Verus



PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

PERIOD ENDING: DECEMBER 31, 2024

Investment Performance Review for

Kern County Employees' Retirement Association

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Verus
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1ST QUARTER 2025
Investment Landscape

Verus business update

Since our last Investment Landscape webinar:

- Verus hired Aimee Hauff as a Senior Performance Analyst, Mallory Wallace as Senior Operations Analyst, Chloe Vo as a Performance Analyst, and Mouhamed Diop as an Accounting Specialist in our Seattle office.
- Palmer Pederson was promoted to Consulting Associate on the Not-For-Profit team.
- Ian Toner, CFA, had an in-depth interview with The Journal of Portfolio Management: "CIO Perspectives".
- 2025 Verus Capital Market Assumptions were released.
- Recent research, found at *verusinvestments.com/research:*
  - ***Top 10 ideas for 2025: Back to the 90s?***
  - ***Examining the Case for Private Credit***
  - ***Selecting Exceptional Private Markets Managers: Strategies for Success in a Complex Arena***
  - ***Using Fixed Income to Avoid Downside Risk***

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Recent Verus research

Visit: verusinvestments.com/research

Thought leadership

TOP 10 IDEAS FOR 2025: BACK TO THE 90S?

Every year Verus identifies a series of topics that we believe will be important for investors to consider during the coming year. Some of those tend to be economics or markets focused, while others tend to focus on geopolitics or other broader issues.

EXAMINING THE CASE FOR PRIVATE CREDIT

We discuss the benefits of including private credit within an investment program. We also highlight the drawbacks and risks facing the asset class as we look to assist investors in answering the question of where to look for credit exposure.

SELECTING EXCEPTIONAL PRIVATE MARKETS MANAGERS: STRATEGIES FOR SUCCESS IN A COMPLEX ARENA

We examine the curated due diligence that Verus uses to select exceptional private markets managers, how our private market team identifies top-tier private markets managers, and the expertise required to do so.

USING FIXED INCOME TO AVOID DOWNSIDE RISK

Downside risk is the undesirable risk of market volatility. We explore how negative correlation of traditional fixed income to equities may mitigate equity drawdown risk and how these characteristics relate to the more active role that fixed income may play in broader portfolio risk management.

4th quarter summary

THE ECONOMY

— The election of Donald Trump and news of a unified government appears to have positively impacted household and business sentiment. The news has generally been perceived as implying easier business conditions, firmer economic growth, fewer interest rate cuts, and mildly higher inflation.

— U.S. inflation drifted upward during Q4, from 2.4% YoY in September to 2.9% in December. Core inflation (ex-food & energy) was fairly stable at 3.2%. Investors now expect the Fed to cut rates once or twice over the next year. Further increases in the rate of inflation could possibly push the Federal Reserve towards a rate hike—an outcome that would likely spook markets.

EQUITY

— The U.S. (S&P 500 +2.4%) provided a strong quarter while non-U.S. markets lagged. Emerging markets (MSCI EM -8.0%) and international developed (MSCI EAFE -8.1%) both delivered sharp losses, though these losses were caused by currency movements rather than equity weakness. For investors with hedged currency exposure, the MSCI EAFE index produced a +0.1% return.

— Small cap and value both continued to underperform. Small cap trailed large cap by -2.4% in Q4, while value trailed growth by -9.1%. This capped off a year of poor returns for both style factors, underperforming by -13% and -19%, respectively.

FIXED INCOME

— The 10-year U.S. Treasury yield jumped from 3.79% to 4.55% during the quarter, amid growing evidence that the economy may remain hotter than previously believed, and expectations around pro-growth policies of the Trump Administration, as well as the possibility that a tariff spat with trade partners could push inflation upwards.

— Default activity remained low, as the economy was strong and chances of recession have fallen. However, 'distressed exchanges', a renegotiation of debt that does not count as a technical default, have been rising substantially. During the quarter, total distressed credit volume was roughly $19.4 billion, which marked the second largest quarterly total on record since Q4 2008.

ASSET ALLOCATION ISSUES

— U.S. election results triggered large market movements in early November. Equities rallied along with most risk assets, while treasury yields jumped materially. Although investors have interpreted this news as generally positive for the future, volatility along the way is also likely.

— Implied bond market volatility continued to moderate, following record highs that were achieved during the recent U.S. inflation scare. However, volatility levels remain materially above the longer-term average. We suspect that volatility will be elevated on an ongoing basis as investors are fixated on Federal Reserve actions and communications.

Evidence of a strong U.S. economy, and news of an incoming Trump Administration, have led to shifting expectations around growth, interest rates, and inflation

What drove the market in Q4?

"Donald Trump wins 2024 U.S. election in historic comeback"

Swing State Margin of Victory

Arizona	Georgia	Michigan	Nevada	NC	Pennsylvania	Wisconsin
+5.5%	+2.2%	+1.4%	+3.1%	+3.2%	+1.7%	+0.9%

Article Source: BBC, November 7th, 2024

"Fed cuts by a quarter point, indicates fewer reductions ahead"

Futures Implied Fed Funds Rate

Jan 25	March 25	May 25	June 25	July 25	Sep 25
4.32%	4.26%	4.19%	4.09%	4.05%	3.98%

Article Source: CNBC, December 18th, 2024

"U.S. inflation gauge ticks higher with consumer prices on the rise"

Personal Consumption Expenditures Price Index, Year-over-Year

June 24	July 24	Aug 24	Sep 24	Oct 24	Nov 24
2.4%	2.5%	2.3%	2.1%	2.3%	2.4%

Article Source: PBS, November 27th, 2024

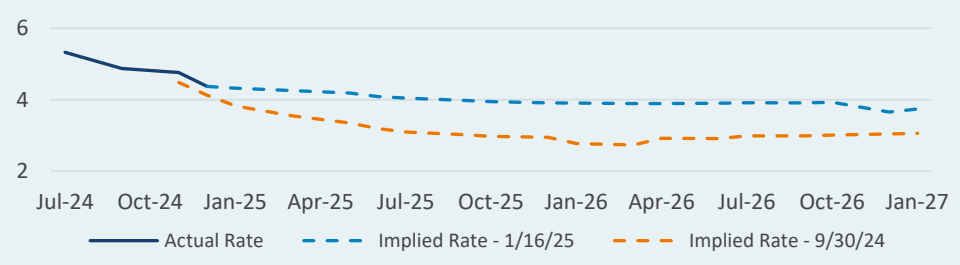
"Dollar hits one-year high as Trump clinches election victory"

ICE U.S. Dollar Index

July 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24
104.1	101.7	100.8	104.0	105.7	108.5

Article Source: Bloomberg, November 6th, 2024

U.S. MARKET IMPLIED FUTURE INTEREST RATES



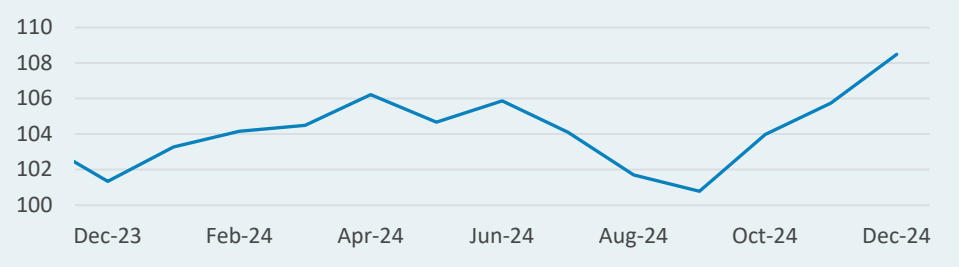
Source: CME Group, as of 1/16/25

PCE INFLATION, YEAR-OVER-YEAR



Source: BEA, as of 11/30/24

ICE U.S. DOLLAR INDEX



Source: ICE, as of 12/31/24

Economic environment

U.S. economics summary

— In early November, U.S. election results were announced, confirming the election of Donald Trump and a unified government as Republicans took the House and Senate. Household surveys and market movements suggest that the coming years may be characterized by easier business conditions, firmer economic growth, fewer interest rate cuts, and perhaps mildly higher inflation.

— Real GDP growth slowed during Q4, from 3.1% to 2.3% quarter-over-quarter annualized (2.5% year-over-year), but remained fairly robust. Economic growth continues to be supported largely by consumer purchases, with increases in government spending also providing notable support. Investment fell and was the largest drag on the economy.

— The Federal Reserve cut interest rates once in November and again in December—each time by a quarter point. This brought the Fed's target rate from 4.75-5.00% down to 4.25-4.50%.

— U.S. inflation drifted upward during Q4, from 2.4% YoY in September to 2.9% in December. Core inflation (ex-food & energy) was fairly stable at 3.2%. Investors now expect the Fed to cut rates once or twice over the next full year. Further increases in the rate of inflation could potentially push the Federal Reserve towards a rate hike—an outcome that would likely spook markets.

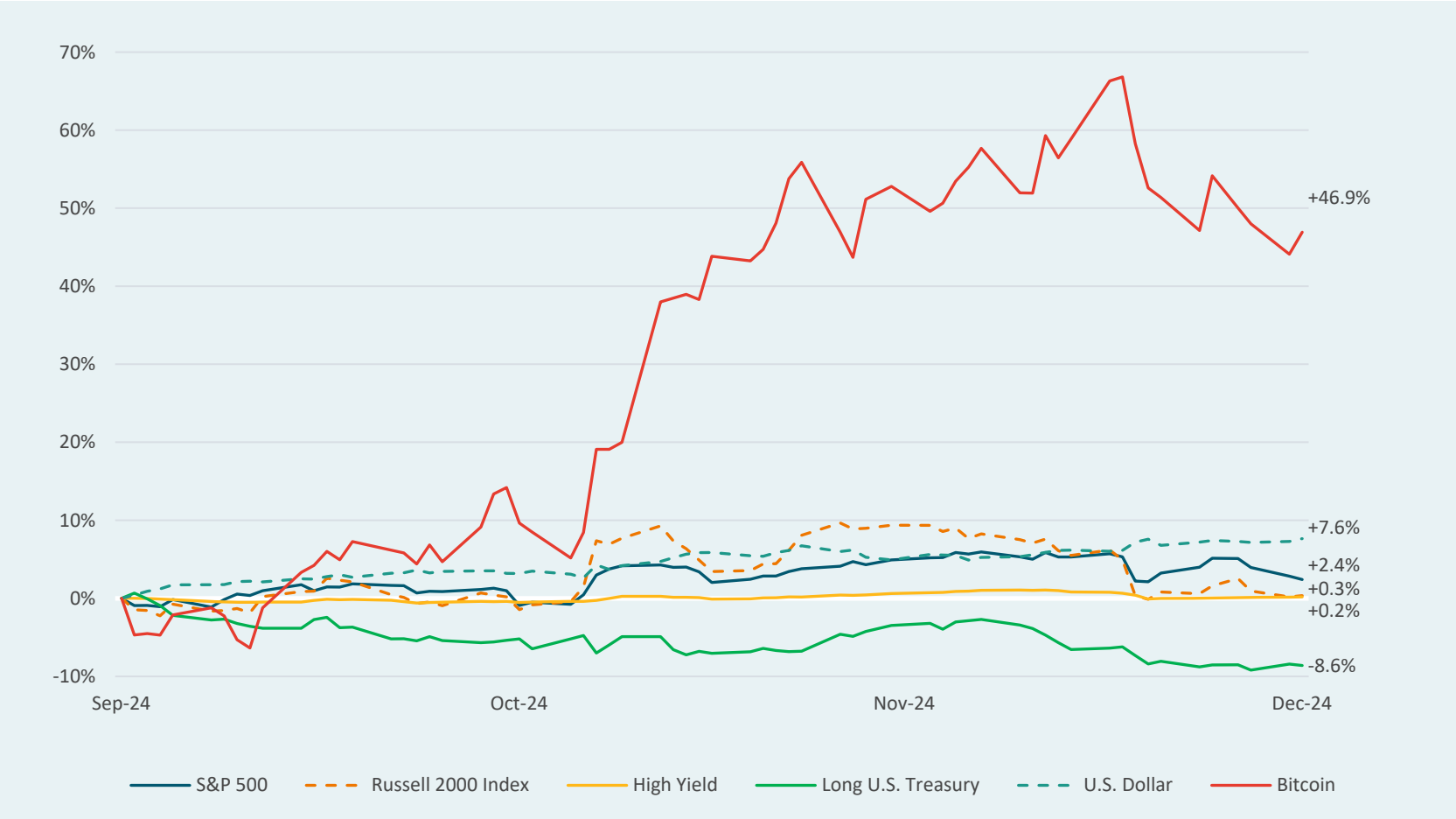
— The labor market was broadly stable during the quarter. Unemployment remained at 4.1%, while the labor participation rate moved slightly lower. December nonfarm payrolls exceeded expectations, coming in at 256,000, which was 91,000 higher than forecast. Moderate, but stable, labor conditions further eased fears that the rise in unemployment of late-2023 might have indicated a trend towards recession.

— Consumer sentiment has improved materially since the results of the U.S. election became known. In November, small business optimism showed the largest monthly jump since 1980. Significant improvements in sentiment should bode well for household and business spending in the near-term.

	Most Recent	12 Months Prior
Real GDP *(YoY)*	2.5% *12/31/24*	3.2% *12/31/23*
Inflation *(CPI YoY, Core)*	3.2% *12/31/24*	3.3% *12/31/23*
Expected Inflation *(5yr-5yr forward)*	2.3% *12/31/24*	2.5% *12/31/23*
Fed Funds Target Range	4.25–4.50% *12/31/24*	5.25–5.50% *12/31/23*
10-Year Rate	4.55% *12/31/24*	3.88% *12/31/23*
U-3 Unemployment	4.1% *12/31/24*	3.7% *12/31/23*
U-6 Unemployment	7.5% *12/31/24*	7.1% *12/31/23*

Examining notable movements of Q4

Conditions shifted in Q4, fueled by economic surprises & U.S. election results



Source: S&P, FTSE Russell, Bloomberg, ICE, as of 12/31/24

Inflation

U.S. inflation (CPI) drifted upward during the quarter, from 2.4% year-over-year in September to 2.9% in December. Meanwhile, core inflation (excluding food & energy) was fairly stable year-over-year, at 3.2% in December. Investors now expect the Fed to cut rates perhaps once or twice over the next year, but the outcome, as always, will depend on the strength of the labor market and the trend of inflation. Further inflation pressures could potentially push the Federal Reserve towards a rate hike—an outcome that would likely spook markets. This is certainly not our expectation, but it is a risk worth watching.

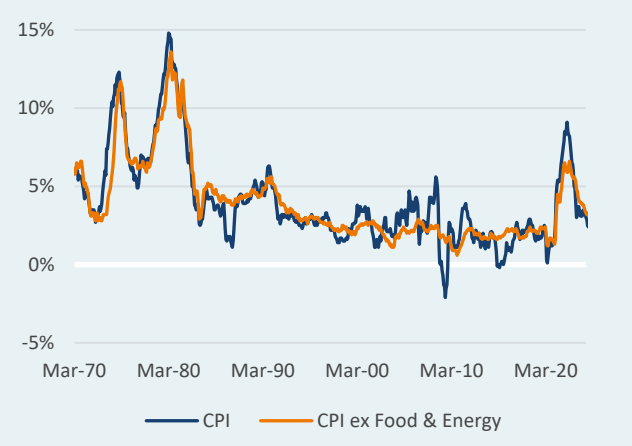
In prior quarters we discussed topics such as deflationary trends in certain goods and services prices, as well as the gradual decline of inflation (albeit slow) towards the Fed's 2% target. Based on recent gains in consumer sentiment and very large gains in business sentiment, as well as positivity around the business and economic effects of a second Trump presidency, we are not as optimistic that inflation will move materially lower from this point. Instead, inflation appears to have stabilized around 3%, with more risks to the upside than to the downside.

Investors will likely remain focused intently on monthly economic data and how the Federal Reserve reacts to data surprises. Also, the *good news is bad news* market dynamics may continue, as strong economic data reduces the chance of rate cuts and therefore may be interpreted negatively.

Certain goods & services prices have been softening, but other areas have been rising at a concerning pace

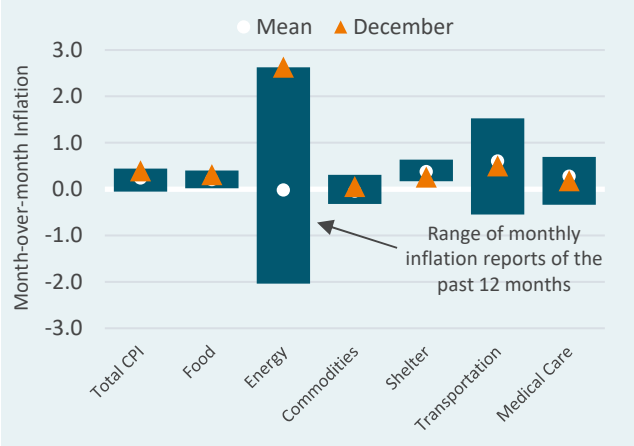
Energy prices fueled a hot December figure

U.S. CPI (YOY)



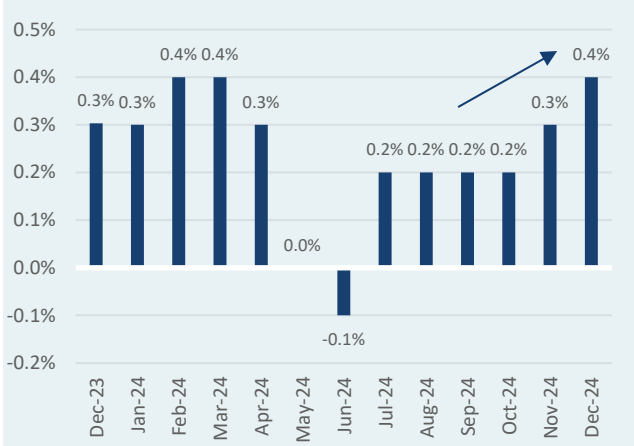
Source: BLS, as of 12/31/24

DECEMBER INFLATION REPORT



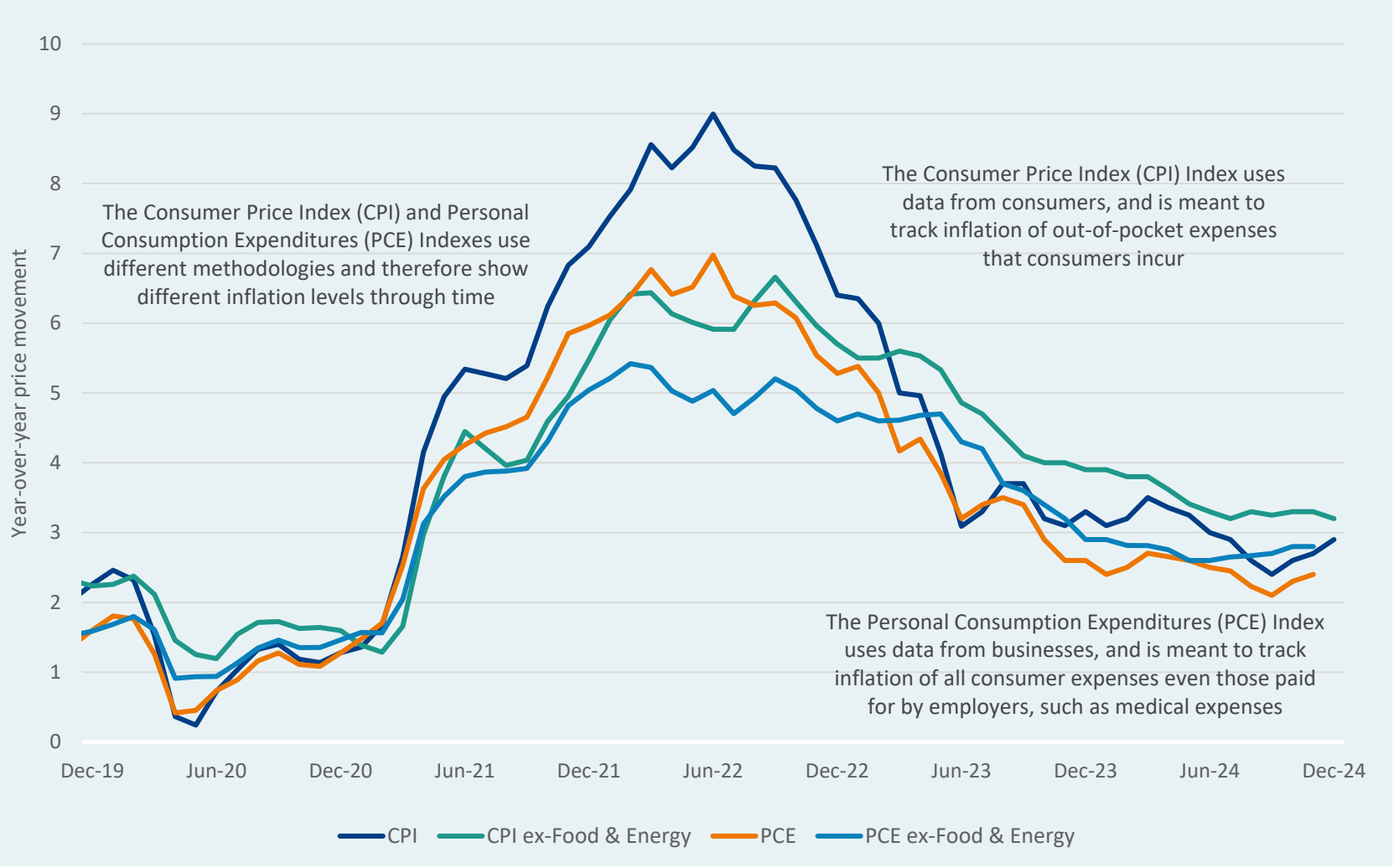
Source: BLS, Verus, of 12/31/24. Commodities exclude food and energy

MONTHLY PRICE MOVEMENT (CPI)



Source: BLS, as of 12/31/24

Inflation stabilizing above Fed's target



The rate of inflation appears to be stabilizing *above* the Fed's target of 2%

A surprisingly strong economy and ongoing price pressures have led investors to expect fewer interest rate cuts in 2025

Source: FRED, Verus, as of 12/31/24 – or most recent release

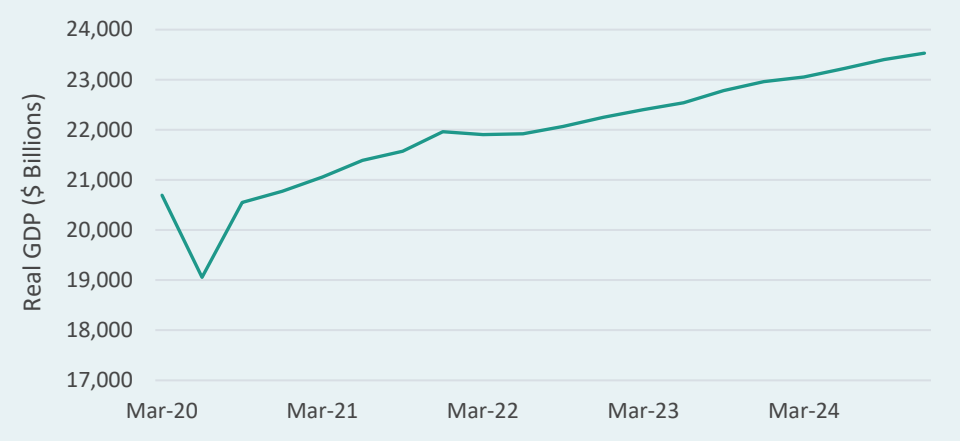
GDP growth

Real GDP growth slowed during Q4, from 3.1% to 2.3% quarter-over-quarter annualized (2.5% year-over-year), but remained fairly robust. Economic growth continues to be supported largely by consumer spending, with increases in government expenditures also providing notable support. Investment fell, and was the largest drag on the economy, followed by fewer imports. Spending gains were broad across goods and services—increases in healthcare spending acted as the largest change. Goods spending was boosted most notably by recreational goods and vehicles. The acceleration of government expenditures was fueled by employee compensation increases.

Economists and investors expect U.S. economic growth to slow during 2025, reflecting more modest consumer spending as households face higher costs and lower savings rates. The U.S. economy is likely headed towards a more moderate growth phase after many quarters of surprisingly hot growth and spending. Unlike past periods of economic weakening, many trends today could reasonably be summarized as a return to normalcy. For example, following the pandemic, the domestic labor market was experiencing a historic mismatch between the number of jobs available and the number of workers available. Resolving that mismatch required a material weakening of the labor market from extreme tightness to relatively strong, but not a move towards something that suggests recession.

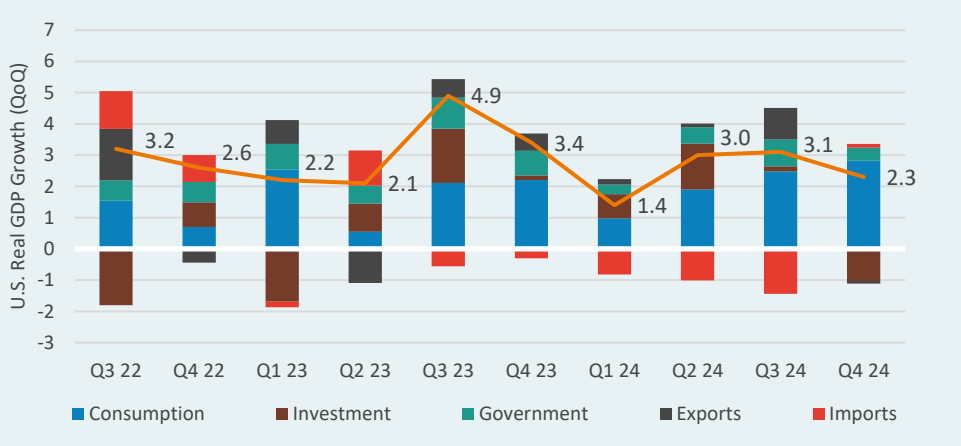
U.S. real GDP growth slowed during Q4, reflecting strong consumer spending but lower levels of private investment

U.S. REAL GROSS DOMESTIC PRODUCT



Source: FRED, as of 12/31/24

U.S. REAL GDP COMPONENTS (QOQ)

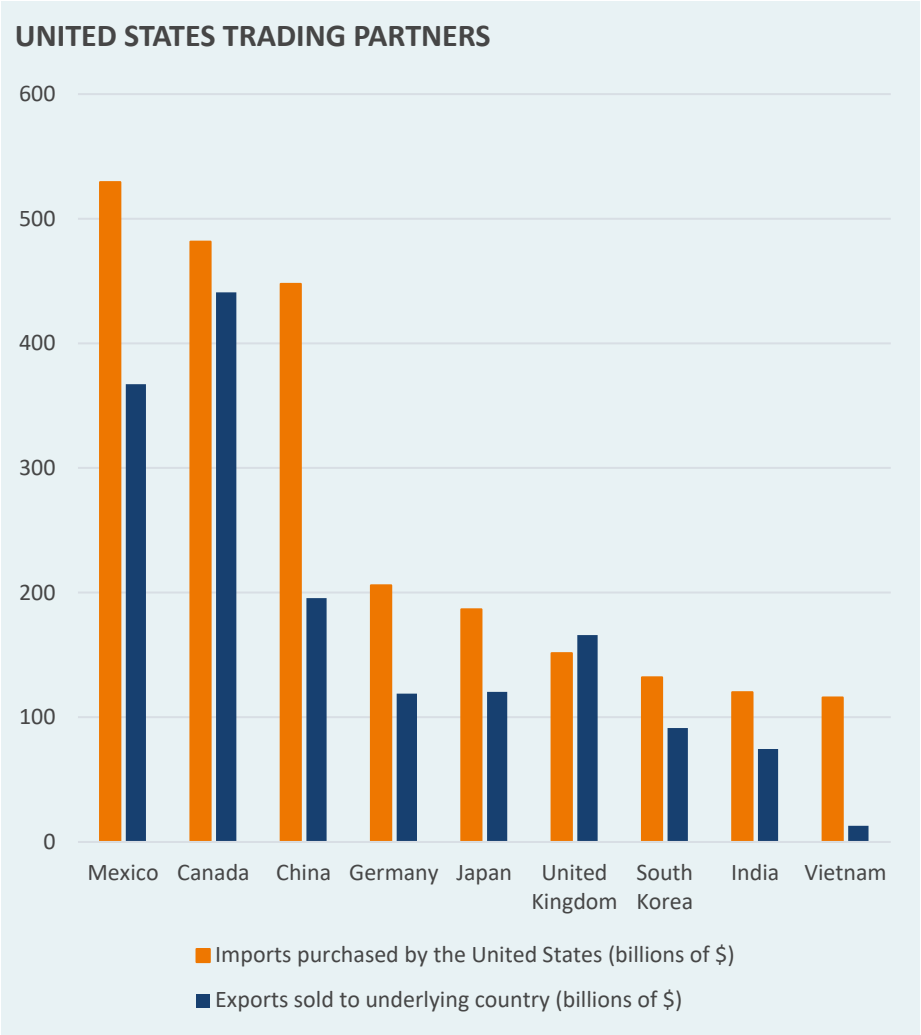


Source: FRED, as of 12/31/24

Trade negotiations: possible areas of focus

Since the re-election of Donald Trump, the topic of U.S. trade has been thrusted back into the spotlight. While the President has publicly threatened large, across-the-board tariffs, lessons learned from the first Trump Administration suggest this may be a negotiation tactic. It is more likely that tariffs will be used tactically, without broad and large increases as some investors fear.

Here we provide an overview of the United States' largest trading partners, through two lenses: the total amount of goods and services that the U.S. purchases from each of our largest trading partners, and the total amount of goods and services that these trading partners purchase from the United States. The countries that sell a significant amount of goods and services to the U.S., but do not purchase nearly as much, may become targets for trade negotiation in the near future.



Source: Bureau of Economic Analysis, as of 2023

Countries which sell a significant amount of goods and services to the U.S., but do not purchase nearly as much, may become targets for trade negotiation

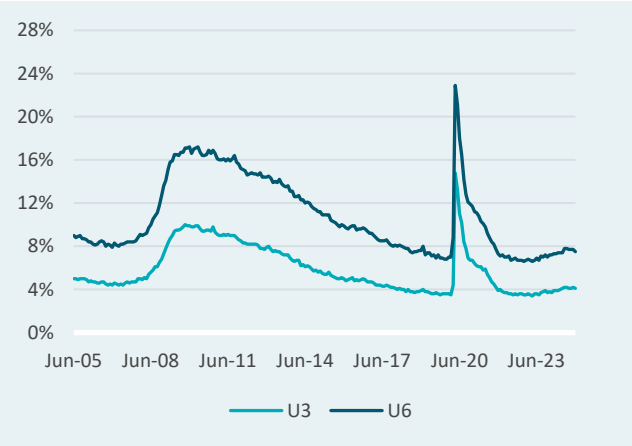
Labor market

The labor market was broadly stable during the quarter. Unemployment remained at 4.1%, while the labor participation rate moved slightly from 62.7% to 62.5%. Labor data surprised to the upside in December with nonfarm payrolls exceeding expectations, coming in at 256,000, which was 91,000 higher than expectations for 165,000. Layoffs have been moving higher and are now back to pre-pandemic levels. Moderate, but stable, labor conditions have further eased fears that the rise in unemployment of late-2023 might have indicated a trend towards recession.

In recent editions of this document, we have explained that immigration, and specifically the difficulties of quantifying unlawful immigration, have made certain labor statistics very difficult to interpret. Determining between a weak or strong job market, or whether the market is trending towards slack or tightness, requires data that is accurate and granular in nature. Relatively small changes in the size, or changes in trend, of the labor market can have real impacts on wage levels, the strength of the economy, and spending, for example. With the new administration coming into office, and many changes to border enforcement and overall immigration policy likely forthcoming, it will be important to closely monitor how these changes incrementally impact the size, trend, and nature of the U.S. job market.

