.3 | 6.3  | 15.5 | 10.3 | -33.8 | 23.3  | 16.1 | -2.1  | 15.3 | 23.3 | 4.9   | -0.8  | 11.2 | 14.6 | -6.0  | 22.0 | 10.3 | 14.8 | -14.5 | 14.6 | 8.2    | 6.8     |
| Large Cap Value         | 29.7 | 12.9 | 5.3  | 15.1 | 7.0  | -35.6 | 20.6  | 15.5 | -2.9  | 14.6 | 12.1 | 4.2   | -1.4  | 8.0  | 13.7 | -8.3  | 18.6 | 7.8  | 11.3 | -14.5 | 11.5 | 7.2    | 5.1     |
| Emerging Markets Equity | 25.2 | 11.4 | 4.7  | 13.3 | 7.0  | -36.8 | 19.7  | 13.1 | -4.2  | 11.5 | 11.0 | 3.4   | -2.5  | 7.1  | 7.8  | -9.3  | 18.4 | 7.5  | 8.9  | -17.3 | 9.8  | 7.0    | 4.3     |
| Hedge Funds of Funds    | 23.9 | 9.1  | 4.6  | 10.4 | 5.8  | -37.6 | 18.9  | 10.2 | -5.5  | 10.5 | 9.0  | 2.8   | -3.8  | 5.7  | 7.7  | -11.0 | 8.7  | 4.6  | 6.5  | -19.1 | 6.3  | 5.3    | 3.3     |
| US Bonds                | 11.6 | 6.9  | 4.6  | 9.1  | 4.4  | -38.4 | 11.5  | 8.2  | -5.7  | 4.8  | 0.1  | 0.0   | -4.4  | 2.6  | 7.0  | -11.2 | 7.8  | 2.8  | 2.8  | -20.1 | 5.5  | 5.1    | 2.7     |
| Cash                    | 9.0  | 6.3  | 4.2  | 4.8  | -0.2 | -38.5 | 5.9   | 6.5  | -11.7 | 4.2  | -2.0 | -1.8  | -7.5  | 1.0  | 3.5  | -12.9 | 7.7  | 0.5  | 0.0  | -20.4 | 5.0  | 3.7    | 1.8     |
| Real Estate             | 4.1  | 4.3  | 3.2  | 4.3  | -1.6 | -43.1 | 0.2   | 5.7  | -13.3 | 0.1  | -2.3 | -4.5  | -14.9 | 0.5  | 1.7  | -13.8 | 6.4  | 0.5  | -1.5 | -26.4 | -5.1 | 1.8    | 1.2     |
| Commodities             | 1.0  | 1.4  | 2.4  | 2.1  | -9.8 | -53.2 | -16.9 | 0.1  | -18.2 | -1.1 | -9.5 | -17.0 | -24.7 | 0.3  | 0.9  | -14.6 | 2.1  | -3.1 | -2.5 | -29.1 | -7.9 | 1.1    | -1.1    |

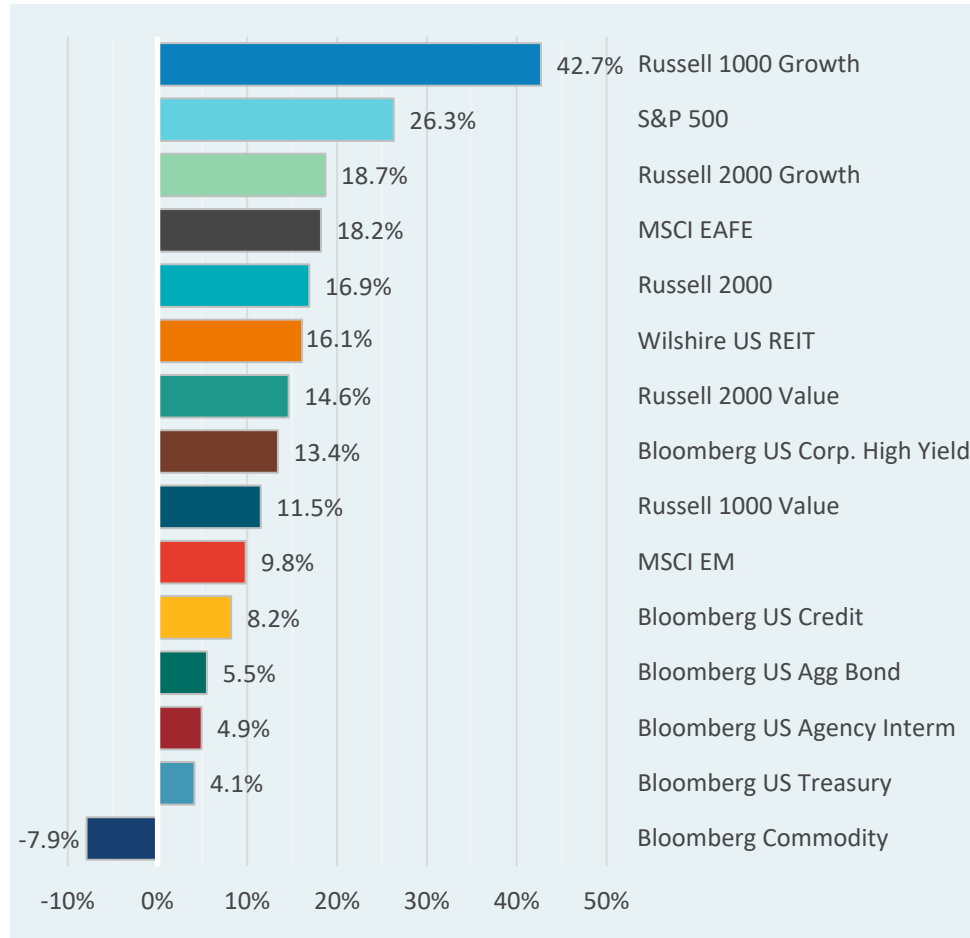
BEST  
↑  
↓  
WORST

|  |   |   |
|--|---|---|
|  Large Cap Equity |  Small Cap Growth        |  Commodities                             |
|  Large Cap Value  |  International Equity    |  Real Estate                             |
|  Large Cap Growth |  Emerging Markets Equity |  Hedge Funds of Funds                    |
|  Small Cap Equity |  US Bonds                |  60% MSCI ACWI/40% Bloomberg Global Bond |
|  Small Cap Value  |  Cash                    |   |

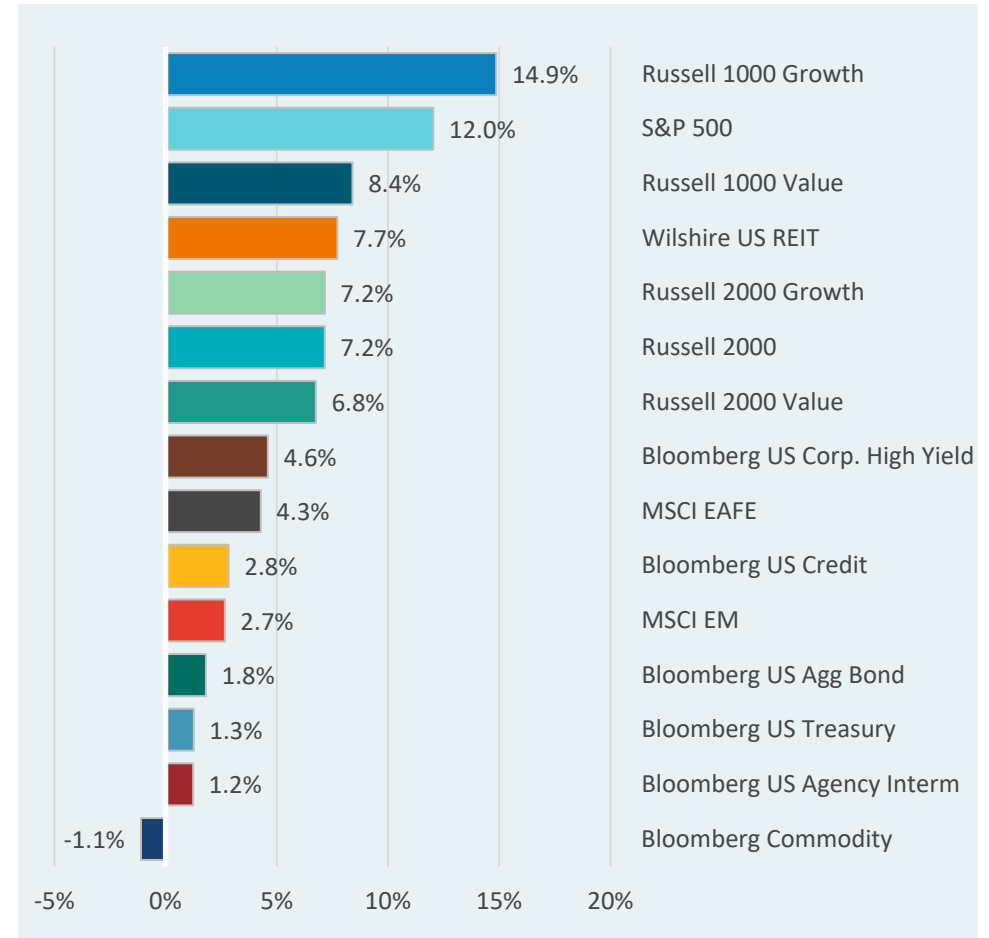
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, Bloomberg Global Bond. NCREIF Property Index performance data as of 9/30/23.

# Major asset class returns

ONE YEAR ENDING DECEMBER



TEN YEARS ENDING DECEMBER



\*Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.

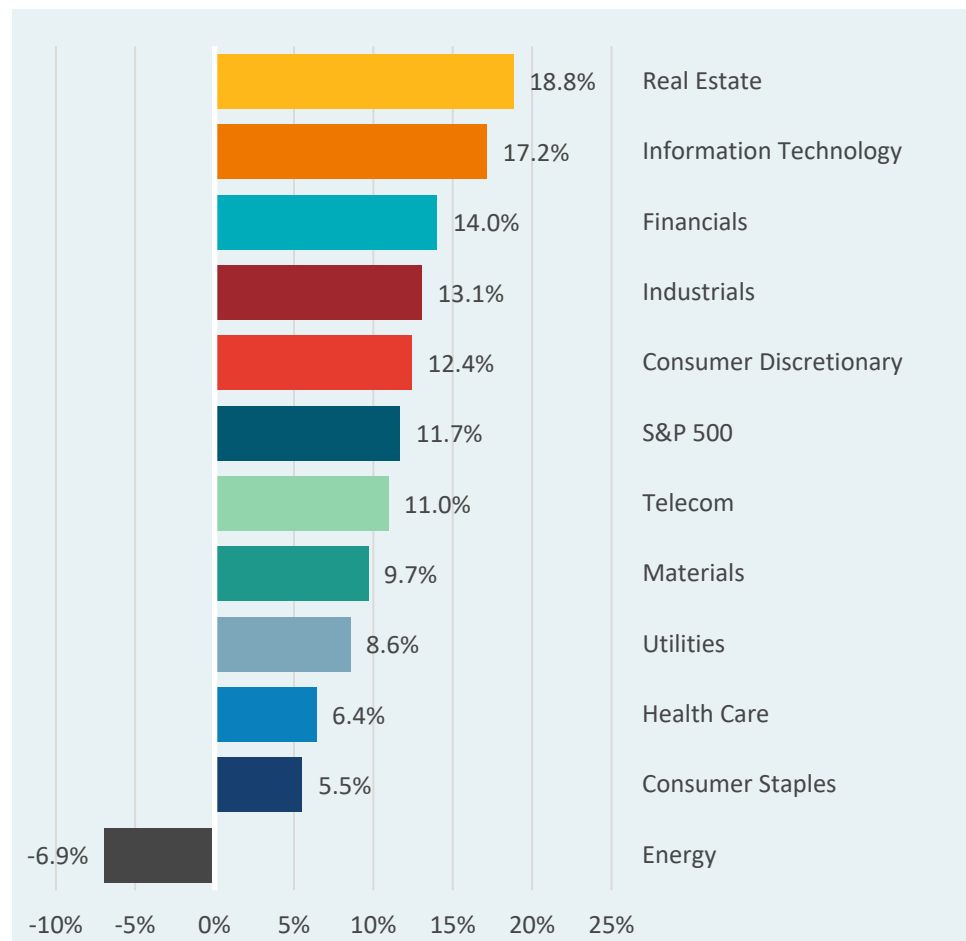
Source: Morningstar, as of 12/31/23

Source: Morningstar, as of 12/31/23



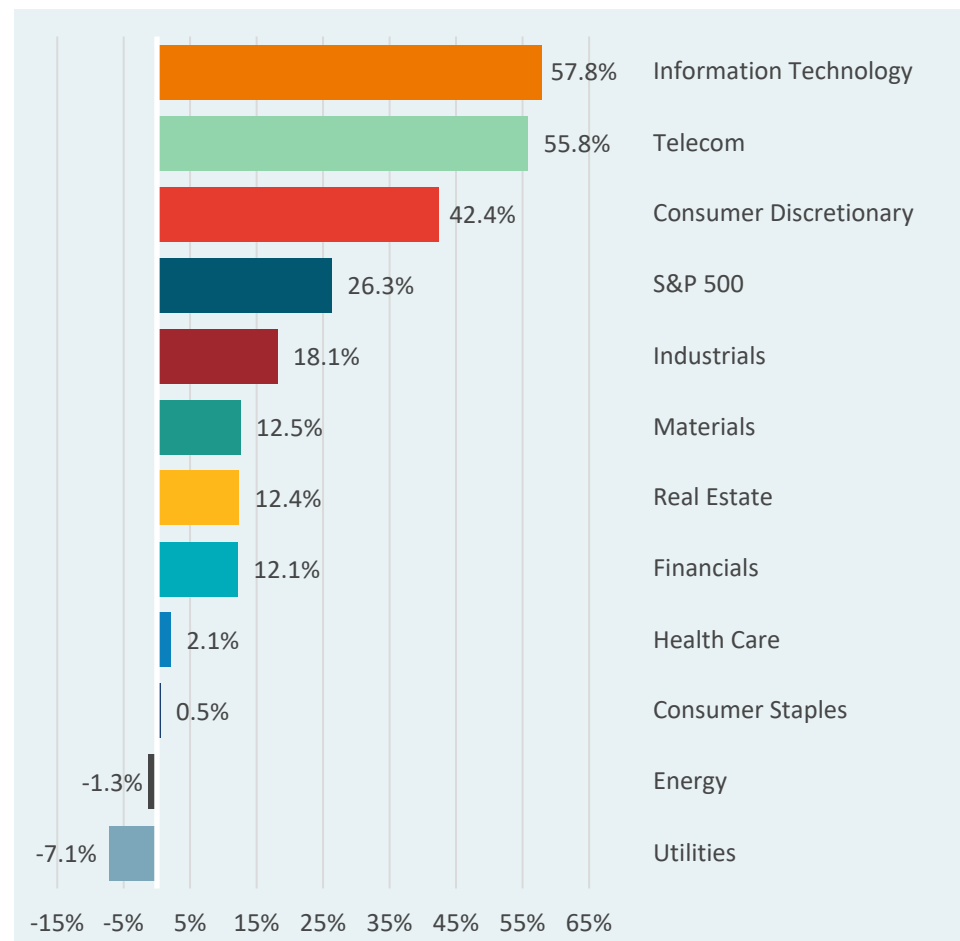
# S&P 500 sector returns

QTD



Source: Morningstar, as of 12/31/23

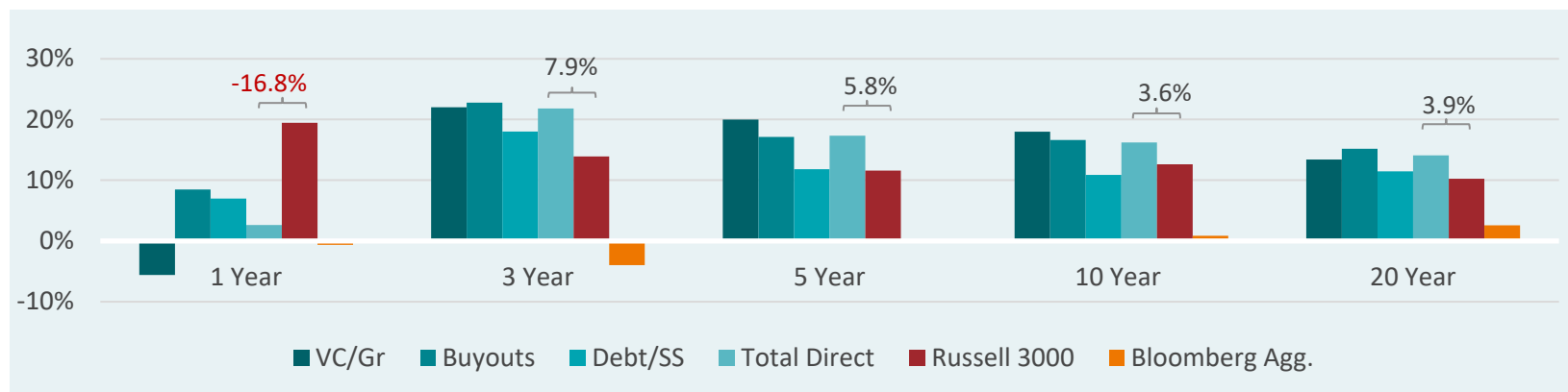
ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/23

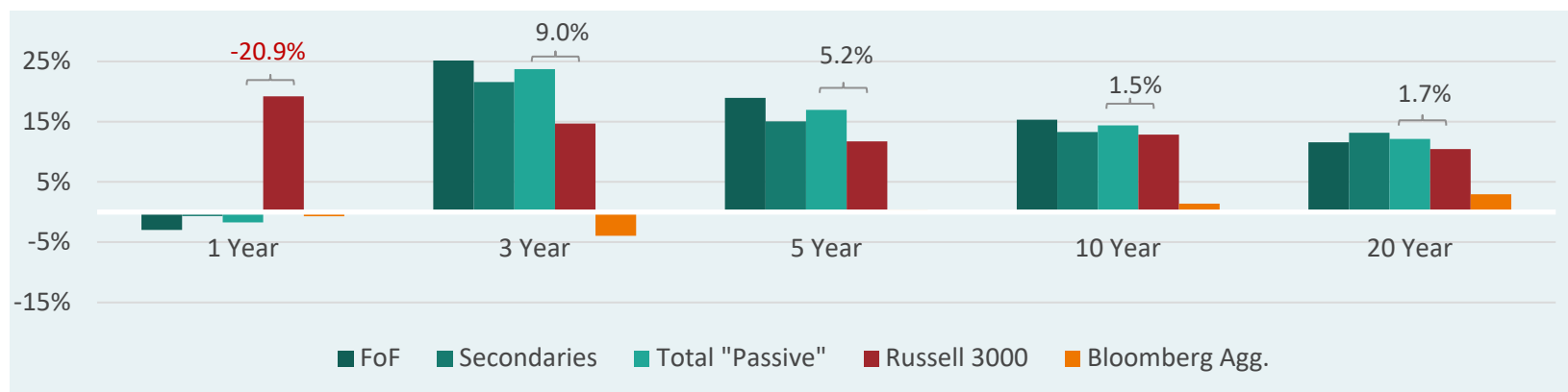
# Private equity vs. traditional assets performance

## DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct P.E Fund Investments outperformed comparable public equities across all time periods, aside from the 1-year.

## "PASSIVE" STRATEGIES

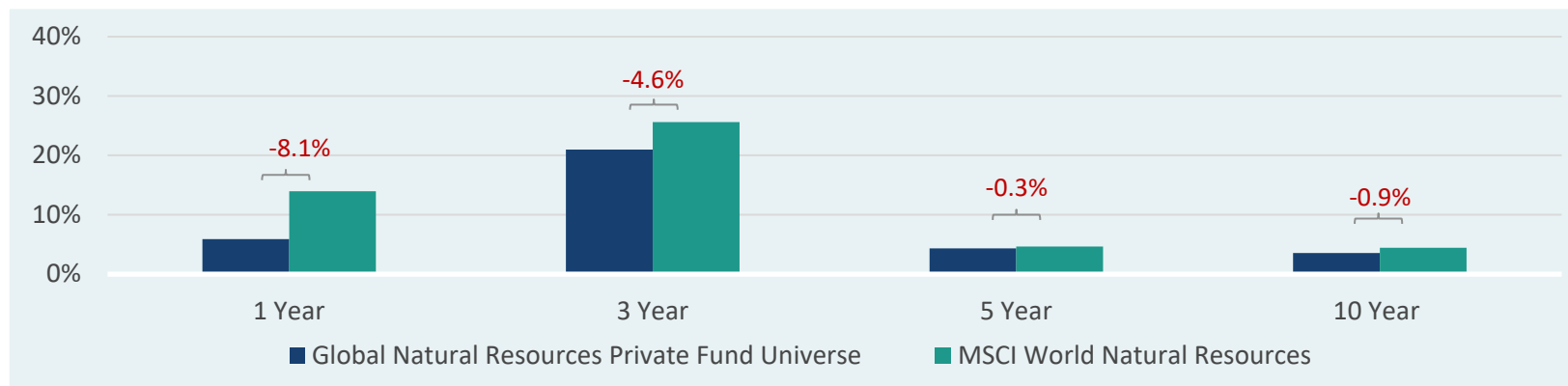


"Passive" strategies outperformed comparable public equities across all time periods, aside from the 1-year.

Sources: Refinitiv PME: U.S. Private Equity Funds sub asset classes as of June 30, 2023. Public Market Equivalent returns resulted from "Total Passive" and Total Direct's identical cash flows invested into and distributed from respective traditional asset comparable.

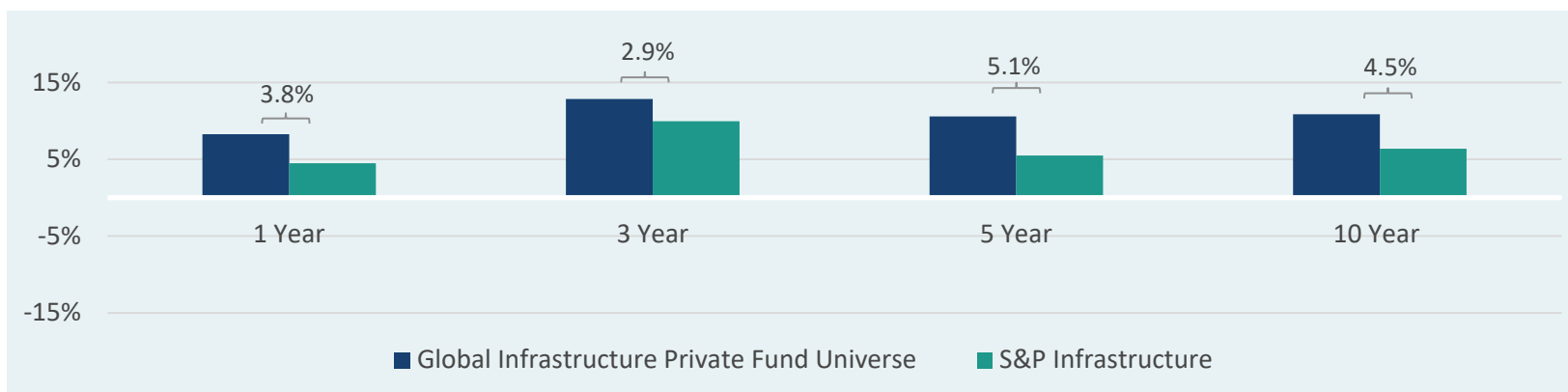
# Private vs. liquid real assets performance

## GLOBAL NATURAL RESOURCES FUNDS



N.R. funds underperformed the MSCI World Natural Resources benchmark across all periods.

## GLOBAL INFRASTRUCTURE FUNDS

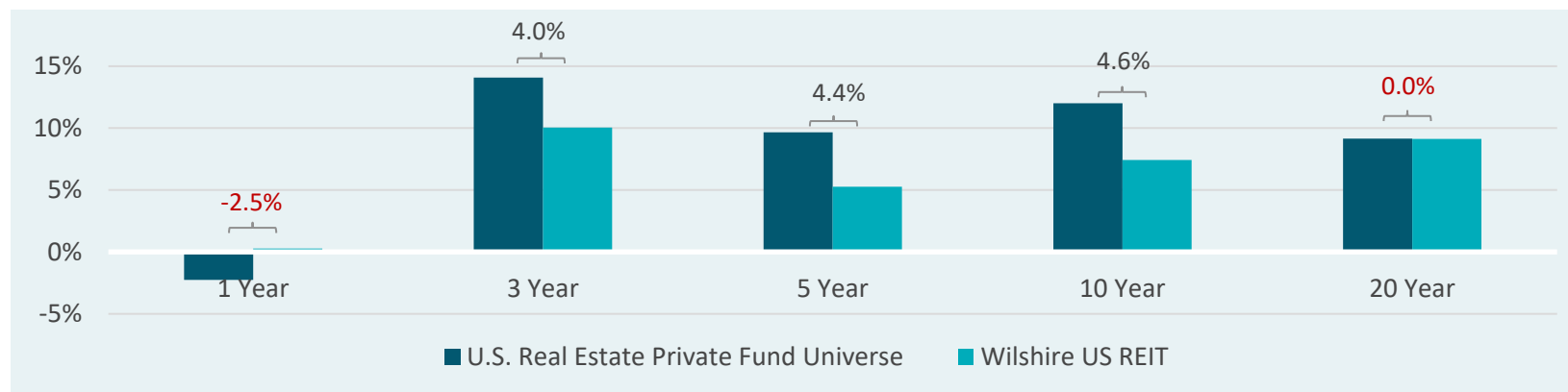


Infra. funds outperformed the S&P Infra. across all periods.

