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PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS

PERIOD ENDING: MARCH 31, 2023

Total Fund Review

Alameda County Employees’ Retirement Association – Non-confidential

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Verus

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U.S. economics summary

— Real GDP increased at a 2.7% rate in the fourth quarter (0.9% year-over-year). The U.S. economy in Q4 was supported by mild but positive growth across most aspects of activity. First quarter GDP is expected to come in at 2.2%, according to the Atlanta Fed GDPNow forecast, as of April 10th.

— The inflation picture improved further. March headline inflation came in at 5.0% year-over-year—the lowest since Q2 2021. Core inflation has remained stubbornly high at 5.6% year-over-year. Many of the goods and services prices that initially contributed to high inflation have moderated or fallen.

— U.S. real personal consumption expenditures were modest in February at 2.5% year-over-year. Household purchases of services continued to climb, while goods purchases were flat. Purchasing trends around goods and services appear to have normalized for the first time since the pandemic.

— Although hiring activity may be slowing and layoffs are occurring in places, the labor participation rate is rebounding as workers who had left the job market during the pandemic are once again seeking employment.

— Consumer sentiment remained weak in Q1. According to the University of Michigan, households increasingly expect a recession in the near-term, especially lower income and younger Americans. Inflation fears have reportedly subsided, with expectations for 3.6% inflation over the next year.

— The U.S. housing market has faced a harsh winter season, as high prices and a significant jump in mortgage interest rates severely crimped demand. Existing home sales are as weak as during the lows of 2009-2011 following the U.S. housing bubble.

	Most Recent	**12 Months Prior**
Real GDP *(YoY)*	0.9% *12/31/22*	5.7% *12/31/21*
Inflation *(CPI YoY, Core)*	5.6% *3/31/23*	8.5% *3/31/22*
Inflation *(CPI YoY, Headline)*	5.0% *3/31/23*	8.5% *3/31/22*
Expected Inflation *(5yr-5yr forward)*	2.2% *3/31/23*	2.4% *3/31/22*
Fed Funds Target Range	4.75% – 5.00% *3/31/23*	0.25% – 0.50% *3/31/22*
10-Year Rate	3.47% *3/31/23*	2.34% *3/31/22*
U-3 Unemployment	3.5% *3/31/23*	3.6% *3/31/22*
U-6 Unemployment	6.7% *3/31/23*	6.9% *3/31/22*

International economics summary

— Developed economies have experienced a sharp slowdown in growth. The IMF forecasts developed economy GDP to fall from 2.7% in 2022 to 1.3% in 2023. The deteriorating outlook was attributed to monetary tightening by central banks, as well as Russia's invasion of Ukraine. Meanwhile, emerging market economic growth is expected to accelerate in 2023, rising from 3.9% to 4.0%.

— Inflation trends varied by country during the quarter but seem to suggest broad moderation. European nations continue to cope with very high inflation rates—much of which have been driven by surging energy costs. In many countries, higher energy prices are contributing to half of official inflation figures.

— Developed central banks, in response to inflation, have carried on with their tightening cycles. Both the European Central Bank and Bank of England raised rates in March, with the ECB increasing their Deposit Facility Rate by 50 bps to 3.00%, while the BOE implemented a 25 bps hike, bringing their policy rate to 4.25%.

— February 24th marked the one-year anniversary of Russia's invasion of Ukraine. The war has created much uncertainty around Europe's economic outlook, and led Finland to apply, and to be accepted as, a NATO member.

— China made progress on its reopening in Q1, as the country aims to ramp up economic activity following nearly three-years of lockdowns. Mobility data has picked up, while gauges of manufacturing and non-manufacturing activity have moved into expansionary territory. March non-manufacturing PMIs came in at 58.2—the highest level since 2011.

Area	**GDP (Real, YoY)**	**Inflation (CPI, YoY)**	**Unemployment**
United States	0.9% *12/31/22*	5.0% *3/31/23*	3.5% *3/31/23*
Eurozone	1.8% *12/31/22*	6.9% *3/31/23*	6.6% *2/28/23*
Japan	0.4% *12/31/22*	3.3% *3/31/23*	2.5% *2/28/23*
BRICS Nations	2.5% *12/31/22*	2.9% *3/31/23*	5.2% *12/31/21*
Brazil	1.9% *12/31/22*	4.7% *3/31/23*	8.5% *3/31/23*
Russia	(2.7%) *12/31/22*	3.5% *3/31/23*	3.5% *2/28/23*
India	4.4% *12/31/22*	5.7% *3/31/23*	7.8% *3/31/23*
China	2.9% *12/31/22*	0.7% *3/31/23*	5.6% *2/28/23*

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

Equity environment

— Global equities delivered another strong quarter in Q1 (MSCI ACWI +7.3%). A variety of risks are stacking up that could weigh on additional gains, including potential recession in many markets, persistent inflation problems, and tightening credit conditions.

— The outlook for domestic stocks remains challenged, especially against the backdrop of high inflation and expectations for slowing economic growth. Earnings growth has started to decline, with year-over-year S&P 500 earnings falling -4.9% in Q4 2022, the first decline seen since Q2 2020.

— The effects of currency volatility on portfolio performance was mixed during the first quarter. Over the past full year, currency movement led to a -8.5% loss for investors with unhedged exposure to international developed equity (MSCI EAFE unhedged -1.4%, MSCI EAFE hedged +7.1%), led by a -12.6% loss in Japanese equities (TOPIX unhedged -3.1%, TOPIX hedged +9.5%). We continue to believe that a thoughtful currency program may allow investors to reduce their total portfolio risk while also increasing long-term expected returns.

— Growth stocks delivered strong outperformance in the first quarter (Russell 1000 Growth +14.4% vs. Russell 1000 Value +1.0%), effectively reversing value's rally in Q4 2022. This divergence in style behavior appears to be, once again, mostly a result of relative sector returns.

— The CBOE VIX implied volatility index surged in March on the news of Silicon Valley Bank's failure, and the possibility of contagion across the financial sector, but ended the quarter at 18.7%—near the longer-term average.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	7.5%		(7.7%)	
U.S. Small Cap (Russell 2000)	2.7%		(11.6%)	
U.S. Equity (Russell 3000)	7.2%		(8.6%)	
U.S. Large Value (Russell 1000 Value)	1.0%		(5.9%)	
US Large Growth (Russell 1000 Growth)	14.4%		(10.9%)	
Global Equity (MSCI ACWI)	7.3%	7.3%	(7.4%)	(4.8%)
International Large (MSCI EAFE)	8.5%		(1.4%)	
China (MSCI China)	4.7%		(4.7%)	
Emerging Markets (MSCI Emerging Markets)	4.0%	3.8%	(10.7%)	(6.6%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/23

Fixed income environment

— The 10-year U.S. Treasury yield fell during the quarter from 3.88% to 3.47%. It appears increasingly likely that the U.S. has already reached, and is beyond, *peak interest rates*. The looming possibility of recession, effects of banking stress, and implications from the Federal Reserve that only one interest rate hike may remain, suggests that bond yields may have more room to fall than to rise.

— Silicon Valley Bank (SVB) failed and was transitioned to government ownership on March 10th. SVB is among the top 20 largest banks in the United States, with approximately 1% of all U.S. domestic bank deposits. New York regulators closed Signature Bank shortly thereafter, and more failures may follow. Banking stress has implications for the future actions of the Federal Reserve and for the economy.

— During the first quarter, fixed income markets delivered strong positive returns despite concerns related to the banking sector and the potential for additional Fed rate hikes. High yield credit performance led the way at 3.6%, followed by 3.5% from investment grade credit and 3.3% from bank loans.

— U.S. yield curve inversion reached even more extreme levels during Q1. The 10-year 2-year yield spread (short-term interest rates being higher than long-term interest rates) reached ~107 bps on March 8th, suggesting an incoming recession.

— Uncertainty around the path of Federal Reserve rate hikes and whether inflation is under control has contributed to considerable volatility in bond markets. As indicated by the ICE BofA "MOVE" Index, which measures the volatility priced into U.S. Treasury bonds, domestic and international banking stress further added to fixed income market choppiness in the first quarter.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	3.0%	(4.8%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	2.9%	(4.6%)
U.S. Treasuries (Bloomberg U.S. Treasury)	3.0%	(4.5%)
U.S. Long Treasuries (Bloomberg U.S. Long Treasury)	6.2%	(16.0%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	3.6%	(3.3%)
Bank Loans (S&P/LSTA Leveraged Loan)	3.3%	2.5%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	5.2%	(0.7%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	1.9%	(6.9%)
Mortgage-Backed Securities (Bloomberg MBS)	2.5%	(4.9%)

Source: Bloomberg, as of 3/31/23

Public real assets environment

— REITs – After rallying to begin the year, REITs and stocks pulled back on uncertainty about the stability of the banking system, followed by a rebound in March as fears abated. Self-storage and industrial REITs closed the first quarter with the highest total returns. On the other hand, office REIT stocks tanked during the first quarter (more than half of the 25 worst-performing REIT stocks came from the office sector).

— Listed Infrastructure – In the first quarter of 2023, energy prices stabilized, amid a warmer-than-expected winter and a continuing re-emergence of mobility lifting the airports and toll roads sectors. Bond yields came off recent highs, supporting longer-duration assets such as renewables, which performed well. Lower yields have also been positive for communication towers, though there has been some broad market pressure on real estate.

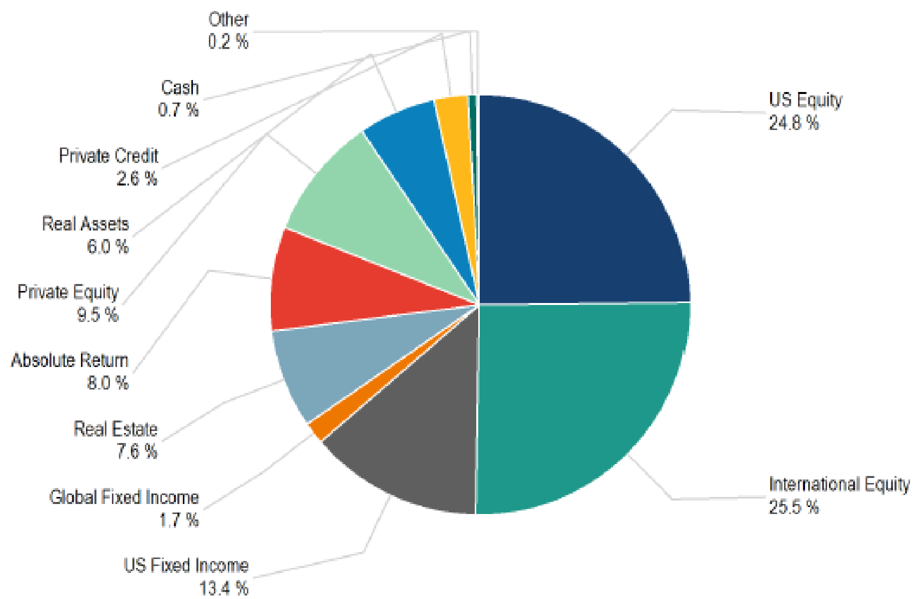
— Commodities – Commodities lost ground on both the quarter and the year, while during Q1, Energy and livestock were the worst-performing subsectors, while precious metals and industrial metals achieved price gains. Within energy, prices for natural gas, gas oil and heating oil were all sharply lower. In precious metals, gold achieved a robust price gain, while silver achieved a more modest price uplift. Within industrial metals, the price of nickel was sharply lower in the first quarter, while the decline in the price of lead was more muted. Copper and aluminum prices both advanced in the quarter.

— TIPS - The Bloomberg U.S. TIPS index returned 3.3% in the most recent quarter and is down 6.1% year-over-year. This comes against a backdrop of continued elevated inflation, low unemployment and the possibility of a recession looming on the horizon.

	QTD Total Return	1 Year Total Return
REITs (FTSE EPRA/NAREIT Global)	0.8%	(20.3%)
Listed Infrastructure (S&P Global Infrastructure)	3.9%	(3.45)%
Commodities (Bloomberg Commodity Index)	(5.4)%	(12.5)%
TIPS (Bloomberg US TIPS)	3.3%	(6.1%)

Total Fund review

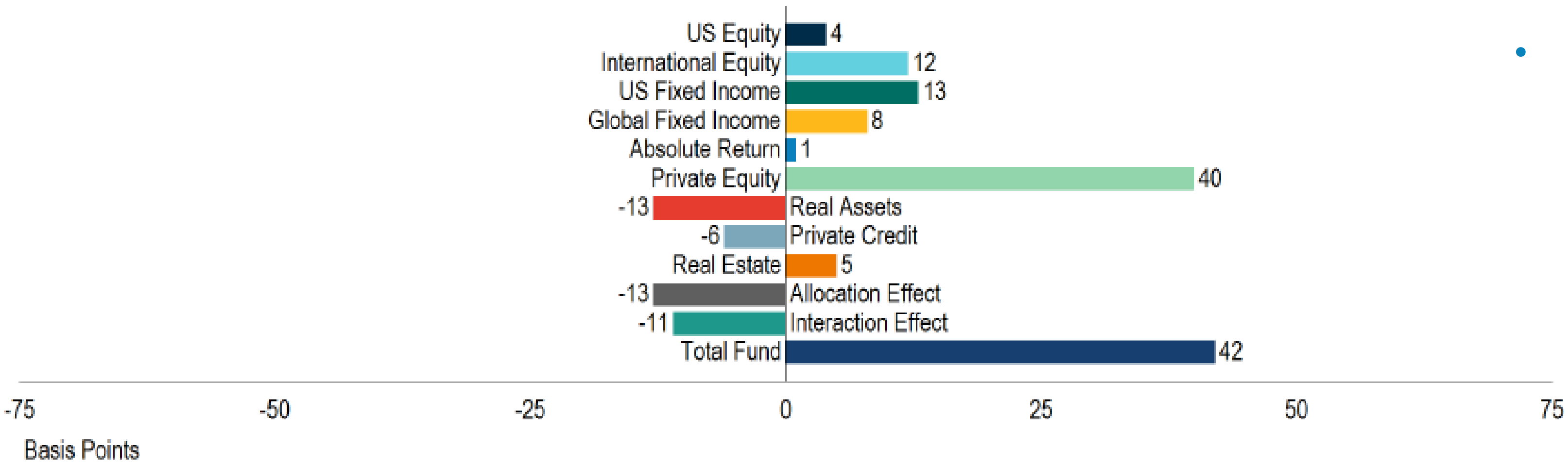
Asset allocation



- Public markets comprise ~75% of ACERA's assets
- Majority of public markets assets are invested in equities (~50%)

	Current Balance ($)	Current Allocation (%)	Policy (%)	Difference (%)	Within IPS Range?
US Equity	2,639,485,722	24.8	24.0	0.8	Yes
International Equity	2,720,213,440	25.5	24.0	1.5	Yes
US Fixed Income	1,429,262,662	13.4	12.0	1.4	Yes
Global Fixed Income	185,711,475	1.7	2.0	-0.3	Yes
Real Estate	813,219,591	7.6	9.0	-1.4	Yes
Absolute Return	852,044,092	8.0	8.0	0.0	Yes
Private Equity	1,008,111,320	9.5	11.0	-1.5	Yes
Real Assets	635,386,575	6.0	6.0	0.0	Yes
Private Credit	274,490,948	2.6	4.0	-1.4	Yes
Cash	73,705,070	0.7	0.0	0.7	Yes
Other	20,919,298	0.2	0.0	0.2	Yes
Total	**10,652,550,193**	**100.0**	**100.0**		

Total Fund attribution
9 Months, Ending as of 3/31/23



- Main source of value-add: Selection within Private Equity

	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	9.93%	9.75%	0.19%	0.04%	-0.08%	0.00%	-0.03%
International Equity	10.58%	10.20%	0.38%	0.12%	-0.04%	0.01%	0.09%
US Fixed Income	0.93%	-0.09%	1.02%	0.13%	-0.14%	0.02%	0.01%
Global Fixed Income	2.54%	-0.71%	3.25%	0.08%	0.01%	-0.02%	0.07%
Absolute Return	2.08%	2.10%	-0.02%	0.01%	-0.04%	-0.02%	-0.05%
Private Equity	-3.96%	-6.76%	2.80%	0.40%	0.13%	-0.08%	0.44%
Real Assets	4.36%	5.89%	-1.53%	-0.13%	0.05%	-0.04%	-0.12%
Private Credit	7.10%	8.86%	-1.77%	-0.06%	-0.08%	0.02%	-0.12%
Real Estate	-7.02%	-7.50%	0.48%	0.05%	0.07%	-0.01%	0.11%
Total	**4.81%**	**4.39%**	**0.42%**	**0.65%**	**-0.13%**	**-0.11%**	**0.42%**

Total Fund and composite performance

	Market Value ($)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Fund	**10,652,550,193**	**100.00**	**4.47**	**10.16**	**-4.53**	**12.57**	**6.44**	**8.47**	**7.74**	**9.33**	**Sep-85**
Policy Index			*3.86*	*9.90*	*-5.11*	*12.36*	*6.77*	*8.50*	*8.09*	*9.62*	*Sep-85*
Total Fund w/o Overlay	**10,631,630,895**	**99.80**	**4.44**	**10.07**	**-4.45**	**12.62**	**6.46**	**8.49**	**7.75**	**9.34**	**Sep-85**
US Equity	**2,639,485,722**	**24.78**	**7.02**	**14.87**	**-8.52**	**18.79**	**10.22**	**12.56**	**11.80**	**11.53**	**Sep-85**
Russell 3000			*7.18*	*14.88*	*-8.58*	*18.48*	*10.45*	*11.99*	*11.73*	*11.10*	*Sep-85*
International Equity	**2,720,213,440**	**25.54**	**8.41**	**23.97**	**-3.76**	**13.07**	**3.44**	**7.14**	**5.60**	**7.78**	**Dec-90**
MSCI ACWI ex USA IMI Gross			*6.70*	*21.88*	*-5.34*	*12.72*	*2.84*	*6.32*	*4.76*	*6.02*	*Dec-90*
Total Fixed Income	**1,614,974,137**	**15.16**	**3.39**	**6.23**	**-5.21**	**0.62**	**1.38**	**2.42**	**2.53**	**6.61**	**Sep-86**
Fixed Income Blend			*3.14*	*6.03*	*-5.86*	*-2.39*	*0.36*	*0.87*	*1.23*	*5.63*	*Sep-86*
US Fixed Income	**1,429,262,662**	**13.42**	**3.26**	**5.45**	**-4.45**	**-0.23**	**1.96**	**2.56**	**2.82**	**6.54**	**Sep-86**
Bloomberg US Aggregate TR			*2.96*	*4.89*	*-4.78*	*-2.77*	*0.90*	*0.88*	*1.36*	*5.46*	*Sep-86*
Global Fixed Income*	**185,711,475**	**1.74**	**4.41**	**12.60**	**-11.47**	**1.25**	**-1.50**	**1.07**	**1.05**	**5.76**	**Nov-01**
FTSE WGBI TR			*3.51*	*7.47*	*-9.55*	*-5.29*	*-2.35*	*-1.06*	*-0.60*	*3.10*	*Nov-01*

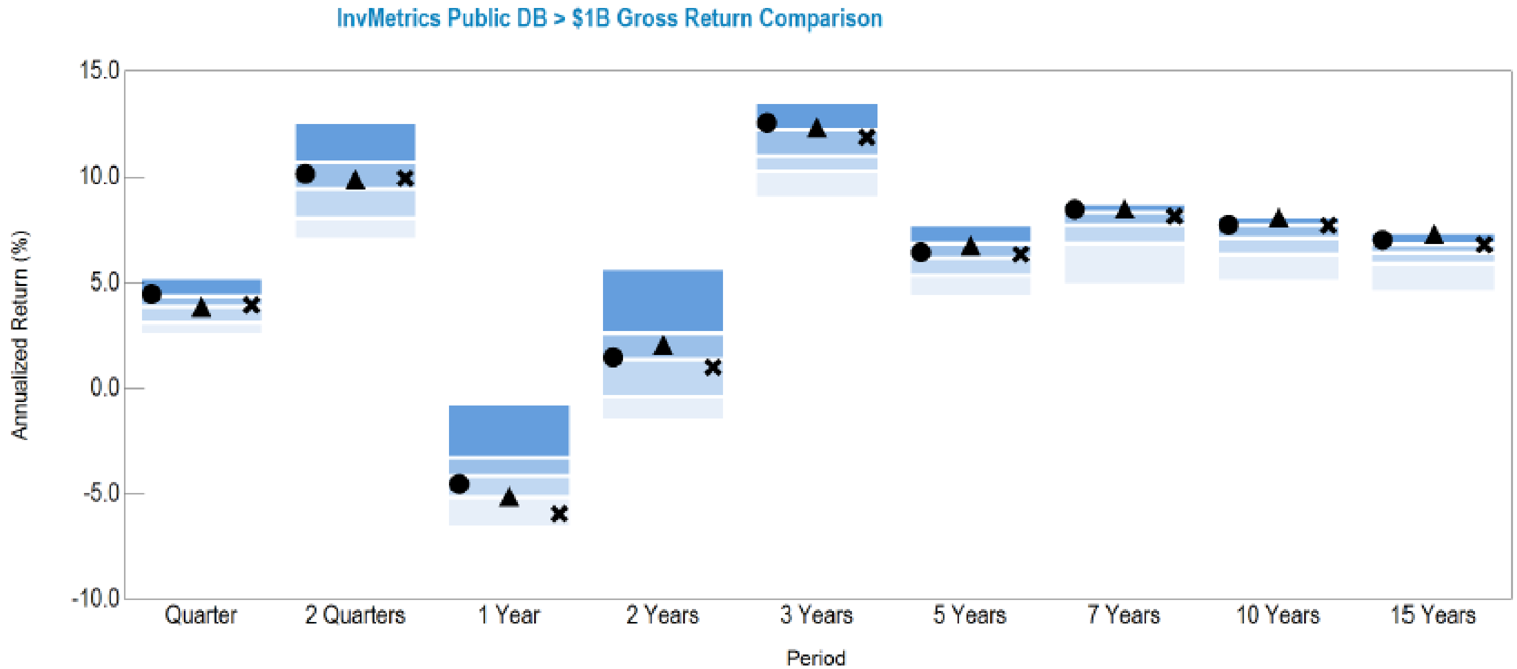
- Total Fund return outperformed Policy Index return over quarter ended 3/31/23
- Biggest positive contributors to outperformance for the quarter were International Equity, Fixed Income, Private Equity and Real Estate. Private Credit was only meaningful negative performance contributor for the quarter.

Total Fund and composite performance (continued)

	Market Value ($)	% of Portfolio	3 Mo (%)	6 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Absolute Return	852,044,092	8.00	-0.23	-0.99	4.15	10.17	3.46	4.30	4.00	3.91	Sep-11
Absolute Return Blend			0.72	2.46	-1.93	7.17	3.10	3.59	3.77	3.84	Sep-11
Private Equity	1,008,111,320	9.46	1.90	2.05	-4.71	17.60	15.91	15.42	15.83	7.00	Nov-08
Private Equity Blend			0.56	-1.37	-8.17	17.56	15.69	16.99	16.05	17.29	Nov-08
Real Assets	635,386,575	5.96	1.69	8.88	-1.96	19.35	4.37	4.25	-1.10	-0.92	Sep-11
Real Asset Blend			1.56	13.31	-4.77	21.17	6.77	7.38	6.45	6.26	Sep-11
Private Credit	274,490,948	2.58	3.06	4.99	7.11	12.25	--	--	--	6.39	Oct-19
S&P/LSTA Leveraged Loan Index +1.75%			3.67	6.93	4.47	10.46	5.47	6.44	5.59	5.65	Oct-19
Cash	73,705,070	0.69	0.93	1.96	2.31	1.00	1.30	1.19	0.85	2.95	Sep-85
91 Day T-Bills			1.07	1.93	2.50	0.88	1.32	1.17	0.83	3.04	Sep-85
Real Estate	813,219,591	7.63	-2.91	-8.11	-3.01	8.62	7.77	8.03	9.97	7.19	Mar-86
Real Estate Blend			-3.17	-7.98	-3.09	8.41	7.51	7.71	9.45	7.88	Mar-86
Overlay	20,919,298										

- Despite outperforming over the 6 months ending 3/31/23, Private Equity continues to lag the benchmark return on a Time Weighted Return ("TWR") basis since-inception. However, Internal Rate of Return ("IRR") is appropriate return metric for all private markets. Private Equity since inception IRR is 16.0% versus 14.1% for its benchmark as of 3/31/23.
- Although Real Assets continues to lag its benchmark since inception, more recent performance has closed the gap since the current program was implemented in 2017.

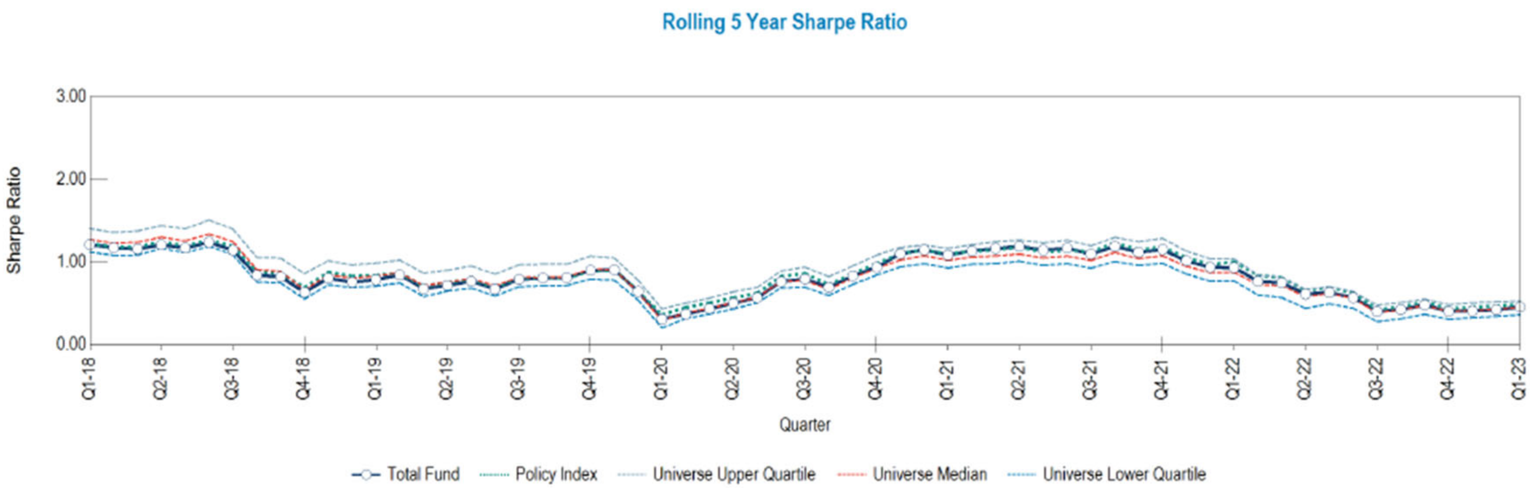
Peer universe comparison

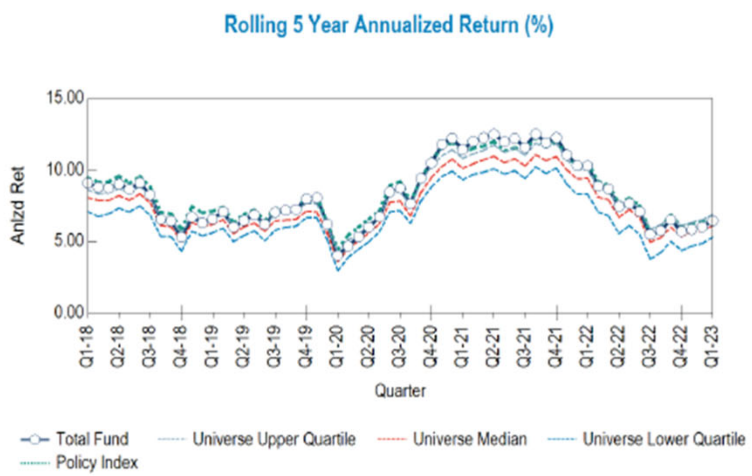


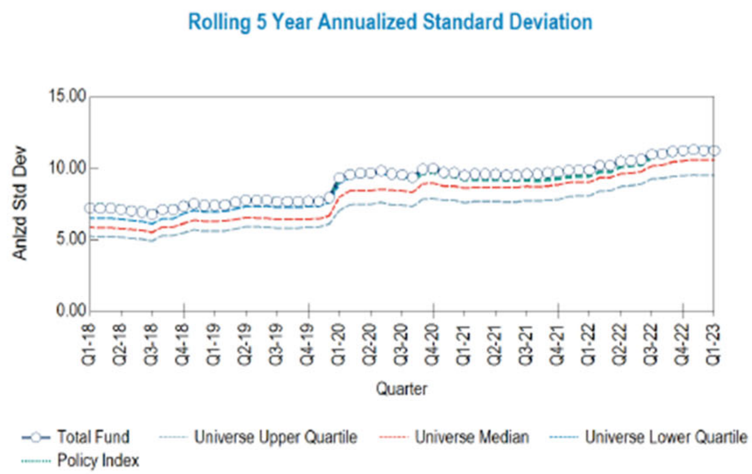
Return (Rank)	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years		15 Years	
5th Percentile	5.23		12.60		-0.75		5.66		13.52		7.74		8.74		8.10		7.37	
25th Percentile	4.37		10.73		-3.26		2.61		12.26		6.87		8.34		7.75		6.83	
Median	3.87		9.46		-4.14		1.40		11.00		6.19		7.72		7.12		6.45	
75th Percentile	3.16		8.06		-5.16		-0.37		10.31		5.36		6.88		6.34		5.92	
95th Percentile	2.55		7.04		-6.57		-1.52		9.03		4.33		4.90		5.08		4.58	
# of Portfolios	70		69		68		68		68		68		67		62		60	
● Total Fund	4.47	(21)	10.16	(33)	-4.53	(60)	1.47	(49)	12.57	(20)	6.44	(44)	8.47	(18)	7.74	(26)	7.03	(11)
▲ Policy Index	3.86	(51)	9.90	(46)	-5.11	(75)	2.06	(35)	12.36	(24)	6.77	(30)	8.50	(15)	8.09	(7)	7.29	(6)
✖ Allocation Index	3.94	(43)	9.95	(44)	-5.94	(89)	1.00	(54)	11.89	(34)	6.34	(47)	8.15	(32)	7.71	(29)	6.80	(27)

- In most periods, ACERA compares favorably vs. peers (i.e., well above median)

Risk-adjusted trend vs. peers



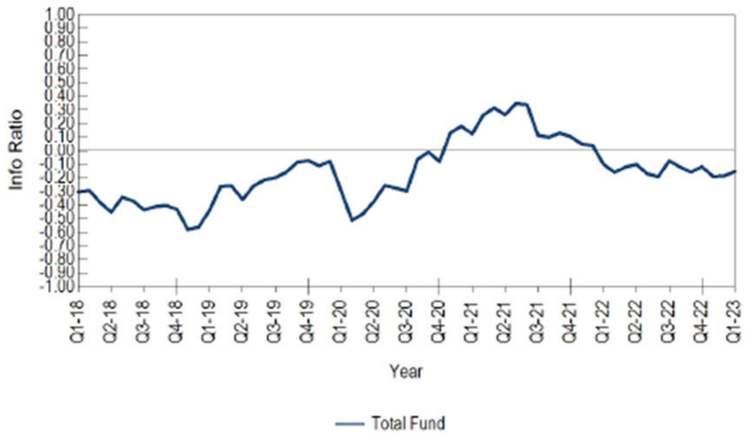




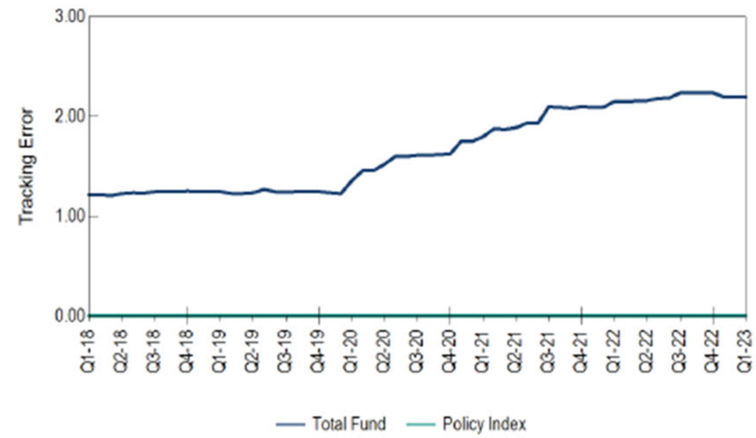
- ACERA's risk-adjusted return ratio (Sharpe) has been consistently at, or near, peer median.
- Rolling 5-year returns have been on an upswing since Q3, 2022
- However, total fund volatility remains elevated relative to peers

Trend in risk-adjusted metrics

Rolling 5 Year Information Ratio

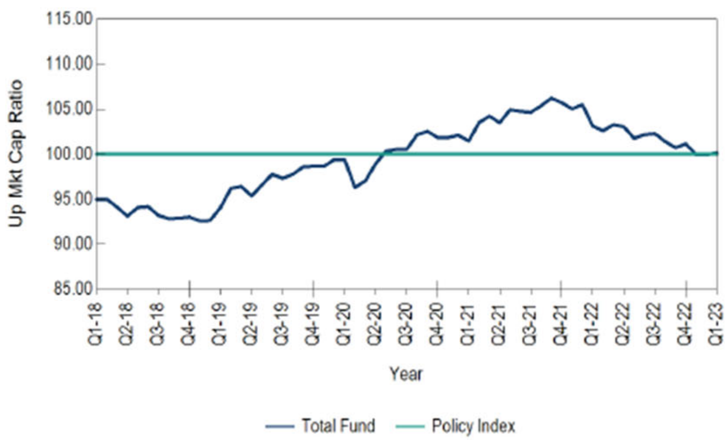


Rolling 5 Year Tracking Error

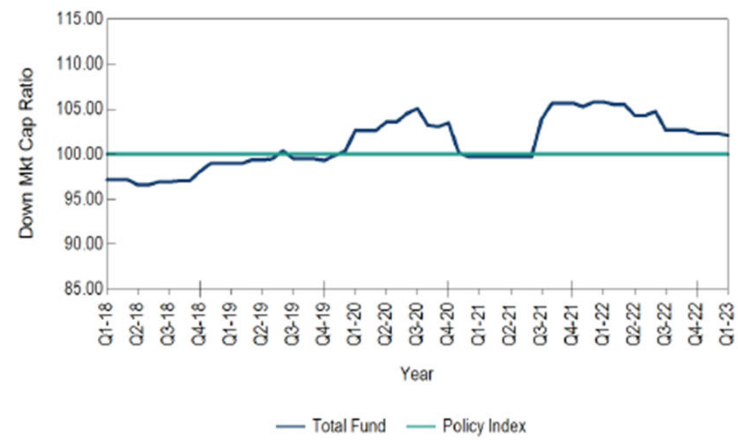


Risk-adjusted active returns have trended down recently as excess risk as increased

Rolling 5 Year Up Market Capture Ratio (%)



Rolling 5 Year Down Market Capture Ratio (%)



Downside capture has improved gradually while Up market capture has somewhat deteriorated recently

Watch List

Manager	Date on Watchlist	Reason	Product Inception Date
Mondrian	9/30/22	Since inception return of 4.77% vs. benchmark (MSCI ACWI ex-US) return of 5.37% and MSCI ex-US Value return of 4.98%; 10-year gross-of-fees return (2.53%) places Mondrian in 86th percentile of ACWI ex-US Large Cap Value Equity Universe. Firm has consistently been in bottom 2 deciles of that universe over cumulative time series.	November, 2003
Templeton	9/30/22	Since inception return of 2.69% vs benchmark (MSCI ACWI ex-US Small Cap) return of 2.93% and MSCI ACWI ex-US Value return of 2.74%.; 10-year return gross-of fees return (4.13%) places Templeton in the 97th percentile of ACWI ex-US Small Cap managers.	April, 2011
TCW	3/1/23	Underperformance and organizational change (recent retirements and team shift). Underperformance vs. Russell 1000 Growth benchmark occurred over 1, 3, 5, and 10-year periods, placing the firm in the lowest quartile versus peers over majority of cumulative time periods.	June, 1999

Appendix

Glossary

Active Return (aka Excess Return) – The difference between the active manager's return and the return on the manager's benchmark index.

Active Risk (aka Tracking Error) – the volatility (standard deviation) of active return.

Attribution – A process by which sources of excess/active return (e.g. active decisions by investment management professionals) are decomposed into the following effects:

- **Allocation** – The amount of excess returns attributable to allocation decisions amongst various asset classes.
- **Selection** – The amount of excess return attributable to selection of individual investments/managers within asset classes.
- **Interaction** – The amount of excess return attributable to both allocation and selection decisions acting in concert with one another.

Sharpe Ratio - A measure of that explains the return of an investment compared to its risk. The Sharpe Ratio indicates excess portfolio return for each unit of risk over the risk free rate (usually short-term Treasuries or LIBOR) per unit of volatility. The higher the Sharpe Ratio, the greater its risk-adjusted return.

Standard Deviation - A measure of volatility, or risk. Measures risk by indicating how far from the average, or mean, return one is likely to fall in any given time period. The rules of statistics dictate that you will fall within 1 standard deviation of the mean 2/3 of the time and within 2 standard deviations 95% of the time. 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%.

Time Weighted Return – A measure of the compound rate of growth in a portfolio, which eliminates the distorting effects of growth rates created by inflows and outflows of money.

Glossary (cont.)

Upside Market Capture – A measure of the manager's performance in up markets relative to the market itself. A value of 110 suggests the manager performs ten percent better than the market when the market is up during the selected time period. The return for the market for each quarter is considered an up market if it is greater than or equal to zero. The Upside Capture Ratio is calculated by dividing the return of the manager during the up market periods by the return of the market for the same period. Generally, the higher the UMC Ratio, the better (If the manager's UMC Ratio is negative, it means that during that specific time period, the manager's return for that period was actually negative).[1]

Downside Market Capture - A measure of the manager's performance in down markets relative to the market itself. A value of 90 suggests the manager's loss is only nine tenths of the market's loss during the selected time period. A market is considered down if the return for the benchmark is less than zero. The Downside Capture Ratio is calculated by dividing the return of the manager during the down market periods by the return of the market during the same periods. Generally, the lower the DMC Ratio, the better (If the manager's DMC Ratio is negative, it means that during that specific time period, the manager's return for that period was actually positive). [1]

1 – Source: eVestment

Glossary (cont.)

Information Ratio – the ratio of active return to active risk, i.e., how much excess return an active manager delivers per unit of tracking error. A common basis of comparison in manager searches.

$$Active\ Return = (R_P - R_B)$$

The return difference between the portfolio return and the benchmark return

$$Active\ Risk = \sigma(R_P - R_B)$$

The volatility of the Active Return

$$Information\ Ratio = \frac{Active\ Return}{Active\ Risk}$$

Rearranging the formula…

$$(Information\ Ratio)\ x\ (Active\ Risk) = Active\ Return$$

Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

PERIOD ENDING: MARCH 31, 2023

Investment Performance Review for

Alameda County Employees’ Retirement Association

U.S. economics summary

- Real GDP increased at a 2.7% rate in the fourth quarter (0.9% year-over-year). The U.S. economy in Q4 was supported by mild but positive growth across most aspects of activity. First quarter GDP is expected to come in at 2.2%, according to the Atlanta Fed GDPNow forecast, as of April 10th.
- The inflation picture improved further. March headline inflation came in at 5.0% year-over-year—the lowest since Q2 2021. Core inflation has remained stubbornly high at 5.6% year-over-year. Many of the goods and services prices that initially contributed to high inflation have moderated or fallen.
- U.S. real personal consumption expenditures were modest in February at 2.5% year-over-year. Household purchases of services continued to climb, while goods purchases were flat. Purchasing trends around goods and services appear to have normalized for the first time since the pandemic.
- Although hiring activity may be slowing and layoffs are occurring in places, the labor participation rate is rebounding as workers who had left the job market during the pandemic are once again seeking employment.
- Consumer sentiment remained weak in Q1. According to the University of Michigan, households increasingly expect a recession in the near-term, especially lower income and younger Americans. Inflation fears have reportedly subsided, with expectations for 3.6% inflation over the next year.
- The U.S. housing market has faced a harsh winter season, as high prices and a significant jump in mortgage interest rates severely crimped demand. Existing home sales are as weak as during the lows of 2009-2011 following the U.S. housing bubble.

	Most Recent	**12 Months Prior**
Real GDP *(YoY)*	0.9% *12/31/22*	5.7% *12/31/21*
Inflation *(CPI YoY, Core)*	5.6% *3/31/23*	8.5% *3/31/22*
Inflation *(CPI YoY, Headline)*	5.0% *3/31/23*	8.5% *3/31/22*
Expected Inflation *(5yr-5yr forward)*	2.2% *3/31/23*	2.4% *3/31/22*
Fed Funds Target Range	4.75% – 5.00% *3/31/23*	0.25% – 0.50% *3/31/22*
10-Year Rate	3.47% *3/31/23*	2.34% *3/31/22*
U-3 Unemployment	3.5% *3/31/23*	3.6% *3/31/22*
U-6 Unemployment	6.7% *3/31/23*	6.9% *3/31/22*

International economics summary

— Developed economies have experienced a sharp slowdown in growth. The IMF forecasts developed economy GDP to fall from 2.7% in 2022 to 1.3% in 2023. The deteriorating outlook was attributed to monetary tightening by central banks, as well as Russia's invasion of Ukraine. Meanwhile, emerging market economic growth is expected to accelerate in 2023, rising from 3.9% to 4.0%.

— Inflation trends varied by country during the quarter but seem to suggest broad moderation. European nations continue to cope with very high inflation rates—much of which have been driven by surging energy costs. In many countries, higher energy prices are contributing to half of official inflation figures.

— Developed central banks, in response to inflation, have carried on with their tightening cycles. Both the European Central Bank and Bank of England raised rates in March, with the ECB increasing their Deposit Facility Rate by 50 bps to 3.00%, while the BOE implemented a 25 bps hike, bringing their policy rate to 4.25%.

— February 24th marked the one-year anniversary of Russia's invasion of Ukraine. The war has created much uncertainty around Europe's economic outlook, and led Finland to apply, and to be accepted as, a NATO member.

— China made progress on its reopening in Q1, as the country aims to ramp up economic activity following nearly three-years of lockdowns. Mobility data has picked up, while gauges of manufacturing and non-manufacturing activity have moved into expansionary territory. March non-manufacturing PMIs came in at 58.2—the highest level since 2011.

Area	**GDP (Real, YoY)**	**Inflation (CPI, YoY)**	**Unemployment**
United States	0.9% *12/31/22*	5.0% *3/31/23*	3.5% *3/31/23*
Eurozone	1.8% *12/31/22*	6.9% *3/31/23*	6.6% *2/28/23*
Japan	0.4% *12/31/22*	3.3% *3/31/23*	2.5% *2/28/23*
BRICS Nations	2.5% *12/31/22*	2.9% *3/31/23*	5.2% *12/31/21*
Brazil	1.9% *12/31/22*	4.7% *3/31/23*	8.5% *3/31/23*
Russia	(2.7%) *12/31/22*	3.5% *3/31/23*	3.5% *2/28/23*
India	4.4% *12/31/22*	5.7% *3/31/23*	7.8% *3/31/23*
China	2.9% *12/31/22*	0.7% *3/31/23*	5.6% *2/28/23*

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

Equity environment

— Global equities delivered another strong quarter in Q1 (MSCI ACWI +7.3%). A variety of risks are stacking up that could weigh on additional gains, including potential recession in many markets, persistent inflation problems, and tightening credit conditions.

— The outlook for domestic stocks remains challenged, especially against the backdrop of high inflation and expectations for slowing economic growth. Earnings growth has started to decline, with year-over-year S&P 500 earnings falling -4.9% in Q4 2022, the first decline seen since Q2 2020.

— The effects of currency volatility on portfolio performance was mixed during the first quarter. Over the past full year, currency movement led to a -8.5% loss for investors with unhedged exposure to international developed equity (MSCI EAFE unhedged -1.4%, MSCI EAFE hedged +7.1%), led by a -12.6% loss in Japanese equities (TOPIX unhedged -3.1%, TOPIX hedged +9.5%). We continue to believe that a thoughtful currency program may allow investors to reduce their total portfolio risk while also increasing long-term expected returns.

— Growth stocks delivered strong outperformance in the first quarter (Russell 1000 Growth +14.4% vs. Russell 1000 Value +1.0%), effectively reversing value's rally in Q4 2022. This divergence in style behavior appears to be, once again, mostly a result of relative sector returns.

— The Cboe VIX implied volatility index surged in March on the news of Silicon Valley Bank's failure, and the possibility of contagion across the financial sector, but ended the quarter at 18.7%—near the longer-term average.

