Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

PERIOD ENDING: DECEMBER 31, 2022

Investment Performance Review for

San Mateo County Employees' Retirement Association

Table of Contents

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4th quarter summary

THE ECONOMIC CLIMATE

- Real GDP increased at a 2.9% rate in the fourth quarter (1.0% year-over-year growth), slightly exceeding expectations. Consumer spending, private inventory investment, government expenditures, and nonresidential investment were supportive of growth.
- Unemployment remained near historic lows during the quarter, at 3.5% in December. While this figure suggests a strong and resilient job market, the workforce remains much smaller than pre-pandemic times as more than two million workers remain out of the labor force.

PORTFOLIO IMPACTS

- Inflation fears continue to ease as domestic inflation fell further. Headline inflation was 6.5% year-over-year in December—the lowest since October 2021—while core inflation came in at 5.7%. Prices for most goods and services have moderated with the exception of shelter costs, which increased at a worryingly fast pace of 10.0% annualized in December.
- U.S. real personal spending held steady at 2.0% year-over-year in August. Households focused spending on services over goods, which has removed some stress from supply chains and likely helped to normalize global transportation issues. Relatively strong spending seems to suggest it is possible that inflation moderates without a painful slowdown in the economy.

THE INVESTMENT CLIMATE

- China's rapid pivot away from a "Zero Covid" policy towards the end of Q4 added a large tailwind to emerging market equity performance and the global growth outlook. Despite this positive news, an uptick in virus cases poses challenges for China's reopening.
- Credit performed well in the fourth quarter, as resilient U.S. economic growth combined with expectations for the Fed to ease their tightening cycle helped mitigate investor concerns of a near-term cyclical downturn.

ASSET ALLOCATION ISSUES

- Calendar year 2022 proved to be a year of *reversal* regarding asset class performance. Top performing investments of the past decade, such as U.S. growth and small cap stocks, suffered some of the largest losses. Meanwhile, many of the worst performing investments of the past decade, including commodities and value stocks, significantly outperformed.
- Value stocks outperformed markedly during 2022, outpacing growth stocks by 10.2% in Q4 and 21.6% for the year. Energy, industrials, and materials—sectors heavily tilted toward value—showed strong returns, with energy ending the year up 64.6%.

Markets have partially recovered as inflation fears eased

Recession risks and an earnings slowdown may come into focus in 2023

U.S. economics summary

— Real GDP increased at a 2.9% rate in Q4 (1.0% year-over-year growth). Consumer spending, private inventory investment, government expenditures, and nonresidential investment supported the economy.

— Inflation fears continue to ease as domestic inflation fell further. December headline inflation came in at 6.5% year-over-year while core inflation (excluding food & energy) came in at 5.7%. Most goods and services price rises have slowed, with the exception of shelter costs, which increased at a worryingly fast pace of 10% annualized in December.

— Unemployment remained very low during the quarter, at 3.5% in December. While this official figure suggests a strong and resilient job market, the workforce remains much smaller than pre-pandemic times as more than two million workers are missing from the labor force.

— Consumer spending kept steady though savings rates dropped to 2.3%—a depressed level not seen since the mid-2000s. A low household savings rate is sometimes seen as an indicator of strong consumer confidence and spending, though we suspect household budgets are currently being hit hard by higher costs.

— Consumer sentiment improved during Q4 but is still very downbeat. In the most recent University of Michigan survey, respondents showed less concern around inflation, reported better business conditions and long-term outlook, but were pessimistic over personal finances.

— U.S. home prices peaked in June 2022 and have been falling since then, according to S&P CoreLogic. Significantly higher mortgage interest rates have led to the worst home affordability on record, according to the National Association of Realtors.

	Most Recent	**12 Months Prior**
Real GDP *(YoY)*	1.0% *12/31/22*	5.7% *12/31/21*
Inflation *(CPI YoY, Core)*	5.7% *12/31/22*	5.5% *12/31/21*
Expected Inflation *(5yr-5yr forward)*	2.2% *12/31/22*	2.3% *12/31/21*
Fed Funds Target Range	4.25% – 4.50% *12/31/22*	0.00% – 0.25% *12/31/21*
10-Year Rate	3.87% *12/31/22*	1.51% *12/31/21*
U-3 Unemployment	3.5% *12/31/22*	3.9% *12/31/21*
U-6 Unemployment	6.5% *12/31/22*	7.3% *12/31/21*

International economics summary

— Economic growth expectations continued to weaken, although the GDP outlook for emerging economies is starting to paint a more optimistic picture. Developed economies, specifically across the Eurozone and United Kingdom, are still facing the negative growth impacts of tighter financial conditions as inflation remains elevated.

— Inflation in both the Eurozone and U.K. has reinforced tighter policies from the ECB and BOE. While U.K. inflation fell to 10.7% from the 11.1% peak in October, interest rates are expected to be raised further (but in smaller increments). Eurozone inflation has shown signs of moving past its peak, although core inflation hit a new high of 5.2%, stoking fears that inflation may be spreading to core goods and services.

— Unemployment rates have remained stable over the quarter. India stood out as an exception, where unemployment jumped from 6.4% to 8.3%.

— The war in Ukraine carried on despite temporary "ceasefires" declared by Russia. The fighting has intensified in Eastern Ukraine around Kharkiv, with a supporting effort in Southern Ukraine, as Russian forces attempt to secure frontline positioning in the Kherson Oblast.

— China's rapid pivot away from a "Zero Covid" policy towards the end of the quarter added a large tailwind to the global growth outlook. Despite this positive news, a rapid uptick in COVID-19 cases challenges the timeline of the reopening story. Additionally, many wonder how a large uptick in global demand might impact inflation pressures at a time when advanced economies struggle specifically to reign in spending.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	1.0% *12/31/22*	6.5% *12/31/22*	3.5% *12/31/22*
Eurozone	2.3% *9/30/22*	9.2% *12/31/22*	6.5% *11/30/22*
Japan	1.5% *9/30/22*	4.0% *12/31/22*	2.4% *11/30/22*
BRICS Nations	3.6% *9/30/22*	3.5% *12/31/22*	5.2% *12/31/21*
Brazil	3.6% *9/30/22*	5.8% *12/31/22*	8.3% *10/31/22*
Russia	(3.7%) *9/30/22*	11.9% *12/31/22*	3.7% *11/30/22*
India	6.3% *9/30/22*	5.7% *12/31/22*	8.3% *12/31/22*
China	3.9% *9/30/22*	1.8% *12/31/22*	5.7% *11/30/22*

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.

Equity environment

— U.S. equities delivered their only positive quarterly return of 2022 during Q4 (S&P 500 +7.6%), helping to dampen the index's worst calendar year performance since 2008 (-18.1% loss in 2022). Higher interest rates and recession fears contributed to poor returns.

— U.S. corporate earnings in Q3 grew 2.4% from the year prior, marking the slowest rate of growth since Q3 2020. Per FactSet, earnings are projected to decline by -4.1% in Q4, which would mark the first decline in U.S. earnings since 2020.

— Many equity markets now trade at valuation levels near historical averages as rising rates and growth concerns have contributed to more attractive pricing. The S&P 500 forward P/E ratio of 18.3 (as of November 30th) is under the five-year average of 18.6 and the ten-year average of 20.2.

— Currency movements continued to create portfolio volatility for investors with unhedged exposure to foreign currencies. The U.S. dollar depreciated sharply during Q4 which resulted in a large gain of 7.6% for investors with unhedged foreign currency exposure (+17.3% MSCI EAFE unhedged, +9.7% MSCI EAFE hedged).

— Value stocks outpaced growth stocks by 10.2% in Q4 and by 21.6% for the year. Energy, industrials, and materials—sectors which are heavily tilted toward value—showed strong returns, with energy ending the year up 64.6%.

— Implied volatility fell significantly over the quarter, as the Cboe VIX Index moved from 31.6 to 21.7. Equity markets advanced on cooling inflation, potential for less aggressive central bank action, and perhaps optimism around China's reopening.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	7.6%		(18.1%)	
U.S. Small Cap (Russell 2000)	6.2%		(20.4%)	
U.S. Equity (Russell 3000)	7.2%		(19.2%)	
U.S. Large Value (Russell 1000 Value)	12.4%		(7.5%)	
US Large Growth (Russell 1000 Growth)	2.2%		(29.1%)	
Global Equity (MSCI ACWI)	9.8%	7.6%	(18.4%)	(15.5%)
International Large (MSCI EAFE)	17.3%	9.7%	(14.5%)	(4.6%)
Eurozone (EURO STOXX 50)	24.8%	15.7%	(15.1%)	(7.0%)
U.K. (FTSE 100)	17.1%	9.3%	(7.0%)	5.9%
Japan (NIKKEI 225)	11.3%	1.4%	(18.9%)	(5.2%)
Emerging Markets (MSCI Emerging Markets)	9.7%	6.7%	(20.1%)	(16.3%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/22

Domestic equity

U.S. equities notched their only positive quarterly return for the year during Q4 (S&P 500 +7.6%), helping to dampen the index's worst annual performance since 2008 (-18.1% loss in 2022). Domestic shares were negatively impacted by higher interest rates and growing recession fears due to tightening from the Federal Reserve. While performance over the quarter was positive, U.S. equities trailed emerging market and international developed equities.

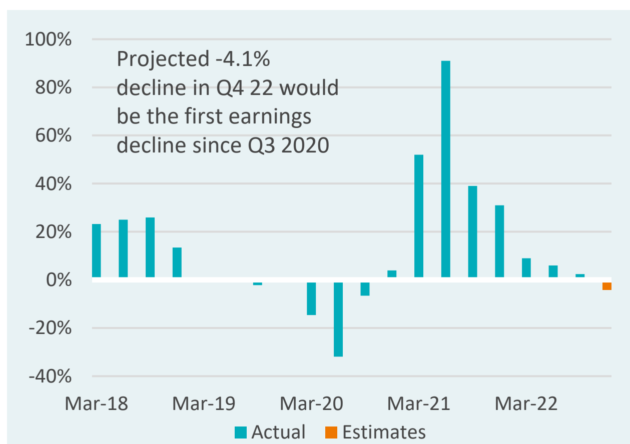
Earnings in the third quarter grew 2.4% from the year prior, marking the slowest rate of growth since Q3 2020. Energy dominated the narrative, as earnings grew an incredible 137% from the previous year. U.S. energy companies experienced margin expansion due to materially higher commodity prices, specifically within oil and natural gas. Per FactSet, earnings are projected to decline by -4.1% in Q4, which would mark the first decline in U.S. earnings since 2020. A potential recession could pose challenges for the earnings outlook.

Energy dominated sector performance in the quarter (+22.8), leading the positive performance seen in most sectors, while telecommunications (-1.4%) and consumer discretionary (-10.2%) saw negative returns.

S&P 500 PRICE INDEX

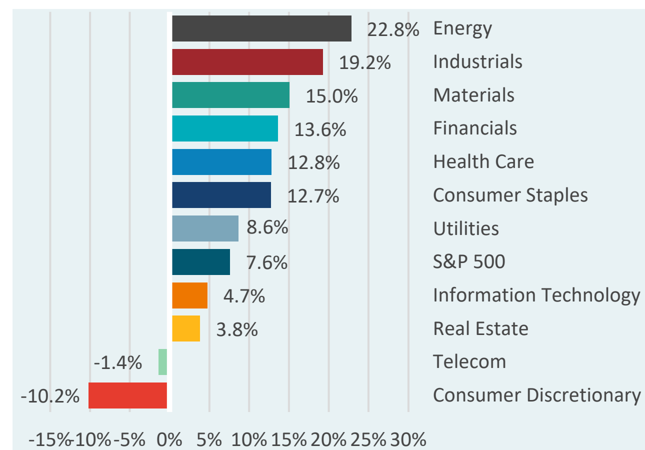
Source: Standard & Poor's, as of 12/31/22

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



Source: FactSet, as of 12/31/22

Q4 SECTOR PERFORMANCE



Source: Morningstar, as of 12/31/22

Domestic equity size & style

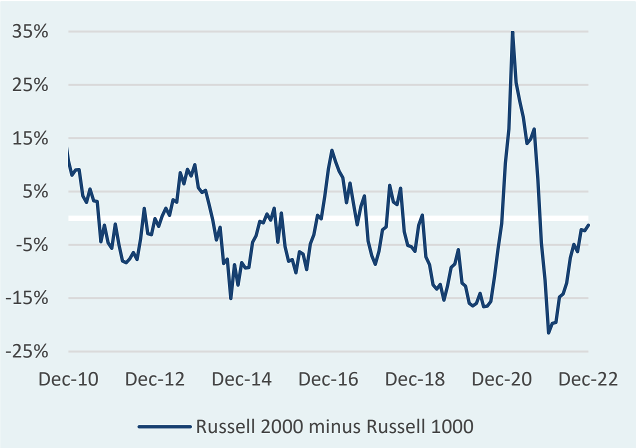
Value stocks outpaced growth stocks by 10.2% in Q4 and by 21.6% for the year. Energy, industrials, and materials—sectors which are heavily tilted toward value—showed strong returns, with the energy sector ending the year up 64.6%.

Markets adjusted to Federal Reserve rate hikes in the fourth quarter and throughout the year. Profitless and high-growth companies suffered the most as investors favored higher yielding fixed income and preferred stocks with strong fundamentals.

Small capitalization stocks underperformed large capitalization stocks (Russell 2000 +6.2%, Russell 1000 +7.2%), and remain relatively rich in valuations despite recent performance pain.

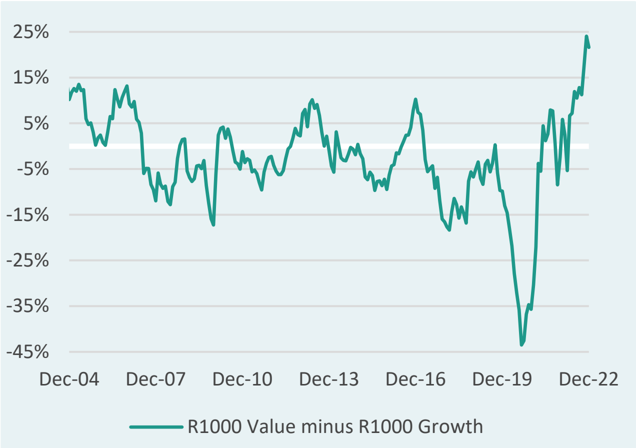
Domestic equities made a modest recovery in Q4 as inflation appears to have peaked and the end of the Fed's hiking cycle is in sight. These dynamics will likely help determine the relative performance of style factors in the near-term.

SMALL CAP VS LARGE CAP (YOY)



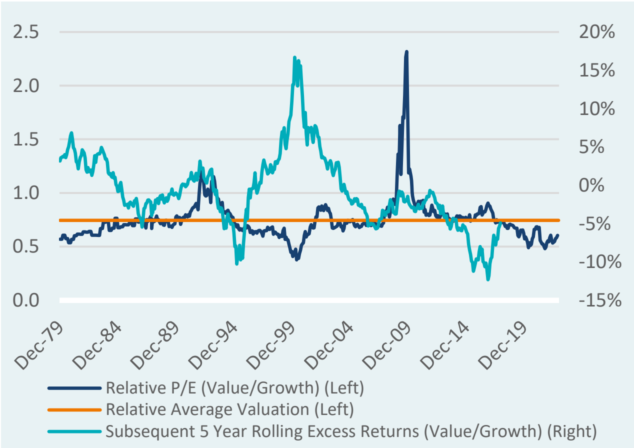
Source: FTSE, as of 12/31/22

VALUE VS GROWTH (YOY)



Source: FTSE, as of 12/31/22

VALUE VS. GROWTH RELATIVE VALUATIONS



Source: FTSE, Bloomberg, as of 12/31/22

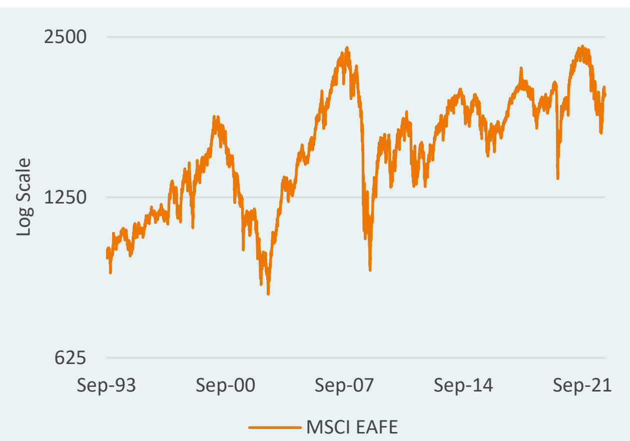
International developed equity

International developed equities rallied significantly in the fourth quarter, driven by strong gains from Eurozone equities and favorable currency movements. The MSCI EAFE Index finished the quarter up 17.3% on an unhedged currency basis, handily outperforming emerging market and U.S. equities.

A bounce back from European shares helped drive the double-digit returns seen from the MSCI EAFE Index. Investors showed preference towards larger names, as the EURO STOXX 50—a gauge of the largest companies in the Eurozone—rose 24.8%, outpacing the 19.7% gain from the broader EURO STOXX 600 Index. Both indices were trading at 2022 lows at the start of the fourth quarter.

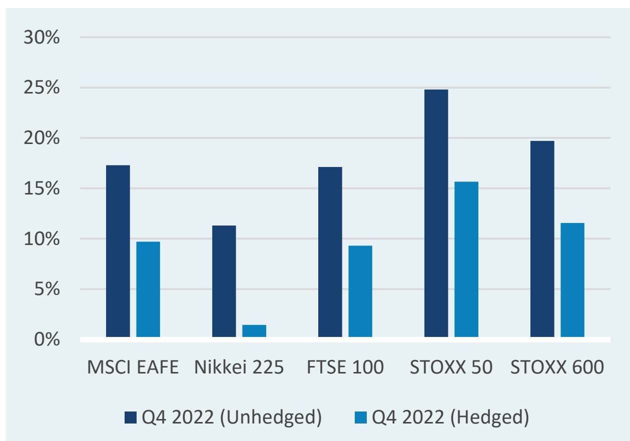
Currency movements played a large role in unhedged Eurozone performance and also boosted the unhedged returns of Japan and the United Kingdom. The U.S. dollar sharply pivoted on market views that the Federal Reserve may follow a shorter tightening cycle. As a result, exchange rates for the Euro, Pound, and Yen appreciated relative to the greenback.

INTERNATIONAL DEVELOPED EQUITY



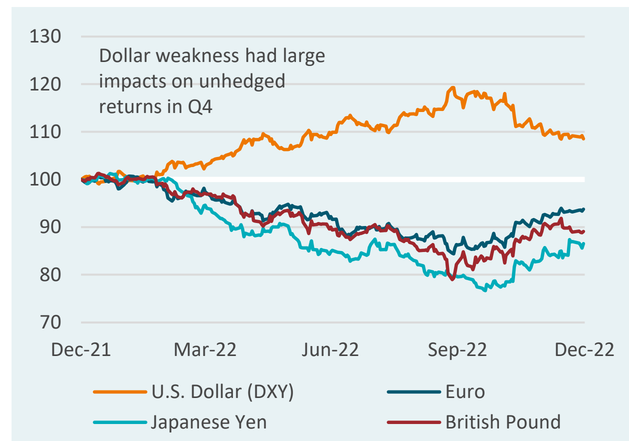
Source: MSCI, as of 12/31/22

Q4 2022 REGIONAL INDEX RETURNS



Source: MSCI, STOXX, FTSE, Nikkei, as of 12/31/22

2022 CURRENCY MOVEMENTS (BASE OF 100)



Source: Bloomberg, as of 12/31/22

Emerging market equity

Emerging market equities advanced alongside global equities as the MSCI EM Index finished the quarter up 9.7%. Performance was volatile over the quarter, as losses in October were pared by a 13.2% rally over November and December. Despite the rally to close out the year, the index still ended down -20.1%, underperforming both international developed and U.S. equity benchmarks.

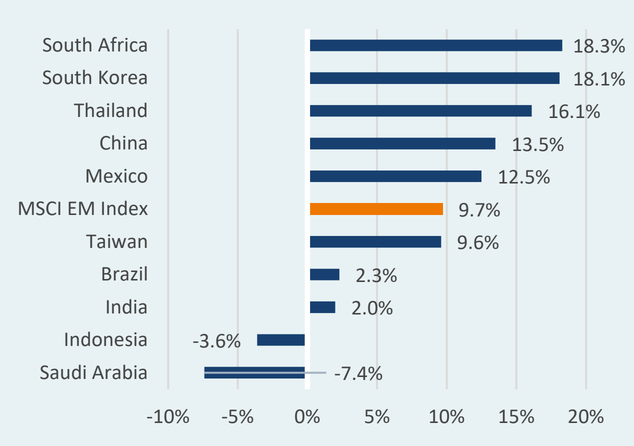
Returns in the fourth quarter were driven by gains in Chinese equities, which jumped following a rapid pivot away from the Chinese Communist Party's "Zero Covid" policy. While Chinese shares still dominate the index (around 30%), strong performance from countries with smaller weights also played a large role.

Indian shares, which hold the second largest weight in the index, acted as a drag on returns during the quarter but still ended in positive territory. Despite a modest 2.0% quarterly gain, the Indian market was one of the best performers of 2022, finishing the year down -8.0%. This compared to double-digit losses from other regional indices.

EMERGING MARKET EQUITY

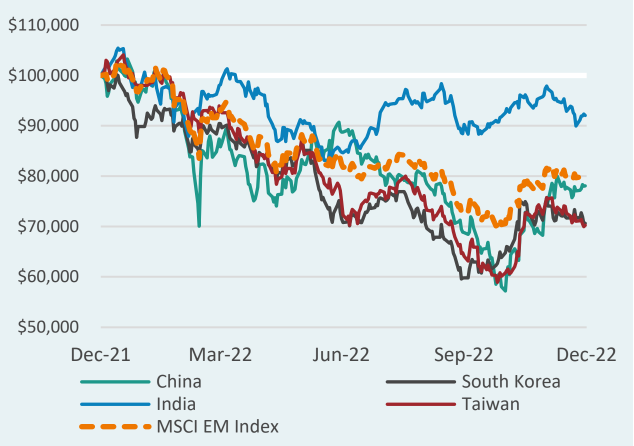
Source: MSCI, as of 12/31/22

Q4 2022 MSCI COUNTRY RETURNS (USD)



Source: Bloomberg, MSCI, as of 12/31/22

GROWTH OF $100K IN 2022 (EM WEIGHTS >10%)



Source: Bloomberg, MSCI, as of 12/31/22 - performance in USD

Fixed income environment

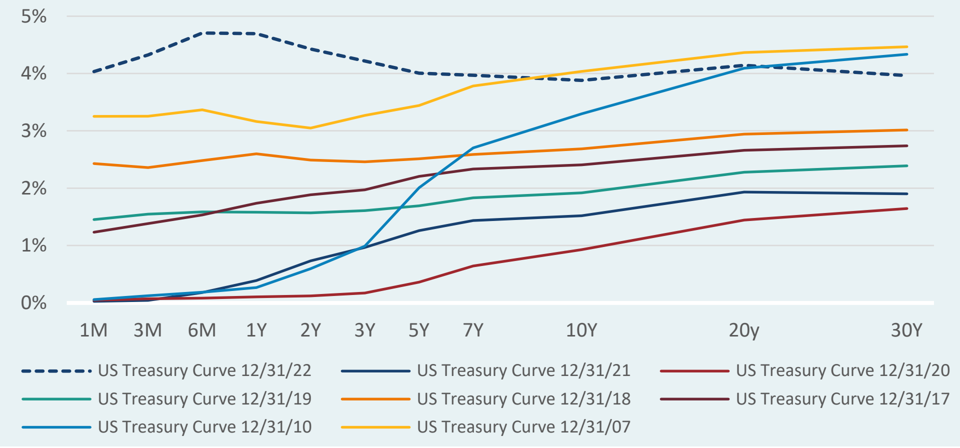
- The 10-year U.S. Treasury yield ended the quarter unchanged at 3.8%. It is possible that long-term interest rates have already reached a cyclical peak, assuming inflation continues to fall and the Federal Reserve becomes less aggressive.
- Credit performance was positive during the fourth quarter, with riskier exposures such as U.S. high yield and emerging market debt (both local and hard currency) leading the pack. Expectations for a slowdown in Federal Reserve rate hikes, and a rosier U.S. economic environment, have provided a tailwind to the credit space.
- Default activity in high yield bonds and bank loans remained subdued during Q4. Throughout the year, 17 companies defaulted totaling $26.3 billion, with large defaults concentrated in the Healthcare sector which accounted for over 36% of total dollar volume. Default rates for par-weighted U.S. high yield and bank loans remained very low at 0.8% and 1.0%, respectively.
- The U.S. yield curve inversion reached historically negative levels, with the 10-year 2-year yield spread seeing its widest inversion since 1981 (short-term interest rates being higher than long-term interest rates). The negative spread bottomed out at ~81 bps on December 5th before gradually easing during the latter half of the month.
- Derivative markets are beginning to clash with Federal Reserve projections, as investors are pricing in a shorter tightening cycle relative to that indicated by comments from Federal Reserve officials. Federal Funds futures reflect a target interest rate of approximately 4.6% by the end of 2023, which compares to 5.1% indicated by the Federal Reserve's December Summary of Economic Projections.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	1.9%	(13.0%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	2.2%	(13.0%)
U.S. Treasuries (Bloomberg U.S. Treasury)	0.7%	(12.5%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	4.2%	(11.2%)
Bank Loans (S&P/LSTA Leveraged Loan)	2.7%	(0.6%)
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	8.5%	(11.7%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	8.1%	(17.8%)
Mortgage-Backed Securities (Bloomberg MBS)	2.1%	(11.8%)

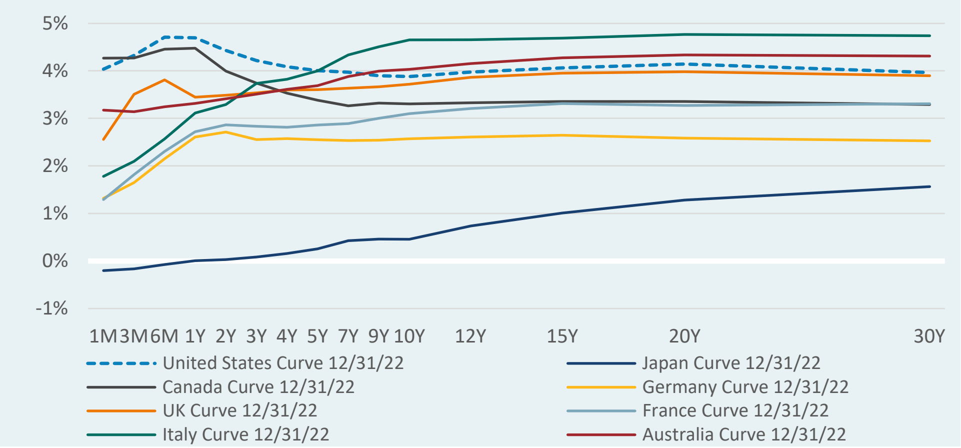
Source: Bloomberg, as of 12/31/22

Yield environment

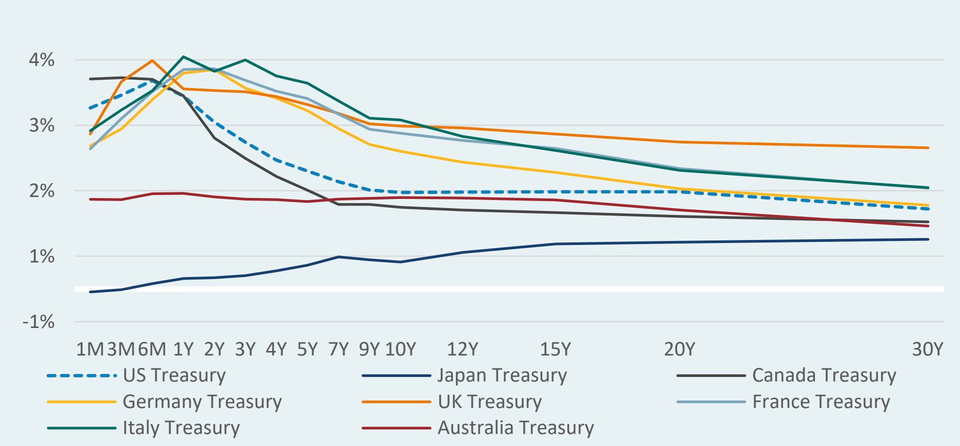
U.S. YIELD CURVE



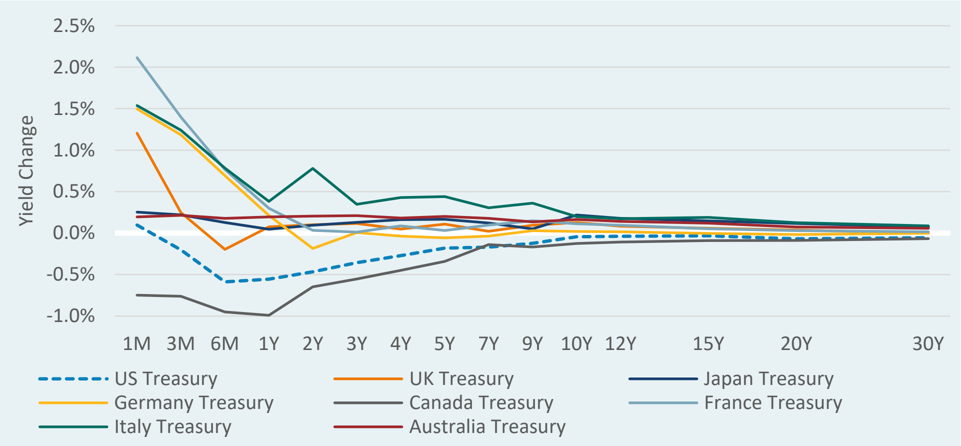
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/22

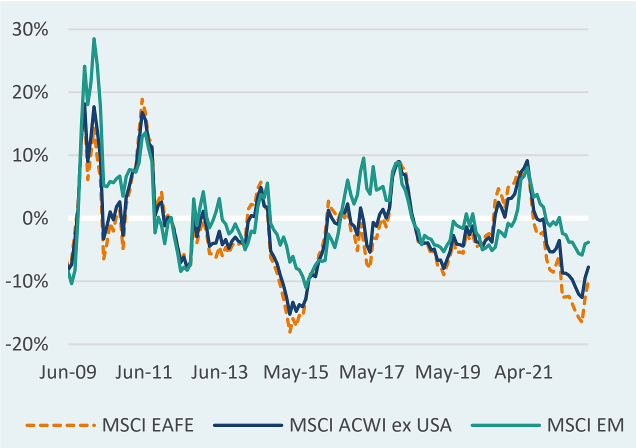
Currency

Currency volatility has translated to much higher portfolio volatility for investors with unhedged exposure to foreign currencies. The U.S. dollar depreciated relative to major currencies during the fourth quarter which resulted in large gains for investors with unhedged foreign currency exposure. These currency gains amounted to 7.6% for investors with unhedged exposure to the MSCI EAFE Index (+17.3% MSCI EAFE unhedged, +9.7% MSCI EAFE hedged).

U.S. dollar strength of 2022 was reversed in Q4 as markets began pricing in a shorter Federal Reserve tightening cycle. Expectations for lower rates in the U.S., combined with an ongoing struggle to control high inflation (and therefore tighter financial policies from respective central banks) within developed economies, likely played a major role in the U.S. dollar sell-off.

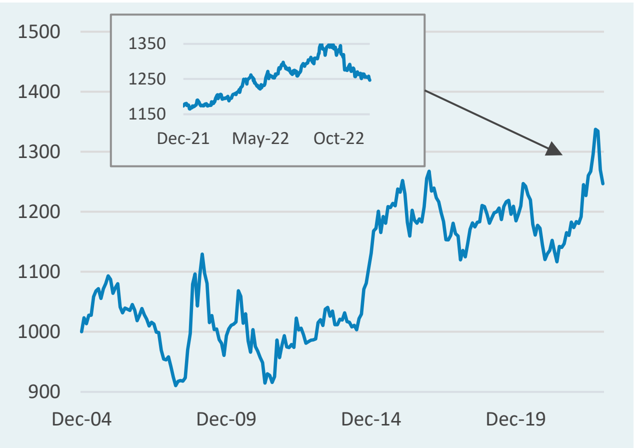
Despite currency gains seen this quarter, we believe that a thoughtful currency program may allow an investor to reduce their total portfolio risk while also increasing long-term expected returns. The MSCI Currency Factor Mix Index—a representation of a passive investment in the currency market—has shown a positive one-year rolling return over most periods with very low volatility. This contrasts to the unhedged currency exposure (what we refer to as "embedded currency") that most investors own, which has shown high volatility and frequent losses.

EFFECT OF CURRENCY (1-YEAR ROLLING)



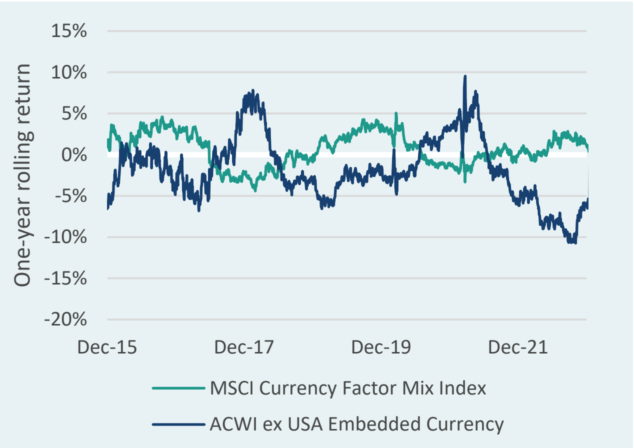
Source: *MSCI, as of 12/31/22*

BLOOMBERG DOLLAR SPOT INDEX



Source: Bloomberg, as of 12/31/22

EMBEDDED CURRENCY VS CURRENCY FACTORS



Source: Bloomberg, as of 12/31/22

— The Total Fund, net of manager fees, returned 4.2% in the fourth quarter of 2022 and ranked in the 82nd percentile among other public plans greater than $1 billion (median of 5.0%). It beat the policy index return of 3.9%. The Total Fund ex Overlay returned 3.9% for the quarter. The Total Fund one-year return of -7.8% beat the policy index return of -9.6% and ranked in the 19th percentile of its peer universe. The three-year return of 4.0% (74th percentile) lagged the median large public plan (4.5%) and matched the policy index (4.0%).

— Fourth quarter results were enhanced by the following factors:

1. Both low volatility managers continued to outperform in Q4, Acadian was up 10.9% and PanAgora was up 12.0% for the quarter both beating the Russell 1000 7.2%.
2. PGIM Quant solutions beat the Russell 2000 (9.7% vs 6.2%.) The value factor continues to be a tailwind for the strategy.

— Fourth quarter results were hindered by the following factors:

1. DoubleLine trailed the Bloomberg US Agg by just about 1% gaining 0.7% for the quarter but was in line with its securitized peer group (1.1%). Securitized holdings underperformed corporate credit for the quarter leading to the slight underperformance.

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Total Fund**	**4.2**	**82**	**0.0**	**90**	**-7.8**	**19**	**1.6**	**48**	**4.0**	**74**	**4.6**	**76**	**6.9**	**55**
Policy Index[1]	3.9	88	-0.9	99	-9.6	38	1.5	50	4.0	75	4.9	65	7.1	46
InvMetrics Public DB > $1B Net Median	5.0		0.8		-11.1		1.4		4.5		5.4		6.9	
Total Fund ex Overlay	**3.9**	**88**	**-0.1**	**92**	**-7.8**	**16**	**1.6**	**47**	**4.1**	**73**	**4.6**	**80**	**6.8**	**61**
Policy Index[1]	3.9	88	-0.9	99	-9.6	38	1.5	50	4.0	75	4.9	65	7.1	46
InvMetrics Public DB > $1B Net Median	5.0		0.8		-11.1		1.4		4.5		5.4		6.9	
Public Equity	**10.9**	**12**	**3.4**	**28**	**-14.9**	**10**	**-0.3**	**46**	**4.2**	**65**	**5.2**	**71**	**8.8**	**63**
Blended Public Equity Index[1]	9.1	84	3.1	40	-16.1	19	-0.2	42	4.9	40	5.7	56	9.1	54
InvMetrics All DB Total Eq Net Median	10.0		2.9		-17.6		-0.5		4.5		5.9		9.3	
US Equity	**9.0**	**14**	**4.1**	**15**	**-13.5**	**5**	**3.5**	**15**	**7.0**	**44**	**8.3**	**52**	**11.6**	**48**
Blended US Equity Index	7.2	79	2.4	79	-19.2	71	0.8	64	7.1	38	8.8	24	12.0	22
Russell 3000	7.2	79	2.4	79	-19.2	71	0.8	64	7.1	38	8.8	24	12.1	20
InvMetrics All DB US Eq Net Median	7.9		3.1		-18.2		1.5		6.8		8.3		11.5	
Large Cap Equity	**8.9**	**54**	**3.7**	**51**	**-13.8**	**47**	**3.3**	**54**	**7.0**	**49**	**8.8**	**44**	**12.3**	**30**
Russell 1000	7.2	68	2.3	63	-19.1	66	1.1	65	7.3	44	9.1	36	12.4	29
eV US Large Cap Equity Net Median	9.6		3.7		-15.4		3.8		7.0		8.4		11.5	
Acadian US MGD V	10.9	20	4.9	25	-11.4	19	4.5	31	3.9	95	--	--	--	--
BlackRock Russell 1000	7.2	74	2.3	62	-19.1	76	1.1	74	7.3	47	9.1	40	--	--
DE Shaw	6.7	82	3.6	41	-16.3	49	0.7	79	6.8	57	8.2	58	12.6	19
PanAgora Defuseq	12.0	10	5.2	20	-2.5	2	8.5	7	7.3	48	--	--	--	--
Russell 1000	7.2	74	2.3	62	-19.1	75	1.1	74	7.3	47	9.1	40	12.4	27
eV US Large Cap Core Equity Net Median	8.5		3.2		-16.5		3.0		7.2		8.5		11.7	

* *Total Fund and asset class aggregates are ranked in InvMetrics universes. Managers are ranked in eVest (eA) manager universes.*

** *Includes Parametric Minneapolis manager funded in August 2013.*

1. See Appendix for Benchmark History.

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Small Cap Equity	**9.7**	**42**	**7.1**	**24**	**-12.9**	**31**	**4.9**	**37**	**4.1**	**72**	**3.7**	**83**	**7.9**	**90**
Russell 2000	*6.2*	*74*	*3.9*	*59*	*-20.4*	*66*	*-4.4*	*72*	*3.1*	*80*	*4.1*	*77*	*9.0*	*70*
eV US Small Cap Equity Net Median	*8.8*		*4.5*		*-16.5*		*2.2*		*5.8*		*5.8*		*10.0*	
PGIM Quant Solutions	9.7	42	7.1	23	-12.9	17	4.9	27	4.1	80	3.7	89	--	--
Russell 2000	*6.2*	*85*	*3.9*	*68*	*-20.4*	*76*	*-4.4*	*87*	*3.1*	*91*	*4.1*	*84*	*9.0*	*73*
eV US Small Cap Core Equity Net Median	*8.8*		*5.0*		*-16.6*		*1.7*		*6.1*		*6.2*		*10.2*	
Domestic Equity Overlay	10.4	--	15.5	--	98.2	--	46.9	--	--	--	--	--	--	--
International Equity	**13.2**	**85**	**2.5**	**77**	**-16.5**	**41**	**-4.6**	**38**	**1.0**	**29**	**1.8**	**18**	**4.7**	**28**
Blended International Equity Index[1]	*11.2*	*96*	*3.6*	*28*	*-12.7*	*9*	*-1.5*	*8*	*2.1*	*12*	*2.0*	*14*	*4.8*	*24*
MSCI EAFE Gross	*17.4*	*3*	*6.5*	*2*	*-14.0*	*11*	*-2.0*	*11*	*1.3*	*20*	*2.0*	*14*	*5.2*	*17*
InvMetrics All DB ex-US Eq Net Median	*14.6*		*3.1*		*-17.4*		*-5.1*		*0.3*		*1.0*		*4.1*	
Baillie Gifford	13.7	42	3.5	51	-31.2	76	-15.5	83	-1.6	76	1.2	68	5.5	58
MSCI ACWI ex US[1]	*14.4*	*29*	*3.2*	*55*	*-15.6*	*9*	*-4.4*	*11*	*0.5*	*55*	*1.4*	*67*	*4.9*	*76*
MSCI ACWI ex US Growth[1]	*12.9*	*56*	*2.4*	*64*	*-22.8*	*34*	*-9.8*	*44*	*-0.1*	*63*	*1.8*	*57*	*5.7*	*57*
eV ACWI ex-US Growth Equity Net Median	*13.1*		*3.5*		*-26.3*		*-10.7*		*1.0*		*2.3*		*6.1*	
Mondrian	15.8	70	-0.3	99	-12.4	77	-3.2	83	-2.2	91	-0.4	64	3.2	78
MSCI ACWI ex USA Value Gross	*15.8*	*70*	*3.9*	*73*	*-8.0*	*22*	*1.1*	*35*	*0.7*	*61*	*0.6*	*47*	*3.3*	*77*
MSCI ACWI ex USA Gross	*14.4*	*85*	*3.2*	*79*	*-15.6*	*87*	*-4.4*	*90*	*0.5*	*62*	*1.4*	*33*	*4.3*	*41*
eV ACWI ex-US Value Equity Net Median	*17.6*		*5.3*		*-9.4*		*0.7*		*1.2*		*0.4*		*4.0*	
BlackRock MSCI ACWI EX-US IMI	14.2	53	3.2	60	-16.3	38	-4.6	48	--	--	--	--	--	--
MSCI ACWI ex USA IMI	*14.1*	*55*	*3.1*	*61*	*-16.6*	*43*	*-4.9*	*50*	*0.2*	*71*	*0.8*	*80*	*4.0*	*83*
eV ACWI ex-US All Cap Core Eq Net Median	*14.3*		*3.4*		*-18.1*		*-4.9*		*1.2*		*1.6*		*5.0*	
Int'l Equity Currency Overlay														
International Equity Overlay	14.7	--	1.3	--	-15.2	--	-6.3	--	--	--	--	--	--	--

1. See Appendix for Benchmark History.

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Fixed Income	**1.7**	**70**	**-1.9**	**54**	**-11.0**	**46**	**-4.9**	**33**	**-1.1**	**33**	**1.0**	**26**	**2.3**	**15**
Blended Fixed Income Index[1]	*2.9*	*20*	*-0.4*	*24*	*-11.5*	*50*	*-5.7*	*49*	*-1.7*	*50*	*0.9*	*31*	*1.6*	*51*
InvMetrics All DB Total Fix Inc Net Median	*2.1*		*-1.8*		*-11.5*		*-5.9*		*-1.7*		*0.6*		*1.6*	
Core Fixed	**1.5**	**--**	**-3.0**	**--**	**-13.3**	**--**	**-7.4**	**--**	**-2.6**	**--**	**-0.1**	**--**	**1.4**	**--**
Bloomberg US Aggregate TR	*1.9*	*--*	*-3.0*	*--*	*-13.0*	*--*	*-7.5*	*--*	*-2.7*	*--*	*0.0*	*--*	*1.1*	*--*
DoubleLine	0.7	69	-3.9	81	-14.2	94	-7.9	97	--	--	--	--	--	--
Bloomberg US Aggregate TR	*1.9*	*24*	*-3.0*	*44*	*-13.0*	*90*	*-7.5*	*95*	*-2.7*	*56*	*0.0*	*52*	*1.1*	*56*
eV US Securitized Fixed Inc Net Median	*1.1*		*-3.2*		*-11.0*		*-5.2*		*-2.6*		*0.1*		*1.3*	
FIAM Bond	1.9	37	-2.6	30	-12.8	39	-7.0	23	-1.7	8	0.8	5	1.7	8
NISA Core Bond	2.0	33	-2.7	35	-12.5	26	-7.2	34	--	--	--	--	--	--
Bloomberg US Aggregate TR	*1.9*	*42*	*-3.0*	*60*	*-13.0*	*47*	*-7.5*	*56*	*-2.7*	*79*	*0.0*	*75*	*1.1*	*74*
eV US Core Fixed Inc Net Median	*1.8*		*-2.8*		*-13.1*		*-7.4*		*-2.4*		*0.2*		*1.2*	
Core Fixed Income Overlay	2.4	--	-4.0	--	-10.1	--	-5.2	--	--	--	--	--	--	--
Opportunistic Credit	**2.2**	**--**	**0.0**	**--**	**-7.0**	**--**	**-0.2**	**--**	**1.6**	**--**	**3.1**	**--**	**5.3**	**--**
Bloomberg BA Intermediate HY	*4.3*	*--*	*3.7*	*--*	*-9.5*	*--*	*-3.0*	*--*	*0.5*	*--*	*2.7*	*--*	*3.3*	*--*
AG CSF ADF II** +	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bloomberg BA Intermediate HY	*4.3*	*--*	*3.7*	*--*	*-9.5*	*--*	*-3.0*	*--*	*0.5*	*--*	*2.7*	*--*	*3.3*	*--*
AG CSF II* +	-0.3	--	-0.8	--	--	--	--	--	--	--	--	--	--	--
Bloomberg BA Intermediate HY	*4.3*	*--*	*3.7*	*--*	*-9.5*	*--*	*-3.0*	*--*	*0.5*	*--*	*2.7*	*--*	*3.3*	*--*
Angelo Gordon Opportunistic+	0.0	--	5.6	--	-0.1	--	13.5	--	7.7	--	11.2	--	--	--
Bloomberg US Aggregate TR	*1.9*	*--*	*-3.0*	*--*	*-13.0*	*--*	*-7.5*	*--*	*-2.7*	*--*	*0.0*	*--*	*1.1*	*--*
Angelo Gordon Credit Solutions+	-0.2	99	-1.8	99	-5.2	18	7.8	1	6.4	1	--	--	--	--
Bloomberg BA Intermediate HY	*4.3*	*26*	*3.7*	*37*	*-9.5*	*42*	*-3.0*	*57*	*0.5*	*47*	*2.7*	*25*	*3.3*	*82*
eV US High Yield Fixed Inc Net Median	*3.9*		*3.5*		*-10.0*		*-2.8*		*0.3*		*2.3*		*3.7*	

* *Funded February 2022.*
** *Funded October 2022.*
\+ *Preliminary return as of 12/31/2022.*
1. See Appendix for Benchmark History.