Sources: Refinitiv PME: Global Natural Resources (vintage 1999 and later, inception of MSCI World Natural Resources benchmark) and Global Infrastructure (vintage 2002 and later, inception of S&P Infrastructure benchmark) universes as of June 30, 2023. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

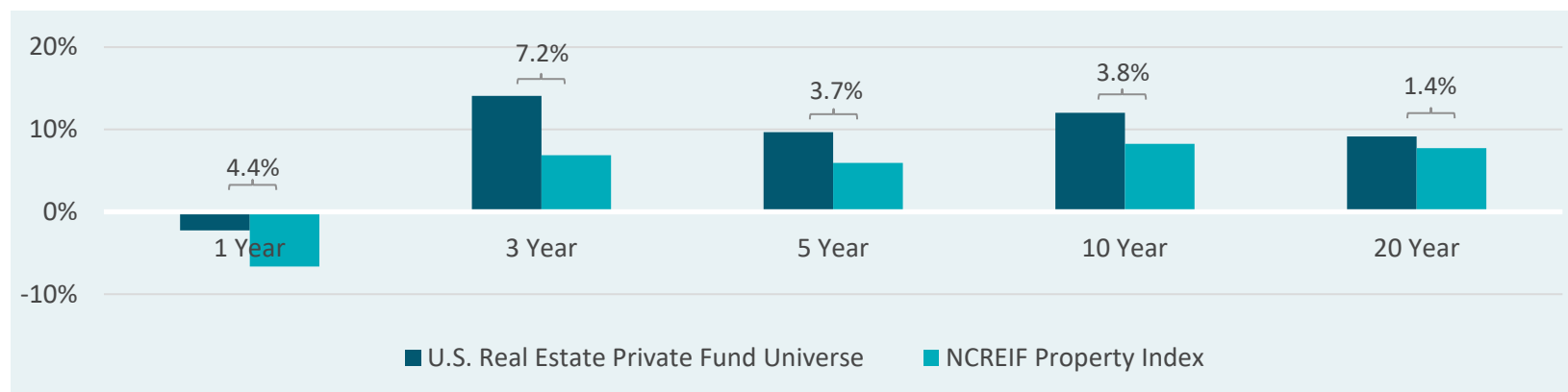
# Private vs. liquid and core real estate performance

## U.S. PRIVATE REAL ESTATE FUNDS VS. LIQUID UNIVERSE



U.S. Private R.E. fund performance relative to the Wilshire U.S. REIT Index has been mixed.

## U.S. PRIVATE REAL ESTATE FUNDS VS. CORE FUNDS



U.S. Private R.E. Funds outperformed the NCREIF Property Index across all time periods.

Sources: Refinitiv PME: U.S. Real Estate universes as of June 30, 2023. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real estate universes.

# Detailed index returns

## DOMESTIC EQUITY

|                        | Month | QTD  | YTD  | 1 Year | 3 Year | 5 Year | 10 Year |
|------------------------|-------|------|------|--------|--------|--------|---------|
| <b>Core Index</b>      |       |      |      |        |        |        |         |
| S&P 500                | 4.5   | 11.7 | 26.3 | 26.3   | 10.0   | 15.7   | 12.0    |
| S&P 500 Equal Weighted | 6.9   | 11.9 | 13.9 | 13.9   | 9.3    | 13.8   | 10.4    |
| DJ Industrial Average  | 4.9   | 13.1 | 16.2 | 16.2   | 9.4    | 12.5   | 11.1    |
| Russell Top 200        | 4.1   | 11.7 | 29.9 | 29.9   | 10.0   | 16.5   | 12.7    |
| Russell 1000           | 4.9   | 12.0 | 26.5 | 26.5   | 9.0    | 15.5   | 11.8    |
| Russell 2000           | 12.2  | 14.0 | 16.9 | 16.9   | 2.2    | 10.0   | 7.2     |
| Russell 3000           | 5.3   | 12.1 | 26.0 | 26.0   | 8.5    | 15.2   | 11.5    |
| Russell Mid Cap        | 7.7   | 12.8 | 17.2 | 17.2   | 5.9    | 12.7   | 9.4     |
| <b>Style Index</b>     |       |      |      |        |        |        |         |
| Russell 1000 Growth    | 4.4   | 14.2 | 42.7 | 42.7   | 8.9    | 19.5   | 14.9    |
| Russell 1000 Value     | 5.5   | 9.5  | 11.5 | 11.5   | 8.9    | 10.9   | 8.4     |
| Russell 2000 Growth    | 12.0  | 12.7 | 18.7 | 18.7   | (3.5)  | 9.2    | 7.2     |
| Russell 2000 Value     | 12.4  | 15.3 | 14.6 | 14.6   | 7.9    | 10.0   | 6.8     |

## INTERNATIONAL EQUITY

|                        | Month | QTD  | YTD  | 1 Year | 3 Year | 5 Year | 10 Year |
|------------------------|-------|------|------|--------|--------|--------|---------|
| <b>Broad Index</b>     |       |      |      |        |        |        |         |
| MSCI ACWI              | 4.8   | 11.0 | 22.2 | 22.2   | 5.7    | 11.7   | 7.9     |
| MSCI ACWI ex US        | 5.0   | 9.8  | 15.6 | 15.6   | 1.5    | 7.1    | 3.8     |
| MSCI EAFE              | 5.3   | 10.4 | 18.2 | 18.2   | 4.0    | 8.2    | 4.3     |
| MSCI EM                | 3.9   | 7.9  | 9.8  | 9.8    | (5.1)  | 3.7    | 2.7     |
| MSCI EAFE Small Cap    | 7.3   | 11.1 | 13.2 | 13.2   | (0.7)  | 6.6    | 4.8     |
| <b>Style Index</b>     |       |      |      |        |        |        |         |
| MSCI EAFE Growth       | 5.7   | 12.7 | 17.6 | 17.6   | 0.3    | 8.8    | 5.1     |
| MSCI EAFE Value        | 4.9   | 8.2  | 19.0 | 19.0   | 7.6    | 7.1    | 3.2     |
| <b>Regional Index</b>  |       |      |      |        |        |        |         |
| MSCI UK                | 4.5   | 6.9  | 14.1 | 14.1   | 8.8    | 6.9    | 2.5     |
| MSCI Japan             | 4.4   | 8.2  | 20.3 | 20.3   | 0.7    | 6.9    | 5.0     |
| MSCI Euro              | 4.4   | 12.9 | 25.2 | 25.2   | 6.0    | 9.3    | 4.1     |
| MSCI EM Asia           | 3.3   | 6.7  | 7.8  | 7.8    | (6.9)  | 4.3    | 4.1     |
| MSCI EM Latin American | 8.3   | 17.6 | 32.7 | 32.7   | 9.9    | 6.1    | 2.1     |

## FIXED INCOME

|                               | Month | QTD  | YTD  | 1 Year | 3 Year | 5 Year | 10 Year |
|-------------------------------|-------|------|------|--------|--------|--------|---------|
| <b>Broad Index</b>            |       |      |      |        |        |        |         |
| Bloomberg US TIPS             | 2.7   | 4.7  | 3.9  | 3.9    | (1.0)  | 3.2    | 2.4     |
| Bloomberg US Treasury Bills   | 0.5   | 1.4  | 5.1  | 5.1    | 2.1    | 1.9    | 1.3     |
| Bloomberg US Agg Bond         | 3.8   | 6.8  | 5.5  | 5.5    | (3.3)  | 1.1    | 1.8     |
| Bloomberg US Universal        | 3.8   | 6.8  | 6.2  | 6.2    | (3.0)  | 1.4    | 2.1     |
| <b>Duration</b>               |       |      |      |        |        |        |         |
| Bloomberg US Treasury 1-3 Yr  | 1.2   | 2.6  | 4.3  | 4.3    | (0.1)  | 1.3    | 1.0     |
| Bloomberg US Treasury Long    | 8.6   | 12.7 | 3.1  | 3.1    | (11.4) | (1.2)  | 2.3     |
| Bloomberg US Treasury         | 3.4   | 5.7  | 4.1  | 4.1    | (3.8)  | 0.5    | 1.3     |
| <b>Issuer</b>                 |       |      |      |        |        |        |         |
| Bloomberg US MBS              | 4.3   | 7.5  | 5.0  | 5.0    | (2.9)  | 0.3    | 1.4     |
| Bloomberg US Corp. High Yield | 3.7   | 7.2  | 13.4 | 13.4   | 2.0    | 5.4    | 4.6     |
| Bloomberg US Agency Interm    | 1.6   | 3.2  | 4.9  | 4.9    | (1.1)  | 1.1    | 1.2     |
| Bloomberg US Credit           | 4.2   | 8.2  | 8.2  | 8.2    | (3.2)  | 2.4    | 2.8     |

## OTHER

|                           | Month | QTD   | YTD   | 1 Year | 3 Year | 5 Year | 10 Year |
|---------------------------|-------|-------|-------|--------|--------|--------|---------|
| <b>Index</b>              |       |       |       |        |        |        |         |
| Bloomberg Commodity       | (2.7) | (4.6) | (7.9) | (7.9)  | 10.8   | 7.2    | (1.1)   |
| Wilshire US REIT          | 10.2  | 16.3  | 16.1  | 16.1   | 7.5    | 7.6    | 7.7     |
| CS Leveraged Loans        | 1.6   | 2.9   | 13.0  | 13.0   | 5.6    | 5.6    | 4.4     |
| S&P Global Infrastructure | 4.2   | 10.9  | 6.8   | 6.8    | 6.0    | 7.4    | 5.7     |
| Alerian MLP               | (3.4) | 3.0   | 23.8  | 23.8   | 31.8   | 10.9   | 1.6     |
| <b>Regional Index</b>     |       |       |       |        |        |        |         |
| JPM EMBI Global Div       | 4.7   | 9.2   | 11.1  | 11.1   | (3.6)  | 1.7    | 3.2     |
| JPM GBI-EM Global Div     | 3.2   | 8.1   | 12.7  | 12.7   | (3.2)  | 1.1    | 0.1     |
| <b>Hedge Funds</b>        |       |       |       |        |        |        |         |
| HFRI Composite            | 2.6   | 3.6   | 7.5   | 7.5    | 4.3    | 7.0    | 4.5     |
| HFRI FOF Composite        | 2.3   | 3.4   | 6.3   | 6.3    | 2.3    | 5.1    | 3.3     |
| <b>Currency (Spot)</b>    |       |       |       |        |        |        |         |
| Euro                      | 1.2   | 4.3   | 3.5   | 3.5    | (3.4)  | (0.7)  | (2.2)   |
| Pound Sterling            | 0.7   | 4.4   | 6.0   | 6.0    | (2.3)  | 0.0    | (2.6)   |
| Yen                       | 4.9   | 5.9   | (6.4) | (6.4)  | (9.9)  | (4.9)  | (2.9)   |

Source: Morningstar, HFRI, as of 12/31/23

# Definitions

**Bloomberg US Weekly Consumer Comfort Index** - tracks the public's economic attitudes each week, providing a high-frequency read on consumer sentiment. The index, based on cell and landline telephone interviews with a random, representative national sample of U.S. adults, tracks Americans' ratings of the national economy, their personal finances and the buying climate on a weekly basis, with views of the economy's direction measured separately each month. ([www.lanqerresearch.com](http://www.lanqerresearch.com))

**University of Michigan Consumer Sentiment Index** - A survey of consumer attitudes concerning both the present situation as well as expectations regarding economic conditions conducted by the University of Michigan. For the preliminary release approximately three hundred consumers are surveyed while five hundred are interviewed for the final figure. The level of consumer sentiment is related to the strength of consumer spending. ([www.Bloomberg.com](http://www.Bloomberg.com))

**NFIB Small Business Outlook** - Small Business Economic Trends (SBET) is a monthly assessment of the U.S. small-business economy and its near-term prospects. Its data are collected through mail surveys to random samples of the National Federal of Independent Business (NFIB) membership. The survey contains three broad question types: recent performance, near-term forecasts, and demographics. The topics addressed include: outlook, sales, earnings, employment, employee compensation, investment, inventories, credit conditions, and single most important problem. (<http://www.nfib-sbet.org/about/>)

**NAHB Housing Market Index** - the housing market index is a weighted average of separate diffusion indices for three key single-family indices: market conditions for the sale of new homes at the present time, market conditions for the sale of new homes in the next six months, and the traffic of prospective buyers of new homes. The first two series are rated on a scale of Good, Fair, and Poor and the last is rated on a scale of High/Very High, Average, and Low/Very Low. A diffusion index is calculated for each series by applying the formula  $(\text{Good-Poor} + 100)/2$  to the present and future sales series and  $(\text{High/Very High-Low/Very Low} + 100)/2$  to the traffic series. Each resulting index is then seasonally adjusted and weighted to produce the HMI. Based on this calculation, the HMI can range between 0 and 100.

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# Kern County Employees' Retirement Association

Investment Performance Review  
Period Ending: December 31, 2023



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PITTSBURGH 412.784.6678  
LOS ANGELES 310.297.1777  
SAN FRANCISCO 415.362.3484

Total Fund  
Portfolio Reconciliation

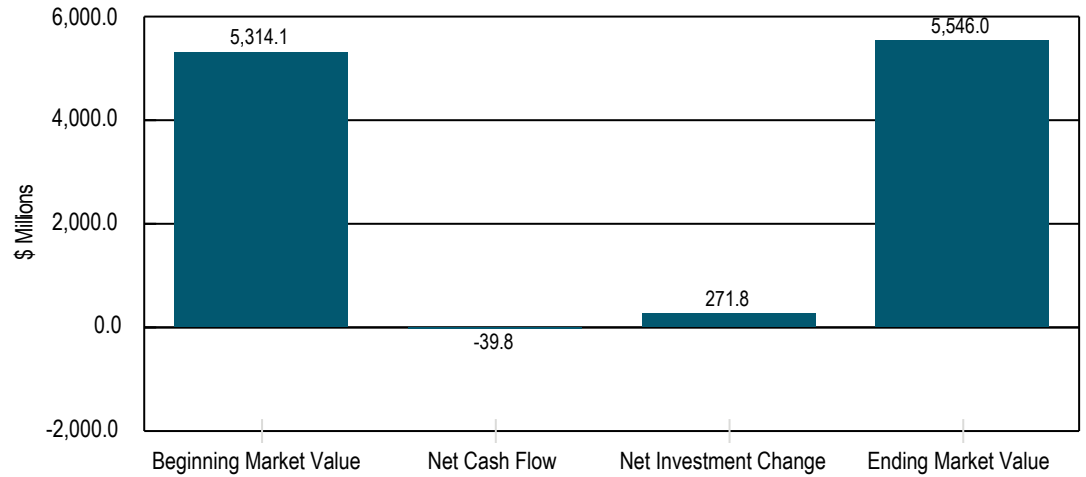
Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

Portfolio Reconciliation

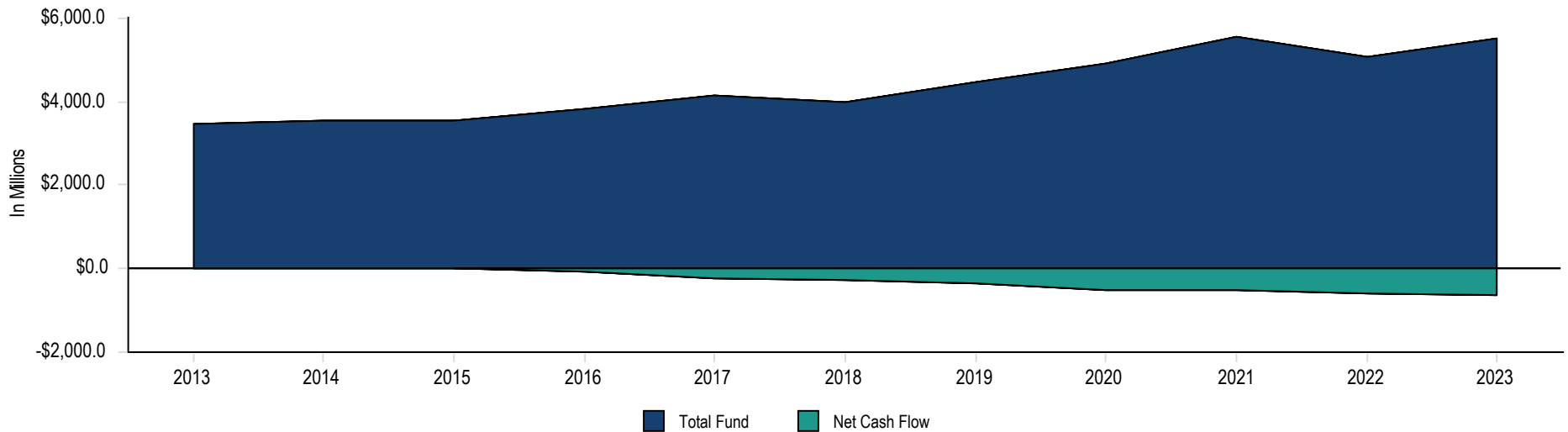
Last Three Months

|                        |                 |
|------------------------|-----------------|
| Beginning Market Value | \$5,314,111,145 |
| Net Cash Flows         | -\$39,835,495   |
| Net Investment Change  | \$271,774,553   |
| Ending Market Value    | \$5,545,997,689 |

Change in Market Value  
Last Three Months



Market Value History





# Total Fund

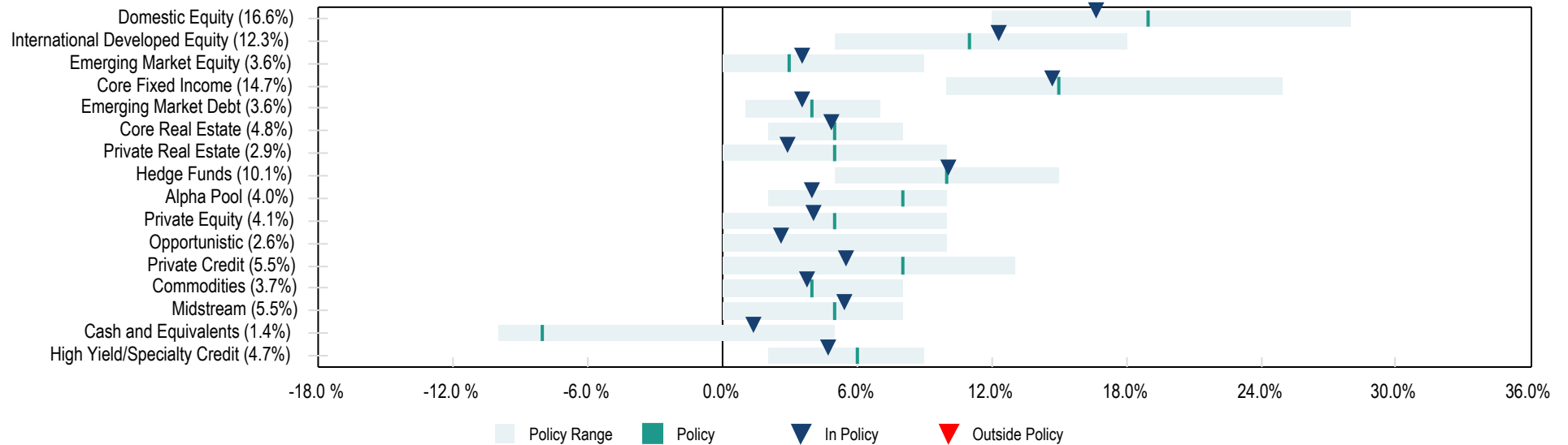
## Asset Allocation vs. Policy

# Kern County Employees' Retirement Association

## Period Ending: December 31, 2023

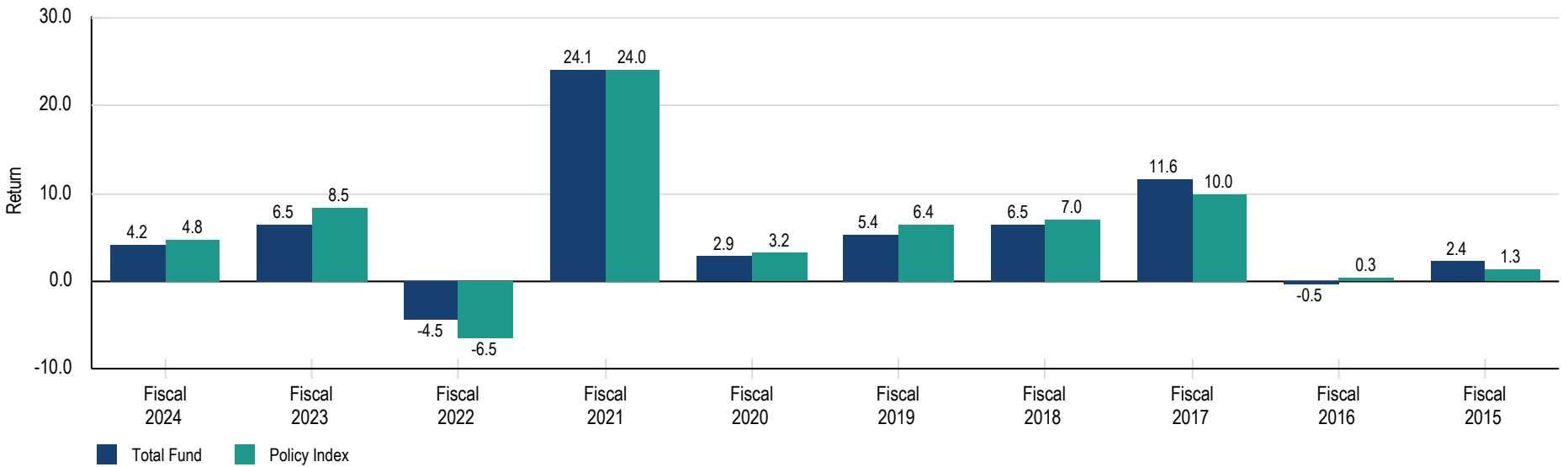
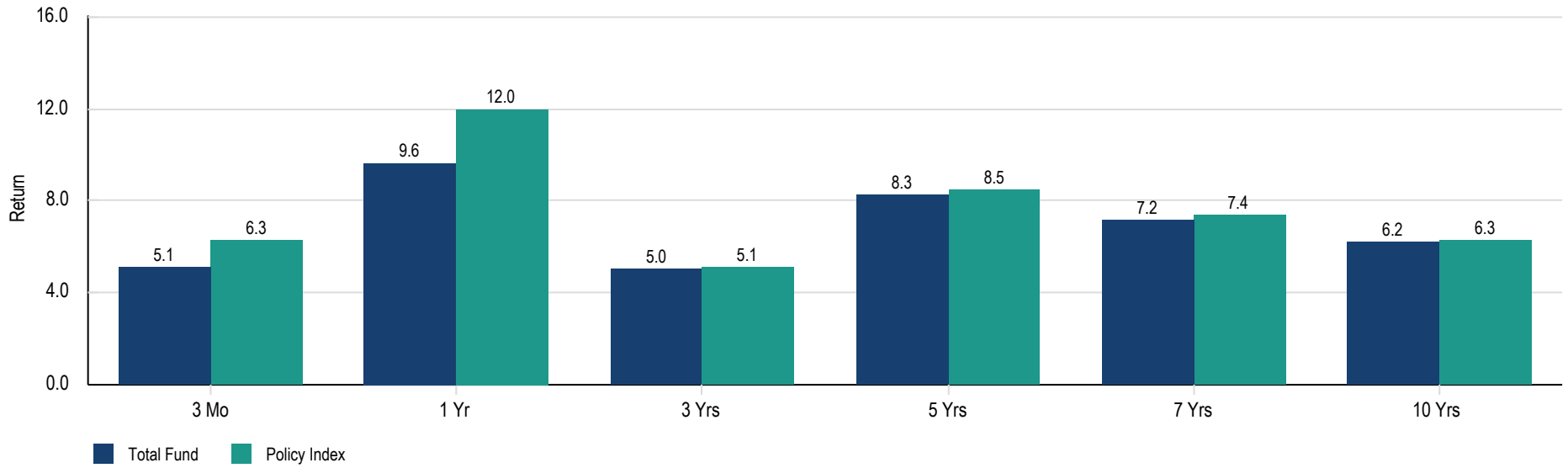
|                      | Current Balance (\$) | Current Allocation (%) | Policy Allocation (%) | Excess Allocation (%) | Policy Range (%) | Within IPS Range? |
|----------------------|----------------------|------------------------|-----------------------|-----------------------|------------------|-------------------|
| Equity               | 1,804,668,699        | 32.5                   | 33.0                  | -0.5                  | 23.0 - 45.0      | Yes               |
| Fixed Income         | 1,276,401,377        | 23.0                   | 25.0                  | -2.0                  | 15.0 - 35.0      | Yes               |
| Core Real Estate     | 267,156,219          | 4.8                    | 5.0                   | -0.2                  | 2.0 - 8.0        | Yes               |
| Hedge Funds          | 557,778,481          | 10.1                   | 10.0                  | 0.1                   | 5.0 - 15.0       | Yes               |
| Alpha Pool           | 221,490,241          | 4.0                    | 8.0                   | -4.0                  | 2.0 - 10.0       | Yes               |
| Private Equity       | 225,134,003          | 4.1                    | 5.0                   | -0.9                  | 0.0 - 10.0       | Yes               |
| Private Credit       | 303,862,333          | 5.5                    | 8.0                   | -2.5                  | 0.0 - 13.0       | Yes               |
| Private Real Estate  | 161,001,260          | 2.9                    | 5.0                   | -2.1                  | 0.0 - 10.0       | Yes               |
| Commodities          | 207,453,782          | 3.7                    | 4.0                   | -0.3                  | 0.0 - 8.0        | Yes               |
| Opportunistic        | 143,114,014          | 2.6                    | 0.0                   | 2.6                   | 0.0 - 10.0       | Yes               |
| Midstream            | 302,780,890          | 5.5                    | 5.0                   | 0.5                   | 0.0 - 8.0        | Yes               |
| Cash and Equivalents | 75,156,390           | 1.4                    | -8.0                  | 9.4                   | -10.0 - 5.0      | Yes               |
| <b>Total</b>         | <b>5,545,997,689</b> | <b>100.0</b>           | <b>100.0</b>          | <b>0.0</b>            |                  |                   |

### Executive Summary



Total Fund  
Performance vs. Policy (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023