	QTD TOTAL RETURN		1 YEAR TOTAL RETURN	
	(unhedged)	(hedged)	(unhedged)	(hedged)
U.S. Large Cap (S&P 500)	7.5%		(7.7%)	
U.S. Small Cap (Russell 2000)	2.7%		(11.6%)	
U.S. Equity (Russell 3000)	7.2%		(8.6%)	
U.S. Large Value (Russell 1000 Value)	1.0%		(5.9%)	
US Large Growth (Russell 1000 Growth)	14.4%		(10.9%)	
Global Equity (MSCI ACWI)	7.3%	7.3%	(7.4%)	(4.8%)
International Large (MSCI EAFE)	8.5%		(1.4%)	
China (MSCI China)	4.7%		(4.7%)	
Emerging Markets (MSCI Emerging Markets)	4.0%	3.8%	(10.7%)	(6.6%)

Source: Russell Investments, MSCI, STOXX, FTSE, Nikkei, as of 3/31/23

Fixed income environment

— The 10-year U.S. Treasury yield fell during the quarter from 3.88% to 3.47%. It appears increasingly likely that the U.S. has already reached, and is beyond, *peak interest rates*. The looming possibility of recession, effects of banking stress, and implications from the Federal Reserve that only one interest rate hike may remain, suggests that bond yields may have more room to fall than to rise.

— Silicon Valley Bank (SVB) failed and was transitioned to government ownership on March 10th. SVB is among the top 20 largest banks in the United States, with approximately 1% of all U.S. domestic bank deposits. New York regulators closed Signature Bank shortly thereafter, and more failures may follow. Banking stress has implications for the future actions of the Federal Reserve and for the economy.

— During the first quarter, fixed income markets delivered strong positive returns despite concerns related to the banking sector and the potential for additional Fed rate hikes. High yield credit performance led the way at 3.6%, followed by 3.5% from investment grade credit and 3.3% from bank loans.

— U.S. yield curve inversion reached even more extreme levels during Q1. The 10-year 2-year yield spread (short-term interest rates being higher than long-term interest rates) reached ~107 bps on March 8th, suggesting an incoming recession.

— Uncertainty around the path of Federal Reserve rate hikes and whether inflation is under control has contributed to considerable volatility in bond markets. As indicated by the ICE BofA "MOVE" Index, which measures the volatility priced into U.S. Treasury bonds, domestic and international banking stress further added to fixed income market choppiness in the first quarter.

	QTD Total Return	1 Year Total Return
Core Fixed Income (Bloomberg U.S. Aggregate)	3.0%	(4.8%)
Core Plus Fixed Income (Bloomberg U.S. Universal)	2.9%	(4.6%)
U.S. Treasuries (Bloomberg U.S. Treasury)	3.0%	(4.5%)
U.S. Long Treasuries (Bloomberg U.S. Long Treasury)	6.2%	(16.0%)
U.S. High Yield (Bloomberg U.S. Corporate HY)	3.6%	(3.3%)
Bank Loans (S&P/LSTA Leveraged Loan)	3.3%	2.5%
Emerging Market Debt Local (JPM GBI-EM Global Diversified)	5.2%	(0.7%)
Emerging Market Debt Hard (JPM EMBI Global Diversified)	1.9%	(6.9%)
Mortgage-Backed Securities (Bloomberg MBS)	2.5%	(4.9%)

Source: Bloomberg, as of 3/31/23

Public real assets environment

— REITs – After rallying to begin the year, REITs and stocks pulled back on uncertainty about the stability of the banking system, followed by a rebound in March as fears abated. Self-storage and industrial REITs closed the first quarter with the highest total returns. On the other hand, office REIT stocks tanked during the first quarter (more than half of the 25 worst-performing REIT stocks came from the office sector).

— Listed Infrastructure – In the first quarter of 2023, energy prices stabilized, amid a warmer-than-expected winter and a continuing re-emergence of mobility lifting the airports and toll roads sectors. Bond yields came off recent highs, supporting longer-duration assets such as renewables, which performed well. Lower yields have also been positive for communication towers, though there has been some broad market pressure on real estate.

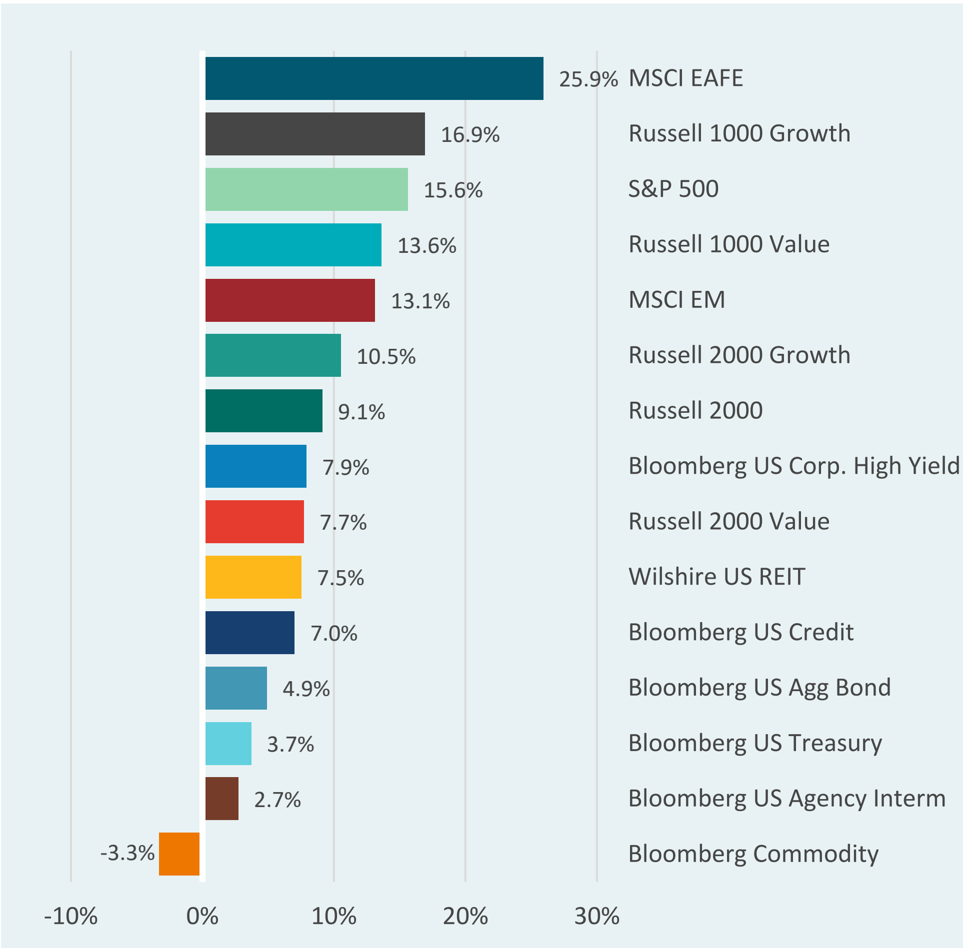
— Commodities – Commodities lost ground on both the quarter and the year, while during Q1, Energy and livestock were the worst-performing subsectors, while precious metals and industrial metals achieved price gains. Within energy, prices for natural gas, gas oil and heating oil were all sharply lower. In precious metals, gold achieved a robust price gain, while silver achieved a more modest price uplift. Within industrial metals, the price of nickel was sharply lower in the first quarter, while the decline in the price of lead was more muted. Copper and aluminium prices both advanced in the quarter.

— TIPS - The Bloomberg U.S. TIPS index returned 3.3% in the most recent quarter and is down 6.1% year-over-year. This comes against a backdrop of continued elevated inflation, low unemployment and the possibility of a recession looming on the horizon.

	QTD Total Return	1 Year Total Return
REITs (FTSE EPRA/NAREIT Global)	0.8%	(20.3%)
Listed Infrastructure (S&P Global Infrastructure)	3.9%	(3.45)%
Commodities (Bloomberg Commodity Index)	(5.4)%	(12.5)%
TIPS (Bloomberg US TIPS)	3.3%	(6.1%)

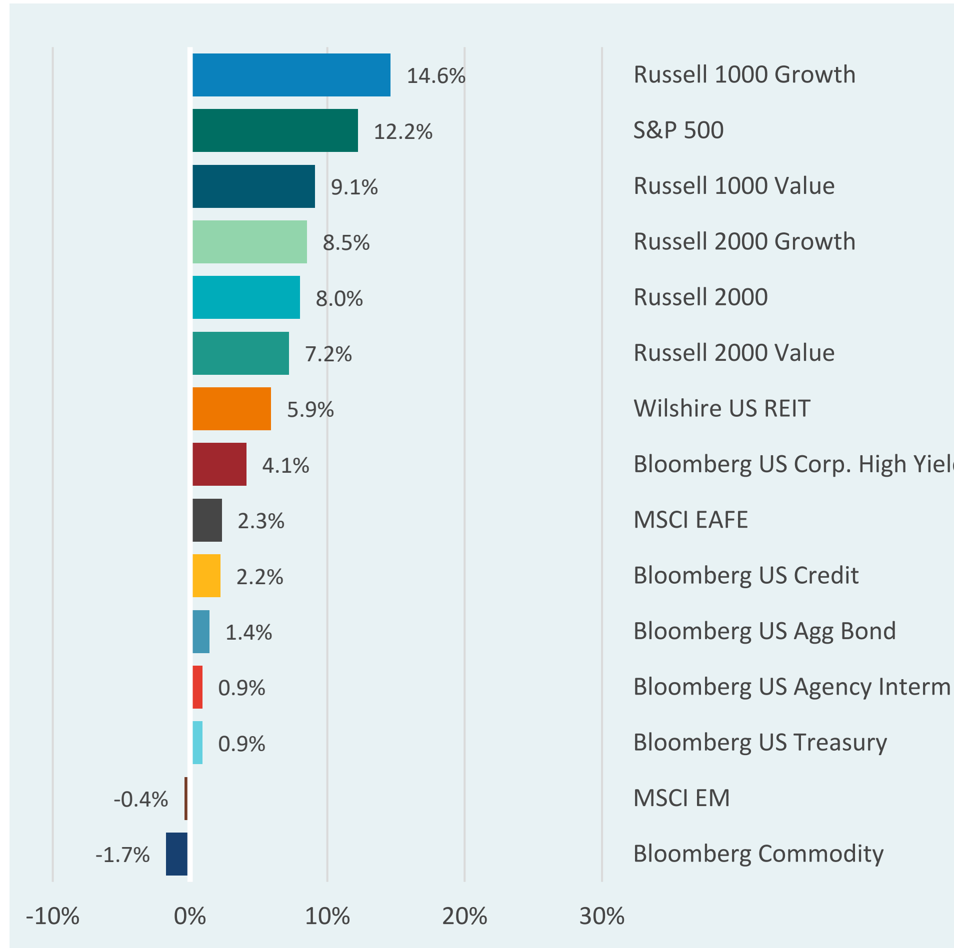
Major asset class returns

SIX MONTHS ENDING MARCH



Source: Bloomberg, as of 3/31/23

TEN YEARS ENDING MARCH



Source: Bloomberg, as of 3/31/23. Annualized returns

— The composite fund returned 4.5% for the first quarter of 2023 and ranked in the 21st percentile among public funds greater than $1 billion (median of 3.9%). The fund beat its policy index return of 3.9% during this time period. Longer term, the five (6.4%), and ten-year (7.7%) returns ranked in the 44th and 26th percentile of large public plans respectively.

— First quarter results were enhanced by the following factors:

1. Aristotle gained 3.7% beating the Russell 1000 Value which gained 1.0%. An overweight in Information Technology and security selection in Consumer Discretionary and Information Technology contributed the most to relative performance.

2. Capital Group gained 10.2% for the quarter outperforming the MSCI ACWI ex US Growth which gained 8.7%. Security selection and an above benchmark position in the Information Technology sector contributed to the outperformance.

— First quarter results were hindered by the following factors:

1. TCW slightly underperformed the Russell 1000 Growth (14.0% vs 14.4%). Overweight positions in the Financials and Healthcare sectors contributed to the slight underperformance.

Total Fund
Manager Allocation Analysis (One Quarter)

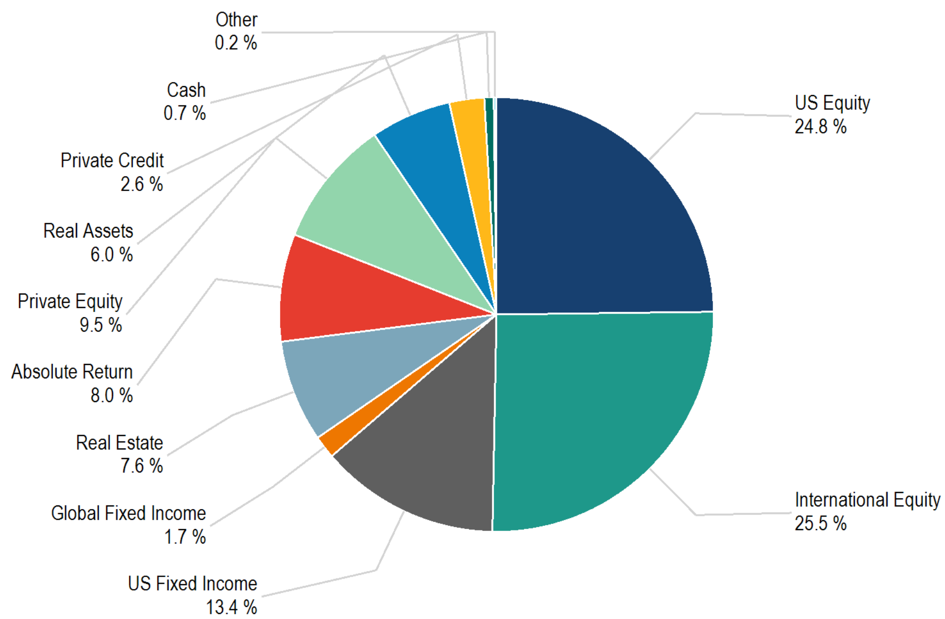
Period Ending: March 31, 2023

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Absolute Return[1]	$853,967,982	$0	-$1,923,890	$852,044,092
Alta	$5,249	$0	$0	$5,249
Applied Research Investments	$24,381	$0	$340	$24,720
AQR	$1,369,857	$0	$19,576	$1,389,433
Arga Investment Management	$27,659,059	$0	$2,809,131	$30,468,189
Aristotle	$146,854,896	-$144,333	$5,415,725	$152,126,289
Baird Advisors	$1,123,335,012	-$195,471	$37,555,311	$1,160,694,852
Bivium Cash	$243	$0	$3	$246
BlackRock MSCI World ex-US Index Fd A	$685,280,373	-$20,000,000	$55,724,463	$721,004,836
BlackRock Russell 1000 Index Fund	$1,997,412,298	-$60,000,000	$149,145,956	$2,086,558,254
Brandywine	$177,993,085	-$127,309	$7,845,699	$185,711,475
Capital Group	$557,533,975	-$160,137	$56,682,062	$614,055,900
Cash Account	$89,583,650	-$16,405,474	$526,894	$73,705,070
Cedar Street	$0	$9,167,497	$908,781	$10,076,278
Denali Advisors	$24,297,026	$0	$1,615,698	$25,912,724
Dundas Partners	$25,560,226	$0	$2,595,003	$28,155,229
Global Alpha Capital Management	$9,707,321	$0	$873,080	$10,580,402
Huber	$1,651	$0	$0	$1,651
Kennedy	$143,098,828	-$294,249	-$927,156	$141,877,423
Loomis Sayles	$261,160,164	-$212,330	$7,619,976	$268,567,810
Mondrian	$649,592,300	-$531,637	$58,940,595	$708,001,257
Newton Emerging Mkt	$9	$0	$0	$9
OakBrook	$116	$0	$1	$117
Overlay	$17,390,205	-$30,000	$3,559,093	$20,919,298
Promethos Capital	$21,699,058	$0	$1,833,087	$23,532,145
Private Credit	$265,355,620	$895,149	$8,240,180	$274,490,948
Private Equity	$984,939,496	$4,445,334	$18,726,490	$1,008,111,320
Radin Capital Partners	$9,510,283	-$9,167,497	-$302,191	$40,595
Redwood	$5,541,793	$0	$392,477	$5,934,271
RVX Asset Management	$6,177,865	$0	-$14,538	$6,163,327
Real Assets[1]	$622,899,785	$1,940,436	$10,546,354	$635,386,575
Real Estate	$805,881,908	$31,699,240	-$24,361,558	$813,219,591
Sec. Lending	$0	-$700,429	$700,429	$0
TCW	$110,730,445	-$131,965	$15,485,569	$126,084,050
Templeton	$243,335,025	$0	$20,540,121	$263,875,146
Intl Transition	$14,069	$0	$91	$14,160
William Blair Emerging Mkts Growth	$260,942,301	$0	$10,042,518	$270,984,819
Willliam Blair Small Cap Growth	$124,798,692	-$489,854	$8,523,605	$132,832,443
Total	**$10,253,654,247**	**-$60,443,028**	**$459,338,975**	**$10,652,550,193**

1 Preliminary ending market value

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Alta	$5,249	$0	$0	$5,249
Bivium Cash	$243	$0	$3	$246
Huber	$1,651	$0	$0	$1,651
OakBrook	$116	$0	$1	$117
Total	**$7,259**	**$0**	**$4**	**$7,263**

	Beginning Market Value	Net Cash Flow	Net Investment Change	Ending Market Value
Applied Research Investments	$24,381	$0	$340	$24,720
Arga Investment Management	$27,659,059	$0	$2,809,131	$30,468,189
Cedar Street	$0	$9,167,497	$908,781	$10,076,278
Denali Advisors	$24,297,026	$0	$1,615,698	$25,912,724
Dundas Partners	$25,560,226	$0	$2,595,003	$28,155,229
Global Alpha Capital Management	$9,707,321	$0	$873,080	$10,580,402
Promethos Capital	$21,699,058	$0	$1,833,087	$23,532,145
Radin Capital Partners	$9,510,283	-$9,167,497	-$302,191	$40,595
Redwood	$5,541,793	$0	$392,477	$5,934,271
RVX Asset Management	$6,177,865	$0	-$14,538	$6,163,327
Total	**$130,177,012**	**$0**	**$10,710,868**	**$140,887,880**



	Current Balance ($)	Current Allocation (%)	Policy (%)	Difference (%)	Within IPS Range?
US Equity	2,639,485,722	24.8	24.0	0.8	Yes
International Equity	2,720,213,440	25.5	24.0	1.5	Yes
US Fixed Income	1,429,262,662	13.4	12.0	1.4	Yes
Global Fixed Income	185,711,475	1.7	2.0	-0.3	Yes
Real Estate	813,219,591	7.6	9.0	-1.4	Yes
Absolute Return	852,044,092	8.0	8.0	0.0	Yes
Private Equity	1,008,111,320	9.5	11.0	-1.5	Yes
Real Assets	635,386,575	6.0	6.0	0.0	Yes
Private Credit	274,490,948	2.6	4.0	-1.4	Yes
Cash	73,705,070	0.7	0.0	0.7	Yes
Other	20,919,298	0.2	0.0	0.2	Yes
Total	**10,652,550,193**	**100.0**	**100.0**		

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Total Fund (Gross)	**4.47**	**21**	**10.16**	**33**	**-4.53**	**60**	**12.57**	**20**	**6.44**	**44**	**8.47**	**18**	**7.74**	**26**	**9.33**	**Sep-85**
Total Fund (Net)	**4.44**	**22**	**10.10**	**36**	**-4.65**	**61**	**12.40**	**24**	**6.27**	**50**	**8.26**	**30**	**7.49**	**39**	**9.14**	
Policy Index[1]	*3.86*	*51*	*9.90*	*46*	*-5.11*	*75*	*12.36*	*24*	*6.77*	*30*	*8.50*	*15*	*8.09*	*7*	*9.62*	*Sep-85*
Allocation Index	*3.94*	*43*	*9.95*	*44*	*-5.94*	*89*	*11.89*	*34*	*6.34*	*47*	*8.15*	*32*	*7.71*	*29*	*--*	*Sep-85*
InvMetrics Public DB > $1B Gross Median	*3.87*		*9.46*		*-4.14*		*11.00*		*6.19*		*7.72*		*7.12*		*8.30*	*Sep-85*
Total Fund w/o Overlay (Gross)	**4.44**	**--**	**10.07**	**--**	**-4.45**	**--**	**12.62**	**--**	**6.46**	**--**	**8.49**	**--**	**7.75**	**--**	**9.34**	**Sep-85**
Total Fund w/o Overlay (Net)	**4.41**	**--**	**10.01**	**--**	**-4.56**	**--**	**12.45**	**--**	**6.30**	**--**	**8.28**	**--**	**7.51**	**--**	**9.14**	
US Equity (Gross)	**7.02**	**33**	**14.87**	**47**	**-8.52**	**68**	**18.79**	**49**	**10.22**	**36**	**12.56**	**10**	**11.80**	**22**	**11.53**	**Sep-85**
US Equity (Net)	**6.98**	**34**	**14.79**	**56**	**-8.65**	**74**	**18.62**	**56**	**10.06**	**44**	**12.34**	**16**	**11.54**	**34**	**--**	
Russell 3000	*7.18*	*21*	*14.88*	*45*	*-8.58*	*73*	*18.48*	*63*	*10.45*	*22*	*11.99*	*32*	*11.73*	*25*	*11.10*	*Sep-85*
InvMetrics All DB US Eq Gross Median	*6.39*		*14.84*		*-7.88*		*18.74*		*9.92*		*11.68*		*11.30*		*10.56*	*Sep-85*
BlackRock Russell 1000 Index Fund (Gross)	7.47	24	15.25	44	-8.38	80	18.58	48	--	--	--	--	--	--	11.02	Apr-18
BlackRock Russell 1000 Index Fund (Net)	7.47	24	15.25	44	-8.39	80	18.57	48	--	--	--	--	--	--	11.01	
Russell 1000	*7.46*	*24*	*15.24*	*44*	*-8.39*	*80*	*18.55*	*48*	*10.87*	*46*	*12.22*	*44*	*12.01*	*49*	*10.99*	*Apr-18*
Large Cap Active Equity (Gross)	**8.11**	**--**	**15.88**	**--**	**-9.36**	**--**	**15.72**	**--**	**6.74**	**--**	**10.19**	**--**	**10.05**	**--**	**7.63**	**Mar-00**
Large Cap Active Equity (Net)	**8.01**	**--**	**15.64**	**--**	**-9.82**	**--**	**15.16**	**--**	**6.23**	**--**	**9.70**	**--**	**9.59**	**--**	**7.19**	
Russell 1000	*7.46*	*--*	*15.24*	*--*	*-8.39*	*--*	*18.55*	*--*	*10.87*	*--*	*12.22*	*--*	*12.01*	*--*	*6.57*	*Mar-00*
Aristotle (Gross)	3.69	19	14.79	41	-4.37	50	--	--	--	--	--	--	--	--	11.51	Oct-20
Aristotle (Net)	3.59	20	14.57	44	-4.84	59	--	--	--	--	--	--	--	--	11.03	
Russell 1000 Value	*1.01*	*46*	*13.55*	*57*	*-5.91*	*75*	*17.93*	*73*	*7.50*	*78*	*9.02*	*83*	*9.13*	*84*	*14.15*	*Oct-20*
TCW (Gross)	13.98	36	17.23	39	-14.74	81	13.33	83	11.67	57	13.48	58	12.63	76	7.98	Jun-99
TCW (Net)	13.87	37	16.96	42	-15.17	84	12.79	86	11.15	68	13.00	70	12.21	83	--	
Russell 1000 Growth	*14.37*	*31*	*16.88*	*43*	*-10.90*	*50*	*18.57*	*25*	*13.66*	*19*	*15.01*	*22*	*14.59*	*23*	*6.77*	*Jun-99*

Total Fund and asset class composites are ranked against InvestorForce universes. Managers are ranked against eVestment Alliance style universes.
Ranking of 1 is a top ranking and a ranking of 100 is a bottom ranking. The InvestorForce Public DB> $1B Gross universe consists of 70 members with a total market value of $1.002.9 Trillion.
Effective 1/1/2017, only traditional asset class (public equity, public fixed income, public real estate) investment management fees will be included in the gross of fee return calculation.
1. See Policy Index and Benchmark History.

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Small Cap Equity (Gross)	**2.83**	**--**	**11.18**	**--**	**-9.97**	**--**	**23.04**	**--**	**9.23**	**--**	**12.55**	**--**	**11.03**	**--**	**13.08**	**Jul-85**
Small Cap Equity (Net)	**2.54**	**--**	**10.75**	**--**	**-10.72**	**--**	**22.05**	**--**	**8.32**	**--**	**11.58**	**--**	**10.12**	**--**	**--**	
Russell 2000	*2.74*	*--*	*9.14*	*--*	*-11.61*	*--*	*17.51*	*--*	*4.71*	*--*	*8.55*	*--*	*8.04*	*--*	*9.02*	*Jul-85*
Kennedy (Gross)	-0.65	89	6.76	98	-13.32	94	23.58	60	5.25	78	8.73	67	9.06	50	10.59	Sep-10
Kennedy (Net)	-0.85	91	6.32	99	-14.05	96	22.62	71	4.37	88	7.80	82	8.17	74	9.71	
Russell 2000 Value	*-0.66*	*89*	*7.70*	*93*	*-12.96*	*93*	*21.01*	*83*	*4.55*	*86*	*7.86*	*81*	*7.22*	*90*	*8.84*	*Sep-10*
Willliam Blair Small Cap Growth (Gross)	6.82	53	16.32	14	-6.10	21	22.13	18	--	--	--	--	--	--	11.69	Oct-19
Willliam Blair Small Cap Growth (Net)	6.44	58	15.90	18	-6.86	24	21.11	21	--	--	--	--	--	--	10.86	
Russell 2000 Growth	*6.07*	*65*	*10.46*	*62*	*-10.60*	*52*	*13.36*	*85*	*4.26*	*94*	*8.74*	*94*	*8.49*	*95*	*4.74*	*Oct-19*
International Equity (Gross)	**8.41**	**22**	**23.97**	**36**	**-3.76**	**49**	**13.07**	**48**	**3.44**	**32**	**7.14**	**28**	**5.60**	**26**	**7.78**	**Dec-90**
International Equity (Net)	**8.37**	**23**	**23.85**	**36**	**-3.98**	**52**	**12.72**	**56**	**3.12**	**42**	**6.79**	**35**	**5.23**	**41**	**--**	
MSCI ACWI ex USA IMI Gross[1]	*6.70*	*68*	*21.88*	*72*	*-5.34*	*76*	*12.72*	*56*	*2.84*	*49*	*6.32*	*50*	*4.76*	*54*	*6.02*	*Dec-90*
InvMetrics All DB ex-US Eq Gross Median	*7.41*		*23.00*		*-3.85*		*12.94*		*2.81*		*6.32*		*4.85*		*6.58*	*Dec-90*
Bivium Intl Equity (Gross)	8.23	36	25.05	32	-3.33	35	14.00	52	--	--	--	--	--	--	6.98	Oct-18
Bivium Intl Equity (Net)	8.13	44	24.82	32	-3.60	46	13.01	66	--	--	--	--	--	--	6.25	
MSCI ACWI ex USA Gross	*7.00*	*70*	*22.38*	*68*	*-4.57*	*66*	*12.32*	*75*	*2.97*	*79*	*6.37*	*82*	*4.65*	*89*	*5.76*	*Oct-18*
BlackRock MSCI World ex-US Index Fd A (Gross)	8.15	50	25.71	56	-2.25	50	14.01	47	--	--	--	--	--	--	6.88	May-19
BlackRock MSCI World ex-US Index Fd A (Net)	8.14	50	25.69	56	-2.27	50	14.00	47	--	--	--	--	--	--	6.86	
MSCI World ex US Gross	*8.19*	*49*	*25.78*	*55*	*-2.19*	*50*	*14.06*	*46*	*4.34*	*34*	*6.88*	*43*	*5.44*	*70*	*6.94*	*May-19*
Capital Group (Gross)	10.17	41	25.80	38	-4.31	62	10.06	76	4.25	70	8.62	49	6.24	74	8.11	Dec-90
Capital Group (Net)	10.14	42	25.73	39	-4.43	62	9.83	77	4.02	77	8.39	51	5.97	83	--	
MSCI ACWI ex USA Gross	*7.00*	*98*	*22.38*	*74*	*-4.57*	*63*	*12.32*	*55*	*2.97*	*92*	*6.37*	*93*	*4.65*	*99*	*6.01*	*Dec-90*
MSCI ACWI ex USA Growth Gross	*8.69*	*71*	*22.76*	*73*	*-6.03*	*72*	*9.81*	*77*	*3.71*	*78*	*6.83*	*89*	*5.45*	*99*	*--*	*Dec-90*

1. See Policy Index and Benchmark History.

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Mondrian (Gross)	9.07	24	26.49	46	-1.98	86	12.41	96	2.06	91	4.88	95	4.15	86	5.86	Dec-03
Mondrian (Net)	8.99	25	26.29	51	-2.33	87	11.99	98	1.66	95	4.47	99	3.76	96	5.53	
MSCI ACWI ex USA Gross	*7.00*	*56*	*22.38*	*88*	*-4.57*	*93*	*12.32*	*96*	*2.97*	*72*	*6.37*	*64*	*4.65*	*62*	*5.95*	*Dec-03*
MSCI ACWI ex USA Value Gross	*5.33*	*84*	*21.99*	*88*	*-3.32*	*90*	*14.54*	*70*	*1.90*	*92*	*5.65*	*72*	*3.67*	*97*	*5.51*	*Dec-03*
Templeton (Gross)	8.44	24	24.94	29	-3.73	25	14.64	51	0.87	94	5.37	88	5.22	97	5.17	Apr-11
Templeton (Net)	8.44	24	24.75	30	-4.22	27	14.00	64	0.27	95	4.72	98	4.55	99	4.49	
MSCI ACWI ex US Small Cap Gross	*4.81*	*80*	*18.85*	*73*	*-9.91*	*61*	*15.53*	*43*	*2.10*	*63*	*6.09*	*75*	*5.47*	*92*	*4.30*	*Apr-11*
MSCI ACWI ex US Small Cap Value GD	*3.96*	*91*	*19.53*	*64*	*-7.32*	*42*	*17.09*	*37*	*1.96*	*67*	*6.10*	*75*	*5.22*	*97*	*4.17*	*Apr-11*
William Blair Emerging Mkts Growth (Gross)	3.85	77	--	--	--	--	--	--	--	--	--	--	--	--	0.11	Nov-22
William Blair Emerging Mkts Growth (Net)	3.85	77	--	--	--	--	--	--	--	--	--	--	--	--	0.11	
MSCI Emerging Markets Gross	*4.02*	*74*	*14.20*	*70*	*-10.30*	*70*	*8.23*	*73*	*-0.53*	*72*	*5.31*	*76*	*2.37*	*83*	*2.61*	*Nov-22*
eV Emg Mkts Equity Gross Median	*5.06*		*15.71*		*-8.67*		*10.45*		*0.67*		*6.41*		*3.40*		*3.69*	*Nov-22*
Total Fixed Income (Gross)	**3.39**	**27**	**6.23**	**27**	**-5.21**	**82**	**0.62**	**38**	**1.38**	**54**	**2.42**	**28**	**2.53**	**28**	**6.61**	**Sep-86**
Total Fixed Income (Net)	**3.36**	**29**	**6.16**	**30**	**-5.35**	**83**	**0.44**	**40**	**1.20**	**68**	**2.23**	**37**	**2.35**	**34**	**--**	
Fixed Income Blend[1]	*3.14*	*42*	*6.03*	*34*	*-5.86*	*85*	*-2.39*	*85*	*0.36*	*93*	*0.87*	*92*	*1.23*	*88*	*5.63*	*Sep-86*
InvMetrics All DB Total Fix Inc Gross Median	*3.05*		*5.36*		*-3.59*		*-0.16*		*1.46*		*1.87*		*2.10*		*5.84*	*Sep-86*
US Fixed Income (Gross)	**3.26**	**40**	**5.45**	**43**	**-4.45**	**59**	**-0.23**	**38**	**1.96**	**31**	**2.56**	**22**	**2.82**	**16**	**6.54**	**Sep-86**
US Fixed Income (Net)	**3.23**	**42**	**5.39**	**46**	**-4.57**	**63**	**-0.37**	**41**	**1.81**	**41**	**2.40**	**27**	**2.66**	**21**	**--**	
Bloomberg US Aggregate TR	*2.96*	*59*	*4.89*	*66*	*-4.78*	*68*	*-2.77*	*84*	*0.90*	*86*	*0.88*	*91*	*1.36*	*89*	*5.46*	*Sep-86*
InvMetrics All DB US Fix Inc Gross Median	*3.08*		*5.28*		*-3.87*		*-0.71*		*1.65*		*1.73*		*2.05*		*6.25*	*Sep-86*
Baird Advisors (Gross)	3.34	20	5.32	27	-4.33	40	-1.70	53	1.50	39	1.70	21	2.25	9	4.22	Oct-01
Baird Advisors (Net)	3.33	22	5.28	29	-4.40	44	-1.77	58	1.42	49	1.62	29	2.17	14	4.14	
Bloomberg US Aggregate TR	*2.96*	*72*	*4.89*	*63*	*-4.78*	*71*	*-2.77*	*95*	*0.90*	*97*	*0.88*	*97*	*1.36*	*96*	*3.40*	*Oct-01*
Loomis Sayles (Gross)	2.92	88	6.09	20	-4.53	43	2.85	7	2.98	7	4.30	1	3.97	1	7.20	Dec-00
Loomis Sayles (Net)	2.84	92	5.91	25	-4.89	62	2.51	8	2.64	15	3.95	1	3.63	1	6.85	
Bloomberg US Credit BAA TR	*3.58*	*26*	*7.90*	*1*	*-5.49*	*82*	*0.81*	*19*	*1.86*	*39*	*2.54*	*27*	*2.55*	*31*	*5.29*	*Dec-00*

1. See Policy Index and Benchmark History.

Total Fund
Performance Summary

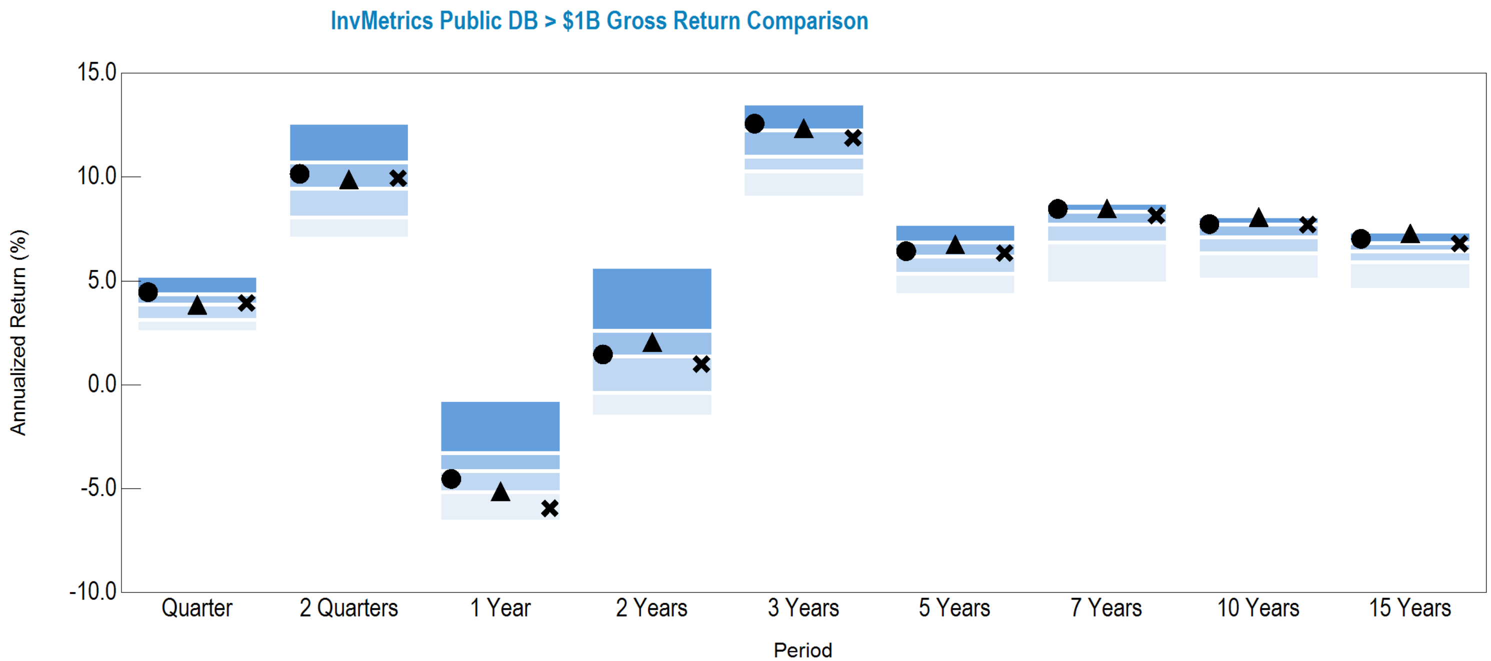
Period Ending: March 31, 2023

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Global Fixed Income (Gross)	**4.41**	**--**	**12.60**	**--**	**-11.47**	**--**	**1.25**	**--**	**-1.50**	**--**	**1.07**	**--**	**1.05**	**--**	**5.76**	**Nov-01**
Global Fixed Income (Net)	**4.34**	**--**	**12.44**	**--**	**-11.75**	**--**	**0.92**	**--**	**-1.80**	**--**	**0.77**	**--**	**0.76**	**--**	**5.45**	
FTSE WGBI TR	*3.51*	--	*7.47*	--	*-9.55*	--	*-5.29*	--	*-2.35*	--	*-1.06*	--	*-0.60*	--	*3.10*	*Nov-01*
Brandywine (Gross)	4.41	6	12.60	10	-11.47	93	1.25	50	-1.50	84	1.07	65	1.05	61	5.90	Dec-01
Brandywine (Net)	4.34	7	12.44	10	-11.75	94	0.92	53	-1.80	88	0.77	70	0.76	70	5.58	
Bloomberg Global Aggregate TR	*3.01*	*57*	*7.69*	*50*	*-8.07*	*75*	*-3.43*	*90*	*-1.34*	*82*	*-0.27*	*86*	*0.07*	*84*	*3.44*	*Dec-01*
FTSE WGBI TR	*3.51*	*27*	*7.47*	*54*	*-9.55*	*85*	*-5.29*	*97*	*-2.35*	*93*	*-1.06*	*96*	*-0.60*	*94*	*3.23*	*Dec-01*
Absolute Return (Gross)*	**-0.23**	**91**	**-0.99**	**93**	**4.15**	**8**	**10.17**	**50**	**3.46**	**74**	**4.30**	**70**	**4.00**	**69**	**3.91**	**Sep-11**
Absolute Return (Net)*	**-0.23**	**91**	**-0.99**	**93**	**4.15**	**8**	**10.17**	**50**	**3.46**	**74**	**4.30**	**70**	**4.00**	**69**	**3.91**	
Absolute Return Blend[1]	*0.72*	*75*	*2.46*	*79*	*-1.93*	*63*	*7.17*	*81*	*3.10*	*76*	*3.59*	*76*	*3.77*	*70*	*3.84*	*Sep-11*
HFRI Fund of Funds Composite Index	*0.72*	*75*	*2.46*	*79*	*-1.93*	*63*	*7.17*	*81*	*3.10*	*76*	*3.89*	*75*	*3.24*	*76*	*3.48*	*Sep-11*
InvMetrics All DB Hedge Funds Gross Median	*2.44*		*6.70*		*-1.05*		*9.96*		*5.19*		*5.58*		*4.76*		*5.43*	*Sep-11*
Private Equity (Gross)**	**1.90**	**--**	**2.05**	**--**	**-4.71**	**--**	**17.60**	**--**	**15.91**	**--**	**15.42**	**--**	**15.83**	**--**	**7.00**	**Nov-08**
Private Equity (Net)**	**1.90**	**--**	**2.05**	**--**	**-4.71**	**--**	**17.60**	**--**	**15.91**	**--**	**15.42**	**--**	**15.83**	**--**	**7.00**	
Private Equity Blend[1]	*0.56*	--	*-1.37*	--	*-8.17*	--	*17.56*	--	*15.69*	--	*16.99*	--	*16.05*	--	*17.29*	*Nov-08*
Refinitiv C|A Global All Private Equity 1Q Lagged	*0.56*	--	*-1.37*	--	*-8.17*	--	*17.56*	--	*15.69*	--	*15.25*	--	*14.77*	--	*11.92*	*Nov-08*
Real Assets (Gross)***	**1.69**	**--**	**8.88**	**--**	**-1.96**	**--**	**19.35**	**--**	**4.37**	**--**	**4.25**	**--**	**-1.10**	**--**	**-0.92**	**Sep-11**
Real Assets (Net)***	**1.67**	**--**	**8.82**	**--**	**-2.08**	**--**	**19.20**	**--**	**4.29**	**--**	**4.19**	**--**	**-1.14**	**--**	**-0.95**	
Real Asset Blend[1]	*1.56*	--	*13.31*	--	*-4.77*	--	*21.17*	--	*6.77*	--	*7.38*	--	*6.45*	--	*6.26*	*Sep-11*
Private Credit (Gross)****	**3.06**	**--**	**4.99**	**--**	**7.11**	**--**	**12.25**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**6.39**	**Oct-19**
Private Credit (Net)****	**3.06**	**--**	**4.99**	**--**	**7.11**	**--**	**12.25**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**6.39**	
S&P/LSTA Leveraged Loan Index +1.75%	*3.67*	--	*6.93*	--	*4.47*	--	*10.46*	--	*5.47*	--	*6.44*	--	*5.59*	--	*5.65*	*Oct-19*

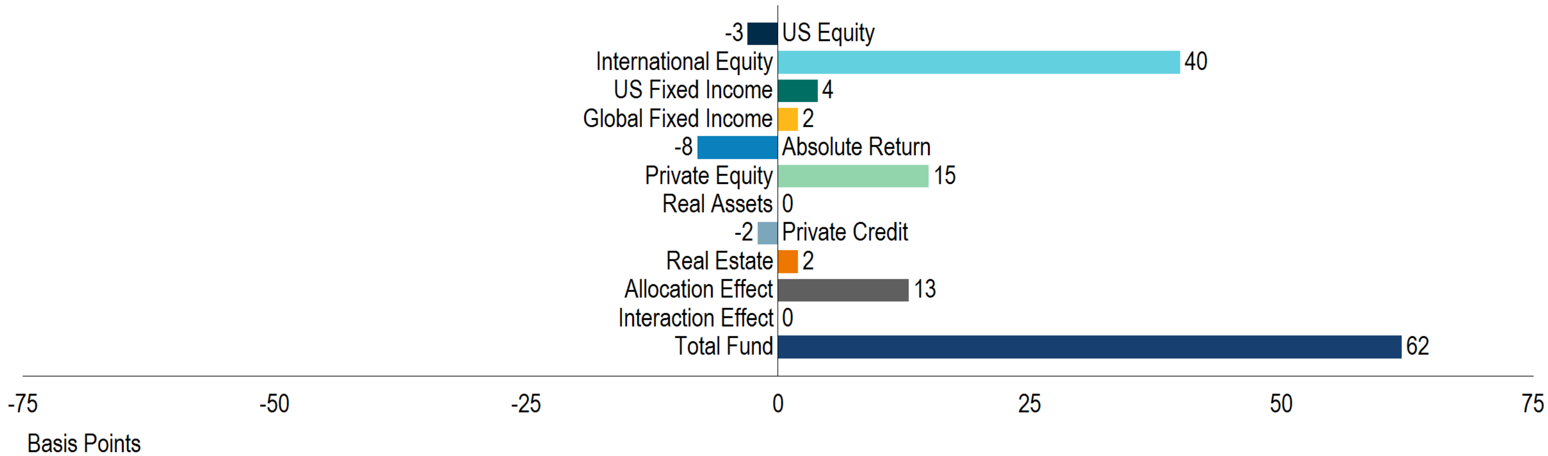
1. See Policy Index and Benchmark History.
** As of 3/31 with the exception of Dyal and AG OWL. Dyal and AG OWL 12/31 market values rolled forward and includes any cash flows from Q1 to derive 3/31 market value.*
*** Private Equity is one quarter lagged. 12/31 market values rolled forward and includes any cash flows from Q1 to derive 3/31 market value.*
**** As of 3/31 with the exception of Private Real Assets. Private Real Assets 12/31 market value is rolled forward and includes any cash flows from Q1 to derive 3/31 market value.*
***** As of 3/31.*

	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	7 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Inception Date
Cash (Gross)	**0.93**	**--**	**1.96**	**--**	**2.31**	**--**	**1.00**	**--**	**1.30**	**--**	**1.19**	**--**	**0.85**	**--**	**2.95**	**Sep-85**
Cash (Net)	**0.93**	**--**	**1.96**	**--**	**2.31**	**--**	**1.00**	**--**	**1.30**	**--**	**1.19**	**--**	**0.85**	**--**	**2.95**	
91 Day T-Bills	*1.07*	*--*	*1.93*	*--*	*2.50*	*--*	*0.88*	*--*	*1.32*	*--*	*1.17*	*--*	*0.83*	*--*	*3.04*	*Sep-85*
Real Estate (Gross)	**-2.91**	**50**	**-8.11**	**62**	**-3.01**	**57**	**8.62**	**32**	**7.77**	**31**	**8.03**	**24**	**9.97**	**13**	**7.19**	**Mar-86**
Real Estate (Net)	**-2.91**	**50**	**-8.11**	**62**	**-3.01**	**57**	**8.62**	**32**	**7.77**	**31**	**7.93**	**29**	**9.58**	**21**	**6.23**	
Real Estate Blend[1]	*-3.17*	*64*	*-7.98*	*58*	*-3.09*	*58*	*8.41*	*43*	*7.51*	*41*	*7.71*	*36*	*9.45*	*24*	*7.88*	*Mar-86*
NCREIF-ODCE	*-3.17*	*64*	*-7.98*	*58*	*-3.09*	*58*	*8.41*	*43*	*7.51*	*41*	*7.71*	*36*	*9.45*	*24*	*7.34*	*Mar-86*
InvMetrics All DB Real Estate Pub+Priv Gross Median	*-2.93*		*-7.31*		*-2.78*		*8.14*		*7.18*		*7.13*		*8.56*		*--*	*Mar-86*

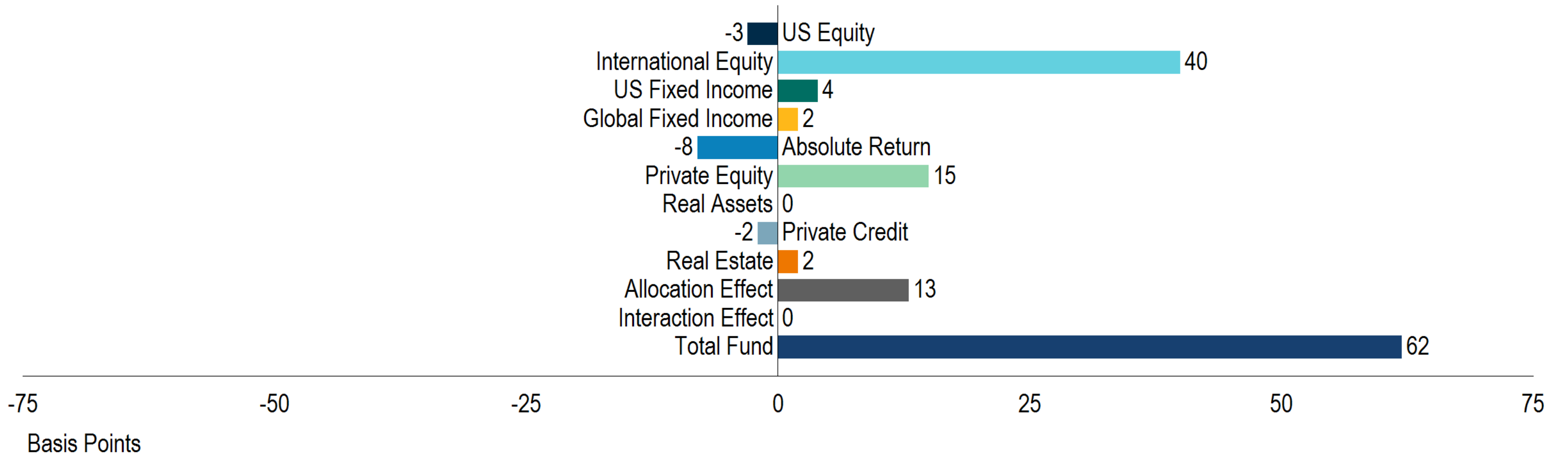
1. See Policy Index and Benchmark History.