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Beach Point Select	1.6	94	-1.2	99	-6.9	22	3.9	2	5.8	1	6.2	1	--	--
Bloomberg BA Intermediate HY	*4.3*	*26*	*3.7*	*37*	*-9.5*	*42*	*-3.0*	*57*	*0.5*	*47*	*2.7*	*25*	*3.3*	*82*
eV US High Yield Fixed Inc Net Median	*3.9*		*3.5*		*-10.0*		*-2.8*		*0.3*		*2.3*		*3.7*	
Brigade Capital	-1.3	99	-3.9	99	-11.2	75	0.7	7	1.7	15	2.6	31	3.7	53
Bloomberg BA Intermediate HY	*4.3*	*26*	*3.7*	*37*	*-9.5*	*42*	*-3.0*	*57*	*0.5*	*47*	*2.7*	*25*	*3.3*	*82*
50% Barclays HY/ 50% Bank Loan	*3.3*	*79*	*3.6*	*46*	*-6.1*	*20*	*-0.6*	*20*	*1.2*	*23*	*2.8*	*19*	*3.9*	*34*
eV US High Yield Fixed Inc Net Median	*3.9*		*3.5*		*-10.0*		*-2.8*		*0.3*		*2.3*		*3.7*	
PIMCO Diversified	4.7	12	2.0	92	-13.8	98	-7.0	99	-2.7	99	0.6	99	--	--
Blended PIMCO Diversified Index[1]	*4.9*	*7*	*1.7*	*93*	*-13.4*	*97*	*-6.7*	*99*	*-2.4*	*99*	*0.6*	*99*	*2.6*	*98*
Bloomberg BA Intermediate HY	*4.3*	*26*	*3.7*	*37*	*-9.5*	*42*	*-3.0*	*57*	*0.5*	*47*	*2.7*	*25*	*3.3*	*82*
eV US High Yield Fixed Inc Net Median	*3.9*		*3.5*		*-10.0*		*-2.8*		*0.3*		*2.3*		*3.7*	
Franklin Templeton	12.2	3	3.3	21	-9.2	25	-6.8	49	-6.4	95	-3.7	97	-0.7	84
Bloomberg Multiverse TR	*4.7*	*41*	*-2.4*	*80*	*-16.0*	*71*	*-10.4*	*72*	*-4.4*	*81*	*-1.6*	*79*	*-0.3*	*78*
eV All Global Fixed Inc Net Median	*4.3*		*-0.4*		*-13.1*		*-7.1*		*-2.2*		*0.4*		*1.6*	
Private Credit	**0.4**	**--**	**0.8**	**--**	**2.2**	**--**	**4.9**	**--**	**5.5**	**--**	**6.4**	**--**	**--**	**--**
Cliffwater Direct Lending Index[+]	*1.8*	*--*	*3.7*	*--*	*6.1*	*--*	*9.4*	*--*	*8.0*	*--*	*8.2*	*--*	*8.9*	*--*
Blackrock DL Feeder IX-U[+]	1.0	97	2.5	83	4.0	1	5.8	1	--	--	--	--	--	--
Cliffwater Direct Lending Index	*1.8*	*93*	*3.7*	*39*	*6.1*	*1*	*9.4*	*1*	*8.0*	*1*	*8.2*	*1*	*8.9*	*1*
eV US High Yield Fixed Inc Net Median	*3.9*		*3.5*		*-10.0*		*-2.8*		*0.3*		*2.3*		*3.7*	
PIMCO Private Income[+]	0.0	99	-0.3	99	0.4	1	6.5	1	6.9	1	--	--	--	--
Bloomberg BA Intermediate HY	*4.3*	*26*	*3.7*	*37*	*-9.5*	*42*	*-3.0*	*57*	*0.5*	*47*	*2.7*	*25*	*3.3*	*82*
Cliffwater Direct Lending Index	*1.8*	*93*	*3.7*	*39*	*6.1*	*1*	*9.4*	*1*	*8.0*	*1*	*8.2*	*1*	*8.9*	*1*
eV US High Yield Fixed Inc Net Median	*3.9*		*3.5*		*-10.0*		*-2.8*		*0.3*		*2.3*		*3.7*	

[+] *Preliminary return as of 12/31/2022.*

1. See Appendix for Benchmark History.

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
TCP Direct Lending VIII+	1.3	97	1.1	95	0.7	1	3.9	2	4.7	2	5.6	1	--	--
White Oak Yield+	0.0	99	1.0	95	4.1	1	4.9	2	5.0	2	6.3	1	--	--
White Oak YSF V+	0.0	99	0.4	97	2.1	1	2.2	3	--	--	--	--	--	--
Cliffwater Direct Lending Index	*1.8*	*93*	*3.7*	*39*	*6.1*	*1*	*9.4*	*1*	*8.0*	*1*	*8.2*	*1*	*8.9*	*1*
eV US High Yield Fixed Inc Net Median	*3.9*		*3.5*		*-10.0*		*-2.8*		*0.3*		*2.3*		*3.7*	
Alternatives	**-3.7**	**--**	**-5.3**	**--**	**-1.6**	**--**	**5.9**	**--**	**13.9**	**--**	**10.2**	**--**	**8.3**	**--**
Blended Alternatives Index[1]	*-0.5*	*--*	*-8.0*	*--*	*-4.6*	*--*	*5.9*	*--*	*7.8*	*--*	*7.9*	*--*	*8.6*	*--*
Private Equity ++**	**-1.1**	**77**	**-9.5**	**92**	**-10.6**	**89**	**6.2**	**85**	**24.2**	**15**	**21.4**	**6**	**18.6**	**3**
Blended Private Equity Index[1]	*-3.3*	*92*	*-19.0*	*99*	*-14.6*	*95*	*7.3*	*83*	*10.8*	*78*	*10.2*	*75*	*14.3*	*30*
InvMetrics All DB Private Eq Net Median	*0.0*		*-1.0*		*1.3*		*16.1*		*18.1*		*15.6*		*12.5*	
Hedge Fund/Absolute Return	**-6.2**	**99**	**-1.9**	**93**	**7.2**	**7**	**4.7**	**11**	**0.6**	**80**	**-2.6**	**87**	**1.8**	**79**
Absolute Return Custom Index	*1.9*	*50*	*3.5*	*17*	*5.7*	*9*	*4.9*	*9*	*4.7*	*32*	*5.3*	*12*	*4.9*	*37*
InvMetrics All DB Hedge Funds Net Median	*1.9*		*2.2*		*-6.0*		*1.7*		*4.1*		*3.9*		*4.2*	
Aberdeen Standard GARS	-3.2	89	-6.1	93	-12.7	80	-7.8	92	-2.9	89	-1.2	85	--	--
Acadian MAAR Fund LLC	-3.6	90	-0.6	67	-0.1	43	0.8	59	--	--	--	--	--	--
CFM Systematic Global Macro	-7.6	97	0.9	51	16.6	8	11.6	17	--	--	--	--	--	--
Graham Quant Macro	-6.1	94	-5.7	92	15.9	8	6.4	28	--	--	--	--	--	--
PIMCO MAARS Fund LP	-7.8	97	0.9	51	12.0	14	11.6	17	--	--	--	--	--	--
Absolute Return Custom Index	*1.9*	*52*	*3.5*	*25*	*5.7*	*26*	*4.9*	*36*	*4.7*	*47*	*5.3*	*38*	*4.9*	*52*
eV Alt All Multi-Strategy Median	*2.1*		*1.0*		*-1.6*		*2.0*		*4.4*		*3.8*		*5.2*	

+ *Preliminary return as of 12/31/2022..*
** *Returns are one-quarter lag.*
++ *Excludes EnCap Energy Capital Fund and Sheridan Production Partners.*
1. See Appendix for Benchmark History.

Performance Summary (Net of Fees)

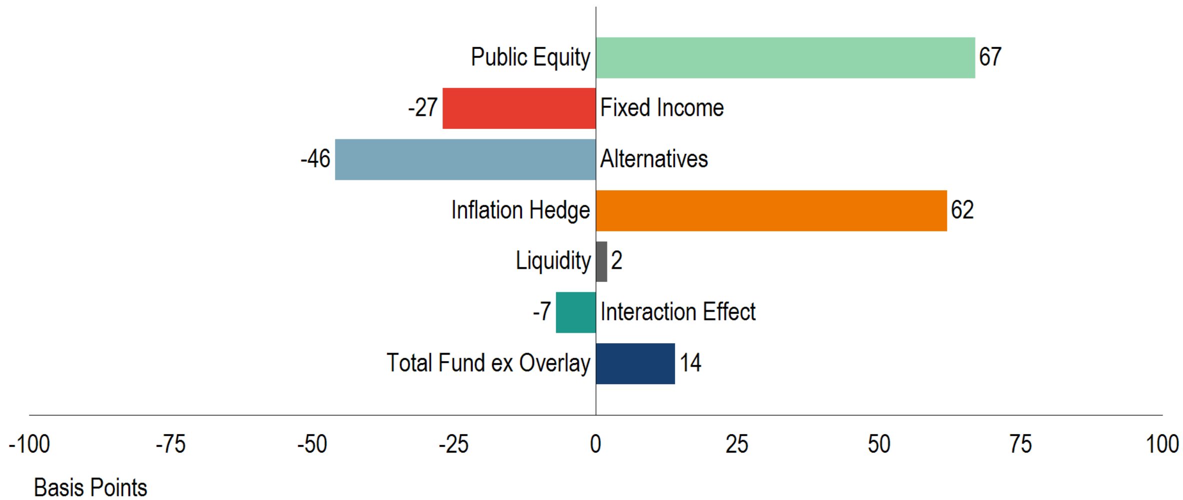
Period Ending: December 31, 2022

	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Inflation Hedge	**0.9**	**--**	**-0.6**	**--**	**7.6**	**--**	**12.8**	**--**	**5.8**	**--**	**4.8**	**--**	**--**	**--**
Blended Inflation Hedge Index[1]	*-2.7*	--	*-5.6*	--	*5.2*	--	*13.9*	--	*8.5*	--	*6.8*	--	--	--
Real Estate	**-3.1**	**37**	**-1.8**	**23**	**7.4**	**41**	**11.8**	**56**	**7.8**	**69**	**7.7**	**43**	**9.6**	**11**
NCREIF ODCE	*-5.0*	*80*	*-4.5*	*69*	*7.5*	*39*	*14.6*	*14*	*9.9*	*10*	*8.7*	*8*	*10.1*	*6*
InvMetrics All DB Real Estate Pub Net Median	*-3.6*		*-3.0*		*6.7*		*12.0*		*8.5*		*7.5*		*8.9*	
Harrison Street Core Property	-0.9	--	1.1	--	10.0	--	9.9	--	--	--	--	--	--	--
Invesco	-5.1	--	-3.7	--	7.4	--	13.9	--	8.4	--	8.1	--	9.7	--
NCREIF ODCE	*-5.0*	--	*-4.5*	--	*7.5*	--	*14.6*	--	*9.9*	--	*8.7*	--	*10.1*	--
Invesco US Val IV+	0.0	--	-38.0	--	-41.3	--	-18.7	--	-12.2	--	-3.0	--	--	--
Invesco US Val V	-6.1	--	-6.0	--	-2.3	--	13.1	--	9.0	--	--	--	--	--
NCREIF ODCE	*-5.0*	--	*-4.5*	--	*7.5*	--	*14.6*	--	*9.9*	--	*8.7*	--	*10.1*	--
NCREIF ODCE + 2%	*-4.5*	--	*-3.5*	--	*9.6*	--	*16.9*	--	*12.1*	--	*10.8*	--	*12.3*	--
Invesco US Val VI* +	0.0	--	--	--	--	--	--	--	--	--	--	--	--	--
NCREIF ODCE	*-5.0*	--	*-4.5*	--	*7.5*	--	*14.6*	--	*9.9*	--	*8.7*	--	*10.1*	--
PGIM RE US Debt Fund	1.7	--	3.3	--	6.0	--	5.7	--	5.3	--	5.6	--	--	--
Stockbridge Value IV+	0.0	--	3.2	--	21.5	--	--	--	--	--	--	--	--	--
NCREIF ODCE	*-5.0*	--	*-4.5*	--	*7.5*	--	*14.6*	--	*9.9*	--	*8.7*	--	*10.1*	--
Private Real Asset**	**2.7**	**--**	**0.2**	**--**	**15.0**	**--**	**21.6**	**--**	**13.8**	**--**	**6.5**	**--**	**--**	**--**
Blended Private Real Asset Index[1]	*-7.3*	--	*-15.7*	--	*-0.8*	--	*13.0*	--	*4.9*	--	*3.4*	--	--	--
Blended Secondary CA Private RA Index[1]	*0.8*	--	*2.6*	--	*16.8*	--	*19.4*	--	*9.8*	--	*7.5*	--	--	--
Public Real Assets	**7.2**	**--**	**1.4**	**--**	**4.3**	**--**	**10.8**	**--**	**1.6**	**--**	**1.0**	**--**	**--**	**--**
Blended Public Real Asset Index[1]	*7.3*	--	*1.5*	--	*4.2*	--	*10.8*	--	*5.4*	--	*4.0*	--	--	--
SSgA Custom Real Asset	7.2	--	1.4	--	4.3	--	10.8	--	5.3	--	4.0	--	--	--
SSgA Custom Real Asset Index[1]	*7.3*	--	*1.5*	--	*4.2*	--	*10.8*	--	*5.4*	--	*4.0*	--	--	--

* *Preliminary return as of 12/31/2022.*
\+ *Funded September 2022.*
** *Returns are one-quarter lag.*
1. See Appendix for Benchmark History.

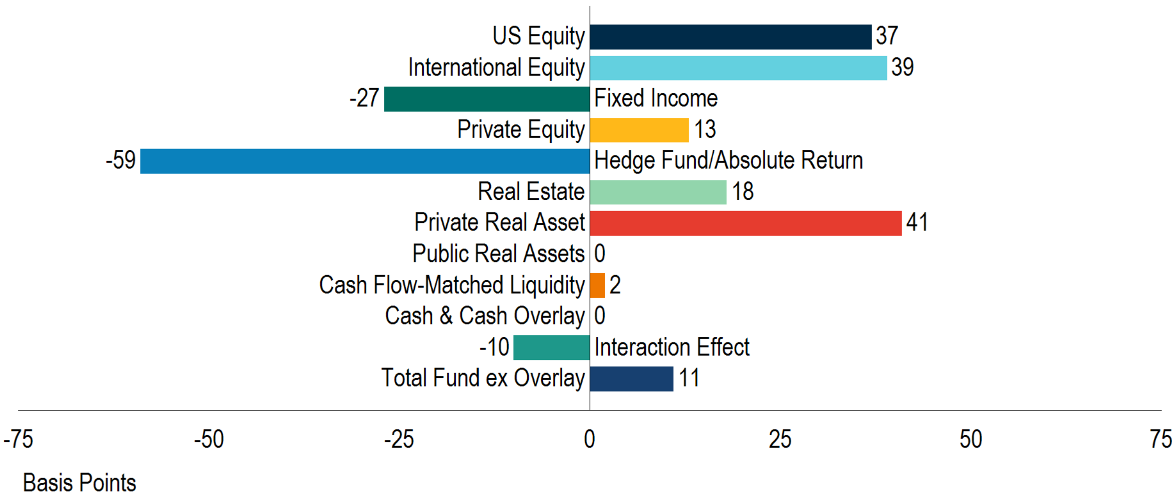
	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	1 Yr (%)	Rank	2 Yrs (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank
Liquidity	**1.2**	**--**	**1.0**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Blended Liquidity Index[1]	*0.9*	--	*0.2*	--	--	--	--	--	--	--	--	--	--	--
Cash Flow-Matched Liquidity	**1.3**	**--**	**0.6**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Bloomberg US Govt/Credit 1-3 Yr. TR	*0.9*	--	*-0.6*	--	*-3.7*	--	*-2.1*	--	*-0.3*	--	*0.9*	--	*0.9*	--
Bloomberg US Credit 1-3 Yr TR	*1.3*	--	*-0.1*	--	*-3.4*	--	*-1.8*	--	*0.0*	--	*1.3*	--	*1.4*	--
Insight Investment*	1.3	--	--	--	--	--	--	--	--	--	--	--	--	--
Bloomberg US Credit 1-3 Yr TR	*1.3*	--	*-0.1*	--	*-3.4*	--	*-1.8*	--	*0.0*	--	*1.3*	--	*1.4*	--
County Treasury Pool+	0.5	--	0.5	--	1.0	--	1.1	--	1.2	--	2.3	--	1.6	--
91 Day T-Bills	*0.8*	--	*1.3*	--	*1.5*	--	*0.7*	--	*0.6*	--	*1.2*	--	*0.7*	--
Cash & Cash Overlay	**1.0**	**--**	**1.6**	**--**	**1.8**	**--**	**1.1**	**--**	**0.9**	**--**	**1.0**	**--**	**0.9**	**--**
91 Day T-Bills	*0.8*	--	*1.3*	--	*1.5*	--	*0.7*	--	*0.6*	--	*1.2*	--	*0.7*	--
General Account	1.0	--	1.6	--	2.0	--	1.2	--	1.1	--	2.3	--	1.7	--
91 Day T-Bills	*0.8*	--	*1.3*	--	*1.5*	--	*0.7*	--	*0.6*	--	*1.2*	--	*0.7*	--
Currency Hedge Cash Overlay	0.8	--	1.2	--	1.2	--	0.5	--	--	--	--	--	--	--

** Funded July 2022.*
+ Moved from Cash & Cash Overlay to Cash Flow-Matched Liquidity in July 2022. Reflects linked historical returns up to June 2022.
1. See Appendix for Benchmark History.



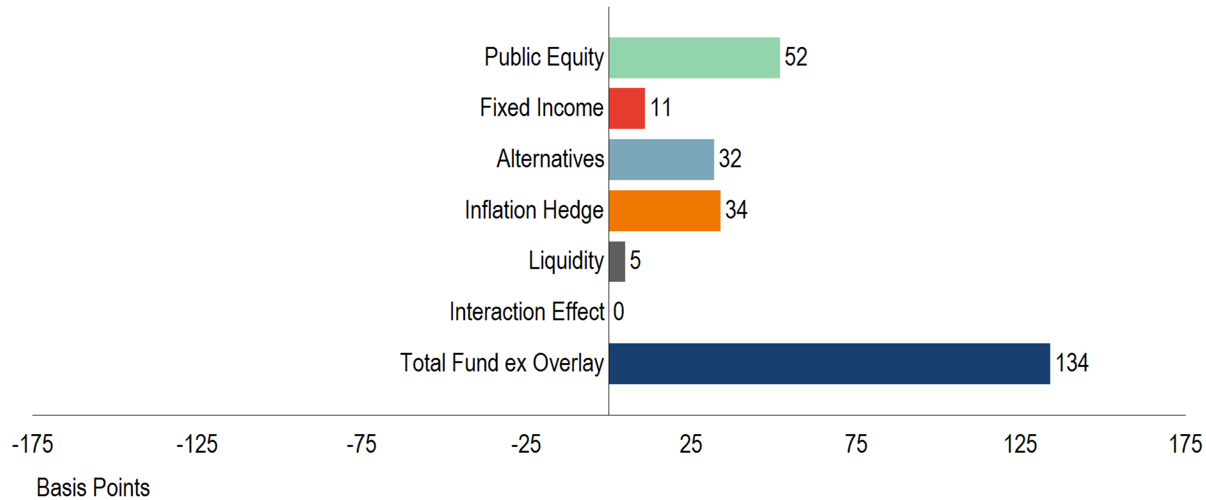
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction * Effects	Total Effects
Public Equity	10.88%	9.15%	1.73%	0.67%	-0.17%	-0.04%	0.46%
Fixed Income	1.74%	2.94%	-1.20%	-0.27%	-0.07%	-0.01%	-0.36%
Alternatives	-3.68%	-0.48%	-3.20%	-0.46%	0.03%	-0.08%	-0.51%
Inflation Hedge	0.87%	-2.68%	3.56%	0.62%	-0.12%	0.07%	0.56%
Liquidity	1.17%	0.88%	0.29%	0.02%	-0.03%	0.00%	-0.01%
Total	**4.01%**	**3.87%**	**0.14%**	**0.58%**	**-0.37%**	**-0.07%**	**0.14%**

Attribution does not include the impact of the Parametric Minneapolis strategy.
** Interaction Effects include Residual Effects.*



	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction* Effects	Total Effects
US Equity	9.00%	7.18%	1.82%	0.37%	-0.08%	-0.01%	0.28%
International Equity	13.23%	11.19%	2.04%	0.39%	-0.18%	-0.05%	0.16%
Fixed Income	1.74%	2.94%	-1.20%	-0.27%	-0.07%	-0.01%	-0.36%
Private Equity	-1.12%	-3.26%	2.14%	0.13%	0.06%	-0.03%	0.16%
Hedge Fund/Absolute Return	-6.18%	1.93%	-8.11%	-0.59%	-0.08%	-0.02%	-0.69%
Real Estate	-3.11%	-4.97%	1.85%	0.18%	-0.07%	0.01%	0.12%
Private Real Asset	2.74%	-7.30%	10.04%	0.41%	-0.01%	0.01%	0.41%
Public Real Assets	7.24%	7.33%	-0.08%	0.00%	0.04%	0.00%	0.03%
Cash Flow-Matched Liquidity	1.25%	0.89%	0.37%	0.02%	0.04%	0.00%	0.06%
Cash & Cash Overlay	1.03%	0.84%	0.18%	0.00%	-0.07%	0.00%	-0.07%
Total	**3.98%**	**3.87%**	**0.11%**	**0.64%**	**-0.42%**	**-0.10%**	**0.11%**

Attribution does not include the impact of the Parametric Minneapolis strategy.
** Interaction Effects include Residual Effects.*

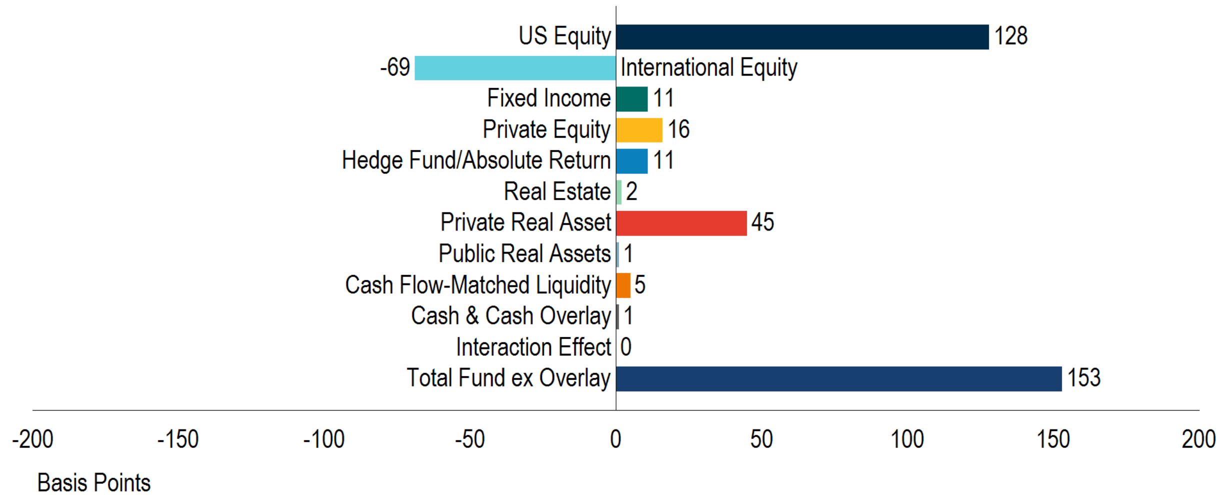


	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction* Effects	Total Effects
Public Equity	-14.88%	-16.10%	1.22%	0.52%	0.00%	0.00%	0.52%
Fixed Income	-11.00%	-11.50%	0.50%	0.11%	0.00%	0.00%	0.11%
Alternatives	-1.65%	-4.58%	2.93%	0.32%	0.00%	0.00%	0.32%
Inflation Hedge	7.59%	5.25%	2.34%	0.34%	0.00%	0.00%	0.34%
Liquidity	1.02%	--	--	0.05%	0.00%	0.00%	0.05%
Total	**-7.72%**	**-9.07%**	**1.35%**	**1.34%**	**0.00%**	**0.00%**	**1.34%**

Attribution does not include the impact of the Parametric Minneapolis strategy.
** Interaction Effects include Residual Effects.*

Total Fund ex Overlay
Performance Attribution (1 Year)

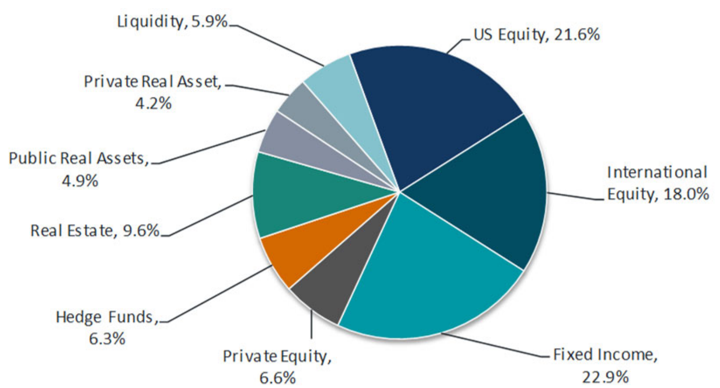
Period Ending: December 31, 2022



	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction* Effects	Total Effects
US Equity	-13.48%	-19.21%	5.72%	1.28%	0.00%	0.00%	1.28%
International Equity	-16.51%	-12.68%	-3.82%	-0.69%	0.00%	0.00%	-0.69%
Fixed Income	-11.00%	-11.50%	0.50%	0.11%	0.00%	0.00%	0.11%
Private Equity	-10.62%	-14.63%	4.01%	0.16%	0.00%	0.00%	0.16%
Hedge Fund/Absolute Return	7.18%	5.68%	1.50%	0.11%	0.00%	0.00%	0.11%
Real Estate	7.41%	7.47%	-0.06%	0.02%	0.00%	0.00%	0.02%
Private Real Asset	14.98%	-0.84%	15.82%	0.45%	0.00%	0.00%	0.45%
Public Real Assets	4.33%	4.21%	0.12%	0.01%	0.00%	0.00%	0.01%
Cash Flow-Matched Liquidity	--	-0.60%	--	0.05%	0.00%	0.00%	0.05%
Cash & Cash Overlay	1.83%	1.46%	0.38%	0.01%	0.00%	0.00%	0.01%
Total	**-7.78%**	**-9.31%**	**1.53%**	**1.53%**	**0.00%**	**0.00%**	**1.53%**

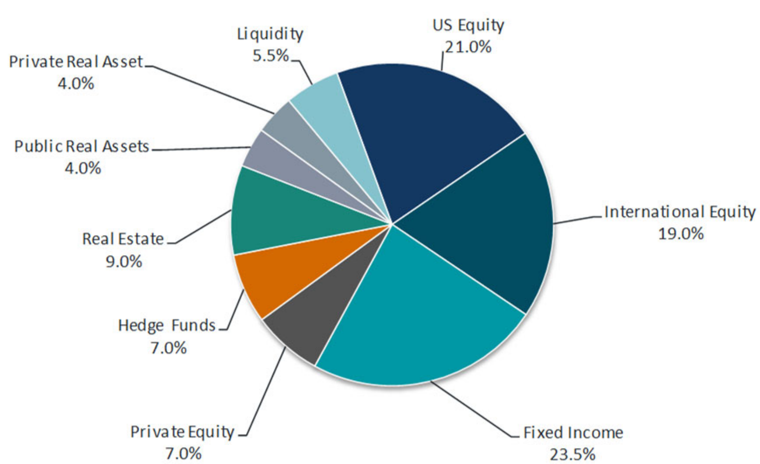
Attribution does not include the impact of the Parametric Minneapolis strategy.
** Interaction Effects include Residual Effects.*

Current w/ Overlay

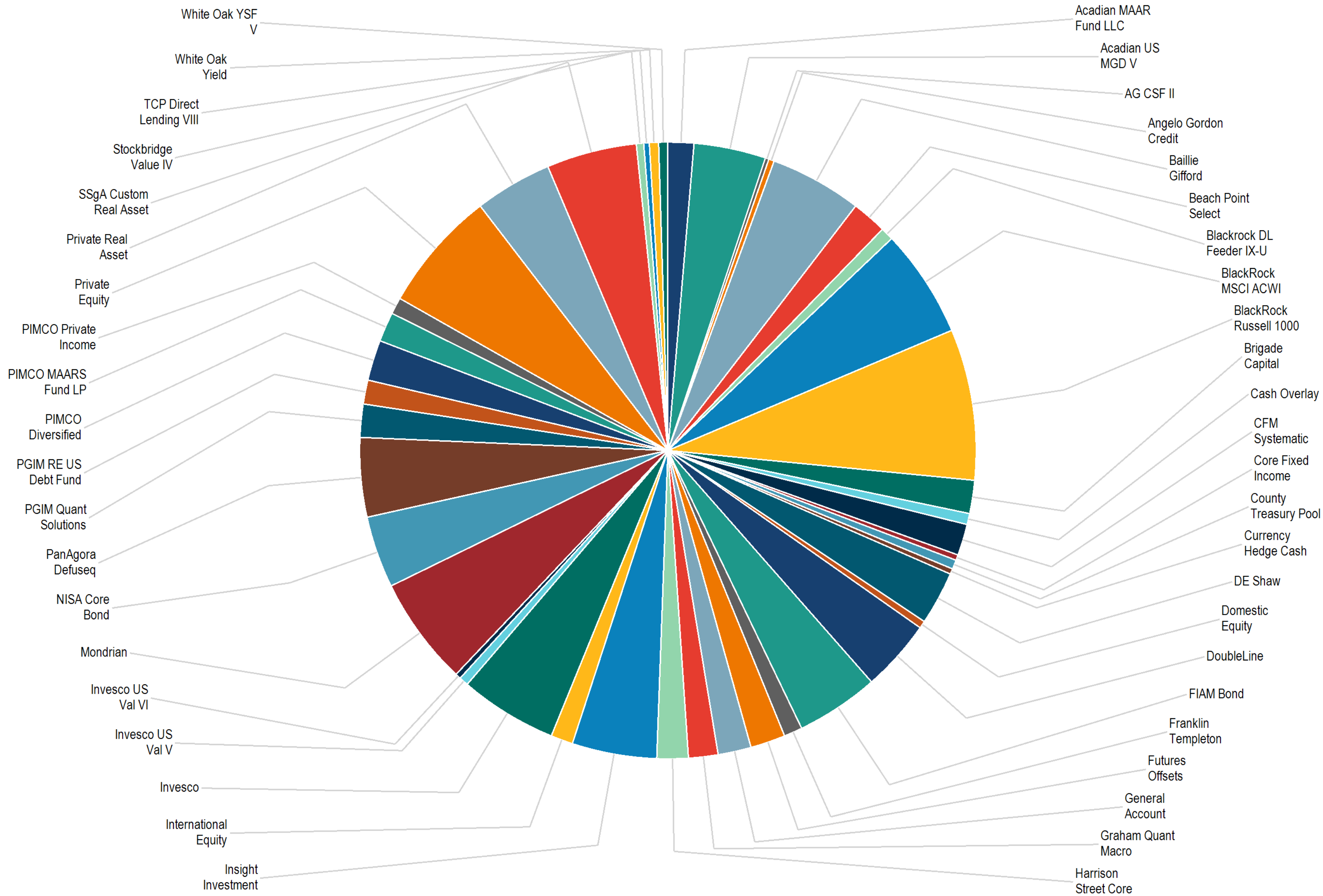


ASSET ALLOCATION	MARKET VALUE W/ OVERLAY	W/ OVERLAY	W/O OVERLAY
US Equity	1,226,861,034	21.6%	21.2%
International Equity	1,022,846,267	18.0%	16.8%
Fixed Income	1,301,088,110	22.9%	22.6%
Private Equity	377,548,837	6.6%	6.6%
Hedge Funds	360,815,825	6.3%	6.3%
Real Estate	543,236,171	9.6%	9.6%
Public Real Assets	277,692,866	4.9%	4.9%
Private Real Asset	241,147,213	4.2%	4.2%
Liquidity	334,103,856	5.9%	7.8%
TOTAL	**5,685,340,179**	**100.0%**	**100.0%**

Target



ASSET ALLOCATION	W/ OVERLAY	TARGET	DIFF
US Equity	21.6%	21.0%	0.6%
International Equity	18.0%	19.0%	-1.0%
Fixed Income	22.9%	23.5%	-0.6%
Private Equity	6.6%	7.0%	-0.4%
Hedge Funds	6.3%	7.0%	-0.7%
Real Estate	9.6%	9.0%	0.6%
Public Real Assets	4.9%	4.0%	0.9%
Private Real Asset	4.2%	4.0%	0.2%
Liquidity	5.9%	5.5%	0.4%
TOTAL	**100.0%**	**100.0%**	**0.0%**


White Oak YSF V
White Oak Yield
TCP Direct Lending VIII
Stockbridge Value IV
SSgA Custom Real Asset
Private Real Asset
Private Equity
PIMCO Private Income
PIMCO MAARS Fund LP
PIMCO Diversified
PGIM RE US Debt Fund
PGIM Quant Solutions
PanAgora Defuseq
NISA Core Bond
Mondrian
Invesco US Val VI
Invesco US Val V
Invesco
International Equity
Insight Investment
Acadian MAAR Fund LLC
Acadian US MGD V
AG CSF II
Angelo Gordon Credit
Baillie Gifford
Beach Point Select
Blackrock DL Feeder IX-U
BlackRock MSCI ACWI
BlackRock Russell 1000
Brigade Capital
Cash Overlay
CFM Systematic
Core Fixed Income
County Treasury Pool
Currency Hedge Cash
DE Shaw
Domestic Equity
DoubleLine
FIAM Bond
Franklin Templeton
Futures Offsets
General Account
Graham Quant Macro
Harrison Street Core

Name	Market Value	% of Portfolio
Acadian US MGD V	$220,730,177	3.9%
BlackRock Russell 1000	$467,327,753	8.2%
DE Shaw	$164,048,174	2.9%
PanAgora Defuseq	$246,616,238	4.3%
PGIM Quant Solutions	$104,962,416	1.8%
Domestic Equity Overlay	$23,176,275	0.4%
Baillie Gifford	$286,276,431	5.0%
Mondrian	$333,866,836	5.9%
BlackRock MSCI ACWI EX-US IMI	$335,875,830	5.9%
International Equity Overlay	$66,827,170	1.2%
DoubleLine	$223,219,437	3.9%
FIAM Bond	$255,656,675	4.5%
NISA Core Bond	$218,886,665	3.9%
Core Fixed Income Overlay	$18,965,227	0.3%
AG CSF ADF II	$1,163,161	0.0%
AG CSF II	$13,703,800	0.2%
Angelo Gordon Opportunistic	$90,282	0.0%
Angelo Gordon Credit Solutions	$15,859,522	0.3%
Beach Point Select	$106,455,939	1.9%
Brigade Capital	$104,125,570	1.8%
PIMCO Diversified	$126,081,633	2.2%
Franklin Templeton	$54,440,816	1.0%
Blackrock DL Feeder IX-U	$37,771,245	0.7%
PIMCO Private Income	$51,648,079	0.9%
TCP Direct Lending VIII	$15,184,336	0.3%
White Oak Yield	$30,726,865	0.5%
White Oak YSF V	$27,108,858	0.5%
Private Equity	$377,548,837	6.6%
Aberdeen Standard GARS	$255,179	0.0%

Manager Allocation Analysis

Name	Market Value	% of Portfolio
Acadian MAAR Fund LLC	$82,129,025	1.4%
CFM Systematic Global Macro	$98,083,979	1.7%
Graham Quant Macro	$89,707,254	1.6%
PIMCO MAARS Fund LP	$90,640,387	1.6%
Harrison Street Core Property	$96,741,491	1.7%
Invesco	$300,204,439	5.3%
Invesco US Val IV	$898,983	0.0%
Invesco US Val V	$28,447,887	0.5%
Invesco US Val VI	$16,563,296	0.3%
PGIM RE US Debt Fund	$75,647,893	1.3%
Stockbridge Value IV	$24,732,182	0.4%
Private Real Asset	$241,147,213	4.2%
SSgA Custom Real Asset	$277,692,867	4.9%
Insight Investment	$262,234,131	4.6%
County Treasury Pool	$28,378,311	0.5%
General Account	$101,440,491	1.8%
Currency Hedge Cash Overlay	$18,915,565	0.3%
Cash Overlay	$32,103,986	0.6%
Transition Account	$42	0.0%
Futures Offsets (SMCE02001)	-$108,968,672	-1.9%
Total	**$5,685,340,179**	**100.0%**

Statistics Summary

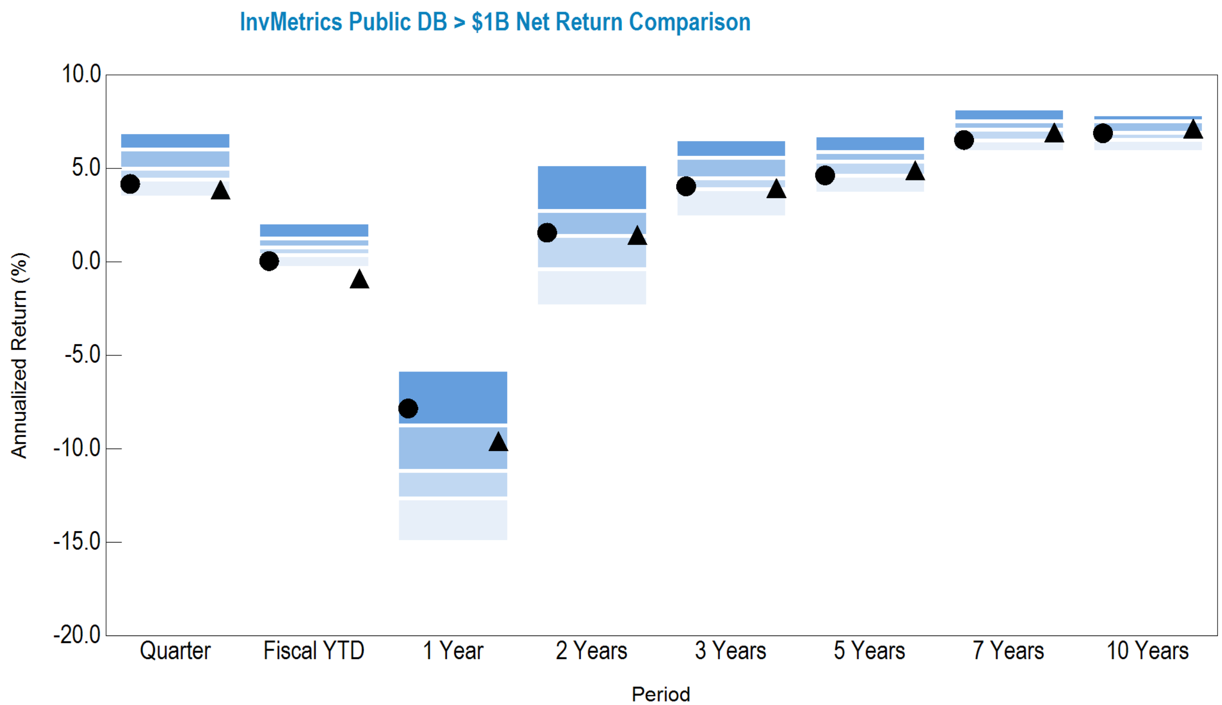
3 Years

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	4.0%	74	10.0%	21	0.3	49	0.0	71	2.6%	65
Policy Index	4.0%	75	10.5%	25	0.3	57	--	--	0.0%	1
InvMetrics Public DB > $1B Net Median	4.5%	--	11.4%	--	0.3	--	0.3	--	2.1%	--