Total Fund  
Executive Summary (Gross of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Market Value         | % of Portfolio | 3 Mo        | Fiscal YTD   | 1 Yr         | 3 Yrs       | 5 Yrs       | 10 Yrs      | Fiscal 2023  | Fiscal 2022  | Fiscal 2021 | Fiscal 2020  | Fiscal 2019 |
|--|----------------------|----------------|-------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|-------------|--------------|-------------|
| <b>Total Fund</b>  | <b>5,545,997,689</b> | <b>100.0</b>   | <b>5.1</b>  | <b>4.3</b>   | <b>9.8</b>   | <b>5.3</b>  | <b>8.6</b>  | <b>6.6</b>  | <b>6.7</b>   | <b>-4.2</b>  | <b>24.4</b> | <b>3.2</b>   | <b>5.7</b>  |
| <i>Policy Index</i>                                      |                      |                | 6.3         | 4.8          | 12.0         | 5.1         | 8.5         | 6.3         | 8.5          | -6.5         | 24.0        | 3.2          | 6.4         |
| <i>InvMetrics Public DB &gt; \$1B Rank</i>               |                      |                | 88          | 67           | 85           | 32          | 42          | 49          | 74           | 32           | 88          | 21           | 62          |
| <b>Equity</b>  | <b>1,804,668,699</b> | <b>32.5</b>    | <b>10.3</b> | <b>6.6</b>   | <b>19.9</b>  | <b>6.1</b>  | <b>11.8</b> | <b>8.6</b>  | <b>15.9</b>  | <b>-14.9</b> | <b>41.2</b> | <b>0.7</b>   | <b>5.3</b>  |
| <i>MSCI AC World IMI (Net)</i>                           |                      |                | 11.1        | 7.4          | 21.6         | 5.5         | 11.5        | 7.8         | 16.1         | -16.5        | 40.9        | 1.2          | 4.6         |
| Domestic Equity  | 922,021,065          | 16.6           | 11.9        | 8.0          | 24.2         | 9.1         | 15.4        | -           | 17.8         | -12.0        | 43.6        | 6.3          | 9.2         |
| <i>MSCI USA IMI</i>                                      |                      |                | 12.1        | 8.5          | 26.2         | 8.8         | 15.4        | -           | 19.2         | -13.7        | 44.4        | 6.7          | 9.0         |
| International Developed Equity                           | 684,112,752          | 12.3           | 9.2         | 4.8          | 16.2         | 4.2         | 8.7         | -           | 17.2         | -17.2        | 37.0        | -5.5         | -0.6        |
| <i>MSCI World ex U.S. IMI Index (Net)</i>                |                      |                | 10.5        | 6.1          | 17.2         | 3.7         | 8.2         | -           | 16.3         | -17.7        | 34.8        | -5.1         | 0.2         |
| Emerging Markets Equity                                  | 198,533,775          | 3.6            | 6.8         | 5.8          | 14.0         | -1.5        | 3.6         | -           | 5.3          | -21.4        | 40.6        | -10.9        | 0.4         |
| <i>MSCI Emerging Markets IMI (Net)</i>                   |                      |                | 8.0         | 5.7          | 11.7         | -3.7        | 4.5         | -           | 3.2          | -24.8        | 43.2        | -4.0         | 0.5         |
| <b>Fixed Income</b>                                      | <b>1,276,401,377</b> | <b>23.0</b>    | <b>6.5</b>  | <b>3.9</b>   | <b>7.4</b>   | <b>-2.3</b> | <b>2.4</b>  | <b>2.6</b>  | <b>3.1</b>   | <b>-12.7</b> | <b>5.4</b>  | <b>6.6</b>   | <b>7.9</b>  |
| <i>Fixed Income Custom Benchmark</i>                     |                      |                | 7.0         | 4.6          | 7.6          | -2.1        | 2.1         | 2.4         | 1.9          | -11.6        | 4.0         | 5.2          | 8.4         |
| Core Fixed Income  | 816,023,077          | 14.7           | 6.7         | 3.1          | 5.1          | -3.7        | 1.3         | -           | -0.9         | -11.2        | 1.0         | 9.5          | 8.0         |
| <i>Blmbg. U.S. Aggregate Index</i>                       |                      |                | 6.8         | 3.4          | 5.5          | -3.3        | 1.1         | -           | -0.9         | -10.3        | -0.3        | 8.7          | 7.9         |
| High Yield/ Specialty Credit                             | 261,902,555          | 4.7            | 4.2         | 4.6          | 10.0         | 1.9         | 4.7         | -           | 7.9          | -9.7         | 13.6        | 0.0          | 7.5         |
| <i>ICE BofA U.S. High Yield Index</i>                    |                      |                | 7.1         | 7.6          | 13.5         | 2.0         | 5.2         | -           | 8.9          | -12.7        | 15.6        | -1.1         | 7.6         |
| Emerging Market Debt                                     | 198,217,388          | 3.6            | 9.3         | 6.8          | 13.9         | -1.9        | 2.6         | -           | 11.7         | -19.6        | 9.4         | -1.2         | 8.5         |
| <i>50 JPM EMBI Global Div / 50 JPM GBI EM Global Div</i> |                      |                | 8.6         | 5.6          | 11.9         | -3.3        | 1.4         | -           | 9.4          | -20.2        | 7.1         | -1.1         | 10.8        |
| <b>Commodities</b>                                       | <b>207,453,782</b>   | <b>3.7</b>     | <b>-1.5</b> | <b>5.9</b>   | <b>1.5</b>   | <b>12.8</b> | <b>10.5</b> | <b>1.0</b>  | <b>-6.3</b>  | <b>20.1</b>  | <b>43.5</b> | <b>-10.7</b> | <b>-6.2</b> |
| <i>Bloomberg Commodity Index Total Return</i>            |                      |                | -4.6        | -0.1         | -7.9         | 10.8        | 7.2         | -1.1        | -9.6         | 24.3         | 45.6        | -17.4        | -6.8        |
| <b>Hedge Funds</b>                                       | <b>557,778,481</b>   | <b>10.1</b>    | <b>3.0</b>  | <b>4.9</b>   | <b>8.0</b>   | <b>6.5</b>  | <b>8.5</b>  | <b>6.3</b>  | <b>6.9</b>   | <b>2.8</b>   | <b>16.3</b> | <b>7.3</b>   | <b>2.6</b>  |
| <i>75% 3 Month T-Bill +4% / 25% MSCI ACWI IMI</i>        |                      |                | 5.1         | 6.8          | 15.5         | 9.5         | 10.9        | 9.4         | 13.4         | 2.0          | 15.7        | 8.3          | 9.8         |
| <b>Alpha Pool</b>  | <b>221,490,241</b>   | <b>4.0</b>     | <b>0.0</b>  | <b>0.2</b>   | <b>-1.6</b>  | <b>2.0</b>  | <b>-</b>    | <b>-</b>    | <b>-0.9</b>  | <b>1.5</b>   | <b>14.5</b> | <b>-</b>     | <b>-</b>    |
| <i>3 Month T-Bill +4%</i>                                |                      |                | 2.4         | 4.7          | 9.2          | 6.2         | -           | -           | 7.7          | 4.2          | 4.1         | -            | -           |
| <b>Midstream Energy</b>                                  | <b>302,780,890</b>   | <b>5.5</b>     | <b>4.9</b>  | <b>11.4</b>  | <b>18.3</b>  | <b>25.0</b> | <b>-</b>    | <b>-</b>    | <b>20.1</b>  | <b>9.6</b>   | <b>-</b>    | <b>-</b>     | <b>-</b>    |
| <i>Alerian Midstream Energy Index</i>                    |                      |                | 6.5         | 9.1          | 14.0         | 24.2        | -           | -           | 12.2         | 11.4         | -           | -            | -           |
| <b>Core Real Estate</b>                                  | <b>267,156,219</b>   | <b>4.8</b>     | <b>-7.6</b> | <b>-10.9</b> | <b>-18.3</b> | <b>1.2</b>  | <b>2.0</b>  | <b>-</b>    | <b>-11.9</b> | <b>25.6</b>  | <b>6.6</b>  | <b>2.3</b>   | <b>6.1</b>  |
| <i>NCREIF ODCE</i>                                       |                      |                | -4.8        | -6.6         | -12.0        | 4.9         | 4.2         | -           | -10.0        | 29.5         | 8.0         | 2.2          | 6.4         |
| <b>Private Real Estate</b>                               | <b>161,001,260</b>   | <b>2.9</b>     | <b>-0.7</b> | <b>-4.5</b>  | <b>-2.1</b>  | <b>13.7</b> | <b>9.8</b>  | <b>12.0</b> | <b>7.9</b>   | <b>31.3</b>  | <b>12.1</b> | <b>4.4</b>   | <b>9.0</b>  |
|  |                      |                | -0.7        | -4.5         | -2.1         | 13.7        | 9.8         | 12.0        | 7.9          | 31.3         | 12.1        | 4.4          | 9.0         |
| <b>Private Equity</b>                                    | <b>225,134,003</b>   | <b>4.1</b>     | <b>0.8</b>  | <b>4.0</b>   | <b>8.1</b>   | <b>13.9</b> | <b>10.6</b> | <b>10.7</b> | <b>-0.6</b>  | <b>23.0</b>  | <b>41.7</b> | <b>-10.5</b> | <b>10.9</b> |
|  |                      |                | 0.8         | 4.0          | 8.1          | 13.9        | 10.6        | 10.7        | -0.6         | 23.0         | 41.7        | -10.5        | 10.9        |
| <b>Private Credit</b>                                    | <b>303,862,333</b>   | <b>5.5</b>     | <b>2.2</b>  | <b>5.7</b>   | <b>10.0</b>  | <b>5.1</b>  | <b>4.9</b>  | <b>-</b>    | <b>3.2</b>   | <b>1.2</b>   | <b>4.8</b>  | <b>5.5</b>   | <b>9.7</b>  |
|  |                      |                | 2.2         | 5.7          | 10.0         | 5.1         | 4.9         | -           | 3.2          | 1.2          | 4.8         | 5.5          | 9.7         |

34% MSCI ACWI IMI (Net), 18% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets Global Diversified, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +3%, 2.5% MSCI ACWI (Net), 8% 90 Day T-Bill + 3%, 7% NCREIF-ODCE Gross Monthly, 4% actual time-weighted Private Equity Returns\*, 5% actual time-weighted Private Credit Returns\*, 3% actual time-weighted Private Real Estate Returns\*, 5% Alerian Midstream, 0% Assumed Rate of Return +3%, -8% 90 Day T-bill.. All data prior to 2Q 2011 has been provided by the investments managers. FY: 6/30. The Equity and Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool.

Total Fund  
Executive Summary (Gross of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|                                   | Market Value       | % of Portfolio | 3 Mo       | Fiscal YTD | 1 Yr       | 3 Yrs       | 5 Yrs      | 10 Yrs     | Fiscal 2023 | Fiscal 2022 | Fiscal 2021 | Fiscal 2020 | Fiscal 2019 |
|-----------------------------------|--------------------|----------------|------------|------------|------------|-------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| <b>Opportunistic</b>              | <b>143,114,014</b> | <b>2.6</b>     | <b>1.9</b> | <b>1.0</b> | <b>6.3</b> | <b>11.0</b> | <b>-</b>   | <b>-</b>   | <b>0.6</b>  | <b>-5.4</b> | <b>59.9</b> | <b>-</b>    | <b>-</b>    |
| <i>Assumed Rate of Return +3%</i> |                    |                | <i>1.8</i> | <i>3.6</i> | <i>7.2</i> | <i>7.2</i>  | <i>-</i>   | <i>-</i>   | <i>7.2</i>  | <i>7.2</i>  | <i>7.2</i>  | <i>-</i>    | <i>-</i>    |
| <b>Cash</b>                       | <b>415,705,315</b> | <b>7.5</b>     | <b>1.8</b> | <b>3.2</b> | <b>4.3</b> | <b>1.8</b>  | <b>1.5</b> | <b>1.9</b> | <b>2.3</b>  | <b>-0.2</b> | <b>0.1</b>  | <b>1.0</b>  | <b>2.0</b>  |
| <i>3 Month T-Bill</i>             |                    |                | <i>1.4</i> | <i>2.7</i> | <i>5.0</i> | <i>2.2</i>  | <i>1.9</i> | <i>1.2</i> | <i>3.6</i>  | <i>0.2</i>  | <i>0.1</i>  | <i>1.6</i>  | <i>2.3</i>  |

# Performance and Attribution

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Total Fund  
Performance (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Market Value         | % of Portfolio | 3 Mo        | Fiscal YTD | 1 Yr        | 3 Yrs       | 5 Yrs       | 10 Yrs     | Fiscal 2023 | Fiscal 2022  | Fiscal 2021 | Fiscal 2020  | Fiscal 2019 | Inception   | Inception Date |
|--|----------------------|----------------|-------------|------------|-------------|-------------|-------------|------------|-------------|--------------|-------------|--------------|-------------|-------------|----------------|
| <b>Total Fund</b>                                      | <b>5,545,997,689</b> | <b>100.0</b>   | <b>5.1</b>  | <b>4.2</b> | <b>9.6</b>  | <b>5.0</b>  | <b>8.3</b>  | <b>6.2</b> | <b>6.5</b>  | <b>-4.5</b>  | <b>24.1</b> | <b>2.9</b>   | <b>5.4</b>  | <b>6.5</b>  | <b>Jun-11</b>  |
| <i>Policy Index</i>                                    |                      |                | 6.3         | 4.8        | 12.0        | 5.1         | 8.5         | 6.3        | 8.5         | -6.5         | 24.0        | 3.2          | 6.4         | 6.5         |                |
| <b>Equity</b>  | <b>1,804,668,699</b> | <b>32.5</b>    | <b>10.2</b> | <b>6.5</b> | <b>19.7</b> | <b>5.8</b>  | <b>11.5</b> | <b>8.2</b> | <b>15.7</b> | <b>-15.1</b> | <b>40.7</b> | <b>0.3</b>   | <b>4.8</b>  | <b>8.9</b>  | <b>Jun-11</b>  |
| <i>MSCI AC World IMI (Net)</i>                         |                      |                | 11.1        | 7.4        | 21.6        | 5.5         | 11.5        | 7.8        | 16.1        | -16.5        | 40.9        | 1.2          | 4.6         | 8.3         |                |
| <b>Domestic Equity</b>                                 | <b>922,021,065</b>   | <b>16.6</b>    | <b>11.8</b> | <b>7.9</b> | <b>24.0</b> | <b>8.9</b>  | <b>15.1</b> | <b>-</b>   | <b>17.6</b> | <b>-12.2</b> | <b>43.2</b> | <b>6.0</b>   | <b>8.8</b>  | <b>11.5</b> | <b>Jul-14</b>  |
| <i>MSCI USA IMI</i>                                    |                      |                | 12.1        | 8.5        | 26.2        | 8.8         | 15.4        | -          | 19.2        | -13.7        | 44.4        | 6.7          | 9.0         | 11.4        |                |
| Equity Beta Exposure                                   | 67,962,000           | 1.2            | 12.0        | 8.1        | 26.3        | 9.6         | -           | -          | 19.2        | -11.0        | -           | -            | -           | 13.1        | Aug-20         |
| <i>S&amp;P 500 Index</i>                               |                      |                | 11.7        | 8.0        | 26.3        | 10.0        | -           | -          | 19.6        | -10.6        | -           | -            | -           | 13.4        |                |
| Mellon DB SL Stock Index Fund                          | 579,000,969          | 10.4           | 11.7        | 8.0        | 26.3        | 10.0        | 15.7        | -          | 19.6        | -10.6        | 40.8        | 7.5          | 10.4        | 12.6        | Oct-17         |
| <i>S&amp;P 500 Index</i>                               |                      |                | 11.7        | 8.0        | 26.3        | 10.0        | 15.7        | -          | 19.6        | -10.6        | 40.8        | 7.5          | 10.4        | 12.5        |                |
| PIMCO StocksPLUS                                       | 126,366,009          | 2.3            | 12.1        | 8.6        | 27.0        | 9.0         | 15.5        | 12.0       | 18.8        | -12.8        | 41.7        | 7.7          | 10.6        | 10.8        | Jul-03         |
| <i>S&amp;P 500 Index</i>                               |                      |                | 11.7        | 8.0        | 26.3        | 10.0        | 15.7        | 12.0       | 19.6        | -10.6        | 40.8        | 7.5          | 10.4        | 10.1        |                |
| AB US Small Cap Value Equity                           | 93,666,254           | 1.7            | 12.7        | 7.8        | 7.8         | 6.8         | 9.2         | -          | 4.3         | -16.1        | 77.5        | -19.4        | -6.9        | 6.8         | Jul-15         |
| <i>Russell 2000 Value Index</i>                        |                      |                | 15.3        | 11.8       | 14.6        | 7.9         | 10.0        | -          | 6.0         | -16.3        | 73.3        | -17.5        | -6.2        | 7.4         |                |
| Geneva Capital Small Cap Growth                        | 55,025,832           | 1.0            | 10.6        | 3.8        | 18.8        | 0.3         | 11.5        | -          | 15.6        | -22.1        | 37.6        | 9.3          | 8.6         | 10.0        | Jul-15         |
| <i>Russell 2000 Growth Index</i>                       |                      |                | 12.7        | 4.5        | 18.7        | -3.5        | 9.2         | -          | 18.5        | -33.4        | 51.4        | 3.5          | -0.5        | 6.6         |                |
| <b>International Developed Equity</b>                  | <b>684,112,752</b>   | <b>12.3</b>    | <b>9.2</b>  | <b>4.8</b> | <b>16.1</b> | <b>4.1</b>  | <b>8.5</b>  | <b>-</b>   | <b>17.1</b> | <b>-17.3</b> | <b>36.7</b> | <b>-5.7</b>  | <b>-0.9</b> | <b>4.6</b>  | <b>Jul-14</b>  |
| <i>MSCI World ex U.S. IMI Index (Net)</i>              |                      |                | 10.5        | 6.1        | 17.2        | 3.7         | 8.2         | -          | 16.3        | -17.7        | 34.8        | -5.1         | 0.2         | 4.0         |                |
| Mellon DB SL World ex-US Index Fund                    | 415,298,504          | 7.5            | 10.6        | 6.2        | 18.6        | 5.5         | 9.3         | -          | 17.9        | -16.1        | 35.6        | -5.5         | -           | 5.8         | Jul-18         |
| <i>MSCI World ex U.S. IMI Index (Net)</i>              |                      |                | 10.5        | 6.1        | 17.2        | 3.7         | 8.2         | -          | 16.3        | -17.7        | 34.8        | -5.1         | -           | 4.8         |                |
| Cevian Capital II                                      | 44,029,220           | 0.8            | 12.1        | 13.3       | 27.9        | 15.0        | 14.2        | -          | 25.3        | -8.2         | 46.8        | -8.2         | -5.0        | 8.6         | Dec-14         |
| <i>MSCI Europe (Net)</i>                               |                      |                | 6.4         | 4.2        | 15.8        | 9.5         | 9.8         | -          | 16.7        | -6.5         | 27.9        | -5.5         | 4.5         | 6.2         | Dec-14         |
| Lazard Japanese Equity                                 | 109,154,063          | 2.0            | -           | -          | -           | -           | -           | -          | -           | -            | -           | -            | -           | 9.2         | Nov-23         |
| <i>TOPIX Net Total Return Index</i>                    |                      |                | -           | -          | -           | -           | -           | -          | -           | -            | -           | -            | -           | 9.8         |                |
| American Century Non-US Small Cap                      | 60,360,821           | 1.1            | 8.9         | 1.2        | 4.8         | -4.6        | -           | -          | 7.9         | -27.4        | -           | -            | -           | -2.9        | Dec-20         |
| <i>MSCI World ex U.S. Small Cap Growth Index (Net)</i> |                      |                | 11.2        | 4.6        | 10.6        | -4.2        | -           | -          | 9.5         | -28.6        | -           | -            | -           | -2.7        |                |
| Dalton Japan Long Only                                 | 55,270,144           | 1.0            | -           | -          | -           | -           | -           | -          | -           | -            | -           | -            | -           | 10.5        | Oct-23         |
| <i>MSCI Japan Small Cap (Net)</i>                      |                      |                | 7.4         | -          | -           | -           | -           | -          | -           | -            | -           | -            | -           | 12.0        |                |
| <b>Emerging Markets Equity</b>                         | <b>198,533,775</b>   | <b>3.6</b>     | <b>6.7</b>  | <b>5.5</b> | <b>13.5</b> | <b>-2.1</b> | <b>2.8</b>  | <b>-</b>   | <b>4.6</b>  | <b>-21.9</b> | <b>39.5</b> | <b>-11.8</b> | <b>-0.6</b> | <b>1.5</b>  | <b>Jul-14</b>  |
| <i>MSCI Emerging Markets IMI (Net)</i>                 |                      |                | 8.0         | 5.7        | 11.7        | -3.7        | 4.5         | -          | 3.2         | -24.8        | 43.2        | -4.0         | 0.5         | 2.5         |                |
| DFA Emerging Markets Value I                           | 87,548,956           | 1.6            | 7.2         | 7.3        | 16.5        | 5.3         | 5.7         | -          | 7.9         | -12.9        | 47.6        | -17.7        | 2.0         | 4.4         | Mar-14         |
| <i>MSCI Emerging Markets Value (Net)</i>               |                      |                | 8.1         | 7.2        | 14.2        | 0.0         | 3.4         | -          | 4.1         | -18.6        | 41.6        | -15.7        | 5.0         | 2.4         |                |
| Mellon Emerging Markets Stock Index Fund               | 110,984,819          | 2.0            | 7.7         | 4.4        | 9.6         | -5.3        | -           | -          | 1.6         | -25.5        | 41.1        | -            | -           | 3.0         | Jun-20         |
| <i>MSCI Emerging Markets (Net)</i>                     |                      |                | 7.9         | 4.7        | 9.8         | -5.1        | -           | -          | 1.7         | -25.3        | 40.9        | -            | -           | 5.3         |                |
| <b>Fixed Income</b>                                    | <b>1,276,401,377</b> | <b>23.0</b>    | <b>6.5</b>  | <b>3.8</b> | <b>7.1</b>  | <b>-2.5</b> | <b>2.2</b>  | <b>2.4</b> | <b>2.9</b>  | <b>-13.0</b> | <b>5.1</b>  | <b>6.3</b>   | <b>7.6</b>  | <b>3.3</b>  | <b>Jun-10</b>  |
| <i>Fixed Income Custom Benchmark</i>                   |                      |                | 7.0         | 4.6        | 7.6         | -2.1        | 2.1         | 2.4        | 1.9         | -11.6        | 4.0         | 5.2          | 8.4         | 3.1         |                |
| <b>Core Fixed Income</b>                               | <b>816,023,077</b>   | <b>14.7</b>    | <b>6.6</b>  | <b>3.1</b> | <b>5.0</b>  | <b>-3.9</b> | <b>1.2</b>  | <b>-</b>   | <b>-1.0</b> | <b>-11.4</b> | <b>0.8</b>  | <b>9.3</b>   | <b>7.9</b>  | <b>1.6</b>  | <b>Jul-14</b>  |
| <i>Bloomberg U.S. Aggregate Index</i>                  |                      |                | 6.8         | 3.4        | 5.5         | -3.3        | 1.1         | -          | -0.9        | -10.3        | -0.3        | 8.7          | 7.9         | 1.5         |                |
| Fixed Income Beta Exposure                             | 351,655,645          | 6.3            | 5.9         | 2.3        | 3.8         | -           | -           | -          | -2.5        | -            | -           | -            | -           | 1.4         | Jun-22         |
| <i>Bloomberg U.S. Aggregate Index</i>                  |                      |                | 6.8         | 3.4        | 5.5         | -           | -           | -          | -0.9        | -            | -           | -            | -           | 0.5         |                |
| Mellon DB SL Aggregate Bond Index Fund                 | 166,484,242          | 3.0            | 6.8         | 3.4        | 5.5         | -3.4        | 1.1         | 1.8        | -0.9        | -10.4        | -0.4        | 8.8          | 7.9         | 2.1         | Jan-11         |
| <i>Bloomberg U.S. Aggregate Index</i>                  |                      |                | 6.8         | 3.4        | 5.5         | -3.3        | 1.1         | 1.8        | -0.9        | -10.3        | -0.3        | 8.7          | 7.9         | 2.2         |                |
| PIMCO Core Plus  | 170,961,375          | 3.1            | 7.1         | 3.8        | 6.1         | -2.8        | 1.4         | 2.0        | -0.7        | -9.9         | 1.1         | 8.7          | 6.3         | 2.4         | Feb-11         |
| <i>Bloomberg U.S. Aggregate Index</i>                  |                      |                | 6.8         | 3.4        | 5.5         | -3.3        | 1.1         | 1.8        | -0.9        | -10.3        | -0.3        | 8.7          | 7.9         | 2.1         |                |

34% MSCI ACWI IMI (Net), 18% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets Global Diversified, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +3%, 2.5% MSCI ACWI (Net), 8% 90 Day T-Bill + 3%, 7% NCREIF-ODCE Gross Monthly, 4% actual time-weighted Private Equity Returns\*, 5% actual time-weighted Private Credit Returns\*, 3% actual time-weighted Private Real Estate Returns\*, 5% Alerian Midstream, 0% Assumed Rate of Return +3%, -8% 90 Day T-bill.. All data prior to 2Q 2011 has been provided by the investments managers. FY: 6/30. The Equity and Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool. Cevian Capital II Benchmark MSCI Europe Index return shown in Euro to reflect currency exchange rate.