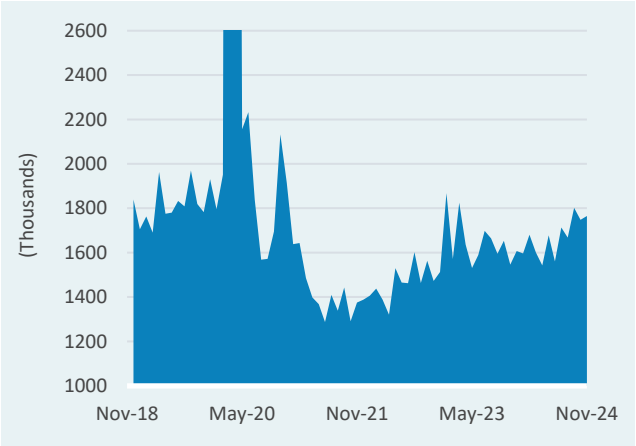
The job market appears to have shifted from *extremely tight* to *fairly balanced*, and is now showing greater stability

U.S. UNEMPLOYMENT



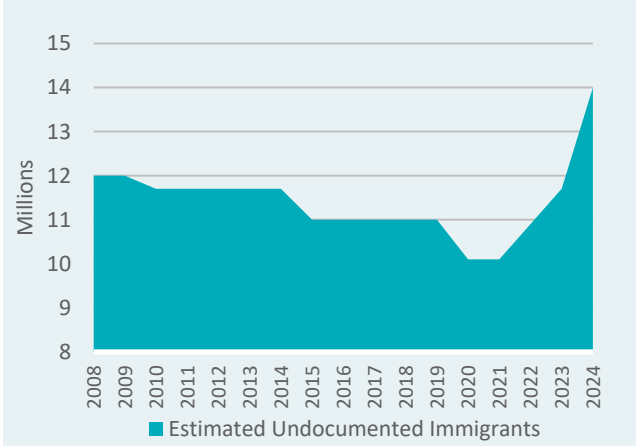
Source: FRED, as of 12/31/24

LAYOFFS



Source: FRED, as of 11/30/24

U.S. UNDOCUMENTED IMMIGRANTS



Source: Center for Immigration Studies

The consumer

Inflation adjusted personal spending growth was 2.9% year-over-year in November, remaining in a robust range. It is expected that consumer spending will slow in 2025, leading to a more moderate pace of overall economic growth.

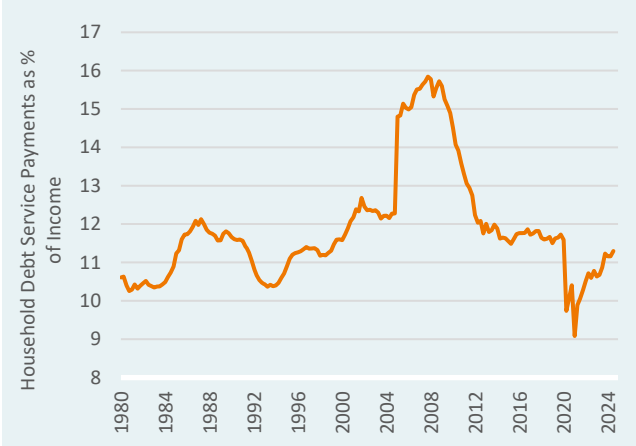
The average cost of household debt payments has been rising in recent years, moving towards pre-pandemic levels. A helpful way to gauge the average household *debt burden* is to examine average monthly debt payments as a percentage of average monthly disposable income. This metric shows an important aspect of rising interest rate environments—higher interest rates gradually feed through to household costs over time, rather than all at once. This is due to fixed rate borrowing—most Americans who own a home or a car, for example, are not as impacted by higher interest rates for those items until they purchase a new home or purchase a new car and are then exposed to higher rates. As time goes by, more households must eventually make large purchases and therefore must borrow at higher rates. As this occurs, the higher costs of debt continues to eat into budgets. This hurts economic growth, as households must either reduce overall spending, or save less money—as observed recently. We expect that, although the economy is strong, this effect will act as an incremental drag on spending for years to come.

REAL PERSONAL SPENDING



Source: FRED, as of 11/30/24

HOUSEHOLD DEBT PAYMENTS AS % OF DISPOSABLE INCOME



Source: FRED, as of 12/31/24

PERSONAL SAVINGS RATE



Source: FRED, as of 11/30/24

Sentiment

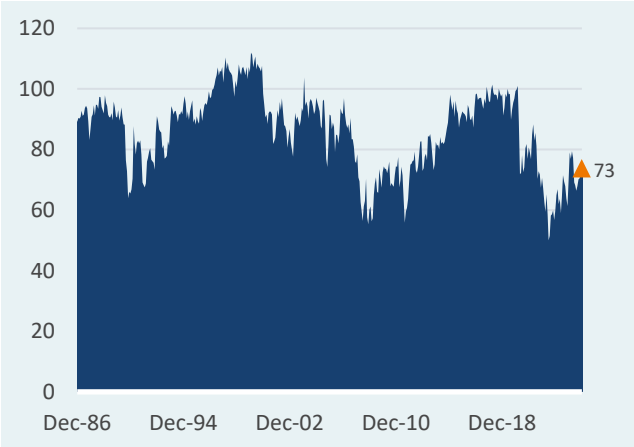
Consumer sentiment has improved materially since the results of the U.S. election became known. In November with small business optimism showing the largest monthly jump since 1980. Significant improvements in sentiment should bode well for household and business spending in the near-term.

According to the University of Michigan Consumer Sentiment survey, households expressed more optimism around the economy in December. Year-ahead inflation expectations changed, rising substantially to 3.3%, while long-run inflation expectations were more stable. We suspect ongoing news coverage and fear around tariffs has impacted expectations.

Throughout 2022, small business optimism had declined as companies grappled with high materials prices and labor shortages. Optimism remained very poor in the following years, until November showed the largest single-month increase in sentiment since 1980. As explained by NFIB Chief Economist Bill Dunkelberg, "Main Street also became more certain about future business conditions following the election, breaking a nearly three-year streak of record high uncertainty. Owners are particularly hopeful for tax and regulation policies that favor strong economic growth as well as relief from inflationary pressures."

Consumer sentiment improved in Q4, while small business sentiment showed the largest monthly gain since 1980

CONSUMER SENTIMENT (UNIV. OF MICHIGAN)



Source: University of Michigan, as of 12/31/24

CONSUMER CONFIDENCE (CONFERENCE BOARD)



Source: Conference Board, as of 12/31/24

NFIB SMALL BUSINESS SENTIMENT



Source: NFIB, as of 12/31/24

Housing

The average 30-year mortgage rate jumped materially during the quarter, from 6.1% to 6.9%, alongside broader rises across the yield curve. Meanwhile, home prices have increased 3.4% year-over-year as of October, according to CoreLogic. These conditions have led to sustained extreme difficulties in affordability for many Americans. However, some aspects of the market have moved in a more favorable direction, such as total housing inventory, at 953,000 in November, closer to the level of 1,143,000 in November 2019 (pre-pandemic). Inventory reached a low of 346,000 in February 2022. The *average days on the market* of homes for sale has also risen to 62 days in November, which compares to 67 days in November 2019—suggesting that more power resides with homebuyers. This metric reached a low of 30 in April 2022. Overall, it appears that the market will likely remain incredibly expensive, but perhaps with a more normal supply/demand balance. If inventory continues increasing and homes sit longer on the market, this may pressure sellers to reduce prices in the future in order to incentivize buyers who have more inventory to choose from.

While home purchase affordability remains dire, the average cost of rent continues to fall nationwide. According to Redfin, in November rent costs were down -0.7% year-over-year and rents are now back to March 2022 levels. Substantial increases in multifamily supply have reportedly contributed to downward rent pressure, with the median asking rent price falling to $1.79 per square foot for the first time since November 2021.

30-YEAR MORTGAGE RATE (%)



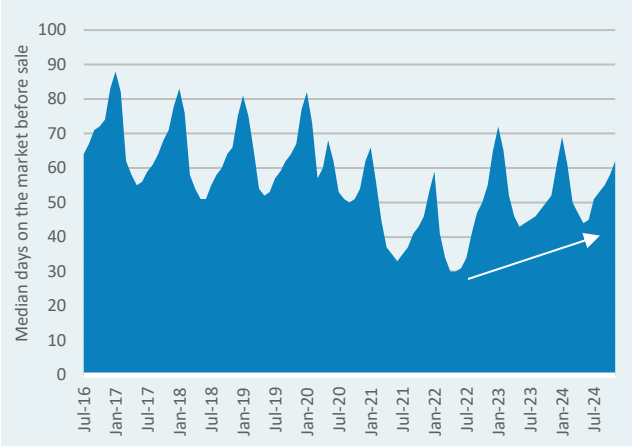
Source: Freddie Mac, as of 12/31/24

EXISTING HOME SALES



Source: National Association of Realtors, as of 11/30/24

AVERAGE DAYS ON THE MARKET



Source: FRED, as of 11/30/24

International economics summary

— The Eurozone grew only 0.9% YoY Q3. The region is also expected to show slow growth in 2025, with a +1.2% consensus estimate for the Euro Area. High energy prices have negatively impacted manufacturing and other business activities, while competition from China has also had dire impacts. Once the industrial heart of Europe, Germany's manufacturing sector faces an uncertain future.

— Inflation has moderated across most global economies, with the European Central Bank (ECB) rounding out the year with its fourth interest rate cut. The ECB has shown a shift in concern away from inflation and towards growth—removing official language regarding keeping rates "sufficiently restrictive." Economists now expect 4-5 rate cuts during 2025, to a rate level that is believed to be neutral to growth or slightly stimulative.

— After slipping into contractionary territory last quarter, the Japanese economy rebounded in Q3, delivering growth of +0.5%. This coincided with a slight uptick in inflation, now at 3%. Growth has been assisted by a weak Yen, which makes exports cheaper for other countries to purchase. Domestic consumer demand has also provided a tailwind for growth and led to expectations of a more normal interest rate environment, with the Bank of Japan now expected to increase interest rates to 0.50% by March.

— China was reportedly able to achieve the official GDP growth target in 2024, claiming growth of 5.4% year-over-year, though the economy still faces deep structural issues. China is heavily reliant on exports, which may be interrupted by U.S. tariffs in the case of a trade spat. Home prices continue to fall alongside oversupply and weaker economic conditions. Deflation fears are weighing on consumer spending. Alongside these near-term issues, a declining population poses a multitude of problems to the overall economy, spending, and the housing market.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	2.7% *9/30/24*	2.9% *12/31/24*	4.1% *12/31/24*
Eurozone	0.9% 9/30/24	2.4% *12/31/24*	6.3% *11/30/24*
Japan	0.5% 9/30/24	3.0% *12/31/24*	2.4% *11/30/24*
BRICS Nations	4.5% 9/30/24	2.1% *12/31/24*	5.2% *12/31/24*
Brazil	4.0% 9/30/24	4.8% *12/31/24*	6.1% *11/30/24*
Russia	3.1% 9/30/24	9.5% *12/31/24*	2.3% *11/30/24*
India	5.4% 9/30/24	5.2% *12/31/24*	7.1% *12/31/24*
China	5.4% *12/31/24*	0.1% *12/31/24*	5.1% *12/31/24*

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.

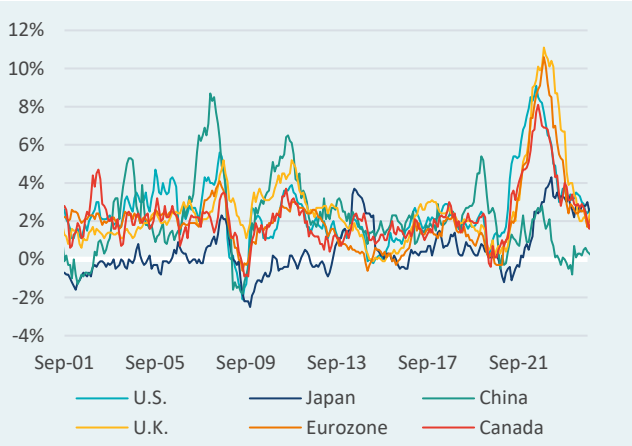
International economics

The Eurozone grew only 0.9% YoY Q3. The region is expected to show slow growth in 2025 of +1.2%. The ECB has communicated 4-5 rate cuts during the year, as low growth remains a concern, and the 2% inflation target has nearly been achieved. Although growth rates have ticked up slightly, strong headwinds remain. Many countries face high energy costs, greater competition from China, and deep side effects from a languishing Chinese economy. Europe's largest industrial power, Germany, has taken the brunt of these effects, with manufacturing activity contracting for many quarters.

The U.K. faces economic headwinds of its own, as tax increases introduced by the Labour Party, and uncertainty surrounding potential shifts in global trade due to a second Trump presidency, have made growth difficult for local companies. While inflation dropped in December to 2.5%, price growth remains at levels that are too high for comfort. Despite the threat of inflation, economists expect four rate cuts in 2025.

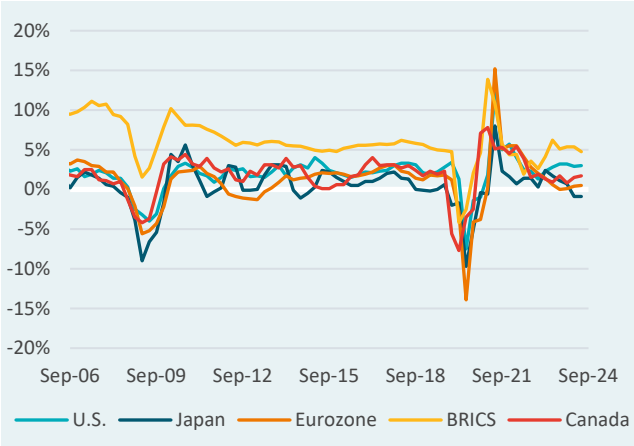
The Japanese economy has recently seen increasing costs, most notably in energy and food. An uptick in inflation following the pandemic and union wage negotiations led the Bank of Japan to reverse their negative interest rate policy in July, as they seek normalization and consistent growth. The BoJ is expected to hike interest rates to 0.5% in late January or March to the highest level in 17 years. Broad wage hikes were recently agreed upon between labor unions and employers, which were a prerequisite for the continued hiking of interest rates, which are expected to eventually reach 1%.

INFLATION (CPI YEAR-OVER-YEAR)



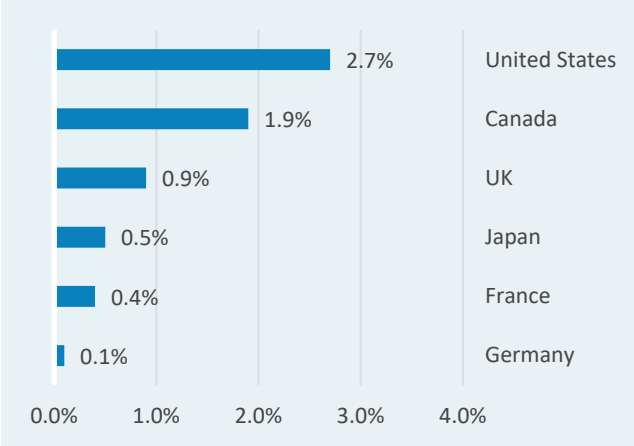
Source: BLS, Verus, as of 12/31/24

REAL GDP GROWTH (YEAR-OVER-YEAR)



Source: BLS, Verus, as of 9/30/24

Q3 REAL GDP GROWTH (YOY)



Source: BLS, Verus, as of Q3 2024

Fixed income rates & credit

Fixed income environment

— The Federal Reserve cut interest rates once in November and again in December—each time by a quarter point. This brought the target rate from 4.75-5.00% to 4.25-4.50%. Rate expectations for 2025 have shifted, as better economic growth expectations and firmer inflation will likely lead the Fed towards fewer rate cuts.

— The 10-year U.S. Treasury yield jumped from 3.79% to 4.55% during the quarter, amid growing evidence that the economy may remain hotter than expected, expectations around pro-growth policies of the Trump Administration, as well as the possibility that a tariff spat with trade partners could push inflation upwards.

— Most credit indices delivered negative to slightly positive returns, with rising interest rates impacting duration-sensitive assets. Bank loans, which are much less sensitive to rate movements, returned +2.3%. High yield delivered slightly positive returns of +0.2% while investment grade lost -2.7%.

— Credit spreads were broadly tighter, a reflection of continued strength in the U.S. corporate sector. Lower-quality high yield bond spreads fell by -30bps to 2.7%, while investment grade spreads tightened slightly to 0.8%. Credit spreads across all ratings remain well below long-term historical averages, suggesting investors are confident in the ability of businesses to service debt.

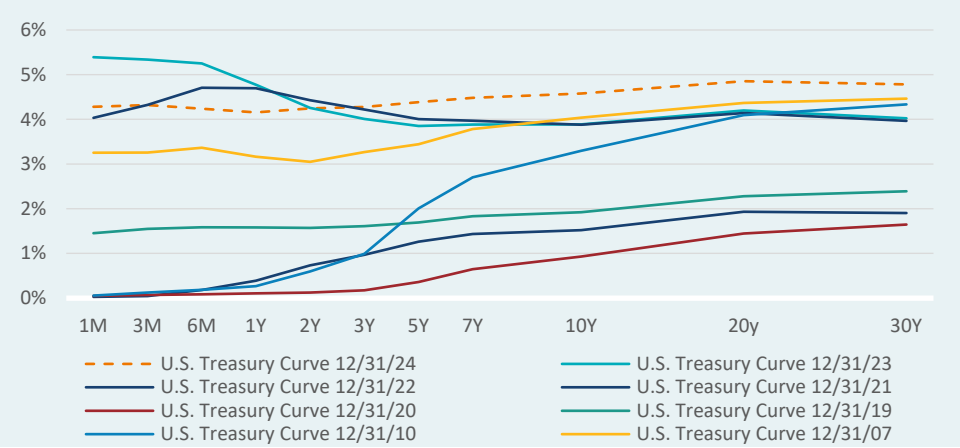
— High yield default activity remained low, falling to 1.1%—down from 2.6% one-year prior. This compares to the long-term annual average of 3.4%. However, distressed exchange activity, particularly among LMEs, has continued to expand. Total distressed credit volume reached $19.4 billion in Q4, far surpassing the previous quarter of $13.5 billion. The level of Q4 was the second largest quarterly total on record since Q4 2008, with Q3 of 2024 being the third highest total on record.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	(3.1%)	1.3%
Core Plus Fixed Income (Bloomberg U.S. Universal)	(2.7%)	2.0%
U.S. Treasuries (Bloomberg U.S. Treasury)	(3.1%)	0.6%
U.S. Treasuries: Long (Bloomberg U.S. Treasury 20+)	(9.4%)	(8.0%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	0.2%	8.2%
Bank Loans (S&P/LSTA Leveraged Loan)	2.3%	9.0%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	(7.0%)	(2.4%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	(1.9%)	6.5%
Mortgage-Backed Securities (Bloomberg MBS)	(3.2%)	1.2%

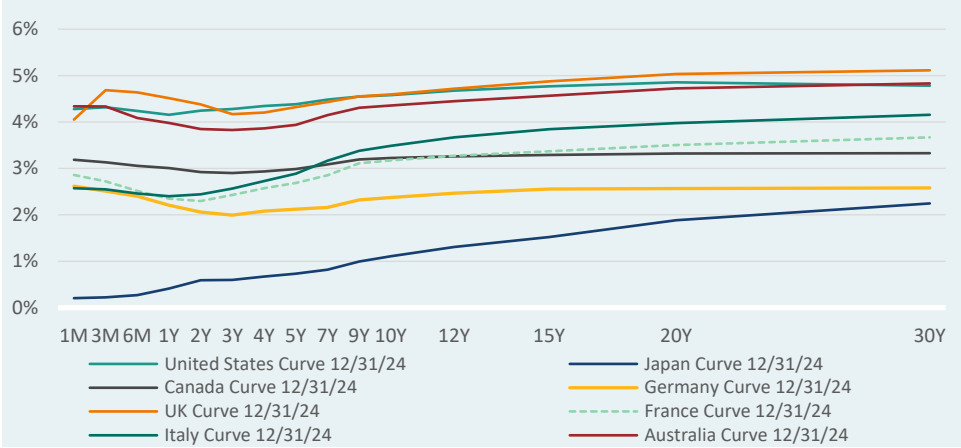
Source: Standard & Poor's, J.P. Morgan, Bloomberg, as of 12/31/24

Yield environment

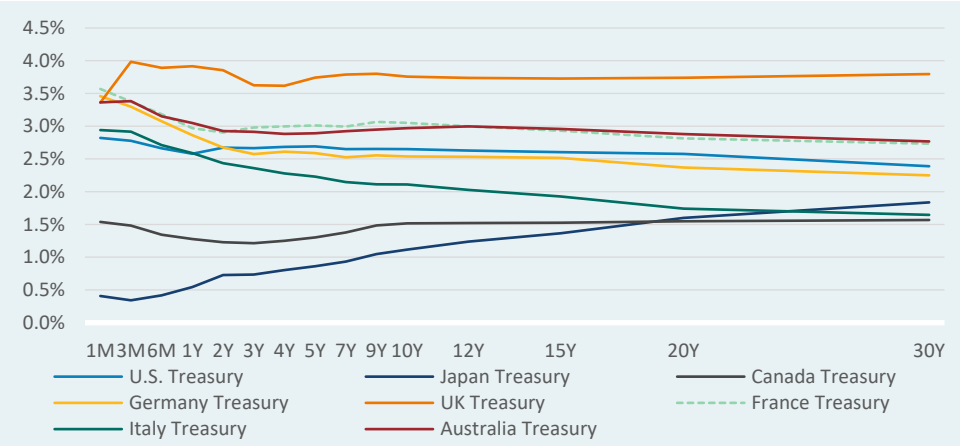
U.S. YIELD CURVE



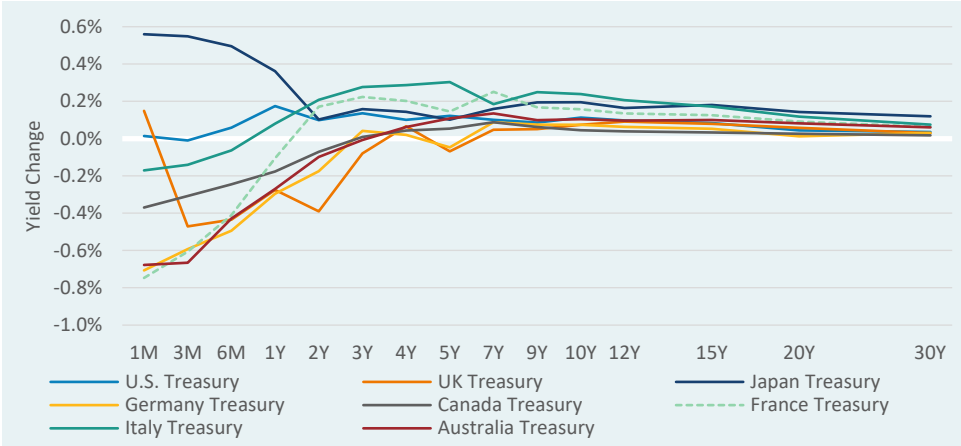
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/24

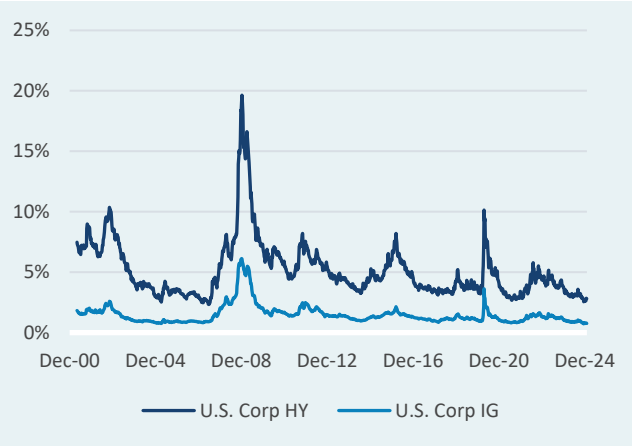
Credit environment

During the fourth quarter, longer duration credit underperformed shorter duration despite a 50bps rate cut by the Federal Reserve. Stronger economic growth expectations, sticky inflation, and a general repricing of the future Federal Funds Rate path, contributed to a rapid rise in the long end of the yield curve. Long duration investment grade corporate bonds (Bloomberg U.S. Long Corporate Credit) lost -6.3%. Bank loans added +2.3% (CS Leveraged Loans) while high yield returned +0.2% (Bloomberg U.S. Corporate High Yield).

Returns within the high yield bond market were mixed, with lower quality credits experiencing the best performance. Bonds rated CCC, which include distressed credit, returned +2.5%, compared to non-distressed CCC-rated bonds which gained only +1.6%. Bonds rated B produced slightly positive returns of +0.3%, while BB-rated bonds lost -0.5% over the same period. Similarly, lower quality bank loans outperformed higher quality. CCC-rated loans returned +2.7%, compared to +2.6% and +2.1% for B- and BB-rated loans, respectively.

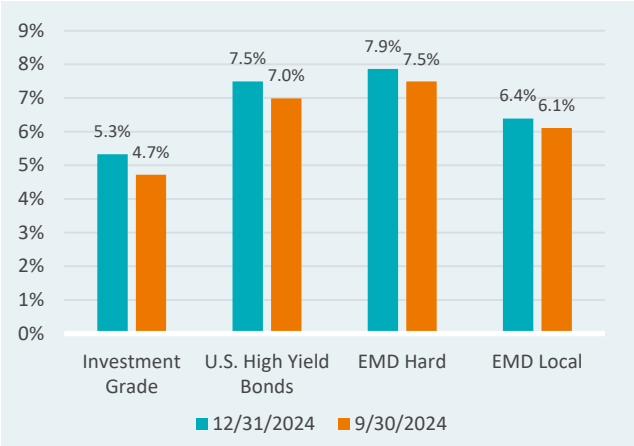
Credit spreads were broadly tighter, a reflection of continued strength in the U.S. corporate sector. Lower-quality high yield bond spreads fell by -30bps, to 2.7%, while investment grade spreads tightened slightly to 0.8%. Credit spreads across all ratings remain well below long-term historical averages, suggesting investors are confident in the ability of businesses to service debt.

SPREADS



Source: Barclays, Bloomberg, as of 12/31/24

YIELD TO MATURITY



Source: Bloomberg, J.P. Morgan as of 12/31/24

CREDIT SPREAD (OAS)

Market	12/31/24	12/31/23
Long U.S. Corp	1.0%	1.2%
U.S. Inv Grade Corp	0.8%	1.0%
U.S. High Yield	2.7%	3.2%
U.S. Bank Loans*	4.5%	5.0%

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/24
**Discount margin (4-year life)*

Default & issuance

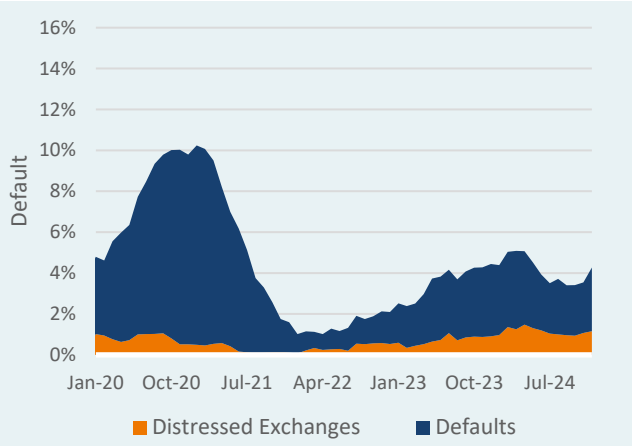
Default activity remained low during Q4, as economic data was strong and trends overall suggested a lower chance of near-term recession. During the period, $27.9 billion of bank loans and high yield bonds were affected by default or distressed exchanges, well over double the $11.0 billion in the prior quarter. Year-to-date, 38 companies defaulted, totaling more than $4.8 billion in bonds and $23.8 billion in loans.

While defaults have remained subdued, distressed exchange activity has increased rapidly. During the quarter, total distressed credit volume was roughly $19.4 billion, surpassing the $13.5 billion pace in Q2. This marked the second largest quarterly total on record since Q4 2008. However, the year-to-date combination of defaults and distressed exchanges of $83.6 billion was still 3% less than the total of 2023.

High yield bond default rates continued their decline, falling to 1.1%, down from 2.6% one year ago. The current figures remain well below the long-term annual average of 3.4%. Recovery rates hit record lows in Q4, but ended the quarter at 24.8%, depressed relative to earlier quarters and 32.8% experienced during 2023.

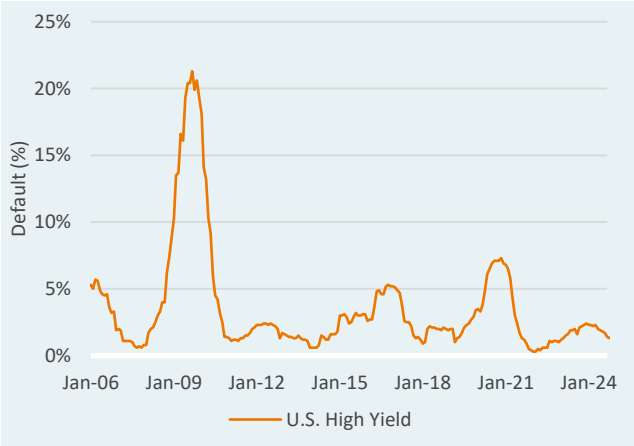
New issuance volume for high yield bonds was lower for the quarter, totaling $49 billion, compared to $74 billion in Q3. Bank loans saw record levels of issuance, reaching a record $515 billion, up from $204 billion. A further reduction in lending rates and credit spreads likely acted as a catalyst for higher issuance in bank loans as companies are able to issue and refinance their debt at more competitive rates.

U.S. BANK LOAN DEFAULTS (LAST 12 MONTHS)



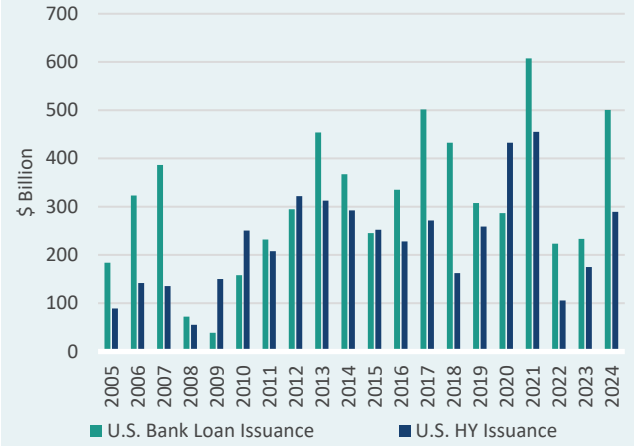
Source: BofA Merrill Lynch, Verus, as of 12/31/24 – par weighted

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



Source: BofA Merrill Lynch, as of 12/31/24 – par weighted

U.S. ISSUANCE ($ BILLIONS)



Source: BofA Merrill Lynch, as of 12/31/24

Equity

Equity environment

— Global equities were mixed during Q4. Emerging markets (MSCI EM -8.0%) and international developed (MSCI EAFE -8.1%) delivered poor returns to U.S. investors with unhedged currency exposure, though most of those losses were driven by currency movement. During 2024, large currency moves created a wide gap between U.S. and non-U.S. returns. For example, currency hedged Japanese equities slightly outperformed U.S. (S&P 500 +25.0%, TOPIX +25.8%) but returned only +8.0% on an unhedged basis

— Expectations for interest rate cuts lessened after economic strength and stubborn inflation led the Fed to emphasize that they would not budge on their 2% inflation target. The *higher for longer* interest rate narrative likely contributed to U.S. dollar strength during the quarter.

— S&P 500 earnings growth is expected to be +11.9% for Q4, which would mark the highest growth rate of the past three years. Financials (+39.5%) led the way, followed by Communication Services (+20.7%), while Energy (-24.6%) was a drag on the index.

— Small cap and value both continued to underperform. Small cap trailed large cap by -2.4% (Russell 2000 +0.3% vs. Russell 1000 +2.7%) in Q4, while growth outperformed value by +9.1% (Russell 1000 Growth +7.1% vs. Russell 1000 Value -2.0%). This capped off a year of poor performance for both of these size and style factors, underperforming by -13% and -19%, respectively.

— Market-priced volatility (Cboe VIX Index) was stable during Q4, beginning the quarter at 16.7% and ending at 17.4%. While the level of volatility has been far less than what was experienced during the spike in August, a few bouts of volatility occurred throughout the quarter.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	2.4%		25.0%	
U.S. Small Cap (Russell 2000)	0.3%		11.5%	
U.S. Equity (Russell 3000)	2.6%		23.8%	
U.S. Large Value (Russell 1000 Value)	(2.0%)		14.4%	
U.S. Large Growth (Russell 1000 Growth)	7.1%		33.4%	
Global Equity (MSCI ACWI)	(1.0%)	1.4%	17.5%	21.0%
International Large (MSCI EAFE)	(8.1%)	0.1%	3.8%	14.1%
Eurozone (EURO STOXX 50)	(8.9%)	(1.4%)	4.1%	12.9%
U.K. (FTSE 100)	(6.8%)	(0.1%)	7.7%	9.9%
Japan (TOPIX)	5.4%	6.7%	8.0%	25.8%
Emerging Markets (MSCI Emerging Markets)	(8.0%)	(4.3%)	7.5%	13.3%

Source: Standard & Poor's, FTSE, MSCI, STOXX, JPX, as of 12/31/24

Domestic equity

U.S. equities outperformed both international and emerging markets, with the S&P 500 ending Q4 up +2.4%. The market rallied in early November following the re-election of President Trump, which seems to have provided an animal spirits boost to sentiment, with markets pricing in firmer growth, a bit higher inflation, and elevated interest rates. Later in December, comments from Fed Chair Jerome Powell led markets to expect fewer rate cuts in 2025, which was received poorly by investors.