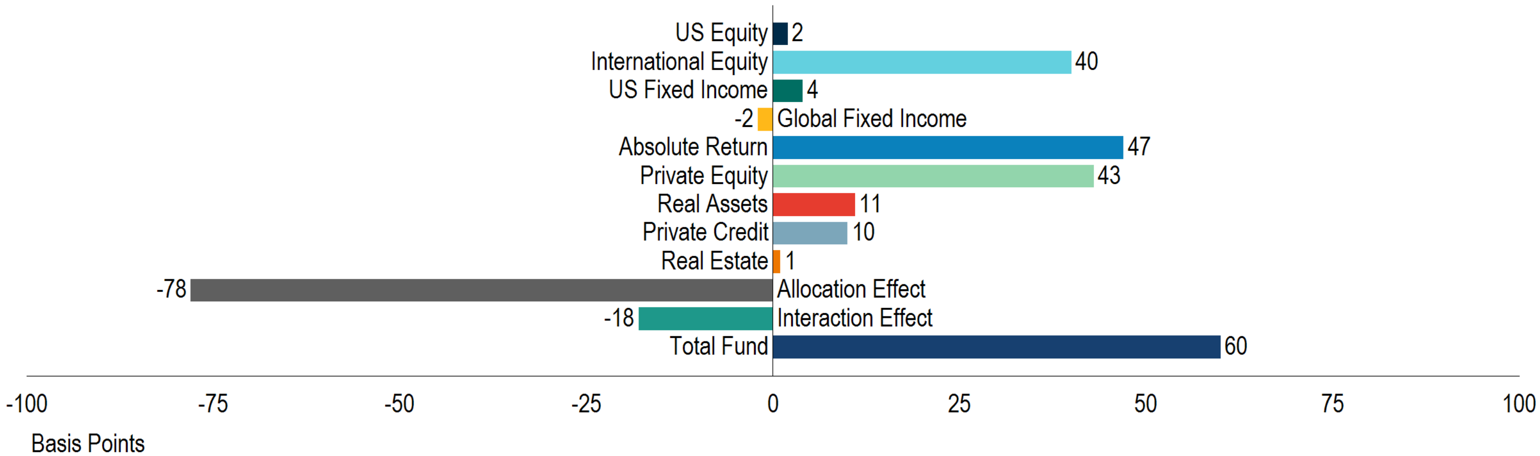
	Return (Rank)																	
5th Percentile	5.23		12.60		-0.75		5.66		13.52		7.74		8.74		8.10		7.37	
25th Percentile	4.37		10.73		-3.26		2.61		12.26		6.87		8.34		7.75		6.83	
Median	3.87		9.46		-4.14		1.40		11.00		6.19		7.72		7.12		6.45	
75th Percentile	3.16		8.06		-5.16		-0.37		10.31		5.36		6.88		6.34		5.92	
95th Percentile	2.55		7.04		-6.57		-1.52		9.03		4.33		4.90		5.08		4.58	
# of Portfolios	70		69		68		68		68		68		67		62		60	
● Total Fund	4.47	(21)	10.16	(33)	-4.53	(60)	1.47	(49)	12.57	(20)	6.44	(44)	8.47	(18)	7.74	(26)	7.03	(11)
▲ Policy Index	3.86	(51)	9.90	(46)	-5.11	(75)	2.06	(35)	12.36	(24)	6.77	(30)	8.50	(15)	8.09	(7)	7.29	(6)
✕ Allocation Index	3.94	(43)	9.95	(44)	-5.94	(89)	1.00	(54)	11.89	(34)	6.34	(47)	8.15	(32)	7.71	(29)	6.80	(27)



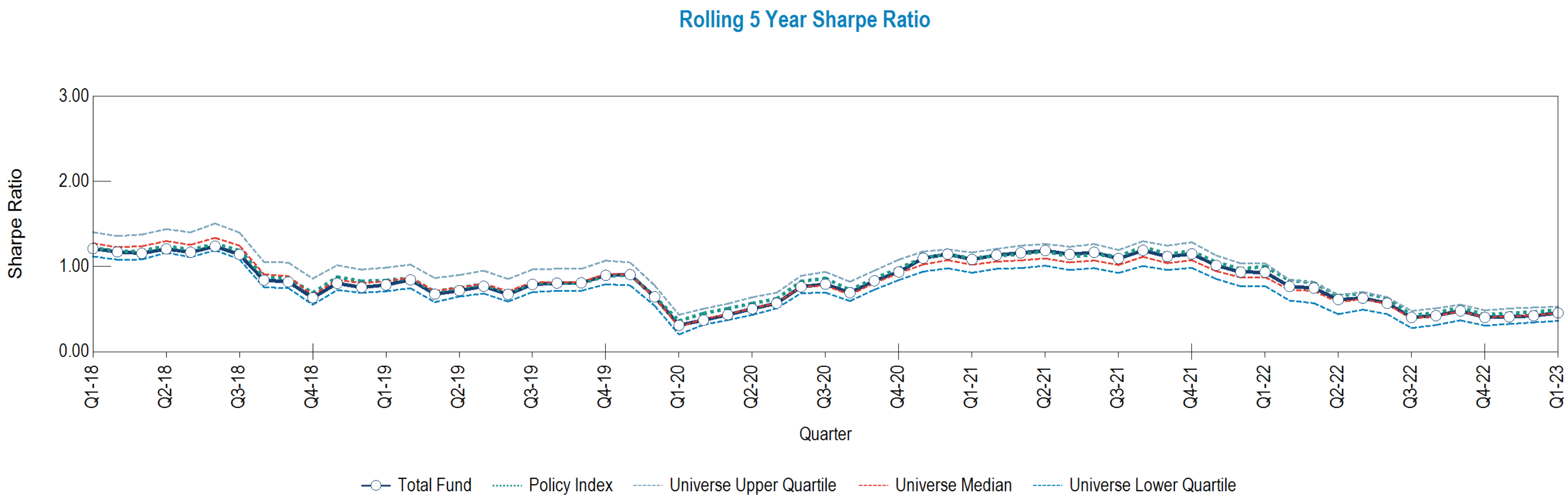
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	7.02%	7.18%	-0.16%	-0.03%	0.03%	0.00%	-0.01%
International Equity	8.41%	6.70%	1.71%	0.40%	0.02%	0.02%	0.44%
US Fixed Income	3.26%	2.96%	0.30%	0.04%	-0.02%	0.01%	0.03%
Global Fixed Income	4.41%	3.51%	0.89%	0.02%	0.00%	0.00%	0.02%
Absolute Return	-0.23%	0.72%	-0.95%	-0.08%	-0.02%	-0.01%	-0.11%
Private Equity	1.90%	0.56%	1.34%	0.15%	0.04%	-0.02%	0.17%
Real Assets	1.69%	1.56%	0.13%	0.00%	0.00%	0.00%	0.00%
Private Credit	3.06%	3.67%	-0.61%	-0.02%	0.00%	0.01%	-0.01%
Real Estate	-2.91%	-3.17%	0.26%	0.02%	0.07%	0.00%	0.09%
Total	**4.47%**	**3.85%**	**0.62%**	**0.49%**	**0.13%**	**0.00%**	**0.62%**

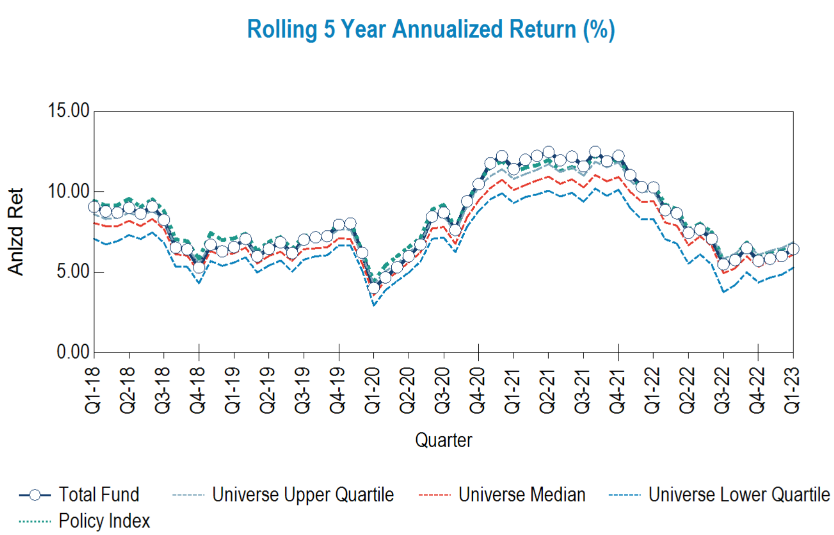


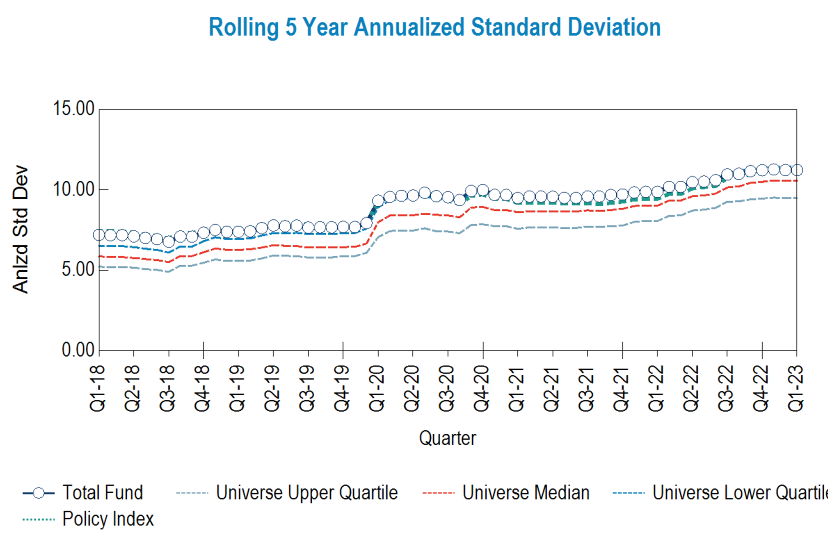
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	7.02%	7.18%	-0.16%	-0.03%	0.03%	0.00%	-0.01%
International Equity	8.41%	6.70%	1.71%	0.40%	0.02%	0.02%	0.44%
US Fixed Income	3.26%	2.96%	0.30%	0.04%	-0.02%	0.01%	0.03%
Global Fixed Income	4.41%	3.51%	0.89%	0.02%	0.00%	0.00%	0.02%
Absolute Return	-0.23%	0.72%	-0.95%	-0.08%	-0.02%	-0.01%	-0.11%
Private Equity	1.90%	0.56%	1.34%	0.15%	0.04%	-0.02%	0.17%
Real Assets	1.69%	1.56%	0.13%	0.00%	0.00%	0.00%	0.00%
Private Credit	3.06%	3.67%	-0.61%	-0.02%	0.00%	0.01%	-0.01%
Real Estate	-2.91%	-3.17%	0.26%	0.02%	0.07%	0.00%	0.09%
Total	**4.47%**	**3.85%**	**0.62%**	**0.49%**	**0.13%**	**0.00%**	**0.62%**



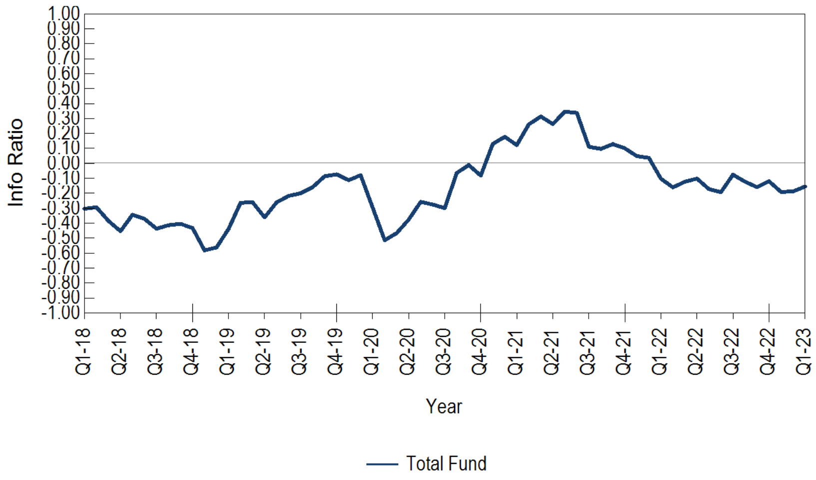
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
US Equity	-8.52%	-8.58%	0.06%	0.02%	-0.25%	0.00%	-0.23%
International Equity	-3.76%	-5.34%	1.58%	0.40%	-0.07%	0.02%	0.35%
US Fixed Income	-4.45%	-4.78%	0.34%	0.04%	-0.01%	0.00%	0.03%
Global Fixed Income	-11.47%	-9.55%	-1.92%	-0.02%	0.01%	-0.01%	-0.02%
Absolute Return	4.15%	-1.93%	6.08%	0.47%	-0.09%	-0.07%	0.32%
Private Equity	-4.71%	-8.17%	3.46%	0.43%	-0.04%	-0.09%	0.30%
Real Assets	-1.96%	-4.77%	2.81%	0.11%	0.02%	0.02%	0.14%
Private Credit	7.11%	4.47%	2.64%	0.10%	-0.17%	-0.05%	-0.12%
Real Estate	-3.01%	-3.09%	0.08%	0.01%	-0.16%	0.00%	-0.16%
Total	**-4.45%**	**-5.05%**	**0.60%**	**1.56%**	**-0.78%**	**-0.18%**	**0.60%**


Rolling 5 Year Sharpe Ratio
3.00
2.00
1.00
0.00
Sharpe Ratio
Q1-18
Q2-18
Q3-18
Q4-18
Q1-19
Q2-19
Q3-19
Q4-19
Q1-20
Q2-20
Q3-20
Q4-20
Q1-21
Q2-21
Q3-21
Q4-21
Q1-22
Q2-22
Q3-22
Q4-22
Q1-23
Quarter
Total Fund
Policy Index
Universe Upper Quartile
Universe Median
Universe Lower Quartile

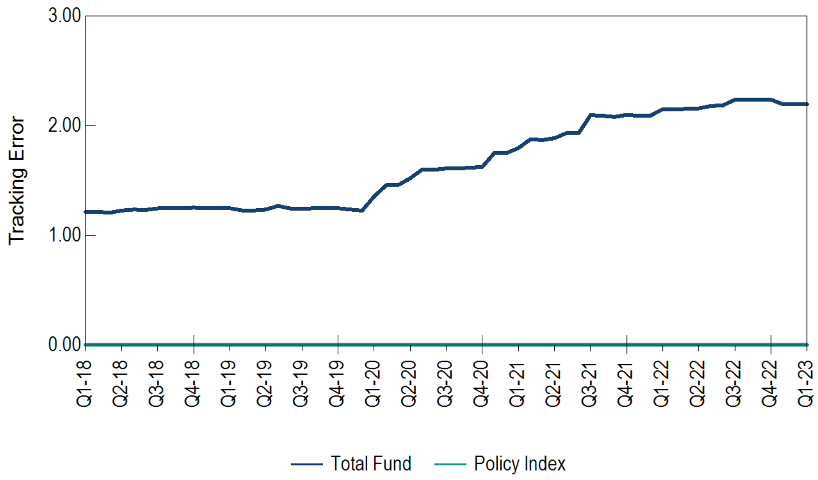

Rolling 5 Year Annualized Return (%)
15.00
10.00
5.00
0.00
Anlzd Ret
Q1-18
Q2-18
Q3-18
Q4-18
Q1-19
Q2-19
Q3-19
Q4-19
Q1-20
Q2-20
Q3-20
Q4-20
Q1-21
Q2-21
Q3-21
Q4-21
Q1-22
Q2-22
Q3-22
Q4-22
Q1-23
Quarter
Total Fund
Universe Upper Quartile
Universe Median
Universe Lower Quartile
Policy Index


Rolling 5 Year Annualized Standard Deviation
15.00
10.00
5.00
0.00
Anlzd Std Dev
Q1-18
Q2-18
Q3-18
Q4-18
Q1-19
Q2-19
Q3-19
Q4-19
Q1-20
Q2-20
Q3-20
Q4-20
Q1-21
Q2-21
Q3-21
Q4-21
Q1-22
Q2-22
Q3-22
Q4-22
Q1-23
Quarter
Total Fund
Universe Upper Quartile
Universe Median
Universe Lower Quartile
Policy Index

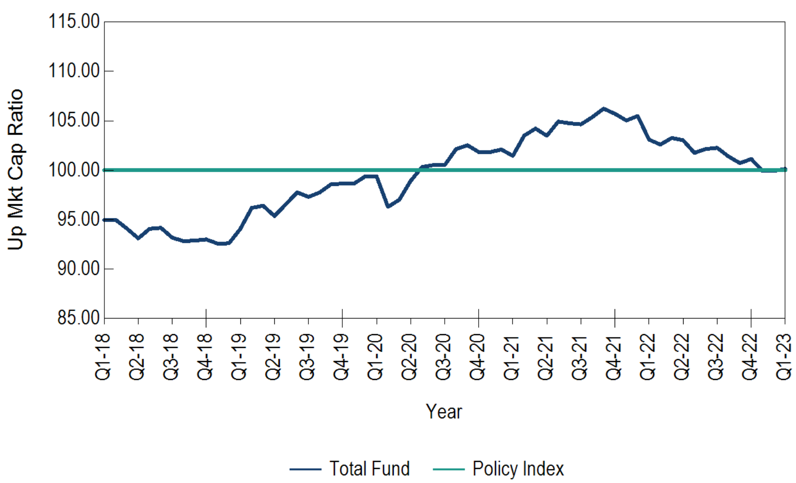
Rolling 5 Year Information Ratio



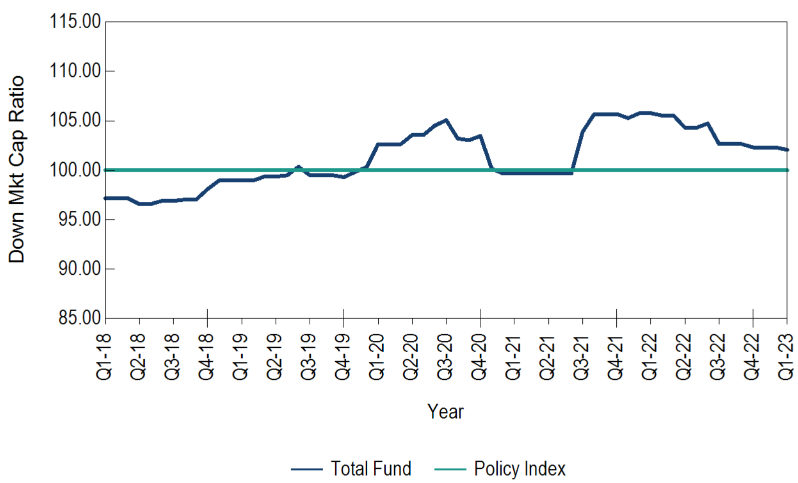
Rolling 5 Year Tracking Error

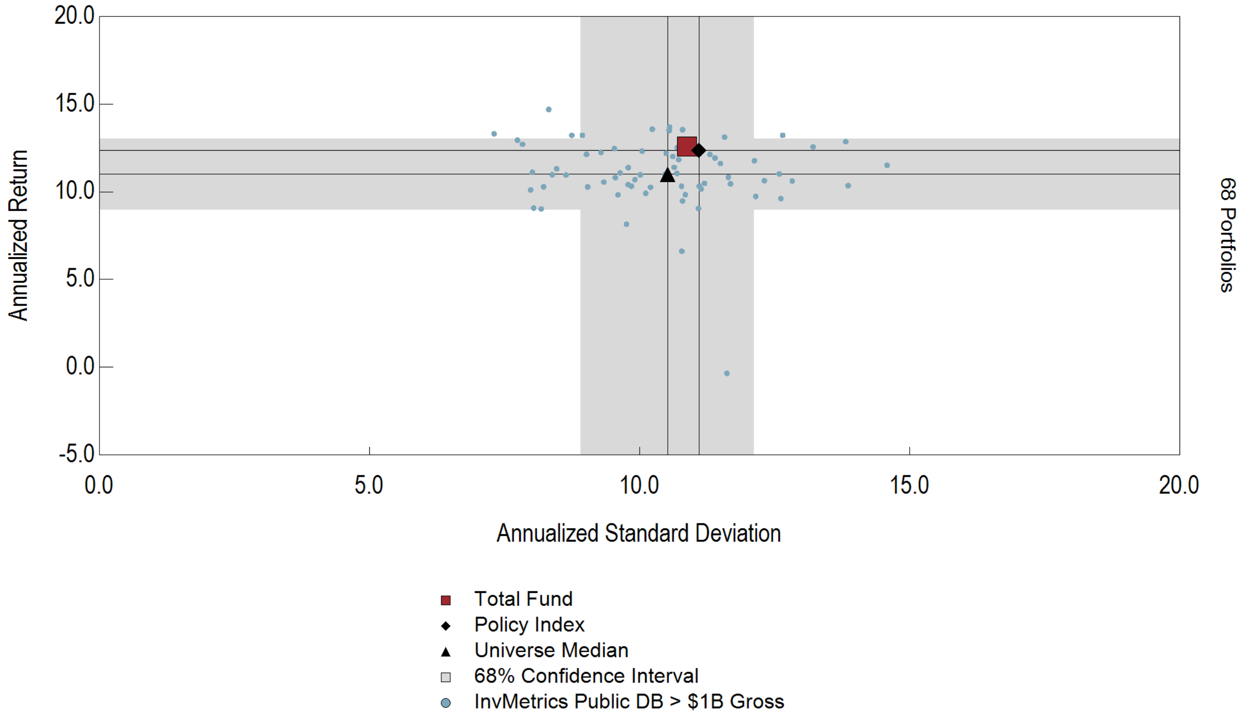


Rolling 5 Year Up Market Capture Ratio (%)

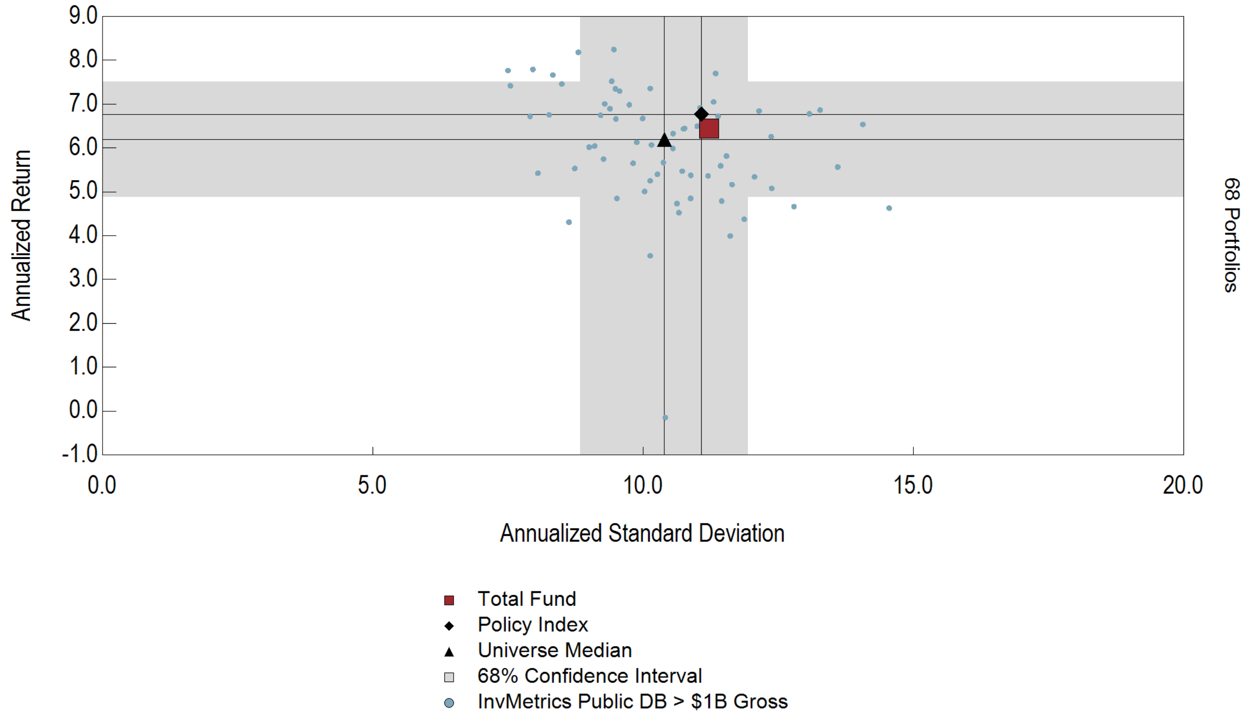


Rolling 5 Year Down Market Capture Ratio (%)

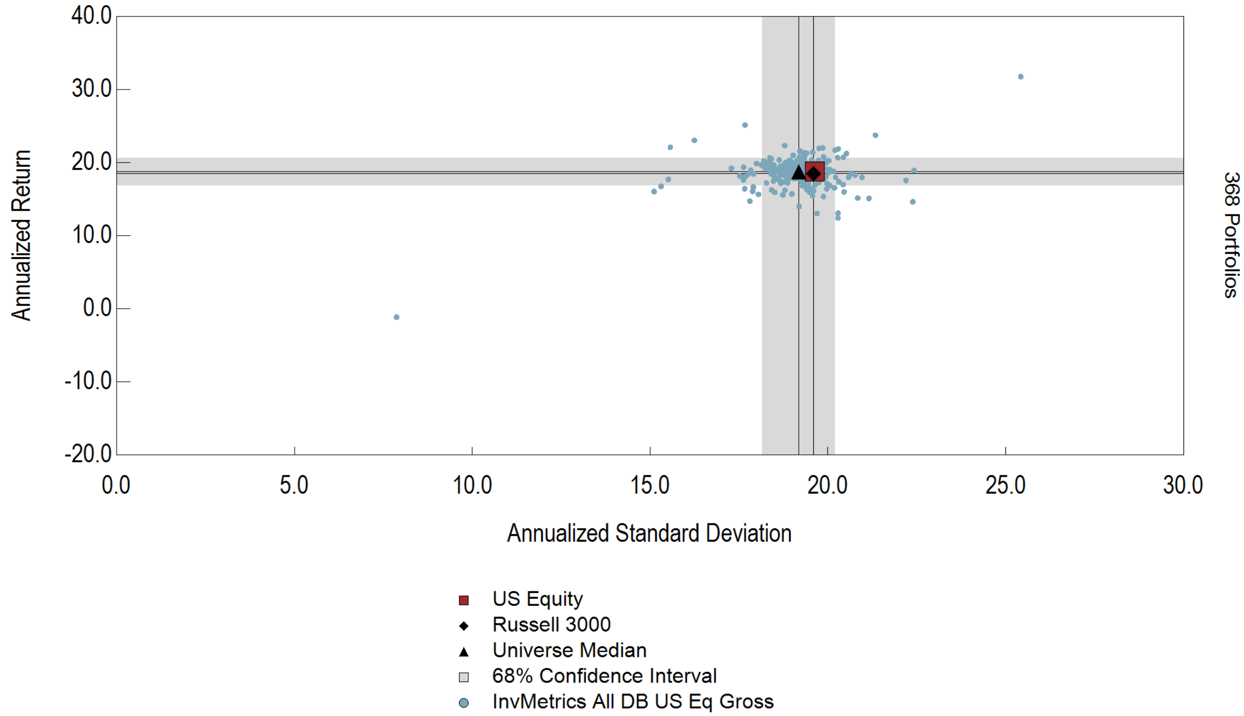




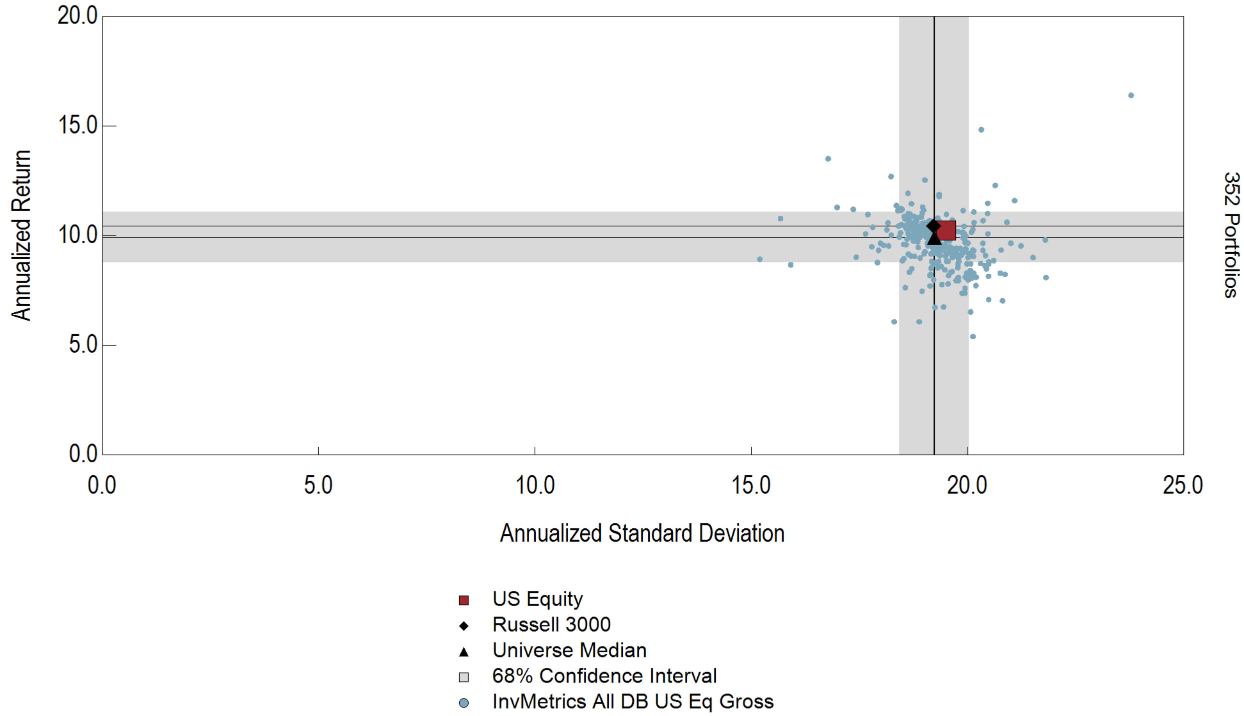
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	12.57%	20	10.88%	68	1.07	33	0.08	84	2.61%	55
Policy Index	12.36%	24	11.10%	70	1.03	42	--	--	0.00%	1
Allocation Index	11.89%	34	11.60%	81	0.95	62	-0.59	99	0.81%	1
InvMetrics Public DB > $1B Gross Median	11.00%	--	10.52%	--	0.99	--	0.46	--	2.03%	--



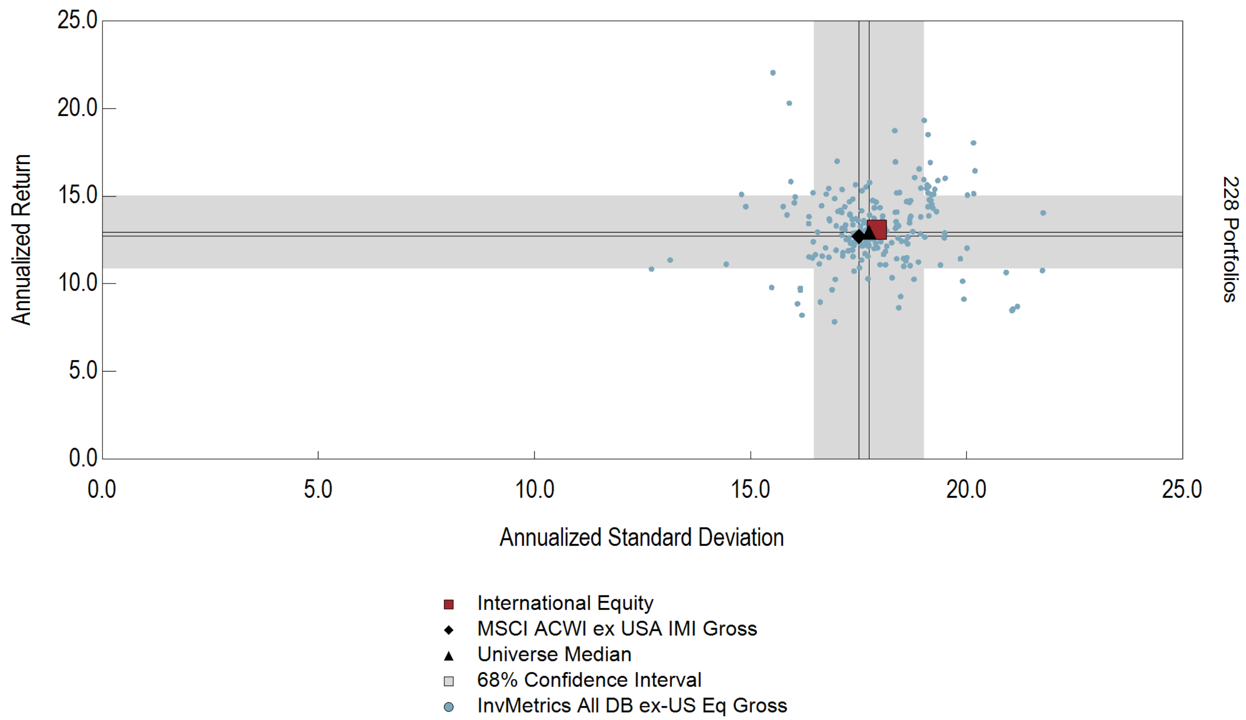
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fund	6.44%	44	11.22%	72	0.46	52	-0.15	82	2.20%	55
Policy Index	6.77%	30	11.08%	68	0.49	37	--	--	0.00%	1
Allocation Index	6.34%	47	11.52%	81	0.44	58	-0.60	99	0.71%	1
InvMetrics Public DB > $1B Gross Median	6.19%	--	10.39%	--	0.46	--	0.17	--	1.81%	--



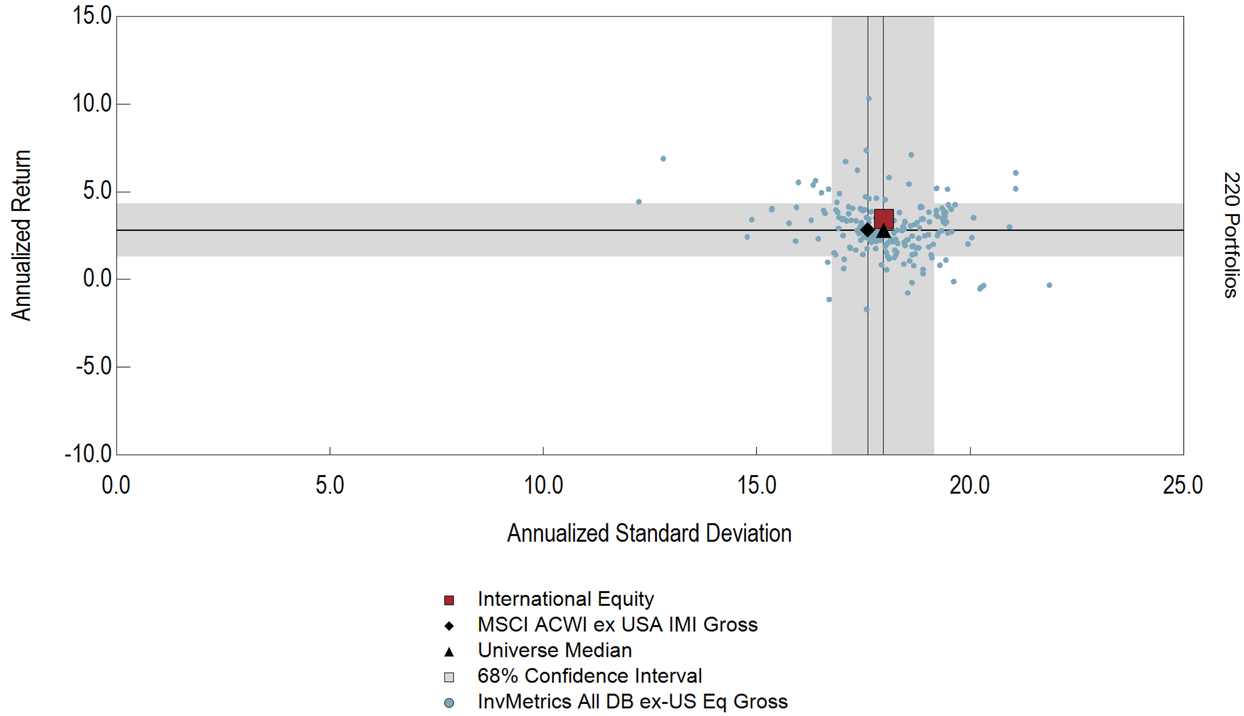
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
US Equity	18.79%	49	19.62%	84	0.91	65	0.48	20	0.65%	10
Russell 3000	18.48%	63	19.59%	83	0.90	76	--	--	0.00%	1
InvMetrics All DB US Eq Gross Median	18.74%	--	19.18%	--	0.94	--	0.10	--	2.40%	--



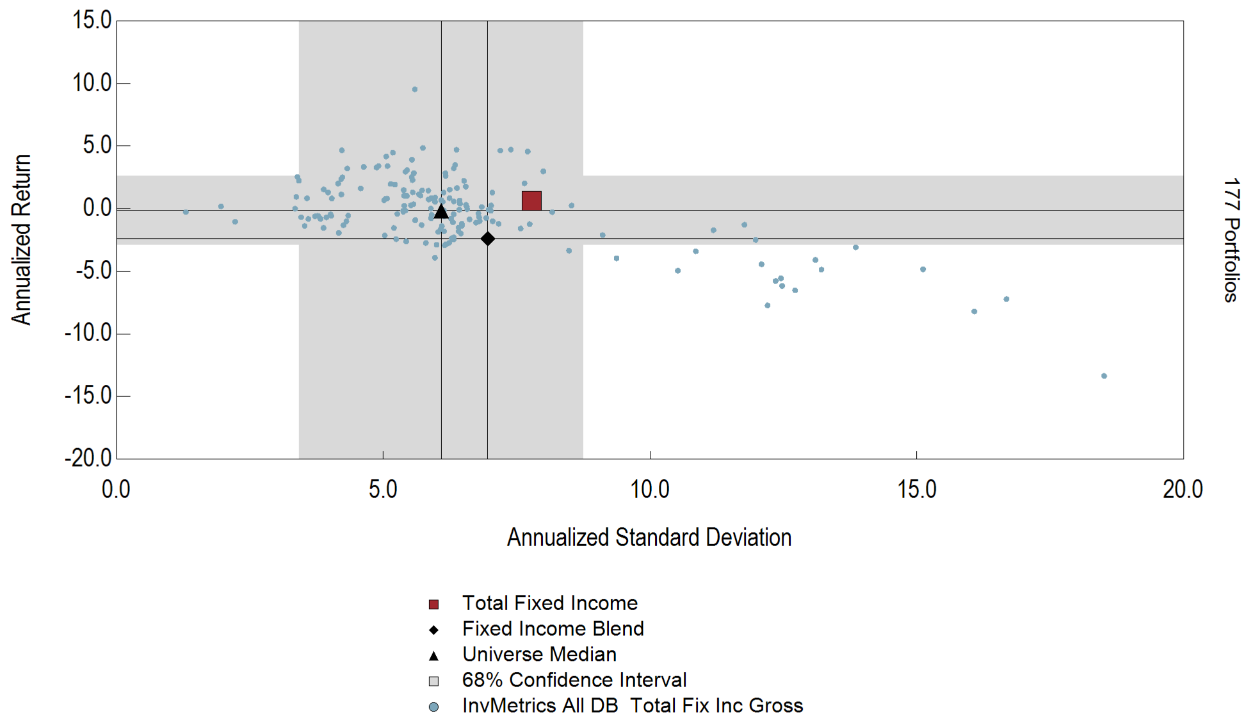
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
US Equity	10.22%	36	19.51%	67	0.46	45	-0.28	40	0.83%	9
Russell 3000	10.45%	22	19.22%	49	0.47	26	--	--	0.00%	1
InvMetrics All DB US Eq Gross Median	9.92%	--	19.24%	--	0.45	--	-0.36	--	2.31%	--



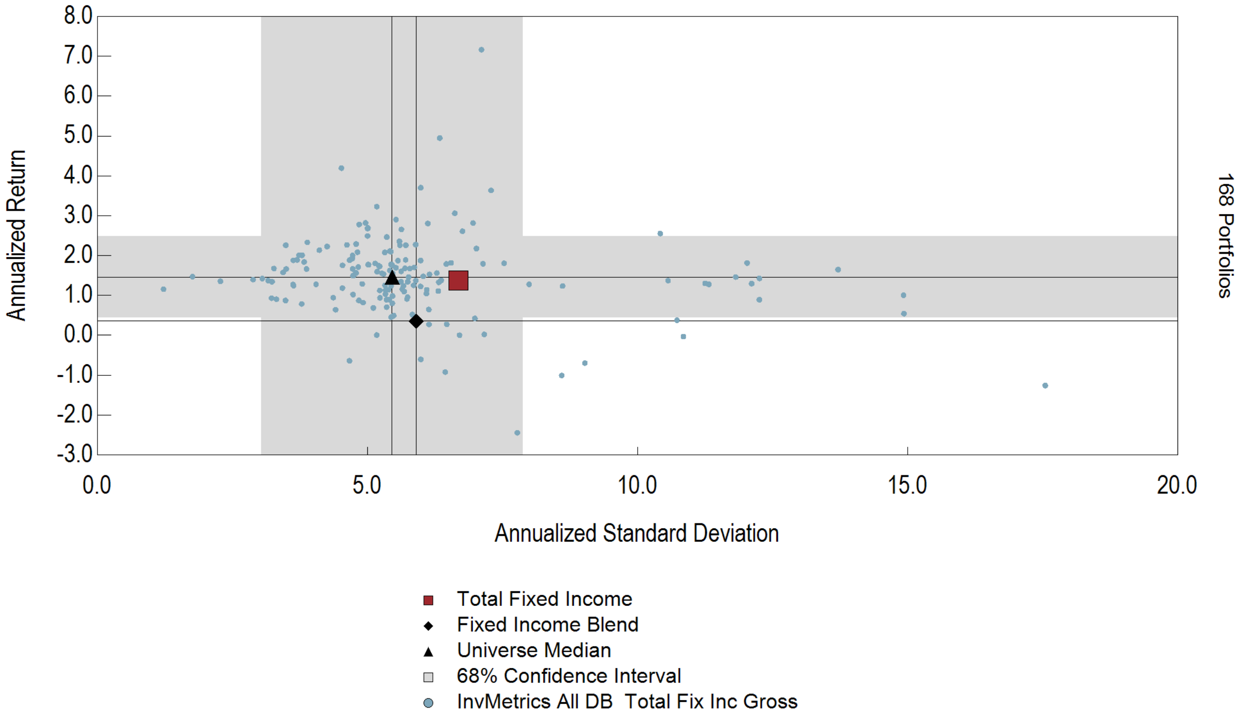
	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
International Equity	13.07%	48	17.92%	57	0.68	50	0.18	60	2.01%	8
MSCI ACWI ex USA IMI Gross	12.72%	56	17.51%	35	0.68	52	--	--	0.00%	1
InvMetrics All DB ex-US Eq Gross Median	12.94%	--	17.74%	--	0.68	--	0.33	--	3.13%	--