Total Fund  
Performance (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|   | Market Value       | % of Portfolio | 3 Mo        | Fiscal YTD | 1 Yr        | 3 Yrs       | 5 Yrs      | 10 Yrs     | Fiscal 2023 | Fiscal 2022  | Fiscal 2021 | Fiscal 2020  | Fiscal 2019 | Inception  | Inception Date |
|---|--------------------|----------------|-------------|------------|-------------|-------------|------------|------------|-------------|--------------|-------------|--------------|-------------|------------|----------------|
| Western Asset Core Plus   | 126,921,814        | 2.3            | 8.3         | 4.0        | 6.5         | -4.3        | 1.6        | 2.5        | 0.8         | -14.5        | 2.4         | 9.3          | 9.4         | 3.8        | Jun-04         |
| <i>Bloomberg U.S. Aggregate Index</i>   |                    |                | 6.8         | 3.4        | 5.5         | -3.3        | 1.1        | 1.8        | -0.9        | -10.3        | -0.3        | 8.7          | 7.9         | 3.3        |                |
| <b>High Yield/ Specialty Credit</b>   | <b>261,902,555</b> | <b>4.7</b>     | <b>4.1</b>  | <b>4.4</b> | <b>9.5</b>  | <b>1.4</b>  | <b>4.2</b> | <b>-</b>   | <b>7.5</b>  | <b>-10.2</b> | <b>13.1</b> | <b>-0.5</b>  | <b>7.0</b>  | <b>2.8</b> | <b>Jul-14</b>  |
| <i>ICE BofA U.S. High Yield Index</i>   |                    |                | 7.1         | 7.6        | 13.5        | 2.0         | 5.2        | -          | 8.9         | -12.7        | 15.6        | -1.1         | 7.6         | 4.2        |                |
| Western Asset High Yield Fixed Income   | 170,770,013        | 3.1            | 5.8         | 6.9        | 12.8        | 1.6         | 4.9        | 3.9        | 9.5         | -14.1        | 16.5        | -2.2         | 8.3         | 6.0        | Jun-05         |
| <i>Bloomberg US HY Ba/B 2% Cap TR</i>   |                    |                | 7.2         | 7.4        | 12.6        | 1.7         | 5.5        | 4.6        | 8.9         | -12.4        | 13.4        | 2.1          | 8.8         | 6.2        |                |
| TCW Securitized Opportunities   | 91,132,542         | 1.6            | 0.9         | -0.1       | 3.8         | 0.8         | 2.5        | -          | 4.4         | -4.0         | 6.4         | 2.2          | 5.2         | 3.2        | Feb-16         |
| <i>Bloomberg U.S. High Yield - 2% Issuer Cap</i>                                      |                    |                | 7.2         | 7.7        | 13.4        | 2.0         | 5.4        | -          | 9.1         | -12.8        | 15.3        | 0.0          | 7.5         | 6.3        |                |
| <b>Emerging Market Debt</b>   | <b>198,217,388</b> | <b>3.6</b>     | <b>9.2</b>  | <b>6.5</b> | <b>13.4</b> | <b>-2.3</b> | <b>2.2</b> | <b>-</b>   | <b>11.2</b> | <b>-19.9</b> | <b>9.1</b>  | <b>-1.7</b>  | <b>7.9</b>  | <b>0.5</b> | <b>Jul-14</b>  |
| <i>50 JPM EMBI Global Div / 50 JPM GBI EM Global Div</i>                              |                    |                | 8.6         | 5.6        | 11.9        | -3.3        | 1.4        | -          | 9.4         | -20.2        | 7.1         | -1.1         | 10.8        | 1.0        |                |
| Stone Harbor Emerging Markets Debt Blend Portfolio                                    | 41,325,698         | 0.7            | 9.5         | 7.7        | 14.0        | -2.4        | 2.3        | 1.3        | 10.8        | -20.9        | 9.5         | -1.8         | 8.2         | 0.6        | Aug-12         |
| <i>50 JPM GBI-EM Global Div/ 40 JPM EMBI Global Div/ 10 JPM Corporate EM Bond Idx</i> |                    |                | 8.3         | 5.5        | 11.7        | -3.1        | 1.6        | 1.8        | 9.2         | -19.5        | 7.2         | -0.8         | 10.6        | 1.4        |                |
| PIMCO EMD   | 156,891,690        | 2.8            | 9.0         | 6.1        | 13.2        | -2.1        | -          | -          | 11.3        | -19.2        | 8.7         | -            | -           | -0.2       | Feb-20         |
| <i>50 JPM EMBI Global Div / 50 JPM GBI EM Global Div</i>                              |                    |                | 8.6         | 5.6        | 11.9        | -3.3        | -          | -          | 9.4         | -20.2        | 7.1         | -            | -           | -1.6       |                |
| <b>Commodities</b>  | <b>207,453,782</b> | <b>3.7</b>     | <b>-1.7</b> | <b>5.5</b> | <b>0.7</b>  | <b>12.0</b> | <b>9.8</b> | <b>0.4</b> | <b>-7.0</b> | <b>19.4</b>  | <b>42.5</b> | <b>-11.3</b> | <b>-6.7</b> | <b>0.1</b> | <b>Jul-13</b>  |
| <i>Bloomberg Commodity Index Total Return</i>   |                    |                | -4.6        | -0.1       | -7.9        | 10.8        | 7.2        | -1.1       | -9.6        | 24.3         | 45.6        | -17.4        | -6.8        | -1.0       |                |
| Gresham MTAP Commodity Builder Fund   | 34,270,350         | 0.6            | -4.6        | 0.2        | -7.9        | 10.4        | 7.5        | -0.8       | -11.5       | 24.7         | 46.8        | -16.3        | -9.0        | -0.9       | Oct-13         |
| <i>Bloomberg Commodity Index Total Return</i>   |                    |                | -4.6        | -0.1       | -7.9        | 10.8        | 7.2        | -1.1       | -9.6        | 24.3         | 45.6        | -17.4        | -6.8        | -1.0       |                |
| Wellington Commodities  | 173,183,432        | 3.1            | -1.1        | 6.8        | 3.2         | 12.2        | 10.9       | 1.4        | -5.2        | 17.2         | 40.2        | -7.5         | -5.4        | 0.9        | Sep-13         |
| <i>S&amp;P GSCI Commodity Equal Weighted</i>  |                    |                | -3.0        | 2.0        | -3.4        | 10.7        | 8.8        | 0.9        | -6.0        | 19.0         | 40.9        | -12.4        | -3.5        | 0.5        |                |
| <b>Hedge Funds</b>  | <b>557,778,481</b> | <b>10.1</b>    | <b>3.2</b>  | <b>5.1</b> | <b>8.3</b>  | <b>6.5</b>  | <b>8.4</b> | <b>5.8</b> | <b>6.8</b>  | <b>2.8</b>   | <b>16.1</b> | <b>7.0</b>   | <b>2.5</b>  | <b>6.1</b> | <b>Sep-10</b>  |
| <i>75% 3 Month T-Bill +4% / 25% MSCI ACWI (net)</i>                                   |                    |                | 4.6         | 5.5        | 12.6        | 6.4         | 7.7        | 6.3        | 10.2        | -0.9         | 12.3        | 5.1          | 6.6         | 6.3        |                |
| Aristeia International Limited  | 73,340,536         | 1.3            | 1.3         | 3.4        | 7.6         | 5.5         | 8.8        | -          | 5.5         | 1.8          | 21.6        | 8.7          | 9.2         | 5.4        | May-14         |
| Brevan Howard Fund  | 56,802,993         | 1.0            | 2.2         | 4.6        | -1.8        | 6.4         | 10.9       | 7.5        | -1.0        | 15.2         | 6.1         | 20.5         | 12.7        | 7.3        | Sep-13         |
| D.E. Shaw Composite Fund  | 59,341,499         | 1.1            | 1.0         | 5.4        | 9.8         | 19.0        | 17.8       | 14.5       | 11.0        | 29.0         | 19.0        | 15.6         | 11.5        | 14.1       | Jul-13         |
| HBK Fund II   | 48,006,986         | 0.9            | 2.9         | 6.6        | 8.6         | 6.9         | 6.6        | 5.0        | 7.9         | 2.3          | 11.0        | 1.5          | 5.5         | 4.9        | Nov-13         |
| Hudson Bay Cap Structure Arbitrage Enhanced Fund                                      | 78,511,107         | 1.4            | 1.2         | 2.4        | 4.3         | 7.5         | -          | -          | 7.7         | 7.7          | 14.2        | 16.2         | -           | 10.6       | Jun-19         |
| Indus Pacific Opportunities Fund  | 45,669,351         | 0.8            | -0.2        | -1.5       | -2.8        | -0.7        | 9.0        | -          | -0.4        | -8.2         | 38.0        | 15.8         | -19.2       | 6.2        | Jul-14         |
| Pharo Macro Fund  | 68,570,627         | 1.2            | 10.6        | 8.9        | 10.0        | -3.1        | -          | -          | 1.2         | -11.1        | 3.5         | -            | -           | 1.1        | Dec-19         |
| PIMCO Commodity Alpha Fund  | 78,129,135         | 1.4            | 5.8         | 9.4        | 24.0        | 14.2        | 11.9       | -          | 18.3        | 8.6          | 14.2        | 4.8          | 5.2         | 11.6       | Jun-16         |
| Enhanced Domestic Partners to Sculptor Master Fund                                    | 49,406,248         | 0.9            | 3.2         | 5.9        | 14.3        | -1.4        | -          | -          | 8.8         | -19.9        | 16.8        | 6.5          | -           | 5.8        | Feb-19         |
| <b>Alpha Pool</b>   | <b>221,490,241</b> | <b>4.0</b>     | <b>0.0</b>  | <b>0.2</b> | <b>-1.6</b> | <b>2.0</b>  | <b>-</b>   | <b>-</b>   | <b>-0.9</b> | <b>1.5</b>   | <b>14.5</b> | <b>-</b>     | <b>-</b>    | <b>4.2</b> | <b>Jul-20</b>  |
| <i>3 Month T-Bill +4%</i>   |                    |                | 2.4         | 4.7        | 9.2         | 6.2         | -          | -          | 7.7         | 4.2          | 4.1         | -            | -           | 5.9        |                |
| Hudson Bay  | 64,505,703         | 1.2            | -1.0        | -1.9       | -4.8        | 2.6         | -          | -          | -1.1        | 6.7          | -           | -            | -           | 4.5        | Aug-20         |
| Davidson Kempner Institutional Partners   | 57,525,287         | 1.0            | 0.0         | -0.6       | -3.2        | -0.6        | -          | -          | -4.1        | -3.4         | -           | -            | -           | 0.0        | Dec-20         |
| HBK Fund II   | 36,167,379         | 0.7            | 0.7         | 2.3        | -0.7        | 2.1         | -          | -          | -1.0        | 1.3          | -           | -            | -           | 2.5        | Dec-20         |
| Garda Fixed Income Relative Value Opportunity Fund                                    | 63,291,872         | 1.1            | 0.5         | 1.5        | 2.8         | -           | -          | -          | 3.6         | -            | -           | -            | -           | 4.6        | Sep-21         |

34% MSCI ACWI IMI (Net), 18% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets Global Diversified, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +3%, 2.5% MSCI ACWI (Net), 8% 90 Day T-Bill + 3%, 7% NCREIF-ODCE Gross Monthly, 4% actual time-weighted Private Equity Returns\*, 5% actual time-weighted Private Credit Returns\*, 3% actual time-weighted Private Real Estate Returns\*, 5% Alerian Midstream, 0% Assumed Rate of Return +3%, -8% 90 Day T-bill. All data prior to 2Q 2011 has been provided by the investments managers. FY: 6/30. The Equity and Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool. Cevian Capital II Benchmark MSCI Europe Index return shown in Euro to reflect currency exchange rate.

Total Fund  
Performance (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|   | Market Value | % of Portfolio | 3 Mo | Fiscal YTD | 1 Yr  | 3 Yrs | 5 Yrs | 10 Yrs | Fiscal 2023 | Fiscal 2022 | Fiscal 2021 | Fiscal 2020 | Fiscal 2019 | Inception | Inception Date |
|---|--------------|----------------|------|------------|-------|-------|-------|--------|-------------|-------------|-------------|-------------|-------------|-----------|----------------|
| <b>Midstream Energy</b>   | 302,780,890  | 5.5            | 4.8  | 11.1       | 17.7  | 24.5  | -     | -      | 19.3        | 9.3         | -           | -           | -           | 27.2      | Sep-20         |
| <i>Alerian Midstream Energy Index</i>   |              |                | 6.5  | 9.1        | 14.0  | 24.2  | -     | -      | 12.2        | 11.4        | -           | -           | -           | 24.2      |                |
| <b>Harvest Midstream</b>  | 145,365,427  | 2.6            | 4.1  | 12.1       | 18.8  | 29.2  | -     | -      | 20.9        | 15.3        | -           | -           | -           | 32.6      | Aug-20         |
| <i>Alerian Midstream Energy Index</i>   |              |                | 6.5  | 9.1        | 14.0  | 24.2  | -     | -      | 12.2        | 11.4        | -           | -           | -           | 23.6      |                |
| <b>PIMCO Midstream</b>  | 157,415,463  | 2.8            | 5.5  | 10.1       | 16.4  | 18.7  | -     | -      | 16.9        | 2.2         | -           | -           | -           | 22.2      | Oct-20         |
| <i>50/25/25 Alerian Midstream/ ICE BofA US Pipeline/ ICE BofA US HY Midstream</i> |              |                | 6.9  | 7.7        | 12.8  | 12.5  | -     | -      | 10.1        | -0.7        | -           | -           | -           | 15.2      |                |
| <b>Core Real Estate</b>   | 267,156,219  | 4.8            | -7.7 | -11.1      | -18.8 | 0.5   | 1.3   | -      | -12.4       | 24.8        | 5.6         | 1.4         | 5.9         | 4.8       | Oct-14         |
| <i>NCREIF ODCE</i>  |              |                | -4.8 | -6.6       | -12.0 | 4.9   | 4.2   | -      | -10.0       | 29.5        | 8.0         | 2.2         | 6.4         | 6.9       |                |
| <b>ASB Allegiance Real Estate Fund</b>  | 144,618,851  | 2.6            | -7.8 | -11.4      | -21.6 | -0.4  | 0.9   | 4.8    | -13.3       | 23.0        | 5.4         | 1.5         | 6.8         | 5.0       | Sep-13         |
| <i>NCREIF ODCE</i>  |              |                | -4.8 | -6.6       | -12.0 | 4.9   | 4.2   | 7.3    | -10.0       | 29.5        | 8.0         | 2.2         | 6.4         | 7.4       |                |
| <b>JPMCB Strategic Property Fund</b>  | 122,537,368  | 2.2            | -7.6 | -10.7      | -15.2 | 1.8   | 1.9   | -      | -11.4       | 27.9        | 5.9         | 1.3         | 5.0         | 5.2       | Jul-14         |
| <i>NCREIF ODCE</i>  |              |                | -4.8 | -6.6       | -12.0 | 4.9   | 4.2   | -      | -10.0       | 29.5        | 8.0         | 2.2         | 6.4         | 7.1       |                |
| <b>Private Real Estate</b>  | 161,001,260  | 2.9            | -0.7 | -4.5       | -2.1  | 13.7  | 9.8   | 11.6   | 7.9         | 31.3        | 12.1        | 4.4         | 9.0         | 11.5      | Mar-11         |
|   |              |                | -0.7 | -4.5       | -2.1  | 13.7  | 9.8   | 12.0   | 7.9         | 31.3        | 12.1        | 4.4         | 9.0         | 11.6      |                |
| <b>Private Equity</b>   | 225,134,003  | 4.1            | 0.8  | 4.0        | 8.1   | 13.9  | 10.6  | 10.3   | -0.6        | 22.9        | 41.7        | -10.5       | 10.9        | 10.6      | Sep-10         |
|   |              |                | 0.8  | 4.0        | 8.1   | 13.9  | 10.6  | 10.7   | -0.6        | 23.0        | 41.7        | -10.5       | 10.9        | 10.7      |                |
| <b>Private Credit</b>   | 303,862,333  | 5.5            | 2.2  | 5.7        | 10.0  | 5.1   | 4.9   | -      | 3.2         | 1.2         | 4.8         | 5.5         | 9.7         | 7.2       | Jan-16         |
|   |              |                | 2.2  | 5.7        | 10.0  | 5.1   | 4.9   | -      | 3.2         | 1.2         | 4.8         | 5.5         | 9.7         | 7.2       |                |
| <b>Opportunistic</b>  | 143,114,014  | 2.6            | 1.9  | 1.0        | 6.3   | 11.0  | -     | -      | 0.6         | -5.4        | 59.9        | -           | -           | 8.9       | Jan-20         |
| <i>Assumed Rate of Return +3%</i>   |              |                | 1.8  | 3.6        | 7.2   | 7.2   | -     | -      | 7.2         | 7.2         | 7.2         | -           | -           | 7.2       |                |
| <b>River Birch International</b>  | 5,352,729    | 0.1            | 10.9 | 19.6       | 60.1  | -     | -     | -      | 45.1        | -           | -           | -           | -           | 53.4      | Jun-22         |
| <i>Assumed Rate of Return +3%</i>   |              |                | 1.8  | 3.6        | 7.2   | -     | -     | -      | 7.2         | -           | -           | -           | -           | 7.2       |                |
| <b>Sixth Street TAO Partners (D)</b>  | 91,747,562   | 1.7            | 2.9  | 6.5        | 13.2  | 15.2  | -     | -      | 4.4         | 9.6         | 39.6        | -           | -           | 15.2      | Mar-20         |
| <i>Assumed Rate of Return +3%</i>   |              |                | 1.8  | 3.6        | 7.2   | 7.2   | -     | -      | 7.2         | 7.2         | 7.2         | -           | -           | 7.2       |                |
| <b>Aristeia Select Opportunities II</b>   | 46,013,723   | 0.8            | 1.8  | -4.8       | -5.5  | -     | -     | -      | -7.2        | -           | -           | -           | -           | -3.0      | Jul-21         |
| <i>Assumed Rate of Return +3%</i>   |              |                | 1.8  | 3.6        | 7.2   | -     | -     | -      | 7.2         | -           | -           | -           | -           | 7.2       |                |
| <b>Cash</b>   | 415,705,315  | 7.5            | 1.8  | 3.1        | 4.2   | 1.7   | 1.4   | 1.9    | 2.2         | -0.2        | 0.1         | 1.0         | 2.0         | 1.6       | Apr-11         |
| <i>3 Month T-Bill</i>   |              |                | 1.4  | 2.7        | 5.0   | 2.2   | 1.9   | 1.2    | 3.6         | 0.2         | 0.1         | 1.6         | 2.3         | 1.0       |                |

34% MSCI ACWI IMI (Net), 18% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets Global Diversified, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +3%, 2.5% MSCI ACWI (Net), 8% 90 Day T-Bill + 3%, 7% NCREIF-ODCE Gross Monthly, 4% actual time-weighted Private Equity Returns\*, 5% actual time-weighted Private Credit Returns\*, 3% actual time-weighted Private Real Estate Returns\*, 5% Alerian Midstream, 0% Assumed Rate of Return +3%, -8% 90 Day T-bill. All data prior to 2Q 2011 has been provided by the investments managers. FY: 6/30. The Equity and Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool. Cevian Capital II Benchmark MSCI Europe Index return shown in Euro to reflect currency exchange rate.



Total Fund  
Total Private Equity

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

IRR Analysis as of IRR date

| Vintage Year                         | Manager/Fund                             | Estimated Market Value as of 12/31/2023 | Total Commitment | Capital Called | % Called | Remaining Commitment | Capital Returned | Market Value as of IRR date | Distrib./Paid-In (DPI) <sup>1</sup> | Tot. Value/ Paid-In (TVPI) <sup>2</sup> | Net IRR Since Inception <sup>3</sup> | IRR Date |
|--------------------------------------|--|---|------------------|----------------|----------|----------------------|------------------|-----------------------------|-------------------------------------|---|--------------------------------------|----------|
| <b>Private Equity</b>                |  |   |                  |                |          |                      |                  |                             |                                     |   |                                      |          |
| 2008                                 | Abbott Capital PE VI                     | \$16,001,729                            | \$50,000,000     | \$49,750,000   | 100%     | \$250,000            | \$79,584,694     | \$16,921,054                | 1.60x                               | 1.92x                                   | 12.6%                                | 09/30/23 |
| 2006                                 | Pantheon Global III                      | \$545,326                               | \$50,000,000     | \$47,300,000   | 95%      | \$2,700,000          | \$52,000,000     | \$548,661                   | 1.10x                               | 1.11x                                   | 1.9%                                 | 09/30/23 |
| 2002                                 | Pantheon USA V                           | \$374,357                               | \$25,000,000     | \$24,350,000   | 97%      | \$650,000            | \$37,950,000     | \$375,348                   | 1.56x                               | 1.57x                                   | 9.0%                                 | 09/30/23 |
| 2004                                 | Pantheon USA VI                          | \$329,324                               | \$35,000,000     | \$33,075,000   | 95%      | \$1,925,000          | \$50,623,827     | \$330,050                   | 1.53x                               | 1.54x                                   | 6.7%                                 | 09/30/23 |
| 2006                                 | Pantheon USA VII                         | \$7,158,613                             | \$50,000,000     | \$46,600,000   | 93%      | \$3,400,000          | \$80,624,998     | \$6,855,040                 | 1.73x                               | 1.88x                                   | 10.1%                                | 09/30/23 |
| 2020                                 | Vista Foundation Fund IV                 | \$18,765,984                            | \$25,000,000     | \$19,521,303   | 78%      | \$5,478,697          | \$30,252         | \$18,784,419                | 0.00x                               | 0.96x                                   | -0.9%                                | 09/30/23 |
| 2021                                 | Crown Global Secondaries V Master S.C.Sp | \$36,047,551                            | \$50,000,000     | \$28,700,000   | 57%      | \$21,300,000         | \$1,550,000      | \$36,047,551                | 0.05x                               | 1.31x                                   | 25.2%                                | 12/31/23 |
| 2021                                 | Brighton Park Capital Fund I             | \$36,960,843                            | \$30,000,000     | \$28,880,317   | 96%      | \$1,119,683          | \$1,325,801      | \$36,863,716                | 0.05x                               | 1.33x                                   | 13.0%                                | 09/30/23 |
| 2021                                 | Warren Equity Partners Fund III          | \$34,020,296                            | \$32,500,000     | \$27,590,020   | 85%      | \$4,909,980          | \$508,290        | \$30,248,893                | 0.02x                               | 1.25x                                   | 15.4%                                | 09/30/23 |
| 2021                                 | Peak Rock Capital Fund III               | \$14,333,765                            | \$30,000,000     | \$12,513,744   | 42%      | \$17,486,256         | \$2,566,358      | \$13,544,451                | 0.21x                               | 1.35x                                   | 24.1%                                | 09/30/23 |
| 2021                                 | Level Equity Growth Partners V           | \$7,597,497                             | \$15,000,000     | \$7,114,651    | 47%      | \$7,885,349          | \$0              | \$6,864,460                 | 0.00x                               | 1.07x                                   | 6.4%                                 | 09/30/23 |
| 2021                                 | Level Equity Opportunities Fund 2021     | \$6,407,431                             | \$15,000,000     | \$5,788,419    | 39%      | \$9,211,581          | \$0              | \$5,898,520                 | 0.00x                               | 1.11x                                   | 13.5%                                | 09/30/23 |
| 2022                                 | Linden Capital Partners V LP             | \$13,014,916                            | \$22,500,000     | \$12,011,178   | 53%      | \$10,488,822         | \$0              | \$12,638,351                | 0.00x                               | 1.08x                                   | 13.3%                                | 09/30/23 |
| 2022                                 | Rubicon Technology Partners IV LP        | \$5,135,484                             | \$30,000,000     | \$6,185,241    | 21%      | \$23,814,759         | \$0              | \$3,124,027                 | 0.00x                               | 0.83x                                   | -18.0%                               | 09/30/23 |
| 2022                                 | OrbilMed Private Investments IX, LP      | \$1,167,203                             | \$10,000,000     | \$1,200,000    | 12%      | \$8,800,000          | \$0              | \$1,167,203                 | 0.00x                               | 0.97x                                   | 31.9%                                | 12/31/23 |
| 2022                                 | Brighton Park Capital Fund II            | \$3,658,153                             | \$30,000,000     | \$4,174,920    | 14%      | \$25,825,080         | \$0              | N/A                         | 0.00x                               | 0.88x                                   | N/A                                  | N/A      |
| 2022                                 | Linden Co-Investment V LP                | \$4,113,076                             | \$7,500,000      | \$7,499,177    | 100%     | \$823                | \$55,503         | \$4,159,884                 | 0.01x                               | 0.56x                                   | 13.3%                                | 09/30/23 |
| 2022                                 | Warren Equity Partners Fund IV           | \$12,263,238                            | \$32,500,000     | \$7,612,883    | 23%      | \$24,887,117         | \$0              | N/A                         | 0.00x                               | 1.61x                                   | N/A                                  | N/A      |
| 2023                                 | WEP Co-Invest IV                         | \$7,239,217                             | \$10,000,000     | \$7,470,589    | 75%      | \$2,529,411          | \$173,170        | N/A                         | 0.02x                               | 0.99x                                   | N/A                                  | N/A      |
| 2022                                 | Accel-KKR Capital Partners VII           | \$0                                     | \$25,000,000     | \$0            | 0%       | \$25,000,000         | \$0              | N/A                         | N/A                                 | N/A                                     | N/A                                  | N/A      |
| 2023                                 | LGT Crown Global Secondaries Fund VI     | \$0                                     | \$30,000,000     | \$0            | 0%       | \$30,000,000         | \$0              | N/A                         | N/A                                 | N/A                                     | N/A                                  | N/A      |
| 2023                                 | Parthenon Investors VII                  | \$0                                     | \$30,000,000     | \$0            | 0%       | \$30,000,000         | \$0              | N/A                         | N/A                                 | N/A                                     | N/A                                  | N/A      |
| <b>Total Private Equity</b>          |  | <b>\$225,134,003</b>                    | \$635,000,000    | \$377,337,442  | 59%      | \$257,662,558        | \$306,992,894    | \$194,371,629               | 0.81x                               | 1.41x                                   |                                      |          |
| <b>% of Portfolio (Market Value)</b> |  | <b>4.1%</b>                             |                  |                |          |                      |                  |                             |                                     |   |                                      |          |

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

<sup>2</sup>(TVPI) is equal to (market value + capital returned) / capital called

<sup>3</sup>Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR is provided by the Fund manager and is reflective of the Fund IRR, rather than KCERA's specific IRR.