Earnings came in above expectations. The S&P 500 delivered year-over-year earnings growth of +5.9% in Q3, greater than the +4.2% growth that was expected going into the quarter. Growth expectations are very bullish for the final quarter of the year, with the S&P 500 forecast to deliver growth of +11.9%. Financials (+39.5%) are expected to deliver the highest growth, with expectations also lofty for Communication Services (+20.7%) and Information Technology (+12.9%).

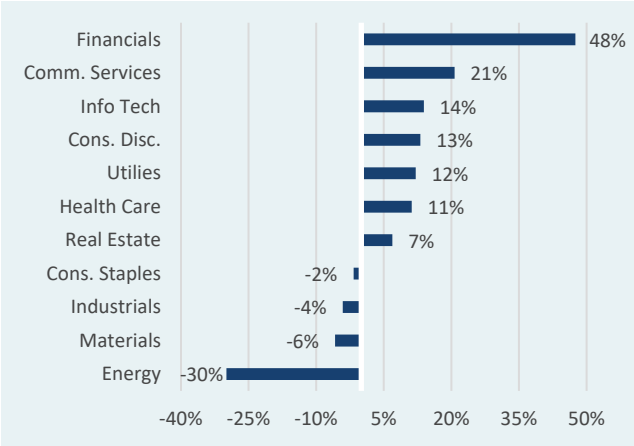
While valuations have been rising throughout the year, they remained at a consistent level over the course of Q4. On top of elevated valuations, U.S. equities are expected to deliver strong earnings growth of 14.8% and 13.6% in 2025 and 2026, respectively. If the U.S. market fails to achieve these estimates, it would place further upward pressure on valuation levels.

S&P 500 PRICE INDEX



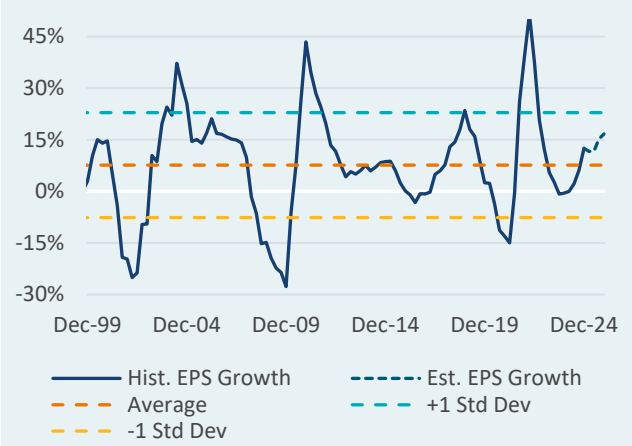
Source: Standard &Poor's, as of 12/31/24

S&P 500 BLENDED EPS GROWTH (YOY)



Source: Factset, as of 12/31/24

S&P 500 EPS GROWTH (YEAR-OVER-YEAR)



Source: Factset, Verus, as of 1/17/25

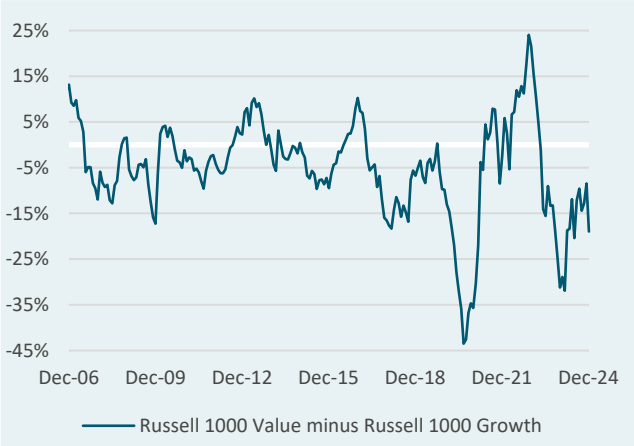
Domestic equity size & style

Small cap and value both continued to underperform. Small cap trailed large cap by -2.4% (Russell 2000 +0.3% vs. Russell 1000 +2.7%) in Q4, while growth outperformed value by +9.1% (Russell 1000 Growth +7.1% vs. Russell 1000 Value -2.0%). This capped off a year of poor performance for both of those size and style factors, underperforming by -13% and -19%, respectively.

The Magnificent 7 stocks delivered an exceptional +67.3% during 2024, substantially outperforming the index. However, recent years have shown investors that mega-cap growth stocks can both act as a big boost to overall index returns or lead the index lower with large losses. The Magnificent 7 stocks delivered 21.7% earnings growth year-over-year in Q4, while the rest of the index reported 9.7% growth, per FactSet. But forecasts are for Magnificent 7 earnings growth to begin to converge with the broader index during 2025 (20.3% year-over-year in Q4 2025 relative to 15.4% overall for the index). If these stocks begin to stand out less from the rest of the S&P 500 in terms of growth, performance may become less differentiated, which could have a notable impact on size and style factor performance.

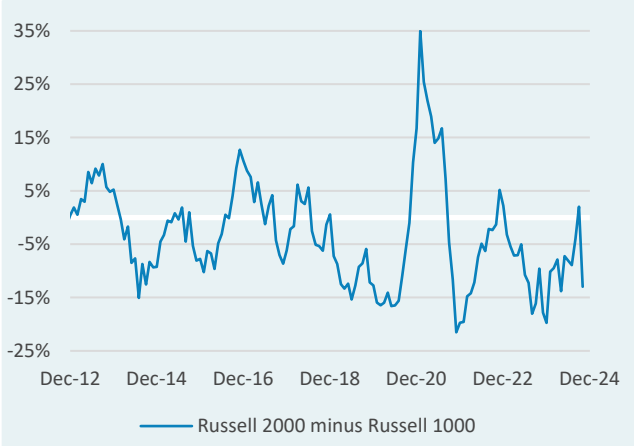
Small cap & value lagged in Q4, lagging in 2024 by -13% and -19%, respectively

VALUE VS. GROWTH 1-YR ROLLING RELATIVE PERFORMANCE



Source: FTSE, as of 12/31/24

SMALL VS. LARGE 1-YR ROLLING RELATIVE PERFORMANCE



Source: FTSE Russell, as of 12/31/24

1-YEAR SIZE & STYLE PERFORMANCE

	Value	Core	Growth
Large Cap	14.4%	24.5%	33.4%
Mid Cap	13.1%	15.3%	22.1%
Small Cap	8.1%	11.5%	15.2%

Source: FTSE Russell, as of 12/31/24

International developed equity

International developed shares (MSCI EAFE -8.1%) underperformed both the U.S. market (S&P 500 +2.4%) and emerging market equities (MSCI EM -8.0%). Most of this underperformance was due to currency movements rather than equity market behavior. On a hedged basis, international developed markets delivered slightly positive returns (+0.1%), with currency contributing losses of -8.2%.

European equities performed very poorly over the course of the quarter, falling -9.7% (MSCI Europe, -2.4% on a hedged basis), and acting as a drag on the overall index. European economies face turmoil due to political instability and a fairly bleak macroeconomic picture. Europe's largest economy, Germany, experienced a second consecutive year of contracting growth. Germany faces high energy costs, weak global demand for its exports, and risks that its automobile manufacturers are left behind as electric vehicle competition heats up from Chinese and American manufacturers. In early December, the French government fell apart after Prime Minister Michel Barnier was ousted in a no-confidence vote. This followed Mr. Barnier's controversial move to use special powers to force through his budget without a vote.

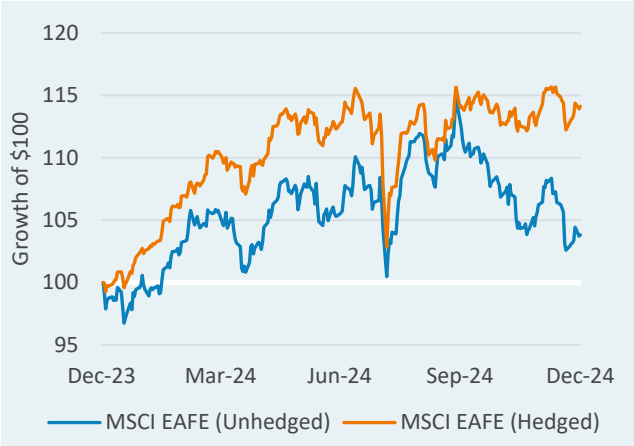
Currency moves also played a major role during the past year. Domestic investors without a currency hedging program lost -10.3% from currency volatility regarding their international equities (MSCI EAFE). The impact from unhedged Japanese asset exposure was particularly extreme—investors without a currency hedging program lost -17.8% from currency moves over the past year (TOPIX Index).

INTERNATIONAL DEVELOPED EQUITY



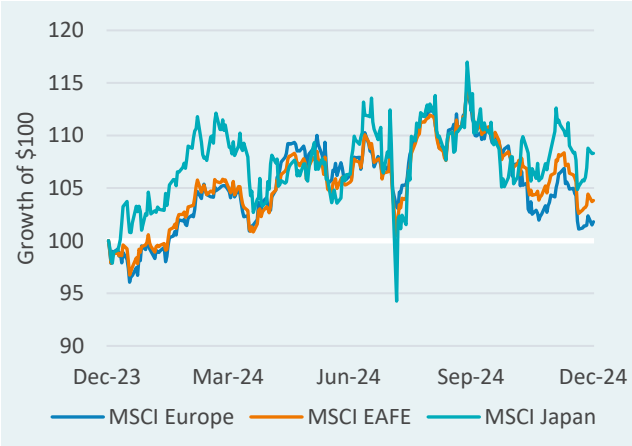
Source: MSCI, as of 12/31/24

MSCI EAFE HEDGED VS UNHEDGED



Source: MSCI, as of 12/31/24

REGIONAL RETURNS OF INTL. DEVELOPED



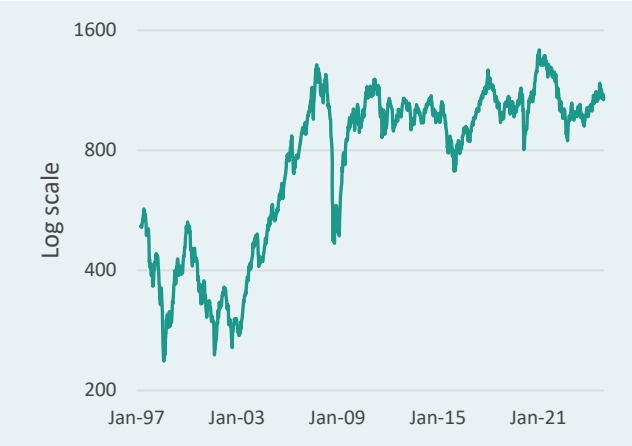
Source: MSCI, as of 12/31/24

Emerging market equity

Emerging market equities (MSCI EM -8.0%) underperformed U.S. markets (S&P 500 +2.4%) during the quarter, and narrowly outperformed international developed equities (MSCI EAFE -8.1%). While not as drastic as seen across international developed equities, currency movements were also a drag on performance, with the hedged index returning -4.3%.

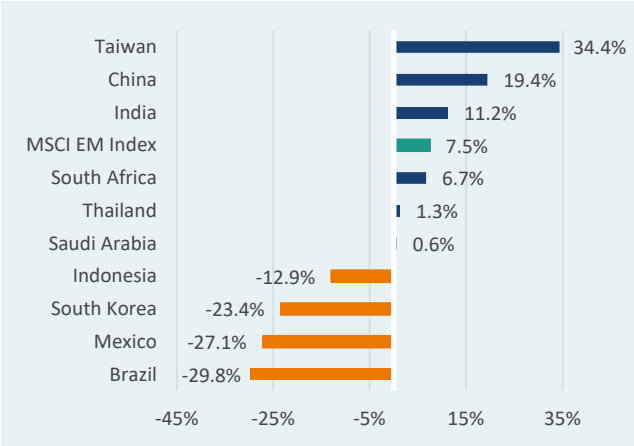
During 2024, Chinese equities clawed back some of the losses of prior years, gaining +19.4% (MSCI China) relative to the broader index return of +7.5%. The Chinese Communist Party (CCP) has struggled to instill confidence in its citizens to look past China's various structural problems, and to have faith in the country's economic future and therefore to spend more freely. A severe drop in residential property prices has had a large impact on confidence, as the average citizen has most of their wealth and retirement savings in home equity. Much of that wealth has disappeared. Investors continue to wait for some sort of aggressive policy response or stimulus from the CCP. In September, major government announcements were made regarding market and economic stimulus, which sent the MSCI China Index up nearly +50%. However, the finer details of those plans were seen as lackluster by investors, and index prices had headed back down towards prior levels.

EMERGING MARKET EQUITY



Source: MSCI, as of 12/31/24

MSCI EM 2024 COUNTRY RETURNS (USD)



Source: MSCI, J.P. Morgan, as of 12/31/24

CHINA'S RALLY HAS PARTIALLY REVERSED



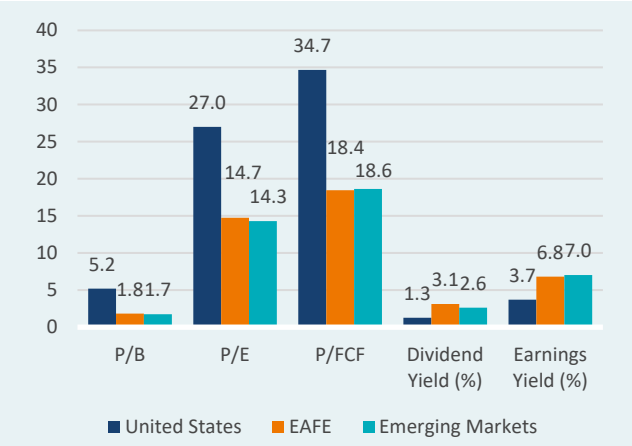
Source: MSCI, as of 12/31/24

Equity valuations

Domestic equity valuations remained very elevated but were unchanged in Q4. A moderate return of +2.4%, combined with slightly higher expected earnings over the next 12 months, led the S&P 500 to continue to trade at a forward price-to-earnings of 22 during the quarter.

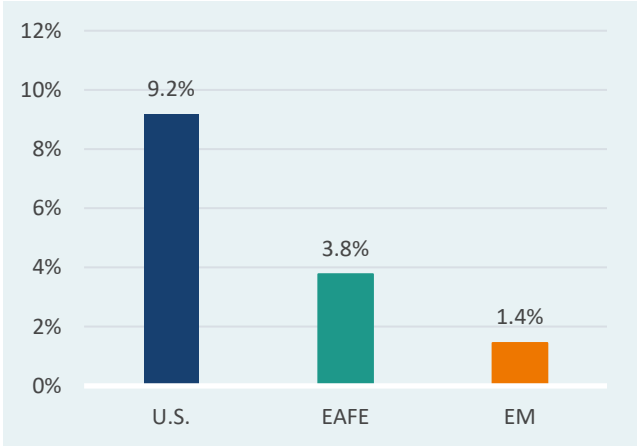
A historically wide gap between U.S. equity valuations and international equity valuations has drawn much attention in recent years. Domestic equities (S&P 500) trade at a 60% premium to international developed equity (MSCI EAFE Index) on a forward price-to-earnings bases, as of the end of the quarter. At first glance this may suggest that international equities provide a particularly attractive opportunity for investors. However, these markets, specifically in Europe, face relatively sluggish growth—much of this due to China's structural problems and economic slowdown. Europe has also faced a fairly severe lack of business innovation and entrepreneurialism—much of that driven by weak venture capital funding activity—lagging the U.S. in terms of earnings growth and new business formation. Additionally, changes in marketplace characteristics within the U.S. index help describe some of the valuation "gap", with a greater proportion of the index being comprised of high growth companies that tend to command higher valuation multiples.

MSCI VALUATION METRICS (3-MONTH AVG)



Source: MSCI, Verus, as of 12/31/24 – trailing P/E

FORWARD P/E PERCENTAGE CHANGE IN 2024



Source: MSCI, Verus, as of 12/31/24

S&P 500 HISTORICAL DIVIDEND YIELD



Source: Standard & Poor's, Verus, as of 12/31/24

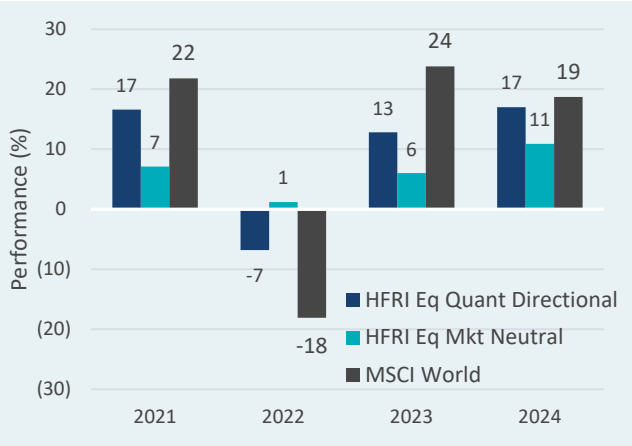
Quant equity hedge funds outperform

Quantitative equity hedge funds in 2024 had their best year in at least 20 years, as measured by the HFRI Equity Market Neutral and Quantitative Directional indices. Equity Market Neutral returned 10.9% and Quantitative Directional gained 17.0%, the highest annual returns for each since 2000 and 2003, respectively.

These strategies have outpaced their fundamental peers in the last few years while keeping up with global equity indices over the same time. We think this quantitative outperformance and the success of Equity Market Neutral funds are related, as both strategies typically use similar techniques such as statistical arbitrage or factor investing.

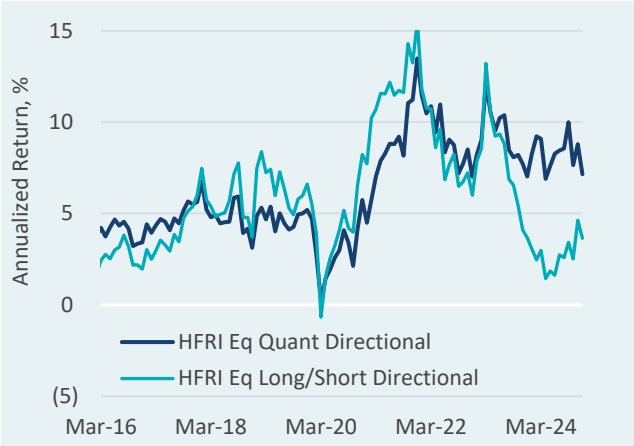
One of the market factors that may be contributing to quantitative strategies' success is the increase in single stock dispersion, which measures the variance in index constituent returns vs. the overall index. Higher dispersion, along with lower intra-stock correlation, theoretically should support strong potential returns for quant programs, which typically hold large numbers of stocks and take a relative value approach.

CALENDAR YEAR RETURNS (%)



Source: MPI, Morningstar, MSCI, HFR

3-YEAR ROLLING RETURN



Source: HFR, MPI, as of 12/31/24

AVERAGE IMPLIED STOCK DISPERSION – S&P 500



Source: S&P DowJones, CBOE S&P 500 Dispersion Index (DSPX)

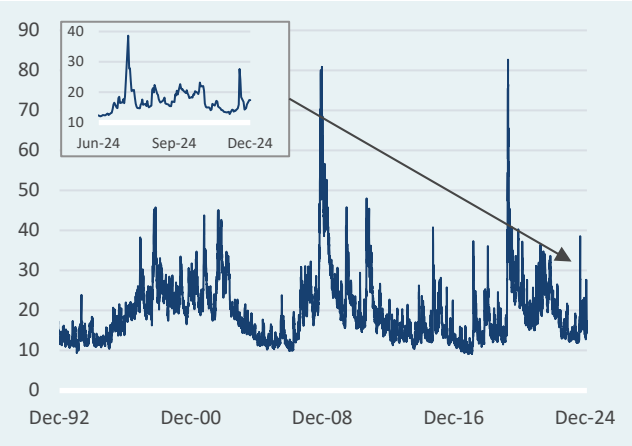
Market volatility

Market-priced volatility (Cboe VIX Index) rose slightly during Q4, beginning the quarter at 16.7% and ending at 17.4%. While the level of volatility was much less than what was experienced during the historic spike in August, a few bouts of volatility did occur throughout the quarter. Implied volatility was above average in the immediate lead-up to the presidential election, reaching 23.4%, while settling back down to below 17% after the results were known. Market volatility increased to its highest level of the quarter in mid-December, after Fed Chair Jerome Powell reiterated the Fed's 2% inflation target, which led markets to expect fewer interest rate cuts.

Implied bond market volatility continued to moderate, following the record highs that were experienced during the recent U.S. inflation scare. However, volatility levels remain materially above the longer-term average. We suspect that volatility will continue to be elevated as investors remain fixated on Federal Reserve actions and communications.

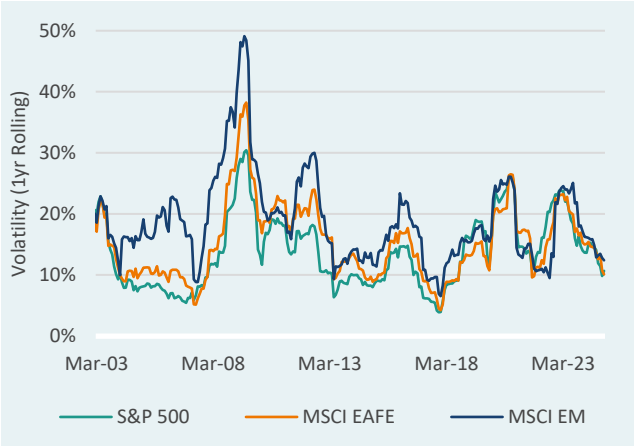
Recent realized one-year volatility drifted further lower, alongside positive equity performance and some easing of fears around recession or an inflation resurgence.

U.S. IMPLIED VOLATILITY (VIX)



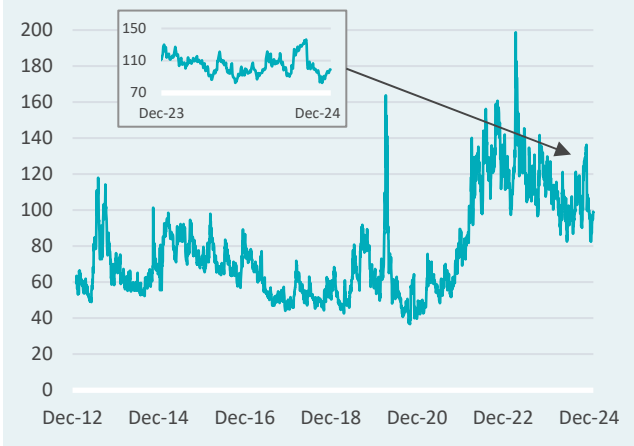
Source: Cboe, as of 12/31/24

REALIZED VOLATILITY



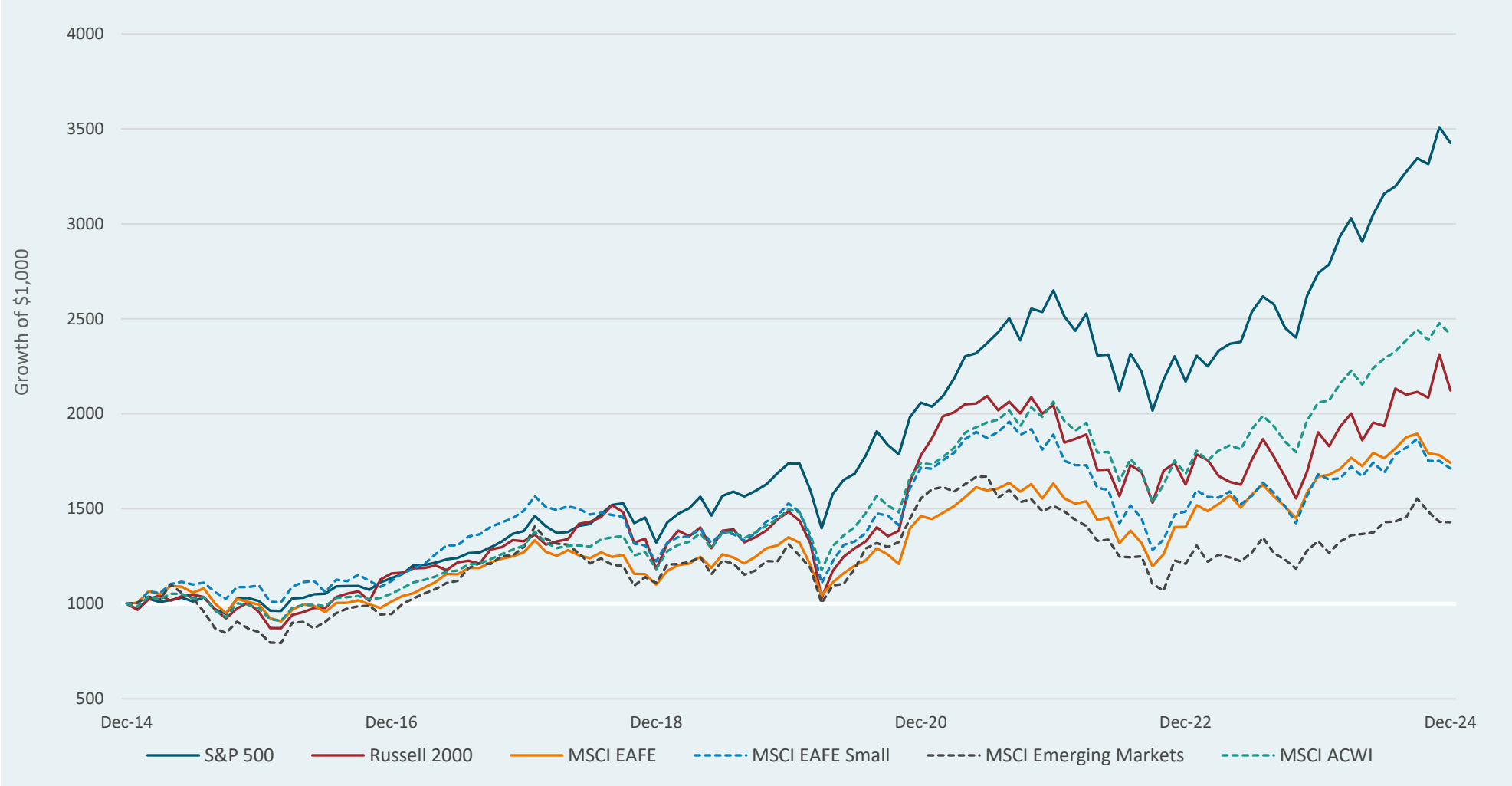
Source: Standard & Poor's, MSCI, Verus, as of 12/31/24

U.S. TREASURY IMPLIED VOL ("MOVE" INDEX)



Source: BofA, as of 12/31/24

Long-term equity performance



Source: Standard & Poor's, FTSE, MSCI, Verus, as of 12/31/24

Other assets

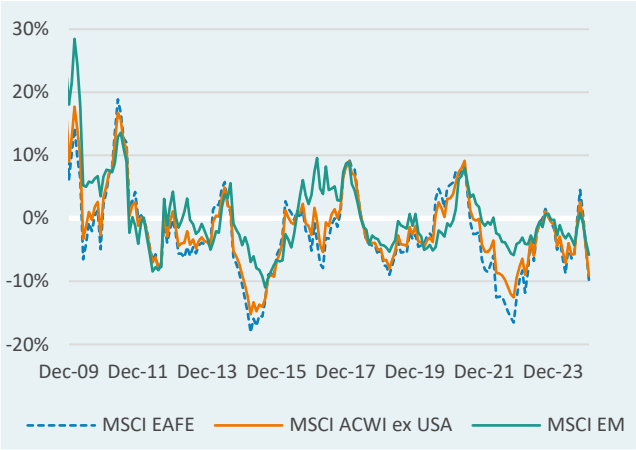
Currency

The U.S. dollar gained sharply in value during Q4—the DXY Index rising from 100.8 to 108.5. Strong economic data and evidence of sticky inflation led investors to reassess the number of upcoming Fed rate cuts and helped push up bond yields. Next, ongoing weak economic data in many international markets, as well as central bank rate cuts, created a bleaker outlook for foreign currency strength. Lastly, the U.S. election resulted in a rerating of expectations around the potential strength of the economy and led to some fears of higher inflation, which contributed to higher interest rates (lifting the U.S. dollar).

Dollar strength resulted in losses for investors with unhedged foreign asset exposure. Those without a currency hedging program lost -8.2% from international equities (MSCI EAFE) during Q4, and -10.3% over the past year. The impact from unhedged Japanese asset exposure was particularly extreme. Investors without a currency hedging program lost -1.3% during the quarter from currency movements, and -17.8% over the past year (TOPIX Index).

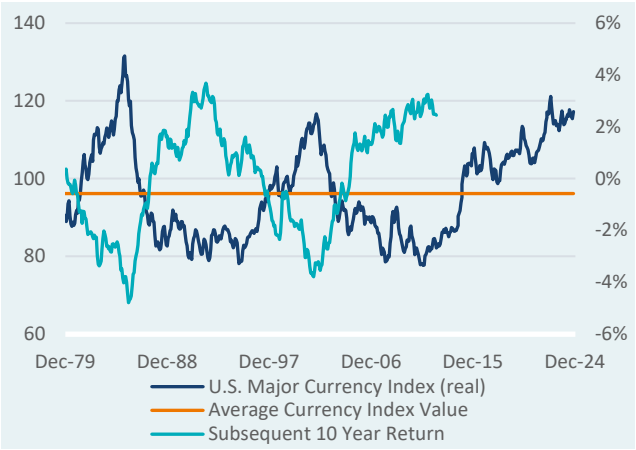
A more thoughtful portfolio approach to currency exposure has provided lower portfolio volatility and higher returns—a rare proposition. This approach involves reducing the uncompensated risk of unhedged foreign currency exposure, and instead of unhedged exposure, making a passive investment in the currency market by investing in currencies with higher interest rates, undervalued currencies, and currencies showing positive price momentum. This approach, represented by the MSCI Currency Factor Mix Index, has offered a positive one-year rolling return over most periods with far lower volatility than an unhedged approach. The past year of intense currency volatility is testament to this approach.