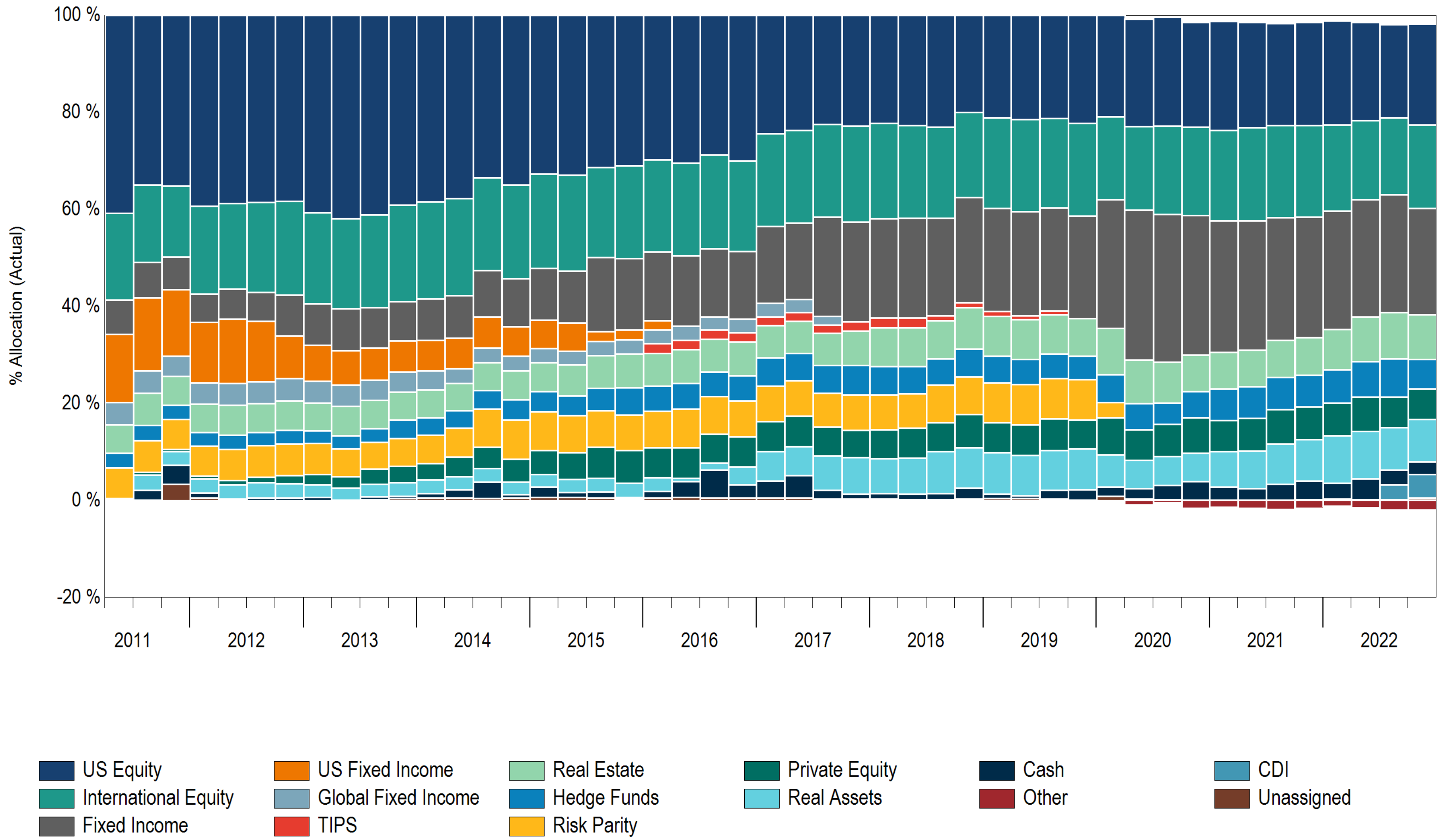
Statistics Summary

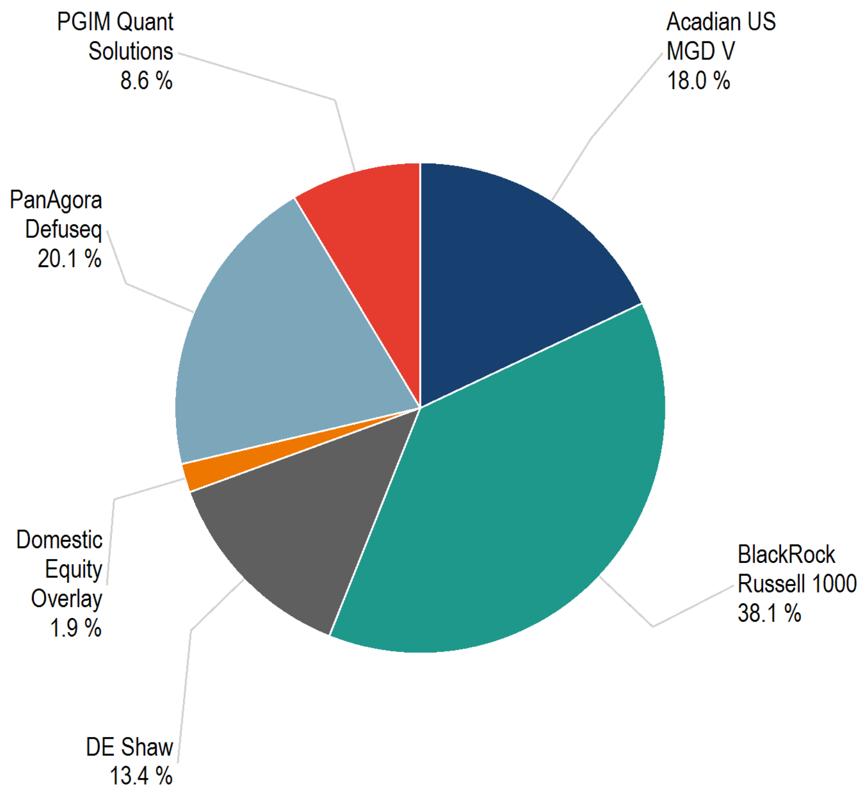
5 Years

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	4.6%	76	8.8%	20	0.4	57	-0.1	83	2.2%	65
Policy Index	4.9%	65	9.2%	27	0.4	43	--	--	0.0%	1
InvMetrics Public DB > $1B Net Median	5.4%	--	10.1%	--	0.4	--	0.1	--	1.7%	--



	Return (Rank)															
5th Percentile	6.9		2.1		-5.8		5.2		6.6		6.8		8.2		7.9	
25th Percentile	6.0		1.3		-8.7		2.7		5.6		5.9		7.6		7.5	
Median	5.0		0.8		-11.1		1.4		4.5		5.4		7.1		6.9	
75th Percentile	4.4		0.4		-12.7		-0.4		3.9		4.6		6.5		6.6	
95th Percentile	3.5		-0.3		-15.0		-2.4		2.4		3.7		5.9		5.9	
# of Portfolios	59		59		59		58		57		57		57		54	
● Total Fund	4.2	(82)	0.0	(90)	-7.8	(19)	1.6	(48)	4.0	(74)	4.6	(76)	6.5	(74)	6.9	(55)
▲ Policy Index	3.9	(88)	-0.9	(99)	-9.6	(38)	1.5	(50)	4.0	(75)	4.9	(65)	6.9	(57)	7.1	(46)


100 %
80 %
60 %
40 %
20 %
0 %
-20 %
% Allocation (Actual)
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
US Equity
International Equity
Fixed Income
US Fixed Income
Global Fixed Income
TIPS
Real Estate
Hedge Funds
Risk Parity
Private Equity
Real Assets
Cash
Other
CDI
Unassigned



	Actual $	Actual %	Manager Contribution to Excess Return %
Acadian US MGD V	$220,730,177	18.0%	0.7%
BlackRock Russell 1000	$467,327,753	38.1%	0.0%
DE Shaw	$164,048,174	13.4%	-0.1%
PanAgora Defuseq	$246,616,238	20.1%	1.0%
PGIM Quant Solutions	$104,962,416	8.6%	0.3%
Domestic Equity Overlay	$23,176,275	1.9%	0.0%
Actual vs. Policy Weight Difference			0.0%
Total	**$1,226,861,034**	**100.0%**	**1.8%**

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
US Equity	7.0%	20.6%	0.3	0.0	2.6%
Blended US Equity Index	7.1%	21.8%	0.3	--	0.0%
Russell 3000	7.1%	21.8%	0.3	--	0.0%

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Large Cap Equity	7.0%	20.2%	0.3	-0.1	2.6%
Russell 1000	7.3%	21.6%	0.3	--	0.0%
Acadian US MGD V	3.9%	18.8%	0.2	-0.5	6.2%
Russell 1000	7.3%	21.6%	0.3	--	0.0%
BlackRock Russell 1000	7.3%	21.6%	0.3	-0.3	0.0%
Russell 1000	7.3%	21.6%	0.3	--	0.0%
DE Shaw	6.8%	21.7%	0.3	-0.2	3.2%
Russell 1000	7.3%	21.6%	0.3	--	0.0%
PanAgora Defuseq	7.3%	18.5%	0.4	0.0	7.9%
Russell 1000	7.3%	21.6%	0.3	--	0.0%
Small Cap Equity	4.1%	28.2%	0.1	0.2	6.2%
Russell 2000	3.1%	26.4%	0.1	--	0.0%
PGIM Quant Solutions	4.1%	28.2%	0.1	0.2	6.2%
Russell 2000	3.1%	26.4%	0.1	--	0.0%

Statistics Summary

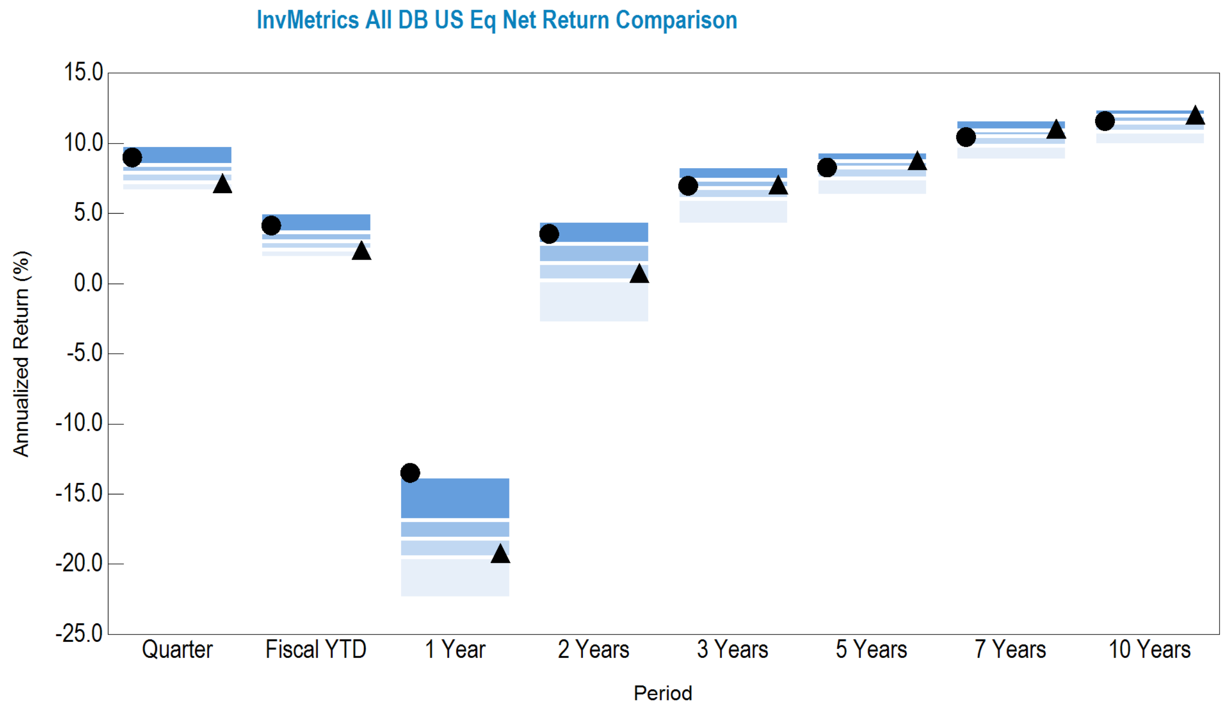
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
US Equity	8.3%	18.3%	0.4	-0.2	2.1%
Blended US Equity Index	8.8%	19.2%	0.4	--	0.0%
Russell 3000	8.8%	19.2%	0.4	--	0.0%

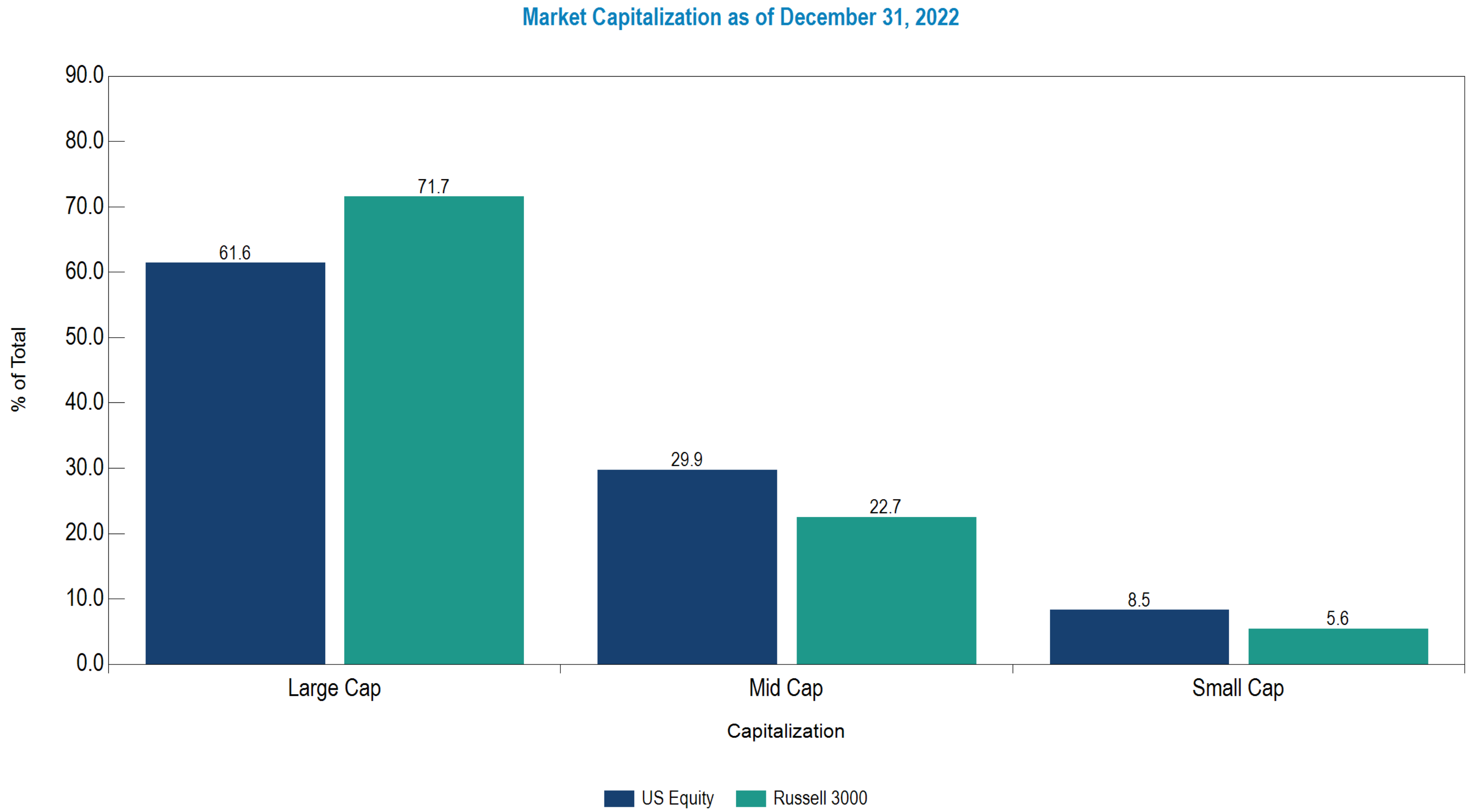
Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Large Cap Equity	8.8%	17.8%	0.4	-0.2	2.2%
Russell 1000	9.1%	19.0%	0.4	--	0.0%
BlackRock Russell 1000	9.1%	19.0%	0.4	0.2	0.0%
Russell 1000	9.1%	19.0%	0.4	--	0.0%
DE Shaw	8.2%	18.9%	0.4	-0.3	2.9%
Russell 1000	9.1%	19.0%	0.4	--	0.0%
Small Cap Equity	3.7%	24.8%	0.1	-0.1	5.1%
Russell 2000	4.1%	23.5%	0.1	--	0.0%
PGIM Quant Solutions	3.7%	24.8%	0.1	-0.1	5.1%
Russell 2000	4.1%	23.5%	0.1	--	0.0%



	Return (Rank)															
5th Percentile	9.8		5.0		-13.8		4.5		8.3		9.4		11.7		12.5	
25th Percentile	8.5		3.7		-16.8		2.8		7.4		8.8		11.0		12.0	
Median	7.9		3.1		-18.2		1.5		6.8		8.3		10.5		11.5	
75th Percentile	7.2		2.5		-19.5		0.3		6.0		7.5		9.9		10.9	
95th Percentile	6.6		1.9		-22.4		-2.8		4.2		6.3		8.8		9.9	
# of Portfolios	467		458		429		415		412		394		355		279	
● US Equity	9.0	(14)	4.1	(15)	-13.5	(5)	3.5	(15)	7.0	(44)	8.3	(52)	10.4	(54)	11.6	(48)
▲ Blended US Equity Index	7.2	(79)	2.4	(79)	-19.2	(71)	0.8	(64)	7.1	(38)	8.8	(24)	11.1	(20)	12.0	(22)



See appendix for the market capitalization breakpoints.

Characteristics

	Portfolio	Russell 3000
Number of Holdings	2,866	2,960
Weighted Avg. Market Cap. ($B)	268.8	360.3
Median Market Cap. ($B)	4.4	2.5
Price To Earnings	17.5	18.5
Price To Book	3.4	3.6
Price To Sales	1.9	2.2
Return on Equity (%)	23.6	23.9
Yield (%)	1.9	1.7

Top Holdings

APPLE INC	3.6%
MICROSOFT CORP	3.5%
ALPHABET INC	1.3%
JOHNSON & JOHNSON	1.2%
CHEVRON CORP	1.0%
AMAZON.COM INC	1.0%
BERKSHIRE HATHAWAY INC	0.9%
UNITEDHEALTH GROUP INC	0.9%
EXXON MOBIL CORP	0.9%
PFIZER INC	0.8%

Best Performers

	Return %
GLYCOMIMETICS INC (GLYC)	449.2%
MADRIGAL PHARMACEUTICALS INC (MDGL)	346.6%
PDS BIOTECHNOLOGY CORP (PDSB)	344.4%
VIKING THERAPEUTICS INC (VKTX)	245.6%
IMMUNOVANT INC (IMVT)	218.1%
RAYONIER ADVANCED MATERIALS INC (RYAM)	204.8%
4D MOLECULAR THERAPEUTICS INC	176.2%
MAXAR TECHNOLOGIES INC (MAXR.)	174.7%
INNOVATE CORP (VATE)	167.1%
IAMGOLD CORP (IMG.)	136.3%

Worst Performers

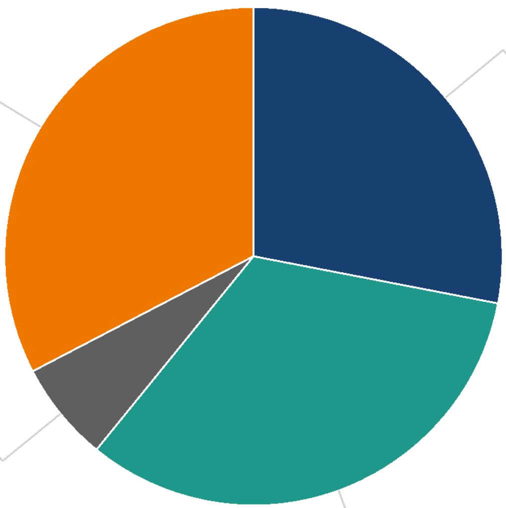
	Return %
TRICIDA INC (TCDAQ)	-98.5%
RELMADA THERAPEUTICS INC (RLMD)	-90.6%
BLUE APRON HOLDINGS INC (APRN)	-85.6%
EIGER BIOPHARMACEUTICALS INC (EIGR)	-84.3%
CANO HEALTH INC	-84.2%
EXELA TECHNOLOGIES INC (XELA)	-81.9%
GOSSAMER BIO INC (GOSS)	-81.9%
TUSIMPLE HLDGS INC CL A CL A	-78.4%
PARTY CITY HOLDCO INC (PRTYQ)	-76.9%
CARVANA CO (CVNA)	-76.7%

US Equity Performance Attribution vs. Russell 3000

	Attribution Effects					Returns		Sector Weights	
	Total Effects		Selection Effect		Allocation Effect		Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark

	Total Effects		Selection Effect		Allocation Effect		Interaction Effects	Returns: Portfolio	Returns: Benchmark	Sector Weights: Portfolio	Sector Weights: Benchmark
Energy	-0.1%		-0.2%		0.1%		0.0%	17.0%	21.5%	5.0%	4.2%
Materials	0.0%		-0.1%		0.1%		0.0%	12.6%	15.6%	4.5%	2.8%
Industrials	0.1%		0.0%		0.1%		0.0%	16.4%	16.6%	10.4%	9.0%
Consumer Discretionary	0.8%		0.7%		0.2%		-0.1%	-1.1%	-7.6%	10.4%	11.5%
Consumer Staples	0.1%		0.0%		0.2%		0.0%	12.1%	12.6%	9.6%	6.3%
Health Care	-0.2%		-0.2%		0.0%		0.0%	10.3%	11.4%	14.1%	15.0%
Financials	-0.2%		-0.1%		-0.1%		0.0%	11.3%	12.2%	10.5%	11.9%
Information Technology	0.6%		0.5%		0.1%		-0.1%	5.8%	3.8%	21.2%	25.4%
Communication Services	0.3%		0.3%		0.0%		0.0%	1.8%	-2.1%	7.4%	7.5%
Utilities	0.0%		0.0%		0.0%		0.0%	8.9%	8.6%	4.3%	3.0%
Real Estate	0.0%		0.0%		0.0%		0.0%	4.2%	4.2%	2.6%	3.4%
Cash	0.0%		--		--		--	--	--	0.0%	0.0%
Unclassified	0.0%		0.0%		0.0%		0.0%	4.9%	--	0.1%	0.0%
Portfolio	**1.5%**	**=**	**1.0%**	**+**	**0.8%**	**+**	**-0.2%**	**8.7%**	**7.1%**	**100.0%**	**100.0%**

U.S. Effective Style Map



	Actual $	Actual %	Manager Contribution to Excess Return %
Baillie Gifford	$286,276,431	28.0%	-0.2%
Mondrian	$333,866,836	32.6%	0.0%
BlackRock MSCI ACWI EX-US IMI	$335,875,830	32.8%	0.0%
International Equity Overlay	$66,827,170	6.5%	0.0%
Actual vs. Policy Weight Difference			2.2%
Total	**$1,022,846,267**	**100.0%**	**2.0%**

Statistics Summary

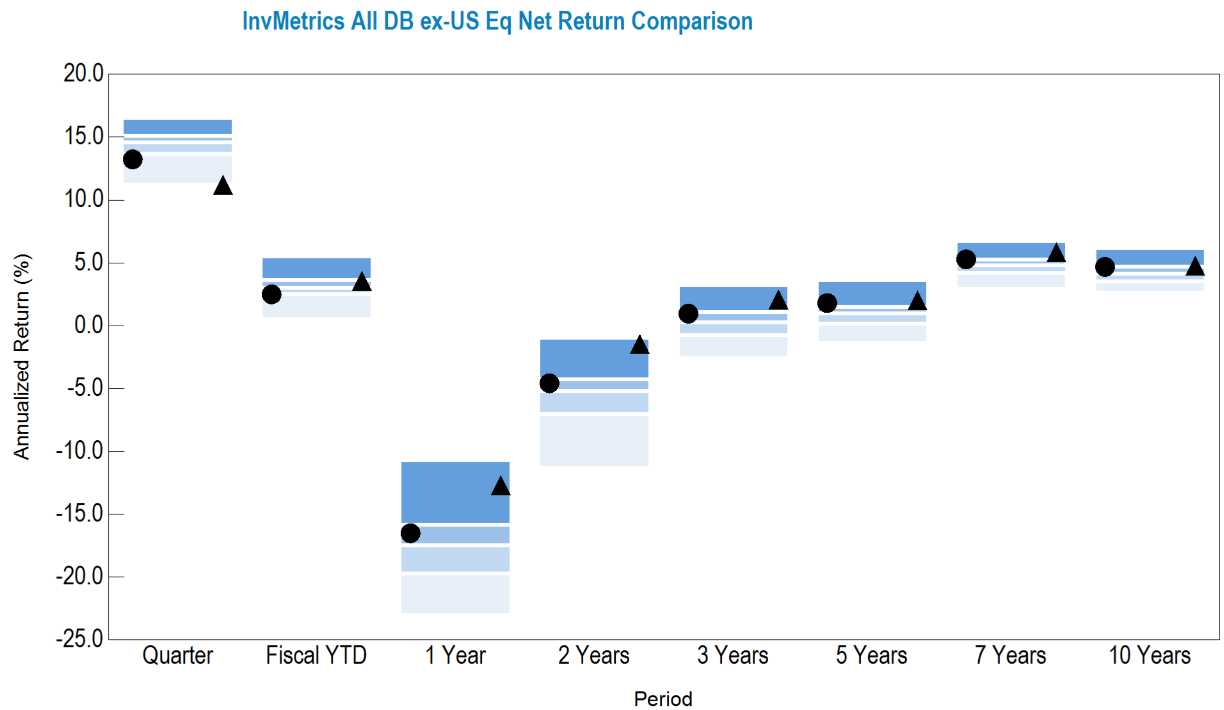
3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
International Equity	1.0%	18.6%	0.0	-0.4	2.7%
Blended International Equity Index	2.1%	17.7%	0.1	--	0.0%
Baillie Gifford	-1.6%	23.1%	-0.1	-0.2	9.4%
MSCI ACWI ex US	0.5%	19.5%	0.0	--	0.0%
Mondrian	-2.2%	20.6%	-0.1	-0.9	3.1%
MSCI ACWI ex USA Value Gross	0.7%	21.3%	0.0	--	0.0%

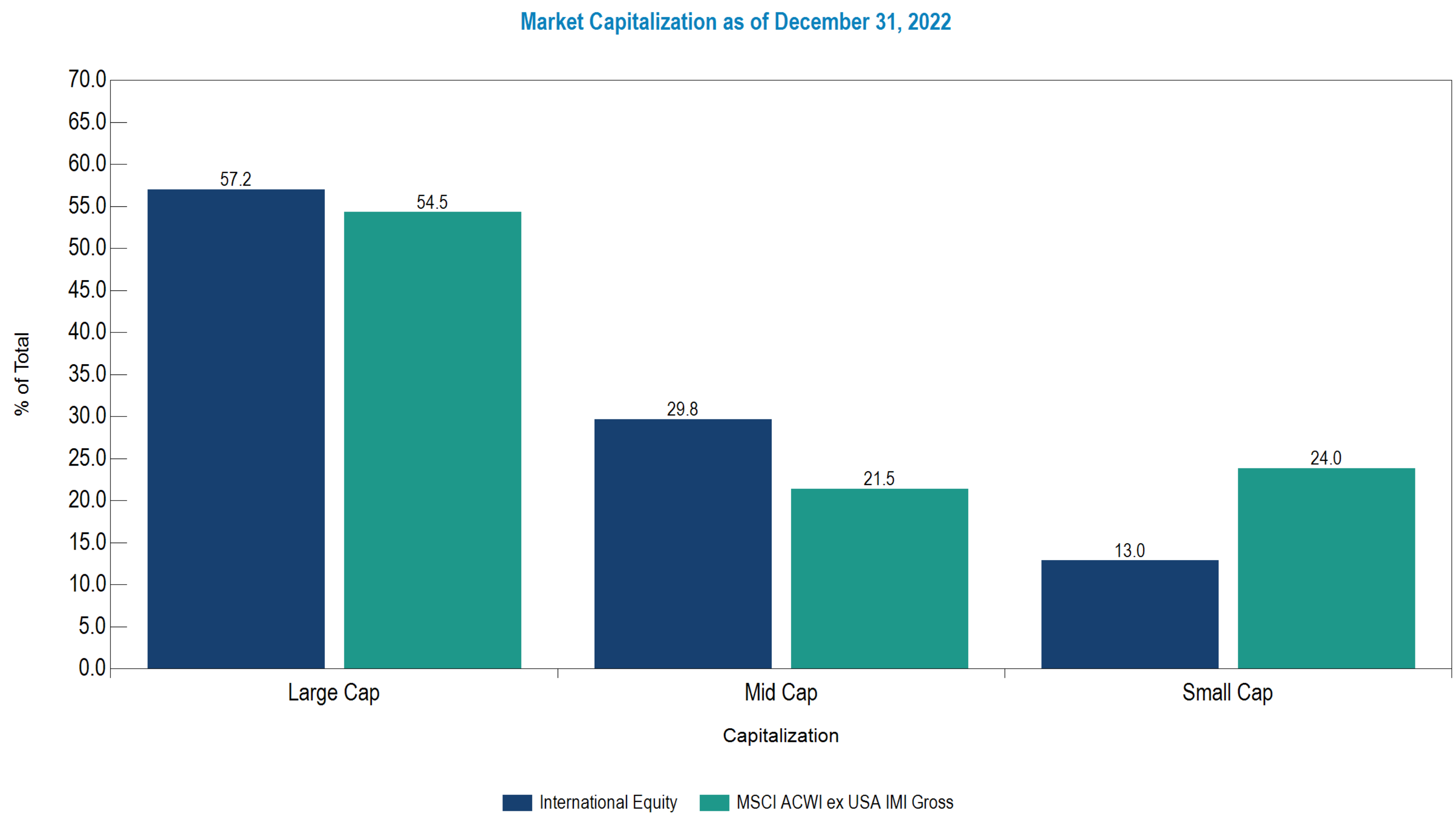
Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
International Equity	1.8%	16.5%	0.0	-0.1	2.2%
Blended International Equity Index	2.0%	15.8%	0.1	--	0.0%
Baillie Gifford	1.2%	20.2%	0.0	0.0	8.0%
MSCI ACWI ex US	1.4%	17.2%	0.0	--	0.0%
Mondrian	-0.4%	18.0%	-0.1	-0.3	2.9%
MSCI ACWI ex USA Value Gross	0.6%	18.6%	0.0	--	0.0%



	Return (Rank)															
5th Percentile	16.5		5.5		-10.7		-1.0		3.2		3.6		6.7		6.2	
25th Percentile	15.1		3.7		-15.8		-4.2		1.1		1.5		5.3		4.7	
Median	14.6		3.1		-17.4		-5.1		0.3		1.0		4.9		4.1	
75th Percentile	13.7		2.6		-19.7		-7.0		-0.7		0.2		4.2		3.6	
95th Percentile	11.3		0.6		-23.0		-11.3		-2.6		-1.3		2.9		2.6	
# of Portfolios	303		299		286		276		272		262		245		185	
● International Equity	13.2	(85)	2.5	(77)	-16.5	(41)	-4.6	(38)	1.0	(29)	1.8	(18)	5.3	(25)	4.7	(28)
▲ Blended International Equity Index	11.2	(96)	3.6	(28)	-12.7	(9)	-1.5	(8)	2.1	(12)	2.0	(14)	5.8	(14)	4.8	(24)



See appendix for the market capitalization breakpoints.

Characteristics

	Portfolio	MSCI ACWI ex USA IMI Gross
Number of Holdings	6,601	6,585
Weighted Avg. Market Cap. ($B)	66.9	69.8
Median Market Cap. ($B)	1.7	1.6
Price To Earnings	13.6	12.6
Price To Book	2.4	2.4
Price To Sales	1.2	1.2
Return on Equity (%)	13.7	14.6
Yield (%)	3.2	3.4

Top Holdings

UNITED OVERSEAS BANK LTD	1.7%
HOUSING DEVELOPMENT FINANCE CORP LTD	1.3%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.2%
ALIBABA GROUP HOLDING LTD	1.2%
TAKEDA PHARMACEUTICAL CO LTD	1.1%
NOVARTIS AG	1.0%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.0%
BP PLC	1.0%
SANOFI	1.0%
ASML HOLDING NV	1.0%

Best Performers

	Return %
PT XL AXIATA TBK	771.5%
BICO GROUP AB (PUBL)	280.3%
KOZA ALTIN ISLEMELERI AS	206.2%
SINCH AB (PUBL)	170.5%
DAOU DATA (KO:DAD)	151.5%
CHINA EAST EDU ORD (667)	141.2%
WEIMOB INC	141.2%
IAMGOLD CORP (IMG.)	136.3%
TURK TRAKTOR VE ZIRAAT MAKINELERI A.S.	133.9%
MERITZ FINANCIAL GROUP INC	133.8%

Worst Performers

	Return %
TECHNICOLOR CREATIVE STUDIOS COMMON STOCK EUR.5	-87.5%
YINCHENG INTERNATIONAL HOLDING CO LTD	-83.6%
ARGO BLOCKCHAIN PLC	-79.4%
NICHI-IKO PHARM. (J:NIHO)	-79.1%
VANTIVA SA	-78.2%
STEINHOFF INVESTMENT HOLDINGS LTD	-69.3%
GANGLONG CHINA PROPERTY GROUP	-68.4%
CITY CHIC COLLECTIVE LTD	-61.7%
HAICHANG OCEAN PARK HOLDINGS LTD	-58.1%
BANCA MONTE DEI PASCHI DI SIENA SPA, SIENA	-58.0%

International Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

	Attribution Effects					Returns		Sector Weights	
	Total Effects		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.0%		0.0%	0.0%	0.0%	14.9%	13.7%	4.6%	5.9%
Materials	-0.2%		0.1%	-0.1%	-0.2%	16.8%	16.1%	5.6%	8.7%
Industrials	-0.4%		-0.3%	0.0%	-0.1%	14.0%	17.1%	13.6%	13.1%
Consumer Discretionary	0.4%		0.1%	0.0%	0.2%	15.8%	14.7%	14.2%	11.3%
Consumer Staples	0.4%		0.2%	0.0%	0.2%	13.6%	10.2%	9.9%	8.9%
Health Care	0.2%		0.1%	0.0%	0.1%	14.3%	13.7%	11.2%	9.4%
Financials	0.0%		0.6%	-0.1%	-0.4%	18.4%	16.0%	15.3%	19.3%
Information Technology	-0.2%		-0.2%	0.0%	0.1%	11.1%	13.4%	12.9%	10.8%
Communication Services	-0.2%		-0.2%	0.0%	0.1%	8.9%	12.5%	7.3%	5.7%
Utilities	0.2%		0.2%	0.0%	0.0%	19.6%	12.6%	3.2%	3.4%
Real Estate	0.0%		0.0%	0.1%	-0.1%	10.5%	10.2%	1.2%	3.5%
Cash	-0.1%		0.0%	-0.1%	0.0%	0.8%	--	0.9%	0.0%
Unclassified	0.0%		0.0%	0.0%	0.0%	7.5%	--	0.0%	0.0%
Portfolio	**0.0%**	**=**	**0.5% +**	**-0.3% +**	**-0.2%**	**14.4%**	**14.3%**	**100.0%**	**100.0%**

Int'l Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

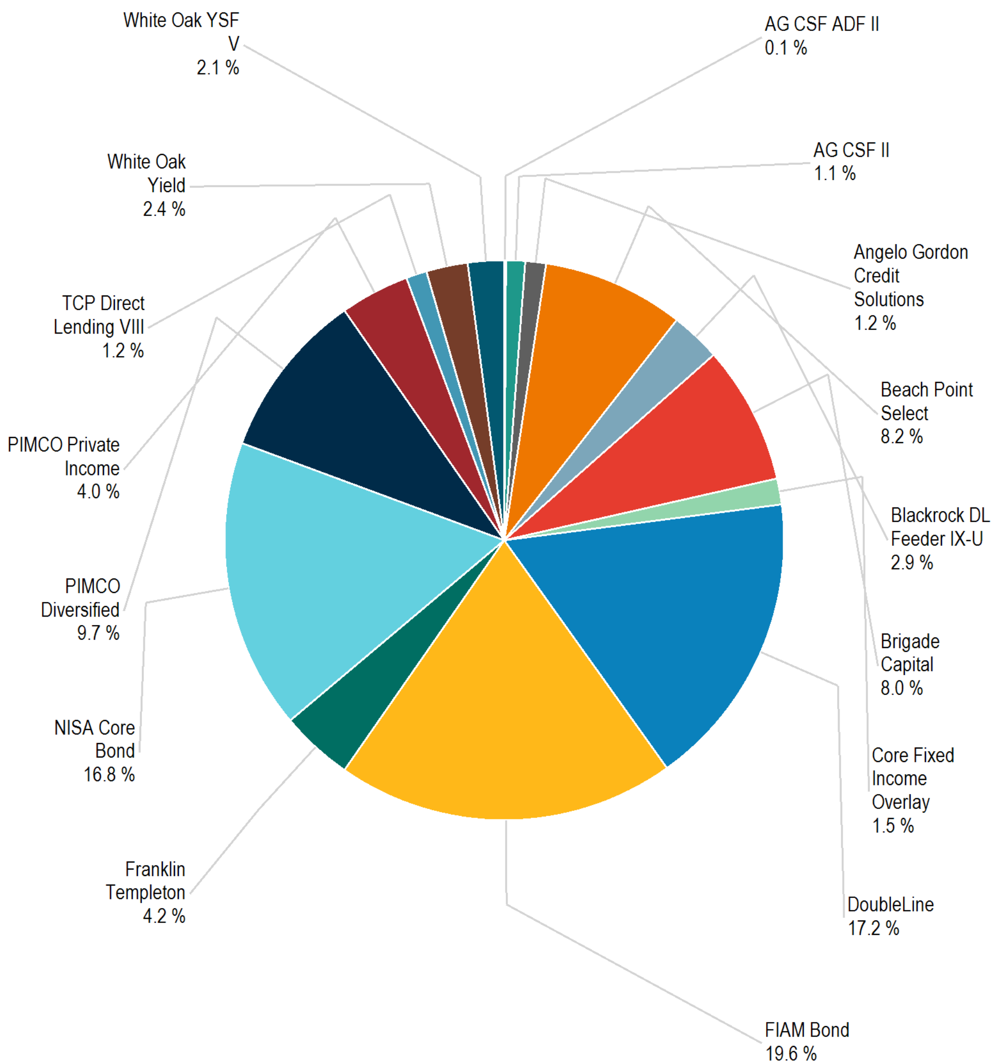
	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Europe									
Austria	24.4%	24.8%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Belgium	23.4%	20.9%	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	-0.1%
Czech Republic*	7.5%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Denmark	31.2%	31.0%	0.6%	1.6%	0.0%	-0.1%	-0.1%	0.0%	-0.2%
Finland	19.5%	18.6%	0.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
France	20.3%	22.4%	5.6%	6.4%	-0.1%	0.0%	-0.1%	0.0%	-0.2%
Germany	22.6%	24.7%	3.1%	4.4%	-0.1%	-0.1%	-0.1%	0.0%	-0.3%
Greece*	30.1%	30.4%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Hungary*	35.6%	35.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ireland	15.8%	21.2%	0.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Italy	27.0%	27.0%	2.2%	1.5%	0.0%	0.1%	0.1%	0.0%	0.1%
Luxembourg	-1.5%	14.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Netherlands	17.2%	21.1%	4.9%	2.4%	-0.1%	0.1%	0.2%	-0.1%	0.1%
Norway	17.1%	18.8%	0.2%	0.6%	0.0%	0.0%	0.0%	0.0%	-0.1%
Poland*	48.2%	47.3%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Portugal	15.8%	17.4%	0.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
Spain	27.4%	23.2%	1.4%	1.4%	0.1%	0.0%	0.0%	0.0%	0.0%
Sweden	8.5%	18.7%	1.9%	2.3%	-0.2%	0.0%	0.0%	0.0%	-0.2%
Switzerland	15.6%	10.7%	4.1%	6.2%	0.3%	0.1%	-0.1%	-0.1%	0.1%
United Kingdom	19.7%	17.8%	12.0%	9.7%	0.2%	0.0%	0.2%	0.0%	0.5%