Total Fund  
Total Private Credit

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

| IRR Analysis as of IRR date          |  |                                   |                  |                |          |                      |                  |                             |                                      |   |                                      |          |
|--------------------------------------|--|-----------------------------------|------------------|----------------|----------|----------------------|------------------|-----------------------------|--------------------------------------|---|--------------------------------------|----------|
| Vintage Year                         | Manager/Fund   | Estimated Market Value 12/31/2023 | Total Commitment | Capital Called | % Called | Remaining Commitment | Capital Returned | Market Value as of IRR date | Distrib./ Paid-In (DPI) <sup>1</sup> | Tot. Value/ Paid-In (TVPI) <sup>2</sup> | Net IRR Since Inception <sup>3</sup> | IRR Date |
| <b>Private Credit</b>                |  |                                   |                  |                |          |                      |                  |                             |                                      |   |                                      |          |
| 2015                                 | DC Value Recovery Fund IV <sup>4</sup>               | \$17,346,522                      | \$74,360,749     | \$73,340,099   | 99%      | \$1,020,650          | \$41,560,033     | \$18,893,391                | 0.57x                                | 0.80x                                   | N/A                                  | 9/30/23  |
| 2017                                 | Sixth Street TAO Partners (B)                        | \$42,694,725                      | \$108,035,958    | \$84,519,175   | 78%      | \$23,516,783         | \$44,420,688     | \$41,877,567                | 0.53x                                | 1.03x                                   | 10.0%                                | 9/30/23  |
| 2017                                 | Brookfield Real Estate Finance Fund V                | \$15,305,465                      | \$50,000,000     | \$36,019,917   | 72%      | \$13,980,083         | \$28,837,159     | \$16,771,893                | 0.80x                                | 1.23x                                   | 13.3%                                | 9/30/23  |
| 2018                                 | Magnetar Constellation Fund V                        | \$26,403,562                      | \$60,000,000     | \$56,445,318   | 94%      | \$3,554,682          | \$42,783,179     | \$26,403,562                | 0.76x                                | 1.23x                                   | 5.4%                                 | 12/31/23 |
| 2019                                 | H.I.G Bayside Loan Opportunity Fund V                | \$45,173,127                      | \$60,000,000     | \$35,821,497   | 60%      | \$24,178,503         | \$14,479,021     | \$45,153,751                | 0.40x                                | 1.67x                                   | 18.0%                                | 9/30/23  |
| 2020                                 | Blue Torch Credit Opportunities Fund II              | \$15,184,695                      | \$20,000,000     | \$16,613,092   | 83%      | \$3,386,908          | \$5,642,562      | \$16,189,364                | 0.34x                                | 1.25x                                   | 13.5%                                | 9/30/23  |
| 2020                                 | Fortress Credit Opportunit Fund V Expansion          | \$22,238,689                      | \$40,000,000     | \$20,122,013   | 50%      | \$19,877,987         | \$468,590        | \$16,911,033                | 0.02x                                | 1.13x                                   | 21.7%                                | 9/30/23  |
| 2021                                 | Fortress Lending Fund II                             | \$28,269,695                      | \$40,000,000     | \$33,337,851   | 83%      | \$6,662,149          | \$10,117,289     | \$28,165,127                | 0.30x                                | 1.15x                                   | 10.0%                                | 9/30/23  |
| 2022                                 | Blue Torch Credit Opportunities Fund III             | \$25,242,588                      | \$40,000,000     | \$26,999,891   | 67%      | \$13,000,109         | \$5,108,700      | \$5,094,132                 | 0.19x                                | 1.12x                                   | 18.8%                                | 9/30/23  |
| 2022                                 | Fortress Lending Fund III                            | \$27,777,855                      | \$40,000,000     | \$26,432,701   | 66%      | \$13,567,299         | \$3,799,583      | \$24,367,938                | 0.14x                                | 1.19x                                   | 11.8%                                | 9/30/23  |
| 2022                                 | OrbiMed Royalty & Credit Opportunities IV            | \$4,831,827                       | \$30,000,000     | \$5,983,980    | 20%      | \$24,016,020         | \$1,774,357      | \$4,831,827                 | 0.30x                                | 1.10x                                   | 11.8%                                | 12/31/23 |
| 2023                                 | Cerberus Business Finance V                          | \$15,804,081                      | \$30,000,000     | \$14,123,992   | 47%      | \$15,876,008         | \$0              | \$11,140,767                | 0.00x                                | 1.12x                                   | 13.6%                                | 9/30/23  |
| 2023                                 | Silver Point – Specialty Credit Fund III             | \$9,652,808                       | \$30,000,000     | \$9,705,708    | 32%      | \$20,294,292         | \$178,180        | \$0                         | N/A                                  | N/A                                     | N/A                                  | N/A      |
| 2023                                 | Ares Pathfinder II                                   | \$2,450,370                       | \$30,000,000     | \$2,298,699    | 8%       | \$27,701,301         | \$0              | \$0                         | N/A                                  | N/A                                     | N/A                                  | N/A      |
| 2023                                 | Oak Hill Advisors Structured Products Fund III, L.P. | \$5,486,324                       | \$25,000,000     | \$5,420,411    | 22%      | \$19,579,589         | \$0              | \$0                         | N/A                                  | N/A                                     | N/A                                  | N/A      |
| 2023                                 | Ares Senior Direct Lending III                       | \$0                               | \$30,000,000     | \$0            | 0%       | \$30,000,000         | \$0              | \$0                         | N/A                                  | N/A                                     | N/A                                  | N/A      |
| <b>Total Private Credit</b>          |  | <b>\$303,862,333</b>              | \$562,396,707    | \$415,635,533  | 74%      | \$146,761,174        | \$198,991,161    | \$255,800,353               | 0.48x                                | 1.21x                                   |                                      |          |
| <b>% of Portfolio (Market Value)</b> |  | <b>5.5%</b>                       |                  |                |          |                      |                  |                             |                                      |   |                                      |          |

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

<sup>2</sup>(TVPI) is equal to (market value + capital returned) / capital called

<sup>3</sup>Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR is provided by the Fund manager and is reflective of the Fund IRR, rather than KCERA's specific IRR.

<sup>4</sup>Name changed from Colony Distressed Credit fund to DC Value Recovery Fund IV

| IRR Analysis as of IRR date          |   |                        |               |               |        |               |               |                             |                            |                             |                              |          |
|--------------------------------------|---|------------------------|---------------|---------------|--------|---------------|---------------|-----------------------------|----------------------------|-----------------------------|------------------------------|----------|
| Vintage                              |   | Estimated Market Value | Total         | Capital       | %      | Remaining     | Capital       |                             | Distrib./                  | Tot. Value/                 | Net IRR                      |          |
| Year                                 | Manager/Fund                              | 12/31/2023             | Commitment    | Called        | Called | Commitment    | Returned      | Market Value as of IRR date | Paid-In (DPI) <sup>1</sup> | Paid-In (TVPI) <sup>2</sup> | Since Inception <sup>3</sup> | IRR Date |
| <b>Private Real Estate</b>           |   |                        |               |               |        |               |               |                             |                            |                             |                              |          |
| 2014                                 | Invesco Real Estate Value-Add Fund IV     | \$649,619              | \$50,000,000  | \$43,637,717  | 87%    | \$6,362,283   | \$56,824,750  | \$649,619                   | 1.30x                      | 1.32x                       | 10.2%                        | 12/31/23 |
| 2017                                 | Landmark Real Estate Partners VIII        | \$31,486,250           | \$60,000,000  | \$43,895,680  | 73%    | \$16,104,320  | \$25,532,514  | \$31,486,250                | 0.58x                      | 1.30x                       | 14.1%                        | 12/31/23 |
| 2018                                 | Long Wharf Real Estate Partners VI        | \$34,319,023           | \$50,000,000  | \$50,000,000  | 100%   | \$0           | \$24,281,467  | \$34,319,023                | 0.49x                      | 1.17x                       | 16.4%                        | 12/31/23 |
| 2020                                 | Covenant Apartment Fund X                 | \$29,983,585           | \$30,000,000  | \$25,507,333  | 85%    | \$4,492,667   | \$7,568,667   | \$29,983,585                | 0.30x                      | 1.47x                       | 16.7%                        | 12/31/23 |
| 2021                                 | Singerman Real Estate Opportunity Fund IV | \$14,774,492           | \$35,000,000  | \$13,527,500  | 39%    | \$21,472,500  | \$0           | \$12,316,089                | 0.00x                      | 1.09x                       | 12.5%                        | 09/30/23 |
| 2022                                 | LBA Logistics Value Fund IX, L.P.         | \$15,969,138           | \$40,000,000  | \$14,230,769  | 36%    | \$25,769,231  | \$0           | \$13,104,308                | 0.00x                      | 1.12x                       | -10.4%                       | 09/30/23 |
| 2022                                 | Covenant Apartment Fund XI                | \$14,987,980           | \$30,000,000  | \$11,100,000  | 37%    | \$38,076,924  | \$3,112       | \$14,987,980                | N/A                        | N/A                         | -0.2%                        | 12/31/23 |
| 2022                                 | KSL Capital Partners VI                   | \$5,598,482            | \$30,000,000  | \$6,945,876   | 23%    | \$23,054,124  | \$212,603     | N/A                         | N/A                        | N/A                         | N/A                          | N/A      |
| 2022                                 | Landmark Real Estate Partners IX          | \$0                    | \$40,000,000  | \$0           | 0%     | \$40,000,000  | \$0           | N/A                         | N/A                        | N/A                         | N/A                          | N/A      |
| 2023                                 | Merit Hill V                              | \$13,232,691           | \$30,000,000  | \$13,232,691  | 44%    | \$16,767,309  | \$0           | N/A                         | N/A                        | N/A                         | N/A                          | N/A      |
| <b>Total Private Real Estate</b>     |   | <b>\$161,001,260</b>   | \$395,000,000 | \$222,077,566 | 56%    | \$192,099,358 | \$114,423,113 | \$136,846,854               | 0.52x                      | 1.24x                       |                              |          |
| <b>% of Portfolio (Market Value)</b> |   | <b>2.9%</b>            |               |               |        |               |               |                             |                            |                             |                              |          |

<sup>1</sup>(DPI) is equal to (capital returned / capital called)

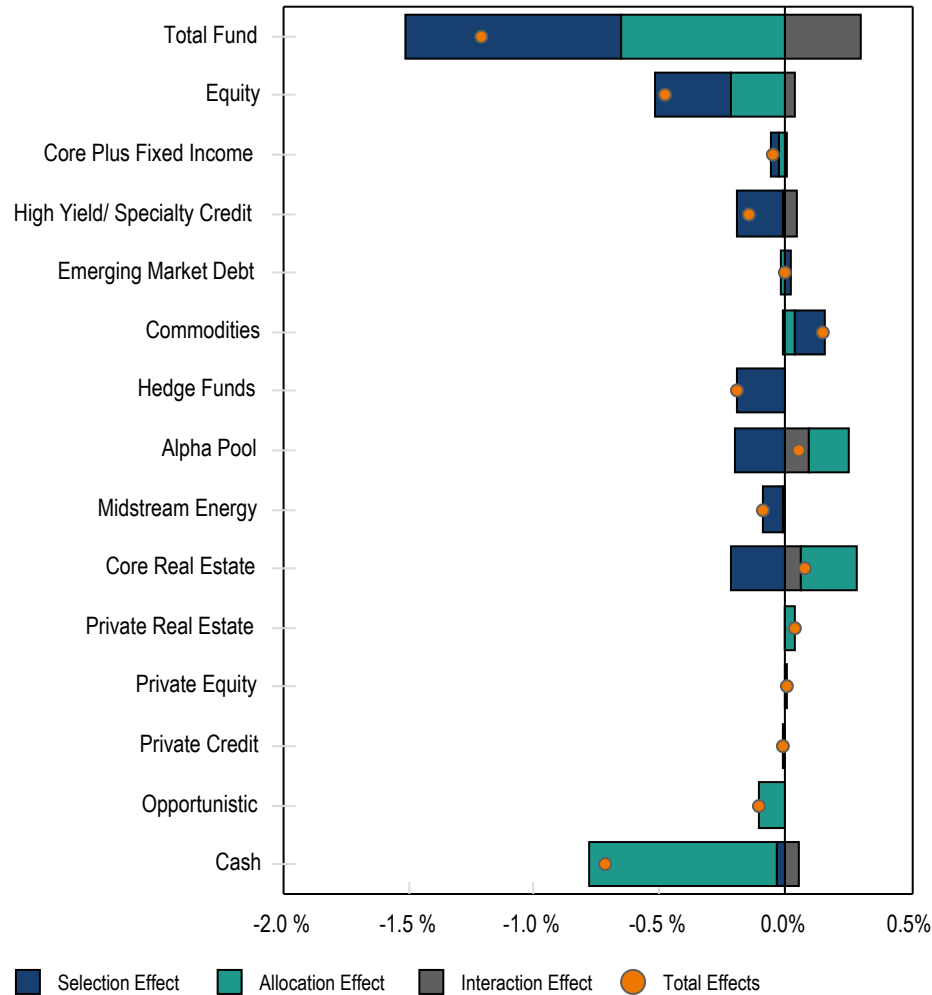
<sup>2</sup>(TVPI) is equal to (market value + capital returned) / capital called

<sup>3</sup>Net IRR is calculated on the cash flows of all the limited partners of the fund and is net of all fees. Each IRR is provided by the Fund manager and is reflective of the Fund IRR, rather than KCERA's specific IRR.

Total Fund  
Attribution Analysis - Asset Class Level (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

Attribution Effects  
Last Three Months



Performance Attribution

|                      | Last Three Months |
|----------------------|-------------------|
| Wtd. Actual Return   | 5.1               |
| Wtd. Index Return    | 6.3               |
| <b>Excess Return</b> | <b>-1.2</b>       |
| Selection Effect     | -0.9              |
| Allocation Effect    | -0.7              |
| Interaction Effect   | 0.3               |

Attribution Summary  
Last Three Months

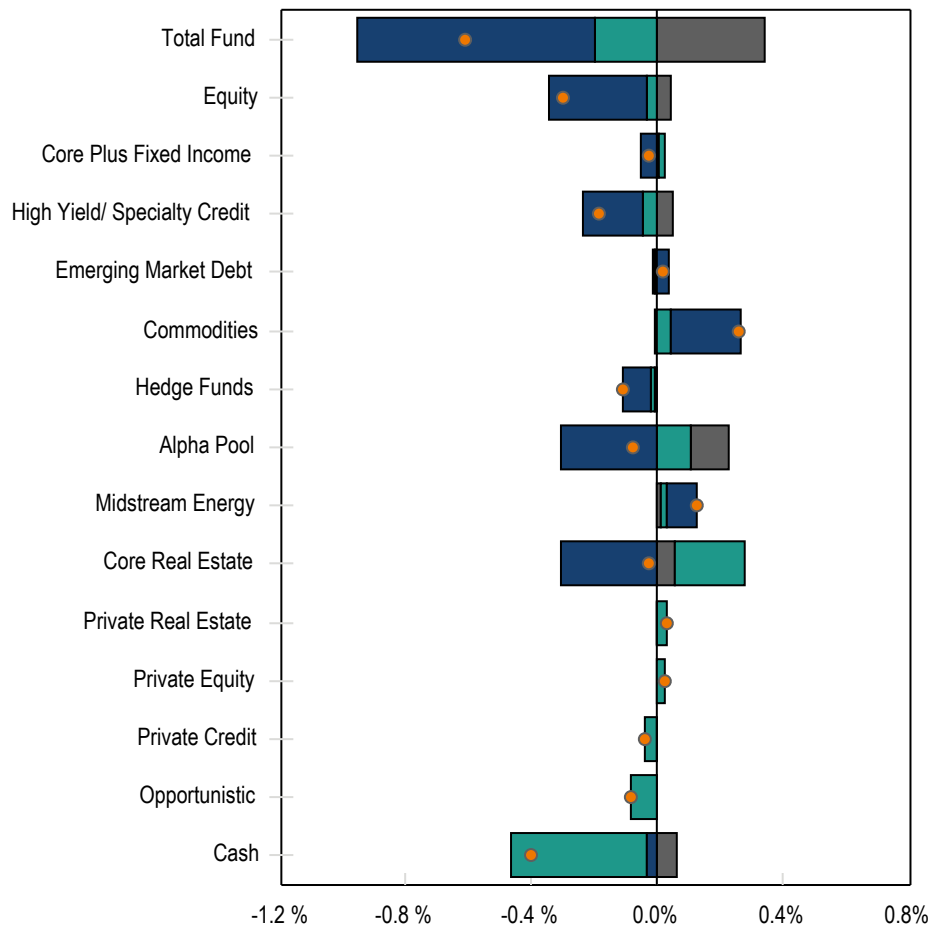
|                              | Wtd. Actual Return | Wtd. Index Return | Excess Return | Selection Effect | Allocation Effect | Interaction Effects | Total Effects |
|------------------------------|--------------------|-------------------|---------------|------------------|-------------------|---------------------|---------------|
| Equity                       | 10.2               | 11.1              | -0.9          | -0.2             | -0.2              | 0.0                 | -0.5          |
| Core Plus Fixed Income       | 6.6                | 6.8               | -0.2          | 0.0              | 0.0               | 0.0                 | 0.0           |
| High Yield/ Specialty Credit | 4.1                | 7.1               | -3.0          | -0.2             | 0.0               | 0.0                 | -0.1          |
| Emerging Market Debt         | 9.2                | 8.6               | 0.5           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Commodities                  | -1.7               | -4.6              | 2.9           | 0.1              | 0.0               | 0.0                 | 0.2           |
| Hedge Funds                  | 3.2                | 5.1               | -2.0          | -0.2             | 0.0               | 0.0                 | -0.2          |
| Alpha Pool                   | 0.0                | 2.4               | -2.4          | -0.2             | 0.2               | 0.1                 | 0.1           |
| Midstream Energy             | 4.8                | 6.5               | -1.7          | -0.1             | 0.0               | 0.0                 | -0.1          |
| Core Real Estate             | -7.7               | -4.8              | -2.9          | -0.2             | 0.2               | 0.1                 | 0.1           |
| Private Real Estate          | -0.7               | -0.7              | 0.0           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Private Equity               | 0.8                | 0.8               | 0.0           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Private Credit               | 2.2                | 2.2               | 0.0           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Opportunistic                | 1.9                | 1.8               | 0.2           | 0.0              | -0.1              | 0.0                 | -0.1          |
| Cash                         | 1.8                | 1.4               | 0.4           | 0.0              | -0.7              | 0.1                 | -0.7          |
| <b>Total Fund</b>            | <b>5.1</b>         | <b>6.3</b>        | <b>-1.2</b>   | <b>-0.9</b>      | <b>-0.7</b>       | <b>0.3</b>          | <b>-1.2</b>   |

Weighted returns shown in attribution analysis may differ from actual returns. Negative cash allocation unable to be shown in Attribution Summary table. Wtd. Index Returns calculated from benchmark returns and weightings of each component. Selection Effect includes Other Effect in the Performance Attribution table.

Total Fund  
Attribution Analysis - Asset Class Level (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

Attribution Effects  
Fiscal YTD



Performance Attribution

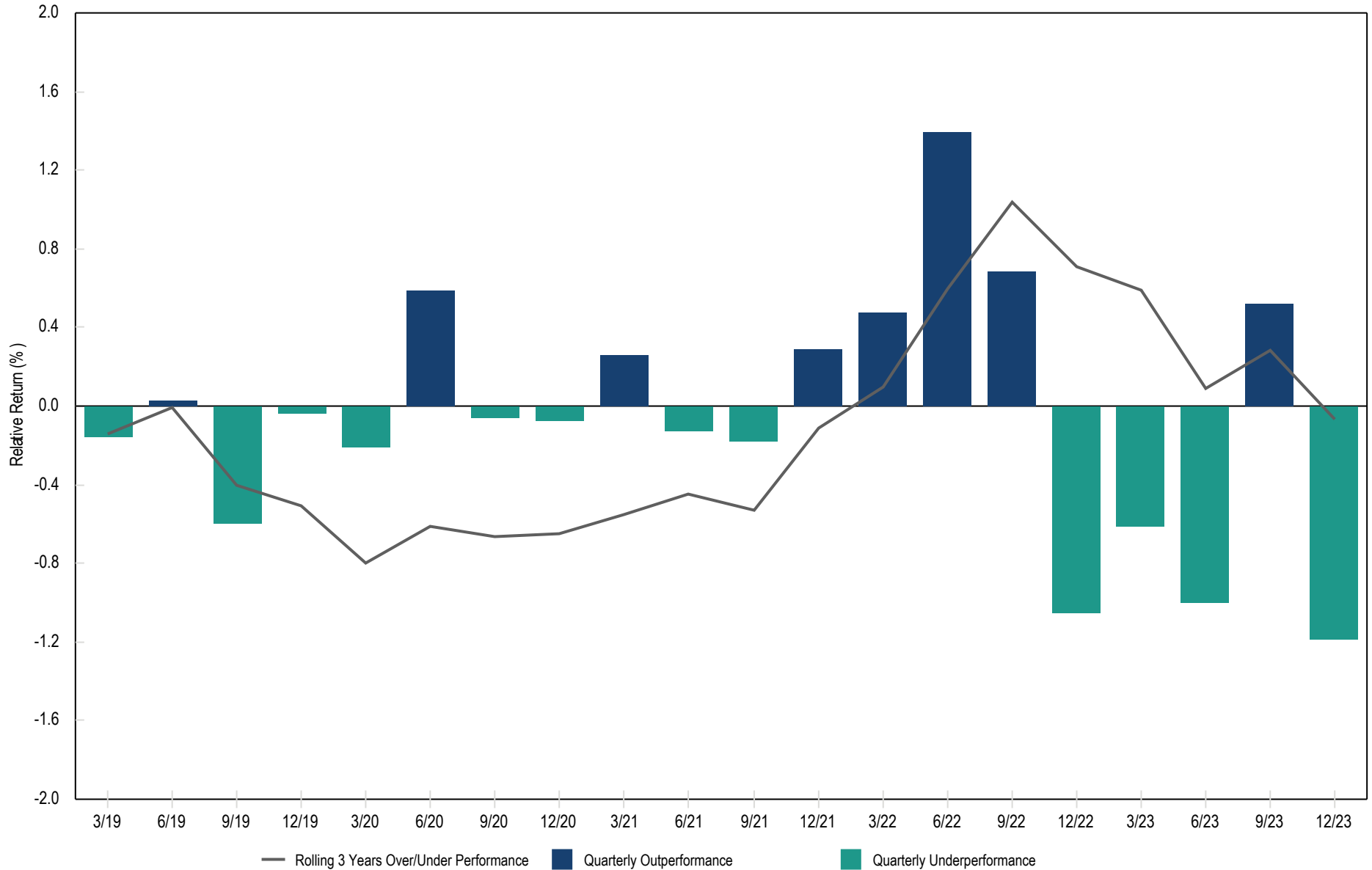
|                      | Fiscal YTD  |
|----------------------|-------------|
| Wtd. Actual Return   | 4.2         |
| Wtd. Index Return    | 4.8         |
| <b>Excess Return</b> | <b>-0.6</b> |
| Selection Effect     | -0.8        |
| Allocation Effect    | -0.2        |
| Interaction Effect   | 0.3         |

Attribution Summary  
Fiscal YTD

|                              | Wtd. Actual Return | Wtd. Index Return | Excess Return | Selection Effect | Allocation Effect | Interaction Effects | Total Effects |
|------------------------------|--------------------|-------------------|---------------|------------------|-------------------|---------------------|---------------|
| Equity                       | 6.5                | 7.4               | -0.9          | -0.3             | 0.0               | 0.0                 | -0.3          |
| Core Plus Fixed Income       | 3.1                | 3.4               | -0.3          | 0.0              | 0.0               | 0.0                 | 0.0           |
| High Yield/ Specialty Credit | 4.4                | 7.6               | -3.3          | -0.2             | 0.0               | 0.1                 | -0.2          |
| Emerging Market Debt         | 6.5                | 5.6               | 0.9           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Commodities                  | 5.5                | -0.1              | 5.7           | 0.2              | 0.0               | 0.0                 | 0.3           |
| Hedge Funds                  | 5.1                | 6.1               | -1.0          | -0.1             | 0.0               | 0.0                 | -0.1          |
| Alpha Pool                   | 0.2                | 4.7               | -4.6          | -0.3             | 0.1               | 0.1                 | -0.1          |
| Midstream Energy             | 11.1               | 9.1               | 2.0           | 0.1              | 0.0               | 0.0                 | 0.1           |
| Core Real Estate             | -11.1              | -6.6              | -4.5          | -0.3             | 0.2               | 0.1                 | 0.0           |
| Private Real Estate          | -4.5               | -4.5              | 0.0           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Private Equity               | 4.0                | 4.0               | 0.0           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Private Credit               | 5.7                | 5.7               | 0.0           | 0.0              | 0.0               | 0.0                 | 0.0           |
| Opportunistic                | 1.0                | 3.6               | -2.6          | 0.0              | -0.1              | 0.0                 | -0.1          |
| Cash                         | 3.1                | 2.7               | 0.4           | 0.0              | -0.4              | 0.1                 | -0.4          |
| <b>Total Fund</b>            | <b>4.2</b>         | <b>4.8</b>        | <b>-0.6</b>   | <b>-0.8</b>      | <b>-0.2</b>       | <b>0.3</b>          | <b>-0.6</b>   |

Weighted returns shown in attribution analysis may differ from actual returns. Negative cash allocation unable to be shown in Attribution Summary table. Wtd. Index Returns calculated from benchmark returns and weightings of each component. Selection Effect includes Other Effect in the Performance Attribution table.