	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
International Equity	3.44%	32	17.98%	51	0.12	33	0.33	14	1.81%	4
MSCI ACWI ex USA IMI Gross	2.84%	49	17.60%	32	0.09	48	--	--	0.00%	1
InvMetrics All DB ex-US Eq Gross Median	2.81%	--	17.97%	--	0.08	--	-0.01	--	3.01%	--



	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 Fixed Income	0.62%	38	7.78%	87	-0.03	37	1.56	37	1.93%	60
Fixed Income Blend	-2.39%	85	6.96%	79	-0.47	84	--	--	0.00%	1
InvMetrics All DB Total Fix Inc Gross Median	-0.16%	--	6.08%	--	-0.19	--	1.35	--	1.70%	--

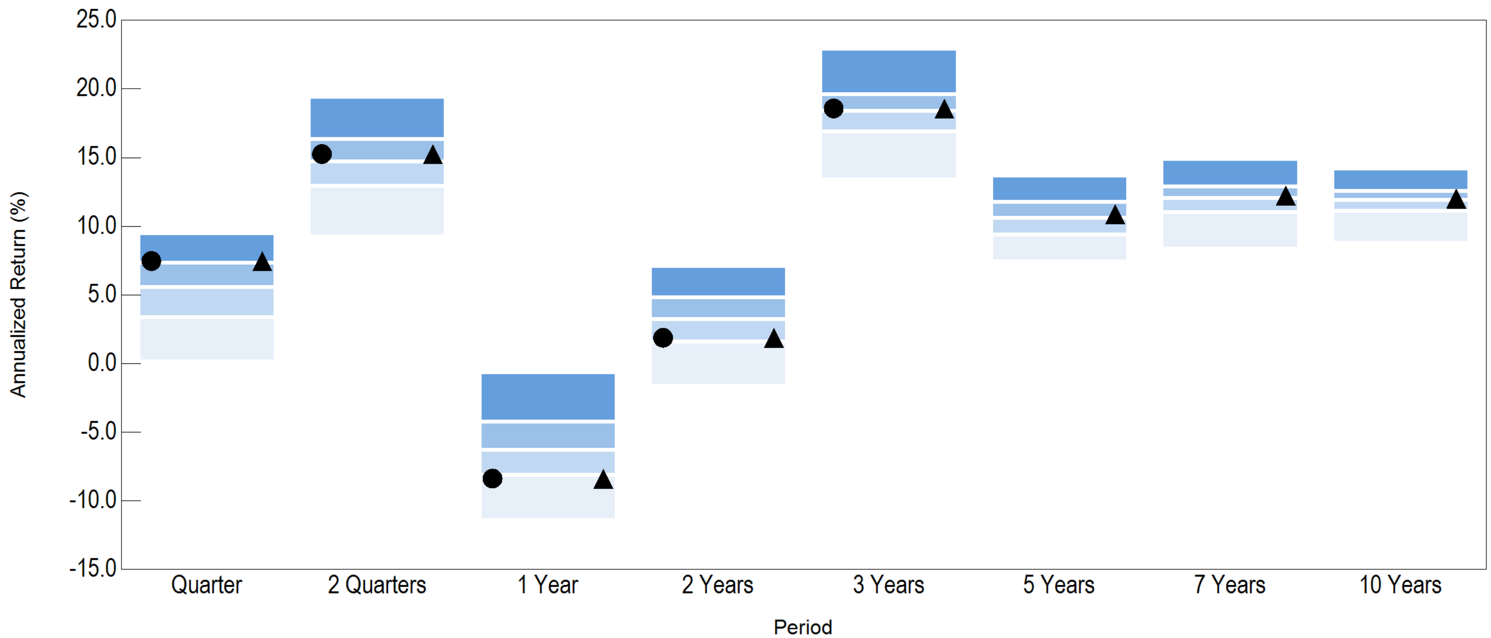


	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank	Information Ratio	Information Ratio Rank	Tracking Error	Tracking Error Rank
Total Fixed Income	1.38%	54	6.69%	83	0.01	56	0.46	21	2.22%	54
Fixed Income Blend	0.36%	93	5.90%	69	-0.16	95	--	--	0.00%	1
InvMetrics All DB Total Fix Inc Gross Median	1.46%	--	5.46%	--	0.02	--	0.27	--	2.19%	--

US Effective Style Map

	US Equity	BlackRock Russell 1000 Index Fund	TCW	Kennedy	Willliam Blair Small Cap Growth	Russell 3000
Risk Free	0.00	0.00	0.00	0.02	0.00	0.00
Large Growth	0.47	0.51	0.94	0.03	0.05	0.48
Large Value	0.43	0.48	0.00	0.13	0.15	0.45
Small Growth	0.05	0.00	0.06	0.00	0.77	0.03
Small Value	0.05	0.00	0.00	0.83	0.02	0.03

eV US Large Cap Core Equity Gross Return Comparison



	Return (Rank)															
5th Percentile	9.49		19.42		-0.64		7.11		22.92		13.68		14.88		14.20	
25th Percentile	7.38		16.37		-4.19		4.83		19.64		11.79		12.90		12.60	
Median	5.59		14.76		-6.27		3.27		18.45		10.65		12.07		11.94	
75th Percentile	3.39		12.98		-8.07		1.64		16.93		9.43		11.05		11.16	
95th Percentile	0.19		9.28		-11.41		-1.58		13.43		7.48		8.42		8.80	
# of Portfolios	337		337		337		333		327		314		287		252	
● **BlackRock Russell 1000 Index Fund**	7.47	(24)	15.25	(44)	-8.38	(80)	1.88	(73)	18.58	(48)	--	(--)	--	(--)	--	(--)
▲ **Russell 1000**	7.46	(24)	15.24	(44)	-8.39	(80)	1.86	(73)	18.55	(48)	10.87	(46)	12.22	(44)	12.01	(49)

Characteristics

	Portfolio	Russell 1000
Number of Holdings	1,006	1,007
Weighted Avg. Market Cap. ($B)	495.8	496.4
Median Market Cap. ($B)	13.5	13.4
Price To Earnings	20.6	20.9
Price To Book	4.1	4.1
Price To Sales	2.3	2.3
Return on Equity (%)	25.6	25.6
Yield (%)	1.7	1.6
Beta	1.0	1.0

Top Holdings

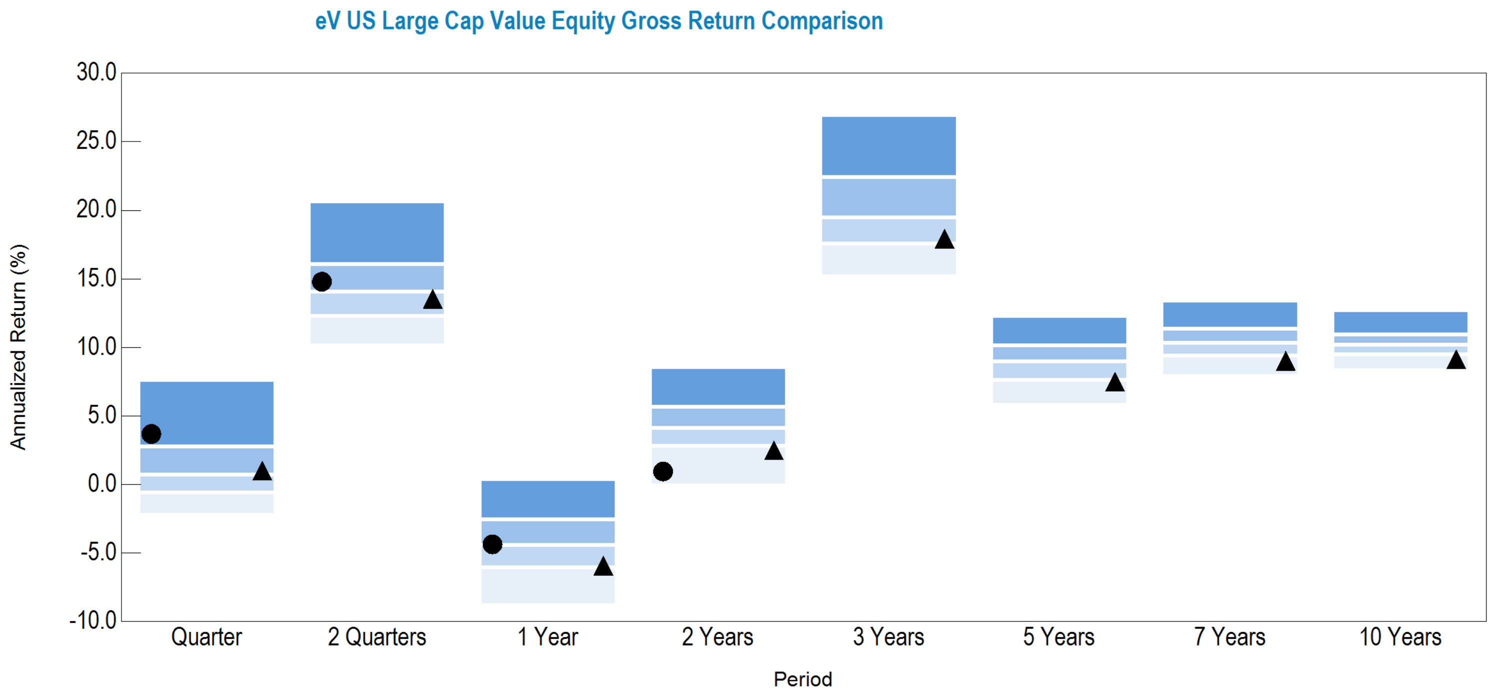
APPLE INC	6.5%
MICROSOFT CORP	5.7%
AMAZON.COM INC	2.4%
NVIDIA CORPORATION	1.7%
ALPHABET INC	1.6%
BERKSHIRE HATHAWAY INC	1.5%
ALPHABET INC	1.4%
TESLA INC	1.4%
META PLATFORMS INC	1.2%
EXXON MOBIL CORP	1.2%

Best Performers

	Return %
SOTERA HEALTH CO (SHC)	115.0%
CARVANA CO (CVNA)	106.5%
COINBASE GLOBAL INC	90.9%
NVIDIA CORPORATION (NVDA)	90.1%
OAK STREET HEALTH INC (OSH)	79.8%
META PLATFORMS INC (META)	76.1%
DRAFTKINGS INC (DKNG)	70.0%
SPOTIFY TECHNOLOGY S.A (SPOT)	69.2%
TESLA INC (TSLA)	68.4%
ROKU INC (ROKU)	61.7%

Worst Performers

	Return %
SIGNATURE BANK (SBNY)	-99.8%
SVB FINANCIAL GROUP (SIVBQ)	-99.6%
FIRST REPUBLIC BANK (FRCB)	-88.5%
PACWEST BANCORP (PACW)	-57.2%
LUMEN TECHNOLOGIES INC (LUMN)	-49.2%
WeWork Inc (WE)	-45.6%
ENVIVA INC (EVA)	-44.4%
WESTERN ALLIANCE BANCORPORATION (WAL)	-40.0%
ZIONS BANCORPORATION NATIONAL ASSOCIATION (ZION)	-38.6%
SCHWAB (CHARLES) CORP (SCHW)	-36.9%



	Return (Rank)															
5th Percentile	7.62		20.63		0.37		8.53		26.94		12.30		13.40		12.69	
25th Percentile	2.83		16.12		-2.53		5.69		22.43		10.19		11.38		10.99	
Median	0.74		14.09		-4.38		4.16		19.53		9.01		10.36		10.22	
75th Percentile	-0.54		12.31		-6.04		2.86		17.59		7.65		9.41		9.54	
95th Percentile	-2.21		10.20		-8.78		-0.02		15.20		5.83		7.93		8.36	
# of Portfolios	355		355		355		352		344		336		320		303	
● Aristotle	3.69	(19)	14.79	(41)	-4.37	(50)	0.95	(92)	--	(--)	--	(--)	--	(--)	--	(--)
▲ Russell 1000 Value	1.01	(46)	13.55	(57)	-5.91	(75)	2.50	(79)	17.93	(73)	7.50	(78)	9.02	(83)	9.13	(84)

Characteristics

	Portfolio	Russell 1000 Value
Number of Holdings	43	849
Weighted Avg. Market Cap. ($B)	160.6	154.6
Median Market Cap. ($B)	43.9	12.1
Price To Earnings	18.0	16.5
Price To Book	3.4	2.5
Price To Sales	2.5	1.7
Return on Equity (%)	25.1	15.1
Yield (%)	2.1	2.3
Beta		1.0

Top Holdings

MICROSOFT CORP	4.1%
CORTEVA INC	3.8%
MICROCHIP TECHNOLOGY INC	3.3%
ANSYS INC	3.3%
PARKER-HANNIFIN CORP	3.1%
SONY GROUP CORPORATION	3.1%
AMERIPRISE FINANCIAL INC	3.0%
DANAHER CORP	3.0%
LENNAR CORP	2.9%
ADOBE INC	2.9%

Best Performers

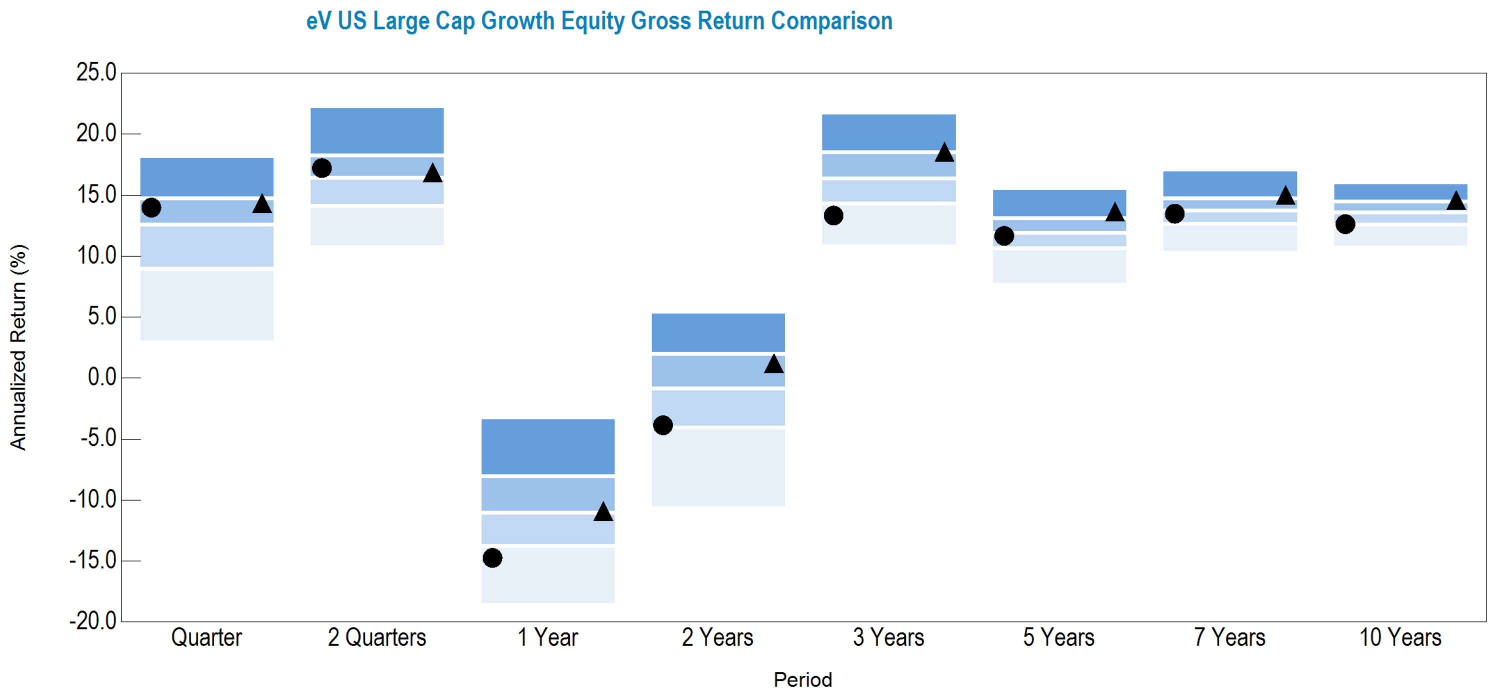
	Return %
ANSYS INC (ANSS)	37.8%
MICROSOFT CORP (MSFT)	20.5%
MICROCHIP TECHNOLOGY INC (MCHP)	19.8%
BLACKSTONE INC (BX)	19.5%
SONY GROUP CORPORATION (SONY)	18.8%
QUALCOMM INC. (QCOM)	16.7%
LENNAR CORP (LEN)	16.6%
PARKER-HANNIFIN CORP (PH)	15.9%
ADOBE INC (ADBE)	14.5%
ECOLAB INC. (ECL)	14.1%

Worst Performers

	Return %
CULLEN/FROST BANKERS INC (CFR)	-20.7%
THE PNC FINANCIAL SERVICES GROUP INC (PNC)	-18.8%
COMMERCE BANCSHARES INC (CBSH)	-13.9%
HONEYWELL INTERNATIONAL INC (HON)	-10.3%
RPM INTERNATIONAL INC (RPM)	-10.0%
GENERAL DYNAMICS CORP (GD)	-7.5%
AMGEN INC (AMGN)	-7.1%
OSHKOSH CORP (OSK)	-5.3%
XYLEM INC (XYL)	-5.0%
DANAHER CORP (DHR)	-4.9%

Aristotle Performance Attribution vs. Russell 1000 Value

	Attribution Effects							Returns		Sector Weights	
	Total Effects		Selection Effect		Allocation Effect		Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.29%		0.26%		0.12%		-0.10%	0.38%	-3.29%	4.89%	7.55%
Materials	-0.04%		-0.13%		0.26%		-0.18%	2.66%	5.25%	10.14%	4.36%
Industrials	-0.66%		-0.64%		0.02%		-0.05%	-1.91%	3.88%	11.65%	10.67%
Consumer Discretionary	0.85%		0.62%		0.06%		0.17%	15.79%	5.13%	7.23%	5.79%
Consumer Staples	-0.10%		-0.06%		-0.02%		-0.01%	-0.95%	-0.03%	8.76%	7.42%
Health Care	0.75%		0.55%		0.36%		-0.16%	-2.65%	-5.68%	12.55%	17.59%
Financials	0.63%		0.57%		0.17%		-0.11%	-3.45%	-5.60%	16.75%	20.38%
Information Technology	1.95%		0.44%		1.08%		0.43%	19.74%	14.24%	16.59%	8.38%
Communication Services	-1.25%		0.42%		-1.32%		-0.34%	12.25%	19.85%	0.00%	7.41%
Utilities	0.15%		0.12%		0.04%		-0.02%	-1.13%	-3.17%	5.21%	5.91%
Real Estate	-0.02%		-0.01%		-0.01%		0.00%	1.74%	2.00%	3.46%	4.54%
Cash	-0.14%		0.00%		-0.14%		0.00%	0.31%	--	2.77%	0.00%
Portfolio	**2.41%**	**=**	**2.16%**	**+**	**0.62%**	**+**	**-0.38%**	**3.52%**	**1.11%**	**100.00%**	**100.00%**



	Return (Rank)															
5th Percentile	18.20		22.26		-3.22		5.41		21.76		15.56		17.06		16.02	
25th Percentile	14.78		18.29		-7.99		2.00		18.55		13.17		14.79		14.52	
Median	12.63		16.43		-11.00		-0.82		16.41		11.93		13.77		13.61	
75th Percentile	8.97		14.13		-13.72		-4.00		14.36		10.69		12.69		12.63	
95th Percentile	2.98		10.78		-18.58		-10.63		10.85		7.66		10.30		10.71	
# of Portfolios	258		258		258		258		257		246		223		212	
● TCW	13.98	(36)	17.23	(39)	-14.74	(81)	-3.87	(75)	13.33	(83)	11.67	(57)	13.48	(58)	12.63	(76)
▲ Russell 1000 Growth	14.37	(31)	16.88	(43)	-10.90	(50)	1.21	(33)	18.57	(25)	13.66	(19)	15.01	(22)	14.59	(23)

Characteristics

	Portfolio	Russell 1000 Growth
Number of Holdings	33	509
Weighted Avg. Market Cap. ($B)	426.8	818.2
Median Market Cap. ($B)	94.7	17.0
Price To Earnings	41.4	28.0
Price To Book	8.5	9.5
Price To Sales	5.0	3.7
Return on Equity (%)	31.3	42.2
Yield (%)	0.6	1.0
Beta	1.0	1.0

Top Holdings

NVIDIA CORPORATION	7.2%
ALPHABET INC	6.4%
SERVICENOW INC	5.8%
MICROSOFT CORP	5.8%
VISA INC	5.5%
AMAZON.COM INC	5.2%
S&P GLOBAL INC	4.0%
MASTERCARD INC	3.7%
SALESFORCE INC	3.6%
ZOETIS INC	3.4%

Best Performers

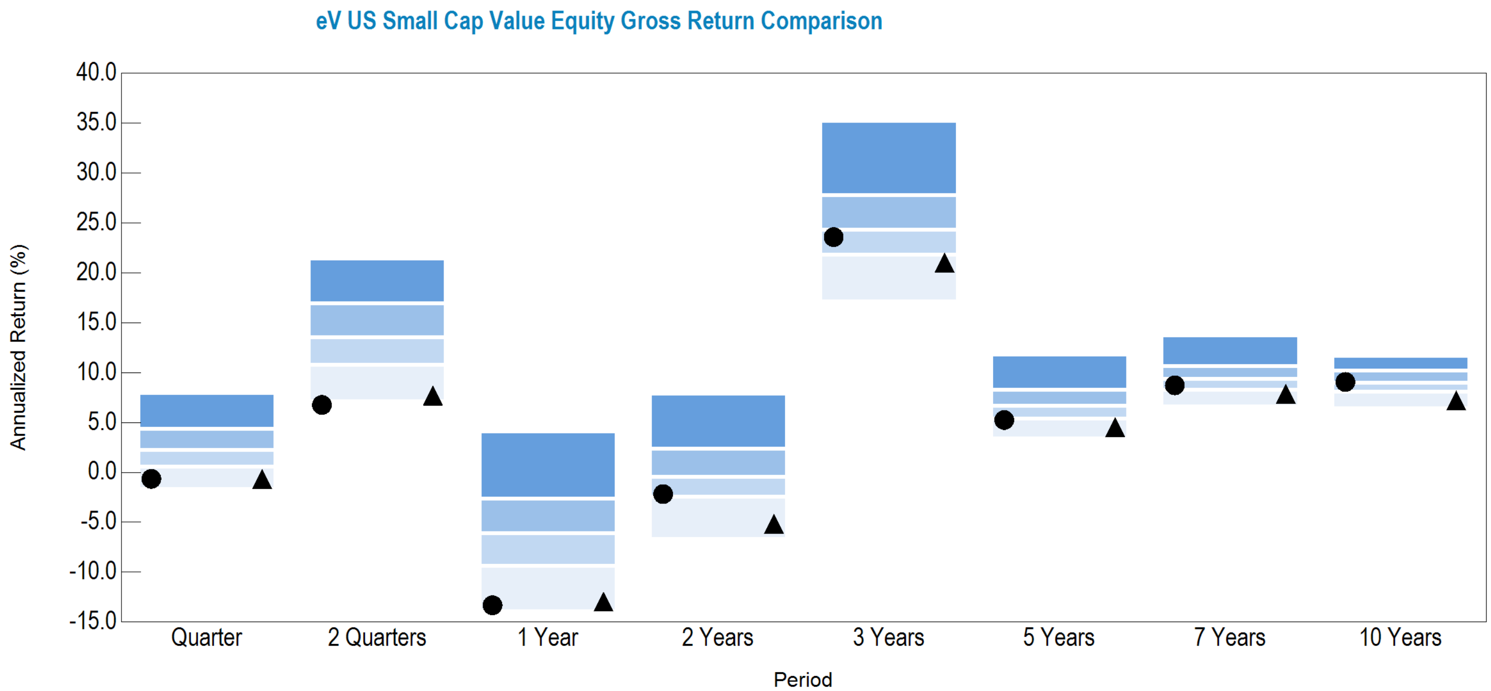
	Return %
NVIDIA CORPORATION (NVDA)	90.1%
ALIGN TECHNOLOGY INC (ALGN)	58.4%
SALESFORCE INC (CRM)	50.7%
TRADE DESK INC (THE) (TTD)	35.9%
CROWDSTRIKE HOLDINGS INC (CRWD)	30.4%
ASML HOLDING NV (ASML)	24.9%
AMAZON.COM INC (AMZN)	23.0%
MICROSOFT CORP (MSFT)	20.5%
SERVICENOW INC (NOW)	19.7%
ALPHABET INC (GOOG)	17.2%

Worst Performers

	Return %
SCHWAB (CHARLES) CORP (SCHW)	-36.9%
ENPHASE ENERGY INC (ENPH)	-20.6%
UNITEDHEALTH GROUP INC (UNH)	-10.5%
HOME DEPOT INC. (THE) (HD)	-5.9%
INTUITIVE SURGICAL INC (ISRG)	-3.7%
AMERICAN TOWER CORP (AMT)	-3.5%
IQVIA HOLDINGS INC (IQV)	-2.9%
DEXCOM INC (DXCM)	2.6%
S&P GLOBAL INC (SPGI)	3.2%
MASTERCARD INC (MA)	4.7%

TCW Performance Attribution vs. Russell 1000 Growth

	Attribution Effects					Returns		Sector Weights	
	Total Effects		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.31%		--	0.31%	--	--	-8.50%	0.00%	1.35%
Materials	0.18%		--	0.18%	--	--	2.74%	0.00%	1.47%
Industrials	0.46%		0.19%	0.37%	-0.10%	7.27%	5.21%	4.20%	8.14%
Consumer Discretionary	-1.21%		-1.29%	-0.01%	0.09%	11.04%	19.83%	13.30%	14.22%
Consumer Staples	0.54%		0.44%	0.31%	-0.22%	9.03%	2.47%	3.41%	6.14%
Health Care	1.41%		1.66%	-0.32%	0.07%	10.81%	-1.20%	13.88%	13.51%
Financials	-1.64%		-0.51%	-0.50%	-0.64%	-13.01%	0.50%	7.96%	3.27%
Information Technology	0.46%		0.69%	-0.15%	-0.08%	24.25%	22.57%	40.64%	43.40%
Communication Services	0.14%		0.04%	0.09%	0.01%	21.75%	21.02%	8.01%	6.79%
Utilities	0.01%		--	0.01%	--	--	-3.86%	0.00%	0.05%
Real Estate	-0.59%		-0.10%	-0.32%	-0.17%	-3.55%	2.01%	4.44%	1.65%
Cash	-0.35%		0.00%	-0.35%	0.00%	0.64%	--	4.16%	0.00%
Portfolio	**-0.28%**	**=**	**1.13%**	**+ -0.37%**	**+ -1.04%**	**14.15%**	**14.43%**	**100.00%**	**100.00%**



	Return (Rank)															
5th Percentile	7.94		21.43		4.05		7.86		35.19		11.79		13.72		11.63	
25th Percentile	4.40		16.99		-2.60		2.43		27.79		8.33		10.70		10.25	
Median	2.28		13.58		-6.08		-0.41		24.36		6.72		9.40		9.00	
75th Percentile	0.61		10.84		-9.33		-2.41		21.88		5.42		8.30		8.10	
95th Percentile	-1.60		7.14		-13.90		-6.66		17.14		3.42		6.63		6.43	
# of Portfolios	206		206		206		205		202		195		187		173	
● Kennedy	-0.65	(89)	6.76	(98)	-13.32	(94)	-2.18	(74)	23.58	(60)	5.25	(78)	8.73	(67)	9.06	(50)
▲ Russell 2000 Value	-0.66	(89)	7.70	(93)	-12.96	(93)	-5.17	(92)	21.01	(83)	4.55	(86)	7.86	(81)	7.22	(90)

Characteristics

	Portfolio	Russell 2000 Value
Number of Holdings	243	1,358
Weighted Avg. Market Cap. ($B)	3.3	2.4
Median Market Cap. ($B)	2.2	0.9
Price To Earnings	12.4	10.5
Price To Book	1.9	1.6
Price To Sales	1.1	0.9
Return on Equity (%)	10.1	5.2
Yield (%)	1.7	2.5
Beta	0.9	1.0

Top Holdings

CASELLA WASTE SYSTEMS INC	1.1%
SOUTHSTATE CORPORATION	1.1%
HOME BANCSHARES INC	1.1%
GRAPHIC PACKAGING HOLDING CO	1.0%
BANNER CORP	1.0%
ATI INC	1.0%
BARRETT BUSINESS SERVICES INC	0.9%
KIRBY CORP	0.9%
ICF INTERNATIONAL INC	0.9%
WNS (HOLDINGS) LTD	0.9%

Best Performers

	Return %
Navitas Semiconductor Corp (NVTS)	108.3%
INTEST CORP (INTT)	101.4%
KIMBALL INTERNATIONAL INC (KBAL)	92.2%
BLUE BIRD CORP (BLBD)	90.8%
INDIE SEMICONDUCTOR INC A COMMON STOCK	81.0%
AXCELIS TECHNOLOGIES INC. (ACLS)	67.9%
LANTHEUS HOLDINGS INC (LNTH)	62.0%
ALLEGRO MICROSYSTEMS INC (ALGM)	59.9%
ONESPAN INC (OSPN)	56.4%
E.L.F. BEAUTY INC (ELF)	48.9%

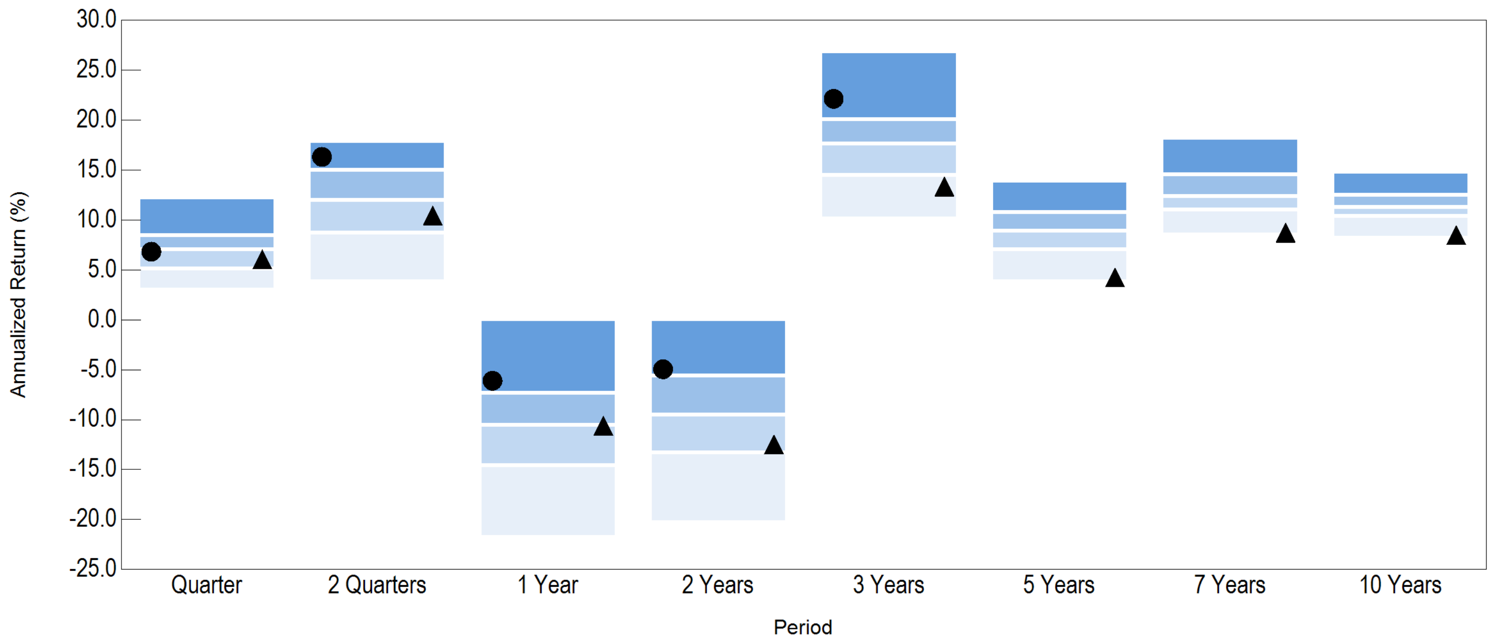
Worst Performers

	Return %
FREQUENCY THERAPEUTICS INC (FREQ)	-86.9%
PACWEST BANCORP (PACW)	-57.2%
UNIVERSAL ELECTRONICS INC (UEIC)	-51.3%
FIRST FOUNDATION INC (FFWM)	-47.7%
CUTERA INC (CUTR)	-46.6%
METROPOLITAN BANK HOLDING CORP (MCB)	-42.2%
WESTERN ALLIANCE BANCORPORATION (WAL)	-40.0%
ASPEN AEROGELS INC (ASPN)	-36.8%
ADAPTHEALTH CORP (AHCO)	-35.3%
INVESTAR HOLDING CORP (ISTR)	-34.7%

Kennedy Performance Attribution vs. Russell 2000 Value

	Attribution Effects					Returns		Sector Weights	
	Total Effects		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	-0.67%		-0.67%	0.00%	-0.01%	-10.18%	0.36%	6.40%	6.33%
Materials	0.45%		0.24%	0.12%	0.09%	13.09%	7.19%	5.60%	4.09%
Industrials	0.40%		0.15%	0.22%	0.03%	7.50%	6.39%	16.58%	13.48%
Consumer Discretionary	-0.32%		-0.11%	-0.23%	0.02%	10.16%	11.31%	7.84%	9.75%
Consumer Staples	0.19%		0.10%	0.03%	0.06%	4.78%	1.17%	4.42%	2.72%
Health Care	0.27%		0.22%	0.07%	-0.03%	-4.22%	-6.39%	9.04%	10.25%
Financials	0.03%		-0.83%	0.67%	0.19%	-13.77%	-10.90%	22.45%	29.07%
Information Technology	1.05%		0.42%	0.40%	0.23%	20.06%	12.60%	8.65%	5.62%
Communication Services	-0.31%		-0.42%	-0.01%	0.12%	-14.28%	0.36%	2.05%	2.88%
Utilities	-0.10%		-0.11%	-0.01%	0.03%	-1.66%	0.61%	3.88%	5.00%
Real Estate	-0.10%		-0.10%	-0.02%	0.01%	-0.37%	0.51%	9.47%	10.82%
Cash	0.06%		0.00%	0.06%	0.00%	1.07%	--	3.63%	0.00%
Portfolio	**0.95%**	**=**	**-1.11%**	**+ 1.31%**	**+ 0.75%**	**0.24%**	**-0.71%**	**100.00%**	**100.00%**

eV US Small Cap Growth Equity Gross Return Comparison



	Return (Rank)															
5th Percentile	12.24		17.92		0.05		0.02		26.85		13.92		18.22		14.81	
25th Percentile	8.54		15.03		-7.30		-5.54		20.14		10.86		14.59		12.54	
Median	7.08		12.04		-10.46		-9.47		17.71		8.98		12.45		11.33	
75th Percentile	5.17		8.77		-14.49		-13.24		14.55		7.12		11.10		10.47	
95th Percentile	3.04		3.91		-21.68		-20.22		10.19		3.89		8.59		8.26	
# of Portfolios	149		149		149		149		146		143		135		123	
● Willliam Blair Small Cap Growth	6.82	(53)	16.32	(14)	-6.10	(21)	-4.94	(21)	22.13	(18)	--	(--)	--	(--)	--	(--)
▲ Russell 2000 Growth	6.07	(65)	10.46	(62)	-10.60	(52)	-12.48	(70)	13.36	(85)	4.26	(94)	8.74	(94)	8.49	(95)

Characteristics

	Portfolio	Russell 2000 Growth
Number of Holdings	3,494	1,091
Weighted Avg. Market Cap. ($B)	259.3	3.4
Median Market Cap. ($B)	10.8	1.4
Price To Earnings	17.4	15.9
Price To Book	3.2	3.6
Price To Sales	1.7	1.5
Return on Equity (%)	18.7	4.1
Yield (%)	2.2	0.9
Beta		1.0

Top Holdings

BWX TECHNOLOGIES INC	2.6%
BRINK'S CO (THE)	2.6%
CASELLA WASTE SYSTEMS INC	2.5%
PERFORMANCE FOOD GROUP COMPANY	1.9%
ALBANY INTERNATIONAL CORP.	1.9%
ENERGY RECOVERY INC	1.8%
MERIT MEDICAL SYSTEMS INC	1.8%
MERCURY SYSTEMS INC	1.8%
INSPIRE MEDICAL SYSTEMS INC	1.8%
ENCOMPASS HEALTH CORP	1.7%

Best Performers

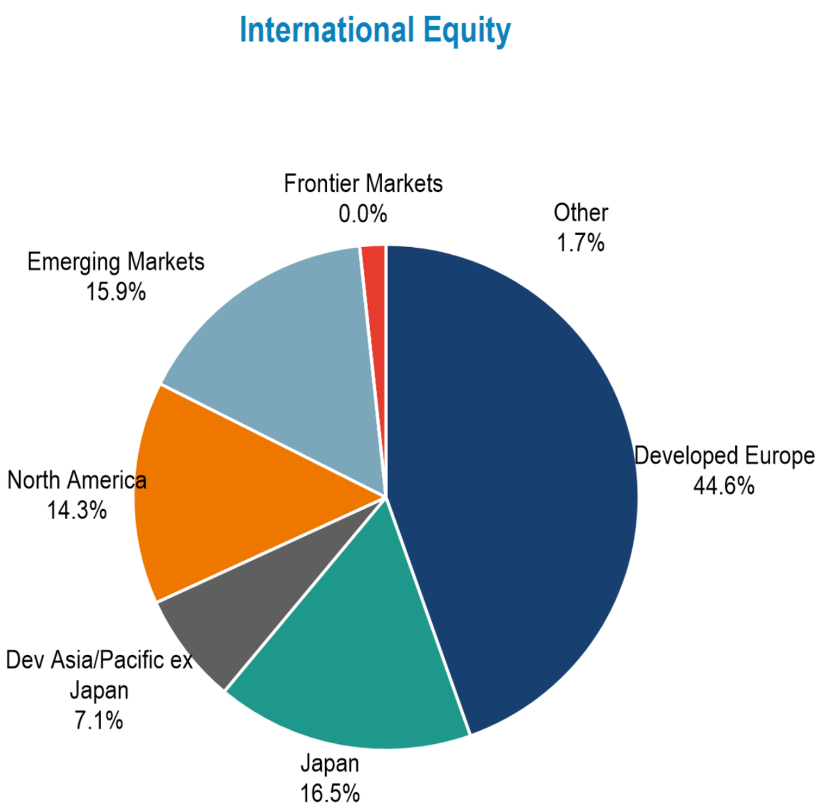
	Return %
SOTERA HEALTH CO (SHC)	115.0%
ACV AUCTIONS INC	57.2%
GOOSEHEAD INSURANCE INC (GSHD)	52.0%
CERTARA INC (CERT)	50.0%
PDF SOLUTIONS INC (PDFS)	48.7%
ORION ENGINEERED CARBONS SA (OEC)	46.6%
SKYLINE CHAMPION CORP (SKY)	46.0%
VERTEX INC (VERX)	42.6%
SITIME CORP (SITM)	40.0%
THE BEAUTY HEALTH CO COMMON STOCK	38.8%

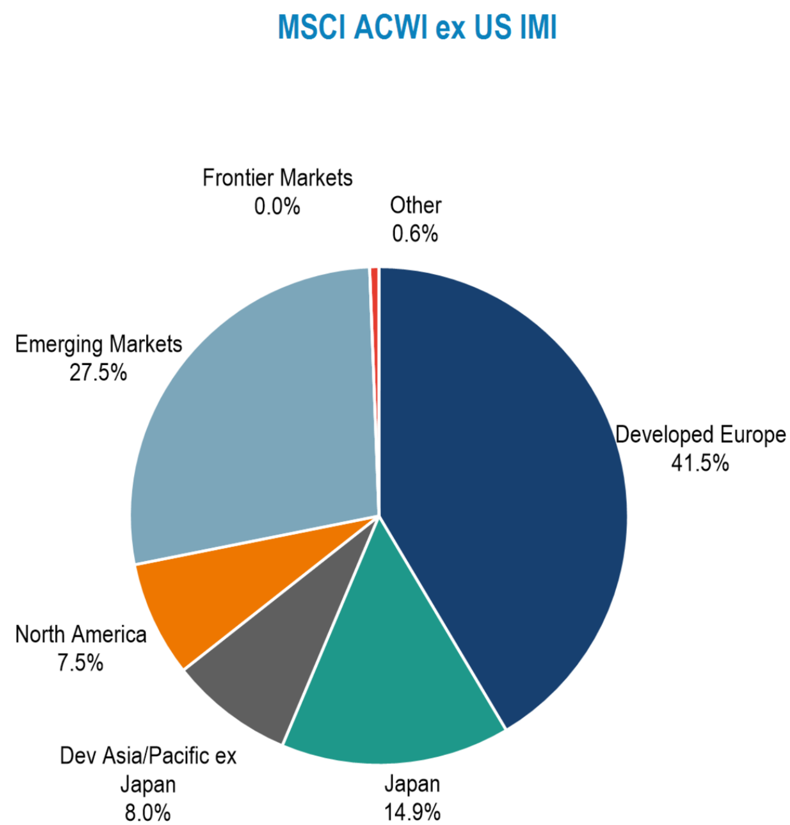
Worst Performers

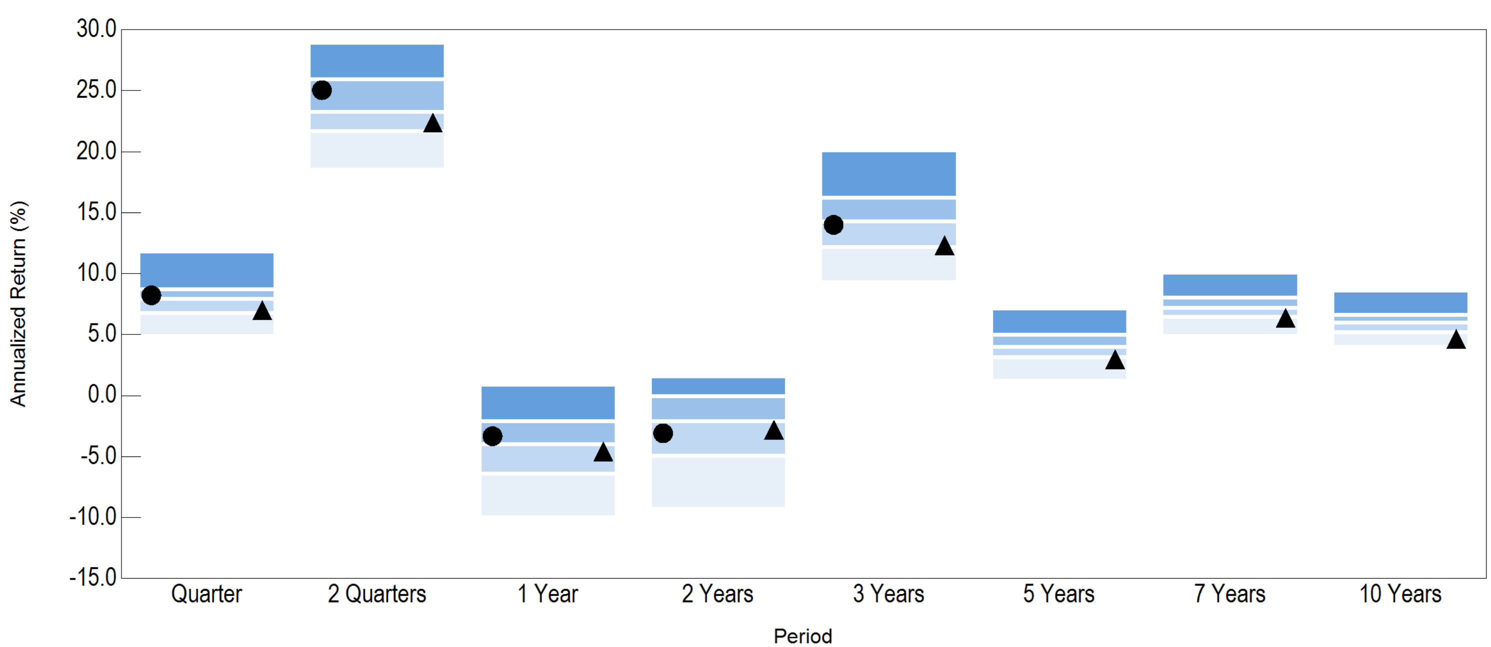
	Return %
PACWEST BANCORP (PACW)	-57.2%
NATIONAL VISION HOLDINGS INC (EYE)	-51.4%
ALIGNMENT HEALTHCARE INC	-45.9%
TWIST BIOSCIENCE CORP (TWST)	-36.7%
STEM INC	-36.6%
HALOZYME THERAPEUTICS INC (HALO)	-32.9%
VERADIGM INC (MDRX)	-26.0%
OWENS & MINOR INC. (OMI)	-25.5%
GLOBUS MEDICAL INC (GMED)	-23.7%
AZENTA INC (AZTA)	-23.4%