EFFECT OF CURRENCY (1-YEAR ROLLING)



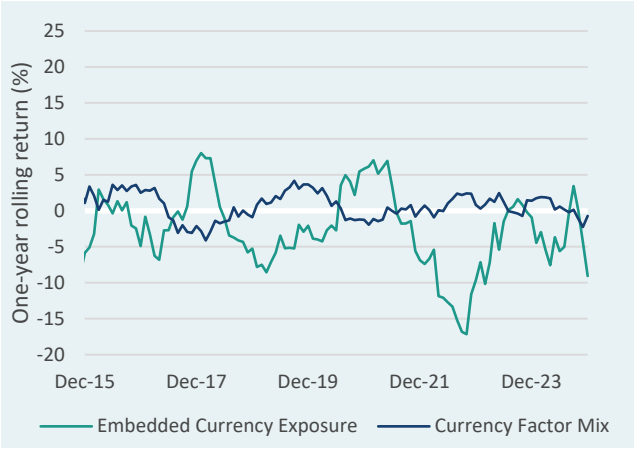
Source: MSCI, Verus, as of 12/31/24

U.S. DOLLAR MAJOR CURRENCY INDEX



Source: FRED, Verus, as of 12/31/24

EMBEDDED CURRENCY VS CURRENCY FACTORS



Source: MSCI, Verus, as of 12/31/24 "Embedded Currency Exposure" is the currency return impact from not hedging currency risk

Appendix

Periodic table of returns

BEST

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	YTD	5-Year	10-Year
Large Cap Growth	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	33.4	19.0	16.8
Large Cap Equity	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	24.5	14.3	12.9
Large Cap Value	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	15.2	8.7	8.5
Small Cap Growth	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	14.4	7.4	8.1
Emerging Markets Equity	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	11.5	7.3	7.8
Small Cap Equity	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	9.9	6.9	7.1
60/40 Global Portfolio	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	9.5	6.8	5.9
Small Cap Value	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	8.1	5.4	5.7
International Equity	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	7.5	5.4	5.2
Hedge Funds of Funds	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	5.4	4.7	3.9
Cash	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	5.3	3.3	3.6
Commodities	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	3.8	2.4	1.7
US Bonds	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	-7.9	1.3	1.7	1.3
Real Estate	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	-0.5	-0.3	1.3

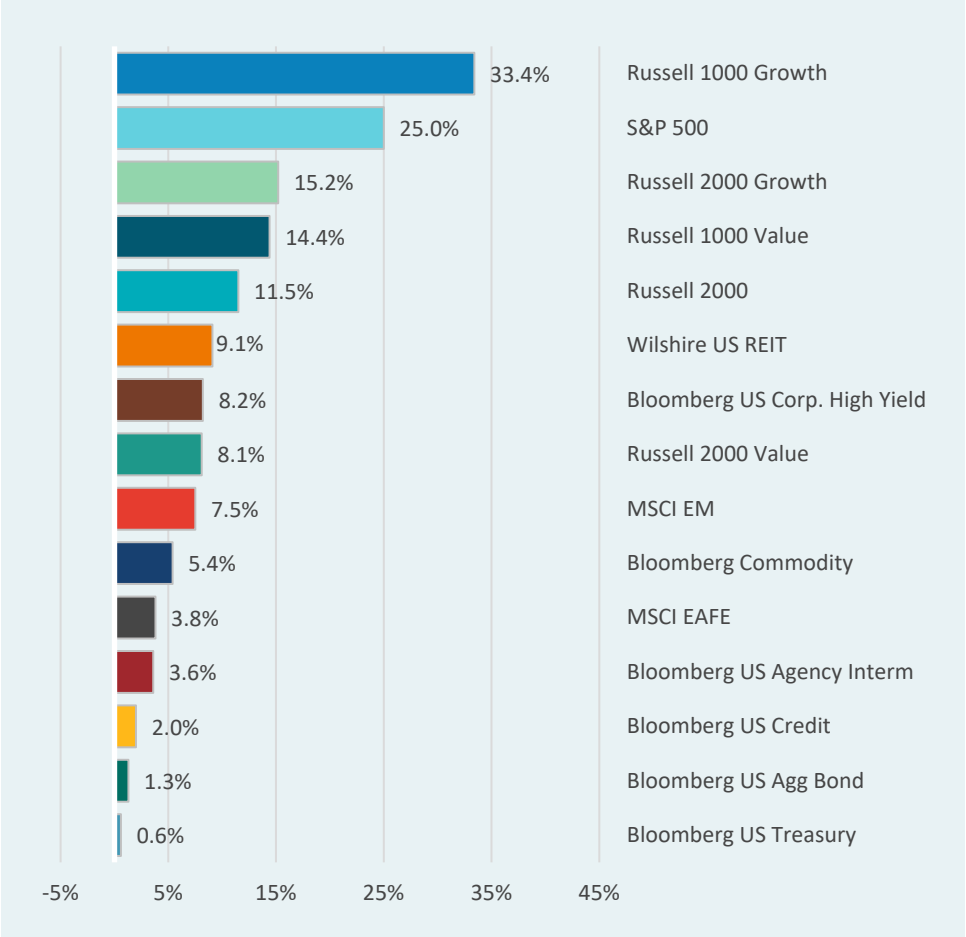
WORST

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

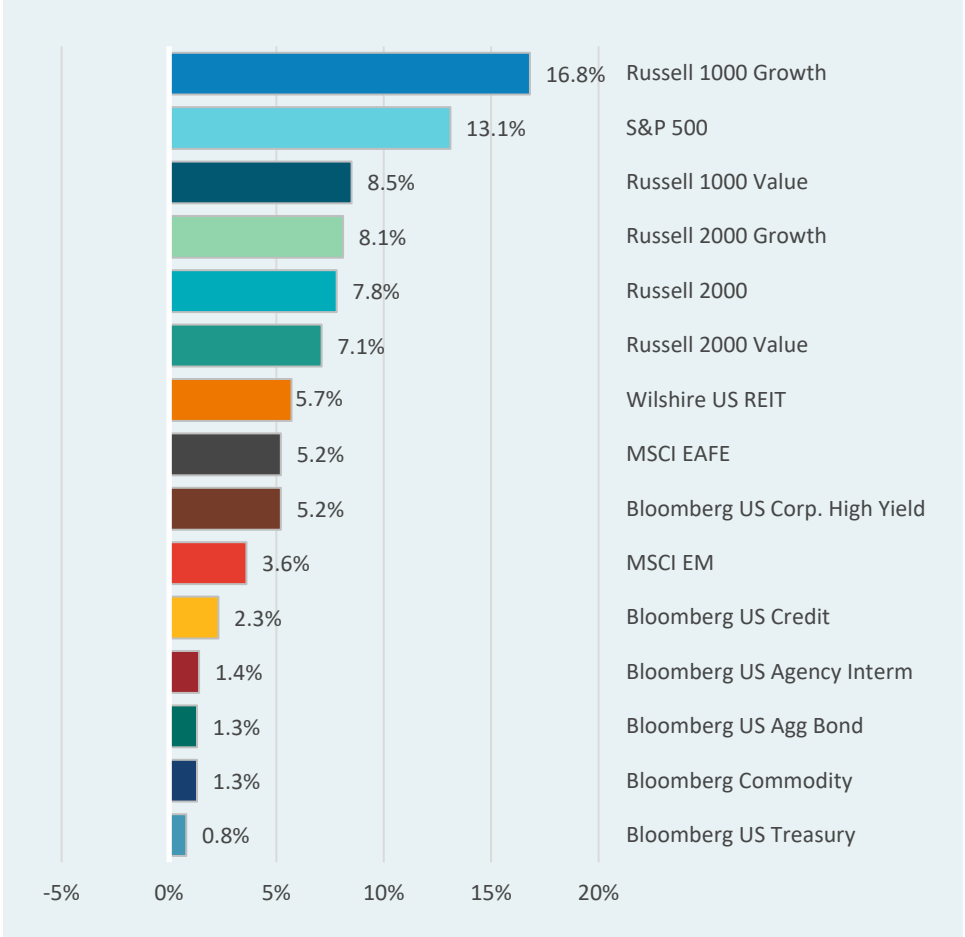
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, Bloomberg Global Bond. NCREIF Property Index performance data as of 9/30/24.

Major asset class returns

ONE YEAR ENDING DECEMBER



TEN YEARS ENDING DECEMBER



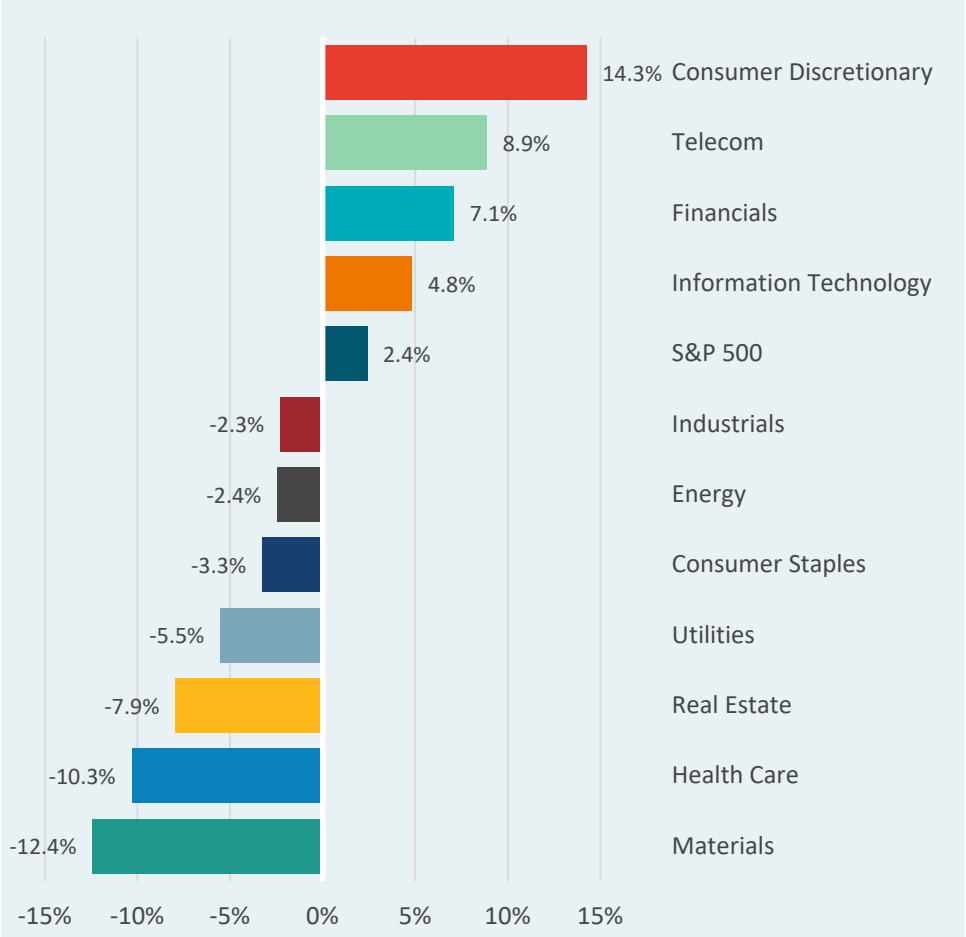
**Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.*

Source: Morningstar, as of 12/31/24

Source: Morningstar, as of 12/31/24

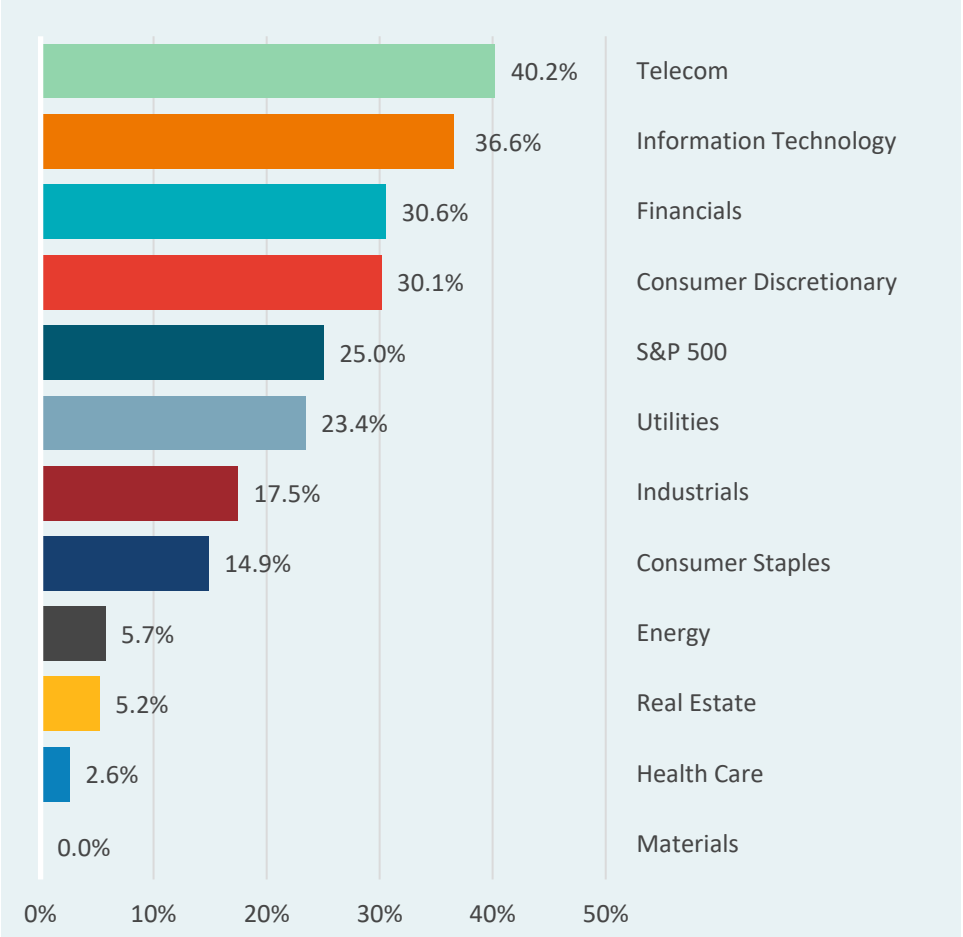
S&P 500 sector returns

QTD



Source: Morningstar, as of 12/31/24

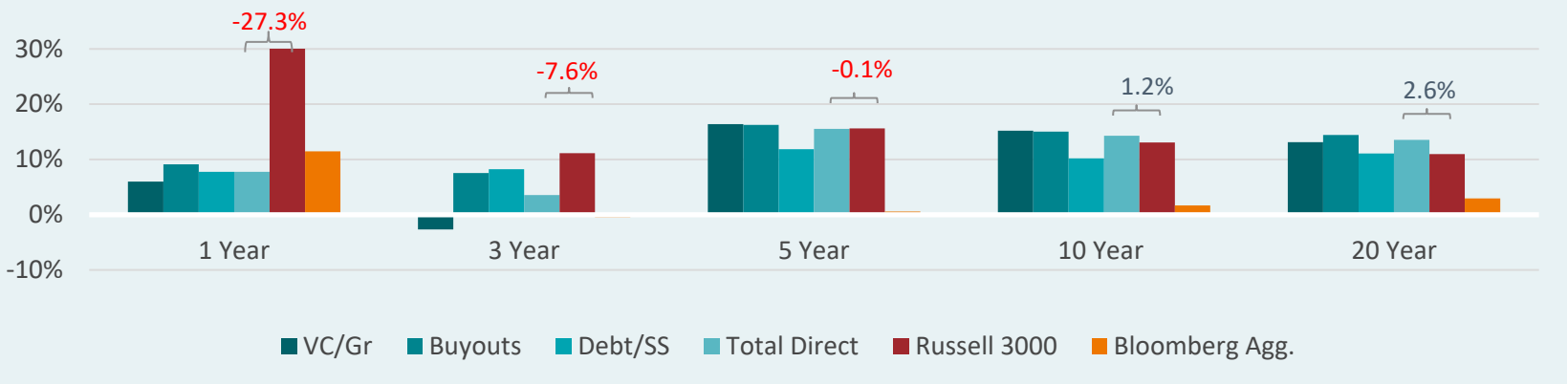
ONE YEAR ENDING DECEMBER



Source: Morningstar, as of 12/31/24

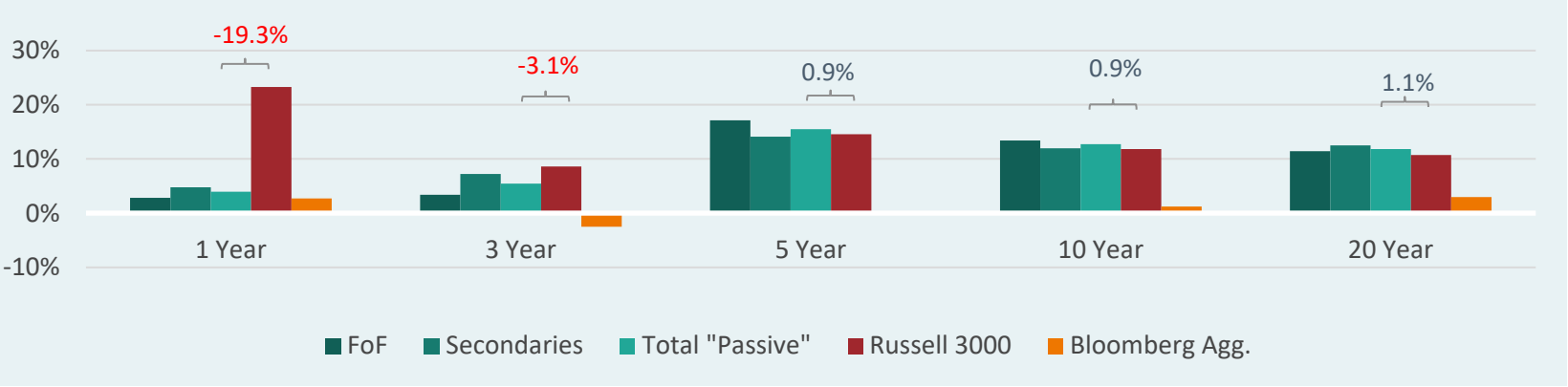
Private equity vs. traditional assets performance

DIRECT PRIVATE EQUITY FUND INVESTMENTS



Direct P.E fund performance vs. public equites has been mixed

"PASSIVE" STRATEGIES

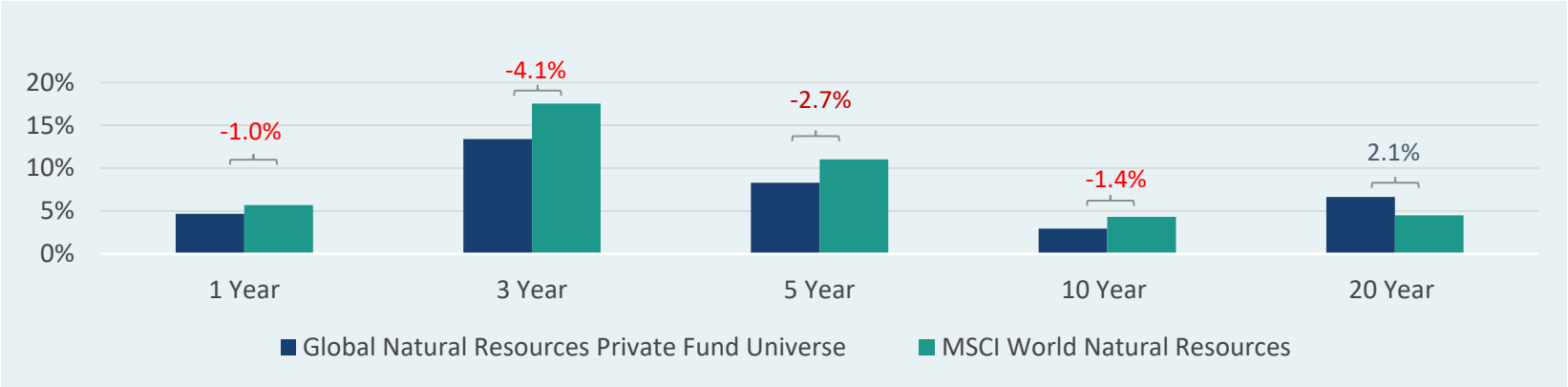


"Passive" strategy performance vs public equities has been mixed

Sources: FTSE PME: U.S. Direct Private Equity returns are as of September 30, 2024, whereas "Passive" strategies as of June 30, 2024. Public Market Equivalent returns resulted from "Total Passive" and Total Direct's identical cash flows invested into and distributed from respective traditional asset comparable.

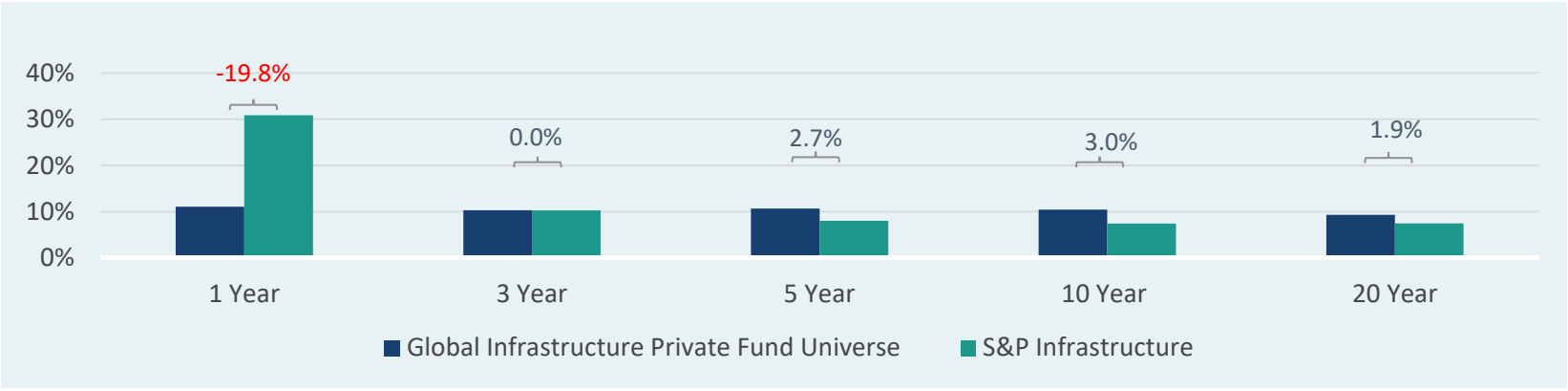
Private vs. liquid real assets performance

GLOBAL NATURAL RESOURCES FUNDS



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

GLOBAL INFRASTRUCTURE FUNDS

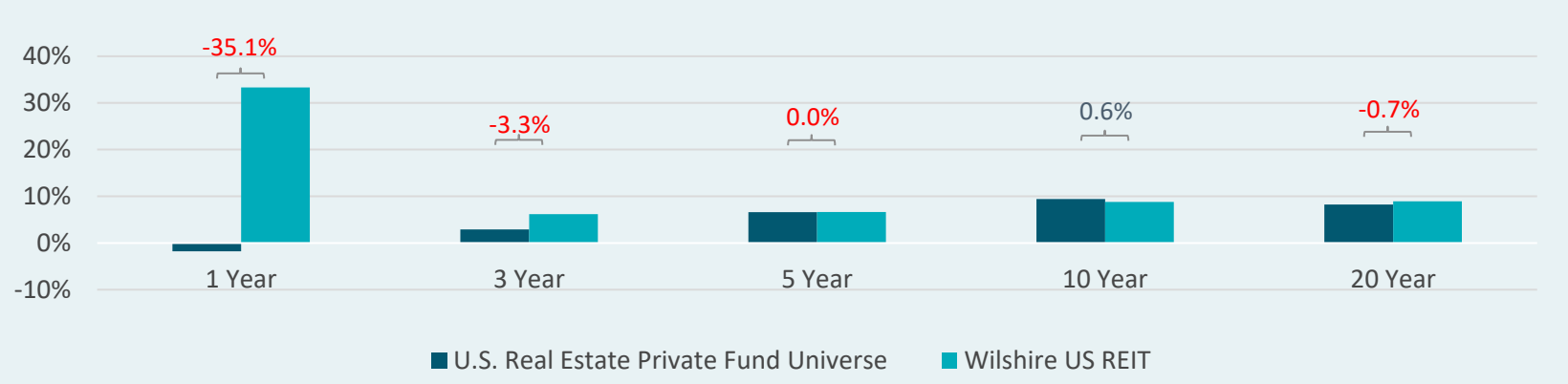


Infra. fund performance relative to the S&P Infra. was mixed

Sources: FTSE 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 September 30, 2024. Public Market Equivalent returns resulted from identical cash flows invested into and distributed from respective liquid real assets universes.

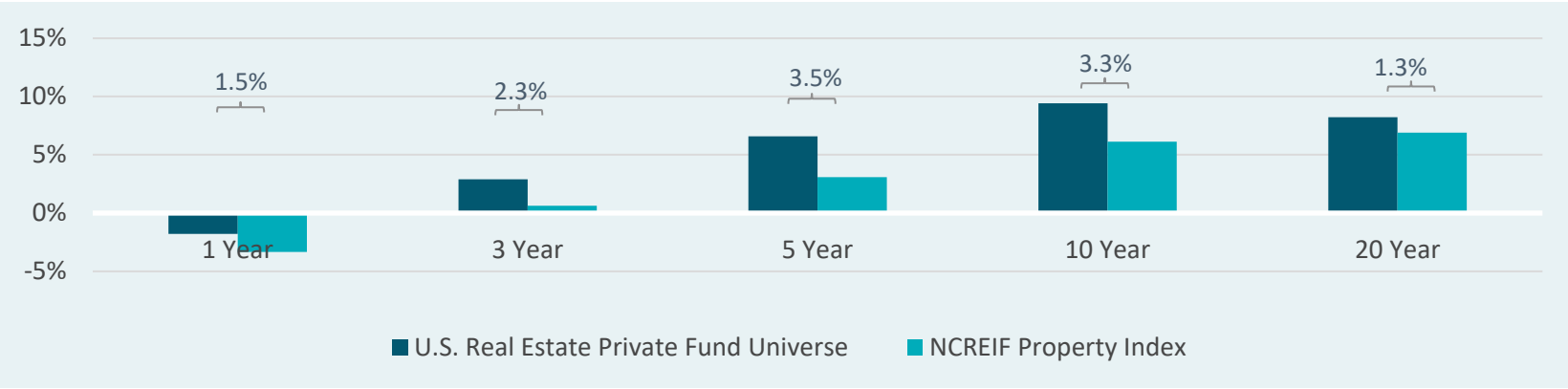
Private vs. liquid and core real estate performance

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



U.S. Private R.E. funds underperformed the Wilshire U.S. REIT Index across most time periods.

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: FTSE PME: U.S. Real Estate universes as of September 30, 2024. 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
Core Index							
S&P 500	(2.4)	2.4	25.0	25.0	8.9	14.5	13.1
S&P 500 Equal Weighted	(6.3)	(1.9)	13.0	13.0	4.5	10.8	10.3
DJ Industrial Average	(5.1)	0.9	15.0	15.0	7.6	10.6	11.6
Russell Top 200	(1.5)	3.4	27.4	27.4	9.9	15.8	14.0
Russell 1000	(2.8)	2.7	24.5	24.5	8.4	14.3	12.9
Russell 2000	(8.3)	0.3	11.5	11.5	1.2	7.4	7.8
Russell 3000	(3.1)	2.6	23.8	23.8	8.0	13.9	12.5
Russell Mid Cap	(7.0)	0.6	15.3	15.3	3.8	9.9	9.6
Style Index							
Russell 1000 Growth	0.9	7.1	33.4	33.4	10.5	19.0	16.8
Russell 1000 Value	(6.8)	(2.0)	14.4	14.4	5.6	8.7	8.5
Russell 2000 Growth	(8.2)	1.7	15.2	15.2	0.2	6.9	8.1
Russell 2000 Value	(8.3)	(1.1)	8.1	8.1	1.9	7.3	7.1

INTERNATIONAL EQUITY	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	(2.4)	(1.0)	17.5	17.5	5.4	10.1	9.2
MSCI ACWI ex US	(1.9)	(7.6)	5.5	5.5	0.8	4.1	4.8
MSCI EAFE	(2.3)	(8.1)	3.8	3.8	1.6	4.7	5.2
MSCI EM	(0.1)	(8.0)	7.5	7.5	(1.9)	1.7	3.6
MSCI EAFE Small Cap	(2.3)	(8.4)	1.8	1.8	(3.2)	2.3	5.5
Style Index							
MSCI EAFE Growth	(2.8)	(9.1)	2.0	2.0	(2.6)	4.0	5.8
MSCI EAFE Value	(1.8)	(7.1)	5.7	5.7	5.9	5.1	4.3
Regional Index							
MSCI UK	(2.8)	(6.8)	7.5	7.5	5.3	4.4	3.8
MSCI Japan	(0.3)	(3.6)	8.3	8.3	2.8	4.8	6.2
MSCI Euro	(0.4)	(9.4)	2.1	2.1	1.9	5.3	5.2
MSCI EM Asia	0.2	(7.9)	12.0	12.0	(1.6)	3.0	4.8
MSCI EM Latin American	(6.1)	(15.8)	(26.4)	(26.4)	2.1	(3.4)	0.3

FIXED INCOME	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
Bloomberg US TIPS	(1.6)	(2.9)	1.8	1.8	(2.3)	1.9	2.2
Bloomberg US Treasury Bills	0.4	1.2	5.3	5.3	3.9	2.5	1.8
Bloomberg US Agg Bond	(1.6)	(3.1)	1.3	1.3	(2.4)	(0.3)	1.3
Bloomberg US Universal	(1.5)	(2.7)	2.0	2.0	(2.0)	0.1	1.7
Duration							
Bloomberg US Treasury 1-3 Yr	0.2	(0.1)	4.0	4.0	1.4	1.4	1.4
Bloomberg US Treasury Long	(5.3)	(8.6)	(6.4)	(6.4)	(12.0)	(5.2)	(0.6)
Bloomberg US Treasury	(1.5)	(3.1)	0.6	0.6	(2.9)	(0.7)	0.8
Issuer							
Bloomberg US MBS	(1.6)	(3.2)	1.2	1.2	(2.1)	(0.7)	0.9
Bloomberg US Corp. High Yield	(0.4)	0.2	8.2	8.2	2.9	4.2	5.2
Bloomberg US Agency Interm	(0.2)	(0.6)	3.6	3.6	0.5	0.9	1.4
Bloomberg US Credit	(1.9)	(3.0)	2.0	2.0	(2.2)	0.2	2.3

OTHER	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	1.0	(0.4)	5.4	5.4	4.1	6.8	1.3
Wilshire US REIT	(7.3)	(5.0)	9.1	9.1	(2.5)	4.5	5.7
CS Leveraged Loans	0.6	2.3	9.1	9.1	6.8	5.7	5.1
S&P Global Infrastructure	(4.5)	(2.5)	15.1	15.1	7.1	5.3	5.9
Alerian MLP	(7.2)	5.6	26.7	26.7	27.2	14.8	3.3
Regional Index							
JPM EMBI Global Div	(1.4)	(1.9)	6.5	6.5	(0.9)	0.1	3.1
JPM GBI-EM Global Div	(1.9)	(7.0)	(2.4)	(2.4)	(1.0)	(1.9)	0.4
Hedge Funds							
HFRI Composite	(0.2)	1.5	8.8	8.8	4.1	6.8	5.2
HFRI FOF Composite	0.5	2.7	9.9	9.9	3.3	5.4	3.9
Currency (Spot)							
Euro	(2.0)	(7.2)	(6.3)	(6.3)	(3.1)	(1.6)	(1.5)
Pound Sterling	(1.5)	(6.6)	(1.8)	(1.8)	(2.6)	(1.1)	(2.2)
Yen	(4.4)	(9.0)	(10.3)	(10.3)	(9.8)	(7.1)	(2.7)

Source: Morningstar, HFRI, as of 12/31/24

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.langerresearch.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)*

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 induces 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 "(Good-Poor + 100)/2" to the present and future sales series and "(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.*

Notices & disclosures

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Kern County Employees Retirement Association

Investment Performance Review

Period Ending: December 31, 2024

Verus

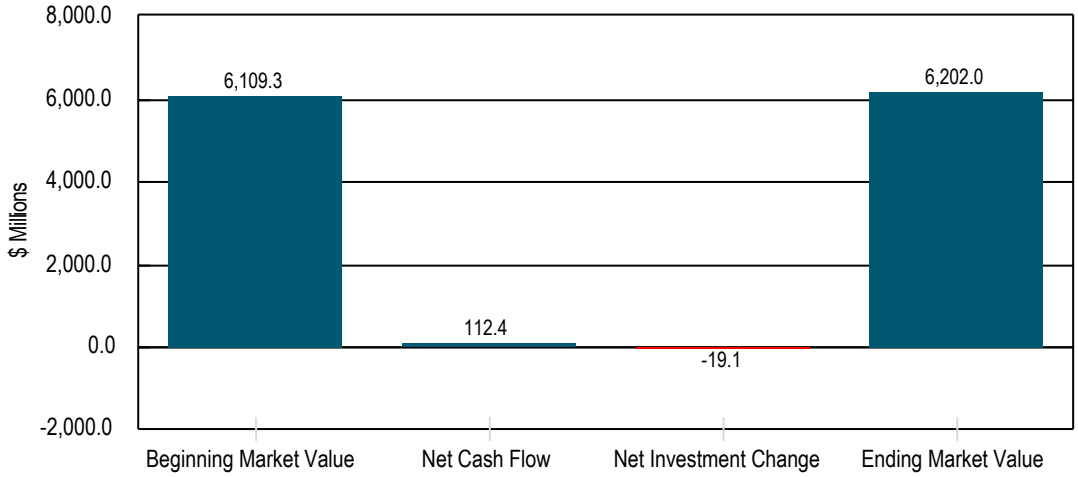
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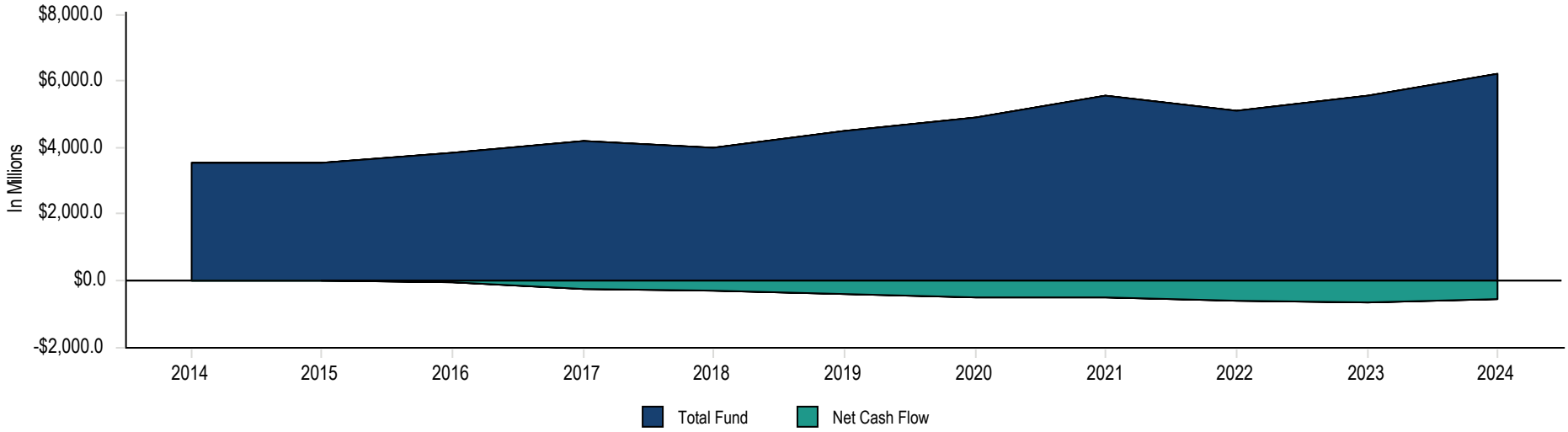
Portfolio Reconciliation