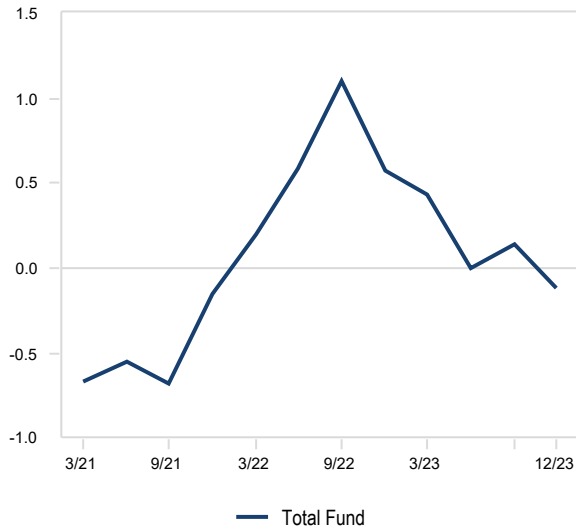
Rolling 3 Year Annualized Excess Performance



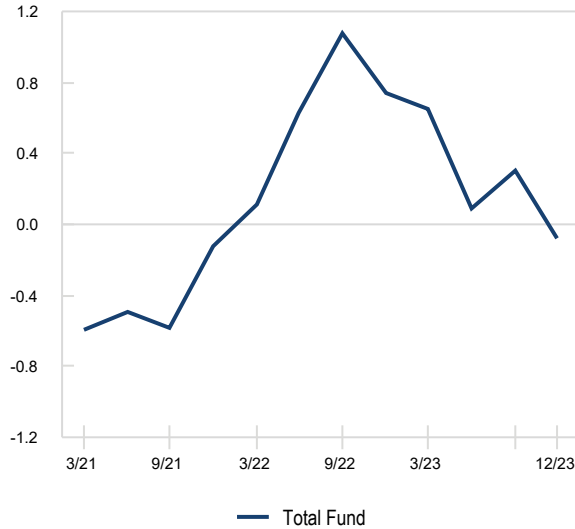
Total Fund  
Rolling Risk Statistics: 3 Years (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

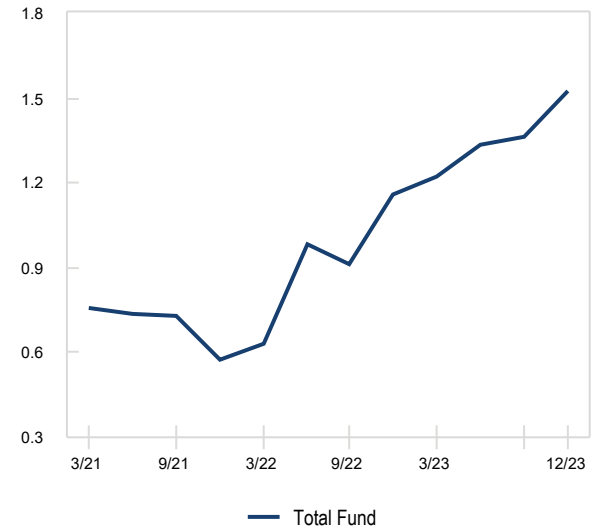
Rolling Information Ratio



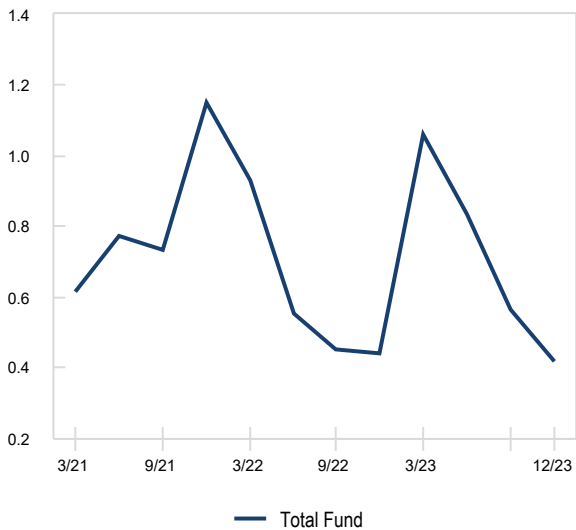
Rolling Annual Excess Benchmark Return



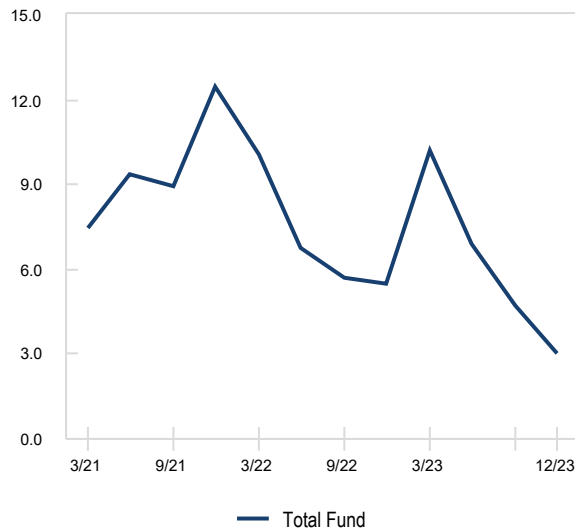
Rolling Tracking Error



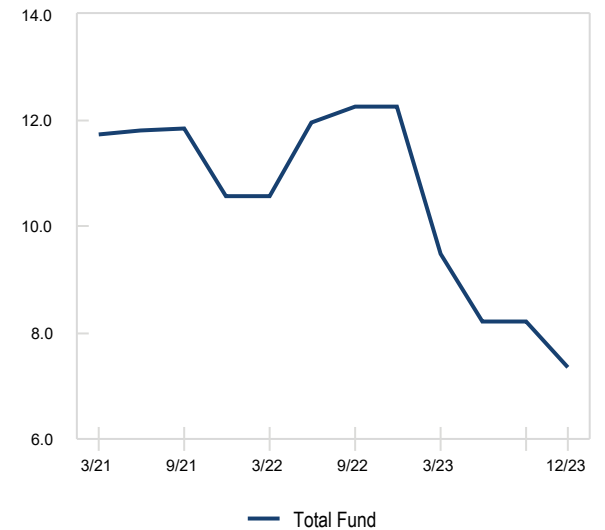
Rolling Sharpe Ratio



Rolling Annual Excess Risk Free Return



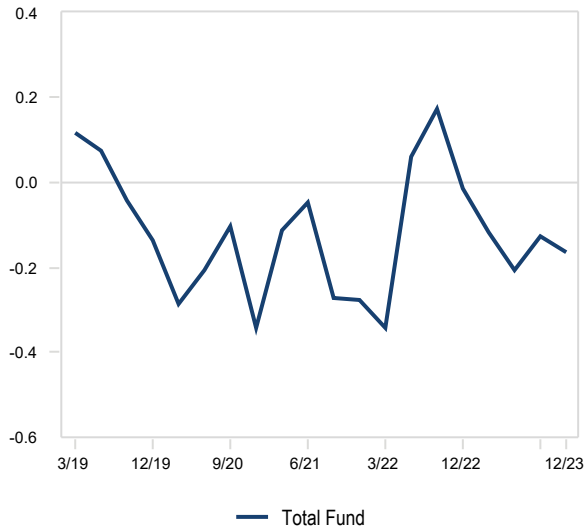
Rolling Annualized Standard Deviation



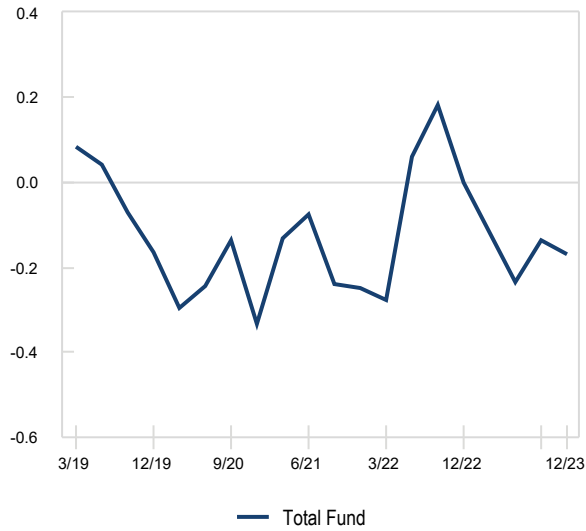
Total Fund  
Rolling Risk Statistics: 5 Years (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

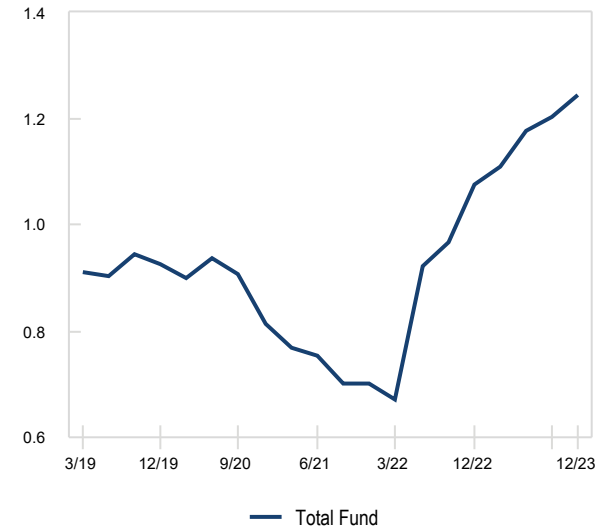
Rolling Information Ratio



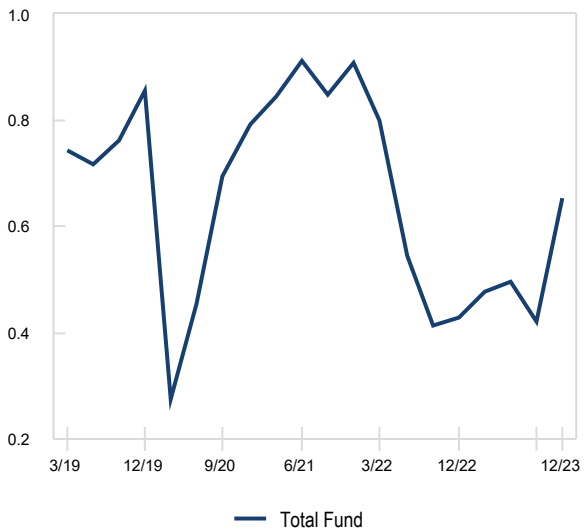
Rolling Annual Excess Benchmark Return



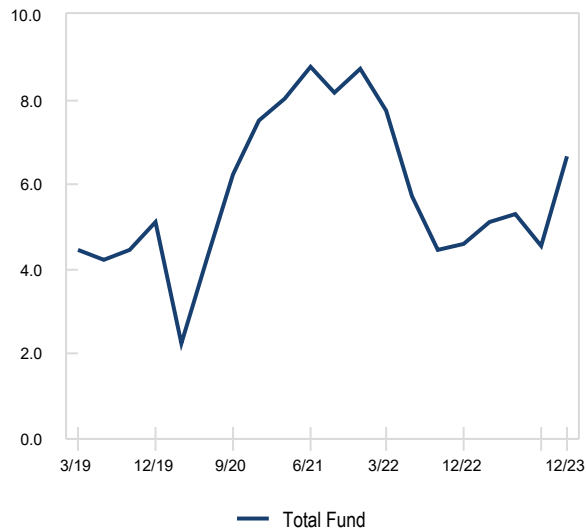
Rolling Tracking Error



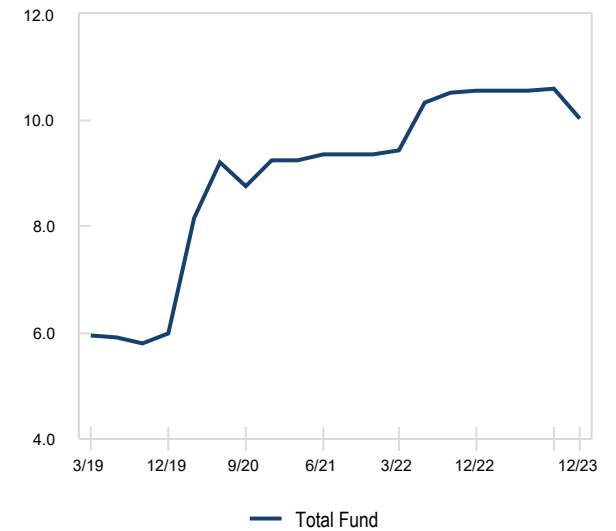
Rolling Sharpe Ratio



Rolling Annual Excess Risk Free Return



Rolling Annualized Standard Deviation





# Cash Flows

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Total Fund  
Net Cash Flow: Last 1 Quarter

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Estimated Beginning<br>Market Value | Contributions    | Withdrawals        | Fees           | Net<br>Transfers   | Net Investment<br>Change | Estimated Ending<br>Market Value |
|--|-------------------------------------|------------------|--------------------|----------------|--------------------|--------------------------|----------------------------------|
| <b>Equity</b>  | <b>1,676,406,460</b>                | <b>734,288</b>   | <b>-25,508,168</b> |                | <b>-16,231,817</b> | <b>169,267,937</b>       | <b>1,804,668,699</b>             |
| Equity Beta Exposure                                       | 85,644,900                          | 734,288          | -25,503,057        |                | -31,500            | 7,117,369                | 67,962,000                       |
| Mellon DB SL Stock Index Fund                              | 518,380,614                         |                  |                    |                |                    | 60,620,355               | 579,000,969                      |
| PIMCO StocksPLUS   | 112,716,197                         |                  |                    |                |                    | 13,649,812               | 126,366,009                      |
| AB US Small Cap Value Equity                               | 82,918,002                          |                  |                    |                |                    | 10,748,253               | 93,666,254                       |
| Geneva Capital Small Cap Growth                            | 49,659,027                          |                  |                    |                |                    | 5,366,806                | 55,025,832                       |
| Mellon DB SL World ex-US Index Fund                        | 505,255,789                         |                  |                    |                | -125,000,000       | 35,042,715               | 415,298,504                      |
| Cevian Capital II  | 39,290,266                          |                  |                    |                |                    | 4,738,954                | 44,029,220                       |
| Lazard Japanese Equity                                     |                                     |                  |                    |                | 100,000,000        | 9,154,063                | 109,154,063                      |
| American Century Non-US Small Cap                          | 65,976,206                          |                  |                    |                | -10,000,000        | 4,384,615                | 60,360,821                       |
| DFA Emerging Markets Value I                               | 81,688,665                          |                  |                    |                |                    | 5,860,291                | 87,548,956                       |
| AB Emerging Markets Strategic Core Equity Collective Trust | 53,102,935                          |                  | -5,111             |                | -53,200,317        | 102,494                  |                                  |
| Mellon Emerging Markets Stock Index Fund                   | 81,772,975                          |                  |                    |                | 22,000,000         | 7,211,844                | 110,984,819                      |
| Dalton Japan Long Only                                     |                                     |                  |                    |                | 50,000,000         | 5,270,144                | 55,270,144                       |
| Transition Equity  | 886                                 |                  |                    |                |                    | 222                      | 1,108                            |
| <b>Fixed Income</b>  | <b>1,303,214,455</b>                | <b>8,165,353</b> | <b>-79,718,503</b> |                | <b>-34,920,674</b> | <b>79,660,745</b>        | <b>1,276,401,377</b>             |
| Fixed Income Beta Exposure                                 | 406,910,741                         | 8,165,353        | -79,718,503        |                | -5,065,000         | 21,363,054               | 351,655,645                      |
| Mellon DB SL Aggregate Bond Index Fund                     | 155,840,026                         |                  |                    |                |                    | 10,644,217               | 166,484,242                      |
| PIMCO Core Plus  | 159,560,189                         |                  |                    |                |                    | 11,401,186               | 170,961,375                      |
| Western Asset Core Plus                                    | 117,145,176                         |                  |                    |                |                    | 9,776,638                | 126,921,814                      |
| Western Asset High Yield Fixed Income                      | 163,885,990                         |                  |                    |                | -2,492,866         | 9,376,889                | 170,770,013                      |
| TCW Securitized Opportunities                              | 92,257,964                          |                  |                    |                | -1,975,653         | 850,231                  | 91,132,542                       |
| Stone Harbor Emerging Markets Debt Blend Portfolio         | 63,485,582                          |                  |                    |                | -25,338,706        | 3,178,822                | 41,325,698                       |
| PIMCO EMD  | 143,838,920                         |                  |                    |                |                    | 13,052,770               | 156,891,690                      |
| Transition Fixed Income                                    | 289,867                             |                  |                    |                | -48,449            | 16,939                   | 258,357                          |
| <b>Commodities</b>   | <b>225,499,850</b>                  |                  |                    | <b>-14,803</b> | <b>-15,000,000</b> | <b>-3,031,265</b>        | <b>207,453,782</b>               |
| Gresham MTAP Commodity Builder Fund                        | 50,660,377                          |                  |                    | -14,803        | -15,000,000        | -1,375,224               | 34,270,350                       |
| Wellington Commodities                                     | 174,839,473                         |                  |                    |                |                    | -1,656,041               | 173,183,432                      |
| <b>Hedge Funds</b>   | <b>551,764,758</b>                  |                  |                    |                | <b>-10,241,489</b> | <b>16,255,213</b>        | <b>557,778,481</b>               |
| Aristeia International Limited                             | 72,368,832                          |                  |                    |                |                    | 971,704                  | 73,340,536                       |
| Brevan Howard Fund   | 55,576,582                          |                  |                    |                |                    | 1,226,411                | 56,802,993                       |
| D.E. Shaw Composite Fund                                   | 63,964,747                          |                  |                    |                | -5,241,489         | 618,241                  | 59,341,499                       |
| HBK Fund II  | 46,665,480                          |                  |                    |                |                    | 1,341,506                | 48,006,986                       |

Total Fund  
Net Cash Flow: Last 1 Quarter

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Estimated Beginning<br>Market Value | Contributions | Withdrawals     | Fees | Net<br>Transfers   | Net Investment<br>Change | Estimated Ending<br>Market Value |
|--|-------------------------------------|---------------|-----------------|------|--------------------|--------------------------|----------------------------------|
| Hudson Bay Cap Structure Arbitrage Enhanced Fund   | 82,491,514                          |               |                 |      | -5,000,000         | 1,019,593                | 78,511,107                       |
| Indus Pacific Opportunities Fund                   | 45,773,642                          |               |                 |      |                    | -104,291                 | 45,669,351                       |
| Pharo Macro Fund                                   | 61,980,585                          |               |                 |      |                    | 6,590,042                | 68,570,627                       |
| PIMCO Commodity Alpha Fund                         | 73,834,671                          |               |                 |      |                    | 4,294,465                | 78,129,135                       |
| Enhanced Domestic Partners to Sculptor Master Fund | 49,108,706                          |               |                 |      |                    | 297,542                  | 49,406,248                       |
| <b>Alpha Pool</b>                                  | <b>226,372,547</b>                  |               |                 |      | <b>-4,903,500</b>  | <b>21,194</b>            | <b>221,490,241</b>               |
| Hudson Bay   | 63,718,148                          |               |                 |      | 1,445,371          | -657,816                 | 64,505,703                       |
| Davidson Kempner Institutional Partners            | 56,240,127                          |               |                 |      | 1,276,355          | 8,805                    | 57,525,287                       |
| HBK Fund II  | 44,877,280                          |               |                 |      | -9,045,941         | 336,040                  | 36,167,379                       |
| Garda Fixed Income Relative Value Opportunity Fund | 61,536,992                          |               |                 |      | 1,420,715          | 334,165                  | 63,291,872                       |
| <b>Midstream Energy</b>                            | <b>302,860,943</b>                  |               |                 |      | <b>-14,246,894</b> | <b>14,166,841</b>        | <b>302,780,890</b>               |
| Harvest Midstream                                  | 151,675,622                         |               |                 |      | -12,257,245        | 5,947,050                | 145,365,427                      |
| PIMCO Midstream                                    | 151,185,321                         |               |                 |      | -1,989,648         | 8,219,790                | 157,415,463                      |
| <b>Core Real Estate</b>                            | <b>291,668,466</b>                  |               | <b>-295,005</b> |      | <b>-2,216,499</b>  | <b>-22,000,742</b>       | <b>267,156,219</b>               |
| ASB Allegiance Real Estate Fund                    | 157,896,152                         |               |                 |      | -1,074,210         | -12,203,091              | 144,618,851                      |
| JPMCB Strategic Property Fund                      | 133,772,313                         |               | -295,005        |      | -1,142,289         | -9,797,651               | 122,537,368                      |
| <b>Private Real Estate</b>                         | <b>136,887,189</b>                  |               |                 |      | <b>25,036,669</b>  | <b>-922,598</b>          | <b>161,001,260</b>               |
| Invesco Real Estate Value-Add Fund IV              | 930,593                             |               |                 |      |                    | -280,974                 | 649,619                          |
| Landmark Real Estate Partners VIII                 | 28,103,277                          |               |                 |      | 2,201,095          | 1,181,878                | 31,486,250                       |
| Long Wharf Real Estate                             | 34,107,846                          |               |                 |      |                    | 211,177                  | 34,319,023                       |
| Covenant Apartment Fund X                          | 31,836,365                          |               |                 |      | -101,343           | -1,751,437               | 29,983,585                       |
| Singerman Real Estate Opportunity Fund IV          | 12,316,089                          |               |                 |      | 2,581,250          | -122,847                 | 14,774,492                       |
| LBA Logistics Value Fund IX, L.P.                  | 13,104,308                          |               |                 |      | 3,076,923          | -212,093                 | 15,969,138                       |
| Covenant Apartment Fund XI, LP                     | 14,543,938                          |               |                 |      |                    | 444,042                  | 14,987,980                       |
| KSL Capital Partners VI                            | 1,944,774                           |               |                 |      | 4,046,053          | -392,345                 | 5,598,482                        |
| Merit Hill Self-Storage V, LP.                     |                                     |               |                 |      | 13,232,691         |                          | 13,232,691                       |
| <b>Private Equity</b>                              | <b>212,605,730</b>                  |               |                 |      | <b>11,406,516</b>  | <b>1,121,756</b>         | <b>225,134,003</b>               |
| Abbott VI  | 16,921,054                          |               |                 |      | -489,130           | -430,195                 | 16,001,729                       |
| Pantheon Secondary III                             | 548,661                             |               |                 |      |                    | -3,335                   | 545,326                          |
| Pantheon III                                       | 45,445                              |               |                 |      | -41,705            | -3,740                   |                                  |
| Pantheon V   | 375,348                             |               |                 |      |                    | -991                     | 374,357                          |

Total Fund  
Net Cash Flow: Last 1 Quarter

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Estimated Beginning<br>Market Value | Contributions | Withdrawals | Fees | Net<br>Transfers  | Net Investment<br>Change | Estimated Ending<br>Market Value |
|--|-------------------------------------|---------------|-------------|------|-------------------|--------------------------|----------------------------------|
| Pantheon VI  | 330,050                             |               |             |      |                   | -726                     | 329,324                          |
| Pantheon VII   | 6,855,040                           |               |             |      | 418,795           | -115,222                 | 7,158,613                        |
| Vista Foundation Fund IV                             | 18,784,419                          |               |             |      |                   | -18,435                  | 18,765,984                       |
| Crown Global Secondaries V Master S.C.Sp             | 31,892,513                          |               |             |      | 5,000,000         | -844,962                 | 36,047,551                       |
| Brighton Park Capital Fund I                         | 36,863,716                          |               |             |      | 97,127            |                          | 36,960,843                       |
| Warren Equity Partners Fund III                      | 30,248,893                          |               |             |      | 3,310,744         | 460,659                  | 34,020,296                       |
| Peak Rock Capital Fund III                           | 13,544,451                          |               |             |      | 218,728           | 570,586                  | 14,333,765                       |
| Level Equity Growth Partners V                       | 6,864,460                           |               |             |      | 398,883           | 334,154                  | 7,597,497                        |
| Level Equity Opportunities Fund 2021                 | 5,898,520                           |               |             |      | 259,034           | 249,877                  | 6,407,431                        |
| Linden Capital Partners V LP                         | 12,638,351                          |               |             |      |                   | 376,565                  | 13,014,916                       |
| Rubicon Technology Partners IV L.P.                  | 3,124,027                           |               |             |      | 2,289,544         | -278,087                 | 5,135,484                        |
| OrbiMed Private Investments IX, LP                   | 1,129,757                           |               |             |      |                   | 37,446                   | 1,167,203                        |
| Brighton Park Capital Fund II, L.P                   | 3,299,342                           |               |             |      |                   | 358,811                  | 3,658,153                        |
| Linden Co-Investment V LP                            | 4,159,884                           |               |             |      | -55,503           | 8,695                    | 4,113,076                        |
| Warren Equity Partners Fund IV                       | 11,784,379                          |               |             |      |                   | 478,859                  | 12,263,238                       |
| WEP IV TS Co-Investment, L.P.                        | 7,297,419                           |               |             |      |                   | -58,202                  | 7,239,217                        |
| <b>Private Credit</b>                                | <b>256,723,966</b>                  |               |             |      | <b>41,396,429</b> | <b>5,741,938</b>         | <b>303,862,333</b>               |
| DC Value Recovery Fund IV                            | 18,893,391                          |               |             |      | -1,229,913        | -316,956                 | 17,346,522                       |
| Sixth Street TAO Partners (B)                        | 41,877,567                          |               |             |      | -359,237          | 1,176,395                | 42,694,725                       |
| Brookfield Real Estate Finance Fund V                | 16,771,893                          |               |             |      | -1,478,134        | 11,706                   | 15,305,465                       |
| Magnetar Constellation Fund V                        | 26,896,537                          |               |             |      |                   | -492,975                 | 26,403,562                       |
| H.I.G. Bayside Loan Opportunity Fund V               | 45,153,751                          |               |             |      | -1,041,216        | 1,060,592                | 45,173,127                       |
| Blue Torch Credit Opportunities Fund II              | 16,189,364                          |               |             |      | -1,389,922        | 385,253                  | 15,184,695                       |
| Fortress Credit Opportunites Fund V Expansion        | 16,911,033                          |               |             |      | 5,000,000         | 327,656                  | 22,238,689                       |
| Fortress Lending Fund II                             | 28,165,127                          |               |             |      | -1,282,960        | 1,387,528                | 28,269,695                       |
| Blue Torch Credit Opportunities Fund III             | 5,094,132                           |               |             |      | 19,800,000        | 348,456                  | 25,242,588                       |
| Fortress Lending Fund III                            | 24,367,938                          |               |             |      | 2,348,752         | 1,061,165                | 27,777,855                       |
| OrbiMed Royalty & Credit Opportunities IV            | 5,262,466                           |               |             |      | -684,768          | 254,129                  | 4,831,827                        |
| Cerberus Business Finance V                          | 11,140,767                          |               |             |      | 4,315,518         | 347,796                  | 15,804,081                       |
| Silver Point Specialty Credit Fund III, L.P.         |                                     |               |             |      | 9,527,528         | 125,280                  | 9,652,808                        |
| Ares Pathfinder II                                   |                                     |               |             |      | 2,450,370         |                          | 2,450,370                        |
| Oak Hill Advisors Structured Products Fund III, L.P. |                                     |               |             |      | 5,420,411         | 65,913                   | 5,486,324                        |