Willliam Blair Small Cap Growth Performance Attribution vs. Russell 2000 Growth

	Attribution Effects					Returns		Sector Weights	
	Total Effects		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.97%		1.01%	-0.10%	0.06%	5.80%	-7.32%	7.04%	7.38%
Materials	0.30%		0.89%	-0.11%	-0.48%	30.50%	10.08%	1.92%	4.47%
Industrials	0.05%		-0.05%	0.12%	-0.02%	8.01%	8.31%	22.51%	17.73%
Consumer Discretionary	-0.47%		-0.52%	0.11%	-0.06%	7.71%	12.71%	12.41%	10.79%
Consumer Staples	-0.02%		0.02%	0.00%	-0.03%	8.55%	8.72%	3.55%	4.53%
Health Care	-1.31%		-1.30%	-0.01%	0.00%	-5.39%	-0.06%	23.64%	23.27%
Financials	-0.25%		-0.33%	0.06%	0.02%	-6.48%	1.14%	2.45%	5.74%
Information Technology	1.14%		1.32%	-0.09%	-0.09%	19.44%	12.31%	17.61%	19.84%
Communication Services	-0.22%		-0.24%	0.16%	-0.15%	2.40%	12.88%	4.16%	2.27%
Utilities	0.04%		--	0.04%	--	--	4.21%	0.00%	1.74%
Real Estate	0.23%		0.31%	0.04%	-0.12%	15.02%	0.75%	1.31%	2.23%
Cash	-0.27%		0.00%	-0.27%	0.00%	1.07%	--	2.85%	0.00%
Unclassified	0.34%		0.00%	0.34%	0.00%	41.97%	--	0.55%	0.00%
Portfolio	**0.53%**	**=**	**1.11% +**	**0.29% +**	**-0.87%**	**6.56%**	**6.02%**	**100.00%**	**100.00%**


International Equity
Frontier Markets
0.0%
Other
1.7%
Emerging Markets
15.9%
North America
14.3%
Developed Europe
44.6%
Dev Asia/Pacific ex
Japan
7.1%
Japan
16.5%


MSCI ACWI ex US IMI
Frontier Markets
0.0%
Other
0.6%
Emerging Markets
27.5%
Developed Europe
41.5%
North America
7.5%
Dev Asia/Pacific ex
Japan
8.0%
Japan
14.9%



	Return (Rank)															
5th Percentile	11.78		28.91		0.89		1.55		20.10		7.15		10.07		8.60	
25th Percentile	8.75		25.95		-2.05		-0.03		16.26		5.00		8.07		6.65	
Median	7.96		23.29		-3.97		-2.07		14.29		4.01		7.21		6.01	
75th Percentile	6.81		21.72		-6.39		-4.90		12.23		3.19		6.52		5.22	
95th Percentile	4.90		18.55		-9.96		-9.26		9.30		1.25		4.92		4.03	
# of Portfolios	56		56		56		56		54		51		49		42	
● **Bivium Intl Equity**	8.23	(36)	25.05	(32)	-3.33	(35)	-3.09	(65)	14.00	(52)	--	(--)	--	(--)	--	(--)
▲ **MSCI ACWI ex USA Gross**	7.00	(70)	22.38	(68)	-4.57	(66)	-2.82	(63)	12.32	(75)	2.97	(79)	6.37	(82)	4.65	(89)

Characteristics

	Portfolio	MSCI ACWI ex USA Gross
Number of Holdings	519	2,258
Weighted Avg. Market Cap. ($B)	53.7	89.8
Median Market Cap. ($B)	7.8	9.2
Price To Earnings	11.7	13.5
Price To Book	2.3	2.5
Price To Sales	0.9	1.2
Return on Equity (%)	14.6	14.8
Yield (%)	3.5	3.3
Beta	1.1	1.0

Top Holdings

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	1.6%
ALIBABA GROUP HOLDING LTD	1.5%
SANDS CHINA LTD	1.2%
ITOCHU CORP	1.2%
BAIDU INC	1.1%
LOREAL SA	1.0%
ROCHE HOLDING AG	1.0%
POSCO HOLDINGS INC	0.9%
BMW	0.9%
AIRBUS SE	0.8%

Best Performers

	Return %
EASYJET (UKIR:EZJ)	64.0%
MERCADOLIBRE INC (MELI)	55.8%
INNER MONGOLIA YITAI COAL CO LTD	55.4%
ADVANTEST CORP	43.1%
ARYZTA AG	42.6%
WIWYNN CORPORATION	42.1%
PANDORA AS	40.0%
SOPRA STERIA GROUP (F:SOP)	39.2%
ASMPT LIMITED	38.7%
CECONOMY AG	37.3%

Worst Performers

	Return %
CREDIT SUISSE GROUP	-69.8%
DIRECT LINE INSURANCE GROUP PLC	-36.2%
EAST BUY HOLDING LIMITED	-36.0%
ANGLO AMERICAN PLATINUM LTD	-33.6%
PRECISION DRILLING CORP (PD.)	-33.0%
QUALICORP CONSULTORIA E CORRETORA DE SEGUROS SA	-29.2%
JINXIN FERTILITY GROUP LIMITED	-27.5%
CHINASOFT INTERNATIONAL LTD	-27.3%
GRUPO SBF	-24.9%
CHINA EDUCATION GROUP HOLDINGS LIMITED	-22.8%

Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA Gross

	Attribution Effects					Returns		Sector Weights	
	Total Effects		Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.24%		0.12%	0.15%	-0.04%	2.46%	-0.02%	3.93%	6.01%
Materials	0.32%		0.36%	0.02%	-0.05%	10.40%	6.06%	7.55%	8.37%
Industrials	-0.02%		-0.04%	0.10%	-0.08%	9.21%	10.06%	14.91%	12.27%
Consumer Discretionary	0.26%		0.24%	0.02%	0.00%	13.06%	11.21%	11.83%	11.35%
Consumer Staples	0.13%		0.20%	0.03%	-0.10%	8.60%	6.55%	6.62%	8.89%
Health Care	0.13%		0.12%	-0.05%	0.05%	5.72%	4.44%	11.77%	9.82%
Financials	0.23%		0.03%	0.22%	-0.02%	1.68%	1.43%	16.74%	20.95%
Information Technology	0.32%		0.21%	0.06%	0.04%	19.41%	17.04%	10.49%	10.76%
Communication Services	-0.03%		0.20%	-0.15%	-0.08%	15.89%	11.74%	3.29%	5.90%
Utilities	0.06%		0.04%	0.05%	-0.03%	4.62%	3.42%	2.13%	3.36%
Real Estate	0.04%		0.06%	-0.06%	0.04%	1.40%	-1.64%	2.87%	2.28%
Cash	-0.16%		0.00%	-0.16%	0.00%	1.07%	--	2.67%	0.00%
Unclassified	-0.14%		0.00%	-0.07%	-0.07%	2.59%	5.20%	5.21%	0.05%
Portfolio	**1.37%**	**=**	**1.55%**	**+ 0.17%**	**+ -0.35%**	**8.30%**	**6.93%**	**100.00%**	**100.00%**

Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA Gross

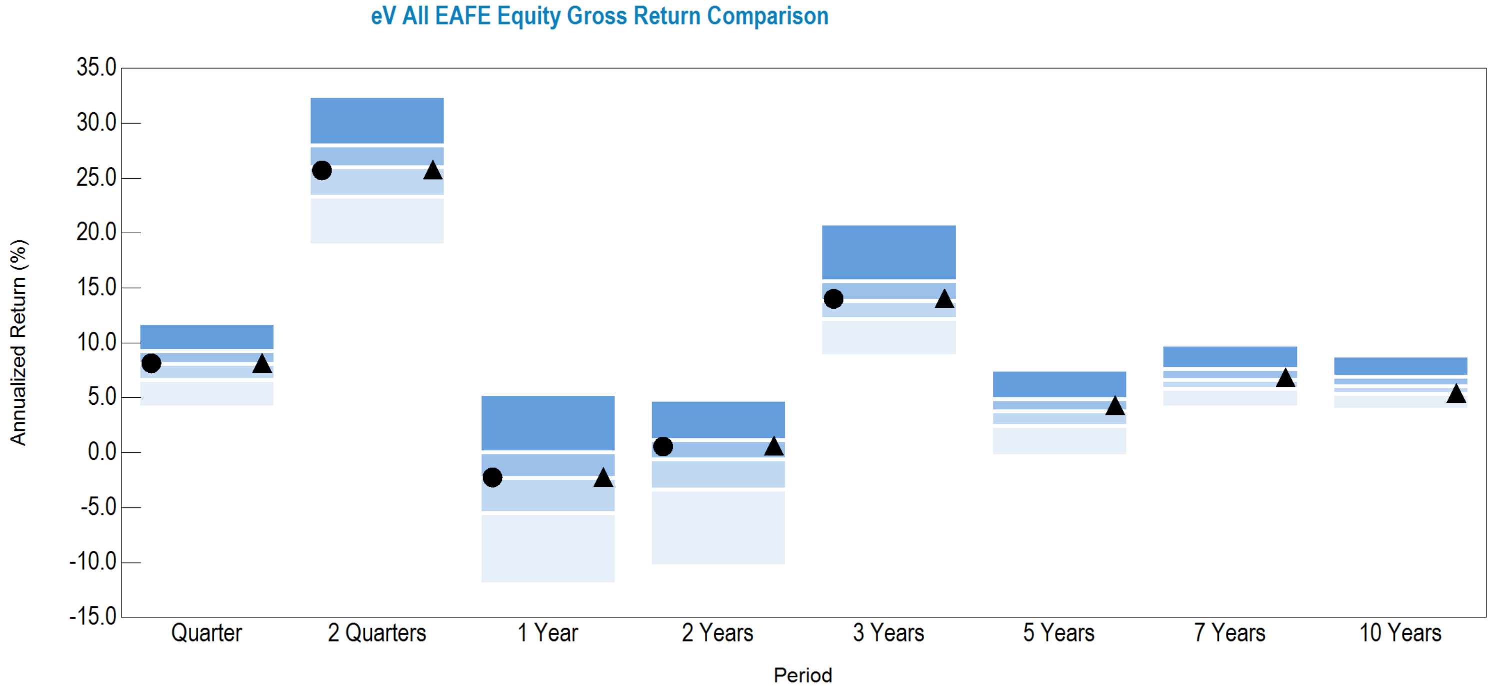
	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Europe									
Austria	-0.05%	2.42%	0.70%	0.12%	0.00%	-0.03%	0.01%	-0.01%	-0.04%
Belgium	3.41%	6.14%	0.40%	0.66%	-0.02%	0.01%	0.00%	0.01%	-0.01%
Czech Republic*	14.66%	32.90%	0.04%	0.04%	-0.01%	0.00%	0.00%	0.00%	-0.01%
Denmark	14.00%	12.83%	2.62%	1.90%	0.02%	0.03%	0.01%	0.01%	0.08%
Finland	-4.10%	-0.12%	0.55%	0.65%	-0.03%	0.01%	0.00%	0.00%	-0.02%
France	14.88%	14.52%	8.74%	7.57%	0.03%	0.07%	0.02%	0.00%	0.13%
Germany	11.52%	14.64%	3.13%	5.21%	-0.16%	-0.13%	-0.04%	0.06%	-0.27%
Greece*	--	15.43%	0.00%	0.09%	--	-0.01%	0.00%	--	-0.01%
Hungary*	-1.15%	3.06%	0.19%	0.05%	0.00%	-0.01%	0.01%	-0.01%	-0.01%
Ireland	-3.58%	21.48%	0.24%	0.44%	-0.10%	-0.03%	-0.01%	0.05%	-0.09%
Italy	3.03%	14.67%	0.68%	1.50%	-0.17%	-0.05%	-0.02%	0.09%	-0.15%
Luxembourg	15.89%	6.94%	0.30%	0.00%	0.00%	0.00%	0.00%	0.03%	0.03%
Netherlands	8.79%	16.53%	4.17%	2.72%	-0.21%	0.12%	0.02%	-0.11%	-0.18%
Norway	3.33%	-6.81%	0.49%	0.50%	0.05%	0.00%	0.00%	0.00%	0.05%
Poland*	5.94%	-1.20%	0.14%	0.21%	0.01%	0.01%	0.00%	0.00%	0.01%
Portugal	--	3.22%	0.00%	0.15%	--	0.01%	0.00%	--	0.00%
Spain	14.39%	15.50%	1.83%	1.55%	-0.02%	0.02%	0.00%	0.00%	0.01%
Sweden	6.43%	10.19%	3.00%	2.13%	-0.08%	0.03%	0.01%	-0.03%	-0.08%
Switzerland	11.16%	7.29%	7.06%	6.48%	0.25%	0.00%	0.01%	0.02%	0.28%
United Kingdom	12.77%	5.94%	8.53%	9.74%	0.66%	0.04%	-0.03%	-0.08%	0.59%

Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA 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	10.28%	2.73%	2.02%	5.07%	0.39%	0.07%	0.04%	-0.23%	0.26%
China*	7.66%	4.85%	5.51%	9.17%	0.25%	0.04%	0.02%	-0.10%	0.21%
Hong Kong	8.42%	-2.47%	6.66%	1.94%	0.21%	-0.39%	-0.03%	0.51%	0.31%
India*	-2.87%	-6.14%	2.39%	4.10%	0.16%	0.23%	-0.03%	-0.07%	0.29%
Indonesia*	7.95%	6.40%	0.54%	0.54%	0.01%	0.00%	0.00%	0.00%	0.01%
Japan	7.06%	6.27%	15.98%	14.03%	0.11%	0.01%	-0.02%	0.02%	0.12%
Korea*	8.53%	8.57%	4.08%	3.21%	-0.08%	0.05%	0.06%	-0.02%	0.02%
Malaysia*	-3.07%	-3.99%	0.25%	0.44%	0.00%	0.02%	0.00%	0.00%	0.02%
New Zealand	16.52%	7.81%	0.65%	0.12%	0.01%	0.01%	-0.01%	0.05%	0.06%
Philippines*	9.78%	2.71%	0.81%	0.21%	0.01%	-0.04%	0.02%	0.04%	0.04%
Singapore	1.28%	5.88%	1.69%	0.97%	-0.05%	-0.01%	0.01%	-0.03%	-0.08%
Taiwan*	20.20%	14.55%	2.35%	3.92%	0.24%	-0.12%	-0.03%	-0.10%	0.01%
Thailand*	-1.63%	-0.58%	0.31%	0.63%	-0.01%	0.03%	-0.01%	0.00%	0.02%
Americas									
Argentina*	55.76%	4.74%	0.09%	0.00%	0.00%	0.00%	0.00%	0.05%	0.04%
Brazil*	-1.14%	-0.68%	3.24%	1.49%	0.00%	-0.20%	0.06%	0.00%	-0.14%
Canada	-1.69%	4.39%	3.44%	7.73%	-0.47%	0.09%	0.00%	0.26%	-0.12%
Chile*	1.53%	4.78%	0.09%	0.16%	0.01%	0.01%	-0.01%	0.00%	0.00%
Colombia*	0.86%	-11.50%	0.09%	0.03%	0.01%	-0.01%	0.00%	0.01%	0.00%
Mexico*	22.21%	21.91%	0.51%	0.65%	0.00%	-0.01%	-0.01%	0.00%	-0.02%
Peru*	--	8.27%	0.00%	0.07%	--	0.00%	0.00%	--	0.00%
United States	3.94%	7.59%	1.59%	0.00%	0.00%	0.02%	0.00%	-0.06%	-0.04%

Bivium Intl Equity Performance Attribution vs. MSCI ACWI ex USA 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*	--	-3.58%	0.00%	0.02%	--	0.00%	0.01%	--	0.00%
Israel	-9.59%	0.88%	0.25%	0.46%	-0.05%	0.01%	0.00%	0.02%	-0.01%
Kuwait*	--	-3.47%	0.00%	0.27%	--	0.03%	0.00%	--	0.03%
Qatar*	--	-0.75%	0.00%	0.28%	--	0.02%	0.00%	--	0.02%
Saudi Arabia*	--	0.12%	0.00%	1.16%	--	0.07%	0.00%	--	0.07%
South Africa*	8.28%	-0.33%	1.07%	1.05%	0.09%	0.00%	0.00%	0.00%	0.09%
Turkey*	5.90%	-8.89%	0.07%	0.19%	0.03%	0.02%	0.00%	-0.02%	0.03%
United Arab Emirates*	-2.10%	-7.75%	0.68%	0.38%	0.02%	-0.04%	0.00%	0.02%	0.00%
Totals									
Americas	1.45%	4.74%	9.05%	10.13%	-0.38%	0.03%	0.03%	0.04%	-0.28%
Europe	11.23%	10.59%	42.80%	41.71%	0.30%	0.03%	-0.02%	0.01%	0.32%
Asia/Pacific	7.66%	4.72%	43.24%	44.34%	1.28%	0.01%	0.03%	-0.03%	1.29%
Other	2.64%	-1.48%	2.07%	3.81%	0.20%	0.11%	0.00%	-0.09%	0.22%
Cash	1.07%	--	2.83%	0.00%	0.00%	-0.15%	0.00%	0.00%	-0.15%
Total	**8.34%**	**6.94%**	**100.00%**	**100.00%**	**1.40%**	**0.03%**	**0.05%**	**-0.07%**	**1.40%**
Totals									
Developed	9.10%	8.06%	74.70%	71.64%	0.80%	0.03%	-0.03%	0.03%	0.83%
Emerging*	6.70%	4.10%	22.46%	28.36%	0.63%	0.14%	0.08%	-0.13%	0.72%
Cash	1.07%	--	2.83%	0.00%	0.00%	-0.15%	0.00%	0.00%	-0.15%



	Return (Rank)															
5th Percentile	11.82		32.45		5.35		4.79		20.83		7.55		9.82		8.84	
25th Percentile	9.28		28.03		0.08		1.17		15.64		4.90		7.63		6.97	
Median	8.10		26.05		-2.29		-0.60		13.81		3.80		6.69		6.06	
75th Percentile	6.64		23.33		-5.48		-3.32		12.23		2.47		5.82		5.36	
95th Percentile	4.15		18.92		-11.93		-10.31		8.80		-0.27		4.15		3.93	
# of Portfolios	397		397		396		389		376		358		320		256	
● BlackRock MSCI World ex-US Index Fd A	8.15	(50)	25.71	(56)	-2.25	(50)	0.57	(32)	14.01	(47)	--	(--)	--	(--)	--	(--)
▲ MSCI World ex US Gross	8.19	(49)	25.78	(55)	-2.19	(50)	0.64	(31)	14.06	(46)	4.34	(34)	6.88	(43)	5.44	(70)

Characteristics

	Portfolio	MSCI World ex USA
Number of Holdings	884	883
Weighted Avg. Market Cap. ($B)	81.7	81.8
Median Market Cap. ($B)	12.5	12.7
Price To Earnings	14.5	14.5
Price To Book	2.5	2.5
Price To Sales	1.3	1.3
Return on Equity (%)	14.5	14.4
Yield (%)	3.2	3.3
Beta	1.0	1.0

Top Holdings

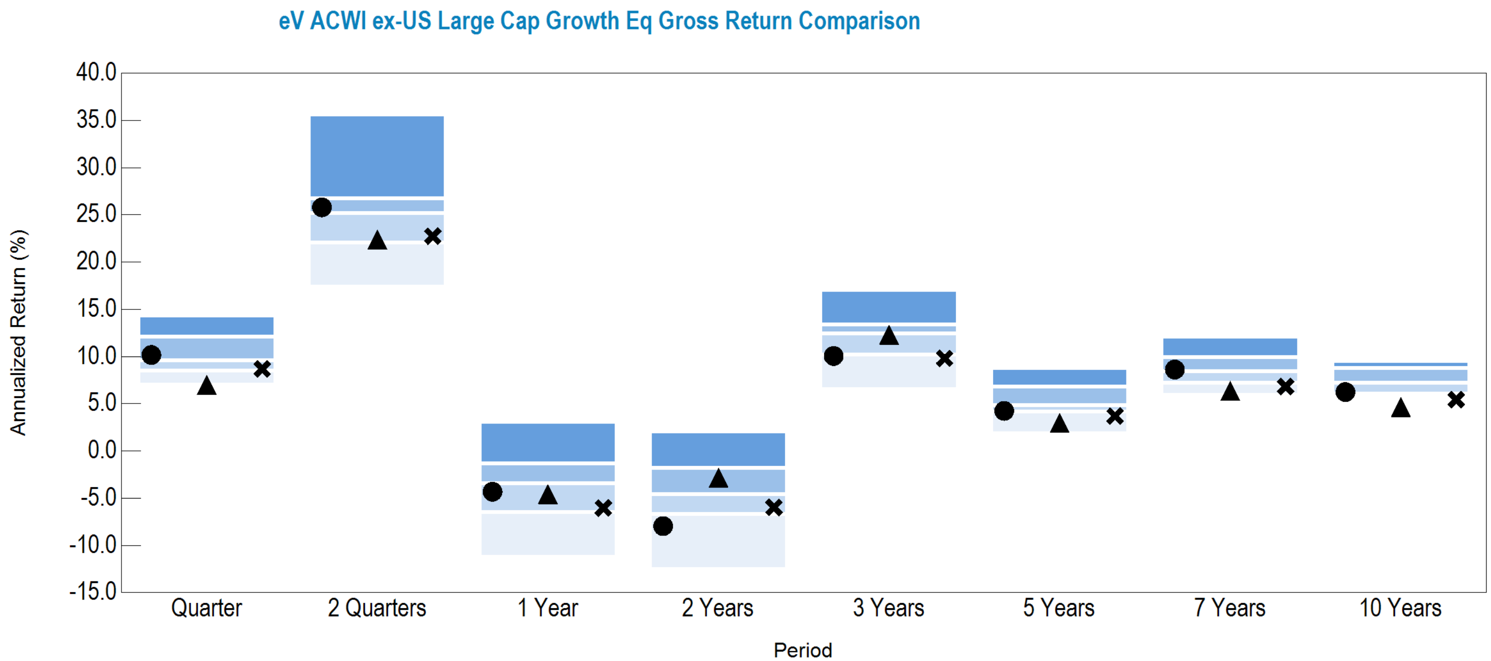
NESTLE SA, CHAM UND VEVEY	1.9%
ASML HOLDING NV	1.6%
NOVO NORDISK 'B'	1.5%
LVMH MOET HENNESSY LOUIS VUITTON SE	1.5%
ASTRAZENECA PLC	1.3%
SHELL PLC	1.2%
ROCHE HOLDING AG	1.1%
NOVARTIS AG	1.1%
BHP GROUP LTD	0.9%
TOYOTA MOTOR CORP	0.9%

Best Performers

	Return %
NUVEI CORP COM	71.2%
SEA LIMITED (SE)	66.3%
ROLLS ROYCE HOLDINGS PLC	64.2%
ASM INTERNATIONAL NV	60.4%
RENESAS ELECTRONICS CORP	60.4%
STMICROELECTRONICS NV	51.0%
JD SPORTS FASHION PLC	44.7%
ADVANTEST CORP	43.1%
TELECOM ITALIA SPA	43.0%
PANDORA AS	40.0%

Worst Performers

	Return %
CREDIT SUISSE GROUP	-69.8%
NIHON M&A CENTER (J:NMAC)	-39.3%
DELIVERY HERO ORD (DHER)	-28.8%
DIASORIN SPA	-24.3%
NIPPON SHINYAKU CO LTD	-21.9%
KEPPEL CORP LTD	-21.8%
BEZEQ THE ISRAEL TELECOMMUNICATION CORP LTD	-21.1%
VONOVIA SE	-20.0%
ROCHE HOLDING AG	-19.6%
AKER BP ASA	-19.1%



Return (Rank)	Quarter		2 Quarters		1 Year		2 Years		3 Years		5 Years		7 Years		10 Years	
5th Percentile	14.32		35.58		3.09		2.06		17.03		8.74		12.07		9.51	
25th Percentile	12.12		26.79		-1.25		-1.76		13.45		6.86		10.00		8.81	
Median	9.64		25.25		-3.40		-4.50		12.50		4.89		8.49		7.29	
75th Percentile	8.58		22.13		-6.40		-6.62		10.26		4.19		7.23		6.12	
95th Percentile	7.07		17.42		-11.15		-12.48		6.57		1.90		5.99		5.74	
# of Portfolios	43		43		43		43		42		38		32		23	
● Capital Group	10.17	(41)	25.80	(38)	-4.31	(62)	-7.95	(84)	10.06	(76)	4.25	(70)	8.62	(49)	6.24	(74)
▲ MSCI ACWI ex USA Gross	7.00	(98)	22.38	(74)	-4.57	(63)	-2.82	(36)	12.32	(55)	2.97	(92)	6.37	(93)	4.65	(99)
✖ MSCI ACWI ex USA Growth Gross	8.69	(71)	22.76	(73)	-6.03	(72)	-5.97	(62)	9.81	(77)	3.71	(78)	6.83	(89)	5.45	(99)

Characteristics

	Portfolio	MSCI ACWI ex USA Gross
Number of Holdings	217	2,258
Weighted Avg. Market Cap. ($B)	107.5	89.8
Median Market Cap. ($B)	29.2	9.2
Price To Earnings	19.0	13.5
Price To Book	3.5	2.5
Price To Sales	2.2	1.2
Return on Equity (%)	17.4	14.8
Yield (%)	1.9	3.3
Beta	1.1	1.0

Top Holdings

NOVO NORDISK 'B'	3.1%
EVOLUTION AB (PUBL)	2.7%
ASML HOLDING NV	2.7%
ASTRAZENECA PLC	2.6%
KEYENCE CORP	2.4%
LVMH MOET HENNESSY LOUIS VUITTON SE	2.2%
TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	2.2%
GENMAB A/S	1.9%
AIA GROUP LTD	1.9%
AIRBUS SE	1.9%

Best Performers

	Return %
NUVEI CORP COM	71.2%
SPOTIFY TECHNOLOGY S.A (SPOT)	69.2%
ASM INTERNATIONAL NV	60.4%
WIZZ AIR HOLDINGS PLC	60.3%
MERCADOLIBRE INC (MELI)	55.8%
STMICROELECTRONICS NV	51.0%
TCS GROUP HOLDING PLC	39.7%
EVOLUTION AB (PUBL)	37.6%
INFINEON TECHNOLOGIES AG	36.0%
GRUPO AEROPORTUARIO DEL PACIFICO SA	35.5%

Worst Performers

	Return %
COUNTRY GARDEN SERVICES HOLDINGS COMPANY LIMITED	-30.6%
KINGDEE INTERNATIONAL SOFTWARE GROUP CO LTD	-24.5%
EUROAPI SASU	-22.8%
WUXI BIOLOGICS (CAYMAN) INC	-19.3%
AKER BP ASA	-19.1%
REDE D OR SAO LUIZ SA COMMON STOCK	-18.5%
MEITUAN	-18.4%
GALP ENERGIA SGPS SA	-15.7%
KUAISHOU TECHNOLOGY COMMON STOCK USD.0000053	-15.5%
GLENCORE PLC	-13.6%

Capital Group Performance Attribution vs. MSCI ACWI ex USA Gross

	Attribution Effects						Returns		Sector Weights	
	Total Effects		Selection Effect		Allocation Effect		Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	-0.01%		-0.05%		0.10%		-0.06%	-2.20%	-0.03%	4.61%	6.01%
Materials	-0.04%		-0.12%		0.03%		0.06%	5.05%	6.07%	5.01%	8.38%
Industrials	0.62%		0.50%		0.02%		0.10%	14.67%	10.05%	12.92%	12.27%
Consumer Discretionary	1.71%		1.64%		0.00%		0.08%	26.35%	11.17%	11.28%	11.39%
Consumer Staples	0.20%		0.26%		0.02%		-0.08%	9.31%	6.54%	7.27%	8.89%
Health Care	-0.38%		-0.22%		-0.18%		0.01%	2.77%	4.43%	15.91%	9.82%
Financials	0.26%		-0.16%		0.43%		0.00%	0.48%	1.44%	13.13%	20.99%
Information Technology	1.48%		0.37%		0.78%		0.33%	20.96%	17.07%	18.02%	10.74%
Communication Services	-0.14%		-0.01%		-0.11%		-0.02%	10.94%	11.82%	3.86%	5.87%
Utilities	0.08%		0.07%		0.07%		-0.06%	5.23%	3.40%	1.70%	3.36%
Real Estate	0.12%		-0.24%		0.16%		0.21%	-12.24%	-1.63%	0.31%	2.28%
Cash	-0.32%		0.00%		-0.32%		0.00%	1.07%	--	5.96%	0.00%
Portfolio	**3.58%**	**=**	**2.04%**	**+**	**0.99%**	**+**	**0.55%**	**10.52%**	**6.94%**	**100.00%**	**100.00%**

Capital Group Performance Attribution vs. MSCI ACWI ex USA Gross

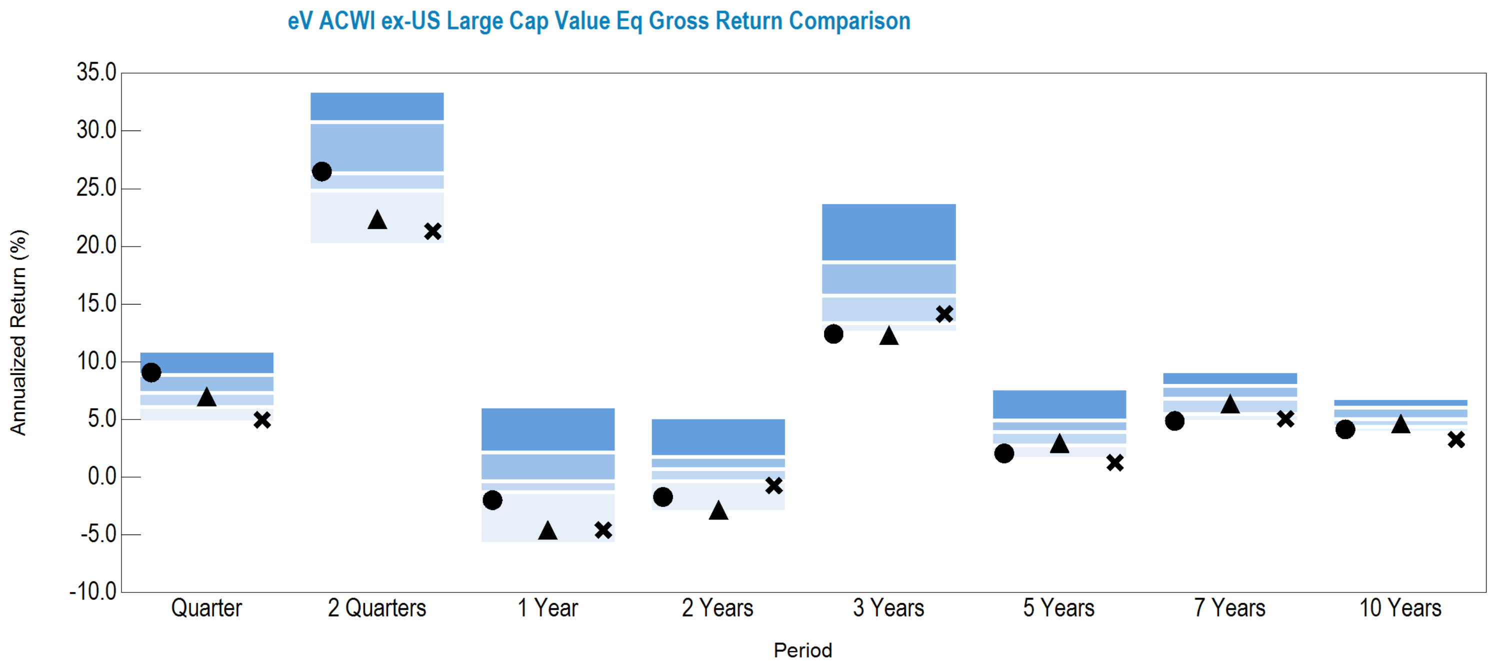
	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Europe									
Austria	3.69%	2.42%	0.00%	0.12%	0.00%	0.01%	0.00%	0.00%	0.00%
Belgium	2.23%	6.14%	1.00%	0.66%	-0.03%	-0.01%	0.01%	-0.01%	-0.04%
Czech Republic*	--	32.90%	0.00%	0.04%	--	-0.01%	0.00%	--	-0.01%
Denmark	8.21%	12.83%	7.56%	1.90%	-0.08%	0.27%	0.05%	-0.23%	0.02%
Finland	6.56%	-0.12%	0.29%	0.65%	0.04%	0.03%	-0.01%	-0.02%	0.04%
France	16.55%	14.52%	11.97%	7.57%	0.15%	0.28%	0.08%	0.09%	0.60%
Germany	20.94%	14.64%	2.34%	5.21%	0.32%	-0.18%	-0.05%	-0.18%	-0.09%
Greece*	--	15.43%	0.00%	0.09%	--	-0.01%	0.00%	--	-0.01%
Hungary*	--	3.06%	0.00%	0.05%	--	0.01%	0.00%	--	0.00%
Ireland	26.12%	21.48%	0.21%	0.44%	0.03%	-0.03%	-0.01%	-0.02%	-0.03%
Italy	22.94%	14.67%	0.27%	1.50%	0.12%	-0.08%	-0.02%	-0.10%	-0.08%
Luxembourg	33.43%	6.94%	0.41%	0.00%	0.00%	0.00%	0.01%	0.10%	0.11%
Netherlands	22.68%	16.53%	6.52%	2.72%	0.16%	0.32%	0.08%	0.23%	0.79%
Norway	-13.47%	-6.81%	0.63%	0.50%	-0.04%	-0.01%	-0.01%	-0.01%	-0.06%
Poland*	--	-1.20%	0.00%	0.21%	--	0.02%	0.00%	--	0.02%
Portugal	-15.68%	3.22%	0.26%	0.15%	-0.03%	-0.01%	0.00%	-0.02%	-0.05%
Spain	24.53%	15.50%	1.44%	1.55%	0.14%	-0.01%	0.00%	-0.01%	0.12%
Sweden	37.61%	10.19%	2.17%	2.13%	0.58%	0.00%	0.00%	0.01%	0.60%
Switzerland	9.67%	7.29%	5.41%	6.48%	0.15%	0.01%	-0.01%	-0.02%	0.12%
United Kingdom	7.65%	5.94%	7.95%	9.74%	0.18%	0.06%	-0.06%	-0.03%	0.14%

Capital Group Performance Attribution vs. MSCI ACWI ex USA 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	33.02%	2.73%	0.12%	5.07%	1.47%	0.11%	0.07%	-1.43%	0.22%
China*	-0.75%	4.85%	5.30%	9.17%	-0.53%	0.04%	0.03%	0.22%	-0.24%
Hong Kong	1.15%	-2.47%	4.20%	1.94%	0.07%	-0.19%	-0.02%	0.08%	-0.05%
India*	-2.89%	-6.14%	3.74%	4.10%	0.16%	0.05%	-0.03%	-0.01%	0.17%
Indonesia*	8.29%	6.40%	0.54%	0.54%	0.01%	0.00%	0.00%	0.00%	0.01%
Japan	11.70%	6.27%	15.12%	14.03%	0.77%	0.01%	-0.02%	0.06%	0.82%
Korea*	7.39%	8.57%	0.73%	3.21%	-0.04%	-0.15%	0.10%	0.03%	-0.06%
Malaysia*	--	-3.99%	0.00%	0.44%	--	0.04%	0.00%	--	0.05%
New Zealand	--	7.81%	0.00%	0.12%	--	0.00%	0.00%	--	0.00%
Philippines*	--	2.71%	0.00%	0.21%	--	0.01%	-0.01%	--	0.01%
Singapore	-2.05%	5.88%	1.73%	0.97%	-0.08%	-0.01%	0.01%	-0.06%	-0.14%
Taiwan*	19.60%	14.55%	3.80%	3.92%	0.21%	-0.01%	-0.01%	-0.01%	0.18%
Thailand*	4.87%	-0.58%	0.28%	0.63%	0.03%	0.03%	0.00%	-0.02%	0.04%
Americas									
Argentina*	55.76%	4.74%	0.80%	0.00%	0.00%	-0.01%	0.00%	0.41%	0.39%
Brazil*	-5.84%	-0.68%	3.33%	1.49%	-0.05%	-0.21%	0.01%	-0.06%	-0.30%
Canada	16.35%	4.39%	2.68%	7.73%	0.92%	0.10%	0.00%	-0.60%	0.42%
Chile*	1.53%	4.78%	0.08%	0.16%	0.01%	0.01%	-0.01%	0.00%	0.00%
Colombia*	--	-11.50%	0.00%	0.03%	--	0.01%	0.00%	--	0.01%
Mexico*	27.42%	21.91%	0.50%	0.65%	0.03%	-0.01%	-0.01%	-0.01%	0.00%
Peru*	--	8.27%	0.00%	0.07%	--	0.00%	0.00%	--	0.00%
United States	-12.23%	7.59%	0.62%	0.00%	0.00%	0.01%	0.00%	-0.13%	-0.12%

Capital Group Performance Attribution vs. MSCI ACWI ex USA 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*	--	-3.58%	0.00%	0.02%	--	0.00%	0.01%	--	0.00%
Israel	19.03%	0.88%	0.54%	0.46%	0.08%	0.00%	0.01%	0.01%	0.09%
Kuwait*	--	-3.47%	0.00%	0.27%	--	0.03%	0.00%	--	0.03%
Qatar*	--	-0.75%	0.00%	0.28%	--	0.02%	0.00%	--	0.02%
Saudi Arabia*	--	0.12%	0.00%	1.16%	--	0.07%	0.00%	--	0.07%
South Africa*	8.36%	-0.33%	0.92%	1.05%	0.09%	0.00%	0.00%	-0.01%	0.09%
Turkey*	--	-8.89%	0.00%	0.19%	--	0.02%	0.00%	--	0.03%
United Arab Emirates*	--	-7.75%	0.00%	0.38%	--	0.05%	0.00%	--	0.05%
Totals									
Americas	9.37%	4.74%	8.00%	10.13%	0.44%	0.06%	-0.01%	-0.09%	0.40%
Europe	14.33%	10.59%	49.02%	41.71%	1.65%	0.17%	0.03%	0.29%	2.14%
Asia/Pacific	7.12%	4.72%	35.54%	44.34%	0.97%	0.09%	0.13%	-0.19%	1.00%
Other	12.29%	-1.48%	1.45%	3.81%	0.58%	0.15%	0.02%	-0.36%	0.39%
Cash	1.07%	--	5.98%	0.00%	0.00%	-0.32%	0.00%	0.00%	-0.32%
Unclassified	--	--	0.00%	0.00%	--	0.00%	0.00%	--	0.00%
Total	**10.55%**	**6.94%**	**100.00%**	**100.00%**	**3.64%**	**0.16%**	**0.17%**	**-0.35%**	**3.61%**
Totals									
Developed	12.70%	8.06%	73.43%	71.64%	3.21%	0.02%	0.13%	0.08%	3.44%
Emerging*	5.63%	4.10%	20.59%	28.36%	0.38%	0.18%	0.03%	-0.11%	0.49%
Cash	1.07%	--	5.98%	0.00%	0.00%	-0.32%	0.00%	0.00%	-0.32%



	Return (Rank)															
5th Percentile	10.94		33.45		6.10		5.15		23.83		7.69		9.14		6.86	
25th Percentile	8.86		30.79		2.19		1.77		18.64		4.92		7.96		6.05	
Median	7.33		26.33		-0.32		0.73		15.74		3.95		6.84		5.06	
75th Percentile	6.11		24.84		-1.26		-0.32		13.35		2.78		5.51		4.38	
95th Percentile	4.78		20.17		-5.78		-2.96		12.52		1.59		4.84		3.86	
# of Portfolios	21		21		21		20		20		20		19		15	
● Mondrian	9.07	(24)	26.49	(46)	-1.98	(86)	-1.71	(87)	12.41	(96)	2.06	(91)	4.88	(95)	4.15	(86)
▲ MSCI ACWI ex USA Gross	7.00	(56)	22.38	(88)	-4.57	(93)	-2.82	(95)	12.32	(96)	2.97	(72)	6.37	(64)	4.65	(62)
✖ MSCI ACWI ex US IMI Value Net	4.97	(89)	21.32	(90)	-4.58	(93)	-0.72	(80)	14.14	(72)	1.27	(98)	5.06	(88)	3.27	(99)

Characteristics

	Portfolio	MSCI ACWI ex USA Gross
Number of Holdings	62	2,258
Weighted Avg. Market Cap. ($B)	49.5	89.8
Median Market Cap. ($B)	23.8	9.2
Price To Earnings	11.9	13.5
Price To Book	1.6	2.5
Price To Sales	0.8	1.2
Return on Equity (%)	8.9	14.8
Yield (%)	3.9	3.3
Beta	1.0	1.0

Top Holdings

BANCO SANTANDER SA	3.7%
ENEL ENTE NAZIONALE PER L'ENERGIA ELETTRICA SPA, ROMA	3.7%
TAKEDA PHARMACEUTICAL CO LTD	3.6%
LLOYDS BANKING GROUP PLC	3.5%
CK HUTCHISON HOLDINGS LTD	3.4%
SANOFI	3.3%
SONY GROUP CORPORATION	3.3%
UNITED OVERSEAS BANK LTD	3.0%
NOVARTIS AG	2.9%
WPP PLC	2.9%

Best Performers

	Return %
HEIDELBERG MATERIALS AG	28.3%
ASSOCIATED BRITISH FOODS PLC	26.4%
MINEBEA MITSUMI INC	26.4%
BANCO SANTANDER SA	24.3%
KONINKLIJKE PHILIPS NV	22.2%
TESCO PLC	21.7%
MITSUBISHI ELECTRIC CORP	21.2%
WPP PLC	20.0%
SONY GROUP CORPORATION	18.9%
ENEL ENTE NAZIONALE PER L'ENERGIA ELETTRICA SPA, ROMA	17.9%

Worst Performers

	Return %
AURIZON HOLDINGS LTD	-9.2%
TOKIO MARINE HOLDINGS INC	-8.9%
ISS A/S	-3.8%
OTSUKA HOLDINGS CO LTD	-3.2%
KAO CORP	-2.5%
UNITED OVERSEAS BANK LTD	-2.3%
JARDINE MATHESON HOLDINGS LTD	-1.4%
TC ENERGY CORP (TRP.)	-0.9%
TELIA COMPANY AB	-0.4%
COCA-COLA BOTTLERS JAPAN HOLDINGS INC	-0.2%

Mondrian Performance Attribution vs. MSCI ACWI ex USA Gross

	Attribution Effects				Returns		Sector Weights	
	Total Effects	Selection Effect	Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.44%	0.36%	-0.09%	0.17%	6.42%	-0.02%	6.34%	6.01%
Materials	0.30%	0.79%	-0.01%	-0.48%	16.14%	6.06%	2.45%	8.37%
Industrials	-0.05%	-0.08%	0.20%	-0.17%	8.65%	10.06%	17.32%	12.27%
Consumer Discretionary	0.17%	0.40%	-0.08%	-0.14%	14.16%	11.21%	9.48%	11.35%
Consumer Staples	0.63%	0.83%	0.12%	-0.32%	16.21%	6.55%	4.96%	8.89%
Health Care	0.63%	0.48%	-0.24%	0.39%	9.42%	4.44%	16.66%	9.82%
Financials	1.33%	1.33%	0.48%	-0.48%	8.16%	1.43%	12.20%	20.95%
Information Technology	-1.48%	-1.51%	-0.41%	0.45%	2.62%	17.04%	7.46%	10.76%
Communication Services	0.00%	-0.10%	0.06%	0.04%	10.91%	11.74%	6.96%	5.90%
Utilities	0.75%	0.30%	-0.28%	0.73%	13.21%	3.42%	9.67%	3.36%
Real Estate	0.19%	--	0.18%	--	--	-1.64%	0.00%	2.28%
Cash	0.00%	--	--	--	--	--	0.00%	0.00%
Unclassified	-0.05%	0.00%	0.00%	-0.05%	5.79%	8.02%	6.50%	0.05%
Portfolio	**2.87%** =	**2.80%** +	**-0.07%** +	**0.14%**	**9.80%**	**6.93%**	**100.00%**	**100.00%**