Int'l Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
AsiaPacific									
Australia	14.2%	15.2%	2.6%	5.3%	-0.1%	0.0%	-0.2%	0.0%	-0.2%
China*	11.9%	14.1%	7.5%	8.2%	-0.2%	0.0%	0.0%	0.0%	-0.2%
Hong Kong	14.0%	18.7%	4.7%	1.8%	-0.1%	0.3%	0.0%	-0.1%	0.1%
India*	5.0%	1.3%	4.8%	4.8%	0.2%	0.0%	0.0%	0.0%	0.2%
Indonesia*	4.7%	-0.6%	0.6%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Japan	11.5%	13.0%	20.1%	15.1%	-0.2%	-0.2%	0.5%	-0.1%	0.0%
Korea*	18.2%	18.4%	2.8%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Malaysia*	14.1%	14.3%	0.2%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
New Zealand	3.6%	17.1%	0.4%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Philippines*	21.5%	20.6%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Singapore	22.6%	9.6%	2.1%	1.1%	0.1%	0.0%	0.1%	0.1%	0.3%
Taiwan*	9.5%	9.5%	4.3%	4.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Thailand*	18.4%	16.0%	0.4%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Americas									
Argentina*	2.2%	32.7%	0.5%	0.0%	0.0%	0.1%	0.0%	-0.2%	0.0%
Brazil*	4.6%	0.5%	2.0%	1.7%	0.1%	0.0%	0.0%	0.0%	0.1%
Canada	9.8%	8.1%	4.1%	8.2%	0.2%	0.1%	-0.1%	-0.1%	0.1%
Chile*	11.0%	11.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Colombia*	14.7%	14.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Mexico*	8.5%	11.5%	0.8%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%
Peru*	10.5%	17.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
United States	22.5%	7.0%	1.3%	0.0%	0.0%	0.0%	0.0%	0.2%	0.2%

Int'l Equity Performance Attribution vs. MSCI ACWI ex USA IMI Gross

	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Other									
Egypt*	24.5%	22.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Israel	-1.3%	-1.6%	0.3%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Kuwait*	5.3%	5.3%	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%
Qatar*	-14.5%	-14.6%	0.1%	0.4%	0.0%	0.1%	0.0%	0.0%	0.1%
Saudi Arabia*	-7.4%	-7.3%	0.5%	1.3%	0.0%	0.1%	0.0%	0.0%	0.1%
South Africa*	18.3%	17.9%	0.4%	1.0%	0.0%	0.0%	0.0%	0.0%	-0.1%
Turkey*	71.8%	72.1%	0.1%	0.1%	0.0%	-0.1%	0.0%	0.0%	-0.1%
United Arab Emirates*	-1.7%	-1.7%	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%
Totals									
Americas	9.9%	7.2%	9.0%	10.8%	0.3%	0.0%	-0.1%	-0.1%	0.3%
Europe	19.4%	19.9%	38.0%	38.9%	-0.2%	0.0%	-0.1%	0.0%	-0.3%
Asia/Pacific	11.9%	12.3%	50.5%	46.0%	-0.2%	-0.1%	0.3%	0.0%	0.0%
Other	3.3%	3.3%	1.6%	4.3%	0.0%	0.2%	0.0%	0.0%	0.1%
Cash	0.8%	--	1.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%
Unclassified	--	--	0.0%	0.0%	--	0.0%	0.0%	--	0.0%
Total	**14.3%**	**14.3%**	**100.0%**	**100.0%**	**-0.1%**	**0.1%**	**0.1%**	**-0.1%**	**0.0%**
Totals									
Developed	16.1%	16.2%	73.4%	71.0%	-0.2%	0.0%	0.3%	0.0%	0.1%
Emerging*	9.7%	9.7%	25.6%	29.0%	0.1%	0.0%	-0.2%	0.0%	-0.1%
Cash	0.8%	--	1.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%



	Actual $	Actual %	Manager Contribution to Excess Return %
AG CSF ADF II	$1,163,161	0.1%	0.0%
AG CSF II	$13,703,800	1.1%	0.0%
Angelo Gordon Credit Solutions	$15,859,522	1.2%	-0.1%
Angelo Gordon Opportunistic	$90,282	0.0%	0.0%
Beach Point Select	$106,455,939	8.2%	-0.2%
Blackrock DL Feeder IX-U	$37,771,245	2.9%	0.0%
Brigade Capital	$104,125,570	8.0%	-0.4%
DoubleLine	$223,219,437	17.2%	-0.2%
FIAM Bond	$255,656,675	19.6%	0.0%
Franklin Templeton	$54,440,816	4.2%	0.3%
NISA Core Bond	$218,886,665	16.8%	0.0%
PIMCO Diversified	$126,081,633	9.7%	0.0%
PIMCO Private Income	$51,648,079	4.0%	-0.2%
TCP Direct Lending VIII	$15,184,336	1.2%	0.0%
White Oak Yield	$30,726,865	2.4%	0.0%
White Oak YSF V	$27,108,858	2.1%	0.0%
Core Fixed Income Overlay	$18,965,227	1.5%	0.0%
Actual vs. Policy Weight Difference			-0.2%
Total	**$1,301,088,110**	**100.0%**	**-1.2%**

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Fixed Income	-1.1%	5.3%	-0.3	0.2	2.4%
Blended Fixed Income Index	-1.7%	6.6%	-0.4	--	0.0%
Core Fixed	-2.6%	5.5%	-0.6	0.0	1.4%
Bloomberg US Aggregate TR	-2.7%	5.9%	-0.6	--	0.0%
FIAM Bond	-1.7%	6.2%	-0.4	0.7	1.5%
Bloomberg US Aggregate TR	-2.7%	5.9%	-0.6	--	0.0%
Opportunistic Credit	1.6%	7.3%	0.1	0.2	5.7%
Bloomberg BA Intermediate HY	0.5%	10.1%	0.0	--	0.0%
Angelo Gordon Opportunistic	7.7%	20.1%	0.4	0.5	20.7%
Bloomberg US Aggregate TR	-2.7%	5.9%	-0.6	--	0.0%
Beach Point Select	5.8%	9.5%	0.5	0.8	6.5%
Bloomberg BA Intermediate HY	0.5%	10.1%	0.0	--	0.0%
Brigade Capital	1.7%	12.4%	0.1	0.2	8.1%
Bloomberg BA Intermediate HY	0.5%	10.1%	0.0	--	0.0%
PIMCO Diversified	-2.7%	9.3%	-0.4	-0.2	1.2%
Blended PIMCO Diversified Index	-2.4%	9.9%	-0.3	--	0.0%
Franklin Templeton	-6.4%	9.3%	-0.8	-0.3	6.5%
Bloomberg Multiverse TR	-4.4%	7.6%	-0.7	--	0.0%

Statistics Summary

3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Private Credit	5.5%	4.2%	1.2	-1.0	2.5%
Cliffwater Direct Lending Index	8.0%	5.6%	1.3	--	0.0%
PIMCO Private Income	6.9%	8.6%	0.7	0.6	10.8%
Bloomberg BA Intermediate HY	0.5%	10.1%	0.0	--	0.0%
TCP Direct Lending VIII	4.7%	3.4%	1.2	-0.7	4.8%
Cliffwater Direct Lending Index	8.0%	5.6%	1.3	--	0.0%
White Oak Yield	5.0%	2.7%	1.6	-0.8	3.7%
Cliffwater Direct Lending Index	8.0%	5.6%	1.3	--	0.0%

Statistics Summary

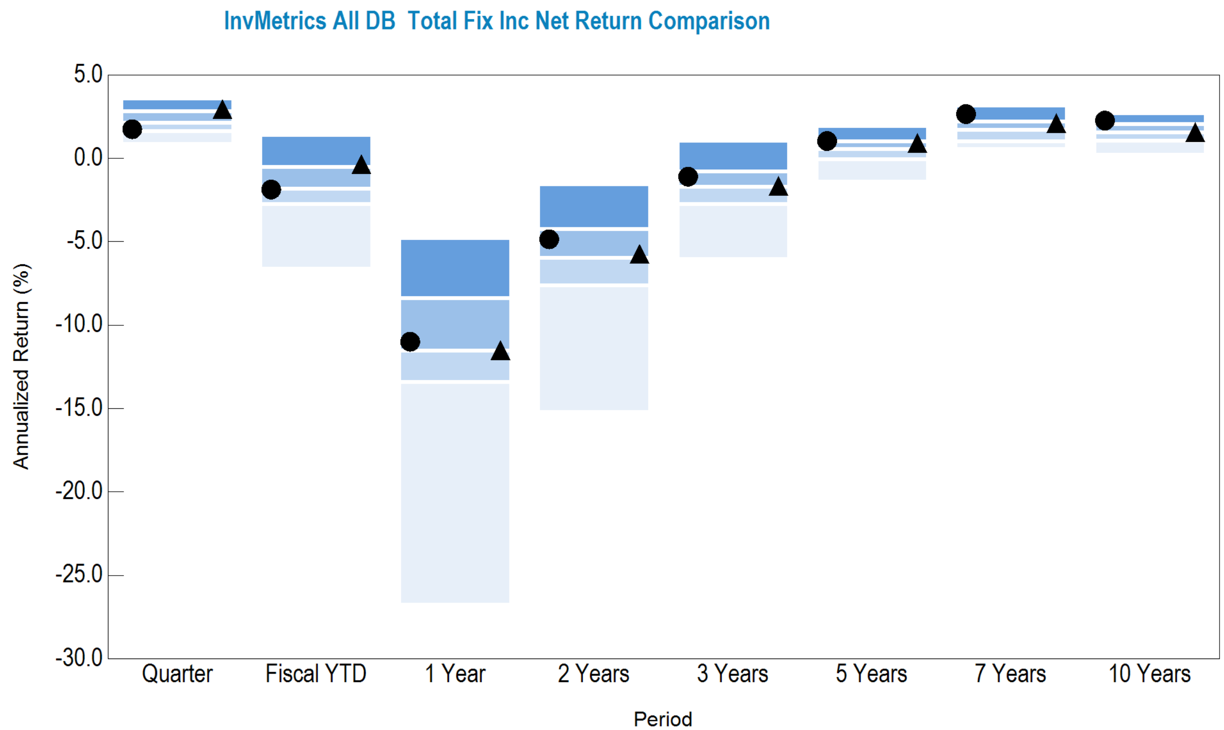
5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Fixed Income	1.0%	4.3%	0.0	0.1	2.1%
Blended Fixed Income Index	0.9%	5.4%	0.0	--	0.0%
Core Fixed	-0.1%	4.6%	-0.3	-0.1	1.4%
Bloomberg US Aggregate TR	0.0%	5.1%	-0.2	--	0.0%
FIAM Bond	0.8%	5.3%	-0.1	0.6	1.2%
Bloomberg US Aggregate TR	0.0%	5.1%	-0.2	--	0.0%
Opportunistic Credit	3.1%	6.0%	0.3	0.1	4.7%
Bloomberg BA Intermediate HY	2.7%	8.3%	0.2	--	0.0%
Angelo Gordon Opportunistic	11.2%	16.4%	0.6	0.7	17.1%
Bloomberg US Aggregate TR	0.0%	5.1%	-0.2	--	0.0%
Beach Point Select	6.2%	7.6%	0.7	0.6	5.4%
Bloomberg BA Intermediate HY	2.7%	8.3%	0.2	--	0.0%
Brigade Capital	2.6%	10.0%	0.1	0.0	6.7%
Bloomberg BA Intermediate HY	2.7%	8.3%	0.2	--	0.0%
PIMCO Diversified	0.6%	7.6%	-0.1	-0.1	1.1%
Blended PIMCO Diversified Index	0.6%	8.0%	-0.1	--	0.0%
Franklin Templeton	-3.7%	8.7%	-0.6	-0.3	7.5%
Bloomberg Multiverse TR	-1.6%	6.4%	-0.4	--	0.0%

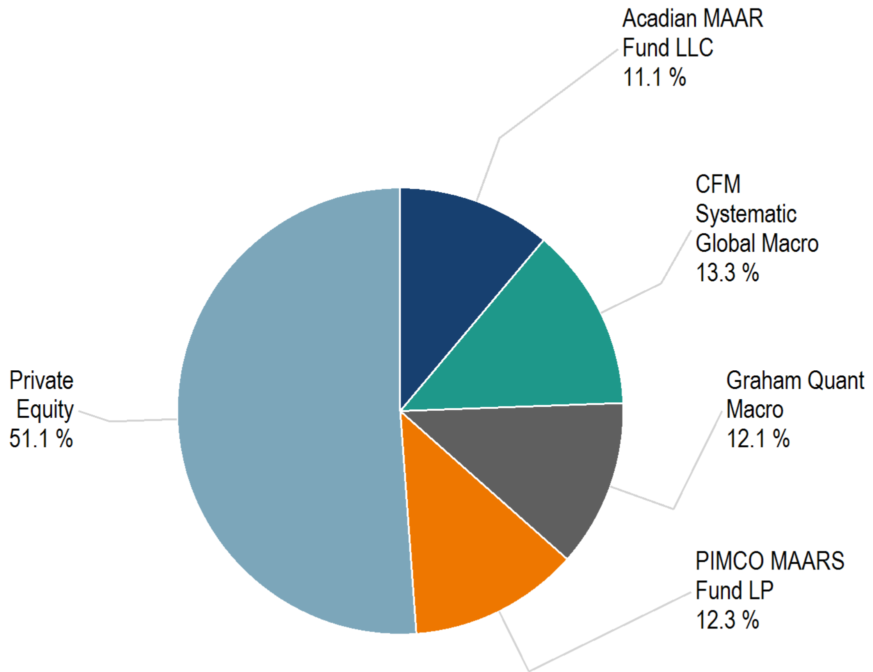
Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Private Credit	6.4%	3.5%	1.5	-0.8	2.3%
Cliffwater Direct Lending Index	8.2%	4.9%	1.4	--	0.0%
TCP Direct Lending VIII	5.6%	2.8%	1.6	-0.6	4.4%
Cliffwater Direct Lending Index	8.2%	4.9%	1.4	--	0.0%
White Oak Yield	6.3%	3.1%	1.6	-0.7	3.0%
Cliffwater Direct Lending Index	8.2%	4.9%	1.4	--	0.0%



	Return (Rank)															
5th Percentile	3.6		1.4		-4.8		-1.6		1.0		1.9		3.1		2.7	
25th Percentile	2.8		-0.5		-8.4		-4.2		-0.8		1.0		2.2		2.1	
Median	2.1		-1.8		-11.5		-5.9		-1.7		0.6		1.7		1.6	
75th Percentile	1.7		-2.7		-13.4		-7.6		-2.7		0.0		1.0		1.1	
95th Percentile	0.9		-6.6		-26.7		-15.2		-6.0		-1.4		0.6		0.2	
# of Portfolios	254		250		222		212		211		198		182		145	
● **Fixed Income**	1.7	(70)	-1.9	(54)	-11.0	(46)	-4.9	(33)	-1.1	(33)	1.0	(26)	2.7	(9)	2.3	(15)
▲ **Blended Fixed Income Index**	2.9	(20)	-0.4	(24)	-11.5	(50)	-5.7	(49)	-1.7	(50)	0.9	(31)	2.1	(28)	1.6	(51)



	Actual $	Actual %	Manager Contribution to Excess Return %
Aberdeen Standard GARS	$255,179	0.0%	-0.3%
Acadian MAAR Fund LLC	$82,129,025	11.1%	-0.6%
CFM Systematic Global Macro	$98,083,979	13.3%	-1.2%
Graham Quant Macro	$89,707,254	12.1%	-1.0%
PIMCO MAARS Fund LP	$90,640,387	12.3%	-1.3%
Private Equity	$377,548,837	51.1%	1.0%
Actual vs. Policy Weight Difference			0.3%
Total	**$738,364,662**	**100.0%**	**-3.2%**

Statistics Summary

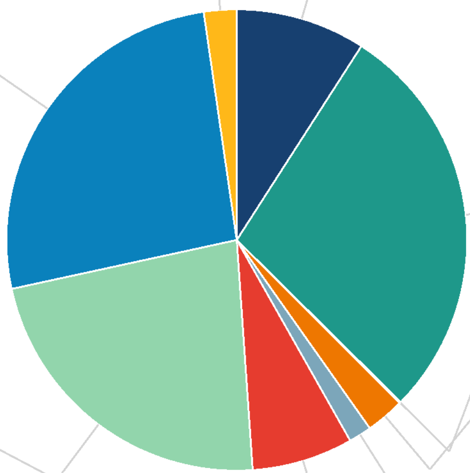
3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Alternatives	13.9%	14.7%	0.9	0.4	14.6%
Blended Alternatives Index	7.8%	10.0%	0.7	--	0.0%
Private Equity	24.2%	25.3%	0.9	0.5	25.6%
Blended Private Equity Index	10.8%	20.4%	0.5	--	0.0%
Hedge Fund/Absolute Return	0.6%	8.2%	0.0	-0.5	8.4%
Absolute Return Custom Index	4.7%	0.3%	11.7	--	0.0%
Aberdeen Standard GARS	-2.9%	6.4%	-0.6	-1.2	6.5%
Absolute Return Custom Index	4.7%	0.3%	11.7	--	0.0%

Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Alternatives	10.2%	12.4%	0.7	0.2	12.6%
Blended Alternatives Index	7.9%	9.0%	0.7	--	0.0%
Private Equity	21.4%	21.2%	1.0	0.5	22.1%
Blended Private Equity Index	10.2%	18.3%	0.5	--	0.0%
Hedge Fund/Absolute Return	-2.6%	7.1%	-0.5	-1.1	7.3%
Absolute Return Custom Index	5.3%	0.3%	12.1	--	0.0%
Aberdeen Standard GARS	-1.2%	5.7%	-0.4	-1.1	5.7%
Absolute Return Custom Index	5.3%	0.3%	12.1	--	0.0%



	Actual $	Actual %	Manager Contribution to Excess Return %
Harrison Street Core Property	$96,741,491	9.1%	0.3%
Invesco	$300,204,439	28.3%	0.0%
Invesco US Val IV	$898,983	0.1%	0.0%
Invesco US Val V	$28,447,887	2.7%	0.0%
Invesco US Val VI	$16,563,296	1.6%	0.1%
PGIM RE US Debt Fund	$75,647,893	7.1%	0.5%
Stockbridge Value IV	$24,732,182	2.3%	0.1%
Private Real Asset	$241,147,213	22.7%	2.1%
SSgA Custom Real Asset	$277,692,867	26.1%	0.0%
Actual vs. Policy Weight Difference			0.6%
Total	**$1,062,076,251**	**100.0%**	**3.6%**

Statistics Summary

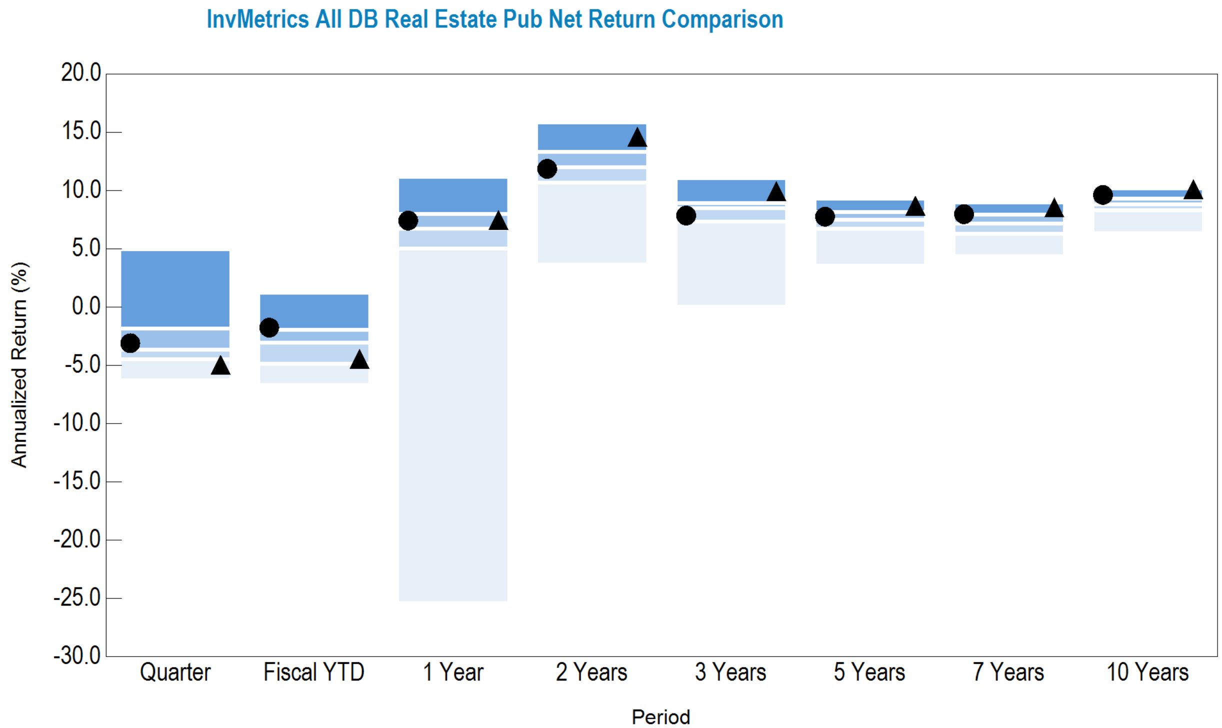
3 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error
Inflation Hedge	5.8%	7.7%	0.7	-0.5	5.0%
Blended Inflation Hedge Index	8.5%	8.8%	0.9	--	0.0%
Real Estate	7.8%	6.3%	1.1	-0.7	3.0%
NCREIF ODCE	9.9%	8.5%	1.1	--	0.0%
Invesco	8.4%	8.6%	0.9	-0.6	2.4%
NCREIF ODCE	9.9%	8.5%	1.1	--	0.0%
Invesco US Val IV	-12.2%	23.1%	-0.6	-0.9	23.6%
NCREIF ODCE	9.9%	8.5%	1.1	--	0.0%
Invesco US Val V	9.0%	10.0%	0.8	-0.1	6.7%
NCREIF ODCE	9.9%	8.5%	1.1	--	0.0%
PGIM RE US Debt Fund	5.3%	1.1%	4.1	-0.6	8.5%
NCREIF ODCE	9.9%	8.5%	1.1	--	0.0%
Private Real Asset	13.8%	13.1%	1.0	0.4	23.2%
Blended Private Real Asset Index	4.9%	21.6%	0.2	--	0.0%
Public Real Assets	1.6%	20.5%	0.0	-0.9	4.1%
Blended Public Real Asset Index	5.4%	17.8%	0.3	--	0.0%
SSgA Custom Real Asset	5.3%	17.6%	0.3	0.0	0.9%
SSgA Custom Real Asset Index	5.4%	17.8%	0.3	--	0.0%

Statistics Summary

5 Years

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Information Ratio	Tracking Error Rank
Inflation Hedge	4.8%	6.7%	0.5	-0.5	--
Blended Inflation Hedge Index	6.8%	7.4%	0.8	--	--
Real Estate	7.7%	5.2%	1.3	-0.4	44
NCREIF ODCE	8.7%	6.8%	1.1	--	1
Invesco	8.1%	6.9%	1.0	-0.3	--
NCREIF ODCE	8.7%	6.8%	1.1	--	--
Invesco US Val IV	-3.0%	18.4%	-0.2	-0.6	--
NCREIF ODCE	8.7%	6.8%	1.1	--	--
PGIM RE US Debt Fund	5.6%	1.8%	2.4	-0.5	--
NCREIF ODCE	8.7%	6.8%	1.1	--	--
Private Real Asset	6.5%	11.9%	0.4	0.2	--
Blended Private Real Asset Index	3.4%	18.5%	0.1	--	--
Public Real Assets	1.0%	17.5%	0.0	-0.9	--
Blended Public Real Asset Index	4.0%	15.4%	0.2	--	--
SSgA Custom Real Asset	4.0%	15.3%	0.2	0.0	--
SSgA Custom Real Asset Index	4.0%	15.4%	0.2	--	--



	Return (Rank)															
5th Percentile	4.9		1.2		11.1		15.8		11.0		9.3		9.0		10.1	
25th Percentile	-1.8		-2.0		8.0		13.3		8.9		8.2		8.0		9.3	
Median	-3.6		-3.0		6.7		12.0		8.5		7.5		7.2		8.9	
75th Percentile	-4.5		-4.8		5.1		10.7		7.3		6.7		6.3		8.3	
95th Percentile	-6.3		-6.6		-25.4		3.7		0.1		3.6		4.4		6.4	
# of Portfolios	69		69		69		67		67		66		62		58	
● Real Estate	-3.1	(37)	-1.8	(23)	7.4	(41)	11.8	(56)	7.8	(69)	7.7	(43)	8.0	(25)	9.6	(11)
▲ NCREIF ODCE	-5.0	(80)	-4.5	(69)	7.5	(39)	14.6	(14)	9.9	(10)	8.7	(8)	8.5	(7)	10.1	(6)

Aberdeen Standard (ASI) Global Absolute Return Strategy (GARS)

The Aberdeen Standard Global Absolute Return Strategy (GARS) was designed in 2005 to address the needs of Standard Life's own Defined Benefit pension plan, with an objective to generate absolute returns with significantly less volatility than equity investments. The GARS investment process is designed to capitalize on an array of research and investment techniques and draws together the team's three-year investment insights. The team then examines and reviews position proposals to approve a high conviction, short list of positions that should work well together. The GARS strategy is built using a broad range of return-seeking positions (i.e. multi-strategy) that incorporate multiple risk views when constructing the portfolio.The strategy will take some directional risk at times if the portfolio management team believes that it will earn positive returns over their three-year time horizon. Given the scale of the GARS portfolio, the team requires all investment positions to be both scalable and suitably liquid. In addition, the strategy's risk-based approach requires the team to be able to reliably model the risk behavior of each selected investment, so all assets used must be well-understood from a risk perspective before going into the portfolio.

Acadian Asset Management – Acadian U.S. Managed Volatility

Acadian's goal is to build a portfolio focused on absolute return and risk with the aim of achieving an absolute return similar to or better than that of a domestic equity index but with lower volatility over the long term. Acadian targets absolute risk to be 25-35% less than a typical capitalization-weighted benchmark. That said, tracking error is not a major consideration and can appear relatively high due in part to Acadian's comfort with carrying large sector variations versus the benchmark. Acadian seeks to combine the values of all of the security-level factors to determine a peer-relative return forecast for each stock. Separately they make a top-down forecast for the stock's peer group, and then add that forecast to the stock's score. Acadian's managed volatility strategies utilize the same alpha forecasts as Acadian's active equity strategies but with risk being the initial consideration when constructing portfolios. Alpha forecasts play a modest role relative to the importance of risk estimates but are important to the goal of achieving a higher risk-adjusted return. Incorporation of alpha forecasts generally results in higher exposure to value, size and quality.

Acadian Asset Management – MAARS Fund

Acadian Multi-Asset Absolute Return (MAARS) strategy was incepted in November 2017. MAARS targets a volatility of 6%-8% and a return of cash plus 5%. This is a multi-factor strategy that aims to exploit behavioral inefficiencies within and across global markets and is designed to be diversifying, dynamic and defensive. It is market neutral, implemented using long and short positions across five primary asset classes (equity, fixed income, currency, commodities, and volatility) and over 100 underlying assets with a focus on liquid instruments. Return forecasts incorporate asset-specific and macroeconomic insights and are utilized to harvest active returns from within and across asset classes through market selection and directional positioning. The strategy integrates risk and return across asset classes. Avoidance of downside events is highlighted in the approach with a greater weighting in their models allocated to down market beneficiaries, such as quality factors, and asymmetric positioning which reduces positions when risk rises. Differentiated attributes of this approach are its approach and weighting to commodities and its volatility sleeve which can incorporate long volatility.

Angelo, Gordon & Co. – AG Opportunistic Whole Loan Fund

The Angelo Gordon Opportunistic Whole Loan (OWL) Fund was established to make investments primarily in a portfolio of non-performing loans (NPLs) and re-performing loans (RPLs). AG sees a lot of operational inefficiency in the market place. By acquiring these loans at a discounted price and replacing original servicers with better-focused special servicers, AG believes it can improve operational efficiency and generate attractive returns. In addition, OWL may also include investments in new residential mortgage loans and excess mortgage servicing rights. Opportunistic investments in commercial mortgage loans and other mortgage related investments may also be included in the Fund's portfolio. OWL is towards the end of its fund life and is continuing to sell down the fund's holdings and distribute proceeds to LPs.

Angelo, Gordon & Co. – Credit Solutions

The Angelo Gordon (AG) Credit Solutions Fund (CSF) expects to hold concentrated positions of 5-8% of NAV (averaging 30 positions over the life of the Fund with recycling). The Fund is targeting a net 15% IRR with a 5-7% current yield. The Fund should be 70% concentrated in the U.S. with the balance in Europe. Finally, while the opportunities can be sourced from both the public markets and the private markets, AG is finding compelling sources of return at this time through structuring new privately placed secured term loans out of public investments made by the firm. CSF will address corporate credit-based opportunities created in three main areas: 1) trading-based price dislocations that reduce creation multiples (price through the debt that must be repaid before value accrues to other stakeholders) while generating high current income; 2) opportunities in issuers tied to industries directly impacted by COVID-19 where the market's perception of the impact differs from the actual impact; and 3) corporate debt issuers that will be materially impacted by the pandemic and will need to restructure, but whose creation value is materially lower than the issuer's intrinsic value.

Angelo, Gordon & Co. – CSF (Annex) Dislocation II

The Angelo Gordon Annex Dislocation Fund II (ADFII)'s investment aim is to target senior securities of world-class businesses with irreplaceable assets and strong cash flow profiles which, because of market stress, can be purchased at a material discount to what they believe is a company's long-term intrinsic value. ADFII will invest opportunistically in securities or claims of companies in North America and Europe for which prices have, in Angelo Gordon's view, dislocated from long term fundamentals due to situational market volatility and stress.

Angelo, Gordon & Co. – Credit Solutions II

Like its predecessor funds, the Angelo Gordon (AG) Credit Solutions Fund II (CSF II) is an all-weather, solutions-based strategy that targets net returns of 14+% with 5-7% current yield. The Fund will invest in single-name opportunities where price movements and credit documents afford creative financing solutions. This could include companies with upcoming debt maturities, working capital issues, or inefficient capital structures that are inflating financing costs. In these cases, AG will seek to work with management and other creditors to structure a bespoke transaction that avoids bankruptcy and solves the issue for the company in exchange for debt securities with conservative attachment points and healthy yield. While the opportunities are likely to be sourced 75% from the public markets and 25% from the private markets, the "solutions" will likely be private products. During periods of dislocation, the Fund can pivot towards trading-oriented strategies where there is not a need for additional financing, such as sourcing debt in the secondary markets at discounts to intrinsic value. CSF II expects to hold concentrated positions of 5-8% of NAV (averaging 30 positions over the life of the Fund with recycling). The fund should be 70% concentrated in the U.S. with the balance in Europe.

Baillie Gifford – ACWI ex US Focus Equities

ACWI ex US Focus is a fundamental growth strategy. Research is organized primarily by regional teams, with each member of the ACWI ex US Focus Portfolio Construction Group representing a regional team. Four global sector groups also contribute research. Baillie Gifford conducts approximately 2000 company meetings annually both in Edinburgh and onsite. Companies are evaluated on their growth opportunity relative to the average company, their ability to execute on that opportunity, and the degree to which probability of future success is already valued by the market. Baillie Gifford's basic philosophy is that share prices ultimately follow earnings. They believe that the stock market has a recurring tendency to under-appreciate the value of long-term compound growth. The process seeks to add value through use of proprietary fundamental research to identify companies exhibiting some combination of sustained above average growth, and attractive financial characteristics. The portfolio generally holds 60-90stocks, with country and sector weights +/-10% relative to the index and stock weights +/- 5% relative to the index.

Beach Point Capital Management, L.P. - Beach Point Select Fund

Beach Point Select Fund is a commingled fund vehicle within the firm's Opportunistic Credit strategy. This fund focuses on off-the-run, complex, and less-liquid securities. It is a best ideas portfolio of distressed debt, special situations, private/direct loans, catalyst-driven high yield bonds and bank loans, and credit-informed equities with a North American and European focus. The Select Fund differs from other funds and accounts in the Opportunistic Credit strategy by pursuing a more concentrated portfolio and emphasizing a higher percentage of less-liquid/private investments. Beach Point invests up and down the entire capital structure and it constructs portfolios with a bottom-up, research-driven approach that also takes into account top-down macro considerations. Its investment process includes idea generation, detailed credit analysis, relative value decision making and investment selection, portfolio construction and on-going monitoring. The ultimate goal of its investment process is to produce a well-diversified investment portfolio with limited downside risk and substantial upside potential.

BlackRock – MSCI ACWI ex US IMI Index

The ACWI ex US IMI Index Fund seeks to replicate the return of the MSCI ACWI ex US IMI Index. This index represents the developed equity markets outside of North America, including small cap equity. BlackRock monitors their funds daily to ensure that additions and deletions to the indexes, mergers and acquisitions, restructurings and other capitalization changes are made to the fund in such a way as to minimize tracking error and transactions costs.

BlackRock – Russell 1000 Index

The Russell 1000 Index Fund tracks large U.S. companies and achieve broad diversification with low costs by fully replicating the Russell 1000 Index. BlackRock monitors their funds daily to ensure that additions and deletions to the indexes, mergers and acquisitions, restructurings and other capitalization changes are made to the fund in such a way as to minimize tracking error and transactions costs.

BlackRock (formerly Tennenbaum Capital Partners) - Direct Lending Funds VIII and IX

TCP Direct Lending Fund VIII is a private investment fund managed by Tennenbaum Capital Partners ("TCP"). The Fund is designed to continue TCP's successful strategy of investing in privately-originated, performing senior secured debt primarily in North America-based companies with target enterprise values between $100 million and $1.5 billion. The Fund will include positions in 1st lien, 2nd lien and unitranche debt, with a preference for floating-rate debt, which TCP believes provides better flexibility to adapt to market conditions. TCP's direct lending strategy has generated attractive investment opportunities across market cycles, as evidenced by the Firm's prior direct lending track record. Fund VIII targets an unlevered annual yield of approximately 9-12%, with its return primarily driven by current income. SamCERA committed $35 million to DLF VIII in June 2016 in its unlevered fund sleeve and $35 million to the DLF IX in June 2019.

Brigade – Opportunistic Credit

Opportunistic Credit is a fundamental, bottom-up strategy focused on high yield corporate bonds and bank loans with tactical allocations to structured securities, convertibles, and other sectors of the bond markets as they become attractive on a relative value basis. While performing credits represent the majority, Brigade will invest up to 35% of the portfolio in distressed securities and restructuring situations if these types of opportunities are attractive on a risk-adjusted basis and the timing is right with respect to the credit cycle. The portfolio is comprised of mostly North American issuers, but they are not restricted geographically and expect to have a moderate allocation to Europe over time. Although the portfolio is generally long-only, Brigade has the ability to implement a limited amount of tactical macro hedges.

CFM - Systematic Global Macro

Capital Fund Management (CFM) Systematic Global Macro (SCM) is a directional strategy that takes long and short positions in liquid future and forwards across 130+ markets and across equities, bonds, currencies, and commodities. It is a new strategy that draws on model signals from existing strategies at the firm – Discus (diversified CTA), CFM ISTrends (trend following) and CFM ISTrend Equity Capped (defensive trend following) - and SamCERA is a seed investor with an attractive fee. SGM’s objective is to provide absolute returns that are uncorrelated with traditional asset classes over a long time horizon with an annualized volatility target between 8% and 12%. SGM uses a diverse set of trading strategies that are based on factors (momentum, value, carry, macro and sentiment) across asset classes. These technical and fundamental factors operate at different time scales and can have varying degrees of influence on performance depending on market and economic conditions. An additional global macro defensive overlay is combined with these outputs in constructing the final portfolio. CFM uses a form of portfolio construction known as agnostic risk parity to ensure that the SGM portfolio is diversified on an out-of-sample basis. The goal of SGM is to generate consistent returns while limiting drawdowns.

DE Shaw – DE Shaw US Broad Market Core Alpha Extension Fund

The D. E. Shaw group believes that there exist some market inefficiencies that may be identified through quantitative analysis, advanced technology, and the insight of practitioners. Identifying these inefficiencies involves a process of hypothesis formulation, testing, and validation. Importantly, to avoid data-mining, the hypothesis formulation precedes the analysis of the historical data. D.E. Shaw’s Structured Equity strategies rely largely on quantitative and computational investment techniques developed by the D. E. Shaw over the last two decades in the course of research conducted for purposes of managing the firm’s hedge funds. D.E. Shaw’s investment process involves a suite of quantitative models, each designed to capitalize on a distinct and uncorrelated set of market inefficiencies. Some of these models are technical in nature and involve price and volume inputs. Other models rely on fundamental data, such as figures gleaned from corporate balance sheets or income statements. Still others, again quantitative, anticipate or react to a particular corporate event or set of events. These models typically operate with forecast horizons of a few weeks to many months. The ability to trade on shorter-term signals distinguishes D.E. Shaw from many of its long only and 130/30 peers. Portfolio construction involves the use of a proprietary optimizer which runs dynamically throughout the trading day. The portfolio is broadly diversified with several hundred long and short positions. Over- and under-weighting of sectors and industries relative to the benchmark will be quite modest, with the intention that most of the alpha be generated by security selection. The US Broad Market Core Alpha Extension Fund is a 130/30 strategy which maintains a beta that is approximately neutral to the Russell 1000 Index.

DoubleLine – Securitized Income

The DoubleLine Securitized Income strategy is an actively managed, liquid, long only, intermediate-term fixed income product. The primary objective of the strategy is to seek and maximize current income and total return by utilizing a combination of Agency MBS and structured credit. The DoubleLine Structured Products team aims to offer clients investment grade exposure to both interest rate duration and credit spread to provide a more attractive total return profile compared to the benchmark. Securitized Income seeks to maximize income and total return by investing across the structured products universe, focusing on agency mortgage-backed securities (MBS) and investment grade securitized credit. DoubleLine takes a barbelled approach to investing in the securitized market, and they will separate rates from credit and will adjust the allocations to both at the based on the economic cycle and opportunities. Duration positioning is achieved through Agency MBS, Agency CMBS, and treasuries while credit exposure is attained through all areas of structured credit.

Fidelity (FIAM) – Broad Market Duration Commingled Pool

Pyramis' Broad Market Duration (BMD) investment strategy seeks to achieve absolute and risk-adjusted returns in excess of the BC U.S. Aggregate Index, focusing its investments in US Treasuries, agencies, investment grade corporate bonds, mortgage-backed and asset-backed securities. The BMD commingled pool can also hold small, opportunistic positions in out-of-benchmark securities, such as inflation-linked bonds. The investable universe includes all US dollar denominated, investment grade debt securities. The BMD investment approach emphasizes issuer and sector valuation and individual security selection. Through the integration of fundamental and quantitative research and trading, the BMD strategy is implemented in a team environment. Risk management technology is utilized to explicitly quantify benchmark exposures on a daily basis, and Pyramis uses the same analytical framework to assess both index and portfolio risk. Tracking error should range between 40 and 60 basis points per annum over the benchmark, and stringent portfolio construction risk control rules are strictly adhered to.

Franklin Templeton Investments – Global Fixed Income

Franklin Templeton manages the global bond mandate in an unconstrained fashion using a top-down, fundamental framework. In the short term and on a country-by-country basis there are often inefficiencies in global bond and currency markets, however, over the longer term the market will generally price to fundamentals. Thus, FT focuses on fundamental research to identify long-term opportunities and uses short-term market inefficiencies to build positions in such investments. The investment and portfolio construction process begin with the determination of the Fund's or institutional client's investment objectives, resulting in a set of risk-return parameters and exposure limits within which the portfolio is managed. Next the firm's global economic outlook for the industrialized countries is developed, with a focus on interest rate and exchange rate forecasts. The portfolio's interest rate outlook is a function of global general equilibrium macroeconomic analysis as well as country-specific research. Macroeconomic conditions in the G-3 economies are analyzed first, primarily with respect to how current and projected growth and inflation dynamics are expected to influence monetary policy. This analysis is then extended out to the rest of the industrialized countries (G-13) as well as emerging markets, which results in broad targets for cash, duration, currencies and the developed/emerging market mix. Using the firm's interest rate and exchange rate outlook, probability-weighted horizon returns for bonds of various countries are then calculated. This analysis is used to establish specific country weights and duration targets based on risk-adjusted expected total return measured in the portfolio's base currency. Analysis of emerging markets includes sovereign credit analysis along with greater emphasis on capital flows, inter-market dynamics and trends in the level of risk aversion in the market.

Graham – Quant Macro Fund

Graham Quant Macro ("GQM") is a directional, long and short strategy that utilizes fundamental and price-based indicators to establish return forecasts across global interest rates, foreign exchange, stock indices and commodities. The strategy incorporates a variety of submodels that generate macro fundamental forecasts, assess yield and earnings differentials, compare current valuations relative to historic fair value, and analyze directional price trends across markets. Quantitative risk management and portfolio construction techniques are used to diversify risk across the portfolio and enhance risk-adjusted returns. Historically, the average holding period has been approximately eight to ten weeks, although the sub-models will make daily adjustments to positions. The strategy is designed to have low correlation to traditional markets and other alternative strategies and has the potential to provide significant portfolio diversification benefits.

Harrison Street Core Property

Based in Chicago, Harrison Street's exclusive focus since inception in 2005 has been investing in non-core property sectors of the real estate market. The Harrison Street Core Fund is an open-end fund that invests primarily in stabilized education, healthcare, and self-storage real estate assets in the United States using modest leverage with an emphasis on generating current income. The focus on these alternative property types is intended to concentrate on areas of the real estate market that are less GDP sensitive with demand drivers that are more demographic driven such as aging populations, education growth and healthcare delivery. Each of these areas tend to be less tied to the business cycle, have fragmented ownership and more operationally intensive. The fund acts as a diversifier within real estate portfolios with sector exposures that are not a typical focus of other core ODCE funds.

INVESCO Realty Advisors – INVESCO Core Equity, LLC

SamCERA is a founding member of INVESCO's open-end Core Equity real estate fund and rolled its separate account properties into the fund. INVESCO Core Equity, LLC (the "Fund") is a perpetual life, open-end vehicle which invests in a diversified portfolio of institutional quality office, retail, industrial and multifamily residential real estate assets. The Fund buys core properties that are located within the United States, typically requiring an investment of $10 million or more. The portfolio cannot be more than 30% leveraged.

INVESCO Realty Advisors – INVESCO US Val IV, V, & VI

Invesco has provided SamCERA with Core Real Estate exposure since 2004 through the Invesco Core Equity Fund. The Invesco real estate team manages around $62B in assets with investments and offices around the globe. Invesco Value Fund's looks to acquire fundamentally sound but broken "core" assets that can be repositioned into institutional-quality, income producing properties. Investments are limited to direct equity interests in office, multi-family, retail and industrial properties across the US. The Fund is expected to be geographically concentrated in U.S. gateway cities and top 25 Metropolitan Statistical Areas (MSA's). Invesco Value Fund's provide a complement to the more conservative Invesco Core Fund and offers the potential of enhanced returns to the SamCERA Real Estate portfolio.