Total Fund  
Net Cash Flow: Last 1 Quarter

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|  | Estimated Beginning<br>Market Value | Contributions    | Withdrawals        | Fees           | Net<br>Transfers   | Net Investment<br>Change | Estimated Ending<br>Market Value |
|--|-------------------------------------|------------------|--------------------|----------------|--------------------|--------------------------|----------------------------------|
| <b>Opportunistic</b>                                 | <b>165,626,876</b>                  |                  | <b>-1,021,997</b>  |                | <b>-24,598,655</b> | <b>3,107,790</b>         | <b>143,114,014</b>               |
| DB Investors Fund IV                                 | 21,437,761                          |                  | -1,021,997         |                | -19,417,936        | -997,828                 |                                  |
| Sixth Street TAO Partners (D)                        | 93,502,490                          |                  |                    |                | -4,428,396         | 2,673,468                | 91,747,562                       |
| Aristeia Select Opportunities II                     | 45,181,604                          |                  |                    |                |                    | 832,119                  | 46,013,723                       |
| River Birch International - Opportunistic Investment | 5,505,020                           |                  |                    |                | -752,322           | 600,031                  | 5,352,729                        |
| <b>Cash</b>  | <b>374,783,988</b>                  | <b>3,903,081</b> | <b>-14,818,215</b> | <b>-37,711</b> | <b>44,519,914</b>  | <b>7,354,258</b>         | <b>415,705,315</b>               |
| Short Term Investment Funds                          | 141,742,344                         | 3,903,081        | -14,818,215        | -37,711        | 44,519,914         | 2,412,105                | 177,721,518                      |
| Parametric Cash Overlay                              | 56,882,831                          | 65,721,849       | -39,473,149        |                |                    |                          | 83,131,531                       |
| Goldman Sachs Cash Account                           | 11,608,728                          | 42,209,427       | -68,973,966        |                |                    |                          | -15,155,811                      |
| Futures Offset                                       | -492,555,641                        | 108,330,764      | -36,424,253        |                |                    | 1,031,485                | -419,617,645                     |
| Collateral Cash                                      | 13,760,000                          |                  | -2,667,000         |                |                    |                          | 11,093,000                       |
| BlackRock Short Duration Fund                        | 233,041,644                         |                  |                    |                |                    | 4,942,153                | 237,983,797                      |

Total Fund  
Cash Flow History

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

Portfolio Reconciliation

|                        | 3 Mo          | Fiscal YTD     | 1 Yr           | 3 Yrs          | 5 Yrs           | 10 Yrs          |
|------------------------|---------------|----------------|----------------|----------------|-----------------|-----------------|
| Beginning Market Value | 5,314,111,145 | 5,352,263,309  | 5,102,522,000  | 4,911,503,681  | 3,984,041,515   | 3,457,058,664   |
| Contributions          | 799,783,285   | 1,123,452,481  | 2,151,565,462  | 9,142,978,939  | 13,436,357,701  | 19,404,152,815  |
| Withdrawals            | -839,618,780  | -1,158,725,981 | -2,206,236,581 | -9,291,198,986 | -13,808,095,758 | -20,058,116,250 |
| Fees                   | -52,514       | -226,111       | -317,584       | -26,426,980    | -54,215,127     | -127,020,344    |
| Net Cash Flows         | -39,835,495   | -35,273,500    | -54,671,119    | -148,220,047   | -371,738,057    | -653,963,434    |
| Net Investment Change  | 271,722,039   | 229,007,880    | 498,146,807    | 782,714,055    | 1,933,694,231   | 2,742,902,459   |
| Ending Market Value    | 5,545,997,689 | 5,545,997,689  | 5,545,997,689  | 5,545,997,689  | 5,545,997,689   | 5,545,997,689   |
| Net Change \$          | 231,886,544   | 193,734,380    | 443,475,688    | 634,494,008    | 1,561,956,174   | 2,088,939,025   |

Contribution and withdrawals include transfers in and out of accounts. Ending market value is net of fees. Market value and flows do not include the Short Term Cash Account balance.

# Risk Metrics

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Total Fund  
Actual Correlation Matrix

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

Correlation Matrix  
3 Years Ending December 31, 2023

|   | A     | B     | C     | D     | E     | F     | G     | H     | I     | J    | K     | L    |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|
| A | 1.00  |       |       |       |       |       |       |       |       |      |       |      |
| B | 0.98  | 1.00  |       |       |       |       |       |       |       |      |       |      |
| C | 0.95  | 0.98  | 1.00  |       |       |       |       |       |       |      |       |      |
| D | 0.96  | 0.97  | 0.91  | 1.00  |       |       |       |       |       |      |       |      |
| E | 0.80  | 0.81  | 0.68  | 0.83  | 1.00  |       |       |       |       |      |       |      |
| F | 0.83  | 0.84  | 0.77  | 0.84  | 0.79  | 1.00  |       |       |       |      |       |      |
| G | 0.71  | 0.74  | 0.68  | 0.74  | 0.70  | 0.97  | 1.00  |       |       |      |       |      |
| H | 0.88  | 0.87  | 0.84  | 0.86  | 0.70  | 0.88  | 0.78  | 1.00  |       |      |       |      |
| I | 0.80  | 0.82  | 0.72  | 0.84  | 0.86  | 0.91  | 0.81  | 0.78  | 1.00  |      |       |      |
| J | 0.54  | 0.42  | 0.36  | 0.46  | 0.42  | 0.19  | 0.06  | 0.34  | 0.28  | 1.00 |       |      |
| K | 0.39  | 0.36  | 0.35  | 0.35  | 0.26  | 0.19  | 0.07  | 0.36  | 0.26  | 0.32 | 1.00  |      |
| L | -0.16 | -0.23 | -0.17 | -0.27 | -0.31 | -0.40 | -0.38 | -0.30 | -0.42 | 0.10 | -0.14 | 1.00 |

- A = Total Fund
- B = Equity
- C = Domestic Equity
- D = International Developed Equity
- E = Emerging Markets Equity
- F = Fixed Income
- G = Core Fixed Income
- H = High Yield/ Specialty Credit
- I = Emerging Market Debt
- J = Commodities
- K = Hedge Funds
- L = Core Real Estate

Low Interaction  
 Moderate Interaction  
 Moderate to High Interaction  
 High Interaction



Total Fund  
Risk Analysis - 3 Years (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|                                | Alpha | Beta | R-Squared | Return | Information Ratio | Excess Performance | Tracking Error | Sharpe Ratio | Excess Return | Standard Deviation | Sortino Ratio | Up Capture | Down Capture |
|--------------------------------|-------|------|-----------|--------|-------------------|--------------------|----------------|--------------|---------------|--------------------|---------------|------------|--------------|
| Total Fund                     | 0.6   | 0.9  | 1.0       | 5.0    | -0.1              | -0.1               | 1.7            | 0.4          | 3.1           | 8.1                | 0.6           | 88.7       | 84.9         |
| Equity                         | 0.4   | 1.0  | 1.0       | 5.8    | 0.3               | 0.4                | 1.1            | 0.3          | 4.9           | 16.1               | 0.4           | 100.1      | 98.6         |
| Domestic Equity                | 0.1   | 1.0  | 1.0       | 8.9    | 0.1               | 0.1                | 1.1            | 0.5          | 7.9           | 17.5               | 0.7           | 99.8       | 99.1         |
| International Developed Equity | 0.4   | 1.0  | 1.0       | 4.1    | 0.2               | 0.3                | 1.3            | 0.2          | 3.2           | 16.3               | 0.3           | 99.3       | 98.0         |
| Emerging Markets Equity        | 1.4   | 0.9  | 1.0       | -2.1   | 0.6               | 1.6                | 2.5            | -0.2         | -3.1          | 15.9               | -0.3          | 95.7       | 89.9         |
| Fixed Income                   | -0.5  | 1.0  | 1.0       | -2.5   | -0.5              | -0.4               | 0.8            | -0.6         | -4.4          | 7.2                | -0.8          | 99.5       | 103.8        |
| Core Fixed Income              | -0.6  | 1.0  | 1.0       | -3.9   | -1.1              | -0.6               | 0.5            | -0.8         | -5.8          | 7.1                | -1.0          | 98.2       | 103.8        |
| High Yield/ Specialty Credit   | -0.1  | 0.7  | 0.9       | 1.4    | -0.3              | -0.6               | 2.7            | -0.1         | -0.5          | 6.3                | -0.1          | 71.2       | 71.9         |
| Emerging Market Debt           | 1.2   | 1.0  | 1.0       | -2.3   | 1.2               | 1.1                | 0.9            | -0.4         | -3.8          | 10.7               | -0.5          | 105.5      | 97.4         |
| Commodities                    | 2.5   | 0.9  | 0.9       | 12.0   | 0.2               | 1.2                | 4.9            | 0.7          | 10.3          | 14.3               | 1.1           | 87.1       | 72.6         |
| Hedge Funds                    | 5.2   | 0.2  | 0.1       | 6.5    | 0.0               | 0.1                | 4.0            | 1.8          | 4.2           | 2.3                | 3.9           | 51.3       | -42.4        |
| Alpha Pool                     | 10.7  | -1.3 | 0.1       | 2.0    | -1.2              | -4.2               | 3.3            | 0.0          | -0.1          | 3.0                | -0.1          | 33.4       | -            |
| Midstream Energy               | 3.7   | 0.8  | 1.0       | 24.5   | -0.1              | 0.3                | 4.5            | 1.3          | 21.4          | 16.5               | 2.2           | 87.3       | 72.0         |
| Core Real Estate               | -3.0  | 0.7  | 0.8       | 0.5    | -1.1              | -4.4               | 4.2            | -0.2         | -1.4          | 7.6                | -0.2          | 68.2       | 116.3        |
| Private Real Estate            | 0.0   | 1.0  | 1.0       | 13.7   | -                 | 0.0                | 0.0            | 1.4          | 11.0          | 7.7                | 4.3           | 100.0      | 100.0        |
| Private Equity                 | 0.0   | 1.0  | 1.0       | 13.9   | -0.6              | 0.0                | 0.0            | 1.3          | 11.3          | 8.8                | 4.4           | 100.0      | 100.3        |
| Private Credit                 | 0.0   | 1.0  | 1.0       | 5.1    | -0.6              | 0.0                | 0.0            | 0.8          | 2.9           | 3.8                | 1.7           | 99.9       | 100.0        |
| Opportunistic                  | -     | -    | -         | 11.0   | 0.3               | 3.7                | 14.5           | 0.6          | 9.3           | 14.5               | 1.8           | 163.0      | -            |

Risk Return Statistics: Last Three Years

Period Ending: December 31, 2023

|                                       | Equity | MSCI AC World IMI (Net) | Core Plus Fixed Income | Bloomberg U.S. Aggregate Index | High Yield/ Specialty Credit | ICE BofA U.S. High Yield Index | Emerging Market Debt | 3 Years<br>50 JPM EMBI Global Div/ 50 JPM GBI EM Global Div | Commodities | Bloomberg Commodity Index Total Return | Hedge Funds | 75% 3 Month T-Bill +4% / 25% MSCI ACWI (net) | Core Real Estate | NCREIF ODCE-monthly |
|---------------------------------------|--------|-------------------------|------------------------|--------------------------------|------------------------------|--------------------------------|----------------------|---|-------------|--|-------------|--|------------------|---------------------|
| <b>RETURN SUMMARY STATISTICS</b>      |        |                         |                        |                                |                              |                                |                      |   |             |  |             |  |                  |                     |
| Up Market Periods                     | 21     | 21                      | 13                     | 13                             | 22                           | 22                             | 15                   | 15  | 21          | 21                                     | 23          | 23   | 31               | 31                  |
| Down Market Periods                   | 15     | 15                      | 23                     | 23                             | 14                           | 14                             | 21                   | 21  | 15          | 15                                     | 13          | 13   | 5                | 5                   |
| Maximum Return                        | 8.39   | 9.24                    | 4.23                   | 4.53                           | 4.80                         | 6.02                           | 7.56                 | 7.35  | 7.67        | 8.78                                   | 2.14        | 2.89   | 5.39             | 7.97                |
| Minimum Return                        | -9.42  | -9.65                   | -4.27                  | -4.32                          | -5.04                        | -6.81                          | -5.99                | -5.81   | -8.90       | -10.77                                 | -0.75       | -1.96  | -6.33            | -4.97               |
| Return                                | 5.84   | 5.46                    | -3.87                  | -3.31                          | 1.41                         | 2.00                           | -2.27                | -3.33   | 12.00       | 10.76                                  | 6.51        | 6.42   | 0.48             | 4.92                |
| Excess Return                         | 4.85   | 4.54                    | -5.82                  | -5.25                          | -0.53                        | 0.20                           | -3.85                | -4.97   | 10.28       | 9.39                                   | 4.22        | 4.19   | -1.36            | 3.12                |
| Excess Performance                    | 0.38   | 0.00                    | -0.56                  | 0.00                           | -0.59                        | 0.00                           | 1.07                 | 0.00  | 1.24        | 0.00                                   | 0.09        | 0.00   | -4.44            | 0.00                |
| <b>RISK SUMMARY STATISTICS</b>        |        |                         |                        |                                |                              |                                |                      |   |             |  |             |  |                  |                     |
| Beta                                  | 0.98   | 1.00                    | 1.00                   | 1.00                           | 0.74                         | 1.00                           | 1.03                 | 1.00  | 0.86        | 1.00                                   | 0.20        | 1.00   | 0.73             | 1.00                |
| Upside Risk                           | 12.23  | 12.34                   | 4.83                   | 4.96                           | 4.71                         | 6.11                           | 7.41                 | 7.07  | 11.86       | 12.53                                  | 2.86        | 4.04   | 5.20             | 8.26                |
| Downside Risk                         | 10.65  | 10.95                   | 5.36                   | 5.21                           | 4.28                         | 5.71                           | 7.79                 | 7.72  | 8.83        | 10.23                                  | 0.81        | 2.08   | 5.59             | 4.79                |
| <b>RISK/RETURN SUMMARY STATISTICS</b> |        |                         |                        |                                |                              |                                |                      |   |             |  |             |  |                  |                     |
| Standard Deviation                    | 16.09  | 16.38                   | 7.14                   | 7.14                           | 6.35                         | 8.33                           | 10.74                | 10.44   | 14.34       | 15.83                                  | 2.34        | 4.16   | 7.63             | 9.43                |
| Alpha                                 | 0.45   | 0.00                    | -0.59                  | 0.00                           | -0.12                        | 0.00                           | 1.21                 | 0.00  | 2.51        | 0.00                                   | 5.24        | 0.00   | -3.02            | 0.00                |
| Sharpe Ratio                          | 0.30   | 0.28                    | -0.83                  | -0.75                          | -0.08                        | 0.02                           | -0.37                | -0.49   | 0.71        | 0.59                                   | 1.80        | 1.03   | -0.17            | 0.32                |
| Excess Risk                           | 16.04  | 16.31                   | 7.01                   | 7.01                           | 6.25                         | 8.21                           | 10.52                | 10.21   | 14.50       | 16.05                                  | 2.35        | 4.05   | 8.10             | 9.79                |
| Tracking Error                        | 1.14   | 0.00                    | 0.55                   | 0.00                           | 2.69                         | 0.00                           | 0.91                 | 0.00  | 4.94        | 0.00                                   | 4.00        | 0.00   | 4.16             | 0.00                |
| Information Ratio                     | 0.27   | -                       | -1.05                  | -                              | -0.27                        | -                              | 1.24                 | -   | 0.18        | -                                      | 0.01        | -  | -1.08            | -                   |
| <b>CORRELATION STATISTICS</b>         |        |                         |                        |                                |                              |                                |                      |   |             |  |             |  |                  |                     |
| R-Squared                             | 1.00   | 1.00                    | 0.99                   | 1.00                           | 0.94                         | 1.00                           | 0.99                 | 1.00  | 0.90        | 1.00                                   | 0.12        | 1.00   | 0.81             | 1.00                |
| Actual Correlation                    | 1.00   | 1.00                    | 1.00                   | 1.00                           | 0.97                         | 1.00                           | 1.00                 | 1.00  | 0.95        | 1.00                                   | 0.35        | 1.00   | 0.90             | 1.00                |

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

Risk Return Statistics: Last Two Years

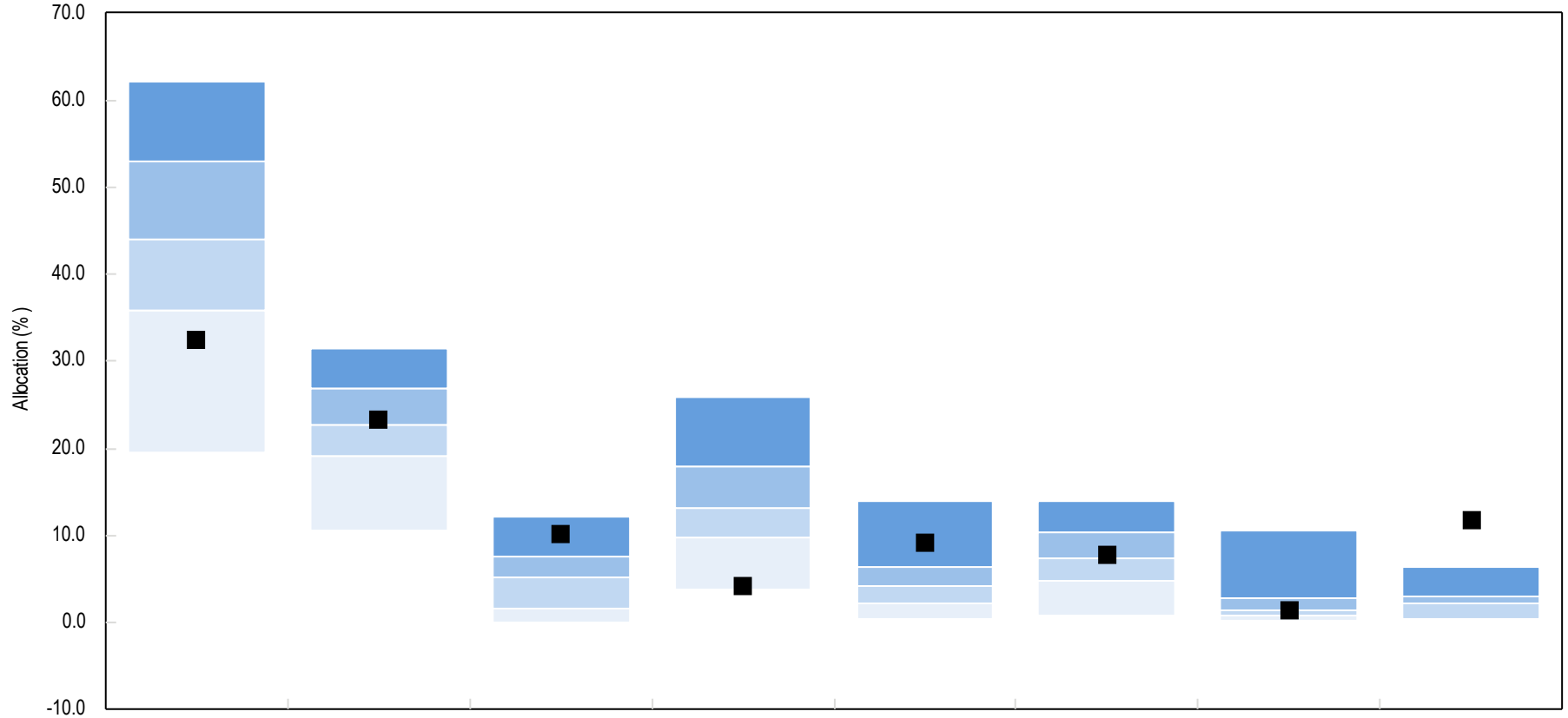
|                                       | Midstream Energy | Alerian Midstream Energy Index | 2 Yrs<br>Opportunistic | Assumed Rate of Return +3% |
|---------------------------------------|------------------|--------------------------------|------------------------|----------------------------|
| <b>RETURN SUMMARY STATISTICS</b>      |                  |                                |                        |                            |
| Up Market Periods                     | 12               | 12                             | 24                     | 24                         |
| Down Market Periods                   | 12               | 12                             | 0                      | 0                          |
| Maximum Return                        | 11.14            | 11.05                          | 5.16                   | 0.58                       |
| Minimum Return                        | -11.84           | -12.21                         | -4.04                  | 0.58                       |
| Return                                | 19.84            | 17.72                          | -4.87                  | 7.25                       |
| Excess Return                         | 16.74            | 15.43                          | -7.88                  | 3.84                       |
| Excess Performance                    | 2.13             | 0.00                           | -12.12                 | 0.00                       |
| <b>RISK SUMMARY STATISTICS</b>        |                  |                                |                        |                            |
| Beta                                  | 0.86             | 1.00                           | -                      | -                          |
| Upside Risk                           | 15.71            | 17.25                          | 1.42                   | 2.03                       |
| Downside Risk                         | 10.95            | 12.87                          | 5.69                   | 0.00                       |
| <b>RISK/RETURN SUMMARY STATISTICS</b> |                  |                                |                        |                            |
| Standard Deviation                    | 18.26            | 20.84                          | 7.39                   | 0.00                       |
| Alpha                                 | 3.99             | 0.00                           | -                      | -                          |
| Sharpe Ratio                          | 0.91             | 0.74                           | -1.09                  | 6.41                       |
| Excess Risk                           | 18.37            | 20.96                          | 7.24                   | 0.60                       |
| Tracking Error                        | 4.60             | 0.00                           | 7.39                   | 0.00                       |
| Information Ratio                     | 0.28             | -                              | -1.59                  | -                          |
| <b>CORRELATION STATISTICS</b>         |                  |                                |                        |                            |
| R-Squared                             | 0.96             | 1.00                           | -                      | -                          |
| Actual Correlation                    | 0.98             | 1.00                           | -                      | -                          |

Data for unavailable for positions held for less than two years.