Mondrian Performance Attribution vs. MSCI ACWI ex USA Gross

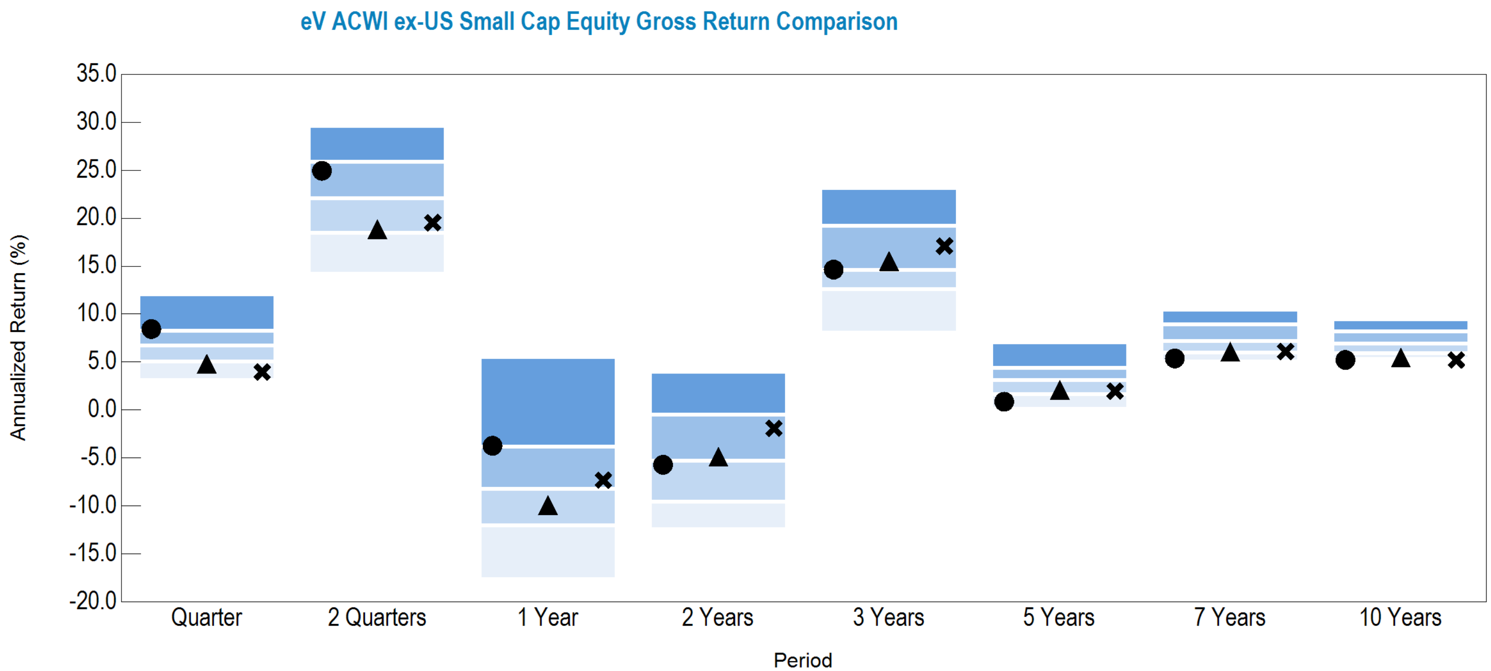
	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Europe									
Austria	--	2.42%	0.00%	0.12%	--	0.01%	0.00%	--	0.00%
Belgium	--	6.14%	0.00%	0.66%	--	0.01%	-0.01%	--	0.00%
Czech Republic*	--	32.90%	0.00%	0.04%	--	-0.01%	0.00%	--	-0.01%
Denmark	-3.81%	12.83%	0.03%	1.90%	-0.31%	-0.09%	-0.03%	0.31%	-0.13%
Finland	--	-0.12%	0.00%	0.65%	--	0.05%	-0.01%	--	0.04%
France	14.02%	14.52%	7.69%	7.57%	-0.04%	0.01%	0.00%	0.00%	-0.03%
Germany	9.73%	14.64%	2.17%	5.21%	-0.25%	-0.20%	-0.06%	0.15%	-0.36%
Greece*	--	15.43%	0.00%	0.09%	--	-0.01%	0.00%	--	-0.01%
Hungary*	--	3.06%	0.00%	0.05%	--	0.01%	0.00%	--	0.00%
Ireland	--	21.48%	0.00%	0.44%	--	-0.06%	-0.01%	--	-0.07%
Italy	12.66%	14.67%	8.57%	1.50%	-0.03%	0.45%	0.13%	-0.14%	0.42%
Netherlands	22.14%	16.53%	2.69%	2.72%	0.15%	0.00%	0.00%	0.00%	0.15%
Norway	--	-6.81%	0.00%	0.50%	--	0.04%	0.03%	--	0.07%
Poland*	--	-1.20%	0.00%	0.21%	--	0.02%	0.00%	--	0.02%
Portugal	--	3.22%	0.00%	0.15%	--	0.01%	0.00%	--	0.00%
Spain	20.84%	15.50%	4.75%	1.55%	0.08%	0.23%	0.06%	0.17%	0.55%
Sweden	6.31%	10.19%	3.50%	2.13%	-0.08%	0.04%	0.01%	-0.05%	-0.08%
Switzerland	5.86%	7.29%	3.62%	6.48%	-0.09%	0.01%	-0.04%	0.04%	-0.08%
United Kingdom	12.92%	5.94%	20.41%	9.74%	0.66%	-0.34%	0.33%	0.73%	1.38%

Mondrian Performance Attribution vs. MSCI ACWI ex USA 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	-9.20%	2.73%	1.61%	5.07%	-0.61%	0.08%	0.05%	0.42%	-0.07%
China*	--	4.85%	0.00%	9.17%	--	0.10%	0.04%	--	0.14%
Hong Kong	3.25%	-2.47%	4.22%	1.94%	0.11%	-0.19%	-0.02%	0.13%	0.04%
India*	--	-6.14%	0.00%	4.10%	--	0.54%	-0.03%	--	0.51%
Indonesia*	--	6.40%	0.00%	0.54%	--	0.02%	-0.02%	--	0.00%
Japan	7.34%	6.27%	34.73%	14.03%	0.15%	0.16%	-0.18%	0.22%	0.35%
Korea*	--	8.57%	0.00%	3.21%	--	-0.20%	0.13%	--	-0.07%
Malaysia*	--	-3.99%	0.00%	0.44%	--	0.04%	0.00%	--	0.05%
New Zealand	--	7.81%	0.00%	0.12%	--	0.00%	0.00%	--	0.00%
Philippines*	--	2.71%	0.00%	0.21%	--	0.01%	-0.01%	--	0.01%
Singapore	-2.26%	5.88%	3.96%	0.97%	-0.08%	-0.04%	0.02%	-0.25%	-0.34%
Taiwan*	--	14.55%	0.00%	3.92%	--	-0.29%	-0.03%	--	-0.32%
Thailand*	--	-0.58%	0.00%	0.63%	--	0.05%	-0.01%	--	0.04%
Americas									
Brazil*	--	-0.68%	0.00%	1.49%	--	0.17%	-0.06%	--	0.11%
Canada	-0.87%	4.39%	1.22%	7.73%	-0.41%	0.13%	0.00%	0.34%	0.06%
Chile*	--	4.78%	0.00%	0.16%	--	0.01%	-0.01%	--	0.00%
Colombia*	--	-11.50%	0.00%	0.03%	--	0.01%	0.00%	--	0.01%
Mexico*	--	21.91%	0.00%	0.65%	--	-0.04%	-0.06%	--	-0.10%
Peru*	--	8.27%	0.00%	0.07%	--	0.00%	0.00%	--	0.00%

Mondrian Performance Attribution vs. MSCI ACWI ex USA 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*	--	-3.58%	0.00%	0.02%	--	0.00%	0.01%	--	0.00%
Israel	--	0.88%	0.00%	0.46%	--	0.02%	0.01%	--	0.03%
Kuwait*	--	-3.47%	0.00%	0.27%	--	0.03%	0.00%	--	0.03%
Qatar*	--	-0.75%	0.00%	0.28%	--	0.02%	0.00%	--	0.02%
Saudi Arabia*	--	0.12%	0.00%	1.16%	--	0.07%	0.00%	--	0.07%
South Africa*	--	-0.33%	0.00%	1.05%	--	0.03%	0.04%	--	0.07%
Turkey*	--	-8.89%	0.00%	0.19%	--	0.02%	0.00%	--	0.03%
United Arab Emirates*	--	-7.75%	0.00%	0.38%	--	0.05%	0.00%	--	0.05%
Totals									
Americas	-0.87%	4.74%	1.22%	10.13%	-0.43%	0.26%	-0.14%	0.38%	0.08%
Europe	13.15%	10.59%	53.43%	41.71%	0.93%	0.28%	0.39%	0.26%	1.86%
Asia/Pacific	5.50%	4.72%	44.52%	44.34%	0.39%	0.00%	-0.04%	0.00%	0.34%
Other	--	-1.48%	0.00%	3.81%	--	0.24%	0.06%	--	0.30%
Cash	1.07%	--	0.84%	0.00%	0.00%	-0.04%	0.00%	0.00%	-0.04%
Total	**9.47%**	**6.94%**	**100.00%**	**100.00%**	**0.88%**	**0.74%**	**0.27%**	**0.65%**	**2.54%**
Totals									
Developed	9.55%	8.06%	99.16%	71.64%	1.01%	0.25%	0.28%	0.39%	1.94%
Emerging*	--	4.10%	0.00%	28.36%	--	0.66%	-0.01%	--	0.64%
Cash	1.07%	--	0.84%	0.00%	0.00%	-0.04%	0.00%	0.00%	-0.04%



	Return (Rank)															
5th Percentile	12.06		29.60		5.48		3.98		23.09		7.03		10.45		9.41	
25th Percentile	8.32		25.88		-3.77		-0.42		19.23		4.40		8.94		8.23	
Median	6.74		22.11		-8.21		-5.22		14.64		3.13		7.21		6.95	
75th Percentile	5.10		18.54		-11.97		-9.50		12.61		1.72		6.04		5.96	
95th Percentile	3.14		14.22		-17.57		-12.39		8.12		0.17		5.07		5.33	
# of Portfolios	63		63		63		63		57		45		41		28	
● Templeton	8.44	(24)	24.94	(29)	-3.73	(25)	-5.70	(55)	14.64	(51)	0.87	(94)	5.37	(88)	5.22	(97)
▲ MSCI ACWI ex US Small Cap Gross	4.81	(80)	18.85	(73)	-9.91	(61)	-4.88	(49)	15.53	(43)	2.10	(63)	6.09	(75)	5.47	(92)
✕ MSCI ACWI ex US Small Cap Value GD	3.96	(91)	19.53	(64)	-7.32	(42)	-1.91	(33)	17.09	(37)	1.96	(67)	6.10	(75)	5.22	(97)

Characteristics

	Portfolio	MSCI ACWI ex US Small Cap Gross
Number of Holdings	120	4,326
Weighted Avg. Market Cap. ($B)	2.5	2.5
Median Market Cap. ($B)	1.4	1.0
Price To Earnings	14.3	12.4
Price To Book	2.4	2.2
Price To Sales	1.2	0.9
Return on Equity (%)	14.1	11.1
Yield (%)	2.9	3.3
Beta	1.0	1.0

Top Holdings

ASICS CORP	2.2%
BARCO NV, KORTRIJK	2.2%
INTERPUMP GROUP SPA, SANT'ILARIO (RE)	2.1%
ISHARES MSCI EAFE SMALL-CAP ETF	2.1%
GERRESHEIMER GROUP	2.0%
TECHNOGYM SPA	2.0%
SANLORENZO SPA	2.0%
TGS ASA	1.9%
BUCHER INDUSTRIES AG, NIEDERWENINGEN	1.8%
KING YUAN ELECTRONICS CO LTD	1.7%

Best Performers

	Return %
GERRESHEIMER GROUP	47.5%
KING YUAN ELECTRONICS CO LTD	34.9%
TGS ASA	34.9%
BRUNCELLO CUCINELLI S.P.A.	34.5%
GLORY LTD	32.4%
JUMBO SA	31.3%
IMAX CORP (IMAX)	30.8%
IDOM INC	30.2%
JOHNSON SERVICE GROUP PLC	29.7%
ONESPAWORLD HOLDINGS LTD (OSW)	28.5%

Worst Performers

	Return %
PHOTOCURE ASA	-46.7%
M DIAS BRANCO INDUSTRIA ON (BR:MDB)	-26.0%
ANORA GROUP OYJ	-23.5%
VIDENDUM PLC	-15.7%
HITEJINRO (KO:JCL)	-15.4%
VALUE PARTNERS GROUP LTD	-13.8%
SECO SPA COMSTK	-13.5%
ANICOM HOLDINGS INC	-12.1%
GIANT MANUFACTURE CO LTD	-11.6%
CAMIL ALIMENTOS S/A	-10.8%

Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap Gross

	Attribution Effects													Returns		Sector Weights	
	Total Effects		Selection Effect		Allocation Effect		Currency Effect		Interaction Effects					Portfolio	Benchmark	Portfolio	Benchmark
Energy	0.94%		1.63%		0.11%		-0.12%		-0.68%					31.29%	-2.02%	2.48%	4.26%
Materials	-0.07%		0.25%		-0.25%		0.08%		-0.15%					11.85%	8.15%	4.79%	11.65%
Industrials	0.07%		-0.07%		0.12%		0.03%		-0.01%					8.22%	8.48%	23.51%	20.19%
Consumer Discretionary	2.16%		0.91%		0.09%		0.22%		0.93%					14.40%	5.57%	23.17%	11.46%
Consumer Staples	-0.98%		-0.67%		-0.05%		0.06%		-0.32%					-7.06%	2.85%	9.39%	6.36%
Health Care	0.30%		0.32%		0.03%		-0.02%		-0.03%					4.29%	0.13%	6.66%	7.24%
Financials	0.51%		0.50%		0.08%		-0.02%		-0.06%					3.64%	-0.79%	9.79%	11.13%
Information Technology	-0.03%		-0.36%		0.32%		0.13%		-0.12%					11.30%	13.77%	14.11%	10.61%
Communication Services	0.35%		0.39%		0.00%		0.02%		-0.06%					16.40%	5.19%	3.16%	3.70%
Utilities	0.14%		--		0.17%		-0.03%		--					--	0.66%	0.00%	3.56%
Real Estate	0.61%		--		0.65%		-0.04%		--					--	-1.63%	0.00%	9.84%
Cash	-0.05%		0.00%		-0.05%		0.00%		0.00%					1.07%	--	1.33%	0.00%
Unclassified	0.01%		0.00%		0.01%		0.00%		0.00%					5.37%	--	1.61%	0.00%
Portfolio	**3.97%**	**=**	**2.91%**	**+**	**1.23%**	**+**	**0.32%**	**+**	**-0.49%**					**8.80%**	**4.83%**	**100.00%**	**100.00%**

Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap Gross

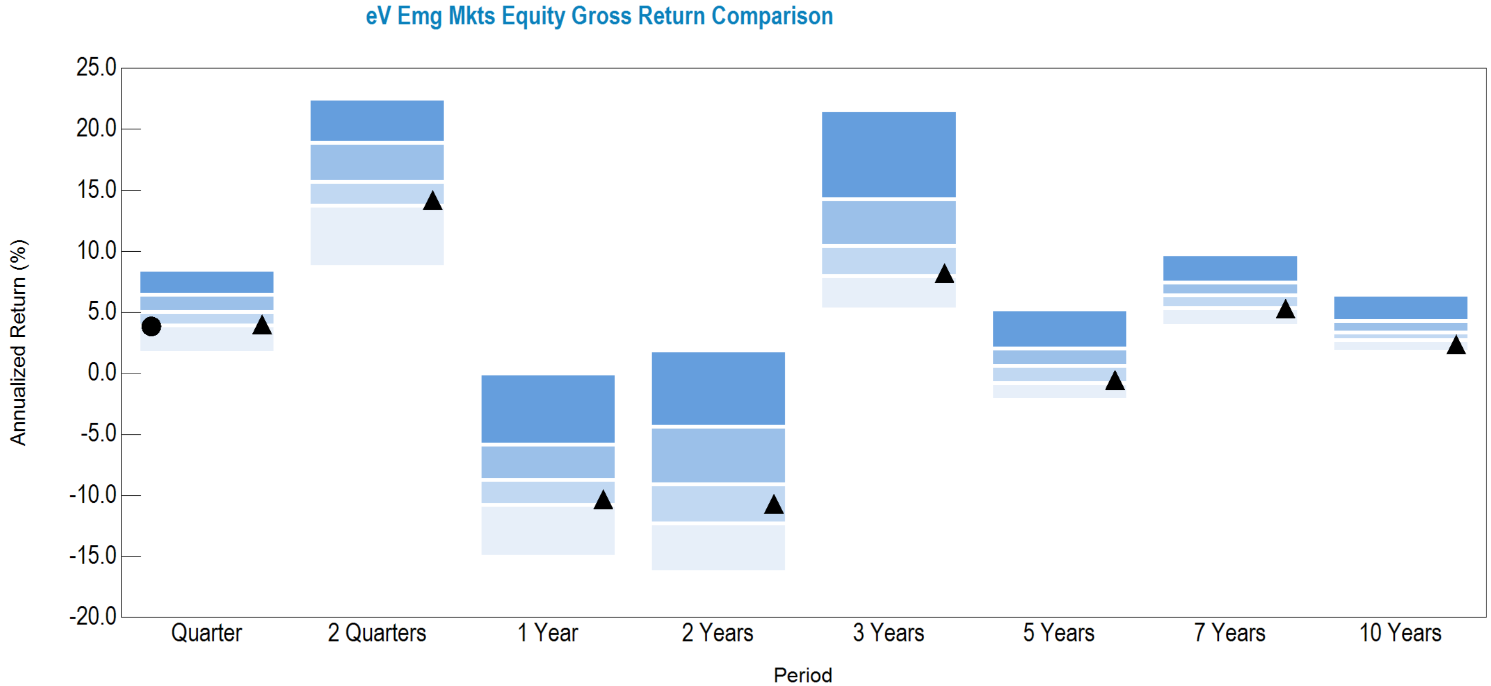
	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Europe									
Austria	11.10%	8.70%	1.69%	0.65%	0.02%	0.02%	0.02%	0.02%	0.08%
Belgium	21.86%	6.26%	3.05%	1.01%	0.15%	0.00%	0.04%	0.31%	0.51%
Czech Republic*	--	10.32%	0.00%	0.02%	--	0.00%	0.00%	--	0.00%
Denmark	22.61%	6.09%	0.53%	1.42%	0.23%	0.00%	-0.01%	-0.15%	0.07%
Finland	-2.14%	9.35%	3.15%	1.07%	-0.12%	0.06%	0.03%	-0.24%	-0.26%
France	--	9.08%	0.00%	2.46%	--	-0.07%	-0.04%	--	-0.11%
Germany	28.04%	12.24%	5.13%	3.07%	0.48%	0.12%	0.05%	0.32%	0.97%
Greece*	31.31%	15.55%	1.27%	0.15%	0.02%	0.10%	0.02%	0.17%	0.32%
Hungary*	--	26.86%	0.00%	0.01%	--	0.00%	0.00%	--	0.00%
Ireland	--	12.01%	0.00%	0.17%	--	-0.01%	0.00%	--	-0.01%
Italy	15.09%	14.22%	9.83%	2.14%	0.02%	0.60%	0.14%	0.07%	0.82%
Luxembourg	7.06%	4.83%	1.68%	0.00%	0.00%	0.00%	0.03%	0.01%	0.04%
Netherlands	25.52%	8.48%	1.12%	1.28%	0.21%	0.00%	0.00%	-0.03%	0.18%
Norway	3.12%	0.08%	2.58%	1.59%	0.05%	0.02%	-0.07%	0.03%	0.03%
Poland*	--	5.63%	0.00%	0.29%	--	0.00%	-0.01%	--	0.00%
Portugal	--	13.25%	0.00%	0.18%	--	-0.01%	0.00%	--	-0.02%
Spain	-1.80%	5.83%	0.56%	1.29%	-0.10%	0.00%	-0.01%	0.05%	-0.05%
Sweden	12.33%	10.65%	3.62%	3.73%	0.06%	-0.01%	0.00%	0.00%	0.05%
Switzerland	6.79%	9.55%	4.33%	3.10%	-0.08%	0.04%	0.01%	-0.03%	-0.06%
United Kingdom	8.10%	4.79%	11.06%	9.83%	0.32%	-0.03%	0.04%	0.04%	0.37%

Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap 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	--	-1.30%	0.00%	6.75%	--	0.31%	0.09%	--	0.40%
China*	14.07%	-3.35%	1.35%	2.64%	0.47%	0.10%	0.00%	-0.23%	0.34%
Hong Kong	-7.44%	3.09%	3.25%	1.44%	-0.15%	-0.02%	-0.01%	-0.19%	-0.37%
India*	--	-3.97%	0.00%	6.05%	--	0.56%	-0.04%	--	0.52%
Indonesia*	--	2.23%	0.00%	0.68%	--	0.04%	-0.03%	--	0.02%
Japan	6.17%	4.37%	20.38%	21.16%	0.38%	0.00%	0.00%	-0.01%	0.37%
Korea*	-4.17%	13.66%	4.49%	3.62%	-0.67%	0.11%	-0.01%	-0.16%	-0.72%
Malaysia*	--	2.87%	0.00%	0.77%	--	0.01%	0.01%	--	0.01%
New Zealand	--	0.79%	0.00%	0.86%	--	0.02%	0.01%	--	0.03%
Philippines*	4.38%	4.56%	1.11%	0.30%	0.00%	-0.02%	0.02%	0.00%	0.00%
Singapore	--	3.91%	0.00%	1.42%	--	0.02%	-0.01%	--	0.01%
Taiwan*	11.90%	15.30%	8.60%	5.15%	-0.17%	0.34%	0.03%	-0.12%	0.08%
Thailand*	1.48%	-4.80%	0.89%	1.13%	0.07%	0.03%	0.00%	-0.01%	0.08%
Americas									
Brazil*	-19.91%	0.19%	2.46%	1.44%	-0.28%	-0.09%	0.02%	-0.20%	-0.54%
Canada	15.12%	5.70%	4.30%	7.26%	0.69%	-0.03%	0.00%	-0.28%	0.37%
Chile*	--	10.55%	0.00%	0.21%	--	0.00%	-0.02%	--	-0.01%
Colombia*	--	-8.19%	0.00%	0.03%	--	0.01%	0.00%	--	0.00%
Mexico*	--	21.20%	0.00%	0.57%	--	-0.04%	-0.05%	--	-0.09%
United States	5.37%	7.59%	1.65%	0.00%	0.00%	0.05%	0.00%	-0.04%	0.01%

Templeton Performance Attribution vs. MSCI ACWI ex US Small Cap 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*	--	-18.92%	0.00%	0.07%	--	0.00%	0.01%	--	0.02%
Israel	-10.50%	-8.19%	0.56%	1.83%	-0.04%	0.14%	0.02%	0.03%	0.15%
Kuwait*	--	-1.70%	0.00%	0.31%	--	0.02%	0.00%	--	0.02%
Qatar*	--	-4.96%	0.00%	0.26%	--	0.03%	0.00%	--	0.03%
Saudi Arabia*	--	13.17%	0.00%	0.80%	--	-0.07%	0.00%	--	-0.07%
South Africa*	--	-8.28%	0.00%	1.02%	--	0.09%	0.04%	--	0.13%
Turkey*	--	-19.04%	0.00%	0.55%	--	0.12%	0.01%	--	0.13%
United Arab Emirates*	--	0.59%	0.00%	0.21%	--	0.01%	0.00%	--	0.01%
Totals									
Americas	2.94%	5.84%	8.41%	9.51%	-0.24%	0.00%	-0.05%	0.03%	-0.26%
Europe	12.77%	7.91%	49.59%	33.44%	1.63%	0.29%	0.25%	0.79%	2.94%
Asia/Pacific	5.25%	3.65%	40.06%	51.99%	0.85%	0.04%	0.06%	-0.19%	0.75%
Other	-10.50%	-5.23%	0.56%	5.06%	-0.27%	0.36%	0.08%	0.24%	0.41%
Cash	1.07%	--	1.37%	0.00%	0.00%	-0.05%	0.00%	0.00%	-0.05%
Total	**8.64%**	**4.83%**	**100.00%**	**100.00%**	**1.97%**	**0.64%**	**0.34%**	**0.86%**	**3.81%**
Totals									
Developed	9.73%	5.17%	78.46%	73.70%	3.06%	0.01%	0.33%	0.20%	3.60%
Emerging*	4.92%	3.89%	20.17%	26.30%	0.24%	0.05%	0.01%	-0.06%	0.25%
Cash	1.07%	--	1.37%	0.00%	0.00%	-0.05%	0.00%	0.00%	-0.05%



	Return (Rank)															
5th Percentile	8.48		22.48		-0.04		1.85		21.54		5.20		9.73		6.42	
25th Percentile	6.49		18.92		-5.82		-4.32		14.30		2.08		7.47		4.34	
Median	5.06		15.71		-8.67		-9.07		10.45		0.67		6.41		3.40	
75th Percentile	3.94		13.77		-10.73		-12.28		8.01		-0.74		5.35		2.74	
95th Percentile	1.69		8.72		-15.01		-16.26		5.26		-2.14		3.89		1.81	
# of Portfolios	398		398		397		383		367		328		292		230	
● **William Blair Emerging Mkts Growth**	3.85	(77)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)	--	(--)
▲ **MSCI Emerging Markets Gross**	4.02	(74)	14.20	(70)	-10.30	(70)	-10.69	(61)	8.23	(73)	-0.53	(72)	5.31	(76)	2.37	(83)

Characteristics

	Portfolio	MSCI Emerging Markets Gross
Number of Holdings	143	1,375
Weighted Avg. Market Cap. ($B)	133.1	112.4
Median Market Cap. ($B)	9.0	6.6
Price To Earnings	20.9	11.7
Price To Book	3.7	2.4
Price To Sales	3.5	1.0
Return on Equity (%)	20.4	15.2
Yield (%)	1.7	3.5
Beta		1.0

Top Holdings

TAIWAN SEMICONDUCTOR MANUFACTURING CO LTD	6.8%
TENCENT HOLDINGS LTD	5.0%
SAMSUNG ELECTRONICS CO LTD	4.4%
ALIBABA GROUP HOLDING LTD	3.2%
PT BANK CENTRAL ASIA TBK	3.2%
RELIANCE INDUSTRIES LTD	3.0%
AIA GROUP LTD	2.4%
WALMART DE MEXICO 'V'	2.4%
KWEICHOW MOUTAI CO LTD	2.3%
MERCADOLIBRE INC	2.3%

Best Performers

	Return %
PROSHARES ULTRA SEMICONDUCTORS (USD)	74.6%
ASMEDIA TECHNOLOGY INC	72.1%
ALCHIP TECHNOLOGIES INC	58.5%
ASPEED TECHNOLOGY INC	57.5%
MERCADOLIBRE INC (MELI)	55.8%
WIWYNN CORPORATION	42.1%
EMEMORY TECHNOLOGY INCORPORATED	40.3%
PARADE TECHNOLOGIES LTD	39.8%
ACCTON TECHNOLOGY (TW:ACC)	37.0%
GRUPO AEROPORTUARIO DEL PACIFICO SA	35.5%

Worst Performers

	Return %
DIXON TECHNOLOGIES (INDIA) LIMITED	-26.2%
Suzhou Maxwell Technologies Co Ltd	-25.6%
FINE ORGANIC INDUSTRIES LIMITED	-24.4%
JD.COM INC	-22.4%
ADANI PORTS & SPECIAL ECONOMIC ZONE LTD	-22.2%
FIRST ABU DHABI BANK P.J.S.C	-21.9%
DEVYANI INTERNATIONAL LTD	-19.4%
MEITUAN DIANPING USD0.00001 A B CLASS ISIN KYG596691041	-18.4%
BANCO BTG PACTUAL SA	-15.8%
ATUL LTD	-15.1%

William Blair Emerging Mkts Growth Performance Attribution vs. MSCI Emerging Markets Gross

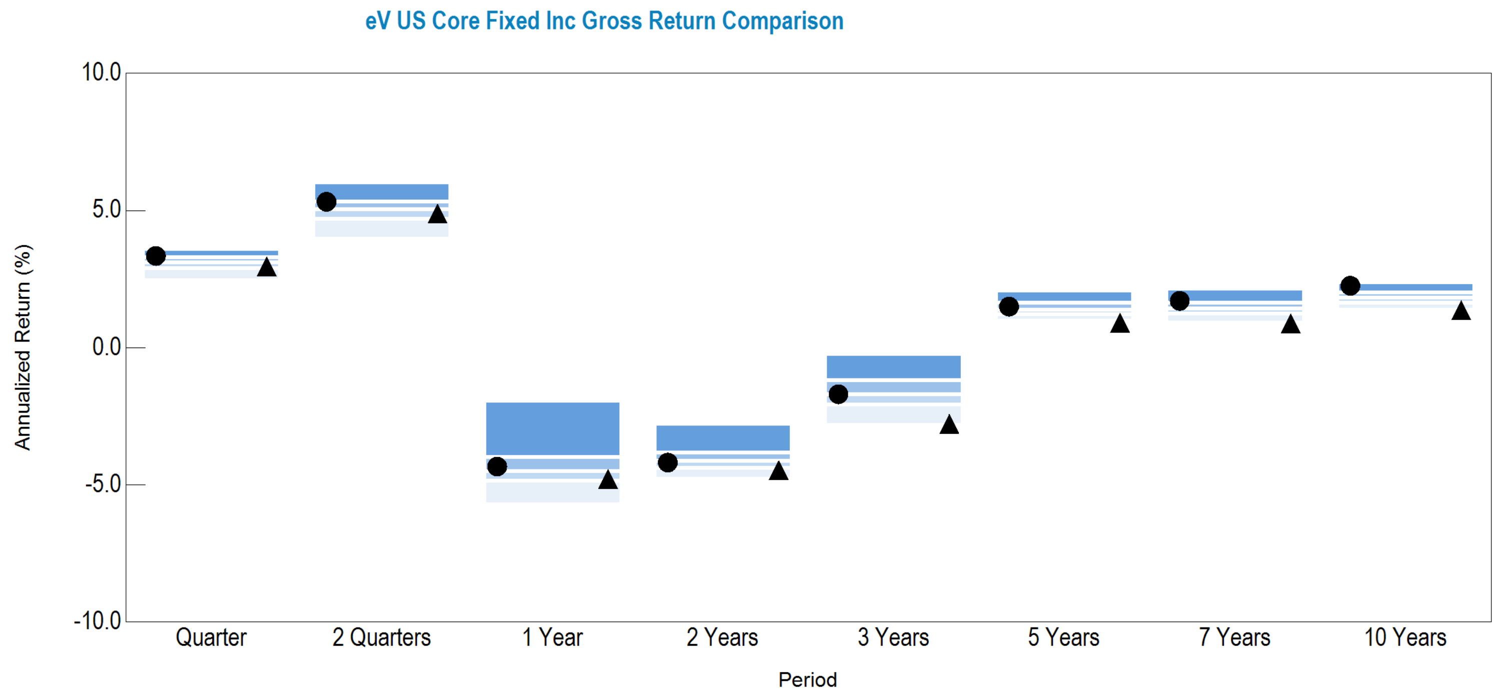
	Attribution Effects							Returns		Sector Weights	
	Total Effects		Selection Effect		Allocation Effect		Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark
Energy	-0.42%		-0.29%		-0.07%		-0.06%	-5.48%	0.59%	5.96%	4.88%
Materials	-0.14%		-0.54%		0.13%		0.27%	-3.58%	2.57%	3.51%	8.85%
Industrials	0.47%		0.27%		-0.06%		0.26%	7.79%	2.35%	9.15%	6.06%
Consumer Discretionary	-0.10%		-0.23%		-0.07%		0.19%	0.62%	1.46%	10.39%	14.07%
Consumer Staples	0.31%		0.15%		-0.22%		0.37%	5.71%	2.76%	14.30%	6.44%
Health Care	0.18%		0.20%		-0.16%		0.15%	1.11%	-4.74%	6.11%	4.07%
Financials	-0.23%		-0.42%		0.03%		0.16%	-1.70%	-0.86%	23.10%	22.10%
Information Technology	0.63%		0.53%		0.12%		-0.02%	17.02%	14.35%	19.81%	18.63%
Communication Services	-0.35%		0.60%		-0.56%		-0.39%	18.91%	13.76%	3.39%	9.91%
Utilities	0.43%		0.63%		0.39%		-0.59%	7.00%	-10.17%	0.57%	3.03%
Real Estate	-0.04%		-0.03%		-0.03%		0.02%	-2.16%	-1.49%	2.06%	1.94%
Cash	-0.01%		0.00%		-0.01%		0.00%	1.07%	--	0.15%	0.00%
Unclassified	0.15%		0.00%		0.15%		0.00%	17.11%	--	1.50%	0.00%
Portfolio	**0.89%**	**=**	**0.88%**	**+**	**-0.37%**	**+**	**0.37%**	**4.98%**	**4.09%**	**100.00%**	**100.00%**

William Blair Emerging Mkts Growth Performance Attribution vs. MSCI Emerging Markets Gross

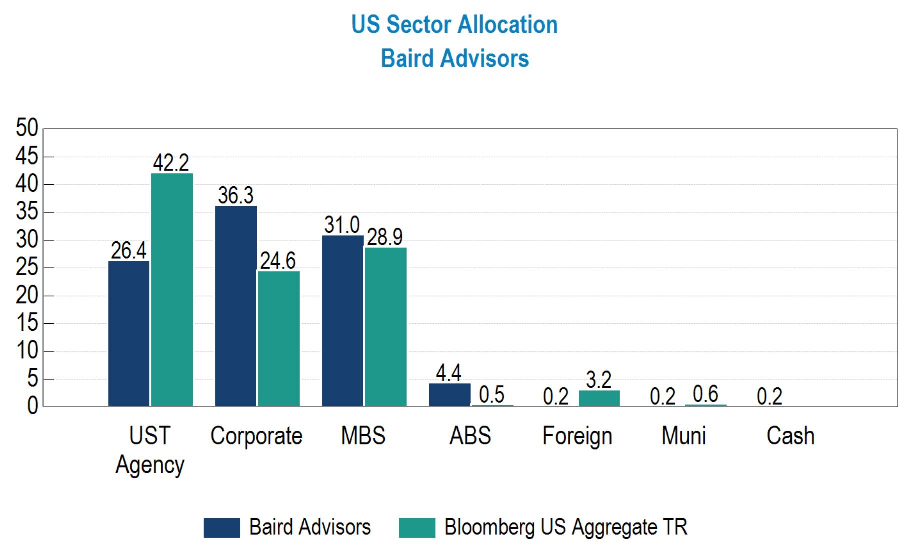
	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Europe									
Czech Republic*	--	32.90%	0.00%	0.14%	--	-0.03%	-0.01%	--	-0.04%
Greece*	--	15.43%	0.00%	0.32%	--	-0.03%	-0.01%	--	-0.04%
Hungary*	--	3.06%	0.00%	0.19%	--	0.02%	-0.01%	--	0.00%
Luxembourg	-2.47%	4.10%	0.52%	0.00%	0.00%	0.00%	0.00%	-0.03%	-0.03%
Poland*	5.94%	-1.20%	0.89%	0.72%	0.05%	-0.01%	0.00%	0.01%	0.05%
AsiaPacific									
China*	3.40%	4.85%	13.99%	32.32%	-0.66%	-0.23%	0.17%	0.37%	-0.35%
Hong Kong	6.30%	-2.39%	5.77%	0.00%	0.00%	-0.34%	-0.04%	0.51%	0.13%
India*	-3.12%	-6.14%	25.89%	14.44%	0.43%	-1.25%	0.09%	0.34%	-0.39%
Indonesia*	7.72%	6.40%	6.57%	1.91%	0.02%	-0.07%	0.19%	0.06%	0.20%
Korea*	9.86%	8.57%	6.82%	11.31%	0.15%	-0.38%	0.18%	-0.06%	-0.12%
Malaysia*	--	-3.99%	0.00%	1.57%	--	0.11%	0.01%	--	0.13%
Philippines*	19.93%	2.71%	1.18%	0.74%	0.12%	-0.02%	0.02%	0.07%	0.20%
Taiwan*	22.04%	14.55%	13.12%	13.81%	1.08%	-0.07%	-0.05%	-0.05%	0.91%
Thailand*	0.66%	-0.58%	3.61%	2.23%	0.03%	-0.08%	0.02%	0.02%	-0.02%
Americas									
Argentina*	55.76%	4.74%	0.98%	0.00%	0.00%	0.01%	0.00%	0.50%	0.51%
Brazil*	1.29%	-0.68%	7.41%	5.27%	0.14%	-0.19%	0.04%	0.06%	0.04%
Chile*	1.53%	4.78%	0.40%	0.56%	0.02%	0.01%	-0.04%	-0.01%	-0.01%
Colombia*	--	-11.50%	0.00%	0.12%	--	0.02%	0.00%	--	0.02%
Mexico*	14.62%	21.91%	3.14%	2.29%	-0.15%	0.07%	0.06%	-0.06%	-0.08%
Peru*	-2.41%	8.27%	0.39%	0.26%	-0.03%	0.01%	0.00%	-0.01%	-0.04%
United States	30.28%	7.59%	1.16%	0.00%	0.00%	0.04%	0.00%	0.26%	0.30%

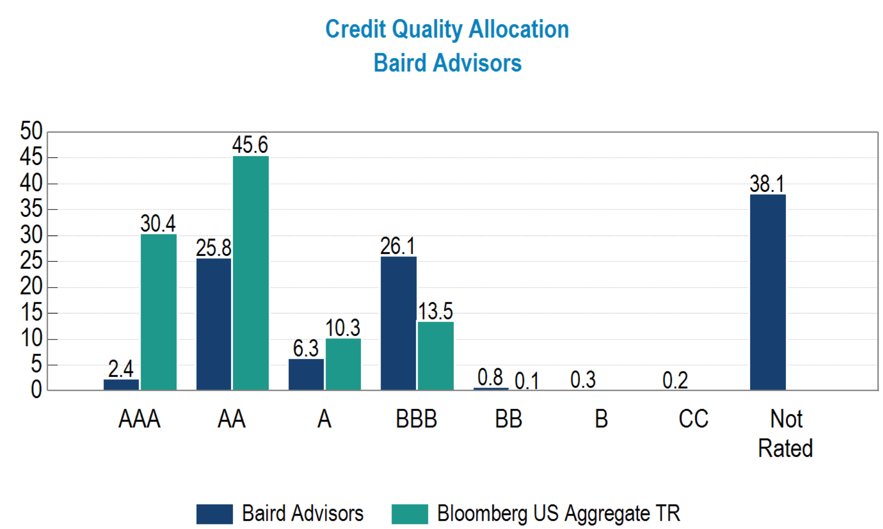
William Blair Emerging Mkts Growth Performance Attribution vs. MSCI Emerging Markets Gross

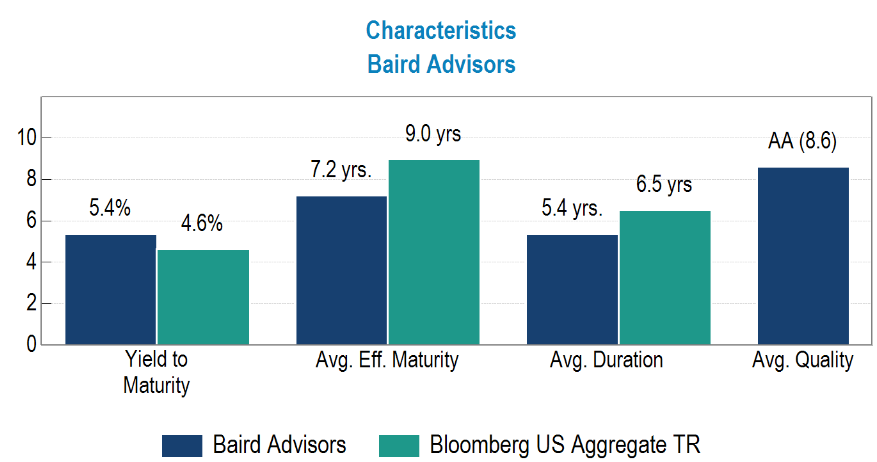
	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
Other									
Egypt*	--	-3.58%	0.00%	0.09%	--	-0.01%	0.02%	--	0.01%
Kuwait*	--	-3.47%	0.00%	0.94%	--	0.07%	0.00%	--	0.07%
Qatar*	-3.92%	-0.75%	0.88%	0.99%	-0.03%	0.01%	0.00%	0.00%	-0.02%
Saudi Arabia*	9.05%	0.12%	1.99%	4.10%	0.37%	0.09%	0.00%	-0.19%	0.26%
South Africa*	-1.06%	-0.33%	3.28%	3.69%	-0.03%	0.00%	0.02%	0.00%	-0.01%
Turkey*	--	-8.89%	0.00%	0.67%	--	0.07%	0.02%	--	0.09%
United Arab Emirates*	-12.11%	-7.75%	1.85%	1.35%	-0.06%	-0.06%	0.00%	-0.02%	-0.14%
Totals									
Americas	10.75%	5.89%	13.48%	8.49%	0.55%	-0.19%	0.06%	0.32%	0.75%
Europe	2.82%	6.73%	1.41%	1.37%	-0.03%	0.00%	-0.02%	0.00%	-0.05%
Asia/Pacific	5.67%	4.76%	76.94%	78.32%	0.13%	-0.01%	0.57%	0.00%	0.69%
Other	-1.42%	-1.81%	8.01%	11.82%	0.06%	0.16%	0.05%	-0.02%	0.25%
Cash	1.07%	--	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total	**5.74%**	**4.10%**	**100.00%**	**100.00%**	**0.71%**	**-0.04%**	**0.66%**	**0.30%**	**1.63%**
Totals									
Developed	9.42%	--	7.46%	0.00%	0.00%	0.00%	-0.04%	0.44%	0.40%
Emerging*	5.45%	4.10%	92.38%	100.00%	0.58%	0.00%	0.70%	-0.04%	1.24%
Cash	1.07%	--	0.16%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%



	Return (Rank)															
5th Percentile	3.58		6.01		-1.95		-2.78		-0.24		2.06		2.13		2.38	
25th Percentile	3.31		5.35		-3.96		-3.81		-1.18		1.65		1.65		2.02	
Median	3.13		5.06		-4.49		-4.11		-1.68		1.40		1.44		1.83	
75th Percentile	2.92		4.71		-4.84		-4.37		-2.05		1.23		1.26		1.66	
95th Percentile	2.47		3.98		-5.69		-4.77		-2.81		1.00		0.94		1.39	
# of Portfolios	202		202		202		199		194		189		185		180	
● Baird Advisors	3.34	(20)	5.32	(27)	-4.33	(40)	-4.19	(57)	-1.70	(53)	1.50	(39)	1.70	(21)	2.25	(9)
▲ Bloomberg US Aggregate TR	2.96	(72)	4.89	(63)	-4.78	(71)	-4.47	(84)	-2.77	(95)	0.90	(97)	0.88	(97)	1.36	(96)


US Sector Allocation
Baird Advisors
50
45
40
35
30
25
20
15
10
5
0
26.4
42.2
36.3
24.6
31.0
28.9
4.4
0.5
0.2
3.2
0.2
0.6
0.2
UST Agency
Corporate
MBS
ABS
Foreign
Muni
Cash
Baird Advisors
Bloomberg US Aggregate TR


Credit Quality Allocation
Baird Advisors
50
45
40
35
30
25
20
15
10
5
0
2.4
30.4
25.8
45.6
6.3
10.3
26.1
13.5
0.8
0.1
0.3
0.2
38.1
AAA
AA
A
BBB
BB
B
CC
Not Rated
Baird Advisors
Bloomberg US Aggregate TR

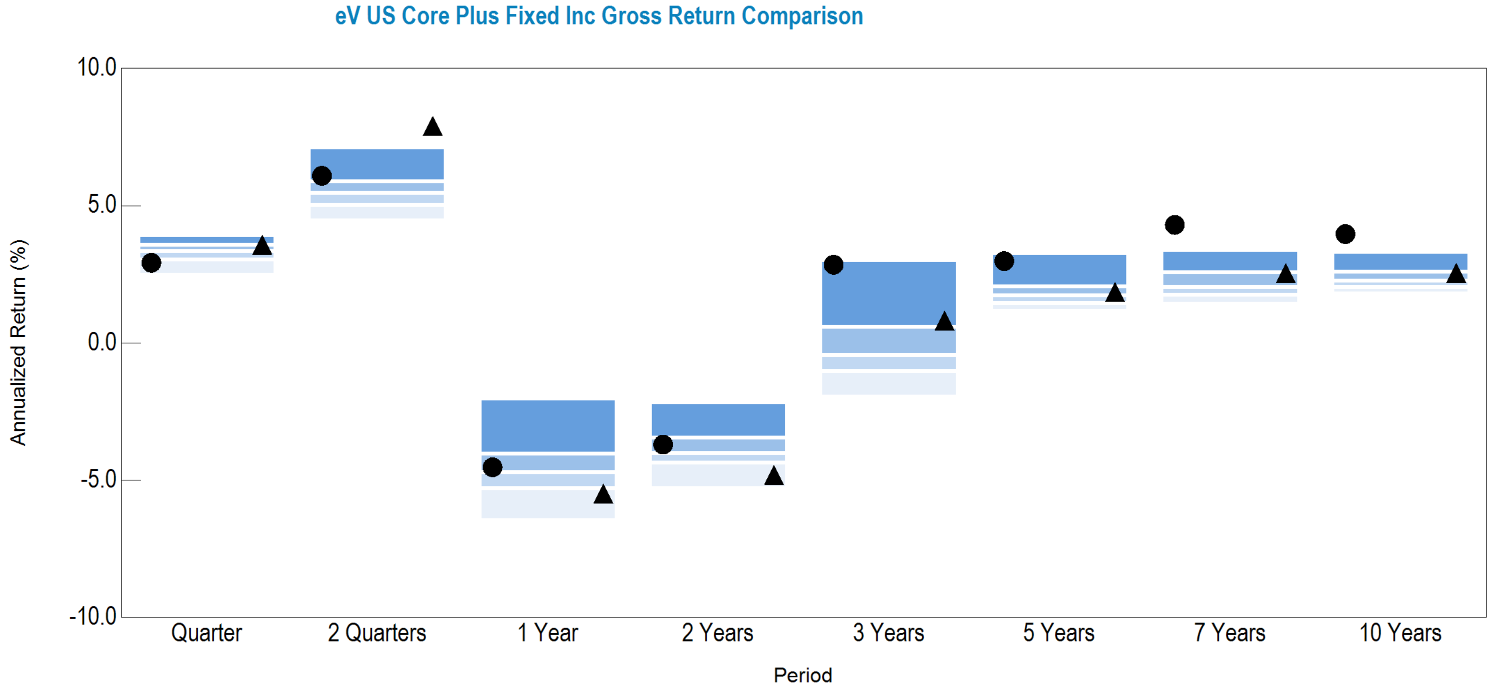

Characteristics
Baird Advisors
10
8
6
4
2
0
5.4%
4.6%
7.2 yrs.
9.0 yrs
5.4 yrs.
6.5 yrs
AA (8.6)
Yield to Maturity
Avg. Eff. Maturity
Avg. Duration
Avg. Quality
Baird Advisors
Bloomberg US Aggregate TR