Insight Investments – Cash Flow Matched Liquidity

Insight is the fixed income sleeve of Mellon Capital. The strategy seeks to invest in short duration fixed income securities that match the negative cash flows of the Plan (similar to an LDI plan). Insight receives estimates of three years of cash flows from the actuarial report. Once a year, if market conditions allow, SamCERA will re-invest "year 3" net cash flows. Insight uses their credit analysis team for analyzing all credits or potential investments to the fund.

Mondrian Investment Partners – International Equity

Mondrian is a value-oriented, defensive manager whose investment philosophy is based on the principle that investments must be evaluated for their fundamental long-term value. The firm's philosophy involves three stated investment objectives: 1) provide a rate of return meaningfully greater than the client's domestic rate of inflation, 2) structure client portfolios that preserve capital during protracted international market declines, and 3) provide portfolio performance that is less volatile than benchmark indices and other international managers. Mondrian applies typical value screening criteria to a universe of 1,500 stocks, from which 500 are selected for more detailed work. Through fundamental research, and the deliberations of the Investment Committee, the universe is further reduced to a list of 150 stocks. The investment team conducts detailed fundamental analysis on the remaining stocks, a process which includes applying the firm's dividend discount model consistently across all markets and industries. Mondrian also uses a purchasing power parity model to give an accurate currency comparison of the value of the stocks under consideration. The firm will only consider buying stocks in countries with good investor protection practices and relatively simple repatriation procedures. A computer-based optimization program is employed in the portfolio construction process. Mondrian's portfolio holds 80-125 issues.

NISA – Core Bond

NISA applies a risk-controlled approach to all of its fixed income portfolios. This approach does not permit large bets or positions that generate significant tracking error versus the benchmark. Instead, NISA invests in a large number of small, diversified, active positions which seek tight tracking error to the chosen benchmark. Benchmark weight is a significant consideration when constructing and managing portfolios. The investment strategy is comprised of strategic (top-down) and tactical (bottom-up) decisions. Strategic decisions include sector selection and yield curve positioning while tactical decisions include industry and security selection and trading activity. Review of both strategic and tactical decisions is continual. The amount of portfolio risk budget devoted to one aspect versus the other will change as market conditions warrant. In general, strategic decisions change relatively infrequently, while tactical decisions, especially security selection, will change fairly often as market conditions provide opportunities. Over a typical market cycle, the bottom-up is expected to contribute to 70% of value-added while top-down is roughly 30%.

PanAgora Asset Management – Defensive U.S. Equity Low Volatility

PanAgora's Defensive Equity strategy seeks to harness the 'low-volatility premium' through a systematic, factor-based investment approach focused on achieving market-like returns with less risk. This is accomplished by leveraging PanAgora's proprietary Risk Parity portfolio construction methodology, which seeks to efficiently capture the equity premium associated with low volatility, while taking minimal unintended risks. Since the firm's inception, PanAgora has been using quantitative techniques to integrate fundamental insights with large amounts of dynamic market data. They score individual securities on a factor basis and also on a diversification basis, in the context of a broadly diversified portfolio. The portfolio construction process optimizes the portfolio around the intended factor exposure (volatility) while maintaining equal risk contribution across sectors (ex., overweight utilities and consumer staples, underweight financials and technology). Shorter term volatility and longer term correlation analysis is combined in the approach. The result for the US Defensive Equity strategy is a portfolio expected to have lower volatility (beta around 0.65-0.75), and similar returns relative to the capitalization-weighted benchmark over a full market cycle. PanAgora expects the strategy to participate in approximately 75% of up markets and 55% in down markets.

Parametric Overlay – Cash Overlay and Currency Hedge

Parametric's cash overlay program is an efficient way for SamCERA to maintain its target asset allocation in a systematic fashion through cash securitization at the fund and manager level, transition/reallocation support and asset class rebalancing back to target within defined bands. The cash overlay program is invested synthetically using liquid futures with cash balances reviewed daily. A combination of large and small cap futures implementation is the proxy for private equity. SamCERA's investment guidelines initially allowed only for cash overlay. Rebalancing was added to the SamCERA program in January 2014. Cash overlay and rebalancing is expected to add 10-20 bps to the portfolio over time. An additional currency overlay hedge placed on half of the notional value of developed international equities. The addition of currency hedging started in September 2018 and was fully implemented on 10/1/2019. The purpose of the currency is first and foremost to lower portfolio risk and secondarily to add incremental performance.

PIMCO Diversified

PIMCO's Diversified Income (DI) Fund is a multi-sector strategy that invests across a broad spectrum of global credit market sectors, including investment grade and high yield corporate debt, as well as emerging markets. The allocation among these will vary based on PIMCO's assessment of global trends and relative valuations. This active and dynamic approach allows for increased responsiveness in asset allocation to changing economic and market conditions while remaining anchored by PIMCO's investment process and longer-term orientation. The ability to invest globally helps to improve diversification and may allow investors to benefit from differences in business cycles across regions and credit quality trends across credit sectors. PIMCO's DI investment strategy seeks to provide high yield-like returns with lower volatility against a blended index (1/3 Bloomberg Barclays Global Agg Credit ex-EM; 1/3 BofA Merrill Lynch BB-B rated Developed Markets High Yield; 1/3 JPMorgan EMBI Global). The fund allows for a duration band of 3-8 years. The team focuses its investments into these groups: credit strategies (investment grade, high yield, emerging markets and non-core credits including MBS, municipals and other govt-related sectors); duration strategies (U.S. and non-U.S. duration) and currencies (tactical non-USD exposure).

PIMCO – MAARS

PIMCO MAARS is an alternative risk premia strategy that looks for risks associated with: (1) Supply and Demand Constraints, (2) Behavioral Biases, and (3) Asymmetric Risks (event risk). As reflected in the design of the MAARS strategies, PIMCO believes that alternative risk premia strategies are best implemented using a systematic approach that minimizes the discretionary inputs in day-to-day portfolio management. MAARS places a greater emphasis and weighting on global interest rates, currencies and commodities and a lesser emphasis on equities than many of its Alt Beta peers. Relative to Alt Beta peers, the strategy's rates and currency (FX) models are particularly robust, reflective of PIMCO's core competency and long history managing these asset classes using derivative instruments.

PIMCO Private Income Fund

PIMCO Private Income Fund (PIF) uses an opportunistic and flexible approach to global private credit. PIF provides a total return oriented global credit exposure utilizing both top-down sector relative value and bottom up security selection. The strategy invests across private residential, commercial, corporate and specialty finance markets. PIMCO's Private Income Fund (PIF) is targeting 8-12% net returns with income providing most of the fund's returns. The Private Income Investment Committee (IC) identifies market themes and direction for their relative value framework, and sector specialists provide recommendations to the PM team within that construct. PIF has the ability to invest throughout the capitalization structure. The fund can use a moderate amount of leverage to enhance portfolio returns (1.5 times with a hard cap of 2 times).

PGIM RE Debt

PGIM Real Estate US Debt Fund (PREDS) focuses on a loan origination strategy with a mix of 20% senior long duration loans on stable assets, 60% senior short/medium duration loans on stable and transitional assets, and 20% mezzanine mid/long duration debt. SamCERA was a founding investor in the PREDS strategy which invests in US commercial real estate debt in an open-ended vehicle with a return target of 7-8% (gross) coming from stable current income. The fund makes investments in first lien mortgages and mezzanine debt. First lien mortgages can be floating rate or fixed rate, but only floating rate loans will use leverage. Subordinate investments (mezzanine debt and preferred equity) will be limited by design. The fund can source and invest in secondary loans through a variety of Prudential real estate professionals, but the primary focus will be on direct origination through the real estate finance team.

Quantitative Management Associates – QMA Small-Cap Core

Quantitative Management Associates (QMA) utilizes a bottom-up quantitative framework in order provide a diversified exposure to core U.S. small-cap stocks, while attempting to produce consistent outperformance versus the benchmark with moderate tracking error levels. QMA uses an adaptive, systematic investment process to exploit opportunities created by mispriced securities to consistently add value over long time periods. Bottom-up stock selection drives exposure to key sources of alpha (valuation, growth, and quality). The QMA stock selection model adapts to changes in company growth rates and market environments by putting more emphasis on valuation for slowly growing companies, and more emphasis on future growth projections for companies with higher projected growth rates.

State Street Global Advisors (SSgA) Custom Real Asset

SSgA Custom Real Asset portfolio uses a portfolio of liquid real assets to proxy private real assets. The portfolio is comprised of equal weightings of the Bloomberg Roll Select Commodity Index, S&P Global Mid-Large Cap Natural Resources Index, S&P Global Infrastructure Index, and Bloomberg Barclays TIPS Index. SSgA provides beta exposure through these underlying liquid components which can be customized to changing client needs (ex., TIPS was added in May 2020 with the other three parts of the portfolio reduced pro-rata). The portfolio is used to fund upcoming private real asset mandates.

Stockbridge Value IV

Stockbridge Value IV will implement a value-added strategy that will seek to own assets that are undervalued, underutilized, and/or not operating to their full potential. The manager will add value with their internal asset management team through active strategies including additional capital investment, leasing, recapitalization, renovation and/or development. The fund will target three to five year holding periods for investments, with disposition taking place after the completion of the value-add strategy. The fund will target 15 to 25 mid-sized investments, diversified by geography and property type. The strategy will target 21 markets in the United States in which the firm has boots on the ground coverage with dedicated acquisitions professionals and asset managers responsible for knowing each market extensively with a vast network of relationships.

White Oak - White Oak Yield Spectrum Fund

The White Oak Yield Spectrum Fund's objective is to earn substantial current income by originating, extending, and/or investing in a diversified portfolio of primarily senior secured corporate credit and debt instruments consisting of term loans, asset-based loans and equipment leases and loans issued by small to middle-market companies located primarily in the United States and Canada. It focuses on providing self-originated deals for predominantly non-sponsored, privately-held borrowers.

White Oak - White Oak Yield Spectrum Fund V

The White Oak Yield Spectrum Fund's objective is to earn substantial current income by originating, extending, and/or investing in a diversified portfolio of primarily senior secured corporate credit and debt instruments consisting of term loans, asset-based loans and equipment leases and loans issued by small to middle-market companies located primarily in the United States and Canada. It focuses on providing self-originated deals for predominantly non-sponsored, privately-held borrowers.

Total Plan Policy Index	As of 10/1/22	7/1/22	2/1/21	1/1/21	7/1/20	4/1/20	10/1/19	7/1/19	4/1/19	1/1/19	10/1/18	4/1/18	10/1/17	2/1/17	1/1/17
10 Year Treasury +2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
60/40 MSCI World/Bloomberg Global Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	4.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
60/40 Russell 3000/Bloomberg US Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
91 Day T-Bills	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg US Govt/Credit 1-3 Yr. TR	4.5%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Aggregate	13.5%	16.5%	18.0%	21.0%	21.0%	18.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	14.0%	12.0%	10.0%
Bloomberg BA Intermediate HY	10.0%	10.0%	10.0%	10.0%	10.0%	8.0%	8.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	6.0%	6.0%
Bloomberg BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Credit BAA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Multiverse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	3.0%
Bloomberg TIPS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Bloomberg Commodity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Citigroup non-US WGBI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
CPI + 5% (RA)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blended Public Real Asset	4.0%	4.0%	4.0%	4.0%	4.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	0.0%	0.0%	0.0%
Blended Private Real Asset	4.0%	4.0%	4.0%	3.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	8.0%	7.0%	5.0%
Libor +4% (HF)	0.0%	0.0%	0.0%	0.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	5.0%
SOFR +4% (HF)	7.0%	7.0%	7.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex US IMI 100% Hedged (Net)	9.5%	9.5%	9.5%	9.0%	9.0%	9.0%	9.0%	7.6%	5.7%	3.8%	1.9%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US IMI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.0%	19.0%
MSCI ACWI ex-US IMI (Net)	9.5%	9.5%	9.5%	9.0%	9.0%	9.0%	9.0%	11.4%	13.3%	15.2%	17.1%	19.0%	19.0%	0.0%	0.0%
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NCREIF ODCE	9.0%	9.0%	9.0%	10.0%	10.0%	9.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	7.0%	7.0%
NCREIF Property	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 1000 Value	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 3000	21.0%	21.0%	22.0%	21.0%	21.0%	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%	21.0%	21.0%	23.0%	28.0%
Russell 3000 +3% (PE)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	7.0%	7.0%
Russell 3000 +3% 1Q Lag (PE)	7.0%	7.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	7.0%	0.0%	0.0%	0.0%
S&P 500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Total Plan Policy Index	As of: 10/1/16	9/1/16	1/1/16	7/1/14	1/1/14	2/1/13	1/1/11	10/1/10	1/1/09	5/1/07	6/1/00	3/1/99	9/1/98	7/1/96
10 Year Treasury +2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.0%	10.0%	10.0%
60/40 MSCI World/Bloomberg Global Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
60/40 Russell 3000/Bloomberg US Aggregate (RP)	8.0%	8.0%	8.0%	8.0%	8.0%	6.0%	6.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
91 Day T-Bills	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg US Govt/Credit 1-3 Yr. TR	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Aggregate	10.0%	10.0%	10.0%	10.0%	9.3%	11.0%	11.0%	12.9%	27.0%	27.0%	29.0%	25.0%	21.0%	21.0%
Bloomberg BA Intermediate HY	6.0%	5.0%	5.0%	5.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Credit BAA	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Multiverse	3.0%	3.0%	3.0%	3.0%	3.8%	4.4%	4.4%	4.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg TIPS	2.0%	2.0%	2.0%	2.0%	2.0%	3.1%	3.3%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Commodity	0.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Citigroup non-US WGBI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	9.0%	9.0%
CPI + 5% (RA)	0.0%	2.0%	2.0%	2.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blended Public Real Asset	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Blended Private Real Asset	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Libor +4% (HF)	5.0%	5.0%	5.0%	4.0%	4.0%	3.0%	3.0%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
SOFR +4% (HF)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US	0.0%	0.0%	0.0%	0.0%	0.0%	18.0%	18.0%	18.0%	21.0%	21.0%	15.0%	0.0%	0.0%	0.0%
MSCI ACWI ex US IMI 100% Hedged (Net)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US IMI	19.0%	20.0%	20.0%	20.0%	20.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US IMI (Net)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	20.0%	20.0%	20.0%
NCREIF ODCE	7.0%	7.0%	7.0%	6.0%	6.0%	5.0%	5.0%	5.0%	6.0%	0.0%	0.0%	0.0%	0.0%	0.0%
NCREIF Property	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	6.0%	0.0%	0.0%	0.0%
Russell 1000	0.0%	0.0%	24.0%	24.0%	24.0%	28.0%	28.0%	28.0%	37.0%	37.0%	40.0%	22.0%	20.0%	20.0%
Russell 1000 Value	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%	5.0%	0.0%
Russell 2000	0.0%	0.0%	4.0%	6.0%	6.0%	7.0%	7.0%	7.0%	9.0%	9.0%	10.0%	15.0%	15.0%	15.0%
Russell 3000	28.0%	28.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 3000 +3% (PE)	7.0%	7.0%	7.0%	7.0%	7.0%	8.0%	8.0%	8.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 3000 +3% 1Q Lag (PE)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
S&P 500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Public Equity Benchmark

As of:	7/1/22	2/1/21	7/1/20	10/1/19	7/1/19	4/1/19	1/1/19	10/1/18	10/1/17	2/1/17	10/1/16	9/1/16	1/1/16	1/1/14	10/1/10	5/1/07	6/1/00	3/1/99	9/1/98	1/1/96
MSCI ACWI ex-US	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	34.0%	31.3%	23.1%	0.0%	0.0%	0.0%
MSCI ACWI ex US IMI 100% Hedged (Net)	23.8%	23.2%	23.1%	22.5%	18.5%	13.9%	9.3%	4.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex-US IMI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	47.5%	45.2%	40.4%	41.7%	41.7%	40.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI ACWI ex US IMI (Net)	23.8%	23.2%	23.1%	22.5%	27.8%	32.4%	37.0%	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	32.3%	33.3%	33.3%
Russell 1000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	50.0%	48.0%	52.8%	55.2%	61.5%	35.5%	33.3%	33.3%
Russell 1000 Value	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.0%	8.4%	0.0%
Russell 2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	12.0%	13.2%	13.5%	15.4%	24.2%	25.0%	25.0%
Russell 3000	52.5%	53.7%	53.9%	55.0%	53.7%	53.7%	53.7%	53.7%	52.5%	54.8%	59.6%	58.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
S&P 500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.4%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

US Equity Benchmark

As of:	9/1/16	1/1/16	6/1/00	3/1/99	9/1/98	7/1/96	1/1/95
Russell 1000	0.0%	85.7%	80.0%	52.0%	50.0%	50.0%	69.0%
Russell 1000 Value	0.0%	0.0%	0.0%	12.0%	12.5%	0.0%	0.0%
Russell 2000	0.0%	14.3%	20.0%	36.0%	37.5%	37.5%	14.0%
Russell 3000	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
S & P 500	0.0%	0.0%	0.0%	0.0%	0.0%	12.5%	17.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

International Equity Benchmark

As of:	10/1/19	7/1/19	4/1/19	1/1/19	10/1/18	10/1/17	1/1/14	6/1/00	1/1/96
MSCI ACWI ex US	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
MSCI ACWI ex US IMI 100% Hedged (Net)	50.0%	40.0%	30.0%	20.0%	10.0%	0.0%	0.0%	100.0%	0.0%
MSCI ACWI ex US IMI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
MSCI ACWI ex US IMI (Net)	50.0%	60.0%	70.0%	80.0%	90.0%	100.0%	0.0%	0.0%	0.0%
MSCI EAFE	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Fixed Income Benchmark

As of:	7/1/22	2/1/21	7/1/20	4/1/20	10/1/19	10/1/17	2/1/17	10/1/16	4/1/16	7/1/14	1/1/14	2/1/13	1/1/11	10/1/10	6/1/00	3/1/99	7/1/96
Bloomberg Aggregate	62.3%	64.3%	67.7%	69.2%	63.6%	66.7%	57.1%	52.6%	55.5%	50.0%	46.3%	50.0%	50.0%	58.6%	100.0%	83.3%	70.0%
Bloomberg BA Intermediate HY	37.7%	35.7%	32.3%	30.8%	36.4%	33.3%	28.6%	31.6%	27.8%	25.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg BBB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7.3%	0.0%	0.0%	0.0%
Bloomberg Credit BAA	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.0%	15.0%	0.0%	0.0%	0.0%	0.0%
Bloomberg Multiverse	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	14.3%	15.8%	16.7%	15.0%	18.8%	20.0%	20.0%	20.5%	0.0%	0.0%	0.0%
Bloomberg TIPS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	10.0%	14.0%	15.0%	13.6%	0.0%	0.0%	0.0%
Citigroup non-US WGBI	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	30.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Opportunistic Credit Benchmark

As of:	1/1/14	12/1/09
Bloomberg BA Intermediate HY	100.0%	0.0%
Bloomberg Credit BAA	0.0%	100.0%
	100.0%	100.0%

Alternatives Benchmark

As of:	7/1/22	2/1/21	1/1/21	10/1/18	4/1/18	2/1/17	4/1/16	1/1/16	1/1/14	1/1/11
60/40 Russell 3000/Bloomberg US Aggregate (RP)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	30.0%
Bloomberg Commodity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	17.7%	18.8%	15.0%
CPI + 5% (RA)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	11.8%	12.5%	0.0%
Libor +4% (HF)	0.0%	0.0%	0.0%	50.0%	46.2%	46.2%	41.7%	29.4%	25.0%	15.0%
SOFR +4% (HF)	50.0%	53.8%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Russell 3000 +3% (PE)	0.0%	0.0%	0.0%	0.0%	0.0%	53.8%	58.3%	41.2%	43.8%	40.0%
Russell 3000 +3% 1Q Lag (PE)	50.0%	46.2%	50.0%	50.0%	53.8%	0.0%	0.0%	0.0%	0.0%	0.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Private Equity Benchmark	As of: 4/1/18	10/1/10
Russell 3000 +3% 1Q Lag	100.0%	0.0%
Russell 3000 +3%	0.0%	100.0%
	100.0%	100.0%

Hedge Fund Benchmark	As of: 1/1/21	10/1/10
Libor +4%	0.00%	100.00%
SOFR +4%	100.0%	0.0%
	100.0%	0.0%

Inflation Hedge Benchmark	As of: 2/1/21	7/1/20	4/1/20	10/1/19	4/1/18	2/1/17	10/1/16	4/1/16
Bloomberg TIPS	0.00%	0.00%	0.00%	5.88%	11.1%	12.5%	14.3%	14.3%
Bloomberg Commodity	0.00%	0.00%	0.00%	0.00%	0.0%	0.0%	0.0%	21.4%
CPI + 5% (RA)	0.00%	0.00%	0.00%	0.00%	0.0%	0.0%	0.0%	14.3%
Blended Public Real Asset	23.53%	23.53%	35.29%	35.29%	33.3%	0.0%	0.0%	0.0%
Blended Private Real Asset	23.53%	17.65%	11.77%	11.77%	11.1%	43.8%	35.7%	0.0%
NCREIF ODCE	52.94%	58.82%	52.94%	47.06%	44.4%	43.8%	50.0%	50.0%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Public Real Asset Benchmark	As of: 5/1/20	10/1/16	1/1/14
Bloomberg Roll Select Commodity	25.0%	34.0%	0.0%
S&P Global Large-MidCap Commodity and Resources	25.0%	33.0%	0.0%
S&P Global Infrastructure	25.0%	33.0%	0.0%
CPI + 5%	0.0%	0.0%	100.0%
Bloomberg TIPS	25.0%	0.0%	0.0%
	100.0%	100.0%	100.0%

Private Real Asset Benchmark	As of: 1/1/21	4/1/18	10/1/16	1/1/14
Bloomberg Roll Select Commodity	0.00%	0.00%	34.00%	0.0%
S&P Global Large-MidCap Commodity and Resources	0.00%	0.00%	33.00%	0.0%
S&P Global Infrastructure	0.00%	0.00%	33.00%	0.0%
50/50 S&P Global Infra & Lrg-MidCap Com & Resources +2% 1QL	0.00%	100.00%	0.00%	0.0%
75/25 S&P Global Infra & Lrg-MidCap Com & Resources +2% 1QL	100.00%	0.00%	0.00%	0.0%
CPI + 5%	0.00%	0.00%	0.00%	100.0%
	100.0%	100.0%	100.0%	100.0%

Private RA Secondary Benchmark	As of: 9/1/14
Cambridge Associates Private Natural Resources 1 Qtr Lag	50.0%
Cambridge Associates Private Infrastructure 1 Qtr Lag	50.0%
	100.0%

Real Estate Benchmark	As of: 1/1/09	6/1/00	7/1/96
10 Year Treasury +2%	0.0%	0.0%	100.0%
NCREIF ODCE	100.0%	0.0%	0.0%
NCREIF Property	0.0%	100.0%	0.0%
	100.0%	100.0%	100.0%

Liquidity Benchmark	As of: 10/1/22	7/1/22
Bloomberg US Govt/Credit 1-3 Yr. TR	81.8%	60.0%
91 Day T-Bills	18.2%	40.0%
	100.0%	100.0%

Baillie Gifford Benchmark	As of: 1/1/14	5/1/12
MSCI ACWI ex-US	100.0%	0.0%
MSCI EAFE	0.0%	100.0%
	100.0%	100.0%

Baillie Gifford Secondary Benchmark	As of: 1/1/14	5/1/12
MSCI ACWI ex-US Growth	100.0%	0.0%
MSCI EAFE Growth	0.0%	100.0%
	100.0%	100.0%

Brigade Secondary Benchmark	As of: 8/1/10
Bloomberg High Yield	50.0%
Credit Suisse Leveraged Loans	50.0%
	100.0%

PIMCO Diversified	As of: 9/1/17
JPMorgan EMBI Global	33.333%
BofAMLBB-BRatedDvlpdMktsHYHdgdUSD	33.333%
Global Agg Credit Ex EM USD hedged	33.334%
	100.0%

SSgA Custom Real Asset	As of: 5/1/20	11/1/16
Bloomberg Roll Select Commodity	25.00%	33.33%
S&P Global Large-MidCap Commodity and Resources	25.00%	33.33%
S&P Global Infrastructure	25.00%	33.34%
Bloomberg TIPS	25.00%	0.00%
	100.0%	100.0%

Acadian Asset Management

First $50 million:	0.27% per annum
Next $50 million:	0.225% per annum
Thereafter:	0.18% per annum

Baillie Gifford

First $25 million:	0.60% per annum
Next $75 million:	0.50% per annum
Next $300 million:	0.40% per annum
Thereafter:	0.30% per annum

BlackRock-Russell 1000 Index Fund

On All Assets:	0.01% per annum

BlackRock-MSCI ACWI ex US IMI Index Fund

On All Assets:	0.045% per annum

DoubleLine

On All Assets:	0.30% per annum

NISA

First $500 million:	0.15% per annum
Next $1 billion:	0.125% per annum
Next $1 billion:	0.105% per annum
Next $1.5 billion	0.085% per annum
Thereafter:	0.065% per annum

Franklin Templeton Investment

First $50 million:	0.40% per annum
Next $50 million:	0.30% per annum
Thereafter:	0.25% per annum

FIAM Bond

First $50 million:	0.25% per annum
Next $50 million:	0.20% per annum
Next $100 million:	0.125% per annum
Thereafter:	0.10% per annum

PanAgora Asset Management

First $50 million:	0.25% per annum
Next $50 million:	0.15% per annum
Thereafter:	0.10% per annum

Parametric Overlay

First $50 million:	0.12% per annum
Next $100 million:	0.10% per annum
Thereafter:	0.05% per annum
Plus monthly reporting fee of $1500	

Parametric Currency Overlay

First $250 million:	0.05% per annum
Thereafter:	0.03% per annum

PIMCO Diversified

On All Assets:	0.75% per annum

QMA

First $100 million:	0.55% per annum
Next $100 million:	0.53% per annum
Thereafter:	0.49% per annum

Western Asset Management

On All Assets:	0.25% per annum
Performance Fee:	20.00%

Mondrian Investment Partners

First $50 million:	1.00% per annum
Next $150 million:	0.19% per annum
Thereafter:	0.33% per annum

Insight Investment

First $200 million:	0.09% per annum
Next $300 million:	0.08% per annum
Thereafter:	0.06% per annum

Name	Primary Benchmark	Rule 1	Rule 2	Rule 3
Acadian US MGD V	Russell 1000	--	--	--
DE Shaw	Russell 1000	🚩	🚩	🚩
PanAgora Defuseq	Russell 1000	--	--	--
PGIM Quant Solutions	Russell 2000	🚩	🚩	🚩
Baillie Gifford	MSCI ACWI ex US	🚩	🚩	🚩
Mondrian	MSCI ACWI ex USA Value Gross	🚩	🚩	🚩
DoubleLine	Bloomberg US Aggregate TR	--	--	--
FIAM Bond	Bloomberg US Aggregate TR	✓	✓	✓
NISA Core Bond	Bloomberg US Aggregate TR	--	--	--
AG CSF ADF II	Bloomberg BA Intermediate HY	--	--	--
AG CSF II	Bloomberg BA Intermediate HY	--	--	--
Angelo Gordon Opportunistic	Bloomberg US Aggregate TR	✓	--	✓
Angelo Gordon Credit Solutions	Bloomberg BA Intermediate HY	--	--	--
Beach Point Select	Bloomberg BA Intermediate HY	✓	✓	✓
Brigade Capital	Bloomberg BA Intermediate HY	🚩	✓	🚩
PIMCO Diversified	Blended PIMCO Diversified Index	🚩	🚩	🚩
Franklin Templeton	Bloomberg Multiverse TR	🚩	🚩	🚩
Blackrock DL Feeder IX-U	Cliffwater Direct Lending Index	--	--	--
PIMCO Private Income	Bloomberg BA Intermediate HY	--	--	--
TCP Direct Lending VIII	Cliffwater Direct Lending Index	🚩	✓	🚩
White Oak Yield	Cliffwater Direct Lending Index	🚩	✓	✓
White Oak YSF V	Cliffwater Direct Lending Index	--	--	--
Aberdeen Standard GARS	Absolute Return Custom Index	🚩	🚩	🚩
Acadian MAAR Fund LLC	Absolute Return Custom Index	--	--	--
CFM Systematic Global Macro	Absolute Return Custom Index	--	--	--
Graham Quant Macro	Absolute Return Custom Index	--	--	--
PIMCO MAARS Fund LP	Absolute Return Custom Index	--	--	--

Rule 1 - Manager has underperformed the benchmark index for the five year period.
Rule 2 - Manager has underperformed the 50th percentile in the appropriate style universe for the five year period.
Rule 3 - Excess 5 Year Sharpe Ratio vs. Benchmark is positive

Name	Primary Benchmark	Rule 1	Rule 2	Rule 3
Acadian US MGD V	Russell 1000	--	--	--
DE Shaw	Russell 1000	⚐	✓	⚐
PanAgora Defuseq	Russell 1000	--	--	--
PGIM Quant Solutions	Russell 2000	✓	⚐	✓
Baillie Gifford	MSCI ACWI ex US	✓	⚐	✓
Mondrian	MSCI ACWI ex USA Value Gross	⚐	⚐	⚐
DoubleLine	Bloomberg US Aggregate TR	--	--	--
FIAM Bond	Bloomberg US Aggregate TR	✓	✓	✓
NISA Core Bond	Bloomberg US Aggregate TR	--	--	--
AG CSF ADF II	Bloomberg BA Intermediate HY	--	--	--
AG CSF II	Bloomberg BA Intermediate HY	--	--	--
Angelo Gordon Opportunistic	Bloomberg US Aggregate TR	✓	--	✓
Angelo Gordon Credit Solutions	Bloomberg BA Intermediate HY	--	--	--
Beach Point Select	Bloomberg BA Intermediate HY	✓	✓	✓
Brigade Capital	Bloomberg BA Intermediate HY	⚐	✓	⚐
PIMCO Diversified	Blended PIMCO Diversified Index	⚐	⚐	⚐
Franklin Templeton	Bloomberg Multiverse TR	⚐	⚐	⚐
Blackrock DL Feeder IX-U	Cliffwater Direct Lending Index	--	--	--
PIMCO Private Income	Bloomberg BA Intermediate HY	--	--	--
TCP Direct Lending VIII	Cliffwater Direct Lending Index	⚐	✓	⚐
White Oak Yield	Cliffwater Direct Lending Index	⚐	✓	✓
White Oak YSF V	Cliffwater Direct Lending Index	--	--	--
Aberdeen Standard GARS	Absolute Return Custom Index	⚐	⚐	⚐
Acadian MAAR Fund LLC	Absolute Return Custom Index	--	--	--
CFM Systematic Global Macro	Absolute Return Custom Index	--	--	--
Graham Quant Macro	Absolute Return Custom Index	--	--	--
PIMCO MAARS Fund LP	Absolute Return Custom Index	--	--	--

Rule 1 - Manager has underperformed the benchmark index for the five year period.
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Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

1ST QUARTER 2023
Investment Landscape

Verus business update

Since our last Investment Landscape webinar:

— Verus hired two new employees:

- **Cholo Villanueva**, Performance Analyst – Seattle office
- **Demitri Castaneda**, Performance Analyst – Seattle office

— Two employees passed their Level III CFA exams, earning their charters. Verus now has a total of 33 CFA charterholders.

— Verus retained a new client in Alaska, adding a fourth client to the state.

— We celebrated our 37th anniversary. Wurts Johnson & Company (founding name) was established in January 1986.

— We also enhanced our research content management system to improve how we *communicate* our conviction in managers with our new IQ Ratings system. *(details on next page)*

Manager rating system

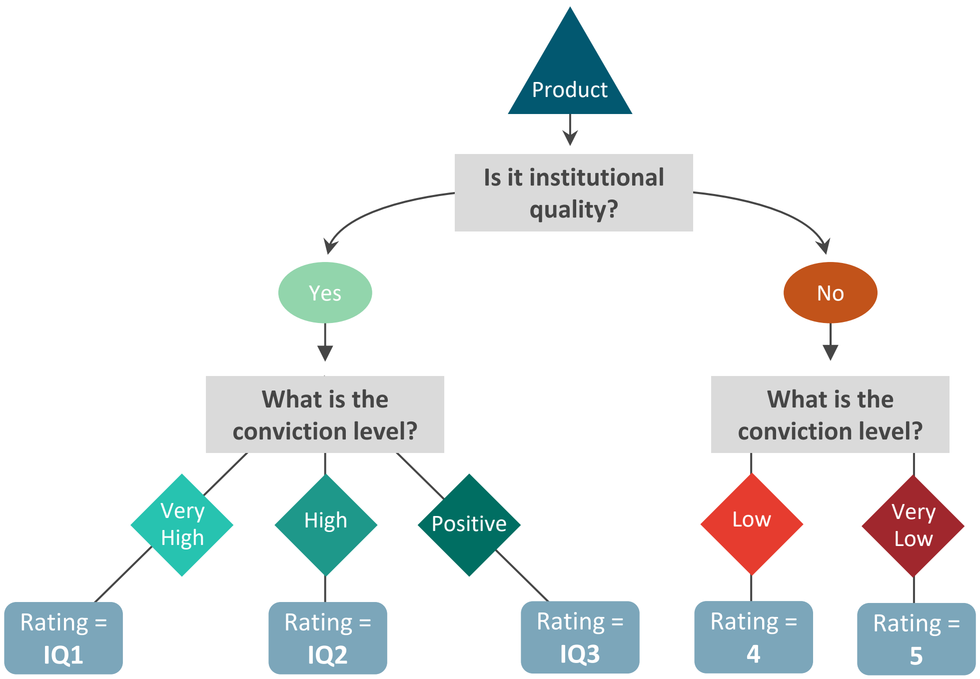
The IQ Rating System communicates our conviction in investment products

There are two components to the rating:

1. **Institutional quality** – (IQ) The product meets or exceeds the standards of fiduciary care required by institutional investors and is suitable for use in clients' portfolios.

2. **Conviction** – (1 to 5) Represents the conviction of our research teams in the distinguishing qualities of the product relative to its peers, with 1 as the highest rating and 5 the lowest.

PROCESS



Rating process simplified for illustrative purposes only

DEFINITIONS & GUIDELINES

Rating	Institutional Quality?	Conviction Level	Defining Characteristics	Recommendations
IQ1	Yes	Very High	Earns Verus' highest conviction. Above-average characteristics most likely to achieve the strategy's desired investment results.	Recommended for use in client portfolios. May be used in Verus discretionary portfolios.
IQ2	Yes	High	Maintains Verus' high conviction. Above-average characteristics most likely to achieve strategy's desired investment results.	Recommended for use in client portfolios. May be used in Verus discretionary portfolios.
IQ3	Yes	Positive	Meets institutional quality standards that can achieve desired investment results. Strengths outweigh weaknesses.	While IQ1 or IQ2 rated products are generally preferable, certain client needs may be better addressed by a highly specialized IQ3 product.
4	No	Low	Concerns with the product's ability to meet institutional-quality standards.	Clients should re-evaluate retention or monitor closely.
5	No	Very Low	Significant issues inhibit the product's ability to meet institutional-quality standards.	Verus recommends termination, immediately.

Recent Verus research

Visit: https://www.verusinvestments.com/insights/

Topics of interest papers

A BRIEF GUIDE TO THE SFA PROGRAM

In this paper, we plan to approach the Special Financial Assistance (SFA) program from an investment perspective. First, we describe the interest rate rules. Next, we offer some ways in which investors may think about their legacy assets relative to their new SFA funds. This section concludes by outlining a strategy in which SFA funds are used to cash flow match expected future liability payments. Overall, the health of a Plan will determine how much SFA funding is available, and the total amount of SFA funding awarded will likely determine the degree to which this program should reasonably impact an investor's total portfolio strategy.

IS PAINLESS DIVERSIFICATION BACK?

Low interest rates over the last few years have caused investors significant asset allocation problems. The 2022 market reversal has begun to reverse these challenges. The implications of this return to more normal conditions for investors include:

- The renewed role of fixed income in portfolios
- Greater flexibility to meet performance objectives through simple portfolio structures
- The ability of certain investors to meet return objectives while taking less market risk
- The potential for pensions to take advantage of higher interest rates and likely stronger funded status by pursuing more liability-aware investment strategies

Annual research

2023 CAPITAL MARKET ASSUMPTIONS

Some important developments occurred in the last year. Capital Market Assumptions guide our advice and recommendations. They reflect the best judgments of our research and investment teams regarding the expected behavior and associated risks of capital markets in the years ahead. During our 2023 Capital Market Assumptions webinar, we discussed:

- A significant increase in our Capital Market Assumptions, and aspects of the environment which have driven this change
- The "building blocks" of market returns and our philosophy around forecasting future asset-class performance
- Implications for investors as markets escape the *low-return environment* of recent years

Table of contents

Verus

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LOS ANGELES 310.297.1777
SAN FRANCISCO 415.362.3484

4th quarter summary

THE ECONOMIC CLIMATE

— Real GDP increased at a 2.9% rate in the fourth quarter (1.0% year-over-year growth), slightly exceeding expectations. Consumer spending, private inventory investment, government expenditures, and nonresidential investment were supportive of growth. ***p. 10***

— Unemployment remained near historic lows during the quarter, at 3.5% in December. While this figure suggests a strong and resilient job market, the workforce remains much smaller than pre-pandemic times as more than two million workers remain out of the labor force. ***p. 13***

PORTFOLIO IMPACTS

— Inflation fears continue to ease as domestic inflation fell further. Headline inflation was 6.5% year-over-year in December—the lowest since October 2021—while core inflation came in at 5.7%. Prices for most goods and services have moderated with the exception of shelter costs, which increased at a worryingly fast pace of 10.0% annualized in December. ***p. 11***

— U.S. real personal spending held steady at 2.0% year-over-year in August. Households focused spending on services over goods, which has removed some stress from supply chains and likely helped to normalize global transportation issues. Relatively strong spending seems to suggest it is possible that inflation moderates without a painful slowdown in the economy. ***p. 14***

THE INVESTMENT CLIMATE

— China's rapid pivot away from a "Zero Covid" policy towards the end of Q4 added a large tailwind to emerging market equity performance and the global growth outlook. Despite this positive news, an uptick in virus cases poses challenges for China's reopening. ***p. 32***

— Credit performed well in the fourth quarter, as resilient U.S. economic growth combined with expectations for the Fed to ease their tightening cycle helped mitigate investor concerns of a near-term cyclical downturn. ***p. 23 & 24***

ASSET ALLOCATION ISSUES

— Calendar year 2022 proved to be a year of *reversal* regarding asset class performance. Top performing investments of the past decade, such as U.S. growth and small cap stocks, suffered some of the largest losses. Meanwhile, many of the worst performing investments of the past decade, including commodities and value stocks, significantly outperformed. ***p. 40***

— Value stocks outperformed markedly during 2022, outpacing growth stocks by 10.2% in Q4 and 21.6% for the year. Energy, industrials, and materials—sectors heavily tilted toward value—showed strong returns, with energy ending the year up 64.6%. ***p. 29***

Markets have partially recovered as inflation fears eased

Recession risks and an earnings slowdown may come into focus in 2023

What drove the market in Q4?

"Has Inflation Peaked?"

HEADLINE CONSUMER PRICE INFLATION (YEAR-OVER-YEAR)

Jul	Aug	Sep	Oct	Nov	Dec
8.5%	8.3%	8.2%	7.7%	7.1%	6.5%

Article Source: Financial Times, December 8th, 2022

"The Labor Market is Still Hot"

CHANGE IN U.S. NONFARM PAYROLLS

Jul	Aug	Sep	Oct	Nov	Dec
+537k	+292k	+269k	+284k	+263k	+223k

Article Source: Axios, November 1st, 2022

"Fed Raises Rate by 0.5 Percentage Point, Signals More Increases Likely"

FOMC MEETING RATE HIKE DECISIONS

May	Jun	July	Sep	Nov	Dec
+50 bps	+75 bps	+75 bps	+75 bps	+75 bps	+50 bps

Article Source: Wall Street Journal, December 14th, 2022

"China's Covid Pivot Accelerates as Cities Ease Testing Rules"

CHINESE REPORTED NEW CASES (DAILY AVERAGE FOR THE MONTH)

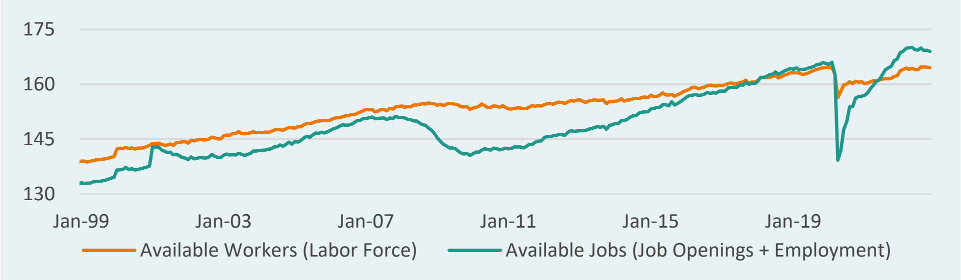
Jul	Aug	Sep	Oct	Nov	Dec
559	1,629	1,158	1,340	18,914	14,748

Article Source: Bloomberg, December 5th, 2022. Dataset from Our World in Data

FED FUNDS RATE UPPER BOUND

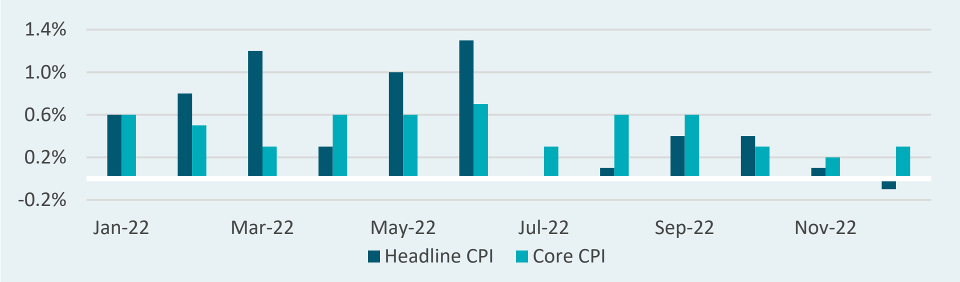
Source: Federal Reserve, as of 12/31/22

U.S. AVAILABLE WORKERS VS. AVAILABLE JOBS (MILLIONS)



Source: Bureau of Labor Statistics, as of 11/30/22

U.S. HEADLINE & CORE CPI (MONTH-OVER-MONTH)



Source: Bureau of Labor Statistics, as of 12/31/22

Economic environment

U.S. economics summary

— Real GDP increased at a 2.9% rate in Q4 (1.0% year-over-year growth). Consumer spending, private inventory investment, government expenditures, and nonresidential investment supported the economy.