	Last Three Months
Beginning Market Value	$6,109,339,176
Net Cash Flows	$112,402,435
Net Investment Change	-$19,060,408
Ending Market Value	$6,201,957,777

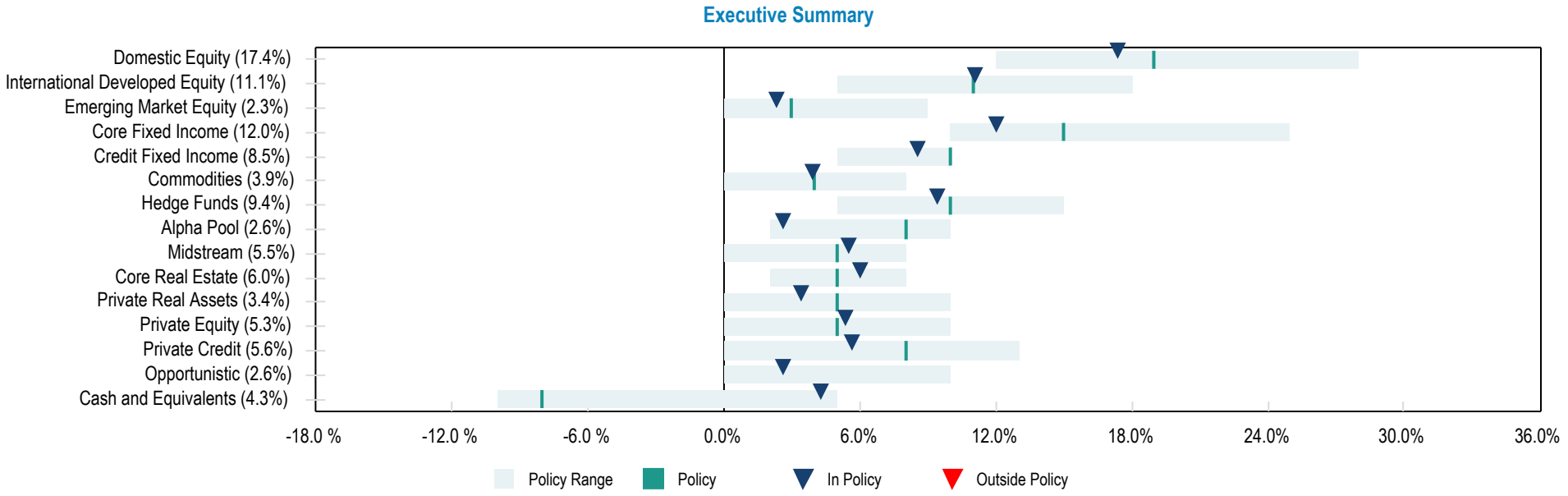
Change in Market Value
Last Three Months

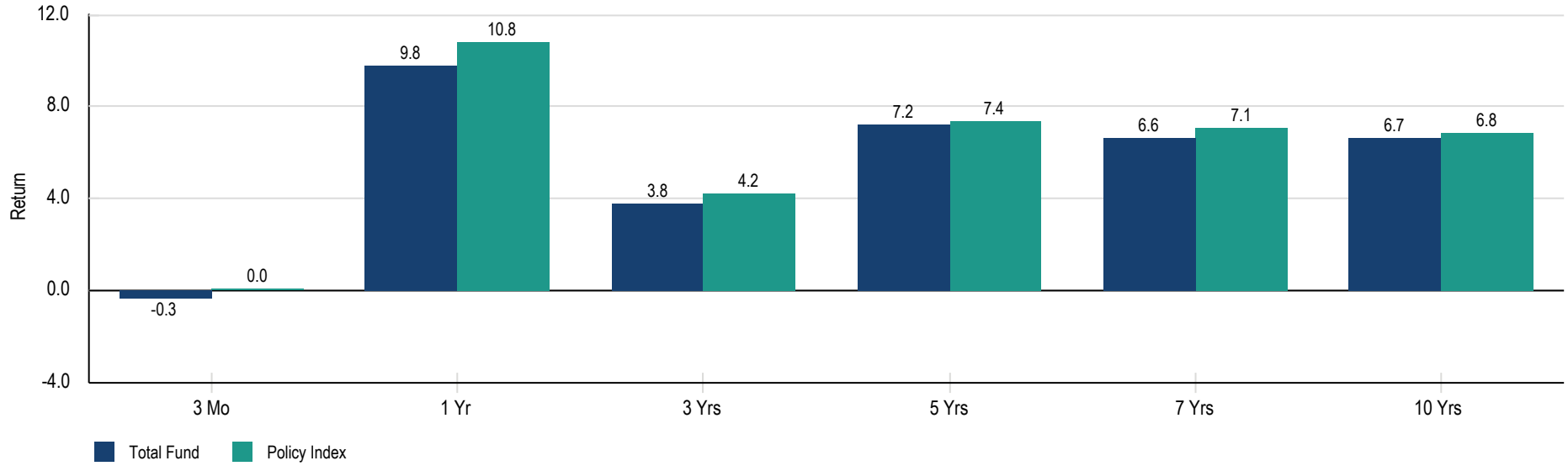


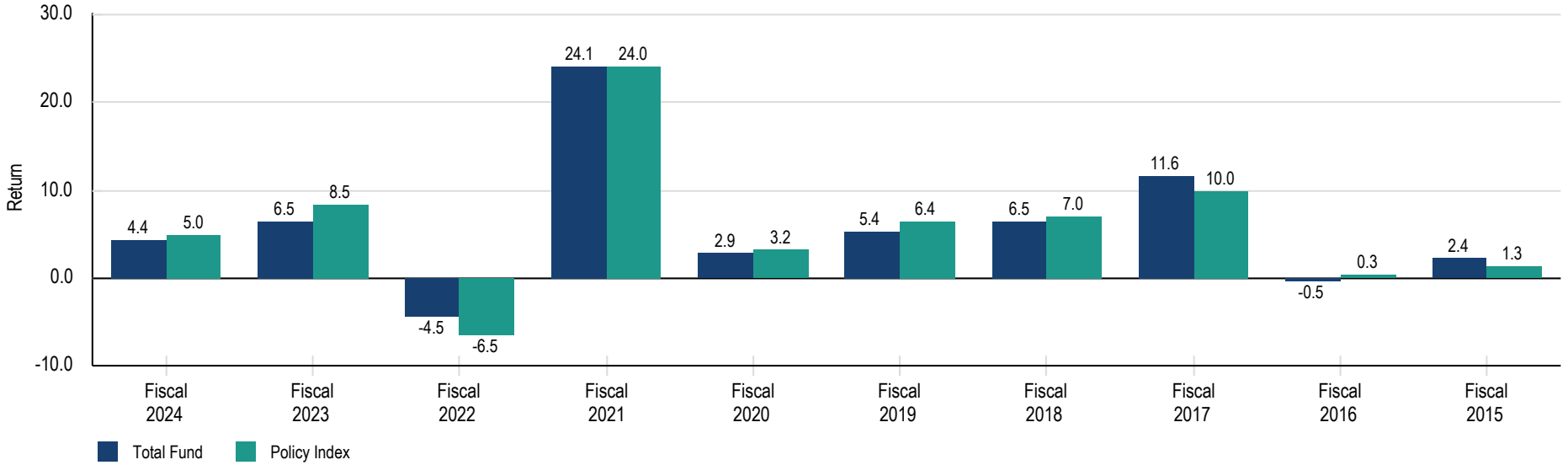
Market Value History



	Current Balance ($)	Current Allocation (%)	Policy Allocation (%)	Excess Allocation (%)	Policy Range (%)	Within IPS Range?
Equity	1,910,448,166	30.8	33.0	-2.2	23.0 - 45.0	Yes
Fixed Income	1,272,695,298	20.5	25.0	-4.5	15.0 - 35.0	Yes
Core Real Estate	373,849,038	6.0	5.0	1.0	2.0 - 8.0	Yes
Hedge Funds	585,804,102	9.4	10.0	-0.6	5.0 - 15.0	Yes
Alpha Pool	161,285,470	2.6	8.0	-5.4	2.0 - 10.0	Yes
Private Equity	304,630,932	4.9	5.0	-0.1	0.0 - 10.0	Yes
Private Credit	374,973,588	6.0	8.0	-2.0	0.0 - 13.0	Yes
Private Real Assets	211,732,870	3.4	5.0	-1.6	0.0 - 10.0	Yes
Commodities	241,938,079	3.9	4.0	-0.1	0.0 - 8.0	Yes
Opportunistic	161,176,482	2.6	0.0	2.6	0.0 - 10.0	Yes
Midstream	339,446,600	5.5	5.0	0.5	0.0 - 8.0	Yes
Cash and Equivalents	263,977,152	4.3	-8.0	12.3	-10.0 - 5.0	Yes
Total	**6,201,957,777**	**100.0**	**100.0**	**0.0**		




12.0
8.0
4.0
0.0
-4.0
Return
-0.3
0.0
9.8
10.8
3.8
4.2
7.2
7.4
6.6
7.1
6.7
6.8
3 Mo
1 Yr
3 Yrs
5 Yrs
7 Yrs
10 Yrs
Total Fund
Policy Index


30.0
20.0
10.0
0.0
-10.0
Return
4.4
5.0
6.5
8.5
-4.5
-6.5
24.1
24.0
2.9
3.2
5.4
6.4
6.5
7.0
11.6
10.0
-0.5
0.3
2.4
1.3
Fiscal 2024
Fiscal 2023
Fiscal 2022
Fiscal 2021
Fiscal 2020
Fiscal 2019
Fiscal 2018
Fiscal 2017
Fiscal 2016
Fiscal 2015
Total Fund
Policy Index

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Fiscal 2024	Fiscal 2023	Fiscal 2022	Fiscal 2021	Fiscal 2020
Total Fund	**6,201,957,777**	**100.0**	**-0.3**	**4.6**	**10.1**	**4.1**	**7.5**	**7.1**	**9.8**	**6.7**	**-4.2**	**24.4**	**3.2**
Policy Index			*0.0*	*5.0*	*10.8*	*4.2*	*7.4*	*6.8*	*10.6*	*8.5*	*-6.5*	*24.0*	*3.2*
InvMetrics Public DB > $1B Rank			*25*	*16*	*25*	*19*	*35*	*51*	*58*	*73*	*36*	*87*	*24*
Equity	**1,978,632,564**	**31.9**	**-2.1**	**4.6**	**15.0**	**4.5**	**9.6**	**9.6**	**17.1**	**15.9**	**-14.9**	**41.2**	**0.7**
MSCI AC World IMI Index (Net)			*-1.2*	*5.5*	*16.4*	*4.9*	*9.7*	*9.0*	*18.4*	*16.1*	*-16.5*	*40.9*	*1.2*
Domestic Equity	1,078,215,451	17.4	2.2	8.6	23.1	7.6	13.7	12.9	22.4	17.8	-12.0	43.6	6.3
MSCI USA IMI			*2.6*	*9.0*	*23.8*	*8.1*	*14.0*	*12.7*	*23.3*	*19.2*	*-13.7*	*44.4*	*6.7*
International Developed Equity	688,664,269	11.1	-6.3	0.9	6.8	1.8	5.6	6.3	11.0	17.2	-17.2	37.0	-5.5
MSCI World ex U.S. IMI Index (Net)			*-7.5*	*0.0*	*4.4*	*1.2*	*4.8*	*5.3*	*10.8*	*16.3*	*-17.7*	*34.8*	*-5.1*
Emerging Markets Equity	211,751,005	3.4	-8.0	-0.9	7.0	0.0	2.4	3.5	14.2	5.3	-21.4	40.6	-10.9
MSCI Emerging Markets IMI (Net)			*-7.9*	*-0.3*	*7.1*	*-1.4*	*2.5*	*3.9*	*13.6*	*3.2*	*-24.8*	*43.2*	*-4.0*
Fixed Income	**1,272,695,298**	**20.5**	**-2.6**	**2.8**	**3.0**	**-1.1**	**1.1**	**2.5**	**4.2**	**3.1**	**-12.7**	**5.4**	**6.6**
Fixed Income Custom Benchmark			*-2.5*	*2.7*	*2.9*	*-1.1*	*0.6*	*2.2*	*4.8*	*1.9*	*-11.6*	*4.0*	*5.2*
Core Fixed Income	744,293,833	12.0	-3.2	1.4	0.9	-3.0	-0.3	1.6	2.5	-0.9	-11.2	1.0	9.5
Core Fixed Income Benchmark			*-3.5*	*1.7*	*0.6*	*-2.5*	*-0.4*	*1.3*	*2.5*	*-0.9*	*-10.3*	*-0.3*	*8.7*
Credit Fixed Income	528,171,262	8.5	-1.8	4.5	6.0	1.5	2.2	3.1	6.7	8.9	-14.6	11.1	-0.6
Credit Fixed Income Benchmark			*-1.7*	*4.4*	*5.7*	*1.4*	*2.1*	*3.8*	*8.2*	*9.2*	*-15.7*	*12.2*	*-1.1*
Commodities	**241,938,079**	**3.9**	**-1.1**	**-0.6**	**7.5**	**7.1**	**9.7**	**3.6**	**14.6**	**-6.3**	**20.1**	**43.5**	**-10.7**
Bloomberg Commodity Index Total Return			*-0.4*	*0.2*	*5.4*	*4.1*	*6.8*	*1.3*	*5.0*	*-9.6*	*24.3*	*45.6*	*-17.4*
Hedge Funds	**585,804,102**	**9.4**	**2.2**	**4.8**	**9.1**	**7.2**	**8.9**	**6.7**	**9.2**	**6.9**	**2.8**	**16.3**	**7.3**
75% (3 Month T-Bill + 3%) + 25% MSCI ACWI Net			*1.2*	*4.5*	*10.7*	*6.9*	*7.0*	*6.1*	*11.4*	*9.4*	*-1.7*	*11.4*	*4.5*
Alpha Pool	**161,285,470**	**2.6**	**1.4**	**2.2**	**2.8**	**0.7**	**-**	**-**	**0.7**	**-0.9**	**1.5**	**14.5**	**-**
3-Month Treasury Bill +3%			*1.9*	*4.1*	*8.4*	*7.0*	*-*	*-*	*8.6*	*6.7*	*3.2*	*3.1*	*-*
Midstream Energy	**339,446,600**	**5.5**	**9.6**	**15.3**	**35.1**	**25.2**	**-**	**-**	**30.6**	**20.1**	**9.6**	**-**	**-**
Alerian Midstream Energy Index			*13.5*	*24.5*	*44.5*	*26.0*	*-*	*-*	*26.7*	*12.2*	*11.4*	*-*	*-*
Core Real Estate	**300,572,462**	**4.8**	**0.7**	**0.4**	**-9.7**	**-7.3**	**-1.0**	**3.4**	**-19.8**	**-11.9**	**25.6**	**6.6**	**2.3**
NCREIF ODCE			*1.2*	*1.4*	*-1.4*	*-2.3*	*2.9*	*5.9*	*-9.3*	*-10.0*	*29.5*	*8.0*	*2.2*
Private Real Assets	**211,732,870**	**3.4**	**-1.5**	**-0.6**	**-2.6**	**3.8**	**9.1**	**9.6**	**-6.4**	**7.9**	**31.3**	**12.1**	**4.4**
			-1.5	*-0.6*	*-2.6*	*3.8*	*9.1*	*9.6*	*-6.4*	*7.9*	*31.3*	*12.1*	*4.4*
Private Equity	**309,723,110**	**5.0**	**4.1**	**6.2**	**14.2**	**7.5**	**12.5**	**10.8**	**11.9**	**-0.6**	**23.0**	**41.7**	**-10.5**
			4.1	*6.2*	*14.2*	*7.5*	*12.5*	*10.8*	*11.9*	*-0.6*	*23.0*	*41.7*	*-10.5*
Private Credit	**374,973,588**	**6.0**	**1.8**	**4.5**	**11.8**	**6.8**	**5.9**	**-**	**13.2**	**3.2**	**1.2**	**4.8**	**5.5**
			1.8	*4.5*	*11.8*	*6.8*	*5.9*	*-*	*13.2*	*3.2*	*1.2*	*4.8*	*5.5*

Policy Index: 33% MSCI ACWI IMI (Net), 25% Fixed Income Blend - 17% Core (14% Bloomberg US Aggregate Index, 3% ICE BofAML 7-10 Year US Treasury Index). 8% Credit (1.5% Securitized (0.75% Bloomberg Non-Agency CMBS Index; 0.50% Bloomberg ABS Index; 0.25% J.P. Morgan CLOIE AAA Index) 2.5% Morningstar LSTA Leverage Loan Index. 4% Emerging Market Debt (2% JPM EMBI Global Div / 2% JPM GBI EM Global Div), 4% Bloomberg Commodity Index, 10% Hedge fund (7.5% 3-Month T-bill + 3%, 2.5% MSCI ACWI (Net)), 8% 3-Month T-Bill + 3%, 5% Alerian Midstream Energy Index, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns, 8% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 0% Assumed Rate of Return +3%, -8% 3-Month T-bill. Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also*

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Fiscal 2024	Fiscal 2023	Fiscal 2022	Fiscal 2021	Fiscal 2020
Opportunistic	**161,176,482**	**2.6**	**-1.9**	**9.8**	**11.9**	**0.5**	**9.4**	**-**	**2.9**	**0.6**	**-5.4**	**59.9**	**-**
Assumed Rate of Return +3%			*2.4*	*4.9*	*10.0*	*10.0*	*10.0*	*-*	*10.0*	*10.0*	*10.0*	*10.0*	*-*
Cash	**418,744,574**	**6.8**	**1.3**	**2.9**	**6.1**	**3.8**	**2.4**	**2.4**	**6.4**	**2.3**	**-0.2**	**0.1**	**1.0**
3 Month T-Bill			*1.2*	*2.6*	*5.3*	*3.9*	*2.5*	*1.8*	*5.4*	*3.6*	*0.2*	*0.1*	*1.6*

Policy Index: 33% MSCI ACWI IMI (Net), 25% Fixed Income Blend - 17% Core (14% Bloomberg US Aggregate Index, 3% ICE BofAML 7-10 Year US Treasury Index). 8% Credit (1.5% Securitized (0.75% Bloomberg Non-Agency CMBS Index; 0.50% Bloomberg ABS Index; 0.25% J.P. Morgan CLOIE AAA Index) 2.5% Morningstar LSTA Leverage Loan Index. 4% Emerging Market Debt (2% JPM EMBI Global Div / 2% JPM GBI EM Global Div), 4% Bloomberg Commodity Index, 10% Hedge fund (7.5% 3-Month T-bill + 3%, 2.5% MSCI ACWI (Net)), 8% 3-Month T-Bill + 3%, 5% Alerian Midstream Energy Index, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns, 8% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 0% Assumed Rate of Return +3%, -8% 3-Month T-bill. Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also*

Performance and Attribution

Total Fund
Performance (Net of Fees)

Kern County Employees' Retirement Association
Period Ending: December 31, 2024

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Fiscal 2024	Fiscal 2023	Fiscal 2022	Fiscal 2021	Fiscal 2020	Inception	Inception Date
Total Fund	**6,201,957,777**	**100.0**	**-0.3**	**4.4**	**9.8**	**3.8**	**7.2**	**6.7**	**9.6**	**6.5**	**-4.5**	**24.1**	**2.9**	**6.7**	**Jun-11**
Policy Index			*0.0*	*5.0*	*10.8*	*4.2*	*7.4*	*6.8*	*10.6*	*8.5*	*-6.5*	*24.0*	*3.2*	*6.8*	
Equity	**1,978,632,564**	**31.9**	**-2.2**	**4.5**	**14.8**	**4.3**	**9.4**	**9.2**	**16.9**	**15.7**	**-15.1**	**40.7**	**0.3**	**9.4**	**Jun-11**
MSCI AC World IMI Index (Net)			*-1.2*	*5.5*	*16.4*	*4.9*	*9.7*	*9.0*	*18.4*	*16.1*	*-16.5*	*40.9*	*1.2*	*8.9*	
Domestic Equity	**1,078,215,451**	**17.4**	**2.1**	**8.4**	**22.8**	**7.3**	**13.5**	**12.6**	**22.1**	**17.6**	**-12.2**	**43.2**	**6.0**	**12.6**	**Jul-14**
MSCI USA IMI			*2.6*	*9.0*	*23.8*	*8.1*	*14.0*	*12.7*	*23.3*	*19.2*	*-13.7*	*44.4*	*6.7*	*12.6*	
Mellon DB SL Stock Index Fund	723,798,486	11.7	2.4	8.4	25.0	8.9	14.5	-	24.5	19.6	-10.6	40.8	7.5	14.2	Oct-17
S&P 500 Index			*2.4*	*8.4*	*25.0*	*8.9*	*14.5*	-	*24.6*	*19.6*	*-10.6*	*40.8*	*7.5*	*14.1*	
PIMCO StocksPLUS	158,301,271	2.6	2.4	8.3	25.3	8.2	14.2	12.9	25.6	18.8	-12.8	41.7	7.7	11.4	Jul-03
S&P 500 Index			*2.4*	*8.4*	*25.0*	*8.9*	*14.5*	*13.1*	*24.6*	*19.6*	*-10.6*	*40.8*	*7.5*	*10.7*	
AB US Small Cap Value Equity	127,181,585	2.1	1.5	10.0	11.4	0.1	7.1	-	9.1	4.3	-16.1	77.5	-19.4	7.3	Jul-15
Russell 2000 Value Index			*-1.1*	*9.0*	*8.1*	*1.9*	*7.3*	-	*10.9*	*6.0*	*-16.3*	*73.3*	*-17.5*	*7.5*	
Geneva Capital Small Cap Growth	68,934,109	1.1	-0.1	8.6	14.9	1.1	9.1	-	9.8	15.6	-22.1	37.6	9.3	10.5	Jul-15
Russell 2000 Growth Index			*1.7*	*10.3*	*15.2*	*0.2*	*6.9*	-	*9.1*	*18.5*	*-33.4*	*51.4*	*3.5*	*7.5*	
International Developed Equity	**688,664,269**	**11.1**	**-6.3**	**0.8**	**6.7**	**1.7**	**5.5**	**6.0**	**10.9**	**17.1**	**-17.3**	**36.7**	**-5.7**	**4.8**	**Jul-14**
MSCI World ex U.S. IMI Index (Net)			*-7.5*	*0.0*	*4.4*	*1.2*	*4.8*	*5.3*	*10.8*	*16.3*	*-17.7*	*34.8*	*-5.1*	*4.0*	
Mellon DB SL World ex-US Index Fund	377,941,699	6.1	-7.4	-0.1	5.1	2.5	5.8	-	11.7	17.9	-16.1	35.6	-5.5	5.7	Jul-18
MSCI World ex U.S. IMI Index (Net)			*-7.5*	*0.0*	*4.4*	*1.2*	*4.8*	-	*10.8*	*16.3*	*-17.7*	*34.8*	*-5.1*	*4.7*	
Cevian Capital II	50,271,585	0.8	3.4	6.2	14.2	12.0	13.3	9.1	21.8	25.3	-8.2	46.8	-8.2	9.1	Dec-14
MSCI Europe Index (Net) Hedged			*-2.6*	*-1.0*	*6.9*	*3.7*	*5.6*	*6.6*	*12.2*	*17.3*	*-8.6*	*25.0*	*-5.6*	*6.5*	
Lazard Japanese Equity	138,325,372	2.2	-3.7	2.0	10.8	-	-	-	-	-	-	-	-	17.8	Nov-23
TOPIX Net Total Return Index			*-4.1*	*2.4*	*7.7*	-	-	-	-	-	-	-	-	*15.4*	
American Century Non-US Small Cap	63,099,815	1.0	-9.6	-2.3	4.5	-7.4	-	-	8.3	7.9	-27.4	-	-	-1.1	Dec-20
MSCI World ex U.S. Small Cap Growth Index (Net)			*-7.6*	*1.6*	*2.6*	*-6.1*	-	-	*5.6*	*9.5*	*-28.6*	-	-	*-1.4*	
Dalton Japan Long Only	59,025,797	1.0	-8.2	4.4	6.8	-	-	-	-	-	-	-	-	15.2	Oct-23
MSCI Japan Small Cap Index (Net)			*-5.9*	*5.5*	*4.4*	-	-	-	-	-	-	-	-	*14.2*	
Emerging Markets Equity	**211,751,005**	**3.4**	**-8.0**	**-1.1**	**6.7**	**-0.5**	**1.8**	**2.7**	**13.8**	**4.6**	**-21.9**	**39.5**	**-11.8**	**1.9**	**Jul-14**
MSCI Emerging Markets IMI (Net)			*-7.9*	*-0.3*	*7.1*	*-1.4*	*2.5*	*3.9*	*13.6*	*3.2*	*-24.8*	*43.2*	*-4.0*	*2.9*	
DFA Emerging Markets Value I	54,296,557	0.9	-7.6	-2.3	6.2	3.4	5.0	4.8	16.7	7.9	-12.9	47.6	-17.7	4.6	Mar-14
MSCI Emerging Markets Value (Net)			*-9.2*	*-1.8*	*4.5*	*0.2*	*2.0*	*2.8*	*14.1*	*4.1*	*-18.6*	*41.6*	*-15.7*	*2.6*	
Mellon Emerging Markets Stock Index Fund	20,451,262	0.3	-7.5	0.2	7.4	-2.2	-	-	12.0	1.6	-25.5	41.1	-	3.9	Jun-20
MSCI Emerging Markets (Net)			*-8.0*	*0.0*	*7.5*	*-1.9*	-	-	*12.5*	*1.7*	*-25.3*	*40.9*	-	*5.8*	
Carrhae Capital Long Master Fund Ltd	68,818,788	1.1	-9.0	-	-	-	-	-	-	-	-	-	-	-1.7	Aug-24
MSCI Emerging Markets IMI (Net)			*-7.9*	-	-	-	-	-	-	-	-	-	-	*-0.5*	
ABS Emerging Market Direct	68,184,398	1.1	-7.5	-	-	-	-	-	-	-	-	-	-	-2.7	Aug-24
MSCI Emerging Markets IMI (Net)			*-7.9*	-	-	-	-	-	-	-	-	-	-	*-1.9*	
Fixed Income	**1,272,695,298**	**20.5**	**-2.6**	**2.7**	**2.8**	**-1.4**	**0.8**	**2.2**	**3.9**	**2.9**	**-13.0**	**5.1**	**6.3**	**3.2**	**Jun-10**
Fixed Income Custom Benchmark			*-2.5*	*2.7*	*2.9*	*-1.1*	*0.6*	*2.2*	*4.8*	*1.9*	*-11.6*	*4.0*	*5.2*	*3.1*	
Core Fixed Income	**744,293,833**	**12.0**	**-3.2**	**1.4**	**0.7**	**-3.1**	**-0.5**	**1.5**	**2.4**	**-1.0**	**-11.4**	**0.8**	**9.3**	**1.5**	**Jul-14**
Core Fixed Income Benchmark			*-3.5*	*1.7*	*0.6*	*-2.5*	*-0.4*	*1.3*	*2.5*	*-0.9*	*-10.3*	*-0.3*	*8.7*	*1.4*	
Fixed Income Beta Exposure	180,127,563	2.9	-3.9	0.3	-0.4	-	-	-	1.7	-2.5	-	-	-	0.7	Jun-22
ICE BofA 7-10 Year U.S. Treasury Index			*-4.6*	*0.9*	*-0.5*	-	-	-	*0.3*	*-3.3*	-	-	-	*-1.1*	
Mellon DB SL Aggregate Bond Index Fund	389,250,916	6.3	-3.1	2.0	1.2	-2.4	-0.4	1.3	2.6	-0.9	-10.4	-0.4	8.8	2.0	Jan-11
Bloomberg U.S. Aggregate Index			*-3.1*	*2.0*	*1.3*	*-2.4*	*-0.3*	*1.3*	*2.6*	*-0.9*	*-10.3*	*-0.3*	*8.7*	*2.1*	

Policy Index: 33% MSCI ACWI IMI (Net), 25% Fixed Income Blend - 17% Core (12% Bloomberg US Aggregate Index, 3% ICE BofAML 7-10 Year US Treasury Index). 8% Credit (1.5% Securitized (0.75% Bloomberg Non-Agency CMBS Index; 0.50% Bloomberg ABS Index; 0.25% J.P. Morgan CLOIE AAA Index), 2.5% Morningstar LSTA Leverage Loan Index. 4% Emerging Market Debt (2% JPM EMBI Global Div / 2% JPM GBI EM Global Div), 4% Bloomberg Commodity Index, 10% Hedge fund (7.5% 3-Month T-bill + 3%, 2.5% MSCI ACWI (Net)), 8% 3-Month T-Bill + 3%, 5% Alerian Midstream Energy Index, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns, 8% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 0% Assumed Rate of Return +3%, -8% 3-Month T-bill. Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool.*

Total Fund
Performance (Net of Fees)