PERFORMANCE BY QUALITY

	NUMBER OF ISSUES	FINAL MARKET VALUE ($000)	FINAL MARKET VALUE %	QUARTERLY RETURN %	QUARTERLY CONTRIBUTION TO TOTAL RETURN %
Cash & Equiv	1	-	0.0	1.20	0.00
Govt & Agency	171	605,883	52.2	3.50	1.83
AAA	42	117,230	10.1	1.10	0.11
AA	7	3,482	0.3	2.00	0.01
A	41	119,551	10.3	3.20	0.33
BAA	118	306,423	26.4	3.20	0.84
Below BAA	10	8,125	0.7	3.10	0.02
Other	0	-	0.0	0.00	0.00
Total Account	**390**	**$1,160,695**	**100.0**	**3.14**	**3.14**

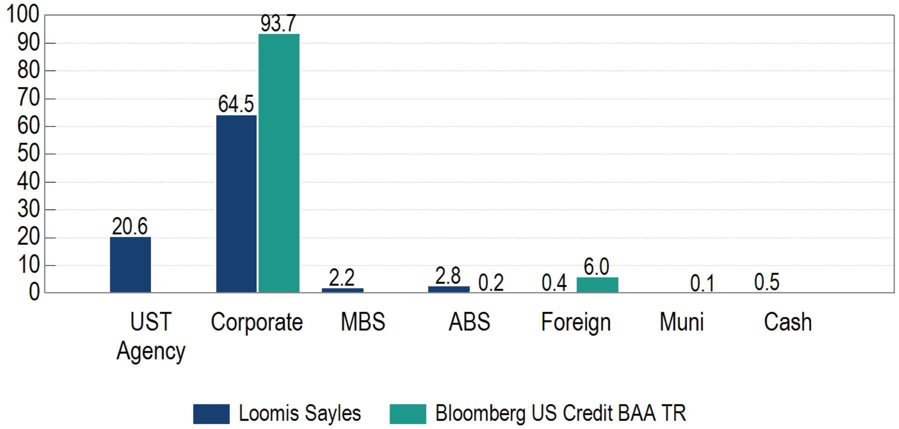
PERFORMANCE BY DURATION

	NUMBER OF ISSUES	FINAL MARKET VALUE ($000)	FINAL MARKET VALUE %	QUARTERLY RETURN %	QUARTERLY CONTRIBUTION TO TOTAL RETURN %
Under 1 Year	16	30,178	2.6	1.50	0.04
1 - 3 Years	68	227,497	19.6	1.70	0.33
3 - 6 Years	191	470,082	40.5	2.80	1.14
Over 6 Years	115	432,939	37.3	4.40	1.63
Total Account	**390**	**$1,160,695**	**100.0**	**3.14**	**3.14**

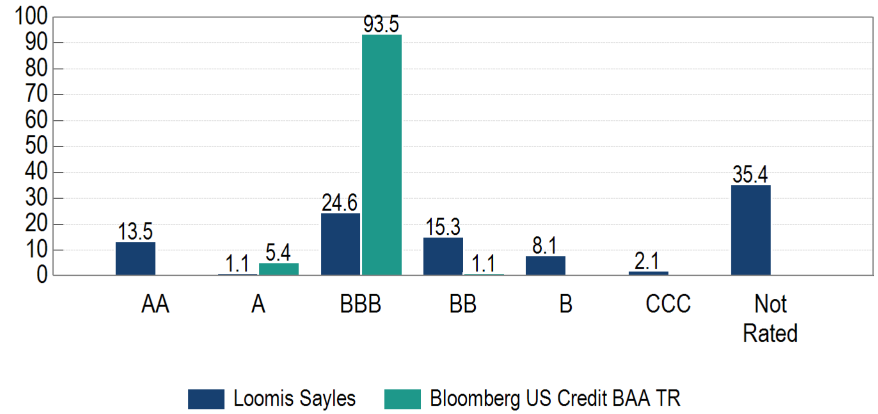


	Return (Rank)															
5th Percentile	3.91		7.12		-2.05		-2.17		3.00		3.27		3.37		3.30	
25th Percentile	3.58		5.91		-4.02		-3.44		0.60		2.08		2.60		2.61	
Median	3.36		5.49		-4.70		-3.99		-0.44		1.74		2.05		2.27	
75th Percentile	3.06		5.04		-5.27		-4.35		-1.00		1.46		1.76		2.04	
95th Percentile	2.48		4.48		-6.45		-5.27		-1.93		1.18		1.45		1.81	
# of Portfolios	123		123		123		121		120		114		110		102	
● Loomis Sayles	2.92	(88)	6.09	(20)	-4.53	(43)	-3.70	(36)	2.85	(7)	2.98	(7)	4.30	(1)	3.97	(1)
▲ Bloomberg US Credit BAA TR	3.58	(26)	7.90	(1)	-5.49	(82)	-4.80	(90)	0.81	(19)	1.86	(39)	2.54	(27)	2.55	(31)

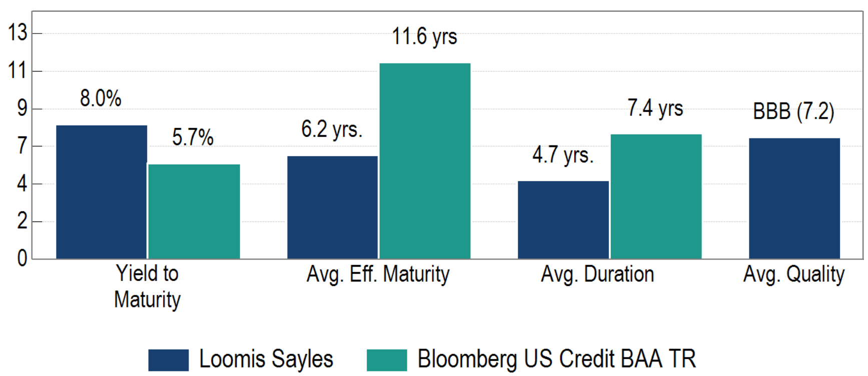
US Sector Allocation
Loomis Sayles



Credit Quality Allocation
Loomis Sayles



Characteristics
Loomis Sayles



Summary

Account Return	3.08
Benchmark Return	3.58
Excess Return	-0.49
Sector Allocation	-0.04
Security Selection	-0.44
Trading	-0.02
Pricing Differences	0.00
Compounding	0.00

Details

Scheme	Average Weight Account	Average Weight Benchmark	Return Account	Return Benchmark	Contribution to Return Account	Contribution to Return Benchmark	Sector Allocation Effect	Security Selection Effect	Total Effect	Excess Total Effect
Total	100.00	100.00	3.11	3.58	3.11	3.58	-0.04	-0.44	-0.47	-0.47
CASH	1.74	0.00	1.14	3.58	0.02	0.00	0.00	-0.08	-0.08	-0.08
AAA	22.12	0.00	1.78	3.58	0.99	0.00	0.00	0.27	0.27	0.27
AA	0.44	0.00	0.36	3.58	-0.19	0.00	0.00	-0.21	-0.21	-0.21
A	3.31	0.02	3.10	2.37	0.10	0.00	-0.04	0.02	-0.02	-0.02
BAA	33.31	99.97	3.89	3.58	1.34	3.58	0.00	0.10	0.10	0.10
BA	17.62	0.00	4.67	3.58	0.83	0.00	0.00	0.18	0.18	0.18
B	8.68	0.01	2.27	0.66	0.19	0.00	0.00	-0.11	-0.11	-0.11
CAA	3.78	0.00	-5.96	3.58	-0.23	0.00	0.00	-0.37	-0.37	-0.37
CA	0.42	0.00	-2.45	3.58	-0.01	0.00	0.00	-0.03	-0.03	-0.03
C	0.53	0.00	-12.71	3.58	-0.06	0.00	0.00	-0.08	-0.08	-0.08
NR	7.57	0.00	2.23	3.58	0.18	0.00	0.00	-0.09	-0.09	-0.09
Unclassified	0.49	0.00	4.60	3.58	-0.04	0.00	0.00	-0.04	-0.04	-0.04

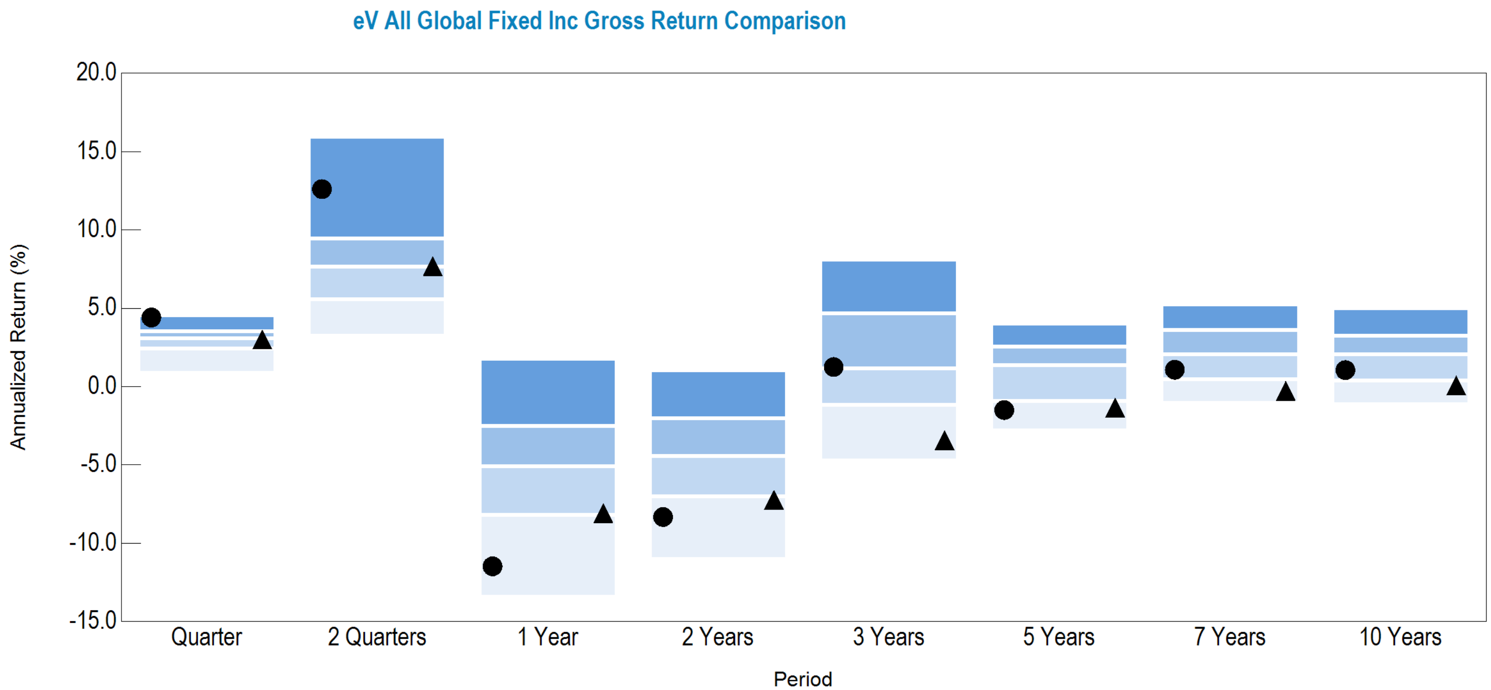
Summary

Account Return	3.08
Benchmark Return	3.58
Excess Return	-0.49
Sector Allocation	0.27
Security Selection	-0.74
Trading	-0.02
Pricing Differences	0.00
Compounding	0.00

Details

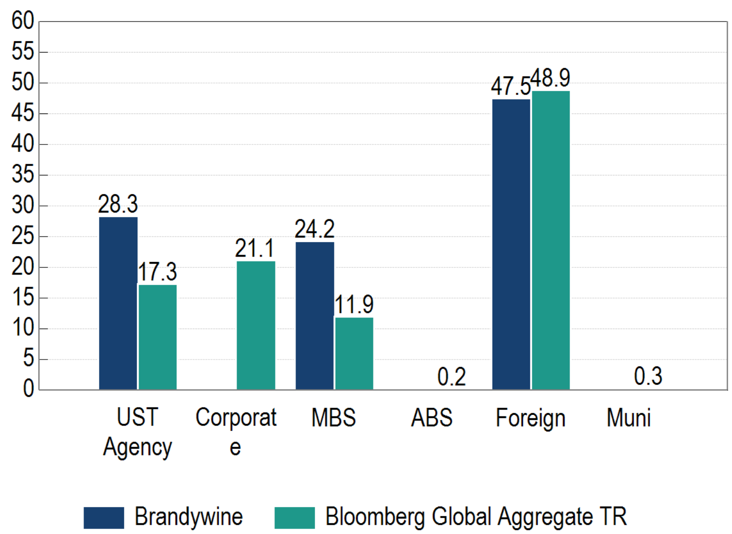
Scheme	Average Weight Account	Average Weight Benchmark	Return Account	Return Benchmark	Contribution to Return Account	Contribution to Return Benchmark	Sector Allocation Effect	Security Selection Effect	Total Effect	Excess Total Effect
Total	100.00	100.00	3.11	3.58	3.11	3.58	0.27	-0.74	-0.47	-0.47
Less than 0.5	-4.36	0.05	0.47	-10.15	0.10	0.00	0.75	-0.70	0.05	0.05
0.5 - 1.0	8.58	1.09	1.17	0.94	0.09	0.01	-0.03	0.03	-0.01	-0.01
1.0 - 1.5	6.08	3.99	-1.69	0.96	0.04	0.04	-0.22	-0.06	-0.28	-0.28
1.5 - 2.0	4.46	5.65	2.65	1.41	0.11	0.08	0.04	0.05	0.09	0.09
2.0 - 2.5	5.01	5.09	1.53	0.82	0.04	0.05	0.06	0.02	0.07	0.07
2.5 - 3.0	4.95	5.28	1.71	1.74	0.05	0.09	-0.01	-0.06	-0.07	-0.07
3.0 - 3.5	5.98	4.28	2.20	1.73	0.11	0.08	-0.05	0.00	-0.05	-0.05
3.5 - 4.0	7.01	6.11	5.16	2.31	0.30	0.13	0.01	0.18	0.19	0.19
4.0 - 4.5	4.97	5.01	2.35	2.74	0.20	0.14	-0.02	0.01	-0.02	-0.02
4.5 - 5.0	7.13	3.97	4.18	3.13	0.28	0.12	-0.01	0.06	0.06	0.06
5.0 - 5.5	4.36	3.75	1.67	3.28	0.08	0.12	0.00	-0.07	-0.08	-0.08
5.5 - 6.0	13.07	4.45	3.70	3.51	0.17	0.16	0.03	-0.07	-0.05	-0.05
6.0 - 6.5	6.05	3.88	4.20	3.51	0.22	0.14	0.00	0.03	0.03	0.03
6.5 - 7.0	4.25	4.20	4.90	3.80	0.17	0.14	0.00	0.04	0.04	0.04
7.0 - 7.5	3.16	6.17	5.51	4.03	0.19	0.25	-0.01	0.05	0.04	0.04
7.5 - 8.0	-3.63	2.14	1.59	4.04	0.15	0.10	-0.03	0.03	0.00	0.00
8.0 - 8.5	0.22	1.29	1.61	4.09	0.07	0.04	0.01	0.00	0.01	0.01
8.5 - 9.0	0.27	1.66	0.73	4.50	-0.03	0.07	-0.02	0.00	-0.02	-0.02
9.0 - 9.5	0.31	1.72	2.92	4.65	0.02	0.08	-0.02	-0.01	-0.02	-0.02

Scheme	Average Weight Account	Average Weight Benchmark	Return Account	Return Benchmark	Contribution to Return Account	Contribution to Return Benchmark	Sector Allocation Effect	Security Selection Effect	Total Effect	Excess Total Effect
9.5 - 10.0	0.11	1.39	6.28	4.97	0.02	0.08	-0.02	0.01	-0.01	-0.01
10.0 - 10.5	0.06	1.30	1.84	4.72	0.00	0.05	-0.01	-0.01	-0.02	-0.02
10.5 - 11.0	0.68	1.22	4.16	5.15	0.05	0.07	0.00	0.00	-0.01	-0.01
11.0 - 11.5	3.41	1.15	-2.02	5.08	-0.32	0.05	-0.10	-0.06	-0.16	-0.16
11.5 - 12.0	3.48	1.84	5.67	4.72	0.27	0.07	0.05	0.03	0.07	0.07
12.0 - 12.5	0.78	2.62	6.60	5.97	0.05	0.14	-0.04	0.01	-0.03	-0.03
12.5 - 13.0	0.46	3.43	11.98	5.75	0.06	0.16	-0.04	0.02	-0.02	-0.02
13.0 - 13.5	0.01	3.77	3.80	6.20	0.01	0.21	-0.09	0.01	-0.08	-0.08
13.5 - 14.0	0.66	3.34	1.55	5.90	-0.04	0.19	-0.08	-0.01	-0.09	-0.09
14.0 - 14.5	1.07	2.89	6.79	5.90	0.13	0.19	-0.03	0.00	-0.02	-0.02
14.5 - 15.0	0.35	1.95	7.04	5.62	0.05	0.13	-0.04	0.03	-0.01	-0.01
15.0 - 15.5	0.19	1.85	2.13	5.46	0.01	0.10	-0.03	-0.01	-0.04	-0.04
15.5 - 16.0	0.01	1.50	2.77	6.98	0.02	0.13	-0.06	0.00	-0.06	-0.06
16.0 - 16.5	1.69	1.00	0.37	6.60	-0.01	0.08	-0.02	0.03	0.01	0.01
16.5 - 17.0	7.60	0.52	-0.49	7.28	-0.09	0.05	0.13	-0.37	-0.25	-0.25
17.0 - 17.5	1.56	0.24	5.22	5.76	0.57	0.02	0.19	0.08	0.28	0.28
17.5 - 18.0	0.00	0.11	0.00	3.70	0.00	0.01	0.00	0.00	0.00	0.00
18.0 - 18.5	0.00	0.05	0.00	1.81	0.00	0.00	0.00	0.00	0.00	0.00
18.5 - 19.0	0.00	0.02	0.00	13.56	0.00	0.00	0.00	0.00	0.00	0.00
19.0 - 19.5	0.00	0.01	0.00	3.88	0.00	0.00	0.00	0.00	0.00	0.00
19.5 - 20.0	0.00	0.00	0.00	-1.61	0.00	0.00	0.00	0.00	0.00	0.00
20.0 - 20.5	0.00	0.00	0.00	2.89	0.00	0.00	0.00	0.00	0.00	0.00

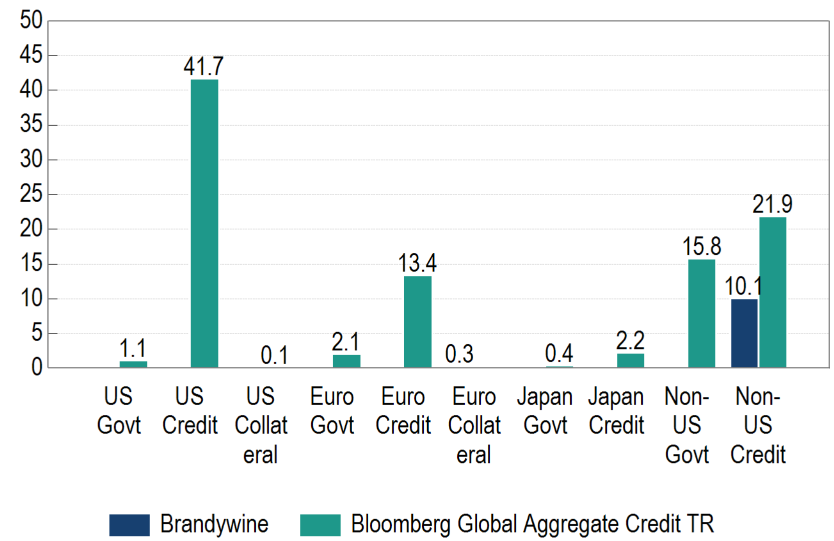


	Return (Rank)															
5th Percentile	4.54		15.91		1.76		1.02		8.09		3.99		5.24		4.98	
25th Percentile	3.54		9.47		-2.49		-1.99		4.70		2.58		3.65		3.27	
Median	3.10		7.67		-5.05		-4.39		1.20		1.39		2.07		2.07	
75th Percentile	2.43		5.60		-8.18		-6.99		-1.13		-0.90		0.47		0.42	
95th Percentile	0.89		3.27		-13.38		-10.97		-4.70		-2.77		-1.03		-1.11	
# of Portfolios	528		528		528		519		507		468		422		344	
● Brandywine	4.41	(6)	12.60	(10)	-11.47	(93)	-8.32	(87)	1.25	(50)	-1.50	(84)	1.07	(65)	1.05	(61)
▲ Bloomberg Global Aggregate TR	3.01	(57)	7.69	(50)	-8.07	(75)	-7.24	(79)	-3.43	(90)	-1.34	(82)	-0.27	(86)	0.07	(84)

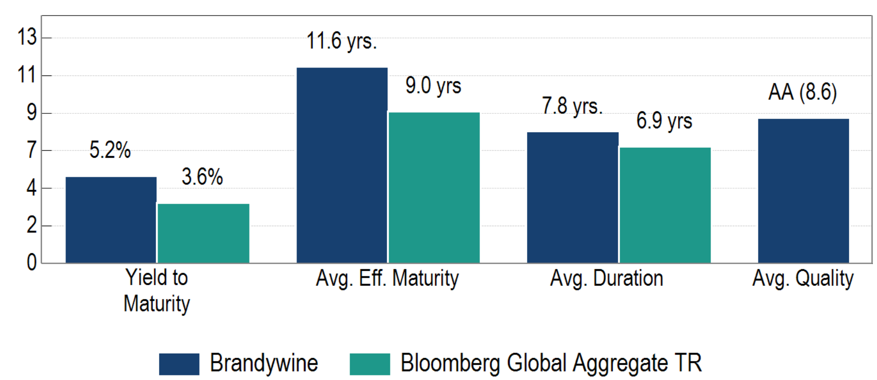
US Sector Allocation



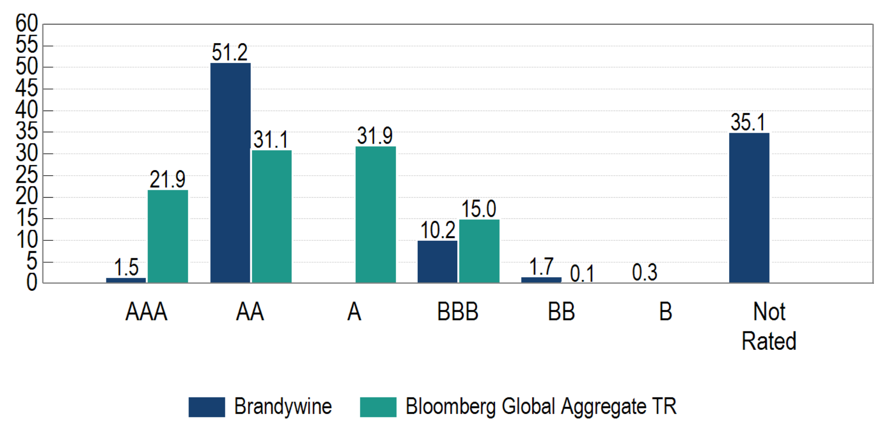
Global Sector Allocation



Characteristics
Brandywine

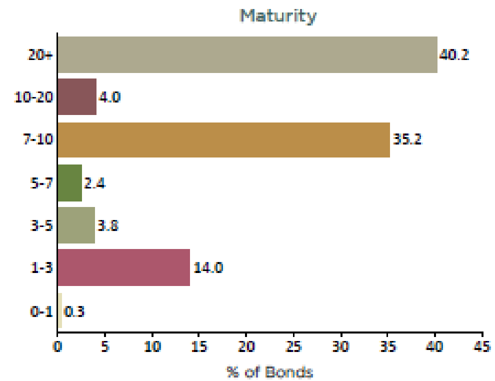


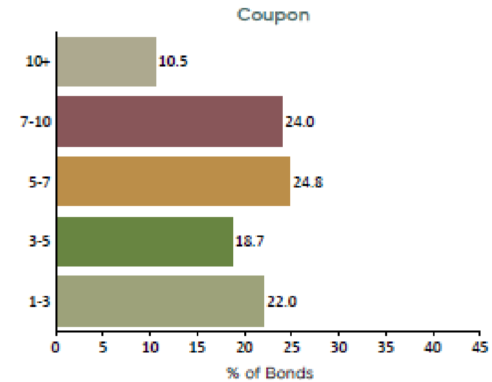
Credit Quality Allocation
Brandywine



Portfolio Characteristics

	Portfolio	Primary Benchmark
Yield to Maturity (%)	6.97	3.12
Yield to Worst (%)	7.06	3.12
Modified Duration	8.89	7.54
Effective Duration	8.28	7.61
Average Maturity	15.83	9.73
Average Market Price	87.95	-
Average Coupon (%)	5.54	1.97
Current Yield (%)	6.16	-
# of Issues	154	1,218





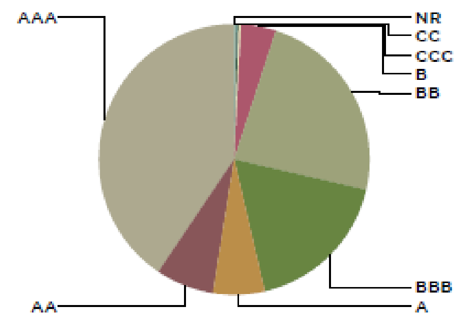
Sector Breakdown

	Market Value (%)	Duration Contribution (in Years)
Government Sovereign	72.40	5.66
Mortgage Backed Securities	13.15	1.06
Corporate Bond - High Yield	8.48	0.29
Corporate Bond - Investment Grade	1.09	0.04
Government Owned - No Guarantee	0.52	0.03
Government Sovereign Agency	0.14	0.01
Cash	3.96	-
Derivatives	0.26	1.79
Total:	100.00	8.89

Portfolio Credit Quality (Blended Weighted Average Rating)

Combined Rating	%	Cumulative %
AAA	40.6	40.6
AA	7.1	47.7
A	5.9	53.6
BBB	18.0	71.6
BB	23.6	95.2
B	4.0	99.2
CCC	0.4	99.7
CC	0.2	99.8
NR	0.2	100.0

Average Quality: A



PRIMARY BENCHMARK is FTSE WGBI (USD)

All Averages are US DOLLAR - weighted by the net market value. Average Market Price includes accrued interest. The "Blended Weighted Average Rating" is determined as follows: in line with the methodology used by Barclays Global indices, the middle rating from the three major NRSROs (S & P, Moody's, and Fitch) will be assigned to each security. In the event that ratings are provided by only two agencies, the lowest rating will be assigned. If only one agency assigns a rating, that rating will be applied. If the security is not rated by one of the three major agencies, U.S. treasuries and certain U.S. agencies are given the U.S. issuer rating. Sovereign treasuries are given the sovereign issuer rating. All other unrated securities are given a rating equivalent to a defaulted bond. The equivalent numerical rating is assigned to each security based on the Security Level scale. A Portfolio Level scale is applied on the weighted average calculation to round for fractional numerical ratings and then converted to an alpha weighted average rating. Cash is included and received the highest rating.

Data included on this page show the aggregate holdings of the Brandywine Emerging Markets Debt Fund ("EMD Fund"), in which the portfolio is invested. Holdings in the EMD Fund are not subject to ACERA's Investment Guidelines. Please note that ACERA owns units of the EMD Fund, not the underlying holdings. Data and characteristics shown are for illustrative purposes only.

Derivatives market value represents the unrealized profit/loss of all derivatives in the portfolio.

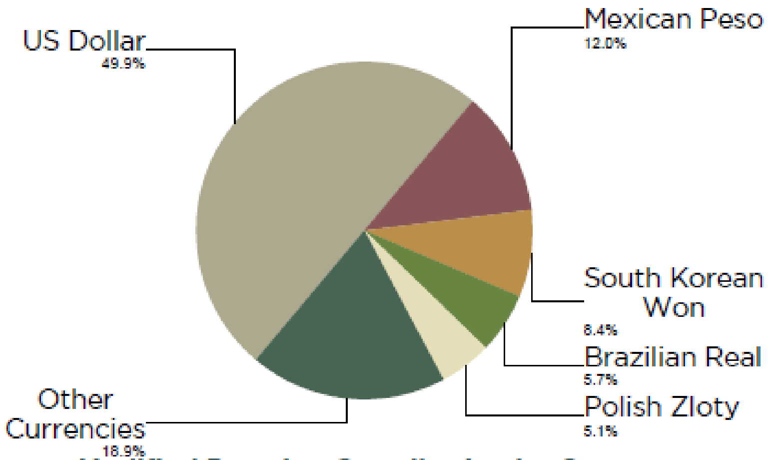
Country Allocation	3/31/2023 Portfolio	3/31/2023 Index	3/31/2023 Active	12/31/2022 Portfolio	12/31/2022 Change
*Mexico	12.61	0.78	11.83	10.35	2.26
*Brazil	10.32	-	10.32	7.57	2.75
South Korea	7.24	-	7.24	7.42	(0.19)
*Colombia	6.12	-	6.12	5.12	1.00
*Poland	5.86	0.40	5.46	5.54	0.32
Spain	0.15	4.41	(4.26)	0.16	(0.01)
*China	0.11	4.35	(4.24)	0.11	-
United Kingdom	0.03	4.23	(4.20)	0.03	-
*South Africa	4.04	-	4.04	4.92	(0.88)
*Peru	3.46	-	3.46	5.37	(1.91)
United States	39.30	42.73	(3.42)	31.65	7.66
Canada	0.16	1.78	(1.62)	0.45	(0.29)
Australia	0.01	1.38	(1.36)	2.20	(2.19)
*Hungary	1.24	-	1.24	1.05	0.19
New Zealand	0.83	0.21	0.62	-	0.83
Israel	0.90	0.28	0.62	0.80	0.10
Germany	5.19	5.66	(0.47)	5.15	0.04
Finland	0.01	0.45	(0.44)	-	0.01
*Chile	0.40	-	0.40	0.49	(0.09)
*Uruguay	0.21	-	0.21	0.22	(0.01)
*Zambia	0.20	-	0.20	0.20	-
*Panama	0.19	-	0.19	0.20	(0.01)
Puerto Rico	0.17	-	0.17	-	0.17
*Ukraine	0.15	-	0.15	0.18	(0.03)
*India	0.14	-	0.14	-	0.14
Tanzania	0.10	-	0.10	0.10	-
*Nigeria	0.09	-	0.09	0.09	-
*Malaysia	0.50	0.48	0.02	1.77	(1.27)
Other Countries	-	32.87	(32.87)	7.42	(7.42)
Derivative P/L	0.26	-	0.26	1.44	(1.18)
Total:	100.00	100.00	-	100.00	-

Currency Allocation	3/31/2023 Portfolio	3/31/2023 Index	3/31/2023 Active	12/31/2022 Portfolio	12/31/2022 Change
US Dollar	(2.10)	42.73	(44.82)	3.70	(5.80)
*Colombian Peso	6.39	-	6.39	1.84	4.54
*Brazilian Real	6.18	-	6.18	3.62	2.55
Canadian Dollar	7.89	1.78	6.11	-	7.89
*Thai Baht	4.55	-	4.55	5.54	(0.99)
*Mexican Peso	5.31	0.78	4.54	3.40	1.92
Norwegian Krone	4.57	0.14	4.43	5.07	(0.50)
*Polish Zloty	4.32	0.40	3.91	4.94	(0.63)
South Korean Won	3.88	-	3.88	4.03	(0.16)
**Chinese Yuan Renminbi	0.65	4.35	(3.69)	0.73	(0.08)
*Indonesian Rupiah	3.45	-	3.45	3.30	0.15
*South African Rand	3.01	-	3.01	3.24	(0.23)
Euro	26.64	28.80	(2.16)	18.78	7.86
*Malaysian Ringgit	2.43	0.48	1.95	4.75	(2.33)
New Zealand Dollar	2.14	0.21	1.93	-	2.14
*Peruvian Nuevo Sol	1.60	-	1.60	1.06	0.54
Australian Dollar	-	1.38	(1.38)	0.21	(0.21)
*Hungarian Forint	0.97	-	0.97	1.66	(0.69)
Singapore Dollar	-	0.38	(0.38)	-	-
*Czech Koruna	0.31	-	0.31	1.05	(0.74)
Israeli Shekel	-	0.28	(0.28)	-	-
Danish Krone	-	0.28	(0.28)	-	-
Swedish Krona	-	0.18	(0.18)	5.04	(5.04)
British Pound Sterling	4.17	4.23	(0.06)	0.09	4.09
Japanese Yen	13.65	13.61	0.04	22.35	(8.70)
*Chilean Peso	-	-	-	5.06	(5.06)
*Philippine Peso	-	-	-	0.53	(0.53)
Total:	100.00	100.00	-	100.00	-

*Emerging Markets are defined as any country and currency included in the JP Morgan Government Bond Index-Emerging Market or the JP Morgan Emerging Market Bond Index Global indices.

**For reporting purposes we have grouped both offshore (CNH) and onshore (CNY) Chinese Yuan Renminbi exposure in a single line item. Please refer to the holdings section of this report for additional details.

Source of Portfolio Duration by Currency Denomination



Modified Duration Contribution by Currency

(In Years)

	3/31/2023					12/31/2022
Currency	**0-3**	**>3-10**	**>10-20**	**>20+**	**Total**	**Total Change**
US Dollar	0.04	1.28	0.83	2.28	4.44	(0.07)
*Mexican Peso	-	0.06	0.32	0.68	1.06	0.23
South Korean Won	-	0.40	-	0.35	0.75	(0.02)
*Brazilian Real	-	0.51	-	-	0.51	0.17
*Polish Zloty	-	0.45	-	-	0.45	0.02
*Colombian Peso	-	-	-	0.45	0.45	0.13
Euro	-	0.44	-	0.00	0.44	(0.79)
*South African Rand	-	0.03	-	0.28	0.31	(0.06)
*Peruvian Nuevo Sol	-	0.23	-	-	0.23	(0.18)
New Zealand Dollar	-	-	-	0.14	0.14	0.15
*Hungarian Forint	-	0.09	-	-	0.09	0.01
*Malaysian Ringgit	-	0.02	-	-	0.02	(0.04)
*Czech Koruna	-	-	-	-	-	(0.09)
Australian Dollar	-	-	-	-	-	(0.01)
Total	0.04	3.51	1.14	4.19	8.89	(0.55)

Modified Duration Contribution by Country

vs. FTSE WGBI (USD)

(In Years)

	3/31/2023							12/31/2022
Country	**0-3**	**>3-10**	**>10-20**	**>20+**	**Total**	**Index**	**Active**	**Total Change**
Japan	-	-	-	-	-	1.69	(1.69)	-
United States	0.02	1.12	0.82	2.27	4.22	2.66	1.56	(0.03)
*Mexico	0.00	0.09	0.32	0.69	1.10	0.04	1.06	0.22
South Korea	-	0.40	-	0.35	0.76	-	0.76	(0.02)
*Brazil	-	0.54	-	0.00	0.54	-	0.54	0.16
*Colombia	-	0.02	-	0.46	0.48	-	0.48	0.13
United Kingdom	-	0.00	-	-	0.00	0.45	(0.45)	(0.00)
*Poland	-	0.45	-	-	0.45	0.01	0.44	0.02
*South Africa	-	0.03	-	0.28	0.31	-	0.31	(0.06)
Spain	-	-	-	0.00	0.00	0.30	(0.30)	(0.00)
*China	-	0.01	-	-	0.01	0.24	(0.24)	(0.00)
*Peru	-	0.23	-	-	0.23	-	0.23	(0.18)
New Zealand	-	-	-	0.14	0.14	0.01	0.13	0.15
Canada	0.00	0.00	-	-	0.01	0.12	(0.12)	(0.01)
Australia	-	0.00	-	-	0.00	0.09	(0.09)	(0.02)
*Hungary	-	0.09	-	-	0.09	-	0.09	0.01
Finland	-	-	0.00	-	0.00	0.03	(0.03)	0.00
Germany	-	0.44	-	-	0.44	0.41	0.03	(0.01)
*Malaysia	-	0.02	-	-	0.02	0.03	(0.01)	(0.04)
*Chile	0.00	0.01	-	-	0.01	-	0.01	(0.00)
*Panama	-	0.01	-	-	0.01	-	0.01	(0.00)
*India	-	0.01	-	-	0.01	-	0.01	0.01
*Zambia	-	0.01	-	-	0.01	-	0.01	(0.00)
Israel	0.01	0.02	-	-	0.02	0.02	0.01	(0.00)
Puerto Rico	0.00	0.01	-	-	0.01	-	0.01	0.01
*Ukraine	-	-	0.01	-	0.01	-	0.01	(0.00)
*Uruguay	0.00	-	-	-	0.00	-	0.00	(0.00)
*Nigeria	-	0.00	-	-	0.00	-	0.00	(0.00)
Tanzania	0.00	-	-	-	0.00	-	0.00	(0.00)
Other Countries	-	-	-	-	-	1.42	(1.42)	(0.87)
Total	0.04	3.51	1.14	4.19	8.89	7.54	1.35	(0.55)

*Emerging Markets are defined as any country and currency included in the JP Morgan Government Bond Index-Emerging Market or the JP Morgan Emerging Market Bond Index Global indices.

Total Plan Policy Index	As of: 7/1/21	1/1/21	7/1/19	10/1/17	7/1/16	1/1/13	10/1/11	4/1/11	1/1/09	7/1/06	4/1/03	6/1/01	10/1/97	1/1/96	10/1/94	1/1/92	1/1/80
91-day US T-Bill													1%	1%	1%	1%	2%
Bloomberg US Aggregate	9%	11.40%	11.40%	11.25%	11.25%	11.25%	15%	18%	18%	21%	23%	26%	33%	29%	32%	37%	30%
Bloomberg US High Yield	1.2%	1.6%	1.6%	1.5%	1.5%	1.5%	2.0%	2.4%	2.4%	3%	3%	3%					
Bloomberg Commodity	0.3%	0.25%	0.75%	0.75%	0.75%												
FTSE WGBI ex US	3.8%	3.00%	3.00%	2.25%	2.25%	2.25%	3%	3.6%	3.6%	4%	4%	5%					
CPI-U +3% (RR)						5.00%	5%										
MSCI ACWI ex US									23%	22%	22%	22%					
MSCI ACWI ex US IMI	24%	25%	25%	26%	26%	27%	25%	23%									
MSCI EAFE													10%	10%	10%	10%	
MSCI Emg Mkts Free ex Malaysia													3%				
MSCI World net																	10%
NCREIF								6%	6%	9%	9%	9%					
NCREIF ODCE	9%	8%	8%	8%	8%	6%	6%										
Russell 3000	24%	25%	25%	28%	28%	32%	34%	37%	37%	41%	39%	35%	42%	49%	47%	40%	
HFRI FoF Composite	8%	9%	9%	9%													
Refinitiv C|A Global All Private Equity 1Q Lagged	11%	8%	8%	9%													
Russell 3000 +1% (PE)					18.00%	15.00%	10%										
Russell 3000 +1.5% (PE)								10%	10%								
Russell 3000 +4% (AI)													2%				
S&P 500																	55%
S&P Global Infrastructure	3.6%	3%	1.75%	1.75%	1.75%												
S&P Global Large Mid Commodity & Resource	2.1%	1.75%	2.50%	2.50%	2.50%												
S&P/LSTA Leveraged Loan+1.75%	4%	4%	4%														
Wilshire RE													9%	11%	10%	12%	3%
	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: 1/1/92	1/1/80
Russell 3000	100%	0%
S&P 500	0%	100%
	100.0%	100.0%

International Equity Benchmark	As of: 4/1/11	6/1/01	10/1/97	1/1/92	1/1/80
MSCI ACWI ex US		100%			
MSCI ACWI ex US IMI	100%				
MSCI EAFE			77%	100%	
MSCI Emg Mkts Free ex Malaysia			23%		
MSCI World net					100%
	100.0%	100.0%	100.0%	100.0%	100.0%

Fixed Income Benchmark	As of: 7/1/21	6/1/19	6/1/01	1/1/80
Bloomberg US Aggregate	75.00%	71.25%	75%	100%
Bloomberg US High Yield	10.00%	10.00%	10%	
FTSE WGBI ex US	15.00%	18.75%	15%	
	100.0%	100.0%	100.0%	100.0%

Absolute Return Benchmark	As of: 10/1/17	10/1/11
HFRI Fund of Funds Composite Index	100%	
LIBOR 1M +4%		100%
	100.0%	100.0%

Private Equity Benchmark	As of: 10/1/17	12/1/08
Refinitiv C|A Global All Private Equity 1Q Lagged	100%	
Russell 3000 +2.5%		100%
	100.0%	100.0%

Real Assets Benchmark	As of: 1/1/21	7/1/16	10/1/11
CPI-U +3%			100%
Bloomberg Commodity	5%	15%	
S&P Global Infrastructure	60%	35%	
S&P Global Large Mid Commodity & Resource	35%	50%	
	100.00%	100.00%	100.0%

Private Credit Benchmark	As of: 11/1/19
S&P/LTSA Leveraged Loan Index +1.75%	100%
	100.0%

Real Estate Blend	As of: 10/1/11	6/1/01	4/1/86
NCREIF ODCE	100%		
NCREIF Property		100%	
Wilshire RE			100%
	0.0%	100.0%	100.0%

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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Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

PERIOD ENDING: MARCH 31, 2023

Absolute Return Performance Report

Alameda County Employees’ Retirement Association

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Hedge Fund Environment

Hedge fund market review

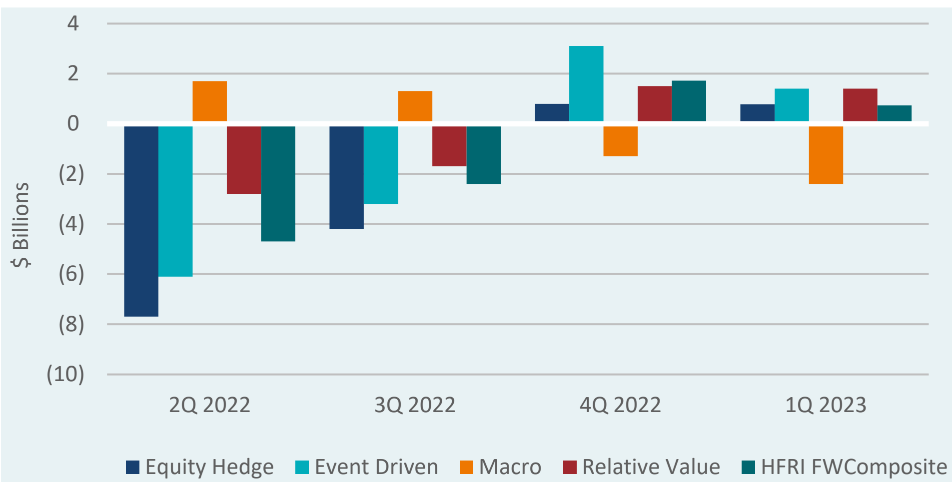
Hedge funds see cash flows start to increase as returns stabilize

— Performance for Q1 (0.7% for the HFRI Composite) modest with many strategies up between 0.7% and 1.5% for the quarter.

— Investors added $9.1 billion in Q1 2023 in a stark reversal of the net flows trend from 2022 (which saw outflows of approximately $40 billion). This comes on the heels of strong inflows in Q1 and the best period of inflows since 2013-2015, which suggests that most investors were using their hedge fund allocations as a source of liquidity rather than exiting the space.