— Inflation fears continue to ease as domestic inflation fell further. December headline inflation came in at 6.5% year-over-year while core inflation (excluding food & energy) came in at 5.7%. Most goods and services price rises have slowed, with the exception of shelter costs, which increased at a worryingly fast pace of 10% annualized in December.

— Unemployment remained very low during the quarter, at 3.5% in December. While this official figure suggests a strong and resilient job market, the workforce remains much smaller than pre-pandemic times as more than two million workers are missing from the labor force.

— Consumer spending kept steady though savings rates dropped to 2.3%—a depressed level not seen since the mid-2000s. A low household savings rate is sometimes seen as an indicator of strong consumer confidence and spending, though we suspect household budgets are currently being hit hard by higher costs.

— Consumer sentiment improved during Q4 but is still very downbeat. In the most recent University of Michigan survey, respondents showed less concern around inflation, reported better business conditions and long-term outlook, but were pessimistic over personal finances.

— U.S. home prices peaked in June 2022 and have been falling since then, according to S&P CoreLogic. Significantly higher mortgage interest rates have led to the worst home affordability on record, according to the National Association of Realtors.

	Most Recent	**12 Months Prior**
Real GDP *(YoY)*	1.0% *12/31/22*	5.7% *12/31/21*
Inflation *(CPI YoY, Core)*	5.7% *12/31/22*	5.5% *12/31/21*
Expected Inflation *(5yr-5yr forward)*	2.2% *12/31/22*	2.3% *12/31/21*
Fed Funds Target Range	4.25% – 4.50% *12/31/22*	0.00% – 0.25% *12/31/21*
10-Year Rate	3.87% *12/31/22*	1.51% *12/31/21*
U-3 Unemployment	3.5% *12/31/22*	3.9% *12/31/21*
U-6 Unemployment	6.5% *12/31/22*	7.3% *12/31/21*

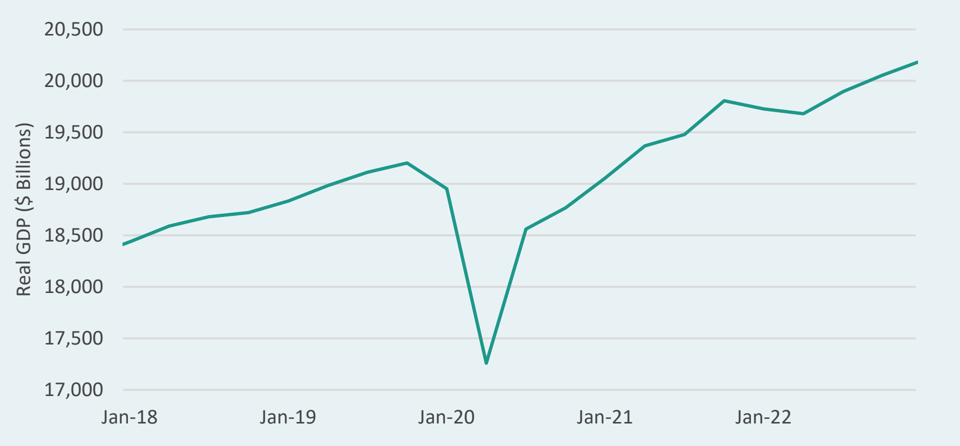
GDP growth

Real GDP increased at a 2.9% rate in the fourth quarter (1.0% growth year-over-year), slightly exceeding expectations of 2.8%. Consumer spending supported growth, along with gains in private inventory investment, government expenditures, and nonresidential investment. Residential fixed investment saw an extreme drop of -26.7% during the quarter as the housing market weakened. Declining exports also acted as a drag on growth.

Investors appear unsure about how to interpret the recent string of strong U.S. economic data. Although consumer sentiment is very poor by most measures, spending remains positive and the job market remains surprisingly resilient. Were the economy to avoid recession, this would be positive for businesses and for corporate earnings, but might also lead to further aggressive Federal Reserve action and interest rate hikes, which are negative for equity prices.

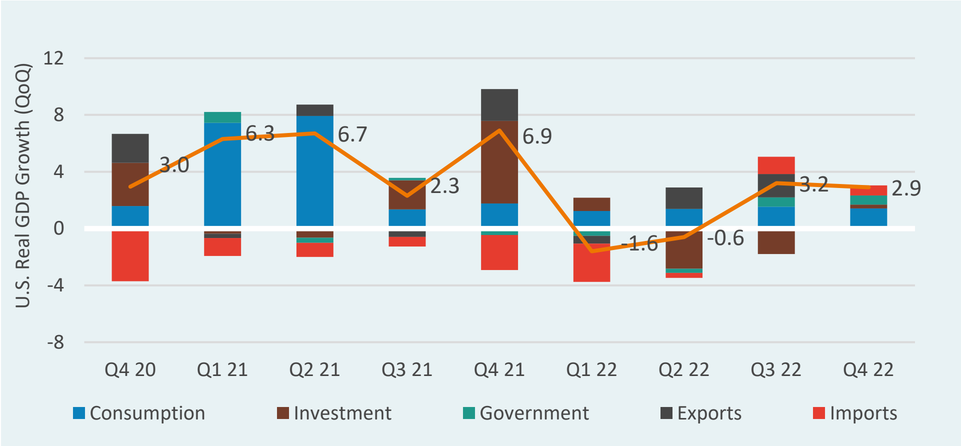
The inflation environment following the COVID-19 pandemic is unlike many past inflation cycles. Much of the price pressure has been fueled by factors *other than* a strong economy, such as an unprecedented shift in consumer spending behavior towards goods and away from services, port and international transportation issues related to lockdowns, and Russia's invasion of Ukraine. Because many of these variables are outside of the Federal Reserve's control, we believe it is possible that inflation continues to fall despite a relatively strong U.S. economy.

U.S. REAL GROSS DOMESTIC PRODUCT



Source: FRED, as of 12/31/22

U.S. REAL GDP COMPONENTS (QOQ)



Source: FRED, as of 12/31/22

Inflation

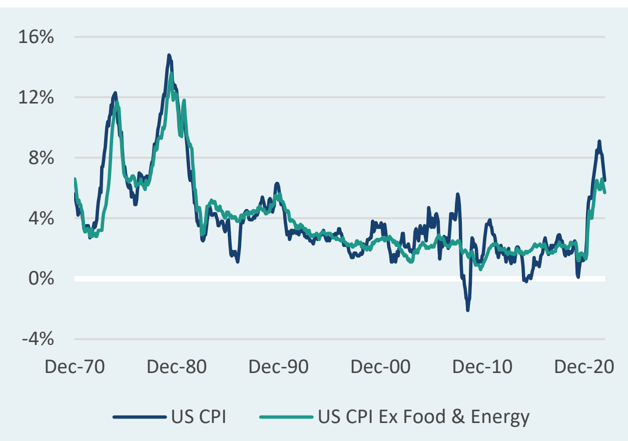
The inflation picture continued to improve in the United States, as both headline and core inflation figures declined further. December headline inflation came in at 6.5% year-over-year—the lowest since October 2021—while core inflation came in at 5.7%. Most goods and services prices have moderated with the exception of shelter, which increased at a worryingly fast pace of 10% annualized in December. Food inflation has been a large contributor to high inflation, but food price rises reassuringly slowed in December, increasing at a 3.7% annualized rate.

Strong increases in U.S. hourly wages over recent years have been a welcome development for workers who are feeling the squeeze of higher prices on household budgets. But wage rises can also act as a key risk to the inflation environment. Accelerating wages might sustain higher spending and therefore persistently elevated rates of inflation. However, government data now indicates that wage growth is slowing, which mitigates the risk of a *wage-price spiral.*

Overall, we believe inflation is falling and will likely be much less of a perceived market risk in 2023. Certain persistent price pressures suggest that an inflation level of 3-4% is more likely than the 1-2% experienced throughout much of the 2010s.

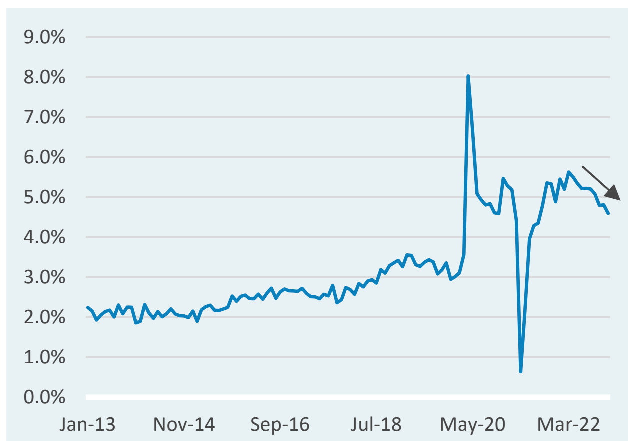
Price pressures continue to ease, adding to optimism that inflation will fall to more normal levels

U.S. CPI (YOY)



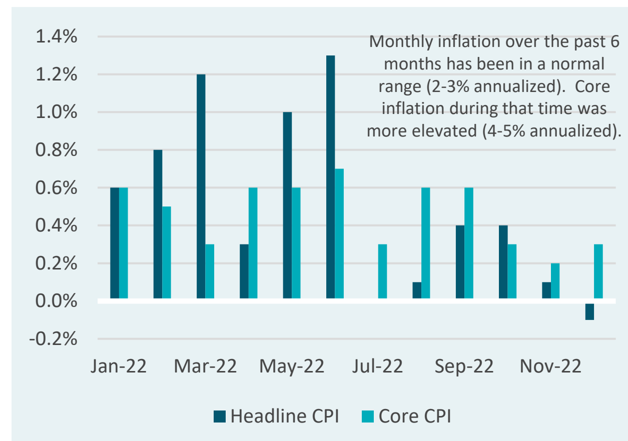
Source: BLS, as of 12/31/22

AVERAGE HOURLY EARNINGS



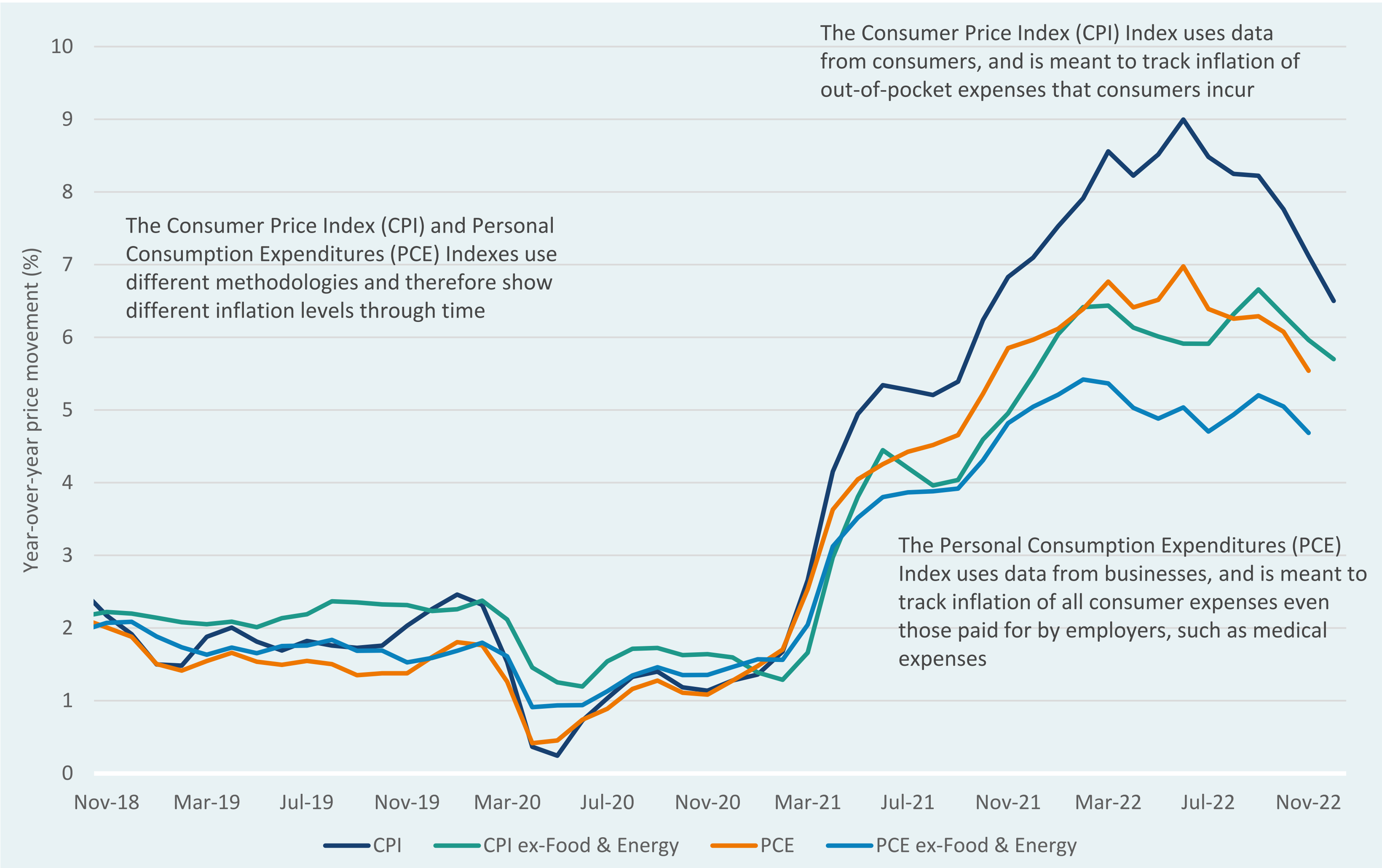
Source: BLS, as of 12/31/22

MONTHLY PRICE MOVEMENT



Source: BLS, as of 12/31/22

How are inflation conditions evolving?



Price rises have slowed considerably in recent months, which is bringing down official year-over-year inflation figures

Source: FRED, Verus, PCE data as of 11/30/22, CPI data as of 12/31/22

Labor market

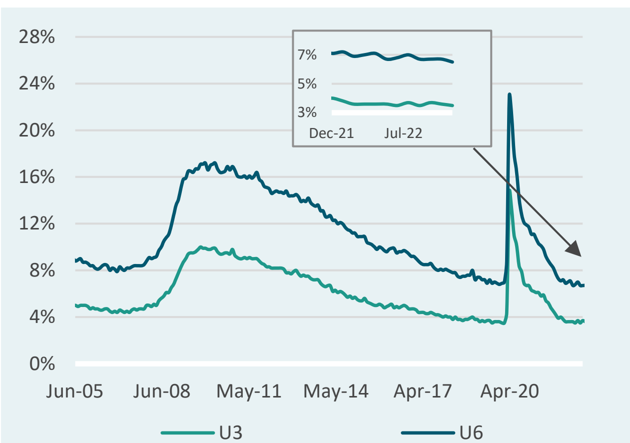
Unemployment remained very low during the quarter, at 3.5% in December. This official figure suggests a strong and resilient job market for those workers who seek employment, although this data contrasts with media reports of fairly widespread layoff activity.

The labor participation rate also remained unchanged during the quarter. Low labor participation paints a different and much weaker picture of the job market, because this figure takes into account the workers *who are not seeking employment*. More than two million workers remain out of the labor force, relative to the pre-pandemic job market. Survey and government-reported data suggests that much of this effect is due to “Long Covid” health troubles. Other variables such as early retirements, and parents taking time off to care for children, have also likely had a material impact on the size of the workforce.

The result of millions of Americans dropping out of the workforce has been a historically large mismatch regarding the number of jobs available and the number of workers available to fill those jobs. This gap remains wide, but has been closing recently as job openings have fallen.

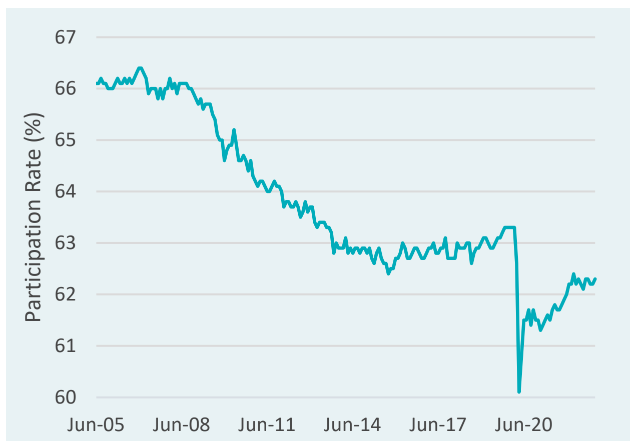
The labor market remains tight, though the size of workforce is much smaller relative to pre-pandemic times

U.S. UNEMPLOYMENT



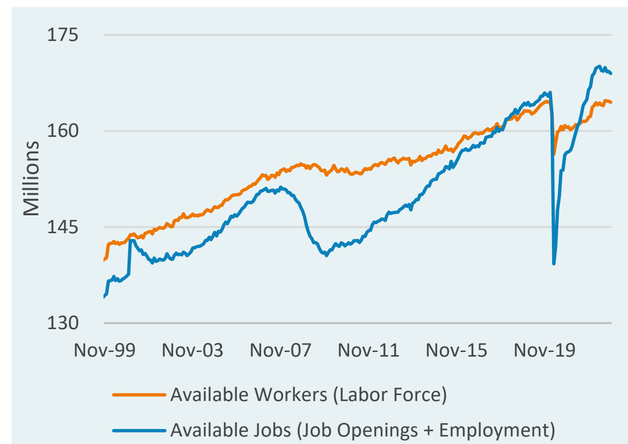
Source: FRED, as of 12/31/22

LABOR FORCE PARTICIPATION RATE



Source: FRED, as of 12/31/22

WORKERS AVAILABLE VS. AVAILABLE JOBS



Source: BLS, as of 11/30/22

The consumer

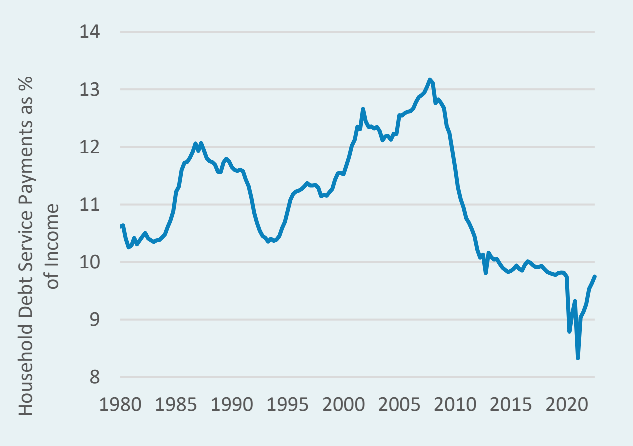
U.S. real (inflation-adjusted) personal consumption expenditures held steady in August, at 2.0% year-over-year. Households have focused spending on services rather than goods, which removed some stress from supply chains and likely helped to normalize transportation issues. Relatively strong spending seems to suggest it is possible that inflation moderates without a painful slowdown in the economy.

Spending has slowed but savings rates have also dropped to 2.3%—a depressed level not seen since the mid-2000s. A low household savings rate is sometimes seen as an indicator of strong consumer confidence and spending, though in the current environment we suspect that household budgets are being hit hard by inflation and higher living costs.

Big ticket items such as automobiles have seen falling sales as higher interest rates make purchases less affordable and household budgets come under strain. The pressure of higher interest rates is reflected in *average debt payments relative to average income*—a metric which has risen towards pre-pandemic levels.

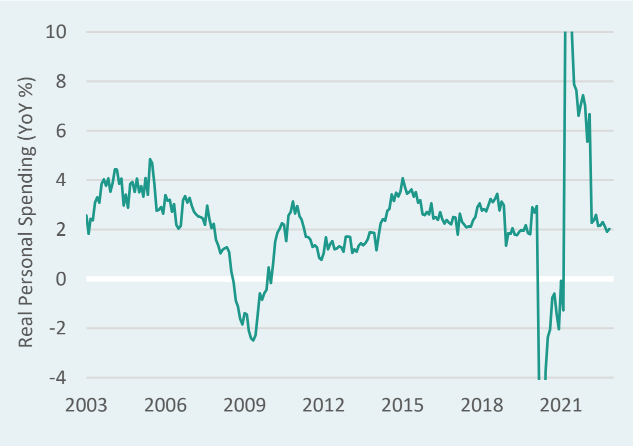
Household spending remains strong, though a very low savings rate may suggest budgets are being squeezed

DEBT SERVICE AS % HOUSEHOLD INCOME



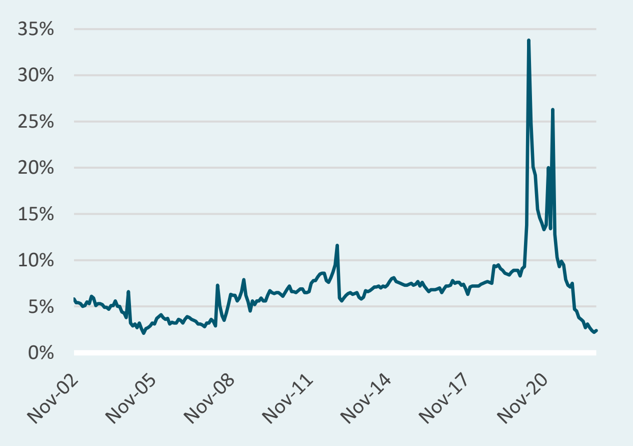
Source: FRED, as of 9/30/22

REAL PERSONAL CONSUMPTION



Source: FRED, as of 11/30/22

PERSONAL SAVINGS RATE



Source: FRED, as of 11/30/22

Sentiment

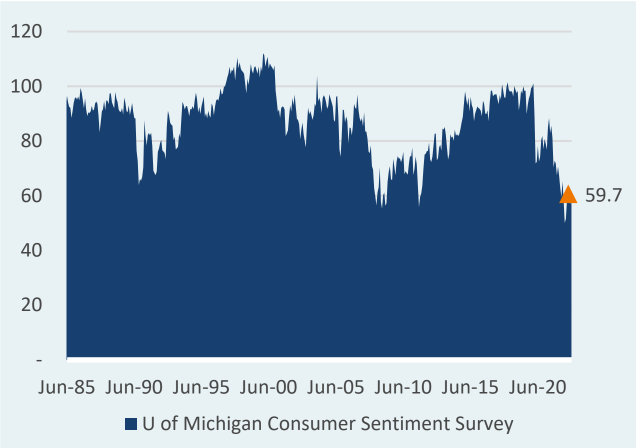
Consumer sentiment improved again during the fourth quarter, but remains very downbeat, according to the University of Michigan. In the most recent survey, respondents expressed less concerns over inflation, reported better business conditions and long-term outlook, though pessimism around current and future personal finances remained.

Consumer confidence measured by the Conference Board improved slightly in the fourth quarter—at the highest level since April. According to the Conference Board, views around current conditions and future conditions improved as households were more upbeat regarding the economy and jobs. Inflation expectations continued to fall (improve), driven by lower gas prices in particular.

The NFIB Small Business Optimism index deteriorated slightly during the quarter, reflecting a very poor business outlook. Thirty-two percent of business owners expressed inflation as their greatest concern for business operations. Other concerns included difficulties in filling open job positions and an inability to raise prices to keep up with inflation.

Sentiment, by most measures, remains very poor

CONSUMER SENTIMENT

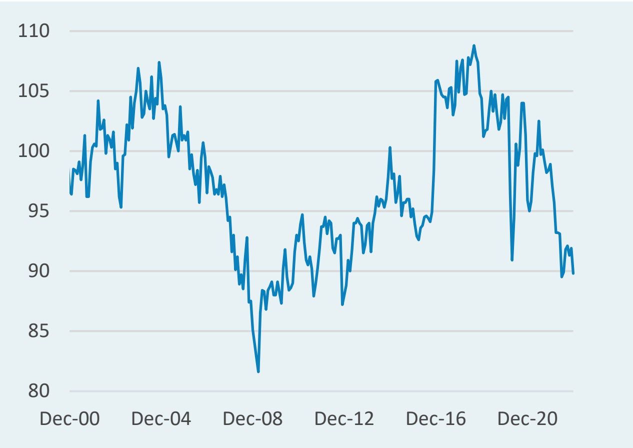


Source: University of Michigan, as of 12/31/22

CONFERENCE BOARD CONSUMER CONFIDENCE

Source: Conference Board, as of 12/31/22

NFIB SMALL BUSINESS SENTIMENT



Source: NFIB, as of 12/31/22

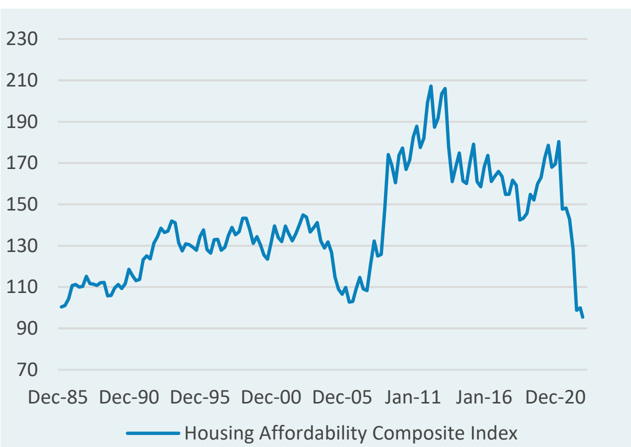
Housing

U.S. home prices peaked in June 2022 and have been falling since that time, according to the S&P CoreLogic Case-Shiller U.S. National Index. Significantly higher mortgage interest rates have led to the worst home affordability on record, as indicated by the National Association of Realtors.

Higher home prices and interest rates have also resulted in a sharp slowdown in sales activity—a notable change from the frothy environment that had occurred post-pandemic. Existing home sales activity has now fallen to a rate not seen since the real estate market was recovering from the housing crisis during the early 2010s.

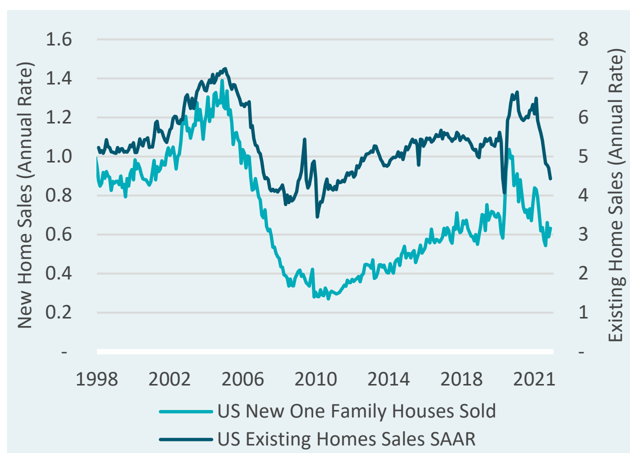
Conditions in housing today appear to be helping to *rebalance* the housing market, as suggested by the monthly supply of homes. Weaker sales volumes and worse affordability has meant that potential buyers have much more inventory to select from. The monthly supply of homes is now at 8.6 months, up from an all-time-low of 3.3 months in August 2020. As homes sit on the market unsold for longer, prices may need to fall further to attract buyers.

HOUSING AFFORDABILITY INDEX



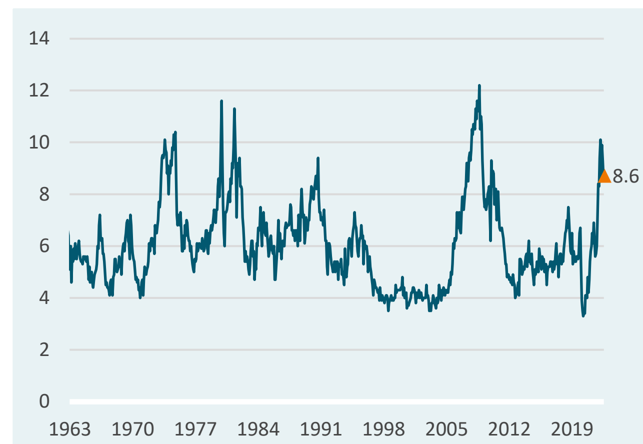
Source: NAR, as of 11/30/22

HOME SALES: NEW & EXISTING (MILLIONS)



Source: FRED, as of 10/31/22

MONTHLY SUPPLY OF HOMES



Source: FRED, as of 11/30/22

The Monthly Housing Affordability Index measures whether or not a typical family earns enough income to qualify for a mortgage loan on a typical home at the national and regional levels based on the most recent monthly price and income data

International economics summary

- Economic growth expectations continued to weaken, although the GDP outlook for emerging economies is starting to paint a more optimistic picture. Developed economies, specifically across the Eurozone and United Kingdom, are still facing the negative growth impacts of tighter financial conditions as inflation remains elevated.
- Inflation in both the Eurozone and U.K. has reinforced tighter policies from the ECB and BOE. While U.K. inflation fell to 10.7% from the 11.1% peak in October, interest rates are expected to be raised further (but in smaller increments). Eurozone inflation has shown signs of moving past its peak, although core inflation hit a new high of 5.2%, stoking fears that inflation may be spreading to core goods and services.
- Unemployment rates have remained stable over the quarter. India stood out as an exception, where unemployment jumped from 6.4% to 8.3%.
- The war in Ukraine carried on despite temporary "ceasefires" declared by Russia. The fighting has intensified in Eastern Ukraine around Kharkiv, with a supporting effort in Southern Ukraine, as Russian forces attempt to secure frontline positioning in the Kherson Oblast.
- China's rapid pivot away from a "Zero Covid" policy towards the end of the quarter added a large tailwind to the global growth outlook. Despite this positive news, a rapid uptick in COVID-19 cases challenges the timeline of the reopening story. Additionally, many wonder how a large uptick in global demand might impact inflation pressures at a time when advanced economies struggle specifically to reign in spending.

Area	GDP (Real, YoY)	Inflation (CPI, YoY)	Unemployment
United States	1.0% *12/31/22*	6.5% *12/31/22*	3.5% *12/31/22*
Eurozone	2.3% *9/30/22*	9.2% *12/31/22*	6.5% *11/30/22*
Japan	1.5% *9/30/22*	4.0% *12/31/22*	2.4% *11/30/22*
BRICS Nations	3.6% *9/30/22*	3.5% *12/31/22*	5.2% *12/31/21*
Brazil	3.6% *9/30/22*	5.8% *12/31/22*	8.3% *10/31/22*
Russia	(3.7%) *9/30/22*	11.9% *12/31/22*	3.7% *11/30/22*
India	6.3% *9/30/22*	5.7% *12/31/22*	8.3% *12/31/22*
China	3.9% *9/30/22*	1.8% *12/31/22*	5.7% *11/30/22*

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.

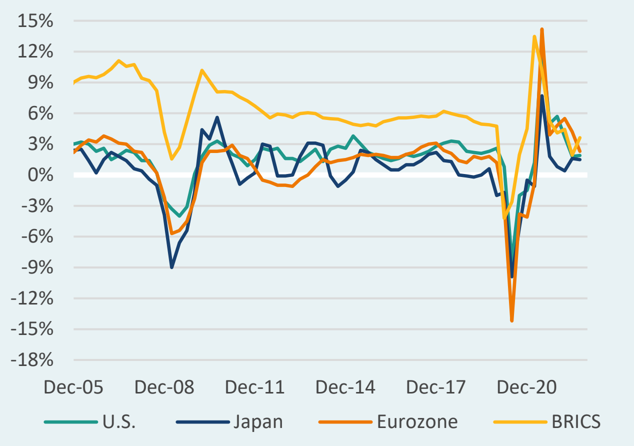
International economics

Growth expectations outside of the U.S. contracted over the quarter, with the largest moves coming from developed economies. The IMF cut its GDP forecast by 0.7% and 0.2% for the Eurozone and U.K. in their October outlook (now expecting 2023 GDP of 0.5% and 0.3%, respectively) as the European Central Bank and Bank of England struggle to rein in record high inflation. Japan saw a smaller downward revision of 0.1%, with 2023 growth expectations now at 1.6%.

The outlook for emerging markets is much more optimistic. Most countries have avoided the high inflation seen in developed markets. A rapid reopening of the Chinese economy is likely providing a tailwind to growth, although the timing remains unclear due to another wave of COVID-19 infections. The 2023 GDP forecast for emerging economies per Bloomberg ticked down from 4.3% to 3.9% over the quarter, but emerging economy growth is still expected to far exceed that of developed economies (developed economy 2023 GDP expectations sit at 0.4%, according to the IMF).

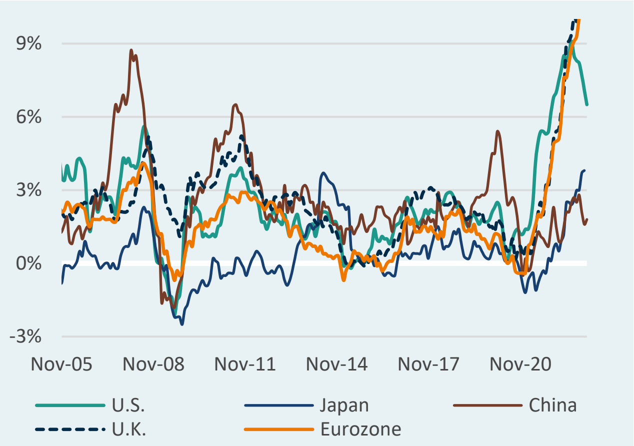
Despite the slowdown in economic growth, employment remains stable amongst the regions we track. India stood out as an exception, where unemployment jumped from 6.4% to 8.3% during Q4.

REAL GDP GROWTH (YOY)



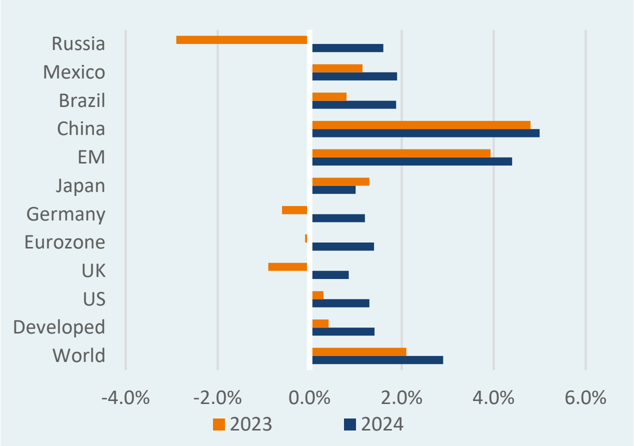
Source: Bloomberg, as of 9/30/22

INFLATION (CPI YOY)



Source: Bloomberg, as of 12/31/22 – or most recent release

ECONOMIC GROWTH FORECASTS



Source: Bloomberg, as of 12/31/22 – or most recent release

Fixed income rates & credit

Fixed income environment

— The 10-year U.S. Treasury yield ended the quarter unchanged at 3.8%. It is possible that long-term interest rates have already reached a cyclical peak, assuming inflation continues to fall and the Federal Reserve becomes less aggressive.

— Credit performance was positive during the fourth quarter, with riskier exposures such as U.S. high yield and emerging market debt (both local and hard currency) leading the pack. Expectations for a slowdown in Federal Reserve rate hikes, and a rosier U.S. economic environment, have provided a tailwind to the credit space.

— Default activity in high yield bonds and bank loans remained subdued during Q4. Throughout the year, 17 companies defaulted totaling $26.3 billion, with large defaults concentrated in the Healthcare sector which accounted for over 36% of total dollar volume. Default rates for par-weighted U.S. high yield and bank loans remained very low at 0.8% and 1.0%, respectively.

— The U.S. yield curve inversion reached historically negative levels, with the 10-year 2-year yield spread seeing its widest inversion since 1981 (short-term interest rates being higher than long-term interest rates). The negative spread bottomed out at ~81 bps on December 5th before gradually easing during the latter half of the month.

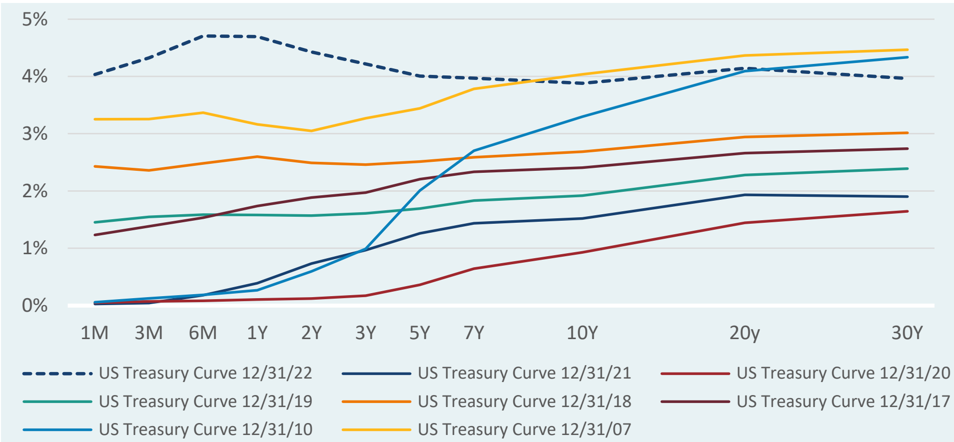
— Derivative markets are beginning to clash with Federal Reserve projections, as investors are pricing in a shorter tightening cycle relative to that indicated by comments from Federal Reserve officials. Federal Funds futures reflect a target interest rate of approximately 4.6% by the end of 2023, which compares to 5.1% indicated by the Federal Reserve's December Summary of Economic Projections.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	1.9%	(13.0%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	2.2%	(13.0%)
U.S. Treasuries (Bloomberg U.S. Treasury)	0.7%	(12.5%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	4.2%	(11.2%)
Bank Loans (S&P/LSTA Leveraged Loan)	2.7%	(0.6%)
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	8.5%	(11.7%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	8.1%	(17.8%)
Mortgage-Backed Securities (Bloomberg MBS)	2.1%	(11.8%)

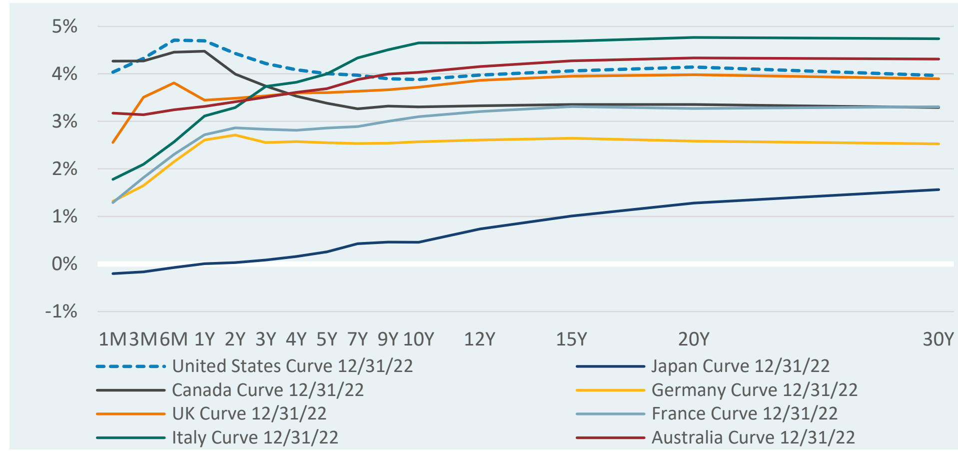
Source: Bloomberg, as of 12/31/22

Yield environment

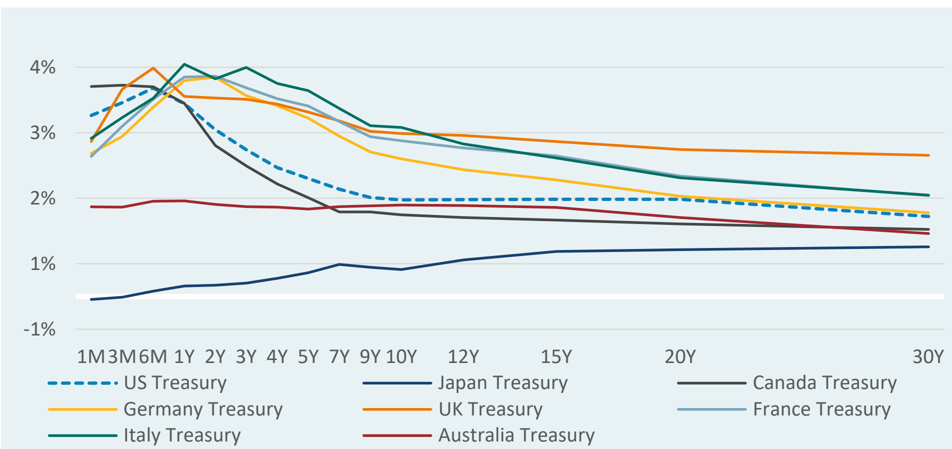
U.S. YIELD CURVE



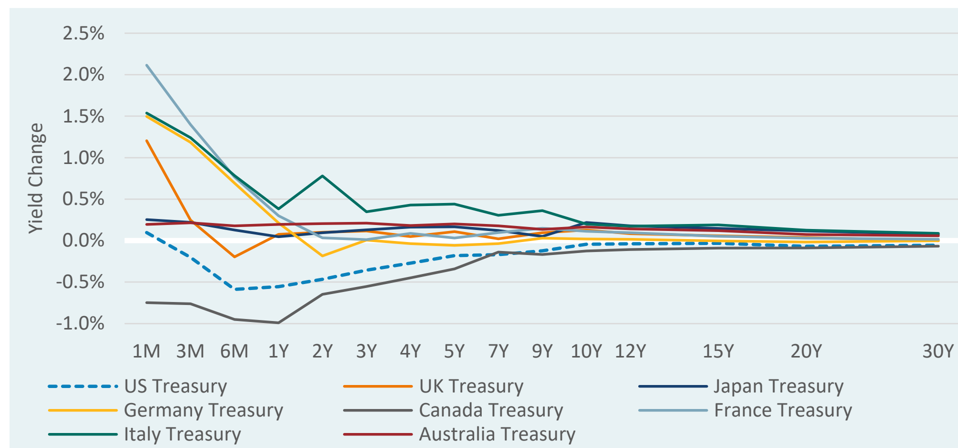
GLOBAL GOVERNMENT YIELD CURVES



YIELD CURVE CHANGES OVER LAST FIVE YEARS



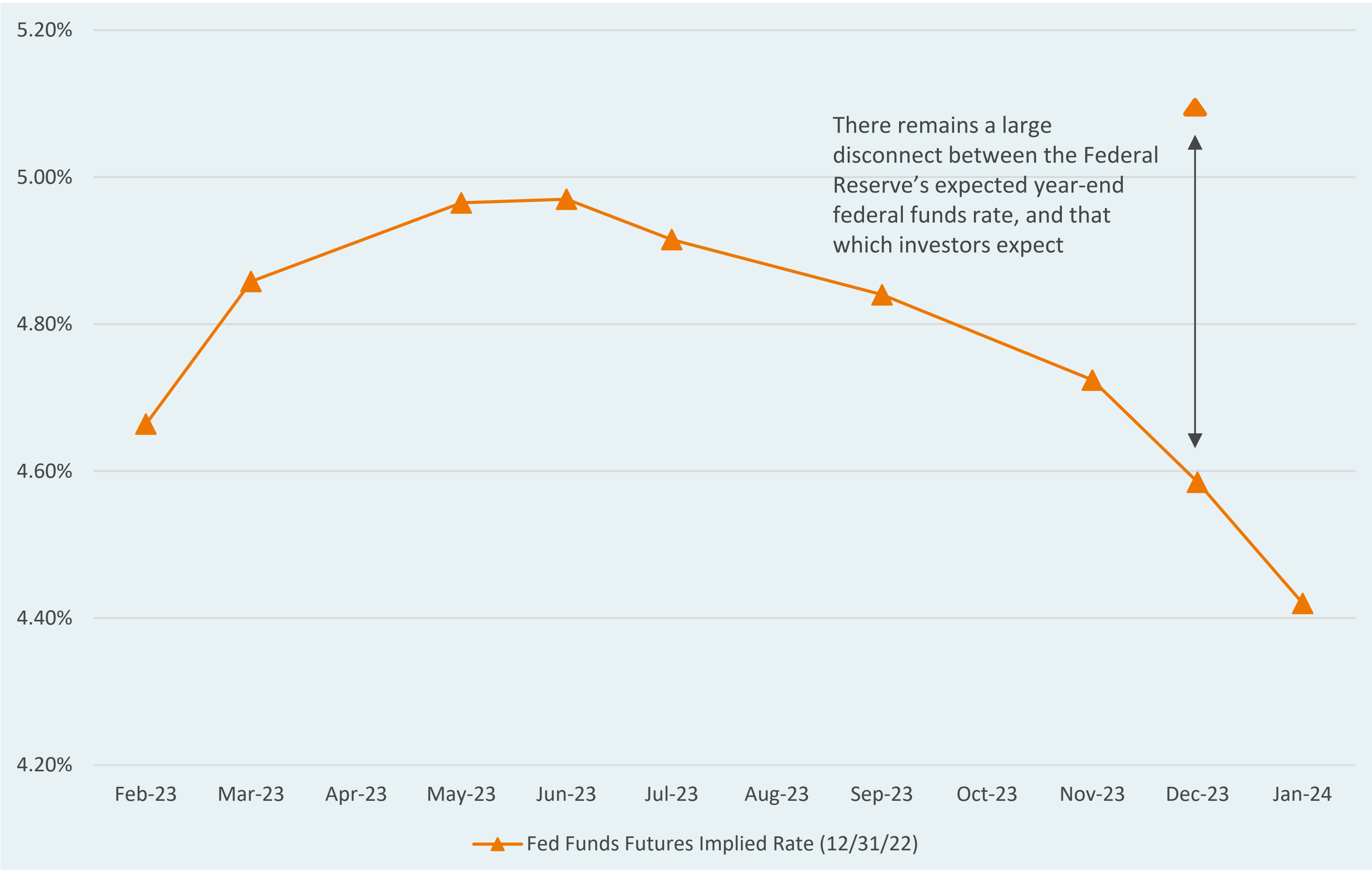
IMPLIED CHANGES OVER NEXT YEAR



Source: Bloomberg, as of 12/31/22

Markets more optimistic than the Fed

FED FUNDS FUTURES IMPLIED FED RATE



Markets expected the federal funds rate to rise to a peak of near 5.0% in Spring of 2023, followed by rate cuts throughout the remainder of the year

This contrasts sharply with forecasts from the Federal Reserve, which indicates a federal funds rate projection for the end of 2023 of ***5.1%***

Source: Bloomberg, as of 12/31/22

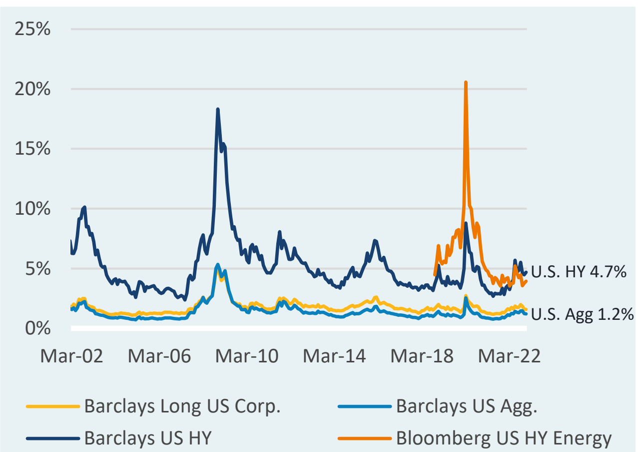
Credit environment

During the fourth quarter, markets began pricing in an eventual end to the Federal Reserve rate hiking cycle. This supported the performance of credit assets, as well as stronger-than-expected U.S. economic data which helped alleviate recession fears. High yield credit returns led the way with 4.2%, followed by 3.6% from investment grade credit and 2.3% from bank loans.