Kern County Employees' Retirement Association
Period Ending: December 31, 2024

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Fiscal 2024	Fiscal 2023	Fiscal 2022	Fiscal 2021	Fiscal 2020	Inception	Inception Date
PIMCO Core Plus	174,770,946	2.8	-2.8	2.3	2.2	-1.8	0.4	1.7	3.6	-0.7	-9.9	1.1	8.7	2.4	Feb-11
Bloomberg U.S. Aggregate Index			*-3.1*	*2.0*	*1.3*	*-2.4*	*-0.3*	*1.3*	*2.6*	*-0.9*	*-10.3*	*-0.3*	*8.7*	*2.1*	
Credit Fixed Income	**528,171,262**	**8.5**	**-1.8**	**4.5**	**6.0**	**1.5**	**2.2**	**3.1**	**6.7**	**8.9**	**-14.6**	**11.1**	**-0.6**	**-**	**May-05**
Credit Fixed Income Benchmark			*-1.7*	*4.4*	*5.7*	*1.4*	*2.1*	*3.8*	*8.2*	*9.2*	*-15.7*	*12.2*	*-1.1*	*5.8*	
TCW Securitized Opportunities	92,361,809	1.5	-0.1	4.5	7.8	2.0	3.0	-	3.1	4.4	-4.0	6.4	2.2	3.7	Feb-16
Bloomberg U.S. High Yield - 2% Issuer Cap			*0.2*	*5.5*	*8.2*	*2.9*	*4.2*	-	*10.4*	*9.1*	*-12.8*	*15.3*	*0.0*	*6.5*	
KKR US Broadly Syndicated Loan Fund	182,172,337	2.9	-	-	-	-	-	-	-	-	-	-	-	0.9	Oct-24
Morningstar LSTA U.S. Leveraged Loan			-	-	-	-	-	-	-	-	-	-	-	*1.5*	
Stone Harbor Emerging Markets Debt Blend Portfolio	39,642,520	0.6	-4.6	2.8	2.0	-0.1	0.0	1.8	6.8	10.8	-20.9	9.5	-1.8	0.7	Aug-12
50 JPM GBI-EM Global Div/ 40 JPM EMBI Global Div/ 10 JPM Corporate EM Bond Idx			*-4.4*	*2.7*	*2.1*	*-0.7*	*-0.6*	*1.9*	*4.9*	*9.2*	*-19.5*	*7.2*	*-0.8*	*1.5*	
PIMCO EMD	213,276,214	3.4	-3.8	3.7	3.2	0.8	-	-	5.6	11.3	-19.2	8.7	-	0.5	Feb-20
50 JPM EMBI Global Div / 50 JPM GBI EM Global Div			*-4.5*	*2.7*	*2.0*	*-0.9*	-	-	*4.9*	*9.4*	*-20.2*	*7.1*	-	*-0.9*	
Commodities	**241,938,079**	**3.9**	**-1.3**	**-0.9**	**6.8**	**6.3**	**9.0**	**2.9**	**13.7**	**-7.0**	**19.4**	**42.5**	**-11.3**	**0.7**	**Jul-13**
Bloomberg Commodity Index Total Return			*-0.4*	*0.2*	*5.4*	*4.1*	*6.8*	*1.3*	*5.0*	*-9.6*	*24.3*	*45.6*	*-17.4*	*-0.4*	
Wellington Commodities	241,938,079	3.9	-1.4	-1.0	7.1	6.7	9.9	3.8	15.5	-5.2	17.2	40.2	-7.5	1.4	Sep-13
S&P GSCI Commodity Equal Weighted			*-0.6*	*-0.5*	*7.7*	*5.2*	*7.9*	*3.3*	*10.4*	*-6.0*	*19.0*	*40.9*	*-12.4*	*1.2*	
Hedge Funds	**585,804,102**	**9.4**	**2.0**	**4.5**	**8.5**	**7.1**	**8.7**	**6.3**	**9.2**	**6.8**	**2.8**	**16.1**	**7.0**	**5.9**	**Jun-13**
75% 90 Day TBills +3% / 25% MSCI ACWI IMI (Net)			*1.2*	*4.5*	*10.7*	*6.9*	*7.0*	*6.1*	*11.4*	*9.4*	*-1.7*	*11.4*	*4.5*	*6.0*	
Aristeia International Limited	76,610,185	1.2	0.7	2.8	4.5	4.3	8.4	6.4	5.1	5.5	1.8	21.6	8.7	5.3	May-14
Brevan Howard Fund	59,815,203	1.0	1.8	6.9	5.3	7.4	10.1	6.7	3.1	-1.0	15.2	6.1	20.5	7.1	Sep-13
D.E. Shaw Composite Fund	65,349,931	1.1	0.5	2.9	10.1	14.9	16.9	14.1	12.9	11.0	29.0	19.0	15.6	13.8	Jul-13
HBK Fund II	52,303,952	0.8	2.6	4.5	9.0	6.8	7.4	5.5	11.1	7.9	2.3	11.0	1.5	5.3	Nov-13
Hudson Bay Cap Structure Arbitrage Enhanced Fund	82,811,320	1.3	1.7	3.9	5.5	6.3	9.6	-	4.0	7.7	7.7	14.2	16.2	9.7	Jun-19
Indus Pacific Opportunities Fund	50,554,997	0.8	0.5	3.0	10.7	2.2	9.2	6.5	5.8	-0.4	-8.2	38.0	15.8	6.6	Jul-14
Pharo Macro Fund	76,312,118	1.2	4.2	7.5	11.3	4.3	3.1	-	12.7	1.2	-11.1	3.5	-	3.1	Dec-19
PIMCO Commodity Alpha Fund	84,568,132	1.4	1.7	2.5	8.2	11.1	12.0	-	15.6	18.3	8.6	14.2	4.8	11.2	Jun-16
Sculptor Master Fund	30,837,906	0.5	3.3	6.5	14.1	3.2	5.1	-	13.5	8.8	-19.9	16.8	6.5	7.2	Feb-19
Elliott Associates	6,640,358	0.1	2.2	2.2	-	-	-	-	-	-	-	-	-	2.2	Jul-24
Alpha Pool	**161,285,470**	**2.6**	**1.4**	**2.2**	**2.8**	**0.7**	**-**	**-**	**0.7**	**-0.9**	**1.5**	**14.5**	**-**	**3.9**	**Jul-20**
3-Month Treasury Bill +3%			*1.9*	*4.1*	*8.4*	*7.0*	-	-	*8.6*	*6.7*	*3.2*	*3.1*	-	*5.7*	
Hudson Bay - Alpha Pool	47,705,509	0.8	1.2	2.1	1.2	0.3	-	-	-2.8	-1.1	6.7	-	-	3.7	Aug-20
Davidson Kempner Institutional Partners	53,010,688	0.9	1.7	3.4	5.3	-0.9	-	-	1.2	-4.1	-3.4	-	-	1.3	Dec-20
HBK Fund II	19,404,617	0.3	2.2	2.8	4.5	0.8	-	-	4.0	-1.0	1.3	-	-	3.0	Dec-20
Garda Fixed Income Relative Value Opportunity Fund	41,164,656	0.7	0.5	0.4	0.7	4.0	-	-	1.8	3.6	-	-	-	3.4	Sep-21
Midstream Energy	**339,446,600**	**5.5**	**9.4**	**14.9**	**34.2**	**24.5**	**-**	**-**	**29.8**	**19.3**	**9.3**	**-**	**-**	**28.8**	**Sep-20**
Alerian Midstream Energy Index			*13.5*	*24.5*	*44.5*	*26.0*	-	-	*26.7*	*12.2*	*11.4*	-	-	*28.7*	
Harvest Midstream	183,474,373	3.0	11.1	16.3	41.0	29.6	-	-	35.9	20.9	15.3	-	-	34.4	Aug-20
Alerian Midstream Energy Index			*13.5*	*24.5*	*44.5*	*26.0*	-	-	*26.7*	*12.2*	*11.4*	-	-	*28.1*	
PIMCO Midstream	155,972,227	2.5	7.5	13.4	27.3	18.4	-	-	23.6	16.9	2.2	-	-	23.4	Oct-20
50/25/25 Alerian Midstream/ ICE BofA US Pipeline/ ICE BofA US HY Midstream			*6.2*	*13.7*	*24.1*	*13.4*	-	-	*17.6*	*10.1*	*-0.7*	-	-	*17.2*	
Core Real Estate	**300,572,462**	**4.8**	**0.6**	**0.0**	**-10.2**	**-7.9**	**-1.6**	**2.8**	**-20.2**	**-12.4**	**24.8**	**5.6**	**1.4**	**3.3**	**Oct-14**
NCREIF ODCE			*1.2*	*1.4*	*-1.4*	*-2.3*	*2.9*	*5.9*	*-9.3*	*-10.0*	*29.5*	*8.0*	*2.2*	*6.1*	
ASB Allegiance Real Estate Fund	119,153,853	1.9	1.0	0.0	-14.1	-9.4	-2.9	2.0	-23.9	-13.3	23.0	5.4	1.5	3.1	Sep-13
NCREIF ODCE			*1.2*	*1.4*	*-1.4*	*-2.3*	*2.9*	*5.9*	*-9.3*	*-10.0*	*29.5*	*8.0*	*2.2*	*6.6*	

Policy Index: 33% MSCI ACWI IMI (Net), 25% Fixed Income Blend - 17% Core (12% Bloomberg US Aggregate Index, 3% ICE BofAML 7-10 Year US Treasury Index). 8% Credit (1.5% Securitized (0.75% Bloomberg Non-Agency CMBS Index; 0.50% Bloomberg ABS Index; 0.25% J.P. Morgan CLOIE AAA Index), 2.5% Morningstar LSTA Leverage Loan Index. 4% Emerging Market Debt (2% JPM EMBI Global Div / 2% JPM GBI EM Global Div), 4% Bloomberg Commodity Index, 10% Hedge fund (7.5% 3-Month T-bill + 3%, 2.5% MSCI ACWI (Net)), 8% 3-Month T-Bill + 3%, 5% Alerian Midstream Energy Index, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns, 8% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 0% Assumed Rate of Return +3%, -8% 3-Month T-bill. Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool.*

Total Fund
Performance (Net of Fees)

Kern County Employees' Retirement Association
Period Ending: December 31, 2024

	Market Value	% of Portfolio	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs	Fiscal 2024	Fiscal 2023	Fiscal 2022	Fiscal 2021	Fiscal 2020	Inception	Inception Date
JPMCB Strategic Property Fund	104,467,147	1.7	1.5	2.1	-2.7	-5.0	0.6	4.2	-14.9	-11.4	27.9	5.9	1.3	4.4	Jul-14
NCREIF ODCE			*1.2*	*1.4*	*-1.4*	*-2.3*	*2.9*	*5.9*	*-9.3*	*-10.0*	*29.5*	*8.0*	*2.2*	*6.2*	
Blue Owl Real Estate Fund VI	28,119,948	0.5	0.0	-6.7	-	-	-	-	-	-	-	-	-	-18.5	May-24
NCREIF ODCE			*1.2*	*1.4*	-	-	-	-	-	-	-	-	-	*1.0*	
Sculptor Diversified REIT	48,831,515	0.8	-	-	-	-	-	-	-	-	-	-	-	-2.5	Dec-24
NCREIF ODCE			-	-	-	-	-	-	-	-	-	-	-	*1.1*	
Private Real Assets	**211,732,870**	**3.4**	**-1.5**	**-0.6**	**-2.6**	**3.8**	**9.1**	**9.6**	**-6.4**	**7.9**	**31.3**	**12.1**	**4.4**	**10.5**	**Mar-11**
			-1.5	*-0.6*	*-2.6*	*3.8*	*9.1*	*9.6*	*-6.4*	*7.9*	*31.3*	*12.1*	*4.4*	*10.5*	
Private Equity	**309,723,110**	**5.0**	**4.1**	**6.2**	**14.2**	**7.5**	**12.5**	**10.8**	**11.9**	**-0.6**	**23.0**	**41.7**	**-10.5**	**10.8**	**Sep-10**
			4.1	*6.2*	*14.2*	*7.5*	*12.5*	*10.8*	*11.9*	*-0.6*	*23.0*	*41.7*	*-10.5*	*10.8*	
Private Credit	**374,973,588**	**6.0**	**1.8**	**4.5**	**11.8**	**6.8**	**5.9**	**-**	**13.2**	**3.2**	**1.2**	**4.8**	**5.5**	**7.7**	**Jan-16**
			1.8	*4.5*	*11.8*	*6.8*	*5.9*	-	*13.2*	*3.2*	*1.2*	*4.8*	*5.5*	*7.7*	
Opportunistic	**161,176,482**	**2.6**	**-1.9**	**9.8**	**11.9**	**0.4**	**9.3**	**-**	**2.9**	**0.6**	**-5.4**	**59.9**	**-**	**9.5**	**Jan-20**
Assumed Rate of Return +3%			*2.4*	*4.9*	*10.0*	*10.0*	*10.0*	-	*10.0*	*10.0*	*10.0*	*10.0*	-	*10.0*	
River Birch International	4,930,140	0.1	4.6	35.2	48.2	-	-	-	31.0	45.1	-	-	-	51.2	Jun-22
Assumed Rate of Return +3%			*2.4*	*4.9*	*10.0*	-	-	-	*10.0*	*10.0*	-	-	-	*10.0*	
Sixth Street TAO Partners (D)	88,931,843	1.4	2.0	4.0	8.7	8.4	-	-	11.3	4.4	9.6	39.6	-	13.8	Mar-20
Assumed Rate of Return +3%			*2.4*	*4.9*	*10.0*	*10.0*	-	-	*10.0*	*10.0*	*10.0*	*10.0*	-	*10.0*	
Aristeia Select Opportunities II	51,690,805	0.8	-11.1	18.4	12.3	0.1	-	-	-9.7	-7.2	-	-	-	1.1	Jul-21
Assumed Rate of Return +3%			*2.4*	*4.9*	*10.0*	*10.0*	-	-	*10.0*	*10.0*	*10.0*	-	-	*10.0*	
Hudson Bay Special Opportunities Fund LP	4,968,994	0.1	21.7	59.4	-	-	-	-	-	-	-	-	-	88.1	Feb-24
Assumed Rate of Return +3%			*2.4*	*4.9*	-	-	-	-	-	-	-	-	-	*8.5*	
Pharo Opportunities Fund SPC	10,654,700	0.2	3.7	6.5	-	-	-	-	-	-	-	-	-	6.5	Jun-24
Assumed Rate of Return +3%			*2.4*	*4.9*	-	-	-	-	-	-	-	-	-	*4.9*	
Cash	**418,744,574**	**6.8**	**1.3**	**2.9**	**6.0**	**3.7**	**2.3**	**2.3**	**6.3**	**2.2**	**-0.2**	**0.1**	**1.0**	**1.9**	**Apr-11**
3 Month T-Bill			*1.2*	*2.6*	*5.3*	*3.9*	*2.5*	*1.8*	*5.4*	*3.6*	*0.2*	*0.1*	*1.6*	*1.3*	

Policy Index: 33% MSCI ACWI IMI (Net), 25% Fixed Income Blend - 17% Core (12% Bloomberg US Aggregate Index, 3% ICE BofAML 7-10 Year US Treasury Index). 8% Credit (1.5% Securitized (0.75% Bloomberg Non-Agency CMBS Index; 0.50% Bloomberg ABS Index; 0.25% J.P. Morgan CLOIE AAA Index), 2.5% Morningstar LSTA Leverage Loan Index. 4% Emerging Market Debt (2% JPM EMBI Global Div / 2% JPM GBI EM Global Div), 4% Bloomberg Commodity Index, 10% Hedge fund (7.5% 3-Month T-bill + 3%, 2.5% MSCI ACWI (Net)), 8% 3-Month T-Bill + 3%, 5% Alerian Midstream Energy Index, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns, 8% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 0% Assumed Rate of Return +3%, -8% 3-Month T-bill. Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool.*

Vintage Year	Manager/Fund	Estimated Market Value as of 12/31/24	IRR Analysis as of IRR date: Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value as of IRR date	Distrib./ Paid-In (DPI)[1]	Tot. Value/ Paid-In (TVPI)[2]	Net IRR Since Inception[3]	IRR Date
Private Equity												
2008	Abbott Capital PE VI	$11,870,892	$50,000,000	$49,750,000	100%	$250,000	$83,815,491	$13,242,893	*1.68x*	*1.92x*	*12.4%*	09/30/24
2006	Pantheon Global III	$535,597	$50,000,000	$47,300,000	95%	$2,700,000	$52,000,000	$537,225	*1.10x*	*1.11x*	*1.9%*	09/30/24
2002	Pantheon USA V	$30,817	$25,000,000	$24,350,000	97%	$650,000	$38,291,224	$374,357	*1.57x*	*1.57x*	*9.0%*	12/31/23
2004	Pantheon USA VI	$311,850	$35,000,000	$33,075,000	95%	$1,925,000	$50,623,827	$309,541	*1.53x*	*1.54x*	*6.7%*	09/30/24
2006	Pantheon USA VII	$4,226,046	$50,000,000	$46,600,000	93%	$3,400,000	$82,779,998	$4,215,981	*1.78x*	*1.87x*	*10.0%*	09/30/24
2020	Vista Foundation Fund IV	$22,309,624	$25,000,000	$19,970,294	80%	$5,029,706	$30,252	$21,479,058	*0.00x*	*1.12x*	*26.2%*	09/30/24
2021	Crown Global Secondaries V Master S.C.Sp	$48,610,264	$50,000,000	$32,250,000	65%	$17,750,000	$1,550,000	$48,610,264	*0.05x*	*1.56x*	*19.4%*	12/31/24
2021	Brighton Park Capital Fund I	$42,681,438	$30,000,000	$30,000,000	100%	$0	$2,354,514	$42,586,009	*0.08x*	*1.50x*	*13.2%*	09/30/24
2021	Warren Equity Partners Fund III	$38,195,667	$32,500,000	$29,121,375	90%	$3,378,625	$564,621	$36,597,253	*0.02x*	*1.33x*	*18.0%*	09/30/24
2021	Peak Rock Capital Fund III	$24,024,213	$30,000,000	$21,052,673	70%	$8,947,327	$6,798,681	$19,776,734	*0.32x*	*1.46x*	*29.0%*	09/30/24
2021	Level Equity Growth Partners V	$12,722,143	$15,000,000	$10,691,904	71%	$4,308,096	$0	$11,430,126	*0.00x*	*1.19x*	*10.0%*	09/30/24
2021	Level Equity Opportunities Fund 2021	$10,355,377	$15,000,000	$8,710,322	58%	$6,289,678	$0	$8,023,637	*0.00x*	*1.19x*	*12.9%*	09/30/24
2022	Linden Capital Partners V LP	$17,210,053	$22,500,000	$14,493,417	64%	$8,006,583	$0	$14,448,158	*0.00x*	*1.19x*	*10.6%*	09/30/24
2022	Rubicon Technology Partners IV LP	$11,171,108	$30,000,000	$11,276,086	38%	$18,723,914	$0	$10,109,238	*0.00x*	*0.99x*	*0.0%*	09/30/24
2022	OrbiMed Private Investments IX, LP	$2,869,017	$10,000,000	$3,249,201	32%	$6,750,799	$765,338	$2,793,919	*0.24x*	*1.12x*	*31.9%*	09/30/24
2022	Brighton Park Capital Fund II	$9,381,533	$30,000,000	$13,184,978	44%	$16,815,022	$3,722,467	N/A	*0.28x*	*0.99x*	*N/A*	N/A
2022	Linden Co-Investment V LP	$6,938,103	$7,500,000	$9,054,807	121%	-$1,554,807	$55,503	$6,559,177	*0.01x*	*0.77x*	*21.7%*	09/30/24
2022	Warren Equity Partners Fund IV	$21,002,030	$32,500,000	$14,343,117	44%	$18,156,883	$0	$17,910,770	*0.00x*	*1.46x*	*16.9%*	09/30/24
2023	WEP Co-Invest IV	$9,008,981	$10,000,000	$9,042,704	90%	$957,296	$173,170	$7,450,442	*0.02x*	*1.02x*	*0.0%*	09/30/24
2023	Crown Global Secondaries Fund VI	$4,173,538	$30,000,000	$3,150,000	11%	$26,850,000	$0	N/A	*0.00x*	*1.32x*	*N/A*	N/A
2023	Parthenon Investors VII	$3,438,509	$30,000,000	$3,604,963	12%	$26,395,037	$0	N/A	N/A	N/A	*N/A*	N/A
2024	Longreach Capital Partners	$3,564,130	$15,000,000	$4,320,836	29%	$10,679,165	$0	N/A	N/A	N/A	*N/A*	N/A
2024	Blue Owl Strategic Equity	$5,092,178	$25,000,000	$1,663,156	7%	$23,336,844	$0	N/A	N/A	N/A	*N/A*	N/A
2025	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
2025	Level Equity Growth Partners VI	$0	$15,000,000	$0	0%	$15,000,000	$0	N/A	N/A	N/A	*N/A*	N/A
2025	Level Equity Opportunities Fund 2025	$0	$15,000,000	$0	0%	$15,000,000	$0	N/A	N/A	N/A	*N/A*	N/A
2025	Linden Capital Partners VI	$0	$30,000,000	$0	0%	$30,000,000	$0	N/A	N/A	N/A	*N/A*	N/A
2025	WEP IV TreeCo Co-Invest	$0	$5,000,000	$0	0%	$5,000,000	$0	N/A	N/A	N/A	*N/A*	N/A
	Total Private Equity	**$309,723,110**	$740,000,000	$440,254,833	59%	$299,745,167	$323,525,086	$266,454,783	*0.73x*	*1.44x*		
	% of Portfolio (Market Value)	***5.0%***										

[1](DPI) is equal to (capital returned / capital called)

[2](TVPI) is equal to (market value + capital returned) / capital called

[3]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.

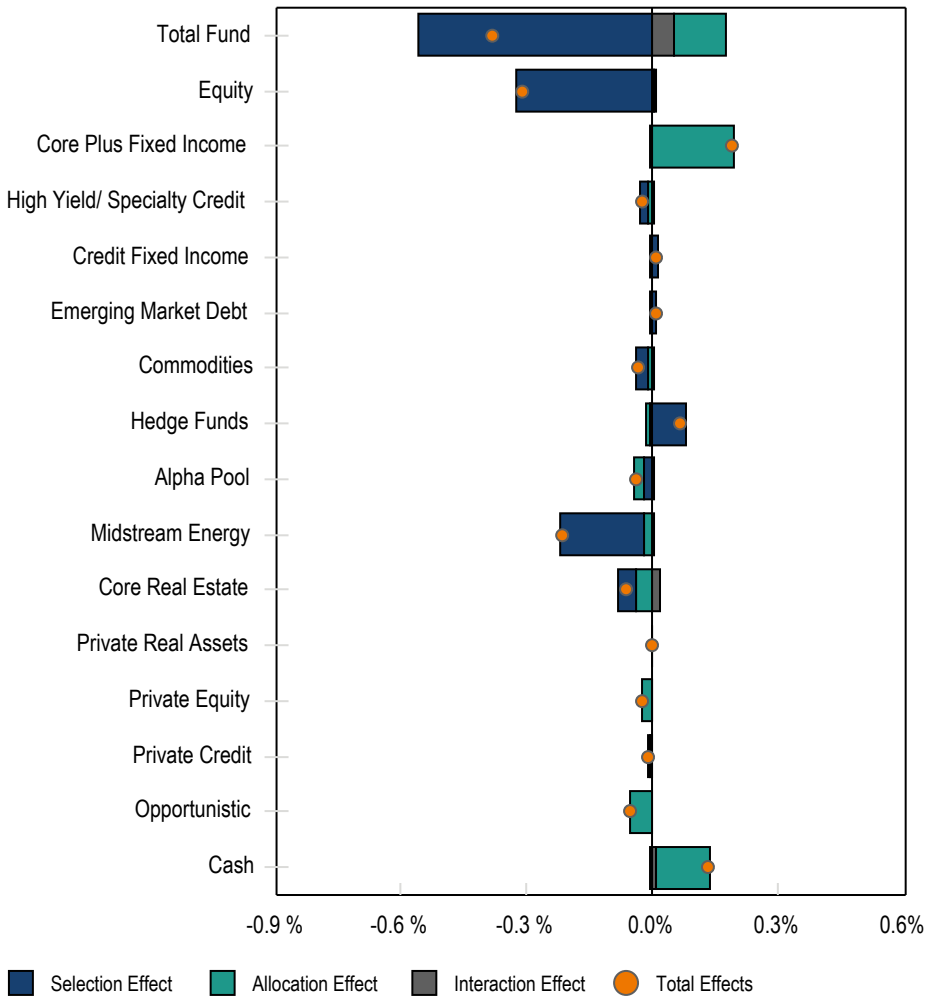
Vintage Year	Manager/Fund	Estimated Market Value 12/31/2024	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value as of IRR date	Distrib./ Paid-In (DPI)[1]	Tot. Value/ Paid-In (TVPI)[2]	Net IRR Since Inception[3]	IRR Date
			IRR Analysis as of IRR date									
Private Credit												
2015	DC Value Recovery Fund IV[4]	$16,849,614	$74,360,749	$73,340,099	99%	$1,020,650	$44,343,375	N/A	*0.60x*	*0.83x*	*N/A*	*N/A*
2017	Sixth Street TAO Partners (B)	$51,532,926	$108,035,958	$93,964,028	87%	$14,071,930	$48,567,799	$46,335,052	*0.52x*	*1.07x*	*9.7%*	9/30/24
2017	Brookfield Real Estate Finance Fund V	$10,910,780	$50,000,000	$39,198,138	78%	$10,801,862	$36,419,179	$13,952,219	*0.93x*	*1.21x*	*5.0%*	9/30/24
2018	Magnetar Constellation Fund V	$16,062,395	$60,000,000	$56,445,318	94%	$3,554,682	$52,782,695	$18,839,741	*0.94x*	*1.22x*	*4.9%*	9/30/24
2019	H.I.G Bayside Loan Opportunity Fund V	$39,109,609	$60,000,000	$35,821,497	60%	$24,178,503	$26,248,824	$39,103,832	*0.73x*	*1.82x*	*18.2%*	9/30/24
2020	Blue Torch Credit Opportunities Fund II	$13,128,979	$20,000,000	$17,296,007	86%	$2,703,993	$8,811,476	$12,936,411	*0.51x*	*1.27x*	*10.9%*	9/30/24
2020	Fortress Credit Opportunites Fund V Expansion	$36,779,982	$40,000,000	$32,853,973	82%	$7,146,027	$3,565,901	$30,575,376	*0.11x*	*1.23x*	*19.4%*	9/30/24
2021	Fortress Lending Fund II	$19,119,636	$40,000,000	$34,937,851	87%	$5,062,149	$21,213,675	$24,888,838	*0.61x*	*1.15x*	*8.4%*	9/30/24
2022	Blue Torch Credit Opportunities Fund III	$32,937,484	$40,000,000	$36,999,891	92%	$3,000,109	$14,514,052	$28,338,193	*0.39x*	*1.28x*	*17.2%*	9/30/24
2022	Fortress Lending Fund III	$30,456,234	$40,000,000	$26,507,904	66%	$13,492,096	$6,745,109	$30,081,378	*0.25x*	*1.40x*	*11.6%*	9/30/24
2022	OrbiMed Royalty & Credit Opportunities IV	$12,426,680	$30,000,000	$11,983,980	40%	$18,016,020	$4,099,317	$13,021,811	*0.34x*	*1.38x*	*11.2%*	9/30/24
2023	Cerberus Business Finance V	$21,800,753	$30,000,000	$22,055,642	74%	$7,944,358	$3,860,174	$21,800,753	*0.18x*	*1.16x*	*19.7%*	12/31/24
2023	Silver Point – Specialty Credit Fund III	$10,327,519	$30,000,000	$17,734,492	59%	$12,265,508	$9,832,200	$12,631,180	*0.55x*	*1.14x*	*15.7%*	9/30/24
2023	Ares Pathfinder II	$6,225,143	$30,000,000	$5,442,084	18%	$24,557,916	$0	$14,361,818	*0.00x*	*1.14x*	*16.0%*	9/30/24
2023	Oak Hill Advisors Structured Products Fund III, L.P.	$16,257,113	$25,000,000	$14,920,411	60%	$10,079,589	$1,127,312	$14,361,818	*0.08x*	*1.17x*	*18.4%*	9/30/24
2023	Ares Senior Direct Lending III	$5,256,014	$30,000,000	$5,113,029	17%	$24,886,971	$122,234	N/A	*N/A*	*N/A*	*N/A*	N/A
2024	ITE Rail Fund, L.P.	$26,239,548	$40,000,000	$28,555,540	71%	$11,444,460	$485,555	$0	*1.7%*	*93.6%*	*N/A*	N/A
2024	HPS Special Situations Opportunity Fund II, L.P.	$7,098,738	$25,000,000	$6,611,066	74%	$18,388,934	$0	$0	*N/A*	*N/A*	*N/A*	N/A
2024	Castlelake Aviation V Stable Yield	$2,454,442	$30,000,000	$2,380,358	8%	$27,619,642	$35,787	N/A	*0.02x*	*1.05x*	N/A	N/A
2025	Fortress Credit Opportunities Fund VI	$0	$25,000,000	$0	0%	$25,000,000	$0	N/A	*N/A*	*N/A*	N/A	N/A
2025	OrbiMed Royalty & Credit Opportunities V	$0	$30,000,000	$0	0%	$30,000,000	$0	N/A	*N/A*	*N/A*	N/A	N/A
	Total Private Credit	**$374,973,588**	$857,396,707	$562,161,306	66%	$212,615,759	$282,774,664	$321,228,420	*0.50x*	*1.17x*		
	% of Portfolio (Market Value)	***6.0%***										

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[4]Name changed from Colony Distressed Credit fund to DC Value Recovery Fund IV

Vintage Year	Manager/Fund	Estimated Market Value 12/31/2024	Total Commitment	Capital Called	% Called	Remaining Commitment	Capital Returned	Market Value as of IRR date	Distrib./ Paid-In (DPI)[1]	Tot. Value/ Paid-In (TVPI)[2]	Net IRR Since Inception[3]	IRR Date
			IRR Analysis as of IRR date									
Private Real Assets												
2014	Invesco Real Estate Value-Add Fund IV	$146,880	$50,000,000	$43,637,717	87%	$6,362,283	$56,824,750	$157,969	*1.30x*	*1.31x*	*11.6%*	06/30/24
2017	Landmark Real Estate Partners VIII	$32,569,977	$60,000,000	$46,233,098	77%	$13,766,902	$26,372,238	$33,636,579	*0.57x*	*1.27x*	*11.1%*	09/30/24
2018	Long Wharf Real Estate Partners VI	$32,906,084	$50,000,000	$50,000,000	100%	$0	$24,777,007	$32,906,084	*0.50x*	*1.15x*	*11.9%*	12/31/24
2020	Covenant Apartment Fund X	$26,226,642	$30,000,000	$25,507,333	85%	$4,492,667	$9,860,181	$26,226,642	*0.39x*	*1.41x*	*0.0%*	12/31/24
2021	Singerman Real Estate Opportunity Fund IV	$21,560,358	$35,000,000	$19,608,750	56%	$15,391,250	$2,974,955	$18,185,543	*0.15x*	*1.25x*	*16.6%*	09/30/24
2022	LBA Logistics Value Fund IX, L.P.	$22,457,656	$40,000,000	$18,461,538	46%	$21,538,462	$0	$20,380,496	*0.00x*	*1.22x*	*-4.3%*	09/30/24
2022	Covenant Apartment Fund XI	$27,381,516	$30,000,000	$19,650,000	66%	$38,076,924	$358,962	$25,820,082	*0.02x*	*1.41x*	*1.5%*	09/30/24
2022	KSL Capital Partners VI	$8,283,177	$30,000,000	$10,719,884	36%	$19,280,116	$212,603	$5,979,917	*0.02x*	*0.79x*	*-28.8%*	09/30/24
2023	Merit Hill V	$9,610,459	$30,000,000	$17,529,762	58%	$12,470,238	$7,084,980	N/A	*0.40x*	*0.95x*	N/A	N/A
2024	Juniper Capital IV, L.P.	$4,431,671	$30,000,000	$5,115,008	17%	$24,884,992	$59,700	N/A	*0.01x*	*0.88x*	N/A	N/A
2024	Juniper High Noon Partners, L.P.	$3,313,080	$5,000,000	$3,309,091	66%	$1,690,909	$0	N/A	*0.00x*	*1.00x*	N/A	N/A
2024	Landmark Real Estate Partners IX	$8,954,510	$40,000,000	$9,743,987	24%	$30,256,013	$0	N/A	*0.00x*	*0.92x*	N/A	N/A
2024	Project Yeti II	$13,890,859	$25,000,000	$14,759,280	59%	$10,240,720	$868,421	N/A	*0.06x*	*1.00x*	N/A	N/A
2025	Covenant Apartment Fund XII	$0	$30,000,000	$0	0%	$30,000,000	$0	N/A	N/A	N/A	N/A	N/A
2025	Sculptor Real Estate V	$0	$50,000,000	$0	0%	$50,000,000	$0	N/A	N/A	N/A	N/A	N/A
2025	SRE Opportunity Fund V	$0	$30,000,000	$0	0%	$30,000,000	$0	N/A	N/A	N/A	N/A	N/A
	Total Private Real Assets	**$211,732,870**	$565,000,000	$284,275,448	50%	$308,451,476	$129,393,797	$163,293,312	*0.46x*	*1.20x*		
	% of Portfolio (Market Value)	***3.4%***										

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Attribution Effects
Last Three Months



Performance Attribution

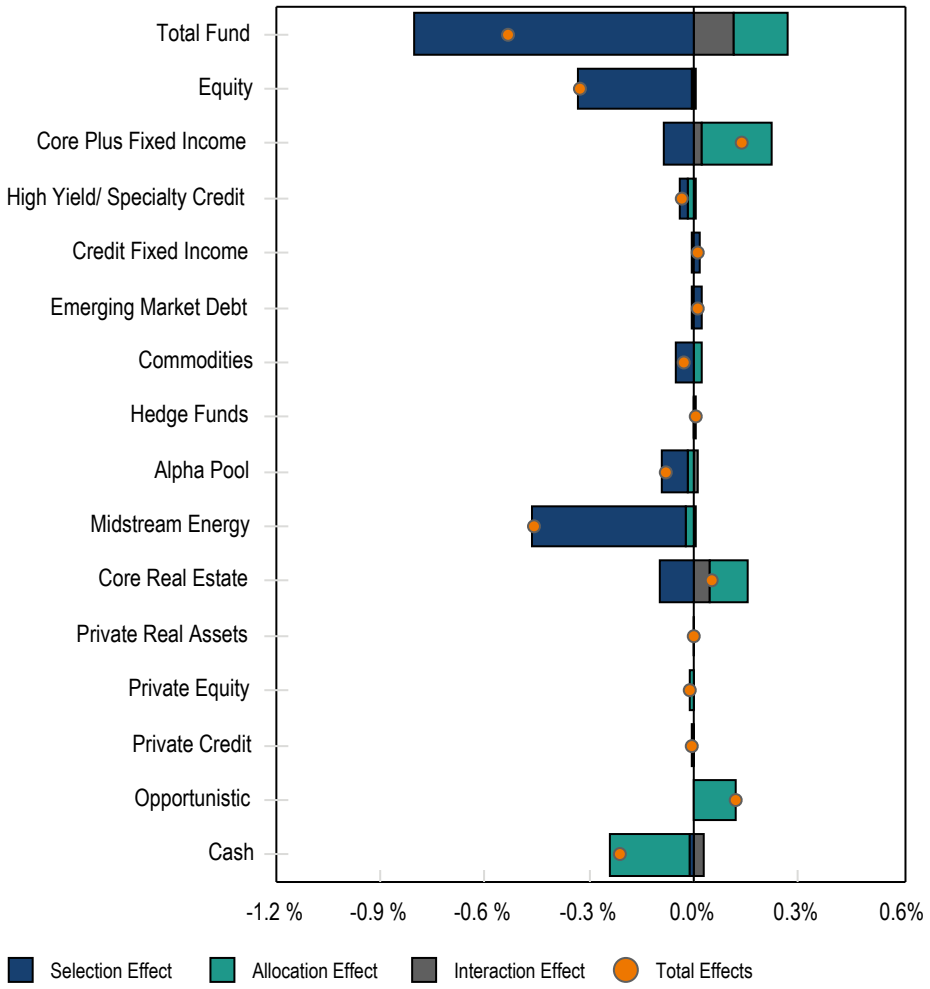
	Last Three Months
Wtd. Actual Return	-0.3
Wtd. Index Return	0.0
Excess Return	**-0.4**
Selection Effect	-0.6
Allocation Effect	0.1
Interaction Effect	0.1

Attribution Summary
Last Three Months

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Equity	-2.2	-1.2	-1.0	-0.3	0.0	0.0	-0.3
Core Plus Fixed Income	-3.2	-3.2	0.0	0.0	0.2	0.0	0.2
High Yield/ Specialty Credit	-0.9	-0.6	-0.4	0.0	0.0	0.0	0.0
Credit Fixed Income	0.1	-0.1	0.2	0.0	0.0	0.0	0.0
Emerging Market Debt	-2.9	-3.2	0.3	0.0	0.0	0.0	0.0
Commodities	-1.3	-0.4	-0.8	0.0	0.0	0.0	0.0
Hedge Funds	2.0	1.2	0.8	0.1	0.0	0.0	0.1
Alpha Pool	1.4	1.9	-0.5	0.0	0.0	0.0	0.0
Midstream Energy	9.4	13.5	-4.1	-0.2	0.0	0.0	-0.2
Core Real Estate	0.6	1.2	-0.6	0.0	0.0	0.0	-0.1
Private Real Assets	-1.5	-1.5	0.0	0.0	0.0	0.0	0.0
Private Equity	4.1	4.1	0.0	0.0	0.0	0.0	0.0
Private Credit	1.7	1.8	-0.1	0.0	0.0	0.0	0.0
Opportunistic	-1.9	2.4	-4.4	0.0	-0.1	0.0	-0.1
Cash	1.3	1.2	0.1	0.0	0.1	0.0	0.1
Total Fund	**-0.3**	**0.0**	**-0.4**	**-0.6**	**0.1**	**0.1**	**-0.4**

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.