# Peer Comparison

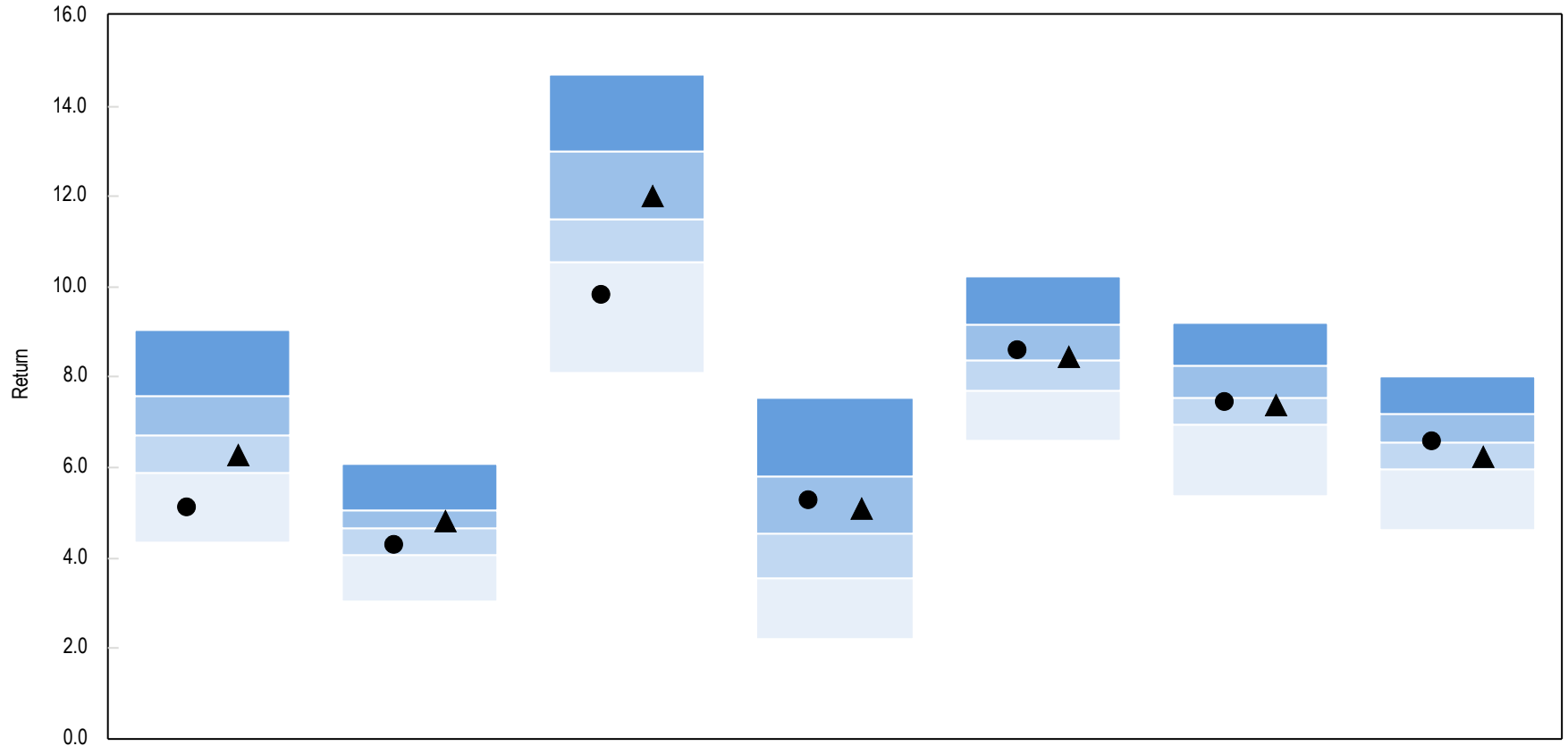
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Total Plan Allocation vs. InvMetrics Public DB > \$1B  
As of December 31, 2023



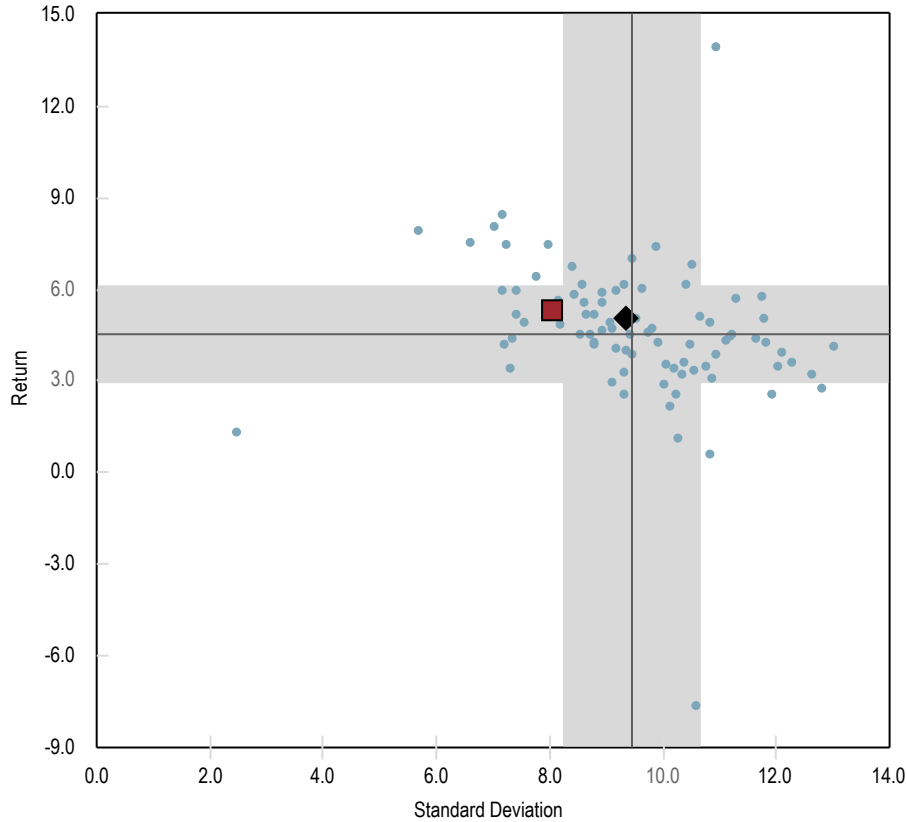
| ■ Total Fund    | Total Equity<br>32.5 (84) | Total Fixed Income<br>23.3 (45) | Hedge Funds<br>10.1 (13) | Private Equity<br>4.2 (95) | Real Assets/Commod<br>9.2 (13) | Real Estate - Private<br>7.7 (47) | Cash & Equivalents<br>1.4 (53) | Other<br>11.7 (1) |
|-----------------|---------------------------|---------------------------------|--------------------------|----------------------------|--------------------------------|-----------------------------------|--------------------------------|-------------------|
| 5th Percentile  | 62.1                      | 31.5                            | 12.2                     | 25.9                       | 13.9                           | 14.0                              | 10.6                           | 6.3               |
| 1st Quartile    | 53.1                      | 26.9                            | 7.6                      | 17.9                       | 6.4                            | 10.3                              | 2.8                            | 3.0               |
| Median          | 44.0                      | 22.7                            | 5.2                      | 13.2                       | 4.2                            | 7.4                               | 1.4                            | 2.2               |
| 3rd Quartile    | 35.9                      | 19.1                            | 1.5                      | 9.8                        | 2.1                            | 4.8                               | 0.7                            | 0.3               |
| 95th Percentile | 19.6                      | 10.5                            | 0.0                      | 3.9                        | 0.4                            | 0.8                               | 0.2                            | 0.2               |
| Population      | 94                        | 95                              | 43                       | 71                         | 52                             | 64                                | 79                             | 14                |

Total Fund vs. InvMetrics Public DB > \$1B



|                 | Quarter  | Fiscal YTD | 1 Year    | 3 Years  | 5 Years  | 7 Years  | 10 Years |
|-----------------|----------|------------|-----------|----------|----------|----------|----------|
| ● Total Fund    | 5.1 (88) | 4.3 (67)   | 9.8 (85)  | 5.3 (32) | 8.6 (42) | 7.5 (52) | 6.6 (49) |
| ▲ Policy Index  | 6.3 (63) | 4.8 (44)   | 12.0 (44) | 5.1 (37) | 8.5 (46) | 7.4 (54) | 6.3 (61) |
| 5th Percentile  | 9.1      | 6.1        | 14.7      | 7.5      | 10.2     | 9.2      | 8.0      |
| 1st Quartile    | 7.6      | 5.1        | 13.0      | 5.8      | 9.1      | 8.3      | 7.2      |
| Median          | 6.7      | 4.7        | 11.5      | 4.5      | 8.4      | 7.5      | 6.5      |
| 3rd Quartile    | 5.9      | 4.1        | 10.5      | 3.6      | 7.7      | 6.9      | 6.0      |
| 95th Percentile | 4.4      | 3.0        | 8.1       | 2.2      | 6.6      | 5.4      | 4.6      |
| Population      | 105      | 102        | 96        | 83       | 80       | 80       | 75       |

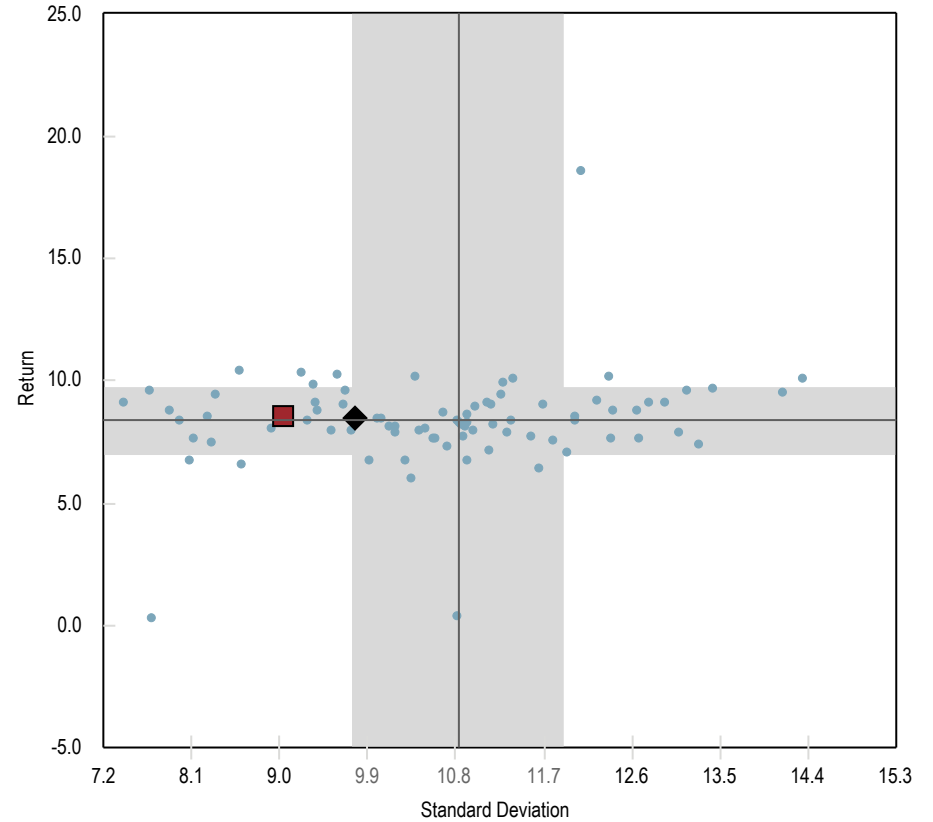
Annualized Return vs. Annualized Standard Deviation  
3 Years Ending December 31, 2023



● InvMetrics Public DB > \$1B

|                | Return | Standard Deviation |
|----------------|--------|--------------------|
| ■ Total Fund   | 5.30   | 8.05               |
| ◆ Policy Index | 5.08   | 9.35               |
| — Median       | 4.53   | 9.45               |
| Population     | 83     | 83                 |

Annualized Return vs. Annualized Standard Deviation  
5 Years Ending December 31, 2023



● InvMetrics Public DB > \$1B

|                | Return | Standard Deviation |
|----------------|--------|--------------------|
| ■ Total Fund   | 8.60   | 9.05               |
| ◆ Policy Index | 8.46   | 9.77               |
| — Median       | 8.39   | 10.83              |
| Population     | 80     | 80                 |

**Other**

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Total Fund  
Quarterly Historical Returns (Net of Fees)

Kern County Employees' Retirement Association  
Period Ending: December 31, 2023

|                     | 2023<br>Q4 | 2023<br>Q3  | 2023<br>Q2 | 2023<br>Q1 | 2022<br>Q4 | 2022<br>Q3  | 2022<br>Q2  | 2022<br>Q1  | 2021<br>Q4 | 2021<br>Q3 | 2021<br>Q2 | 2021<br>Q1 |
|---------------------|------------|-------------|------------|------------|------------|-------------|-------------|-------------|------------|------------|------------|------------|
| <b>Total Fund</b>   | <b>5.1</b> | <b>-0.8</b> | <b>1.9</b> | <b>3.2</b> | <b>4.5</b> | <b>-3.1</b> | <b>-7.5</b> | <b>-0.8</b> | <b>3.6</b> | <b>0.5</b> | <b>5.5</b> | <b>3.5</b> |
| <i>Policy Index</i> | 6.3        | -1.4        | 2.9        | 3.8        | 5.5        | -3.8        | -8.9        | -1.3        | 3.3        | 0.7        | 5.7        | 3.3        |

|                     | 2020<br>Q4 | 2020<br>Q3 | 2020<br>Q2  | 2020<br>Q1   | 2019<br>Q4 | 2019<br>Q3 | 2019<br>Q2 | 2019<br>Q1 | 2018<br>Q4  | 2018<br>Q3 | 2018<br>Q2 | 2018<br>Q1  |
|---------------------|------------|------------|-------------|--------------|------------|------------|------------|------------|-------------|------------|------------|-------------|
| <b>Total Fund</b>   | <b>8.8</b> | <b>4.4</b> | <b>10.7</b> | <b>-11.3</b> | <b>4.6</b> | <b>0.2</b> | <b>3.1</b> | <b>6.8</b> | <b>-6.4</b> | <b>2.3</b> | <b>0.3</b> | <b>-0.1</b> |
| <i>Policy Index</i> | 8.8        | 4.5        | 10.1        | -11.1        | 4.6        | 0.8        | 3.0        | 7.0        | -5.5        | 2.2        | 0.7        | -0.1        |

|                     | 2017<br>Q4 | 2017<br>Q3 | 2017<br>Q2 | 2017<br>Q1 | 2016<br>Q4 | 2016<br>Q3 | 2016<br>Q2 | 2016<br>Q1 | 2015<br>Q4 | 2015<br>Q3  | 2015<br>Q2 | 2015<br>Q1 |
|---------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|------------|------------|
| <b>Total Fund</b>   | <b>3.0</b> | <b>3.2</b> | <b>2.7</b> | <b>4.2</b> | <b>0.8</b> | <b>3.5</b> | <b>1.9</b> | <b>1.1</b> | <b>2.2</b> | <b>-5.4</b> | <b>0.7</b> | <b>2.4</b> |
| <i>Policy Index</i> | 3.2        | 3.1        | 2.8        | 3.5        | 0.5        | 2.9        | 2.2        | 1.8        | 1.4        | -4.9        | 0.4        | 2.0        |

# Total Fund Data Sources and Methodology

# Kern County Employees' Retirement Association Period Ending: December 31, 2023

## Performance Return Calculations

Performance is calculated using a Time Weighted Rates of Return (TWRR) methodology. Monthly returns are linked geometrically and annualized for periods longer than one year.

## Data Source

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

## Illiquid Alternatives

Due to the inability to receive final valuation prior to report production, closed end funds (including but are not limited to Real Estate, Hedge Funds, Private Equity, and Private Credit) performance is typically reported at a one-quarter lag. Valuation is reported at a one-quarter lag, adjusted for current quarter flow (cash flows are captured real time). Closed end fund performance is calculated using a time-weighted return methodology consistent with all portfolio and total fund performance calculations. For Private Markets, performance reports also include Verus-calculated multiples based on flows and valuations (e.g. DPI and TVPI) and manager-provided IRRs.

## Manager Line Up

| <u>Investment Fund or Strategy</u>             | <u>Fund Incepted</u> | <u>Data Source</u> | <u>Investment Fund or Strategy</u>           | <u>Fund Incepted</u> | <u>Data Source</u> |
|--|----------------------|--------------------|--|----------------------|--------------------|
| AB US Small Cap Value Equity                   | 7/7/2015             | Northern Trust     | Linden Co-Investment V LP                    | 6/30/2022            | Linden             |
| Abbott Capital PE VI                           | 3/31/2008            | Abbott Capital     | Long Wharf Real Estate                       | 6/27/2019            | Long Wharf         |
| American Century Non-US Small Cap              | 12/15/2020           | American Century   | Magnatar Constellation                       | 11/14/2018           | Magnatar           |
| Ares Pathfinder                                | 10/1/2023            | Ares               | Mellon Aggregate Bond Index Fund             | 1/14/2011            | Mellon             |
| Aristeia International Limited                 | 5/1/2014             | Northern Trust     | Mellon EB DV Stock Index                     | 10/18/2017           | Mellon             |
| ASB Real Estate                                | 9/30/2013            | ASB                | Mellon EB DV World ex-US Index               | 8/1/2018             | Mellon             |
| Barclays Capital Aggregate Rebalancing Overlay | 6/15/2022            | Parametric         | Merit Hill Self Storage                      | 11/3/2023            | Merit              |
| BlackRock Short Duration Fund                  | 9/8/2021             | BlackRock          | Myriad Opportunities Offshore                | 5/19/2016            | Northern Trust     |
| Blue Torch Credit Opportunities                | 7/24/2020            | Blue Torch         | Oak Hill Advisors                            | 12/22/2023           | Oak Hill           |
| Brevan Howard                                  | 11/1/2013            | Northern Trust     | OrbiMed Royalty & Credit Opportunities       | 9/12/2022            | OrbiMed            |
| Brighton Private Equity                        | 3/28/2021            | Brighton           | Pantheon Global III                          | 6/30/2000            | Pantheon           |
| Brighton Park Capital Fund II, L.P.            | 9/30/2022            | Brighton           | Pantheon USA V                               | 6/30/2005            | Pantheon           |
| Brookfield Real Estate Finance Fund V          | 12/18/2017           | Northern Trust     | Pantheon USA VI                              | 3/31/2005            | Pantheon           |
| Cerberus Business Finance V                    | 8/25/2023            | Cerberus           | Pantheon USA VII                             | 3/31/2005            | Pantheon           |
| Cevian Capital II                              | 12/30/2014           | Northern Trust     | Parametric Overlay/ Cap Efficiency Program   | 7/31/2020            | Parametric         |
| Covenant Apartment Fund X                      | 10/29/2020           | Covenant           | Peak Rock Capital Fund III                   | 7/13/2021            | Peak Rock          |
| Dalton Japan Long Only                         | 10/31/2023           | Dalton             | PIMCO Core Plus                              | 1/21/2011            | Northern Trust     |
| DC Value Recovery fund IV                      | 12/28/2015           | Colony             | PIMCO Commodity Alpha                        | 5/4/2016             | PIMCO              |
| D.E. Shaw                                      | 6/30/2013            | Northern Trust     | PIMCO EMD                                    | 2/29/2020            | Northern Trust     |
| DFA Emerging Markets Value I                   | 3/7/2014             | Northern Trust     | PIMCO Midstream                              | 10/9/2020            | PIMCO              |
| Fortress Credit Opportunities                  | 12/17/2020           | Fortress           | PIMCO StocksPLUS                             | 7/14/2003            | PIMCO              |
| Fortress Lending Fund II                       | 3/15/2021            | Fortress           | Fidelity Non-US Small Cap Equity             | 6/10/2008            | Northern Trust     |
| Garda Fixed Income Relative Value Opp          | 9/30/2021            | Garda              | River Birch                                  | 8/3/2015             | Northern Trust     |
| Geneva Capital Small Cap Growth                | 7/22/2015            | Geneva             | Rubicon Technology Partners IV LP            | 11/30/2022           | Rubicon            |
| Gresham MTAP Commodity                         | 9/3/2013             | Gresham            | Silver Point Specialty Credit Fund III, L.P. | 10/4/2023            | Singerman          |
| Harvest Midstream                              | 9/28/2020            | Harvest Midstream  | Singerman Real Estate Opportunity Fund IV    | 10/27/2021           | Sculptor           |
| HBK Fund II                                    | 11/1/2013            | Northern Trust     | Sculptor Enhanced Domestic Partners          | 3/26/2019            | Northern Trust     |
| Henderson Smallcap Growth                      | 7/22/2015            | Northern Trust     | Short Term Cash Account                      | 12/31/2000           | Northern Trust     |
| H.I.G Bayside Loan Opportunities Fund V        | 7/24/2019            | H.I.G. Capital     | Short Term Investment Funds                  | 6/30/2000            | Stone Harbor       |
| Hudson Bay                                     | 6/7/2019             | Northern Trust     | Stone Harbor Emerging Markets Debt           | 8/8/2012             | TPG Sixth Street   |
| Indus Pacific Opportunities                    | 6/30/2014            | Northern Trust     | TAO Contingent                               | 4/16/2020            | TCW                |
| Invesco Real Estate III                        | 6/30/2013            | Invesco            | TCW Securitized Opportunities                | 2/3/2016             | Northern Trust     |
| Invesco Real Estate IV                         | 12/18/2015           | Invesco            | Transition Equity                            | 9/30/2010            | Northern Trust     |
| J.P. Morgan Strategic Property                 | 7/2/2014             | J.P. Morgan        | Transition Fixed Income                      | 9/30/2010            | TPG Sixth Street   |
| KSL Capital Partners VI                        | 4/26/2023            | KSL Capital        | TSSP Adjacent Opportunities Partners         | 11/17/2017           | Vista Equity       |
| Landmark Real Estate Partners VIII             | 4/29/2018            | Landmark           | Vista Equity Partners                        | 7/24/2020            | Warren             |
| Lazard Japanese Equity                         | 11/1/2023            | Lazard             | Warren Equity III                            | 4/1/2021             | Warren             |
| LBA Logistics Value Fund IX, L.P.              | 2/22/2022            | LBA                | Warren Equity IV                             | 1/1/2023             | Wellington         |
| Level Equity Growth Partners V                 | 11/1/2021            | Level Equity       | Wellington Alternative Investments           | 2/9/2023             | Wellington         |
| Level Equity Opportunities Fund 2021           | 11/1/2021            | Level Equity       | WEP IV TS Co-Investment, L.P.                | 8/14/2023            | Northern Trust     |
| LGT Crown                                      | 2/1/2021             | LGT                | Western Asset Core Plus                      | 5/31/2004            | Northern Trust     |
| Linden Capital Partners V LP                   | 7/19/2022            | Linden             | Western Asset High Yield Fixed income        | 5/31/2005            |                    |

# Total Fund Data Sources and Methodology

# Kern County Employees' Retirement Association Period Ending: December 31, 2023

| Policy & Custom Index Composition  |   |
|------------------------------------|---|
| Policy Index: 10/31/2023 - Present | 34% MSCI ACWI IMI (Net), 18% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets Global Diversified, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +3%, 2.5% MSCI ACWI (Net), 8% 90 Day T-Bill + 3%, 7% NCREIF-ODCE Gross Monthly, 4% actual time-weighted Private Equity Returns*, 5% actual time-weighted Private Credit Returns*, 3% actual time-weighted Private Real Estate Returns*, 5% Alerian Midstream, 0% Assumed Rate of Return +3%, -8% 90 Day T-bill.                    |
| Policy Index: 4/1/2022-9/30/23     | 37% MSCI ACWI IMI (Net), 14% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets Global Diversified, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +4%, 2.5% MSCI ACWI (Net), 8% 91 Day T-Bill + 4%, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns*, 5% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 5% Alerian Midstream, 0% Assumed Rate of Return +3%, -8% 3-Month T-bill.                   |
| Policy Index: 7/1/2021-4/1/2022    | 37% MSCI ACWI IMI, 14% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 2% actual time-weighted Private Equity Returns*, 4% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 1% Bloomberg US Aggregate*, 4% Bloomberg US Aggregate, 5% Alerian Midstream, 5% 3-Month T-bill +400bps, 91 Day T-Bills, -5% 3-Month T-bill. |
| Policy Index: 1/1/2021-6/30/2021   | 37% MSCI ACWI IMI, 14% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 1% actual time-weighted Private Equity Returns*, 4% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 4% MSCI ACWI*, 1% Bloomberg US Aggregate*, 4% Bloomberg US Aggregate, 5% Alerian Midstream, 5% 3-Month T-bill +400bps, 91 Day T-Bills, -5% 3-Month T-bill. |
| Policy Index: 7/1/2020-12/31/2020  | 37% MSCI ACWI IMI, 14% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 1% actual time-weighted Private Equity Returns*, 4% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 4% MSCI ACWI*, 5% Bloomberg US Aggregate, 1% Alerian Midstream, 4% Bloomberg US Aggregate  |
| Policy Index: 4/1/2020-6/30/2020   | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 1% actual time-weighted Private Equity Returns*, 4% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 5% Bloomberg US Aggregate*.   |
| Policy Index: 1/1/2020-3/31/2020   | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 2% actual time-weighted Private Equity Returns*, 4% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 5% Bloomberg US Aggregate*.   |
| Policy Index: 10/1/2019-12/31/2019 | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 2% actual time-weighted Private Equity Returns*, 3% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 6% Bloomberg US Aggregate*.   |
| Policy Index: 7/1/2019-9/30/2019   | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 2% actual time-weighted Private Equity Returns*, 4% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 5% Bloomberg US Aggregate*.   |
| Policy Index: 4/1/2019-6/30/2019   | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 2% actual time-weighted Private Equity Returns*, 3% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 6% Bloomberg US Aggregate*.   |
| Policy Index: 1/1/2019-3/31/2019   | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 2% actual time-weighted Private Equity Returns*, 3% actual time-weighted Private Credit Returns*, 2% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 5% Bloomberg US Aggregate*.   |
| Policy Index: 10/1/2018-12/31/2018 | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 2% actual time-weighted Private Equity Returns*, 2% actual time-weighted Private Credit Returns*, 2% actual time-weighted Private Real Estate Returns*, 3% MSCI ACWI*, 6% Bloomberg US Aggregate*.   |
| Policy Index: 7/1/2018-9/30/2018   | 37% MSCI ACWI IMI, 19% Bloomberg US Aggregate, 6% Ice BofA ML High Yield Master II Index, 2% JPM Emerging Markets Bond Index Global Diversified, 2% JPM Government Bond Index-Emerging Markets, 4% Bloomberg Commodity Index, 7.5% 3-Month T-bill +400bps, 2.5% MSCI ACWI, 5% NCREIF-ODCE, 3% actual time-weighted Private Equity Returns*, 2% actual time-weighted Private Credit Returns*, 1% actual time-weighted Private Real Estate Returns*, 2% MSCI ACWI*, 7% Bloomberg US Aggregate*.   |
| Policy Index: 1/1/2017- 6/30/2018  | 19% Russell 3000 Index, 18% MSCI ACWI ex US, 29% Bloomberg US Aggregate, 10% NCREIF-ODCE, 4% Bloomberg Commodity Index, 7.5% 91-day T-bills + 400bps, 2.5% MSCI ACWI, 5% Russell 3000 Index + 300 bps, 5% ICE BofA ML High Yield + 200 bps.   |
| Policy Index: 4/1/2014-12/31/2016  | 23% Russell 3000 Index, 29% Bloomberg US Aggregate, 22% MSCI ACWI ex US.  |

### Other Disclosures

\*Private Asset actual weights, rounded to 1%, and actual time-weighted returns of Private Equity, Private Credit, Private Real Estate used in policy with the difference in weight versus target allocated to private markets public market "equivalent". Private Equity to Global Equity, Private Credit and Private Real Estate to Core Plus.

All data prior to 2Q 2011 has been provided by the investment managers.

# Glossary

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**Allocation Effect:** An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

**Alpha:** The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as: Portfolio Return - [Risk-free Rate + Portfolio Beta x (Market Return - Risk-free Rate)].

**Benchmark R-squared:** Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R-squared, the more appropriate the benchmark is for the manager.

**Beta:** A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

**Book-to-Market:** The ratio of book value per share to market price per share. Growth managers typically have low book-to-market ratios while value managers typically have high book-to-market ratios.

**Capture Ratio:** A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

**Correlation:** A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

**Excess Return:** A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

**Information Ratio:** A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: excess return divided by tracking error.

**Interaction Effect:** An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

**Portfolio Turnover:** The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

**Price-to-Earnings Ratio (P/E):** Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price-to-earnings ratios whereas value managers hold stocks with low price-to-earnings ratios.

**R-Squared:** Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another, i.e., the goodness of fit to a benchmark. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

**Selection Effect:** An attribution effect that describes the amount attributable to the managers' stock selection decisions, relative to the benchmark.

**Sharpe Ratio:** A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as: Portfolio Excess Return / Portfolio Standard Deviation.

**Sortino Ratio:** Measures the risk-adjusted return of an investment, portfolio, or strategy. It is a modification of the Sharpe Ratio, but penalizes only those returns falling below a specified benchmark. The Sortino Ratio uses downside deviation in the denominator rather than standard deviation, like the Sharpe Ratio.

**Standard Deviation:** A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two-thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

**Style Analysis:** A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

**Style Map:** A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two-dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

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