Credit spreads broadly tightened, with investment grade spreads falling to 130 bps from their high of 165 bps in Q3. High yield spreads compressed further, moving from 552 bps to 469 bps over the quarter. Despite calendar year returns of investment grade credit being the worst on record at -15.8%, and two consecutive years of negative returns, spreads have widened less than anticipated. This suggests spreads could expand from these levels if conditions deteriorate.

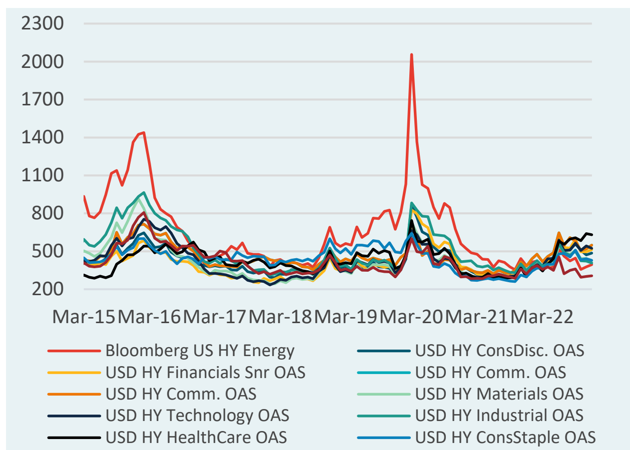
The total yield of high yield credit declined modestly throughout Q4, ending the quarter at 9.0%, which was 71 bps below Q3 yields but still elevated far above yields to start 2022. The Bloomberg US Corporate Investment Grade Index saw similar movement, with yields declining to 5.4% from 5.7% during the quarter, though still significantly higher than 2.4% to start the year. More attractive yield levels have the potential to drive demand for fixed income broadly, though concerns around growth and recession may act as headwinds to the spread-sensitive performance of higher risk credit.

SPREADS



Source: Barclays, Bloomberg, as of 12/31/22

HIGH YIELD SECTOR SPREADS (BPS)



Source: Bloomberg, as of 12/31/22

	Credit Spread (OAS)	
Market	**12/31/22**	**12/31/21**
Long U.S. Corp	1.6%	1.3%
U.S. Inv Grade Corp	1.3%	0.9%
U.S. High Yield	4.7%	2.8%
U.S. Bank Loans*	5.9%	4.3%

Source: Barclays, Credit Suisse, Bloomberg, as of 12/31/22
**Discount margin (4-year life)*

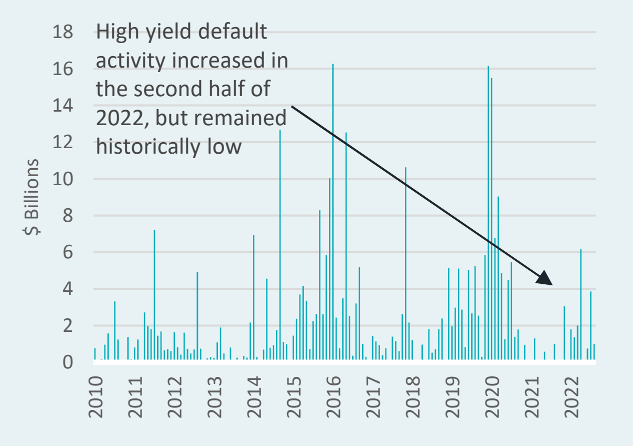
Default & issuance

Default activity in high yield bonds and bank loans remained subdued during Q4. Throughout the year, 17 companies defaulted totaling $26.3 billion, with large defaults concentrated in the Healthcare sector which accounted for over 36% of total dollar volume. Default rates for par-weighted U.S. high yield and bank loans remained very low at 0.8% and 1.0%, respectively. While these levels are well below long-term historical averages, defaults are widely expected to increase amid sustained higher interest rates, tighter financial conditions, and weaker economic growth.

Default recovery rates of high yield and bank loans remained strong for a second consecutive year. High yield recovery rates ended the year at 55% (above the long-term average of 40%) while the recovery rate of bank loans ended the year at 58% (below the long-term average of 64%).

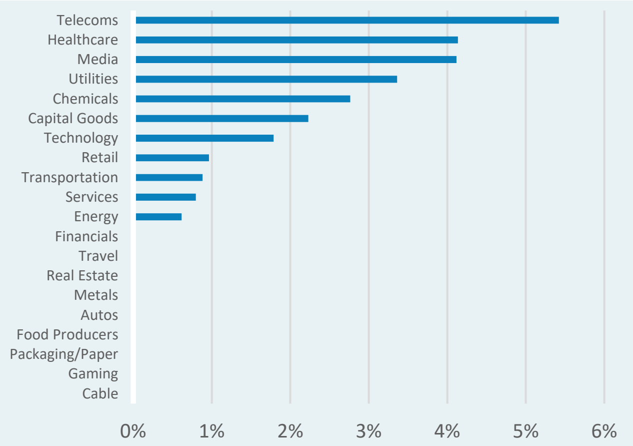
Investment grade credit issuance remained light, with $195 billion of issuance in Q4 being the lowest quarter of the year. During 2022, $1.2 trillion of investment grade bond issuance was 12% lower than 2021 but still in line with the past five-year average. Levered credit also saw quarterly lows of issuance, with $16.5 billion and $47.6 billion in the high yield and levered loan spaces, respectively. The year-over-year declines in issuance within high yield and bank loans have been dramatic, down around 70% since 2021.

U.S. HY MONTHLY DEFAULTS (PAR WEIGHTED)



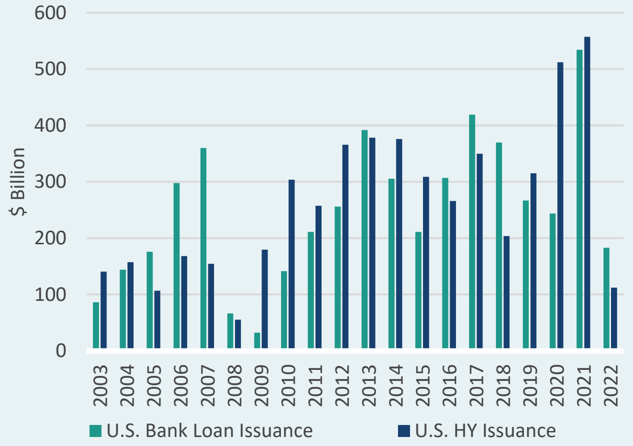
Source: BofA Merrill Lynch, as of 12/31/22

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



Source: BofA Merrill Lynch, as of 12/31/22 – par weighted

U.S. ISSUANCE ($ BILLIONS)



Source: BofA Merrill Lynch, as of 12/31/22

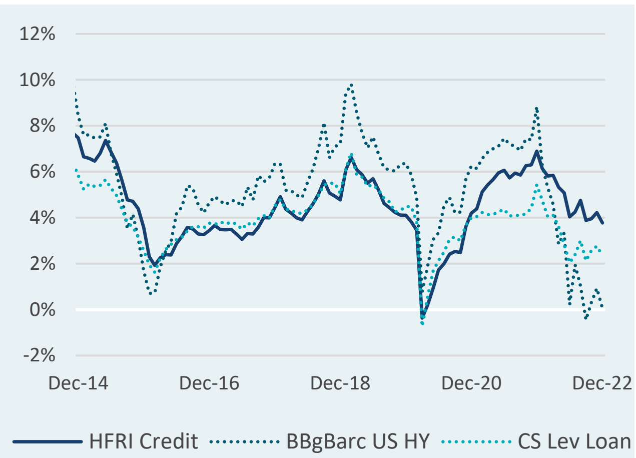
Alternative credit

Credit hedge fund strategies held up well in 2022 despite continued pressure on high yield and duration-sensitive assets. The HFRI Credit Index, which typically delivers performance between that of high yield and bank loans, only lost -2.6% for the year despite widening credit spreads and exposure to duration (which has been very painful for traditional credit).

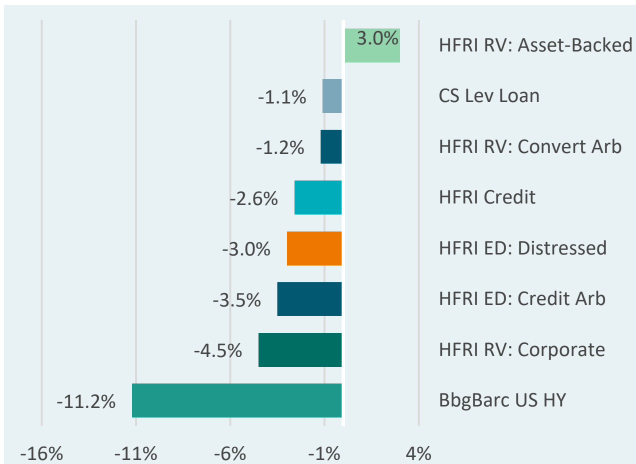
Looking more closely at hedge fund credit, asset-backed strategies were the strongest performers throughout the year. These strategies gained 3% while most other alternative credit funds were modestly negative, in line with bank loans.

We believe asset-backed and distressed strategies remain the most interesting in the space. Asset-backed funds have found attractive yields in off-the-run securitized credit markets, while distressed funds benefited from value investing coming back into favor, and increasing corporate stress which provides new trading opportunities.

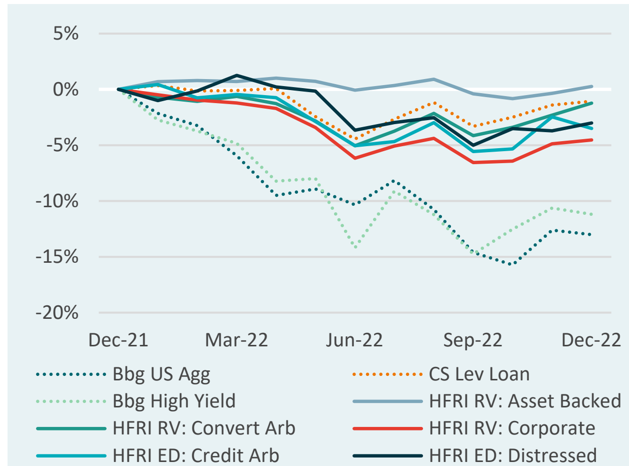
3-YEAR ROLLING RETURN



2022 RETURN



2022 CUMULATIVE RETURN



Source: MPI, Morningstar, HFR, Bloomberg, as of 12/31/22

Equity

Equity environment

— U.S. equities delivered their only positive quarterly return of 2022 during Q4 (S&P 500 +7.6%), helping to dampen the index's worst calendar year performance since 2008 (-18.1% loss in 2022). Higher interest rates and recession fears contributed to poor returns.

— U.S. corporate earnings in Q3 grew 2.4% from the year prior, marking the slowest rate of growth since Q3 2020. Per FactSet, earnings are projected to decline by -4.1% in Q4, which would mark the first decline in U.S. earnings since 2020.

— Many equity markets now trade at valuation levels near historical averages as rising rates and growth concerns have contributed to more attractive pricing. The S&P 500 forward P/E ratio of 18.3 (as of November 30th) is under the five-year average of 18.6 and the ten-year average of 20.2.

— Currency movements continued to create portfolio volatility for investors with unhedged exposure to foreign currencies. The U.S. dollar depreciated sharply during Q4 which resulted in a large gain of 7.6% for investors with unhedged foreign currency exposure (+17.3% MSCI EAFE unhedged, +9.7% MSCI EAFE hedged).

— Value stocks outpaced growth stocks by 10.2% in Q4 and by 21.6% for the year. Energy, industrials, and materials—sectors which are heavily tilted toward value—showed strong returns, with energy ending the year up 64.6%.

— Implied volatility fell significantly over the quarter, as the Cboe VIX Index moved from 31.6 to 21.7. Equity markets advanced on cooling inflation, potential for less aggressive central bank action, and perhaps optimism around China's reopening.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	7.6%		(18.1%)	
U.S. Small Cap (Russell 2000)	6.2%		(20.4%)	
U.S. Equity (Russell 3000)	7.2%		(19.2%)	
U.S. Large Value (Russell 1000 Value)	12.4%		(7.5%)	
US Large Growth (Russell 1000 Growth)	2.2%		(29.1%)	
Global Equity (MSCI ACWI)	9.8%	7.6%	(18.4%)	(15.5%)
International Large (MSCI EAFE)	17.3%	9.7%	(14.5%)	(4.6%)
Eurozone (EURO STOXX 50)	24.8%	15.7%	(15.1%)	(7.0%)
U.K. (FTSE 100)	17.1%	9.3%	(7.0%)	5.9%
Japan (NIKKEI 225)	11.3%	1.4%	(18.9%)	(5.2%)
Emerging Markets (MSCI Emerging Markets)	9.7%	6.7%	(20.1%)	(16.3%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 12/31/22

Domestic equity

U.S. equities notched their only positive quarterly return for the year during Q4 (S&P 500 +7.6%), helping to dampen the index's worst annual performance since 2008 (-18.1% loss in 2022). Domestic shares were negatively impacted by higher interest rates and growing recession fears due to tightening from the Federal Reserve. While performance over the quarter was positive, U.S. equities trailed emerging market and international developed equities.

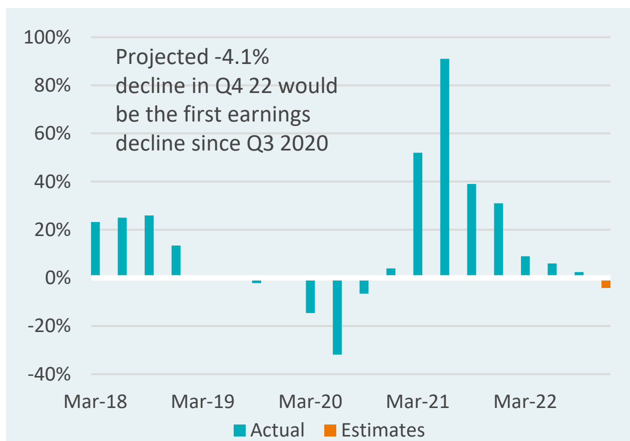
Earnings in the third quarter grew 2.4% from the year prior, marking the slowest rate of growth since Q3 2020. Energy dominated the narrative, as earnings grew an incredible 137% from the previous year. U.S. energy companies experienced margin expansion due to materially higher commodity prices, specifically within oil and natural gas. Per FactSet, earnings are projected to decline by -4.1% in Q4, which would mark the first decline in U.S. earnings since 2020. A potential recession could pose challenges for the earnings outlook.

Energy dominated sector performance in the quarter (+22.8), leading the positive performance seen in most sectors, while telecommunications (-1.4%) and consumer discretionary (-10.2%) saw negative returns.

S&P 500 PRICE INDEX

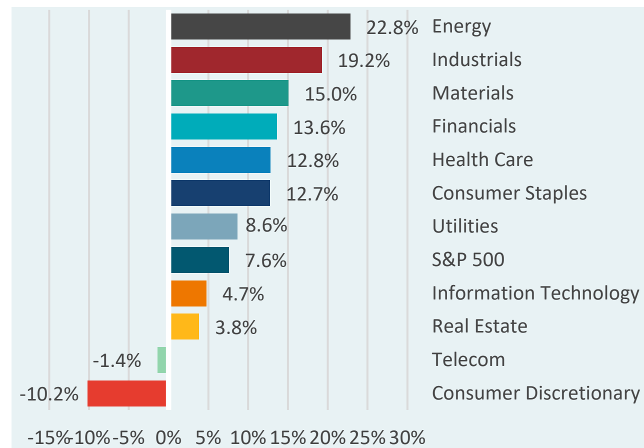
Source: Standard & Poor's, as of 12/31/22

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



Source: FactSet, as of 12/31/22

Q4 SECTOR PERFORMANCE



Source: Morningstar, as of 12/31/22

Domestic equity size & style

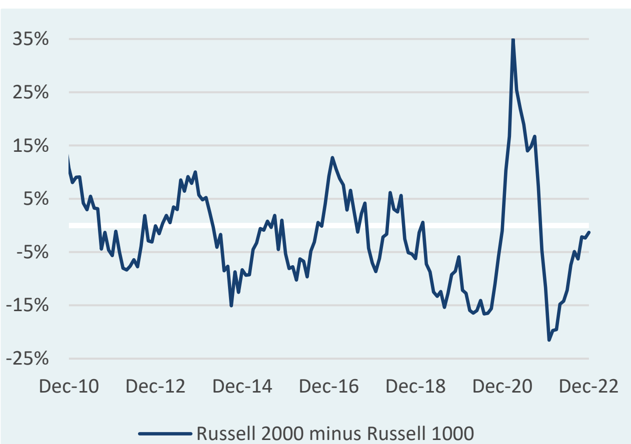
Value stocks outpaced growth stocks by 10.2% in Q4 and by 21.6% for the year. Energy, industrials, and materials—sectors which are heavily tilted toward value—showed strong returns, with the energy sector ending the year up 64.6%.

Markets adjusted to Federal Reserve rate hikes in the fourth quarter and throughout the year. Profitless and high-growth companies suffered the most as investors favored higher yielding fixed income and preferred stocks with strong fundamentals.

Small capitalization stocks underperformed large capitalization stocks (Russell 2000 +6.2%, Russell 1000 +7.2%), and remain relatively rich in valuations despite recent performance pain.

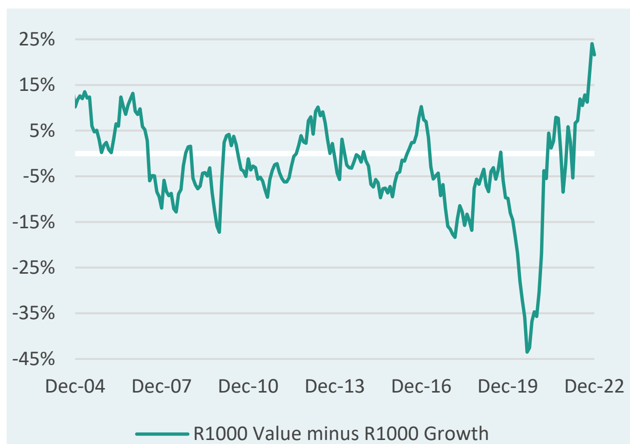
Domestic equities made a modest recovery in Q4 as inflation appears to have peaked and the end of the Fed's hiking cycle is in sight. These dynamics will likely help determine the relative performance of style factors in the near-term.

SMALL CAP VS LARGE CAP (YOY)



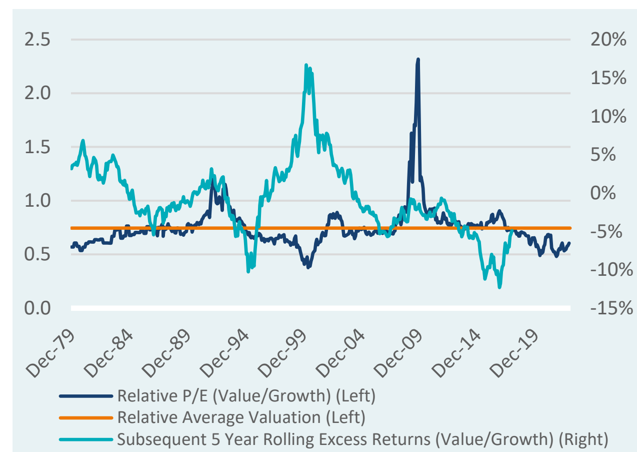
Source: FTSE, as of 12/31/22

VALUE VS GROWTH (YOY)



Source: FTSE, as of 12/31/22

VALUE VS. GROWTH RELATIVE VALUATIONS



Source: FTSE, Bloomberg, as of 12/31/22

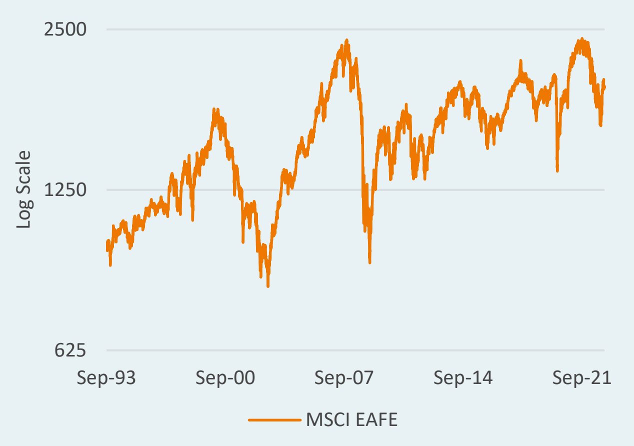
International developed equity

International developed equities rallied significantly in the fourth quarter, driven by strong gains from Eurozone equities and favorable currency movements. The MSCI EAFE Index finished the quarter up 17.3% on an unhedged currency basis, handily outperforming emerging market and U.S. equities.

A bounce back from European shares helped drive the double-digit returns seen from the MSCI EAFE Index. Investors showed preference towards larger names, as the EURO STOXX 50—a gauge of the largest companies in the Eurozone—rose 24.8%, outpacing the 19.7% gain from the broader EURO STOXX 600 Index. Both indices were trading at 2022 lows at the start of the fourth quarter.

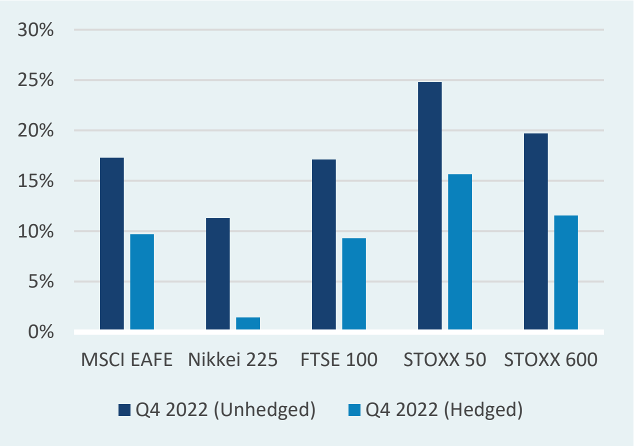
Currency movements played a large role in unhedged Eurozone performance and also boosted the unhedged returns of Japan and the United Kingdom. The U.S. dollar sharply pivoted on market views that the Federal Reserve may follow a shorter tightening cycle. As a result, exchange rates for the Euro, Pound, and Yen appreciated relative to the greenback.

INTERNATIONAL DEVELOPED EQUITY



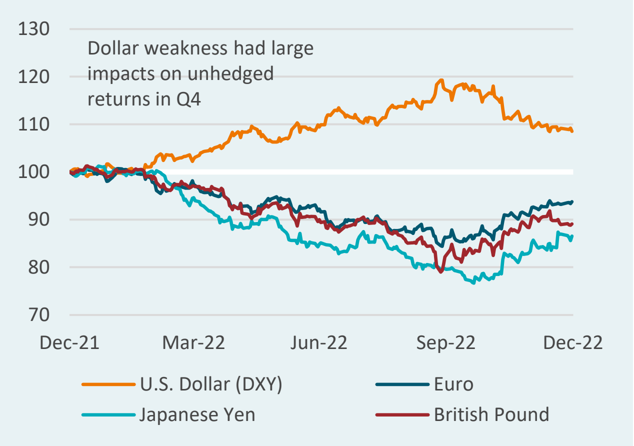
Source: MSCI, as of 12/31/22

Q4 2022 REGIONAL INDEX RETURNS



Source: MSCI, STOXX, FTSE, Nikkei, as of 12/31/22

2022 CURRENCY MOVEMENTS (BASE OF 100)



Source: Bloomberg, as of 12/31/22

Emerging market equity

Emerging market equities advanced alongside global equities as the MSCI EM Index finished the quarter up 9.7%. Performance was volatile over the quarter, as losses in October were pared by a 13.2% rally over November and December. Despite the rally to close out the year, the index still ended down -20.1%, underperforming both international developed and U.S. equity benchmarks.

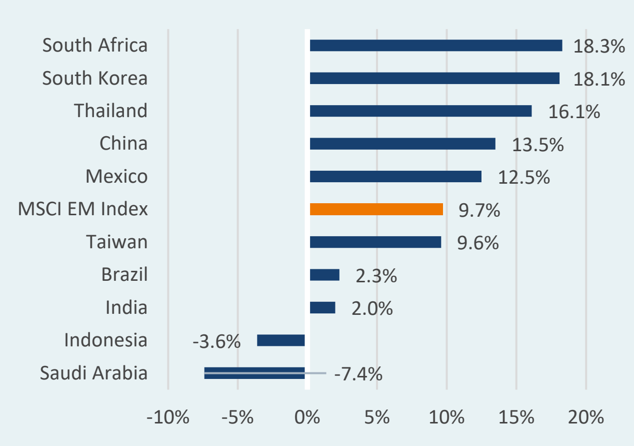
Returns in the fourth quarter were driven by gains in Chinese equities, which jumped following a rapid pivot away from the Chinese Communist Party's "Zero Covid" policy. While Chinese shares still dominate the index (around 30%), strong performance from countries with smaller weights also played a large role.

Indian shares, which hold the second largest weight in the index, acted as a drag on returns during the quarter but still ended in positive territory. Despite a modest 2.0% quarterly gain, the Indian market was one of the best performers of 2022, finishing the year down -8.0%. This compared to double-digit losses from other regional indices.

EMERGING MARKET EQUITY

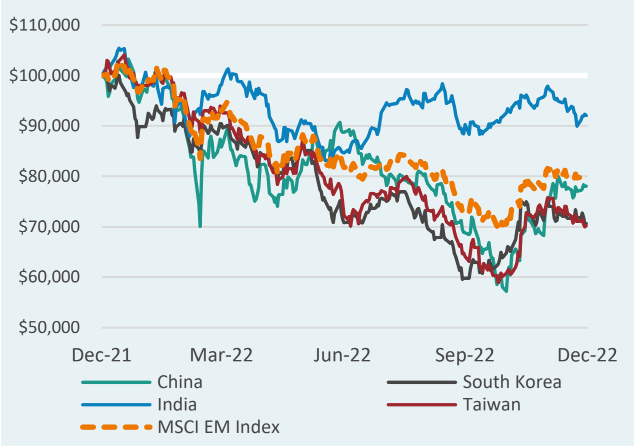
Source: MSCI, as of 12/31/22

Q4 2022 MSCI COUNTRY RETURNS (USD)



Source: Bloomberg, MSCI, as of 12/31/22

GROWTH OF $100K IN 2022 (EM WEIGHTS >10%)



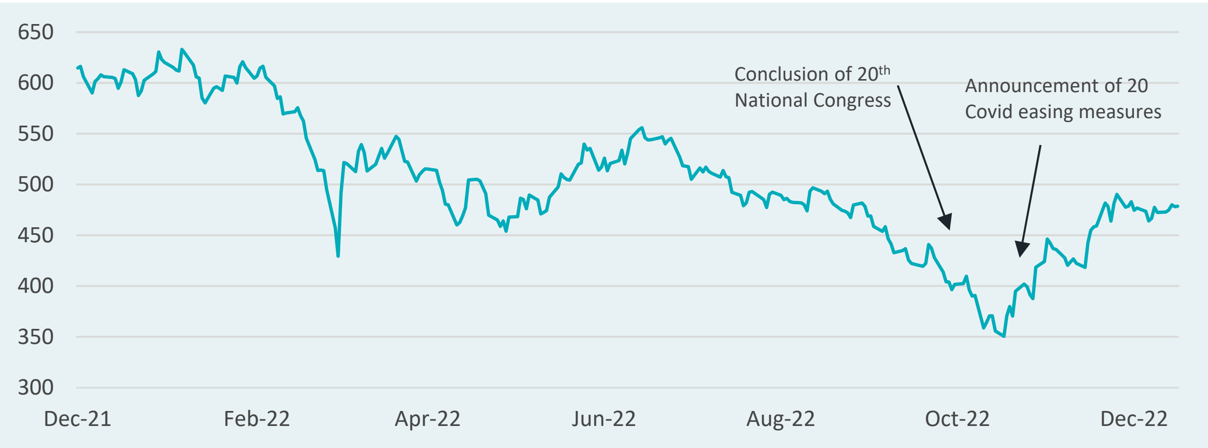
Source: Bloomberg, MSCI, as of 12/31/22 - performance in USD

Recent developments in China

China has continued to make global headlines, though two stories seemed to dominate the narrative. First, the 20th National Congress of the Chinese Communist Party (CCP) resulted in greater concentration of power and an unprecedented third-term for CCP General Secretary Xi Jinping. Second, China communicated a sharp reversal of its "Zero Covid" policy, as the government swiftly reopened major cities from stringent lockdowns, which has contributed to a new wave of COVID-19 cases.

Chinese equity markets dropped sharply following the 20th National Congress, but quickly reversed course following a string of economic reopening announcements. Markets moved even higher during the latter half of the quarter, fueled by the reopening story and prospects for easier monetary and fiscal policy relative to the rest of the world. While the reopening of the world's largest economy presents a tailwind to economic growth, concerns remain around the timeline of recovery, the net impact of eased supply chains and increased global demand, as well as the new concentration of power within the government.

MSCI CHINA INDEX (USD)



Source: Bloomberg, as of 12/31/22

CHINESE LEADERSHIP SINCE MAO ZEDONG

Leader	Electing Central Committee
Mao Zedong	6th (1928 - 1945)
	7th
	8th
	9th
	10th (1973 - 1977)
Hua Guofeng	11th (1977 - 1982)
Hu Yaobang	11th (1977 - 1982)
	12th (1982 - 1987)
Zhao Ziyang	12th (1982 - 1987)
	13th (1987 - 1992)
Jiang Zemin	13th (1987 - 1992)*
	14th (1992 - 1997)
	15th (1997 - 2002)
Hu Jintao	16th (2002 - 2007)
	17th (2007 - 2012)
Xi Jinping	18th (2012 - 2017)
	19th (2017 - 2022)
	20th (2022 - 2027)

**Replaced Zhao Ziyang mid-term in 1989*

First third-term election since Mao Zedong

Verus

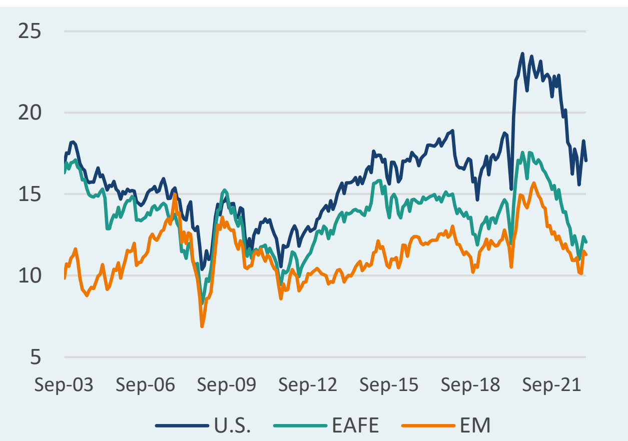
Equity valuations

Many markets now trade at valuation levels near their historical average as inflation and rising interest rates have brought prices down. The S&P 500 forward P/E ratio of 17.1 is below the five- and ten-year averages of 18.6 and 20.2, respectively. The Federal Reserve remains in focus for U.S. investors as valuations over the past decade have been lifted by low interest rates. International equity valuations are depressed but may be further challenged by inflation and recession. Emerging market equities appear to be poised for a strong recovery, given a more positive growth outlook, and as China's reopening could improve fundamentals and bring the asset class back into favor.

International developed equities remain inexpensive relative to U.S. equities, but developed markets face significant long-term headwinds. In Q4, gains in the Euro and Yen and an easing energy crisis boosted international developed equity returns, but high inflation, high debt and low growth in Japan, poor demographics, and a hawkish ECB make for a challenged long-term outlook.

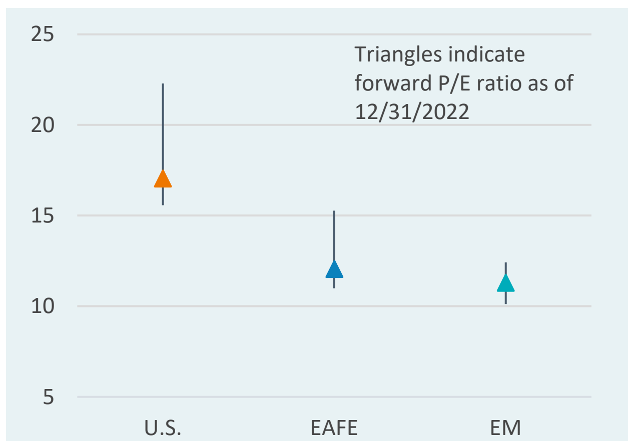
International developed equities remain extremely cheap relative to U.S. markets

FORWARD P/E RATIOS



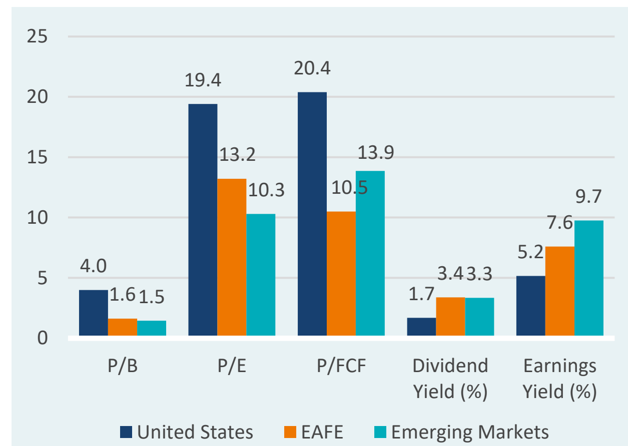
Source: MSCI, 12m forward P/E, as of 12/31/22

FORWARD P/E RATIO RANGES (DURING 2022)



Source: MSCI, 12m forward P/E, as of 12/31/22

VALUATION METRICS (3-MONTH AVERAGE)



Source: Bloomberg, MSCI, as of 12/31/22 - trailing P/E

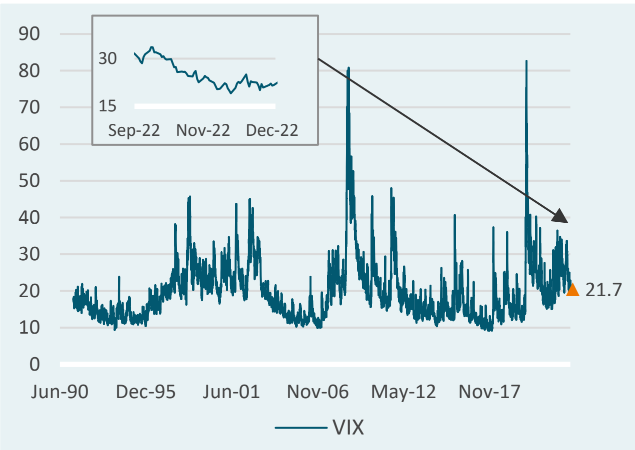
Equity volatility

Implied volatility fell significantly over the quarter. The Cboe VIX Index moved from 31.6 to 21.7. Equity markets advanced on cooling inflation, potential for less aggressive central bank action, and perhaps optimism around China's reopening.

In contrast, realized volatility increased from the prior quarter. Volatility rose across S&P 500, MSCI EAFE, and MSCI EM Indices. Realized volatility in the domestic market remained the highest—a trend consistent with last quarter—as markets swung around inflation prints, two Federal Reserve interest rate decisions, and growing concerns over a potential 2023 recession.

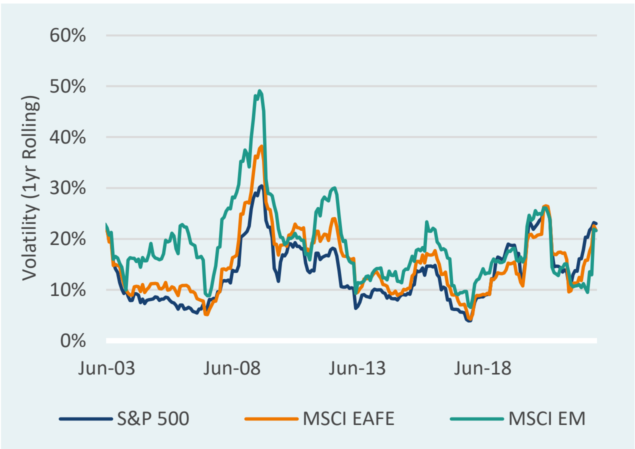
Historically speaking, the S&P 500 delivered exceptionally poor performance in line with some of the worst of the index's history. Looking all the way back to 1929, this year was the seventh worst in the index's history and the worst calendar year performance since 2008.