Attribution Effects Fiscal YTD



Performance Attribution

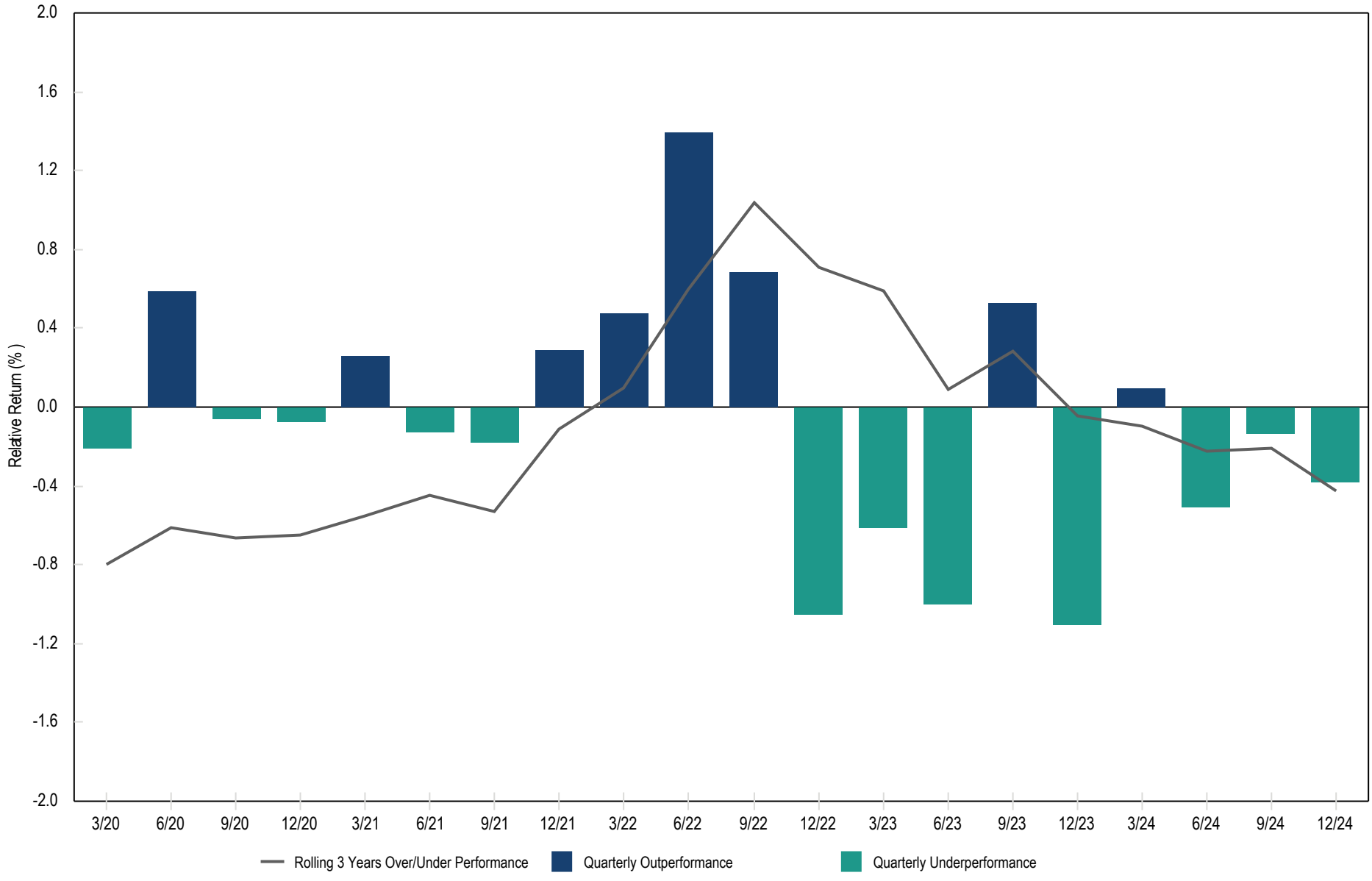
	Fiscal YTD
Wtd. Actual Return	4.4
Wtd. Index Return	5.0
Excess Return	**-0.5**
Selection Effect	-0.8
Allocation Effect	0.2
Interaction Effect	0.1

Attribution Summary FYTD

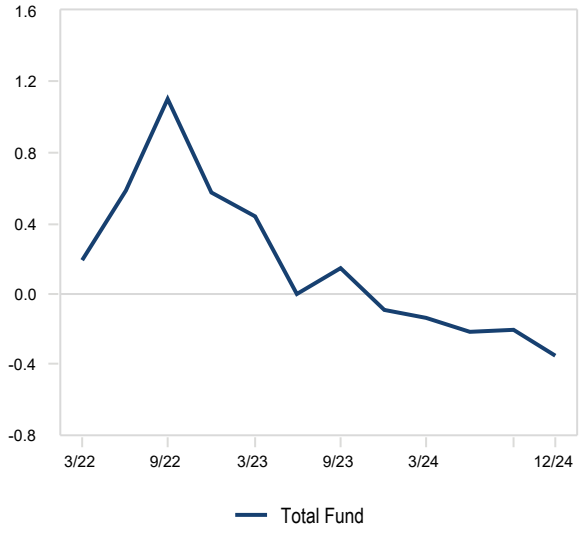
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Equity	4.5	5.5	-1.0	-0.2	0.0	0.0	-0.3
Core Plus Fixed Income	1.4	1.9	-0.5	-0.1	0.2	0.0	0.1
High Yield/ Specialty Credit	4.3	4.7	-0.4	0.0	0.0	0.0	0.0
Credit Fixed Income	0.1	-0.1	0.2	0.0	0.0	0.0	0.0
Emerging Market Debt	4.7	4.2	0.5	0.0	0.0	0.0	0.0
Commodities	-0.9	0.2	-1.1	0.0	0.0	0.0	0.0
Hedge Funds	4.5	4.5	0.0	0.0	0.0	0.0	0.0
Alpha Pool	2.2	4.1	-1.9	-0.1	0.0	0.0	-0.1
Midstream Energy	14.9	24.5	-9.5	-0.4	0.0	0.0	-0.5
Core Real Estate	0.0	1.4	-1.4	-0.1	0.1	0.0	0.1
Private Real Assets	-0.6	-0.6	0.0	0.0	0.0	0.0	0.0
Private Equity	6.2	6.2	0.0	0.0	0.0	0.0	0.0
Private Credit	4.4	4.5	-0.1	0.0	0.0	0.0	0.0
Opportunistic	9.8	4.9	4.9	0.0	0.1	0.0	0.1
Cash	2.9	2.6	0.3	0.0	-0.2	0.0	-0.2
Total Fund	**4.4**	**5.0**	**-0.5**	**-0.8**	**0.2**	**0.1**	**-0.5**

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.

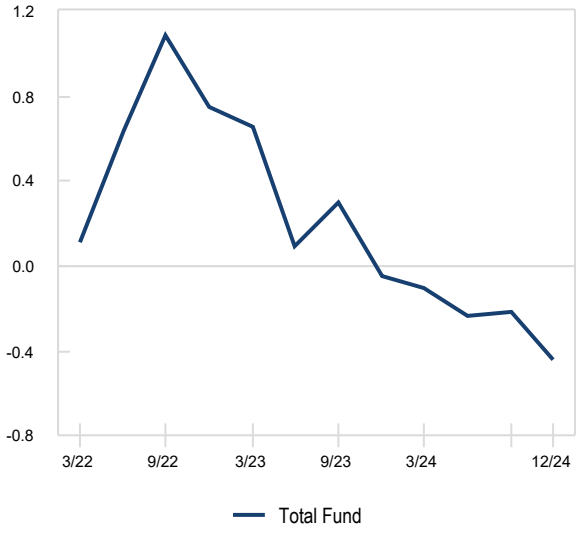
Rolling 3 Year Annualized Excess Performance



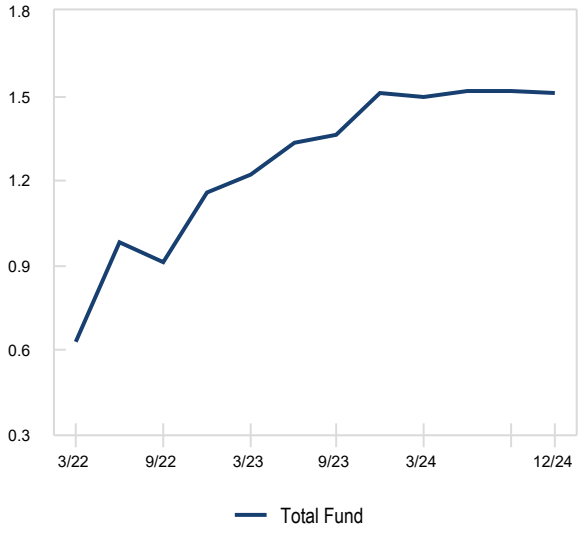
Rolling Information Ratio



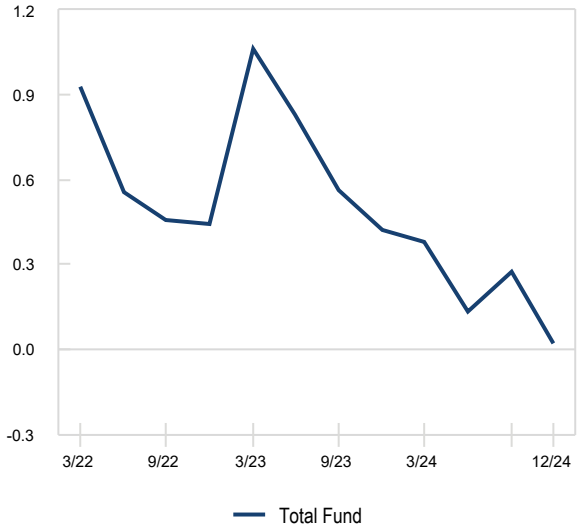
Rolling Annual Excess Benchmark Return



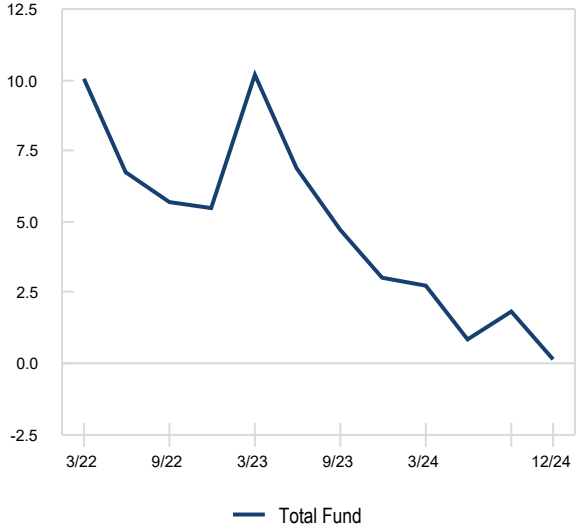
Rolling Tracking Error



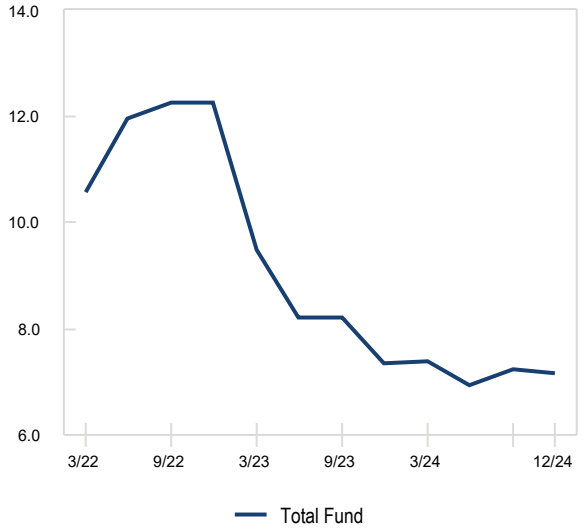
Rolling Sharpe Ratio



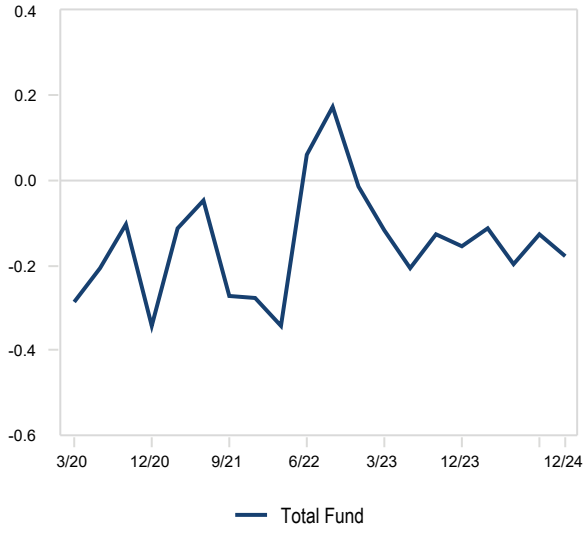
Rolling Annual Excess Risk Free Return



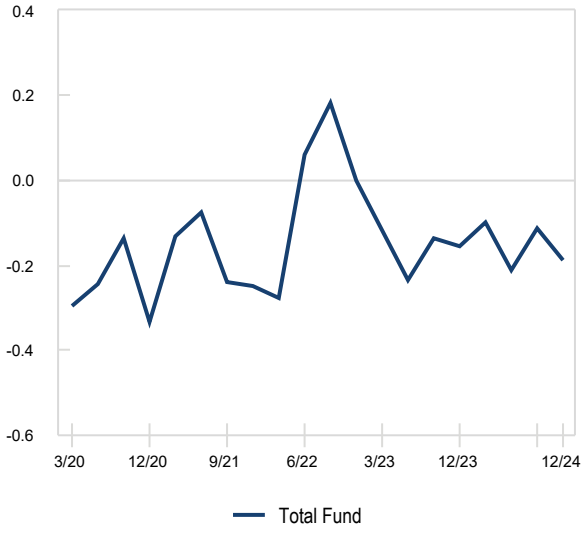
Rolling Annualized Standard Deviation



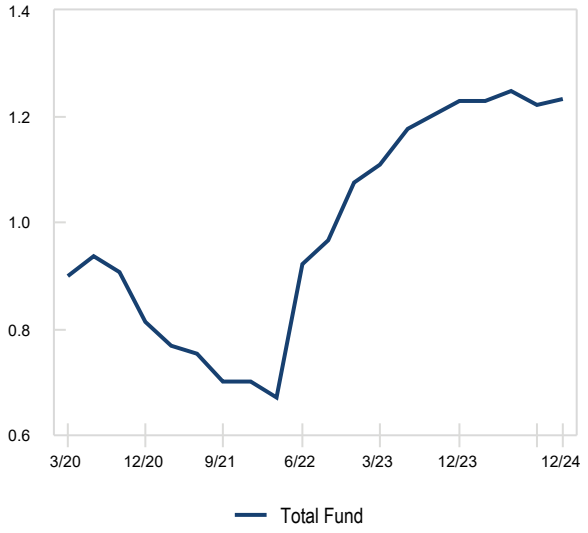
Rolling Information Ratio



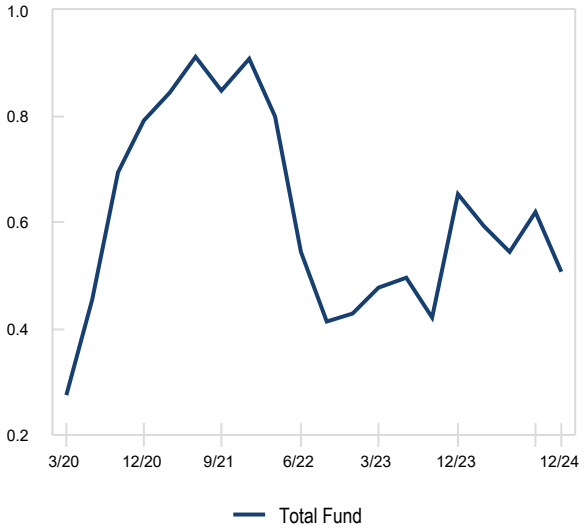
Rolling Annual Excess Benchmark Return



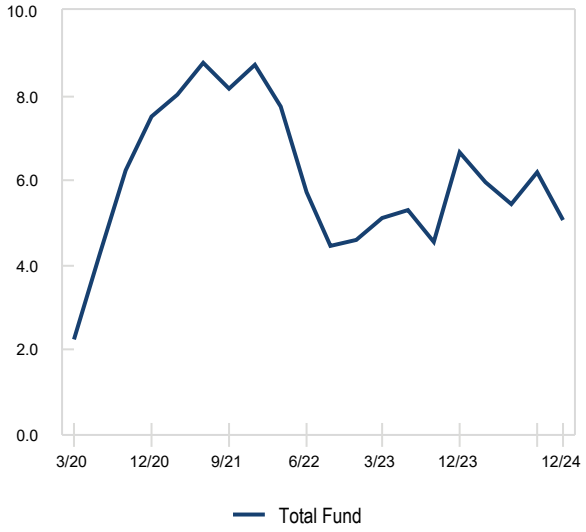
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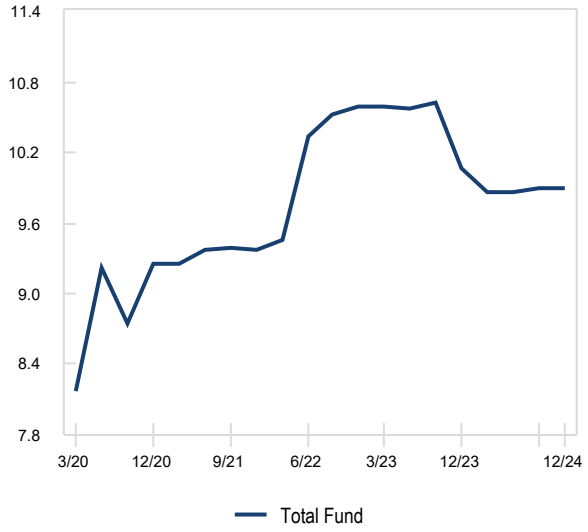
Rolling Sharpe Ratio



Rolling Annual Excess Risk Free Return



Rolling Annualized Standard Deviation



Cash Flows

	Estimated Beginning Market Value	Contributions	Withdrawals	Fees	Net Transfers	Net Investment Change	Estimated Ending Market Value
Equity	**2,083,185,034**			**-99,044**	**-60,000,000**	**-44,453,426**	**1,978,632,564**
Mellon DB SL Stock Index Fund	706,785,735					17,012,752	723,798,486
PIMCO StocksPLUS	154,576,110					3,725,161	158,301,271
AB US Small Cap Value Equity	125,024,919					2,156,666	127,181,585
Geneva Capital Small Cap Growth	68,866,795					67,314	68,934,109
Mellon DB SL World ex-US Index Fund	471,332,046				-60,000,000	-33,390,347	377,941,699
Cevian Capital II	48,613,486					1,658,099	50,271,585
Lazard Japanese Equity	143,675,214					-5,349,841	138,325,372
American Century Non-US Small Cap	69,815,299					-6,715,485	63,099,815
Dalton Japan Long Only	64,295,733			-99,044		-5,170,891	59,025,797
DFA Emerging Markets Value I	58,777,011					-4,480,454	54,296,557
Mellon Emerging Markets Stock Index Fund	22,115,167					-1,663,904	20,451,262
Carrhae Capital Long Master Fund Ltd	75,623,383					-6,804,596	68,818,788
ABS Emerging Market Direct	73,682,589					-5,498,191	68,184,398
Transition Equity	1,547					292	1,839
Fixed Income	**1,258,154,026**	**345,967**	**-91,783,279**		**139,460,700**	**-33,482,116**	**1,272,695,298**
Fixed Income Beta Exposure	281,287,485	345,967	-91,048,890		-869,000	-9,587,999	180,127,563
Mellon DB SL Aggregate Bond Index Fund	248,737,017				150,000,000	-9,486,101	389,250,916
PIMCO Core Plus	179,845,803					-5,074,857	174,770,946
TCW Securitized Opportunities	94,495,752				-2,027,660	-106,283	92,361,809
KKR US Broadly Syndicated Loan Fund					180,000,000	2,172,337	182,172,337
Stone Harbor Emerging Markets Debt Blend Portfolio	42,309,381		-734,389			-1,932,472	39,642,520
PIMCO EMD	221,608,916					-8,332,702	213,276,214
Transition Fixed Income	246,416					-16,214	230,202
Commodities	**261,721,066**	**122,450,000**			**-139,534,817**	**-2,698,170**	**241,938,079**
Gresham MTAP Commodity Builder Fund	46,793,801				-46,534,817	-258,984	
Wellington Commodities	214,927,265	122,450,000			-93,000,000	-2,439,186	241,938,079
Hedge Funds	**584,936,545**				**-10,000,000**	**10,867,557**	**585,804,102**
Aristeia International Limited	76,065,456					544,729	76,610,185
Brevan Howard Fund	58,729,187					1,086,016	59,815,203
D.E. Shaw Composite Fund	65,003,295					346,636	65,349,931
HBK Fund II	50,988,594					1,315,358	52,303,952
Hudson Bay Cap Structure Arbitrage Enhanced Fund	81,415,249					1,396,071	82,811,320

	Estimated Beginning Market Value	Contributions	Withdrawals	Fees	Net Transfers	Net Investment Change	Estimated Ending Market Value
Indus Pacific Opportunities Fund	50,279,070					275,927	50,554,997
Pharo Macro Fund	73,257,054					3,055,064	76,312,118
PIMCO Commodity Alpha Fund	83,152,032					1,416,100	84,568,132
Sculptor Master Fund	39,546,607				-10,000,000	1,291,299	30,837,906
Elliott Associates	6,500,000					140,358	6,640,358
Alpha Pool	**177,913,104**				**-19,131,000**	**2,503,366**	**161,285,470**
Hudson Bay - Alpha Pool	46,891,782				248,494	565,234	47,705,509
Davidson Kempner Institutional Partners	51,867,195				276,215	867,278	53,010,688
HBK Fund II	38,413,655				-19,870,219	861,181	19,404,617
Garda Fixed Income Relative Value Opportunity Fund	40,740,472				214,511	209,673	41,164,656
Midstream Energy	**313,582,513**				**-4,172,721**	**30,036,808**	**339,446,600**
Harvest Midstream	166,891,311				-2,251,859	18,834,921	183,474,373
PIMCO Midstream	146,691,202				-1,920,862	11,201,887	155,972,227
Core Real Estate	**242,532,590**		**-1,248,343**	**-373,714**	**57,581,094**	**2,080,836**	**300,572,462**
ASB Allegiance Real Estate Fund	120,351,816		-1,248,343		-1,248,343	1,298,723	119,153,853
JPMCB Strategic Property Fund	108,269,373			-373,714	-5,379,111	1,950,598	104,467,147
Blue Owl Real Estate Fund VI	13,911,400				14,208,548		28,119,948
Sculptor Diversified REIT					50,000,000	-1,168,485	48,831,515
Private Real Assets	**192,060,389**				**22,906,927**	**-3,234,447**	**211,732,870**
Invesco Real Estate Value-Add Fund IV	145,935					945	146,880
Landmark Real Estate Partners VIII	33,636,579				-709,850	-356,751	32,569,977
Long Wharf Real Estate	33,595,954				-495,540	-194,330	32,906,084
Covenant Apartment Fund X	30,188,721				-938,828	-3,023,251	26,226,642
Singerman Real Estate Opportunity Fund IV	18,185,543				3,106,295	268,520	21,560,358
LBA Logistics Value Fund IX, L.P.	20,380,496				2,307,692	-230,532	22,457,656
Covenant Apartment Fund XI, LP	25,820,082				1,317,581	243,853	27,381,516
KSL Capital Partners VI	5,979,917				3,193,498	-890,238	8,283,177
Merit Hill Self-Storage V, LP.	14,463,767				-5,022,386	169,078	9,610,459
Juniper Capital IV, L.P	4,230,534					201,137	4,431,671
Landmark Real Estate Partners IX	2,376,256				6,257,607	320,648	8,954,510
Juniper High Noon Partners, L.P	3,056,606					256,474	3,313,080

	Estimated Beginning Market Value	Contributions	Withdrawals	Fees	Net Transfers	Net Investment Change	Estimated Ending Market Value
Private Equity	**277,856,537**	**3,875,204**			**16,819,251**	**11,172,118**	**309,723,110**
Abbott VI	13,242,893				-1,480,797	108,796	11,870,892
Pantheon Secondary III	537,225					-1,628	535,597
Pantheon V	30,817						30,817
Pantheon VI	309,541					2,309	311,850
Pantheon VII	4,215,981					10,065	4,226,046
Vista Foundation Fund IV	21,479,058					830,566	22,309,624
Crown Global Secondaries V Master S.C.Sp	43,419,619					5,190,645	48,610,264
Crown Global Secondaries VI Master S.C.Sp	2,814,026				900,000	459,512	4,173,538
Brighton Park Capital Fund I	42,586,009				-465,342	560,771	42,681,438
Warren Equity Partners Fund III	36,597,253				720,582	877,832	38,195,667
Peak Rock Capital Fund III	19,776,734				1,884,260	2,363,219	24,024,213
Level Equity Growth Partners V	11,430,126				1,218,227	73,790	12,722,143
Level Equity Opportunities Fund 2021	8,023,637				2,096,322	235,418	10,355,377
Linden Capital Partners V LP	14,448,158				2,214,292	547,603	17,210,053
Rubicon Technology Partners IV L.P.	10,109,238				518,623	543,247	11,171,108
OrbiMed Private Investments IX, LP	2,793,919				-165,338	240,436	2,869,017
Brighton Park Capital Fund II, L.P	8,882,238				726,417	-227,122	9,381,533
Linden Co-Investment V LP	6,559,177					378,926	6,938,103
Warren Equity Partners Fund IV	17,910,770				2,653,483	437,777	21,002,030
WEP IV TS Co-Investment, L.P.	7,450,442				1,572,114	-13,575	9,008,981
Parthenon Investors VII	1,461,391				2,155,586	-178,468	3,438,509
Longreach Capital Partners	3,762,659				607,664	-806,193	3,564,130
Private Credit	**366,969,220**	**41,140**		**-226,453**	**1,262,201**	**6,927,480**	**374,973,588**
DC Value Recovery Fund IV	15,882,710					966,904	16,849,614
Sixth Street TAO Partners (B)	48,154,805				2,213,338	1,164,783	51,532,926
Brookfield Real Estate Finance Fund V	13,952,219				-2,834,906	-206,533	10,910,780
Magnetar Constellation Fund V	18,839,741				-2,908,649	131,303	16,062,395
H.I.G. Bayside Loan Opportunity Fund V	39,103,832				-1,294,791	1,300,568	39,109,609
Blue Torch Credit Opportunities Fund II	12,936,411					192,568	13,128,979
Fortress Credit Opportunites Fund V Expansion	30,575,376				5,633,308	571,298	36,779,982
Fortress Lending Fund II	24,888,838				-5,430,580	-338,622	19,119,636
Blue Torch Credit Opportunities Fund III	28,338,193				3,601,059	998,232	32,937,484
Fortress Lending Fund III	30,081,378				-1,079,349	1,454,205	30,456,234
OrbiMed Royalty & Credit Opportunities IV	13,021,811				-717,435	122,304	12,426,680

	Estimated Beginning Market Value	Contributions	Withdrawals	Fees	Net Transfers	Net Investment Change	Estimated Ending Market Value
Cerberus Business Finance V	19,390,391			-226,453	1,460,616	1,176,199	21,800,753
Silver Point Specialty Credit Fund III, L.P.	12,631,180				-2,660,968	357,307	10,327,519
Ares Pathfinder II	5,979,610					245,533	6,225,143
Oak Hill Advisors Structured Products Fund III, L.P.	14,361,818				1,372,688	522,607	16,257,113
ITE Rail Fund, L.P	28,800,778				-385,555	-2,175,674	26,239,548
Ares Senior Direct Lending Fund III LP	4,500,595				490,200	265,219	5,256,014
HPS Special Situations Opportunity Fund II, L.P.	5,529,534				1,458,656	110,548	7,098,738
Opportunistic	**164,441,022**				**-59,472**	**-3,205,068**	**161,176,482**
Sixth Street TAO Partners (D)	87,440,579				-290,750	1,782,014	88,931,843
Aristeia Select Opportunities II	58,113,643					-6,422,839	51,690,805
River Birch International - Opportunistic Investment	4,713,804					216,336	4,930,140
Hudson Bay Special Opportunities Fund LP	3,893,496				231,278	844,220	4,968,994
Pharo Opportunities Fund SPC	10,279,500					375,200	10,654,700
Cash	**427,961,705**	**23,512,786**	**-37,669,496**	**-24,214**	**867,836**	**4,095,958**	**418,744,574**
Short Term Investment Funds	188,129,014	23,512,786	-37,669,496	-24,214	75,867,836	1,143,003	250,958,928
BlackRock Short Duration Fund	239,832,691				-75,000,000	2,952,955	167,785,646
Other	**-241,974,574**	**141,351,158**	**-48,472,702**		**-6,000,000**	**328,696**	**-154,767,422**
Parametric Cash Overlay	33,474,710	13,351,251	-23,905,818		-6,000,000		16,920,143
Goldman Sachs Cash Account	661,200	24,349,553	-21,117,755				3,892,997
Futures Offset	-281,287,485	102,687,355	-1,856,128			328,696	-180,127,563
Collateral Cash	5,177,000	963,000	-1,593,000				4,547,000

Portfolio Reconciliation

	3 Mo	Fiscal YTD	1 Yr	3 Yrs	5 Yrs	10 Yrs
Beginning Market Value	6,109,339,176	5,838,506,052	5,545,796,887	5,558,278,973	4,502,865,481	3,554,763,207
Contributions	1,451,669,535	2,526,444,605	3,199,006,855	8,788,720,312	15,608,738,043	21,319,457,521
Withdrawals	-1,339,267,100	-2,423,813,708	-3,093,377,542	-8,807,615,532	-15,775,591,937	-21,867,579,327
Fees	-723,425	-1,083,178	-1,903,203	-12,975,305	-42,143,340	-125,815,881
Net Cash Flows	112,402,435	102,630,897	105,629,313	-18,895,220	-166,853,893	-548,121,806
Net Investment Change	-19,783,833	260,820,829	550,531,578	662,574,025	1,865,946,189	3,195,316,376
Ending Market Value	6,201,957,777	6,201,957,777	6,201,957,777	6,201,957,777	6,201,957,777	6,201,957,777
Net Change $	92,618,602	363,451,726	656,160,890	643,678,805	1,699,092,296	2,647,194,571

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

Correlation Matrix
3 Years Ending December 31, 2024

	A	B	C	D	E	F	G	H	I	J	K	L
A	1.00											
B	0.98	1.00										
C	0.95	0.97	1.00									
D	0.96	0.97	0.89	1.00								
E	0.76	0.77	0.64	0.79	1.00							
F	0.87	0.87	0.80	0.88	0.78	1.00						
G	0.79	0.80	0.73	0.80	0.71	0.97	1.00					
H	0.91	0.89	0.85	0.87	0.69	0.90	0.81	1.00				
I	0.86	0.86	0.77	0.89	0.87	0.92	0.84	0.81	1.00			
J	0.42	0.32	0.25	0.35	0.38	0.13	0.03	0.26	0.24	1.00		
K	0.44	0.41	0.43	0.39	0.18	0.29	0.20	0.42	0.33	0.14	1.00	
L	-0.24	-0.30	-0.25	-0.31	-0.37	-0.43	-0.43	-0.37	-0.39	0.02	-0.12	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 Interation
- Moderate to High Interation
- High Interaction

	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	0.2	0.8	1.0	3.8	-0.3	-0.4	1.7	0.0	0.2	7.9	0.0	85.2	84.1
Equity	-0.5	1.0	1.0	4.3	-0.5	-0.6	1.2	0.1	1.7	16.0	0.1	97.7	100.0
Domestic Equity	-0.7	1.0	1.0	7.3	-0.7	-0.7	1.0	0.3	4.8	17.6	0.4	98.1	100.5
International Developed Equity	0.5	1.0	1.0	1.7	0.2	0.5	1.7	-0.1	-0.8	16.2	-0.1	99.6	97.8
Emerging Markets Equity	0.8	0.9	1.0	-0.5	0.4	0.9	2.2	-0.2	-3.0	16.2	-0.3	95.8	92.2
Fixed Income	-0.3	1.0	1.0	-1.4	-0.4	-0.3	0.7	-0.7	-4.9	7.6	-0.8	98.2	101.0
Core Fixed Income	-0.7	1.0	1.0	-3.1	-1.5	-0.7	0.5	-0.9	-6.7	7.7	-1.0	96.7	102.9
High Yield/ Specialty Credit	0.3	0.8	0.9	2.5	-0.2	-0.4	2.7	-0.2	-1.1	6.6	-0.2	75.6	73.0
Emerging Market Debt	1.4	1.0	1.0	0.5	1.6	1.4	0.9	-0.3	-2.8	10.8	-0.3	104.7	95.2
Commodities	2.9	0.8	0.9	6.3	0.4	2.3	5.0	0.2	3.1	12.6	0.4	80.9	63.0
Hedge Funds	5.6	0.2	0.2	7.1	-0.2	-0.6	3.9	1.6	3.0	1.9	2.9	47.1	-61.2
Alpha Pool	2.4	-0.2	0.0	0.7	-3.6	-7.4	2.0	-1.6	-3.1	1.9	-1.6	9.0	-
Midstream Energy	2.1	0.8	1.0	24.5	-0.4	-1.6	4.8	1.1	19.7	17.1	2.0	85.2	73.1
Core Real Estate	-5.8	0.9	0.8	-7.9	-1.6	-5.5	3.6	-1.5	-11.7	7.5	-1.6	45.7	147.8
Private Real Assets	0.0	1.0	1.0	3.8	-	0.0	0.0	0.0	0.0	5.2	0.0	100.0	100.0
Private Equity	0.0	1.0	1.0	7.5	-0.6	0.0	0.0	0.7	3.6	5.0	1.2	100.0	100.2
Private Credit	0.0	1.0	1.0	6.7	-1.2	0.0	0.0	0.7	2.8	4.1	1.7	99.7	100.0
Opportunistic	-	-	-	0.4	-0.9	-9.6	9.7	-0.3	-2.9	9.7	-0.4	9.4	-

Risk Return Statistics: Last Three Years

3 Years

	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	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
RETURN SUMMARY STATISTICS														
Up Market Periods	21	21	15	15	21	21	18	18	20	20	22	22	29	29
Down Market Periods	15	15	21	21	15	15	18	18	16	16	14	14	7	7
Maximum Return	8.39	9.24	4.23	4.53	4.80	6.02	7.56	7.35	7.67	8.78	1.46	2.89	5.39	7.37
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	4.32	4.90	-3.10	-2.41	2.50	2.91	0.47	-0.90	6.33	4.05	7.06	7.66	-7.87	-2.32
Excess Return	1.70	2.32	-6.67	-5.96	-1.14	-0.60	-2.78	-4.17	3.12	1.19	3.03	3.66	-11.71	-5.92
Excess Performance	-0.58	0.00	-0.69	0.00	-0.41	0.00	1.37	0.00	2.28	0.00	-0.60	0.00	-5.55	0.00
RISK SUMMARY STATISTICS														
Beta	0.98	1.00	0.99	1.00	0.75	1.00	1.02	1.00	0.82	1.00	0.19	1.00	0.93	1.00
Upside Risk	11.99	12.27	5.18	5.37	5.01	6.29	7.64	7.33	9.93	10.67	2.71	4.27	3.75	5.12
Downside Risk	10.75	10.96	5.70	5.59	4.32	5.72	7.57	7.58	7.94	9.66	0.62	2.02	6.90	4.99
RISK/RETURN SUMMARY STATISTICS														
Standard Deviation	16.03	16.36	7.66	7.72	6.57	8.45	10.75	10.55	12.56	14.32	1.95	4.21	7.52	7.12
Alpha	-0.47	0.00	-0.73	0.00	0.26	0.00	1.41	0.00	2.85	0.00	5.59	0.00	-5.78	0.00
Sharpe Ratio	0.11	0.14	-0.89	-0.79	-0.18	-0.07	-0.26	-0.40	0.25	0.08	1.62	0.91	-1.49	-0.80
Excess Risk	15.86	16.19	7.46	7.54	6.37	8.26	10.53	10.31	12.65	14.48	1.87	4.01	7.85	7.41
Tracking Error	1.24	0.00	0.48	0.00	2.70	0.00	0.87	0.00	4.97	0.00	3.85	0.00	3.65	0.00
Information Ratio	-0.49	-	-1.49	-	-0.20	-	1.61	-	0.39	-	-0.16	-	-1.59	-
CORRELATION STATISTICS														
R-Squared	0.99	1.00	1.00	1.00	0.93	1.00	0.99	1.00	0.88	1.00	0.16	1.00	0.77	1.00
Actual Correlation	1.00	1.00	1.00	1.00	0.97	1.00	1.00	1.00	0.94	1.00	0.41	1.00	0.88	1.00

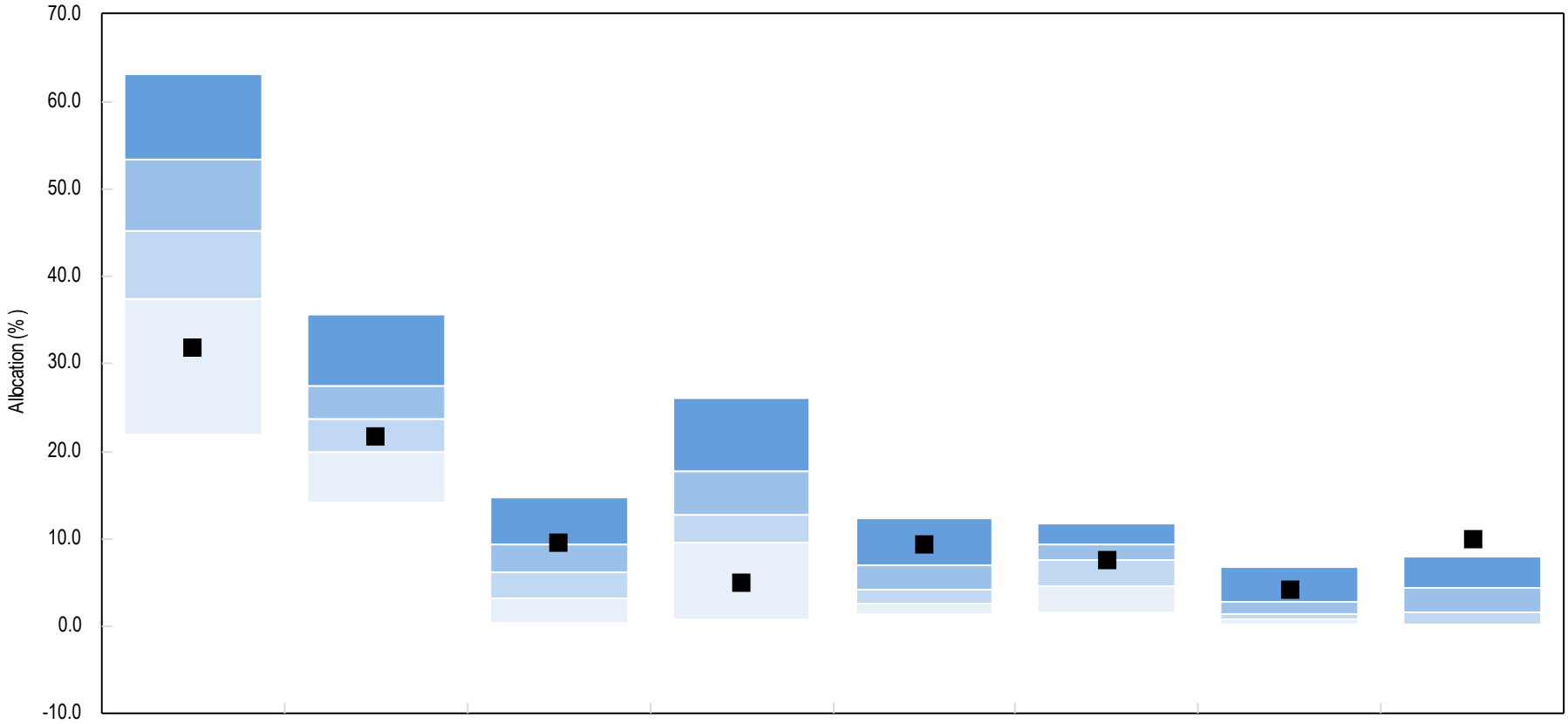
Risk Return Statistics: Last Two Years

	2 Yrs			
	Midstream Energy	Alerian Midstream Energy Index	Opportunistic	Assumed Rate of Return +3%
RETURN SUMMARY STATISTICS				
Up Market Periods	15	15	24	24
Down Market Periods	9	9	0	0
Maximum Return	12.72	14.38	10.18	0.80
Minimum Return	-5.47	-6.10	-6.31	0.80
Return	25.67	28.37	9.09	10.00
Excess Return	18.81	21.34	4.23	4.55
Excess Performance	-2.70	0.00	-0.91	0.00
RISK SUMMARY STATISTICS				
Beta	0.79	1.00	-	-
Upside Risk	13.43	15.77	9.26	2.76
Downside Risk	4.85	6.44	5.14	0.00
RISK/RETURN SUMMARY STATISTICS				
Standard Deviation	12.51	15.24	10.25	0.00
Alpha	3.05	0.00	-	-
Sharpe Ratio	1.50	1.40	0.41	28.05
Excess Risk	12.52	15.24	10.28	0.16
Tracking Error	4.69	0.00	10.25	0.00
Information Ratio	-0.54	-	-0.03	-
CORRELATION STATISTICS				
R-Squared	0.93	1.00	-	-
Actual Correlation	0.96	1.00	-	-

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

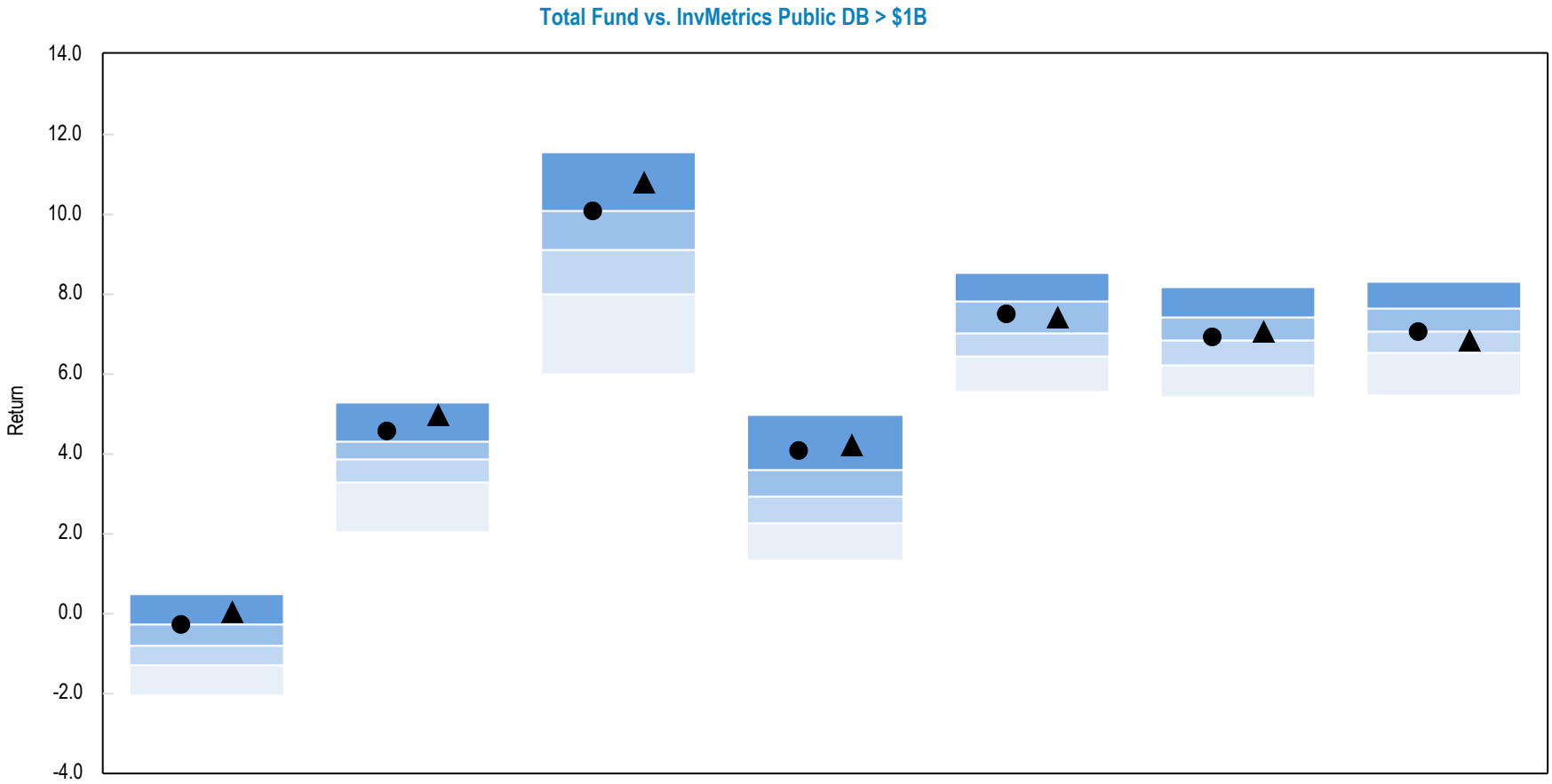
Peer Comparison

Total Plan Allocation vs. InvMetrics Public DB > $1B
As of December 31, 2024



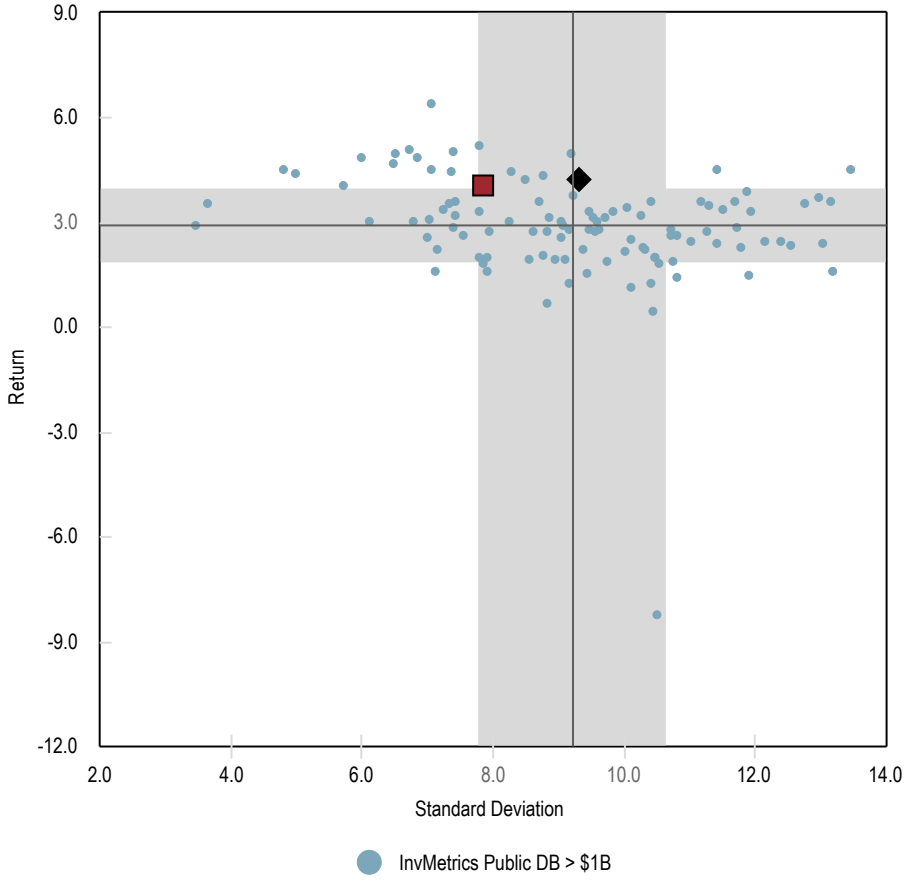
	Total Equity	Total Fixed Income	Hedge Funds	Private Equity	Real Assets/Commod	Real Estate - Private	Cash & Equivalents	Other
Total Fund	31.9 (88)	21.6 (66)	9.6 (25)	5.0 (87)	9.4 (20)	7.6 (46)	4.3 (12)	9.9 (1)
5th Percentile	63.2	35.7	14.7	26.1	12.3	11.8	6.7	7.9
1st Quartile	53.5	27.5	9.5	17.7	7.0	9.4	2.8	4.4
Median	45.2	23.7	6.2	12.7	4.1	7.5	1.4	1.6
3rd Quartile	37.5	19.9	3.2	9.5	2.5	4.7	0.8	0.2
95th Percentile	22.0	14.1	0.4	0.9	1.4	1.6	0.2	0.1
Population	106	107	49	97	70	89	98	18

Parentheses contain percentile rankings. Other contains Alpha Pool, Opportunistic, and Private Credit. Real Estate contains Private and Core Real Estate. Real Assets contain Commodities and Midstream.



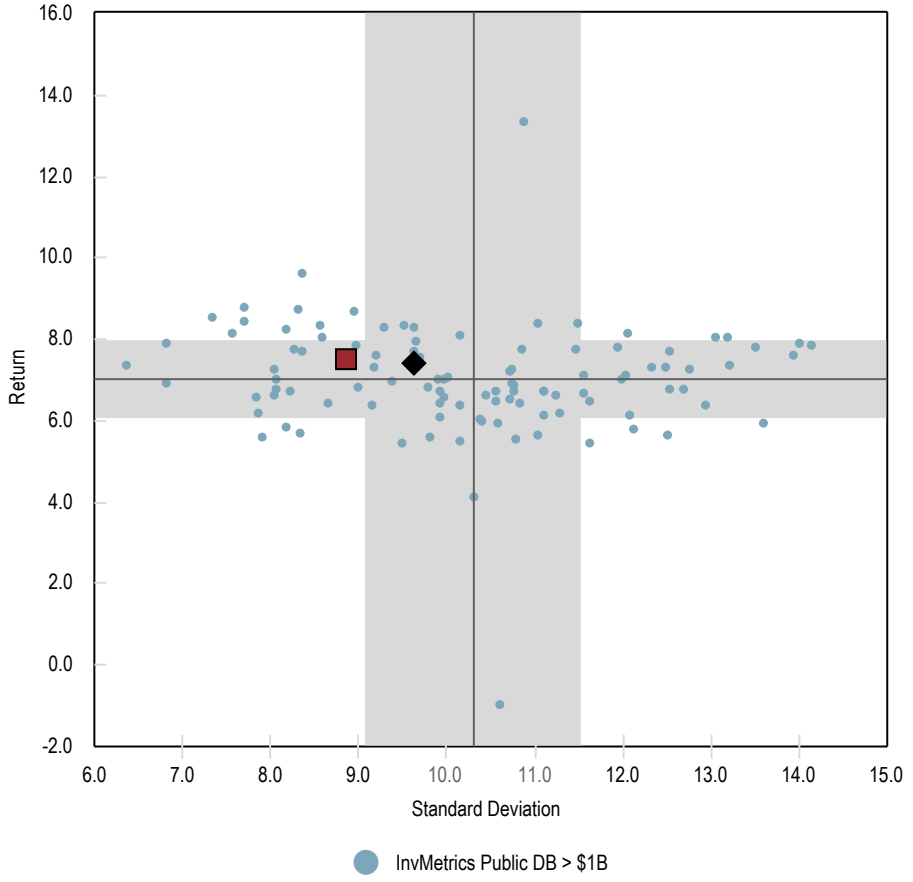
	Quarter	Fiscal YTD	1 Year	3 Years	5 Years	7 Years	10 Years
● Total Fund	-0.3 (25)	4.6 (16)	10.1 (25)	4.1 (19)	7.5 (35)	6.9 (46)	7.1 (51)
▲ Policy Index	0.0 (9)	5.0 (9)	10.8 (14)	4.2 (17)	7.4 (36)	7.1 (40)	6.8 (59)
5th Percentile	0.5	5.3	11.5	5.0	8.5	8.2	8.3
1st Quartile	-0.3	4.3	10.1	3.6	7.8	7.4	7.6
Median	-0.8	3.9	9.1	2.9	7.0	6.8	7.1
3rd Quartile	-1.3	3.3	8.0	2.3	6.4	6.2	6.5
95th Percentile	-2.0	2.0	6.0	1.3	5.6	5.4	5.5
Population	110	109	109	106	105	103	102

Annualized Return vs. Annualized Standard Deviation
3 Years Ending December 31, 2024



	Return	Standard Deviation
Total Fund	4.07	7.86
Policy Index	4.24	9.30
Median	2.93	9.21
Population	106	106

Annualized Return vs. Annualized Standard Deviation
5 Years Ending December 31, 2024



	Return	Standard Deviation
Total Fund	7.52	8.86
Policy Index	7.41	9.62
Median	7.01	10.30
Population	105	105

Other

	2024 Q4	2024 Q3	2024 Q2	2024 Q1	2023 Q4	2023 Q3	2023 Q2	2023 Q1	2022 Q4	2022 Q3	2022 Q2	2022 Q1
Total Fund	**-0.3**	**4.8**	**1.3**	**3.8**	**5.1**	**-0.8**	**1.9**	**3.2**	**4.5**	**-3.1**	**-7.5**	**-0.8**
Policy Index	*0.0*	*4.9*	*1.8*	*3.7*	*6.2*	*-1.4*	*2.9*	*3.8*	*5.5*	*-3.8*	*-8.9*	*-1.3*

	2021 Q4	2021 Q3	2021 Q2	2021 Q1	2020 Q4	2020 Q3	2020 Q2	2020 Q1	2019 Q4	2019 Q3	2019 Q2	2019 Q1
Total Fund	**3.6**	**0.5**	**5.5**	**3.5**	**8.8**	**4.4**	**10.7**	**-11.3**	**4.6**	**0.2**	**3.1**	**6.8**
Policy Index	*3.3*	*0.7*	*5.7*	*3.3*	*8.8*	*4.5*	*10.1*	*-11.1*	*4.6*	*0.8*	*3.0*	*7.0*

	2018 Q4	2018 Q3	2018 Q2	2018 Q1	2017 Q4	2017 Q3	2017 Q2	2017 Q1	2016 Q4	2016 Q3	2016 Q2	2016 Q1
Total Fund	**-6.4**	**2.3**	**0.3**	**-0.1**	**3.0**	**3.2**	**2.7**	**4.2**	**0.8**	**3.5**	**1.9**	**1.1**
Policy Index	*-5.5*	*2.2*	*0.7*	*-0.1*	*3.2*	*3.1*	*2.8*	*3.5*	*0.5*	*2.9*	*2.2*	*1.8*

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

Investment Fund or Strategy	Fund Incepted	Data Source
AB US Small Cap Value Equity	7/7/2015	Northern Trust
Abbott Capital PE VI	3/31/2008	Abbott Capital
ABS Emerging Market Direct	8/29/2024	ABS
American Century Non-US Small Cap	12/15/2020	American Century
Ares Pathfinder	10/1/2023	Ares
Aristeia International Limited	5/1/2014	Northern Trust
ASB Real Estate	9/30/2013	ASB
Barclays Capital Aggregate Rebalancing Overlay	6/15/2022	Parametric
BlackRock Short Duration Fund	9/8/2021	BlackRock
Blue Owl Real Estate Fund VI	3/18/2024	Blue Owl
Blue Torch Credit Opportunities	7/24/2020	Blue Torch
Brevan Howard	11/1/2013	Northern Trust
Brighton Private Equity	3/28/2021	Brighton
Brighton Park Capital Fund II, L.P	9/30/2022	Brighton
Brookfield Real Estate Finance Fund V	12/18/2017	Northern Trust
Carrhae Capital Long Master Fund	8/1/2024	Carrhae
Cerberus Business Finance V	8/25/2023	Cerberus
Cevian Capital II	12/30/2014	Northern Trust
Covenant Apartment Fund X	10/29/2020	Covenant
Crown Global Secondaries V Master S.C.Sp	2/1/2021	Crown
Crown Global Secondaries Fund VI	2/1/2021	Crown
Dalton Japan Long Only	10/31/2023	Dalton
DC Value Recovery fund IV	12/28/2015	Colony
D.E. Shaw	6/30/2013	Northern Trust
DFA Emerging Markets Value I	3/7/2014	Northern Trust
Elliot Associates	7/1/2024	Elliott
Fortress Credit Opportunities	12/17/2020	Fortress
Fortress Lending Fund II	3/15/2021	Fortress
Garda Fixed Income Relative Value Opp	9/30/2021	Garda
Geneva Capital Small Cap Growth	7/22/2015	Geneva
Gresham MTAP Commodity	9/3/2013	Gresham
Harvest Midstream	9/28/2020	Harvest Midstream
HBK Fund II	11/1/2013	Northern Trust
Henderson Smallcap Growth	7/22/2015	Northern Trust
H.I.G Bayside Loan Opportunities Fund V	7/24/2019	H.I.G. Capital
Hudson Bay	6/7/2019	Northern Trust
Hudson Bay Special Opportunities Fund	2/20/2024	Hudson Bay
Indus Pacific Opportunities	6/30/2014	Northern Trust
Invesco Real Estate III	6/30/2013	Invesco
Invesco Real Estate IV	12/18/2015	Invesco
ITE Rail Fund, L.P	2/27/224	ITE Rail
J.P. Morgan Strategic Property	7/2/2014	J.P. Morgan
Juniper High Noon Partners, L.P	3/18/2024	Juniper
Juniper Capital IV, L.P.	4/26/2023	Juniper
KKR US Broadly Syndicated Loan Fund	10/21/2024	Mellon
KSL Capital Partners VI	4/26/2023	KSL Capital
Landmark Real Estate Partners VIII	4/29/2018	Landmark
Landmark Real Estate Partners IX	4/1/2024	Landmark
Lazard Japanese Equity	11/1/2023	Lazard
LBA Logistics Value Fund IX, L.P.	2/22/2022	LBA
Level Equity Growth Partners V	11/1/2021	Level Equity
Level Equity Opportunities Fund 2021	11/1/2021	Level Equity
LGT Crown	2/1/2021	LGT
Linden Capital Partners V LP	7/19/2022	Linden
Linden Co-Investment V LP	6/30/2022	Linden
Longreach Capital Partners	5/28/2024	Long Reach
Long Wharf Real Estate	6/27/2019	Long Wharf
Magnetar Constellation	11/14/2018	Magnetar
Mellon Aggregate Bond Index Fund	1/14/2011	Mellon
Mellon EB DV Stock Index	10/18/2017	Mellon
Mellon EB DV World ex-US Index	8/1/2018	Mellon
Merit Hill Self Storage	11/3/2023	Merit
Myriad Opportunities Offshore	5/19/2016	Northern Trust
Oak Hill Advisors	12/22/2023	Oak Hill
OrbiMed Private Investments IV, LP	11/4/2022	OrbiMed
OrbiMed Royalty & Credit Opportunities	9/12/2022	OrbiMed
Pantheon Global III	6/30/2000	Pantheon
Pantheon USA V	6/30/2005	Pantheon
Pantheon USA VI	3/31/2005	Pantheon
Pantheon USA VII	3/31/2005	Pantheon
Parametric Overlay/ Cap Efficiency Program	7/31/2020	Parametric
Peak Rock Capital Fund III	7/13/2021	Peak Rock
Pharo Opportunities Fund SPC	6/28/2024	Pharo
PIMCO Core Plus	1/21/2011	Northern Trust
PIMCO Commodity Alpha	5/4/2016	PIMCO
PIMCO EMD	2/29/2020	Northern Trust
PIMCO Midstream	10/9/2020	PIMCO
PIMCO StocksPLUS	7/14/2003	PIMCO
Fidelity Non-US Small Cap Equity	6/10/2008	Northern Trust
River Birch	8/3/2015	Northern Trust
Rubicon Technology Partners IV LP	11/30/2022	Rubicon
Silver Point Specialty Credit Fund III, L.P.	10/4/2023	Singerman
Singerman Real Estate Opportunity Fund IV	10/27/2021	Sculptor
Sculptor Diversified REIT	12/2/2024	Sculptor
Sculptor Enhanced Domestic Partners	3/26/2019	Northern Trust
Short Term Cash Account	12/31/2000	Northern Trust
Short Term Investment Funds	6/30/2000	Stone Harbor
Stone Harbor Emerging Markets Debt	8/8/2012	TPG Sixth Street
TAO Contingent	4/16/2020	TCW
TCW Securitized Opportunities	2/3/2016	Northern Trust
Transition Equity	9/30/2010	Northern Trust
Transition Fixed Income	9/30/2010	TPG Sixth Street
TSSP Adjacent Opportunities Partners	11/17/2017	Vista Equity
Vista Equity Partners	7/24/2020	Warren
Warren Equity III	4/1/2021	Warren
Warren Equity IV	1/1/2023	Wellington
Wellington Alternative Investments	2/9/2023	Wellington
WEP IV TS Co-Investment, L.P.	8/14/2023	Northern Trust
Western Asset Core Plus	5/31/2004	Northern Trust
Western Asset High Yield Fixed income	5/31/2005	Western Asset

Policy & Custom Index Composition	
Policy Index: 11/1/2024 - Present	Policy Index: 33% MSCI ACWI IMI (Net), 25% Fixed Income Blend - 17% Core (14% Bloomberg US Aggregate Index, 3% ICE BofAML 7-10 Year US Treasury Index). 8% Credit (1.5% Securitized (0.75% Bloomberg Non-Agency CMBS Index; 0.50% Bloomberg ABS Index; 0.25% J.P. Morgan CLOIE AAA Index) 2.5% Morningstar LSTA Leverage Loan Index, 4% Emerging Market Debt (2% JPM EMBI Global Div / 2% JPM GBI EM Global Div), 4% Bloomberg Commodity Index, 10% Hedge fund (7.5% 3-Month T-bill + 3%, 2.5% MSCI ACWI (Net)), 8% 3-Month T-Bill + 3%, 5% Alerian Midstream Energy Index, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns*, 8% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 0% Assumed Rate of Return +3%, -8% 3-Month T-bill. The Equity and Fixed Income Beta Exposure return includes overlay cash and an implied hurdle rate also applied to the Alpha pool. All data is preliminary.
Policy Index: 10/1/2023 - 11/1/2024	33% MSCI ACWI IMI (Net), 15% 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%, 5% Alerian Midstream Energy Index, 5% NCREIF-ODCE Gross Monthly, 5% actual time-weighted Private Equity Returns*, 8% actual time-weighted Private Credit Returns*, 5% actual time-weighted Private Real Estate Returns*, 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 market's public market "equivalent". Private Equity to Global Equity, Private Credit and Private Real Estate to Core Plus.

Glossary

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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