U.S. IMPLIED VOLATILITY (VIX)



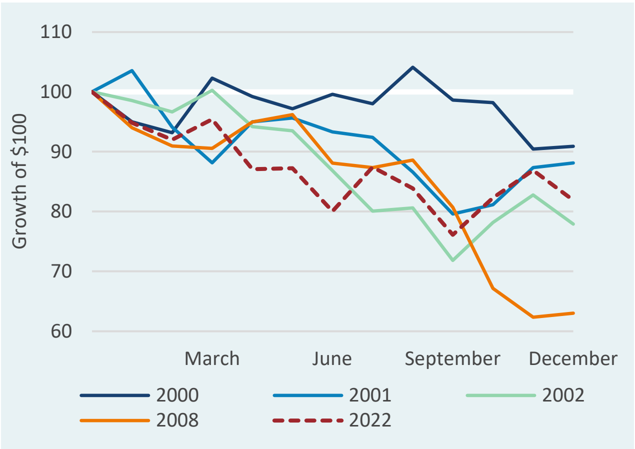
Source: Cboe, as of 12/31/22

REALIZED VOLATILITY



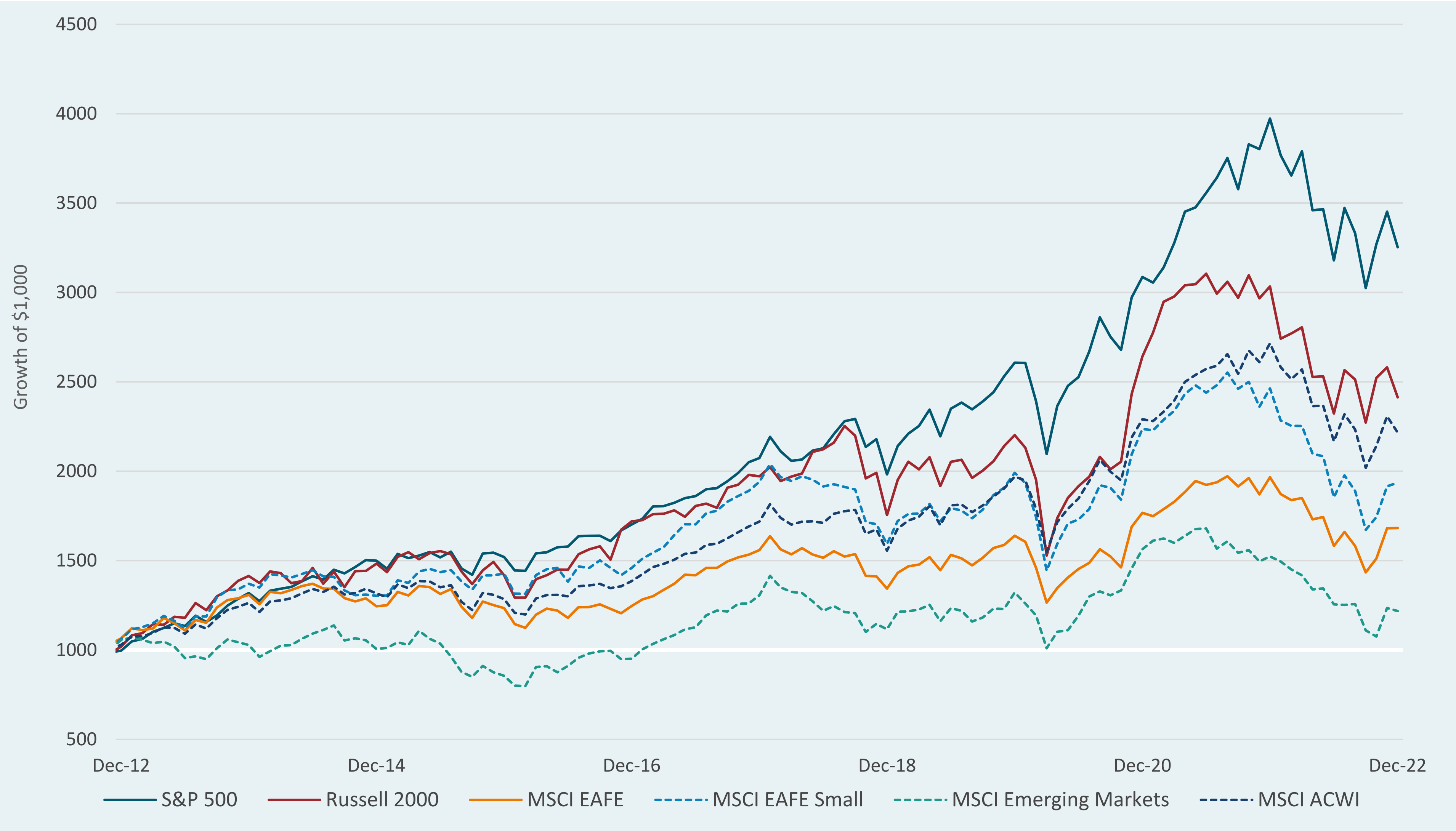
Source: S&P, MSCI, as of 12/31/22

S&P 500 FIVE WORST YEARS SINCE 1988



Source: S&P, Bloomberg, as of 12/31/22 – since 1988

Long-term equity performance



Source: MPI, as of 12/31/22

Other assets

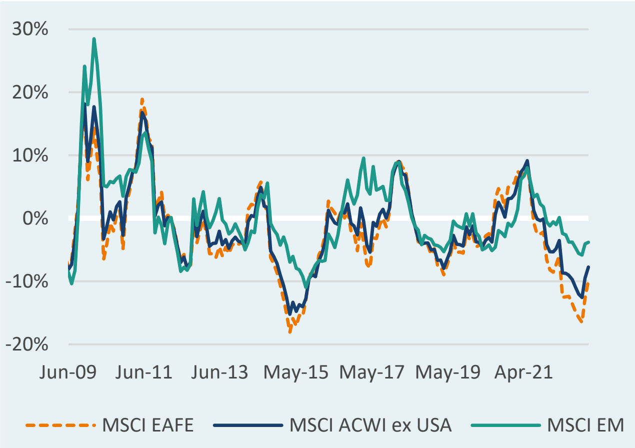
Currency

Currency volatility has translated to much higher portfolio volatility for investors with unhedged exposure to foreign currencies. The U.S. dollar depreciated relative to major currencies during the fourth quarter which resulted in large gains for investors with unhedged foreign currency exposure. These currency gains amounted to 7.6% for investors with unhedged exposure to the MSCI EAFE Index (+17.3% MSCI EAFE unhedged, +9.7% MSCI EAFE hedged).

U.S. dollar strength of 2022 was reversed in Q4 as markets began pricing in a shorter Federal Reserve tightening cycle. Expectations for lower rates in the U.S., combined with an ongoing struggle to control high inflation (and therefore tighter financial policies from respective central banks) within developed economies, likely played a major role in the U.S. dollar sell-off.

Despite currency gains seen this quarter, we believe that a thoughtful currency program may allow an investor to reduce their total portfolio risk while also increasing long-term expected returns. The MSCI Currency Factor Mix Index—a representation of a passive investment in the currency market—has shown a positive one-year rolling return over most periods with very low volatility. This contrasts to the unhedged currency exposure (what we refer to as “embedded currency”) that most investors own, which has shown high volatility and frequent losses.

EFFECT OF CURRENCY (1-YEAR ROLLING)

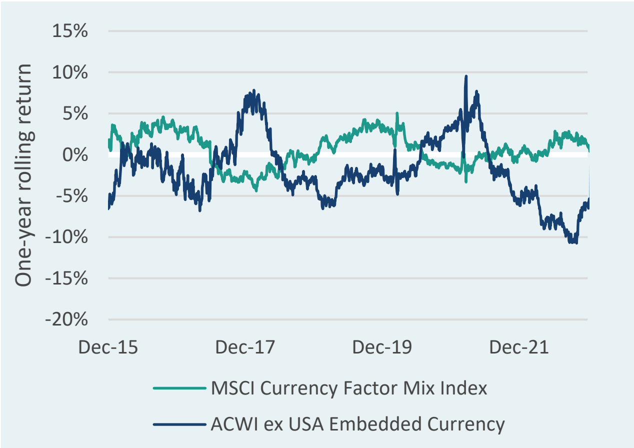


Source: MSCI, as of 12/31/22

BLOOMBERG DOLLAR SPOT INDEX

Source: Bloomberg, as of 12/31/22

EMBEDDED CURRENCY VS CURRENCY FACTORS



Source: Bloomberg, as of 12/31/22

Appendix

Periodic table of returns

BEST

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	YTD	5-Year	10-Year
Commodities	31.8	14.0	25.9	56.3	26.0	34.5	32.6	39.8	5.2	79.0	29.1	14.3	18.6	43.3	13.5	13.3	31.7	37.3	6.7	36.4	38.5	28.3	16.1	11.0	14.1
Real Estate	22.8	8.4	10.3	48.5	22.2	21.4	26.9	16.2	1.4	37.2	26.9	7.8	18.1	38.8	13.2	5.7	21.3	30.2	1.9	31.4	34.6	27.6	9.4	9.1	12.4
Cash	12.2	7.3	6.7	47.3	20.7	20.1	23.5	15.8	-6.5	34.5	24.5	2.6	17.9	34.5	13.0	0.9	17.3	25.0	0.0	28.5	21.0	27.1	1.5	8.6	10.3
Hedge Funds of Funds	11.6	3.3	1.6	46.0	18.3	14.0	22.2	11.8	-21.4	32.5	19.2	1.5	17.5	33.5	11.8	0.6	12.1	22.2	-1.5	26.5	20.0	26.5	-4.7	6.7	9.5
Large Cap Value	7.0	2.8	1.0	39.2	16.5	7.5	18.4	11.6	-25.9	28.4	16.8	0.4	16.4	33.1	6.0	0.0	11.8	21.7	-3.5	25.5	18.3	25.2	-7.5	6.4	9.2
US Bonds	6.0	2.5	-5.9	30.0	14.5	7.1	16.6	10.9	-28.9	27.2	16.7	0.1	16.3	32.5	5.6	-0.4	11.3	17.1	-4.8	22.4	14.0	17.7	-13.0	4.1	9.0
Small Cap Value	4.1	-2.4	-6.0	29.9	14.3	6.3	15.5	10.3	-33.8	23.3	16.1	-2.1	15.3	23.3	4.9	-0.8	11.2	14.6	-6.0	22.0	10.3	14.8	-14.5	4.1	8.5
International Equity	-3.0	-5.6	-11.4	29.7	12.9	5.3	15.1	7.0	-35.6	20.6	15.5	-2.9	14.6	12.1	4.2	-1.4	8.0	13.7	-8.3	18.6	7.8	11.3	-14.5	3.5	4.8
60/40 Global Portfolio	-7.3	-9.1	-15.5	25.2	11.4	4.7	13.3	7.0	-36.8	19.7	13.1	-4.2	11.5	11.0	3.4	-2.5	7.1	7.8	-9.3	18.4	7.5	8.9	-17.3	3.2	4.7
Large Cap Equity	-7.8	-9.2	-15.7	23.9	9.1	4.6	10.4	5.8	-37.6	18.9	10.2	-5.5	10.5	9.0	2.8	-3.8	5.7	7.7	-11.0	8.7	4.6	6.5	-19.1	2.7	3.6
Emerging Markets Equity	-14.0	-12.4	-20.5	11.6	6.9	4.6	9.1	4.4	-38.4	11.5	8.2	-5.7	4.8	0.1	0.0	-4.4	2.6	7.0	-11.2	7.8	2.8	2.8	-20.1	1.5	1.4
Small Cap Equity	-22.4	-19.5	-21.7	9.0	6.3	4.2	4.8	-0.2	-38.5	5.9	6.5	-11.7	4.2	-2.0	-1.8	-7.5	1.0	3.5	-12.9	7.7	0.5	0.0	-20.4	1.2	1.1
Small Cap Growth	-22.4	-20.4	-27.9	4.1	4.3	3.2	4.3	-1.6	-43.1	0.2	5.7	-13.3	0.1	-2.3	-4.5	-14.9	0.5	1.7	-13.8	6.4	0.5	-1.5	-26.4	0.0	0.7
Large Cap Growth	-30.6	-21.2	-30.3	1.0	1.4	2.4	2.1	-9.8	-53.2	-16.9	0.1	-18.2	-1.1	-9.5	-17.0	-24.7	0.3	0.9	-14.6	2.1	-3.1	-2.5	-29.1	-1.4	-1.3

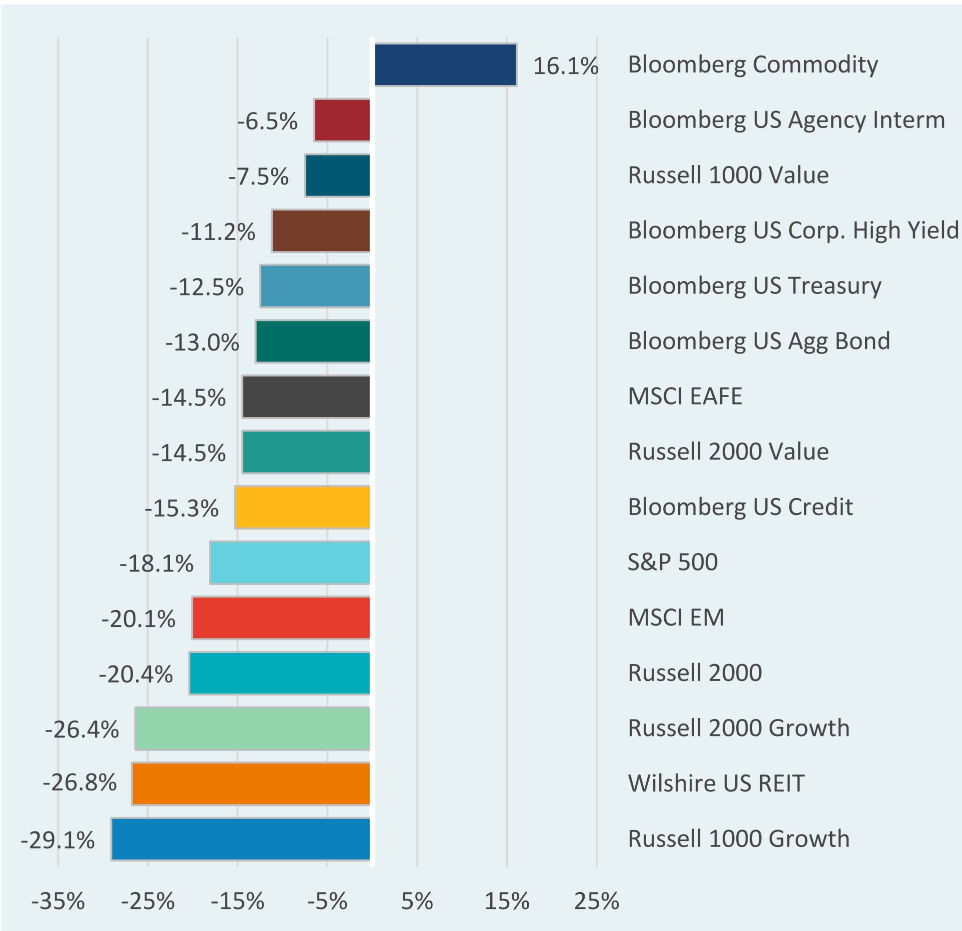
WORST

- 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

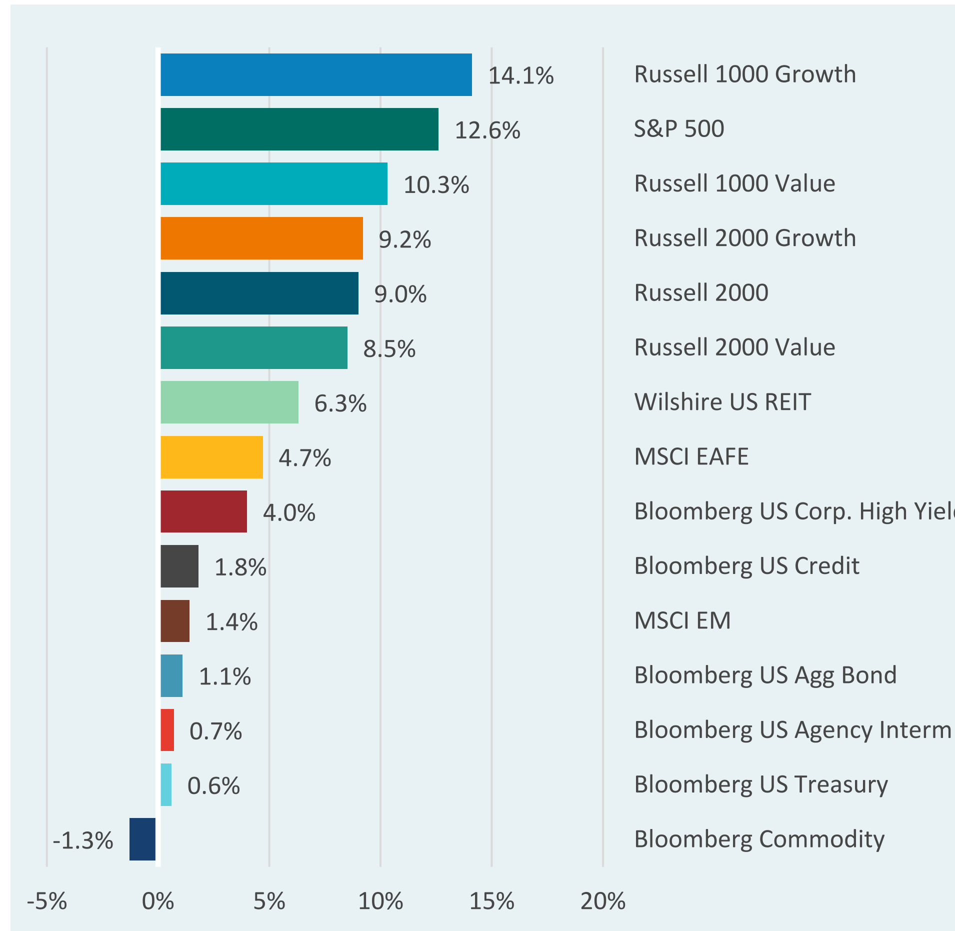
Source Data: Morningstar, Inc., Hedge Fund Research, Inc. (HFR), National Council of Real Estate Investment Fiduciaries (NCREIF). Indices used: Russell 1000, Russell 1000 Value, Russell 1000 Growth, Russell 2000, Russell 2000 Value, Russell 2000 Growth, MSCI EAFE, MSCI EM, Bloomberg US Aggregate, T-Bill 90 Day, Bloomberg Commodity, NCREIF Property, HFRI FOF, MSCI ACWI, Bloomberg Global Bond as of 12/31/22. NCREIF Property Index performance data as of 9/30/22.

Major asset class returns

ONE YEAR ENDING DECEMBER



TEN YEARS ENDING DECEMBER



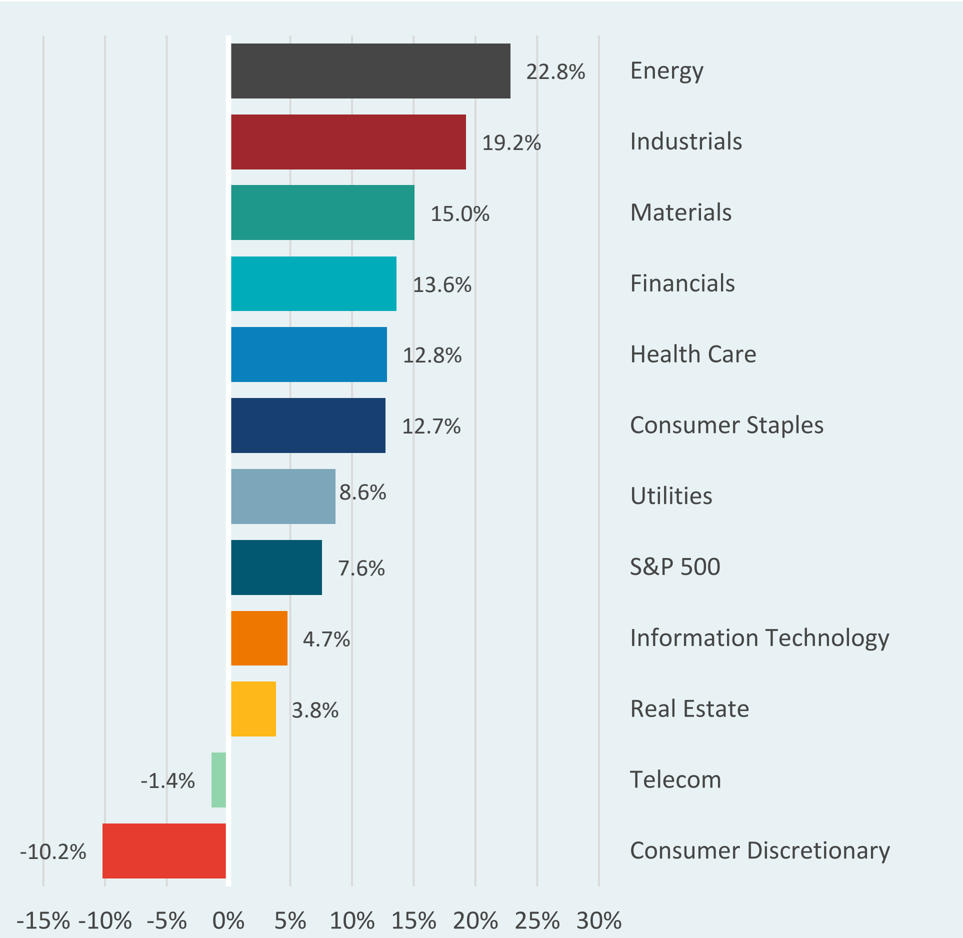
**Only publicly traded asset performance is shown here. Performance of private assets is typically released with a 3- to 6-month delay.*

Source: Morningstar, as of 12/31/22

Source: Morningstar, as of 12/31/22

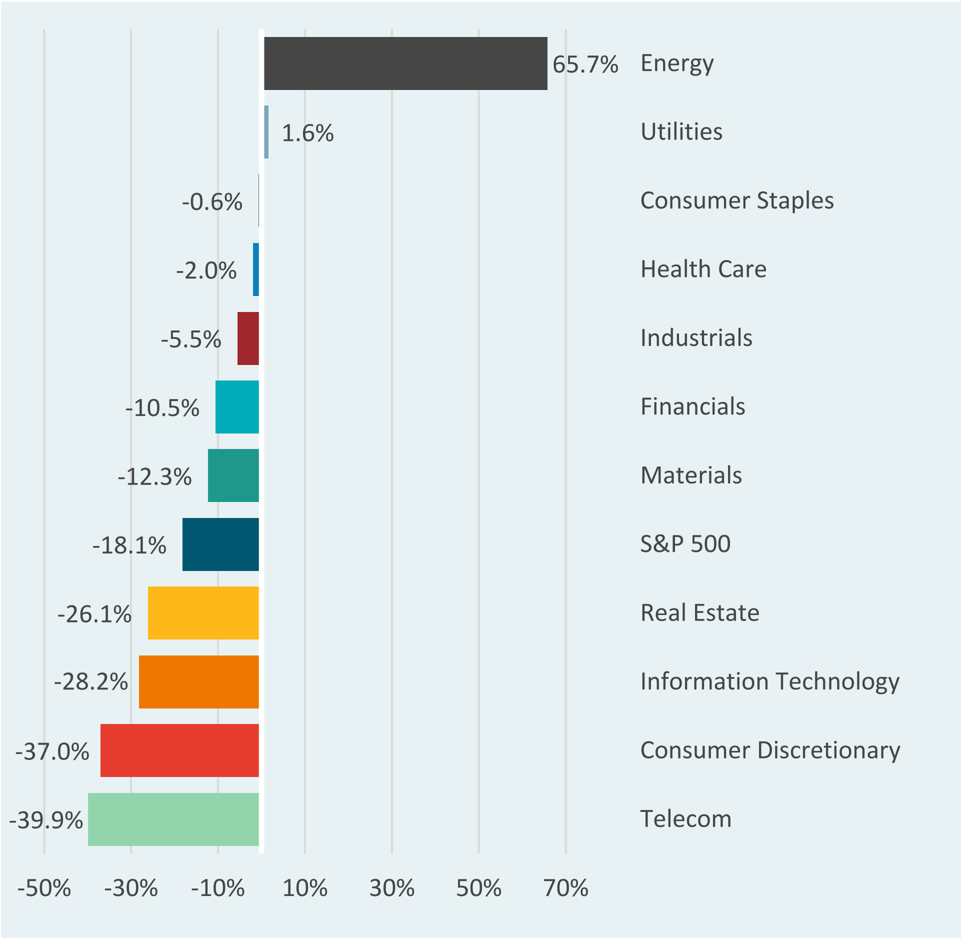
S&P 500 sector returns

QTD



Source: Morningstar, as of 12/31/22

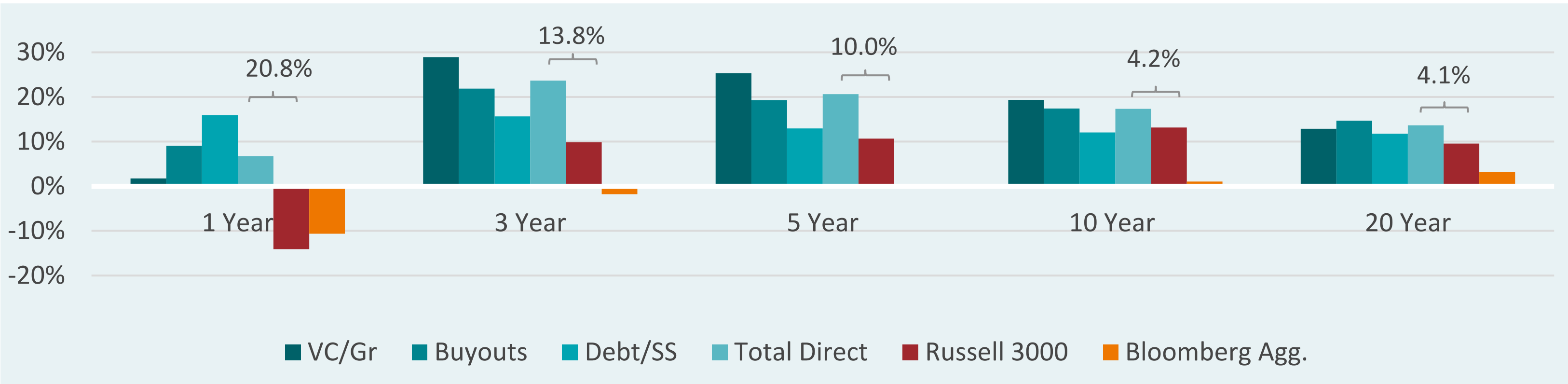
ONE YEAR ENDING DECEMBER



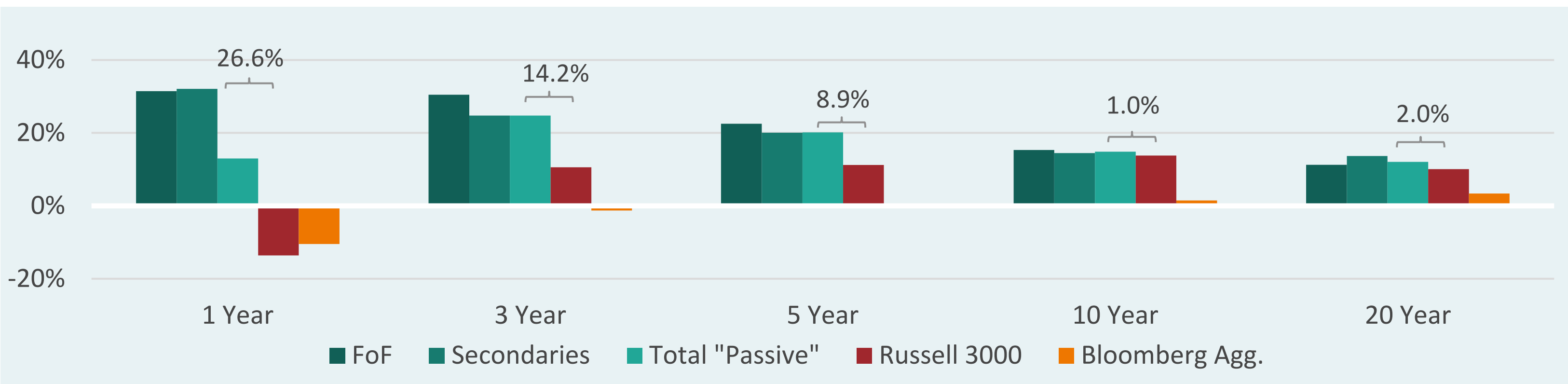
Source: Morningstar, as of 12/31/22

Private equity vs. traditional assets performance

DIRECT PRIVATE EQUITY FUND INVESTMENTS



“PASSIVE” STRATEGIES



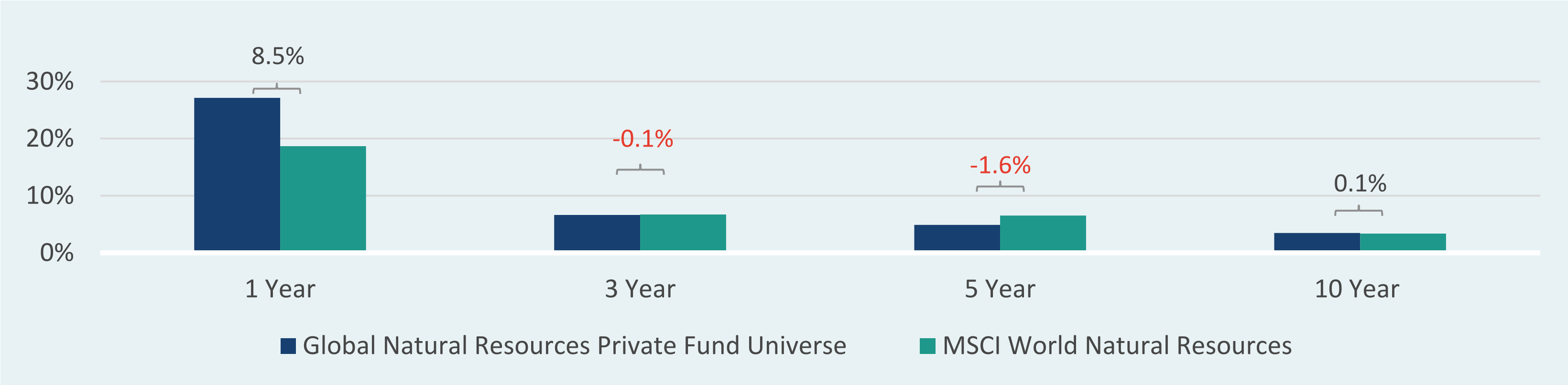
Direct P.E Fund Investments outperformed over all time periods, though elevated short-term outperformance may be transitory due to appraisal lags

“Passive” strategies outperformed over all periods

Sources: Refinitiv PME: U.S. Private Equity Funds sub asset classes as of June 30, 2022. Public Market Equivalent returns resulted from “Total Passive” and Total Direct’s identical cash flows invested into and distributed from respective traditional asset comparable.

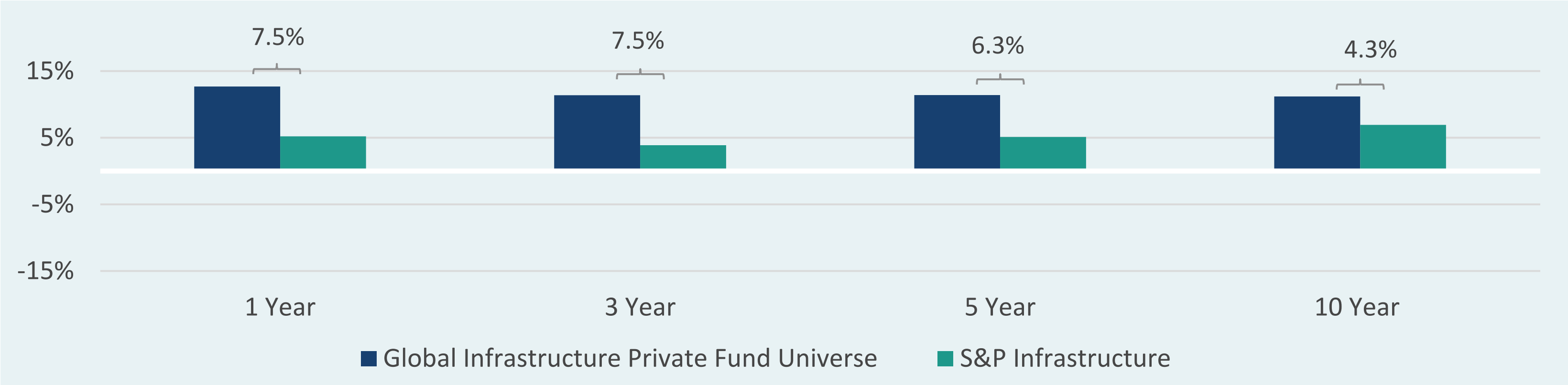
Private vs. liquid real assets performance

GLOBAL NATURAL RESOURCES FUNDS



N.R. funds outperformed the MSCI World Natural Resources benchmark across 1- and 10-year periods

GLOBAL INFRASTRUCTURE FUNDS

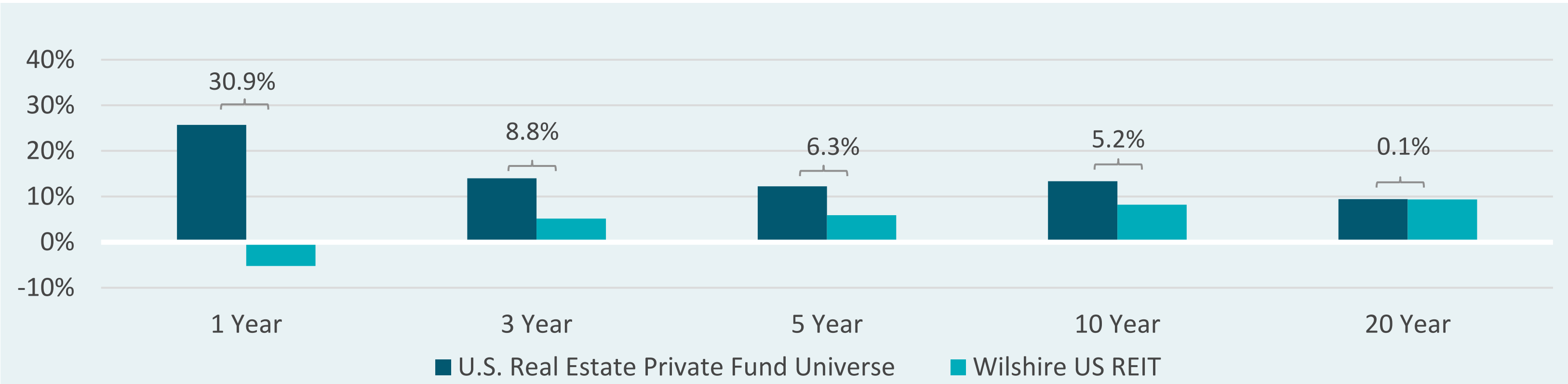


Infra. funds outperformed the S&P Infra. across all periods

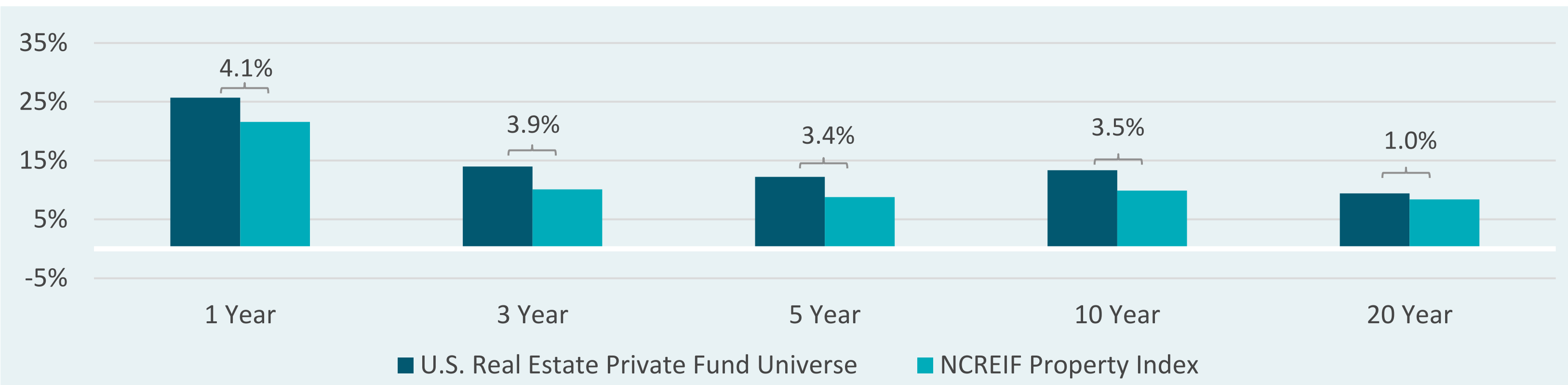
Sources: Refinitiv PME: Global Natural Resources (vintage 1999 and later, inception of MSCI World Natural Resources benchmark) and Global Infrastructure (vintage 2002 and later, inception of S&P Infrastructure benchmark) universes as of June 30, 2022. Public Market Equivalent returns resulted from identical 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 REAL ESTATE FUNDS VS. CORE FUNDS



U.S. Private R.E. funds outperformed the Wilshire U.S. REIT Index across all time periods, though short-term outperformance may be transitory due to appraisal lags

U.S. Private R.E. Funds outperformed across all periods

Sources: Refinitiv PME: U.S. Real Estate universes as of June 30, 2022. 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	(5.8)	7.6	(18.1)	(18.1)	7.7	9.4	12.6
S&P 500 Equal Weighted	(4.7)	11.6	(11.4)	(11.4)	9.0	9.1	12.4
DJ Industrial Average	(4.1)	16.0	(6.9)	(6.9)	7.3	8.4	12.3
Russell Top 200	(6.0)	6.6	(19.8)	(19.8)	7.9	9.9	12.9
Russell 1000	(5.8)	7.2	(19.1)	(19.1)	7.3	9.1	12.4
Russell 2000	(6.5)	6.2	(20.4)	(20.4)	3.1	4.1	9.0
Russell 3000	(5.9)	7.2	(19.2)	(19.2)	7.1	8.8	12.1
Russell Mid Cap	(5.4)	9.2	(17.3)	(17.3)	5.9	7.1	11.0
Style Index							
Russell 1000 Growth	(7.7)	2.2	(29.1)	(29.1)	7.8	11.0	14.1
Russell 1000 Value	(4.0)	12.4	(7.5)	(7.5)	6.0	6.7	10.3
Russell 2000 Growth	(6.4)	4.1	(26.4)	(26.4)	0.6	3.5	9.2
Russell 2000 Value	(6.6)	8.4	(14.5)	(14.5)	4.7	4.1	8.5

FIXED INCOME

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
Bloomberg US TIPS	(1.0)	2.0	(11.8)	(11.8)	1.2	2.1	1.1
Bloomberg US Treasury Bills	0.4	0.9	1.3	1.3	0.7	1.2	0.8
Bloomberg US Agg Bond	(0.5)	1.9	(13.0)	(13.0)	(2.7)	0.0	1.1
Bloomberg US Universal	(0.3)	2.2	(13.0)	(13.0)	(2.5)	0.2	1.3
Duration							
Bloomberg US Treasury 1-3 Yr	0.2	0.7	(3.8)	(3.8)	(0.5)	0.7	0.7
Bloomberg US Treasury Long	(1.7)	(0.6)	(29.3)	(29.3)	(7.4)	(2.2)	0.6
Bloomberg US Treasury	(0.5)	0.7	(12.5)	(12.5)	(2.6)	(0.1)	0.6
Issuer							
Bloomberg US MBS	(0.4)	2.1	(11.8)	(11.8)	(3.2)	(0.5)	0.7
Bloomberg US Corp. High Yield	(0.6)	4.2	(11.2)	(11.2)	0.0	2.3	4.0
Bloomberg US Agency Interm	0.0	0.8	(6.5)	(6.5)	(1.3)	0.4	0.7
Bloomberg US Credit	(0.4)	3.4	(15.3)	(15.3)	(2.9)	0.4	1.8

INTERNATIONAL EQUITY

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Broad Index							
MSCI ACWI	(3.9)	9.8	(18.4)	(18.4)	4.0	5.2	8.0
MSCI ACWI ex US	(0.7)	14.3	(16.0)	(16.0)	0.1	0.9	3.8
MSCI EAFE	0.1	17.3	(14.5)	(14.5)	0.9	1.5	4.7
MSCI EM	(1.4)	9.7	(20.1)	(20.1)	(2.7)	(1.4)	1.4
MSCI EAFE Small Cap	1.1	15.8	(21.4)	(21.4)	(0.9)	(0.0)	6.2
Style Index							
MSCI EAFE Growth	(1.1)	15.0	(22.9)	(22.9)	0.5	2.5	5.6
MSCI EAFE Value	1.3	19.6	(5.6)	(5.6)	0.6	0.2	3.5
Regional Index							
MSCI UK	(0.4)	17.0	(4.8)	(4.8)	0.3	1.0	3.1
MSCI Japan	0.3	13.2	(16.6)	(16.6)	(1.0)	0.2	5.6
MSCI Euro	(0.5)	23.0	(17.2)	(17.2)	0.5	0.8	4.3
MSCI EM Asia	(0.8)	10.8	(21.1)	(21.1)	(1.3)	(0.6)	3.6
MSCI EM Latin American	(4.0)	5.7	8.9	8.9	(4.8)	(1.1)	(2.1)

OTHER

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Index							
Bloomberg Commodity	(2.4)	2.2	16.1	16.1	12.7	6.4	(1.3)
Wilshire US REIT	(5.6)	4.0	(26.8)	(26.8)	(0.5)	3.4	6.3
CS Leveraged Loans	0.4	2.3	(1.1)	(1.1)	2.3	3.2	3.8
S&P Global Infrastructure	(2.2)	11.0	(0.2)	(0.2)	1.7	3.9	6.5
Alerian MLP	(4.7)	10.5	31.4	31.4	8.3	3.6	2.1
Regional Index							
JPM EMBI Global Div	0.3	8.1	(17.8)	(17.8)	(5.3)	(1.3)	1.6
JPM GBI-EM Global Div	2.2	8.5	(11.7)	(11.7)	(6.1)	(2.5)	(2.0)
Hedge Funds							
HFRI Composite	(0.4)	2.2	(4.3)	(4.3)	5.7	4.4	4.7
HFRI FOF Composite	0.9	2.4	(4.7)	(4.7)	3.9	3.2	3.6
Currency (Spot)							
Euro	3.7	8.9	(6.2)	(6.2)	(1.7)	(2.3)	(2.1)
Pound Sterling	1.0	7.8	(11.2)	(11.2)	(3.2)	(2.3)	(3.0)
Yen	5.8	9.7	(12.7)	(12.7)	(6.3)	(3.1)	(4.1)

Source: Morningstar, HFRI, as of 12/31/22.

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.*

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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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