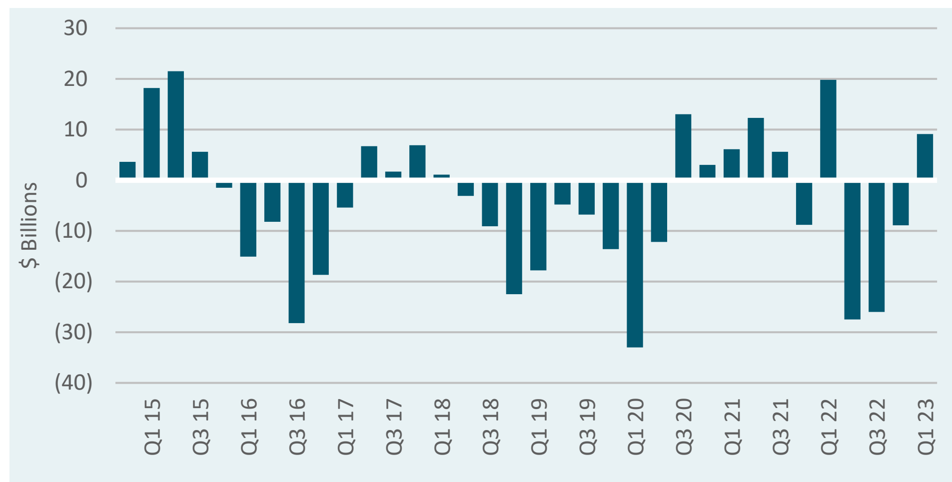
— Hedge funds generally saw positive performance in Q4 2022 and Q1 2023 led by event driven strategies. Macro strategies, which had been strong through Q3 2022 was the only major HFRI strategy with negative returns in both Q4 and Q1.

HFRI STRATEGY RETURNS, LAST 4 QUARTERS



Source: HFR

QUARTERLY NET FLOWS TO HEDGE FUNDS



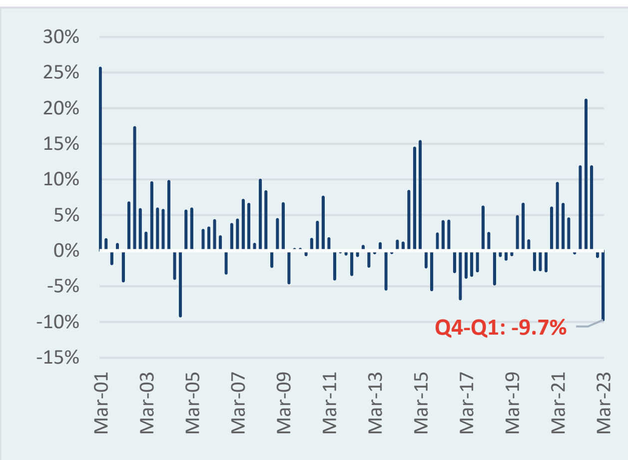
Source: HFR

CTAs suffer reversal of fortune

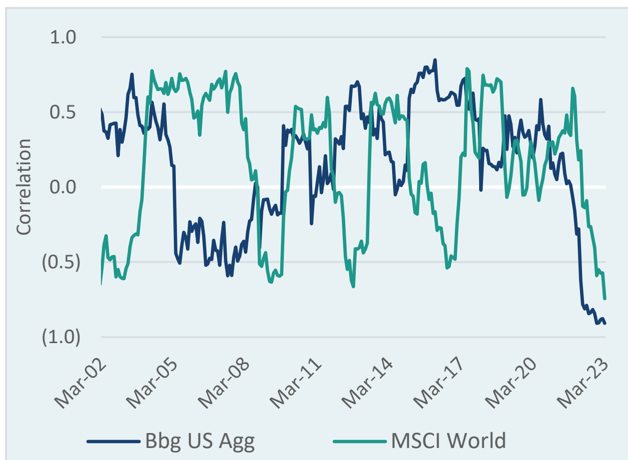
In 2021 and for most of 2022, systematic CTA strategies were the top performing hedge fund strategy. Trend following paid off after several years of mediocre returns from 2016-2020. This periodicity is typical of trend following/CTA type strategies, and the end of 2022 and first quarter of 2023 are a great example of the weak points for these strategies. CTA strategies, as proxied by the SocGen CTA Index, had their worst performance ever over a consecutive quarter period from Q4 '22 through Q1 '23, with data going back to 2000.

The source of pain is obvious when looking at their intermediate-term correlations to stocks and bonds, each of which were simultaneously at their all time most negative since 2000. Rolling 3-year performance for CTAs vs other strategy types is in the midst of reversing after COVID drawdowns begin to roll off and CTAs have suffered from the recent reversals in both stocks and bonds. As intermediate (6-12 month) trends in markets begin to flatten out and the first half of 2022 rolls off, look for CTA positioning to level out and potentially support further moves higher if they continue as they need to cover shorts or add to longs.

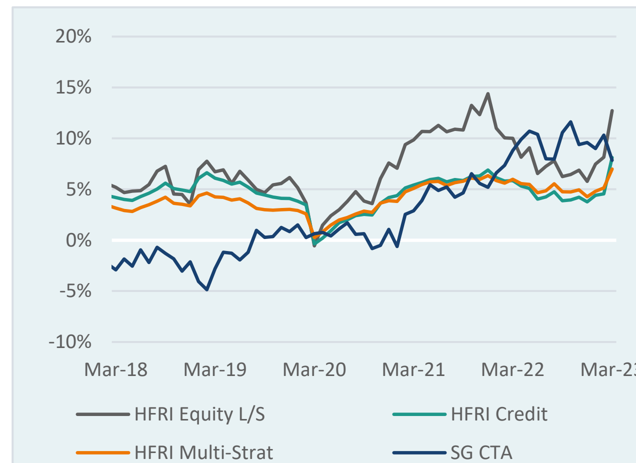
ROLLING 6-MONTH RETURNS FOR CTA INDEX



12-MONTH CORRELATION VS CTA INDEX



CUMULATIVE RETURN LAST 12 MONTHS



Source: HFR, MPI, Morningstar. SocGen, Data as of 9/30/2022

ACERA Performance

Allocations

Target

Sub-categories	Target Allocations	Min./Max. Ranges
AR Portfolio	**8.0%**	**5% to 10.5%**
▪ *Fund of Funds**	*6.4%*	*4% to 8%*
▪ *Other Alternatives/Opportunistic*	*1.6%*	*0% to 4.0%*

Current (as of 3/31/2023)

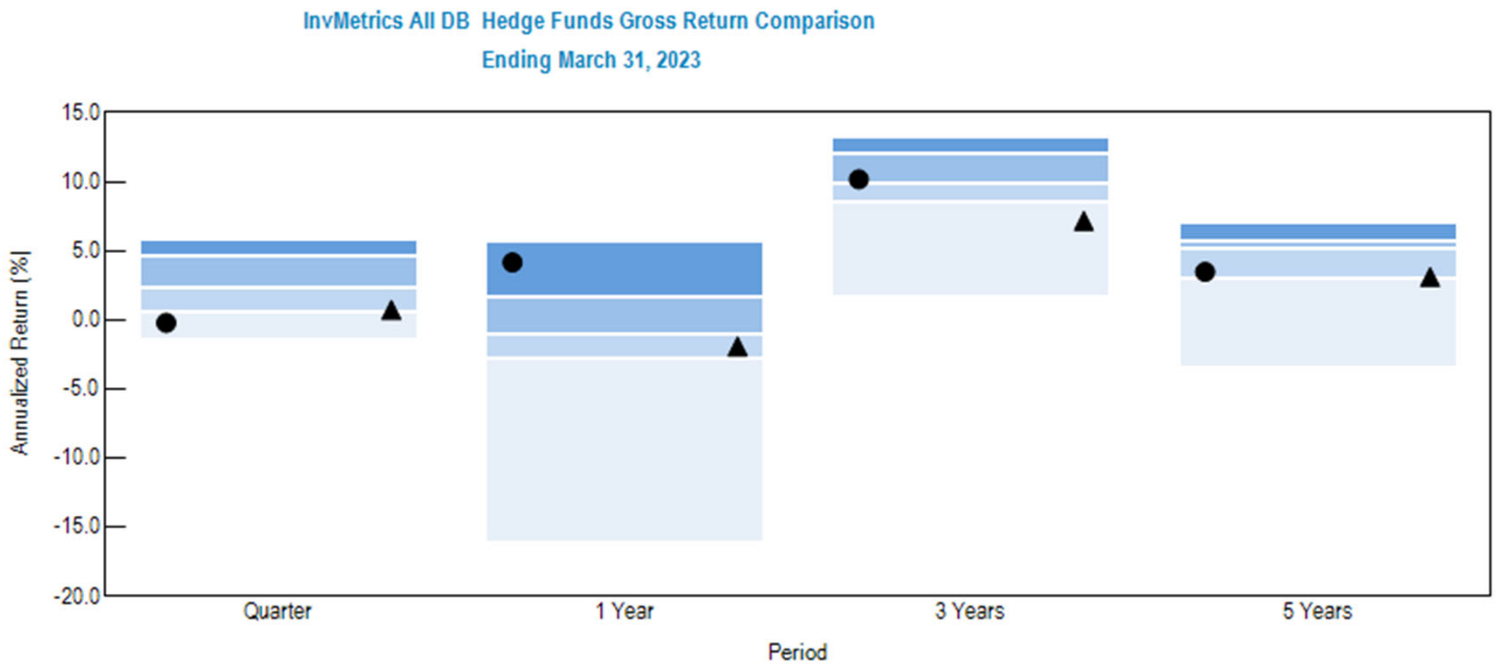
Sub-categories	Current Allocations	Min./Max. Ranges
AR Portfolio	**8.0%**	**5% to 10.5%**
▪ *Fund of Funds**	*6.3%*	*4% to 8%*
▪ *Other Alternatives/Opportunistic*	*1.7%*	0% to 4%

* Funding second Fund of One manage completed in two tranches August and September 2022.

Performance Summary

	Market Value ($)	% of Portfolio	3 Mo (%)	YTD (%)	Fiscal YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	Inception (%)	Inception Date
									Ending March 31, 2023							
Absolute Return*	**852,044,092**	**100.0**	**-0.2**	**-0.2**	**-0.2**	**4.2**	**10.2**	**3.5**	**4.0**	**6.1**	**15.0**	**-0.6**	**1.8**	**-2.2**	**3.9**	**Sep-11**
Absolute Return Blend			*0.7*	*0.7*	*0.7*	*-1.9*	*7.2*	*3.1*	*3.8*	*-5.3*	*6.2*	*10.9*	*8.4*	*-4.0*	*3.8*	*Sep-11*

Relative Performance



	Return (Rank)							
5th Percentile	5.7		5.7		13.2		6.9	
25th Percentile	4.6		1.8		12.1		5.8	
Median	2.4		-1.1		10.0		5.2	
75th Percentile	0.6		-2.8		8.6		3.1	
95th Percentile	-1.4		-16.1		1.7		-3.4	
# of Portfolios	127		115		109		93	
● Absolute Return	-0.2	(91)	4.2	(8)	10.2	(50)	3.5	(74)
▲ Absolute Return Blend	0.7	(75)	-1.9	(63)	7.2	(81)	3.1	(76)

Portfolio Statistics* (as of 3/31/2023)

	Benchmark HFRI FoF Composite	Absolute Return Portfolio	MSCI ACWI
Max Drawdown	-9.0	-10.5	-25.3
Sharpe Ratio	0.51	0.64	0.62
Beta	0.27	0.07	1.00
Correlation to MSCI ACWI	0.81	0.24	1.00
Annualized StDev	4.9	4.2	14.7

*Since inception of AR Portfolio (9/2011)

Portfolio performance and risk targets are:

- AR portfolio returns to exceed benchmark
- Correlation to global equities less than or equal to 0.5

Appendix

Glossary

Beta - A measure of systematic (undiversifiable) 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.

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 optimize the benefits of diversification when constructing an investment portfolio.

Internal Rate of Return (IRR) – the interest rate which is the net present value of all the cash flows (both positive and negative) of an investment.

Maximum Drawdown – the maximum loss from a peak to a trough of a portfolio before a new peak attained. Maximum drawdown measures the downside risk over a specified time period.

Standard Deviation - A measure of volatility, or risk. Measures risk by indicating how far from the average, or mean, return one is likely to fall in any given time period. The rules of statistics dictate that you will fall within 1 standard deviation of the mean 2/3 of the time and within 2 standard deviations 95% of the time. 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%.

Glossary

Sharpe Ratio - A measure of that explains the return of an investment compared to its risk. The Sharpe Ratio indicates excess portfolio return for each unit of risk over the risk free rate (usually short-term Treasuries or LIBOR) per unit of volatility. The higher the Sharpe Ratio, the greater its risk-adjusted return.

Time Weighted Return – A measure of the compound rate of growth in a portfolio, which eliminates the distorting effects of growth rates created by inflows and outflows of money.

Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

PERIOD ENDING DECEMBER 31, 2022

Private Equity Review

Alameda County Employees’ Retirement Association

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Market Commentary

DEBT RELATED

— **HY issuance and leveraged loan issuance both were down significantly.** In 2022, US high yield issuance at $96.5 billion was down 77.5% compared to 2021[1]. Leverage loan issuance volume was $1.1 trillion in 2022, down 24.5% from the $1.4 trillion last year[1].

— **Spreads loosened across the board.** US HY Credit Index increased by 161 bps or up 48.8%[2] versus the same period last year. BB and B index loosened by 56 bps and 247 bps, increasing by 18.2%[2] and 55.6%[2] versus the same period last year. In the meantime, CCC index spread increased by 69.8%[2] in 2022 from 2021.

— **Slight decrease in LBO debt except Large Corp, interest coverage decreased in US.** Large Corp total leverage averaged 5.9x (Debt / EBITDA) in 2022 for US new issue loans, up 0.7% from 2021[3], and interest coverage averaged 3.0x (EBITDA / Cash Interest), down 13.5% from 2021[3]. Middle-market total leverage averaged 5.7x (Debt / EBITDA) in 2022 for US new issue loans, down 4.6% from 2021[3], and interest coverage averaged 2.3x (EBITDA / Cash Interest), down 33.3% from 2021[3]. In Europe, 2022 new issue LBO Loan volume at $36.2 billion was down 66.8% from 2021 and down 73.7% from $137.7 billion peak in 2007[4]. European leverage multiples decreased 0.9% to 5.7x in 2022[4], down from 6.1x from peak in 2007[4].

GLOBAL

— **Both investment activity and average deal size decreased.** During 2022, global PE firms invested in $1.7 trillion worth of deals, down 14.7% from prior year, and closed on 67,894 transactions, down 10.9%[5]. Average deal size declined 4.3%[5].

— **Private Markets* dry powder decreased globally.** In 2022, global total dry powder was at $2.6 trillion, down 13.9% from 2021[5]. Global total PE ex Venture Capital dry powder was down by 16.2% to $1.3 trillion[5]. Global Venture Capital dry powder was down by 4.6% to $583.1 billion[5]. Global Private Debt dry powder was down by 20.8% to $395.2 billion[5].

US PRIVATE EQUITY (BUYOUT & GROWTH)

— **Fundraising activity increased.** In 2022, US buyout firms raised $282.1 billion, up by 6.3% from prior year[5]. Average fund size was up 87.4%, from $457.6 million in 2021 to $857.6 million in 2022[5]. US growth strategy raised $60.9 billion, down by 32.8% from $90.6 billion in 2021.

— **Investment activity was down.** During 2022, US buyout firms invested in $921.5 billion (-26.9% from 2021) into 7,495 deals (-17.8%)[5]. IT and Financial Services sectors declined the least, down from 2021 by 11.6% and 16.8%, respectively. B2B sector invested the most capital ($281.5 billion[5], -25.6% from 2021 and completed the most number of deals (2,879 deals[5], -13.7% from 2021).

— **Dry powder decreased.** In 2022, US private equity dry powder was $775.6 billion, down by 14.9% from 2021[5].

Market Commentary

— **LBO price multiples up.** As of December 31, 2022, US LBO purchase price multiple (Enterprise Value / EBITDA) was at 11.9x , a 4.3% increase from December 31, 2021[3]. Healthcare sector led the highest purchase price multiple at 14.4x, an increase of 5.2% from same time last year.

— **Exit activity decreased.** During 2022, US private equity firms exited 1,082 companies, representing $295.8 billion in total transaction value[5]. This represented a 39.1% decrease in the number of exits and a 66.3% decrease in total transaction value compared to the same time last year[5].

US VENTURE CAPITAL

— **Fundraising activity increased.** US VC firms raised $162.6 billion in 2022, a 5.5% increase from last year[5]. 769 funds closed in 2022, a 39.4% decrease from last year[5]. The average US VC fund size increased to $211.5 million by 74.3% versus the same period last year[5].

— **Investment activity decreased.** US VC firms deployed $238.3 billion in capital in 2022, a 30.9% decrease from 2021. The number of deals closed at 15,852, a 14.4% decrease from last year[5]. Average deal size decreased 19.3% from 2021 due to fewer deals in late stage.

— **Dry powder increased.** In 2022, US VC dry powder was at $289.0 billion, up 15.7% from 2021[5].

— **Entry valuations and deal sizes mixed by stage:**

- **Entry valuations.** Compared to December 31, 2021, the average pre-money valuations for all stages in 2022 are: up 9.7% at $4.9 million[5] for Angel stage, up 16.7% at $10.5 million[5] for Seed stage, up 19.0% at $50.0 million[5] for early-stage VC, and down 10.2% at $67.3 million[5] for late-stage VC.
- **Deal sizes.** Average deal size increased for Angel stage and Seed stage by 6.8% to $0.7 million[5] and 30.5% at $3.9 million[5], respectively. In the meantime, average deal size decreased for Early stage and Late stage by 11.6% to $14.4 million[5] and 29.0% at $23.2 million[5], respectively. Across all stages, the average investment per deal decreased to $10.5 million, a 19.8% decrease from prior year[5]. Over the past 3 years, the average deal size of Angel-, Seed-, Early- and Late-stage investments were down 92.2%, 86.6%, 101.0%, and 101.5%, respectively[5].

— **Exit activity decreased significantly with smaller transactions.** US VC firms exited 1,208 companies in 2022, down by 37.2% from the same time last year, and down 7.2% from three years ago[5]. This represented $71.4 billion in transaction value, down by 90.5% from the same period last year, but up by 73.5% from three years ago[5]. Largest sectors exited were Software and Pharma & Biotech.

EX US

— **Ex-US fundraising activity was down.** In 2022, ex-US fundraising decreased 1.3% from the same time in 2021 to $419.9 billion[5]. Fundraising in Asia decreased by 1.9% to $124.0 billion[5], while Europe was down by 40.8% to $83.9 billion[5].

Market Commentary

— **Capital deployment decreased by VCs and Buyout managers in Europe and Asia.**

- **In both Europe and Asia, VCs invested less capital into fewer deals.** In 2022, number of deals closed decreased by 16.0% in Europe with 15.9% in capital deployed at $98.3 billion. Similar to Europe, Asia VC capital investment 74.9% less capital to $32.2 billion, representing 63.1% fewer deals than 2022.
- **Buyout deal activity and capital deployment dropped in Europe and in Asia.** In Europe, buyout firms transacted on $638.6 billion in aggregate value (-18.2% from 2021)[5]. Asia buyout firms invested $24.3 billion in aggregate value (-53.3%)[5].

— **Dry powder decreased ex-US.** PE dry powder outside the US decreased 19.2% to $1.6 trillion[5] in 2022. Dry powder outside the US was 58.8% less than dry powder in the US ($3.8 trillion)[5].

- **Europe VC and buyout dry powder both down.** VC at $17.3 billion and buyout at $677.9 billion were down 22.8% and 16.6% from 2021, respectively[5].
- **In Asia, VC and buyout dry powder decreased in parallel with US and Europe, but growth dry powder increased.** VC at $40.9 billion, buyout at $218.9 billion, and growth at $59.9 billion were down 6.7%, 25.3% and up 7.2% from 2021, respectively[5].

— **Purchase price multiples decreased in Europe and Asia.** As of December 31, 2022, European buyout median purchase price multiples decreased 9.4% from 8.4x to 7.6x EBITDA from the same time last year[5]. Asia buyout median purchase price multiples decreased 39.3% from 7.1x to 4.3x EBITDA from the same time last year[5].

— **Exit activity weakened in Europe and Asia.** Europe PE aggregate exit value amounted to $254.9 billion in 2022, a 54.8% decrease from 2021, while Asia PE exit value dropped by 30.1% to $158.2 billion[5].

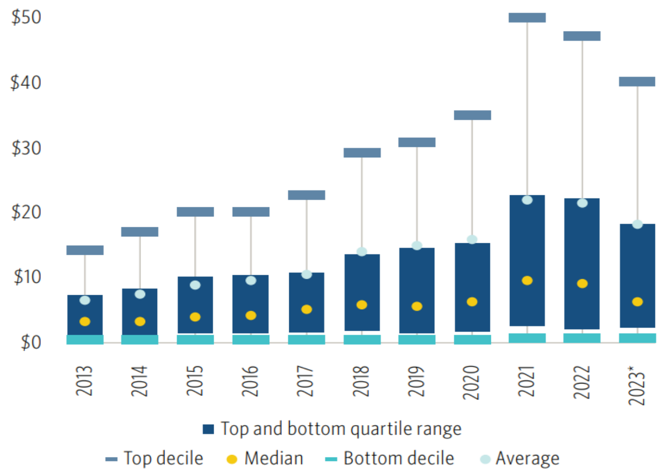
Notes

1. *White & Case Debt Explorer (April 10, 2023)*
2. *Guggenheim High-Yield Bank Loan Outlook (Q1 2023)*
3. *S&P Global US LBO Review (4Q 2022)*
4. *S&P Global LCD European Leveraged Buyout Review (4Q 2022)*
5. *Pitchbook (December 31, 2022)*

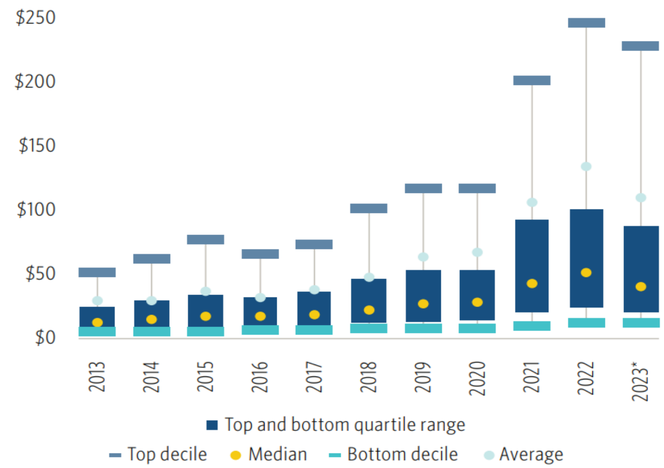
** Include Buyout, Venture Capital, Private Debt, Fund of Funds and Secondaries.*

VC Valuations

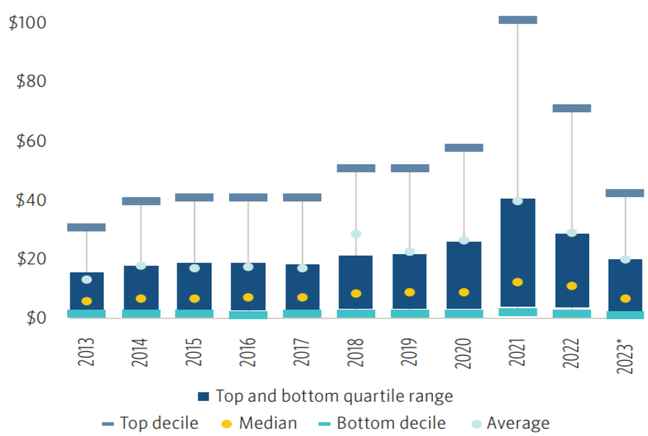
Early-stage deal sizes continue to dip
Early-stage VC deal value ($M) dispersion



Median early-stage VC valuation falls to eight-quarter low
Early-stage VC pre-money valuation ($M) dispersion

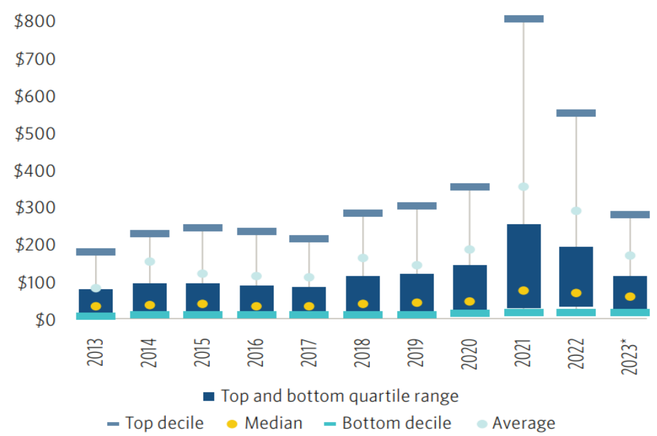


Median late-stage deal value has fallen 40% YoY
Late-stage VC deal value ($M) dispersion



Source: PitchBook • **Geography:** US
*As of March 31, 2023

Top-decile valuation down 70% QoQ
Late-stage VC pre-money valuation ($M) dispersion



Source: PitchBook • **Geography:** US
*As of March 31, 2023

Source: Pitchbook

Private Equity portfolio

	Policy Target	Policy Range	Market Value %	Market Value $(000)	Unfunded Commitment $(000)	Market Value + Unfunded $(000)
ACERA Plan Assets - Total				**$10,253,590**		
Private Equity:	**11.0%**	**8-13%**	**9.8%**	**$1,005,092**	**$382,823**	**$1,387,915**
Buyouts	60.0%	30-80%	59.5%	$598,042	$181,639	$779,681
Venture Capital	20.0%	0-40%	23.6%	$236,859	$77,017	$313,876
Debt-Related/Special Situations	20.0%	0-30%	16.9%	$170,191	$124,167	$294,358

Portfolio Summary

— As of December 31, 2022, the Private Equity portfolio had a total market value of $1.0B, with $598.0M in Buyouts, $236.9M in Venture Capital, and $170.2M in Debt-Related/Special Situations. Total market value is the current reported value of investments, excluding the remaining amount of unfunded commitments.

— Since its initial allocation to Private Equity in Q4 2008, ACERA has contributed $1.4B towards its total $1.6B Private Equity commitments.

— The portfolio exposure at 9.8% is below the 11.0% policy target approved in 2021, but within its 8-13% target range. Compared to December 31, 2021, portfolio exposure is up 1.5%. Buyout is very close to its policy target, Venture Capital is above its target, and Debt-Related / Special Situations is below its policy target; but all sub-asset classes are within policy ranges.

Portfolio Activity

— In the third quarter of 2022, ACERA committed $55M to Audax Fund VII. ACERA also committed $43M to Atlas III during the year.

Performance

— Current Private Equity portfolio is valued at $1.0BM. Portfolio investments have a capital-weighted average life of 5.2 years. Since inception (2008):

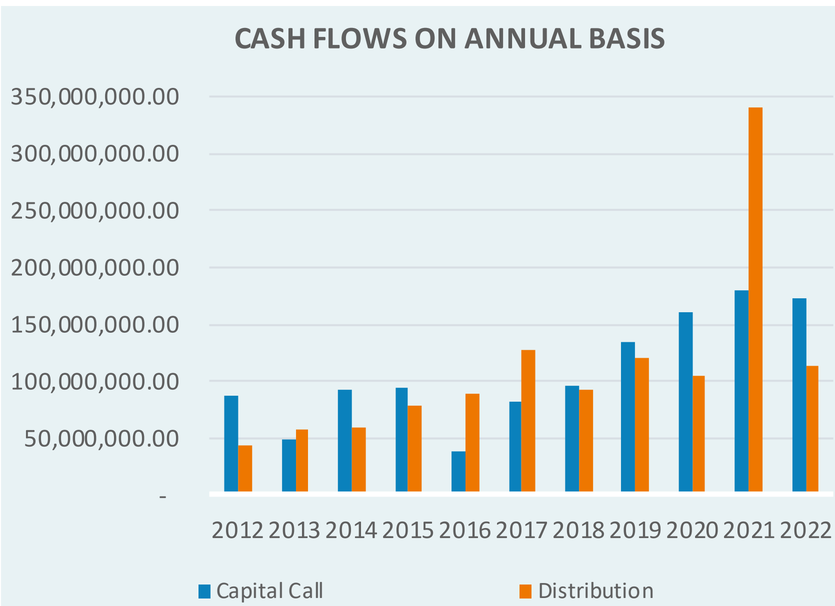
- The portfolio has produced 16.03% net IRR, outperforming its Refinitiv C|A Global PE benchmark pooled IRR of 14.07% by 1.96%. Portfolio returns rank above median on all measures: net IRR and Total Value Multiple (TVPI), and Distribution Multiple (DPI).
- Relative to same Vintage global benchmark peers, Buyout ranks close to Median on IRR, at Median for TVPI, above Median for DPI; Venture Capital ranks above median on IRR and above Top-Quartile on TVPI & DPI; and Debt Related/ Special Situations ranks close to Median on IRR, and below Median on TVPI, and DPI.

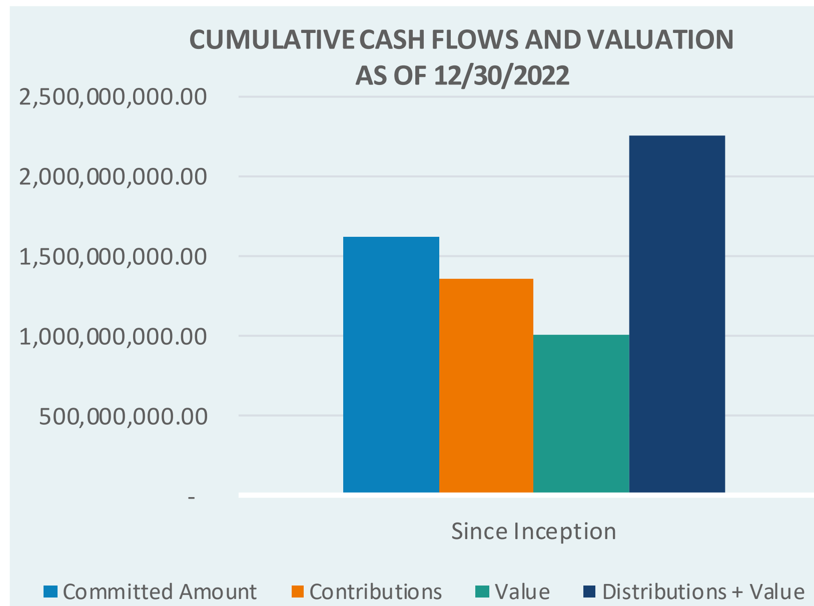
— Together with $1.2B in realized distributions (0.92x DPI), Private Equity's Total Value at $2.3B is approximately $895.7M above $1.4B contributed capital (1.66x TVPI), net of fees. Return drivers include:

- Buyout up $463.0M/+0.60x cost (Great Hill Equity Partners V & VI; Sycamore; Peak Rock II, Audax VI, and Warburg XII leading) with 82.5% of called capital realized and distributed. Since inception, the Buyout portfolio produced 15.95% net IRR versus its peer global benchmark 15.06% pooled IRR.
- Venture Capital up $340.5M/+1.60x cost (General Catalyst VI; Khosla Ventures IV, V, and Seed B; Great Hill Equity Partners IV and VI; Third Rock Venture II and III; and NEA 13 leading), with 148.8% of called capital realized and distributed. Since inception, this portfolio produced 21.89% net IRR versus its peer global benchmark of 15.39% pooled IRR.
- Debt-Related / Special Situations was up $92.2M/+0.25x cost (AG CSF1A (Annex) Dislocation; Peak Rock Credit II; Abry Senior Equity IV and V, and Advanced Securities II, Centerbridge Special Credit Partners; and OHA Strategic Credit Fund IB and II leading), with 78.8% of called capital. Since inception, this portfolio produced 9.16% net IRR versus its peer global benchmark of 12.58% pooled IRR.

— Contributions outpaced distributions by a ratio of 1.53:1.0 in 2022. Of $1.2B in since-inception cash distributions, 51.2% were from Buyouts, 25.3% from Venture Capital, and 23.5% from Debt-Related/Special Situations.

— Within Private Equity, the current allocation of exposure is 59.5% to Buyouts, 23.6% to Venture Capital, and 16.9% to Debt / Special Situations.





Portfolio Performance vs. Pooled Benchmark IRR

Period Ending: December 31, 2022

	1-Year	3-Year	5-Year	10-Year	Since Inception[2]
Buyout	**5.77%**	**21.43%**	**17.37%**	**17.13%**	**15.95%**
Refinitiv C/A Global Buyout Benchmark [1]	*-3.16%*	*17.80%*	*15.68%*	*15.17%*	*15.06%*
Venture Capital	**-22.72%**	**30.80%**	**24.28%**	**22.72%**	**21.89%**
Refinitiv C/A Global Venture Capital & Growth Equity Benchmark [1]	*-16.69%*	*21.28%*	*19.58%*	*17.19%*	*15.39%*
Debt-Related / Special Situation	**-3.37%**	**6.25%**	**4.83%**	**7.54%**	**9.16%**
Refinitiv C/A Global All Debt Benchmark [1]	*3.90%*	*12.61%*	*9.90%*	*10.13%*	*12.58%*
Total Private Equity	**-4.34%**	**20.66%**	**17.20%**	**17.02%**	**16.03%**
Refinitiv C/A Global All Private Equity Benchmark [1]	***-6.40%***	***17.71%***	***15.15%***	***13.98%***	***14.07%***

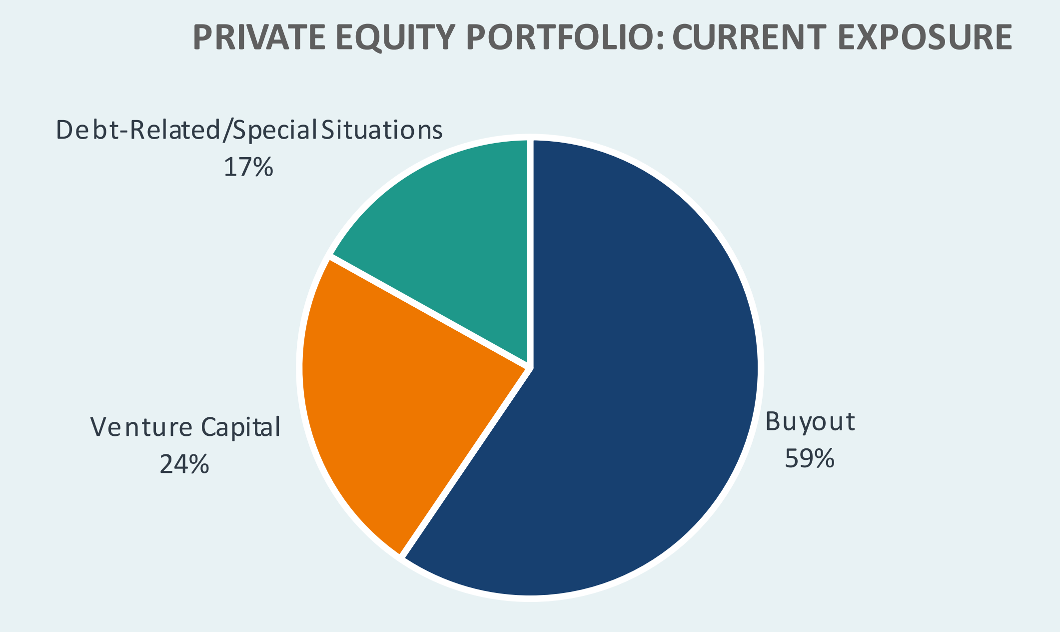
Identical cash flows from the portfolio inception through 12/31/2022 invested in the Russell 3000 Total Return index would yield a 12.66% (Long Nickels). The Private Equity Portfolio outperformed the Russell 3000 by 3.37%. Public Market Equivalent analysis provided by Solovis.

[1] *Benchmarks: Refinitiv C/A as of 12/31/2022, vintage 2008 through present.*

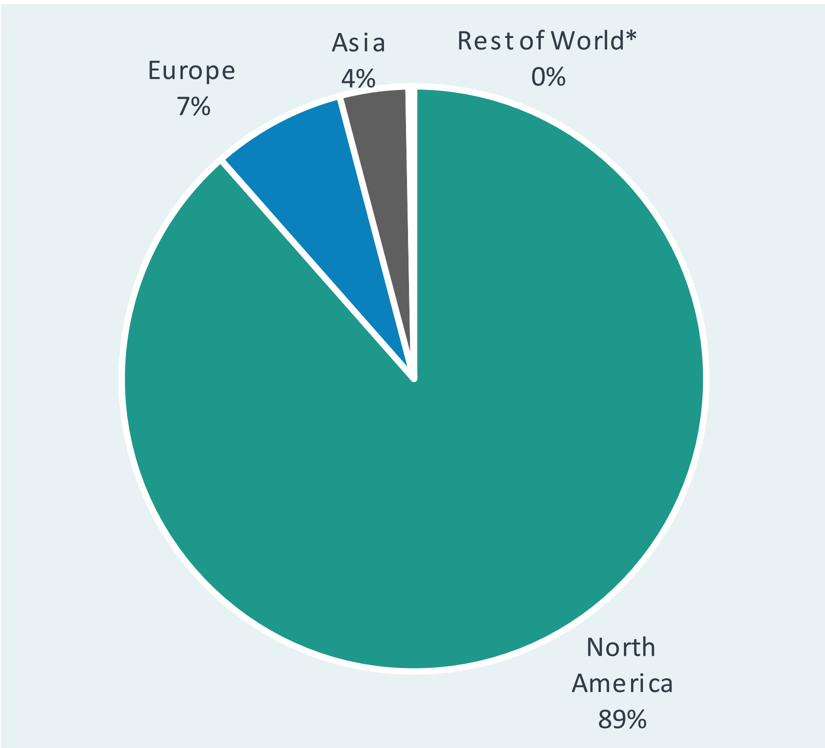
[2] *ACERA's inception date of November 21, 2008 vs. Refiniv C/A's inception date of January 1, 2008.*

Investment Type	Commitment	Current Exposure	Current Exposure as % of Private Equity
Buyout	861,995,686	598,041,780	59.5%
Venture Capital	288,600,000	236,859,376	23.6%
Debt-Related/Special Situations	470,247,675	170,190,776	16.9%
Total Private Equity	**1,620,843,361**	**1,005,091,932**	**100.0%**

Investment Type	Target Range	Target Exposure	Current Exposure as % of Target	Difference
Buyout	3.3%-8.8%	6.6%	5.8%	-0.8%
Venture Capital	0.0%-4.4%	2.2%	2.2%	0.0%
Debt-Related/Special Situations	0.0%-3.3%	2.2%	1.8%	-0.4%
Total Private Equity	**8%-13%**	**11.0%**	**9.8%**	**-1.2%**



Geography	Current Exposure
North America	889,805,040
Europe	74,306,272
Asia	38,014,789
Rest of World*	2,965,831
Total Private Equity	**1,005,091,932**

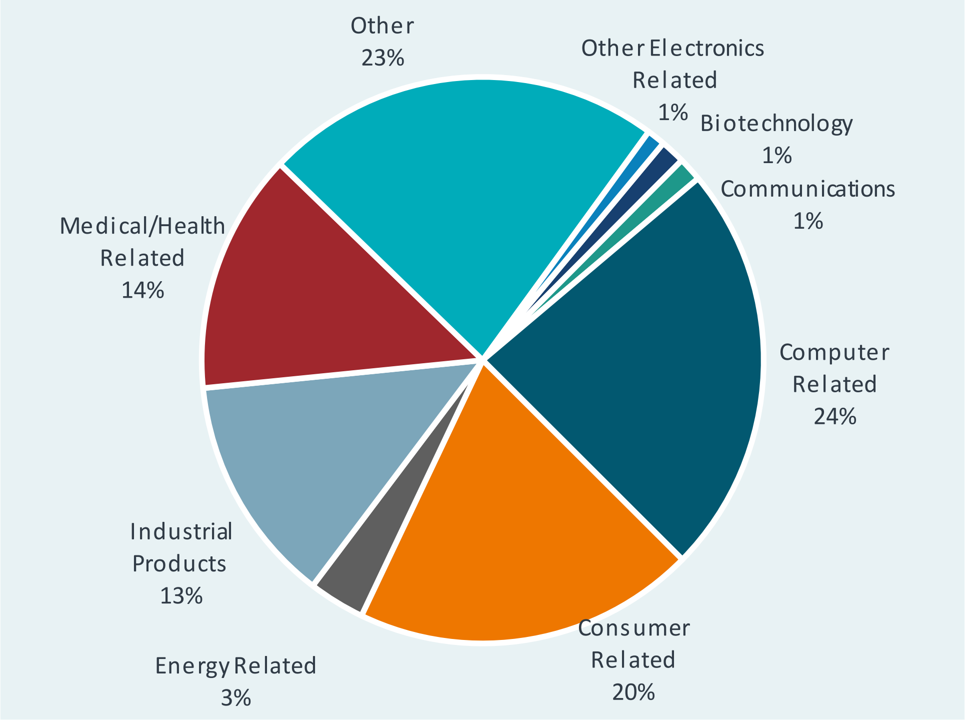


Based on the value of private equity portfolio companies as of December 31, 2022, as provided by the partnerships. Differences between reported value and the private equity portfolio valuation is due to temporary cash funds, fees, other expenses, and holdings with undisclosed industry breakdown.

* Rest of World includes: Brazil, New Zealand, Kenya, Israel, United Arab Emirates, Australia, and Turkey.

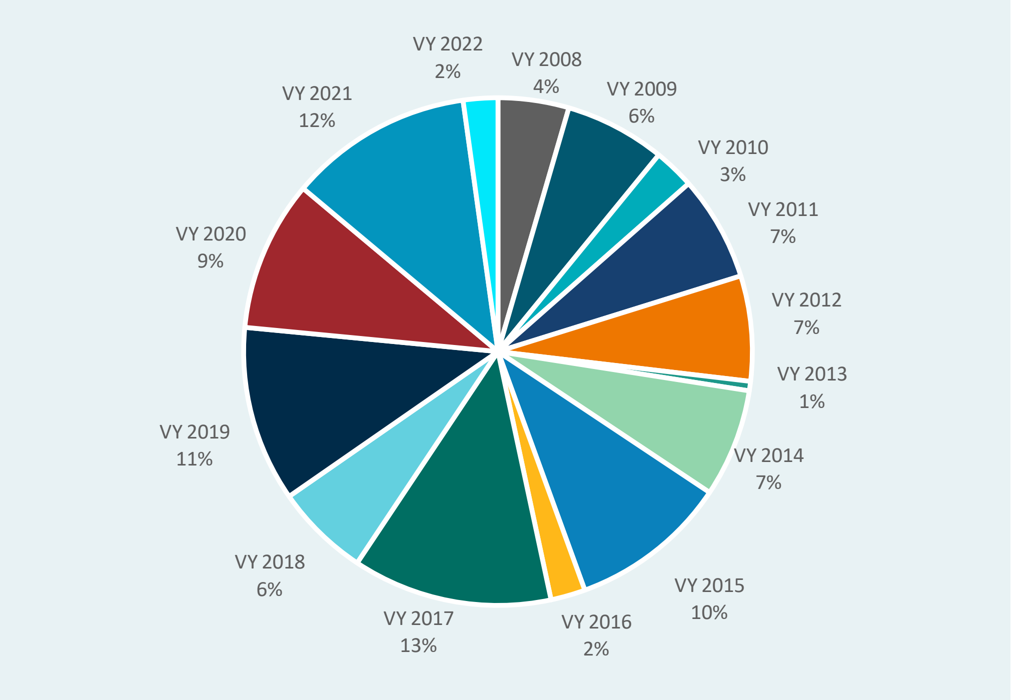
Private Equity Portfolio Diversification

Industry	Current Exposure
Biotechnology	14,262,267
Communications	13,822,370
Computer Related	236,391,706
Consumer Related	197,742,729
Energy Related	32,530,710
Industrial Products	131,564,424
Medical/Health Related	138,172,717
Other	230,039,520
Other Electronics Related	10,565,489
Total Private Equity	**1,005,091,932**



Based on the value of private equity portfolio companies as of December 31, 2022, as provided by the partnerships. Differences between reported value and the private equity portfolio valuation is due to temporary cash funds, fees, other expenses, and holdings with undisclosed industry breakdown.

Vintage Year	Commitment as of 12/31/2022	% of Portfolio Commitment
2008	72,370,855	4.5%
2009	103,500,000	6.4%
2010	42,500,000	2.6%
2011	108,189,282	6.7%
2012	108,500,000	6.7%
2013	10,000,000	0.6%
2014	112,080,000	6.9%
2015	163,250,000	10.1%
2016	35,000,000	2.2%
2017	205,501,820	12.7%
2018	98,000,000	6.0%
2019	181,000,000	11.2%
2020	155,951,404	9.6%
2021	189,000,000	11.7%
2022	36,000,000	2.2%
Total Private Equity	**1,620,843,361**	**100%**



- **As of December 31, 2022, the Private Equity Portfolio's market value is at 9.8%, below its target allocation of 11.0% approved in 2021, but within its target range.**

Appendix

Private Credit Portfolio

	Policy Target	Policy Range	Market Value %	Market Value $(000)	Unfunded Commitment $(000)	Market Value + Unfunded $(000)
ACERA Plan Assets - Total				**$10,253,590**		
Private Credit:	**4.0%**	**3-5%**	**2.6%**	**$265,356**	**$113,063**	**$378,419**
Private Credit	4.0%	3-5%	100.0%	$265,356	$113,063	$378,419

Portfolio Summary

— As of December 31, 2022, the Private Credit portfolio had a total market value of $265.4M. Total market value is the current reported value of investments, excluding the remaining amount of unfunded commitments.

— Since ACERA's initial allocation to Private Credit in Q1 2019, the Plan has contributed $270.8M towards its aggregate $375M commitments. Unfunded commitments total $113.1M.

— The portfolio exposure at 2.6% is below the policy target of 4.0% and policy range of 3-5%. Compared to December 31, 2021, ACERA's private credit exposure is up 1.3%.

Portfolio Activity

— In the second half of 2022, ACERA made no new commitments toward its private credit portfolio.

Performance

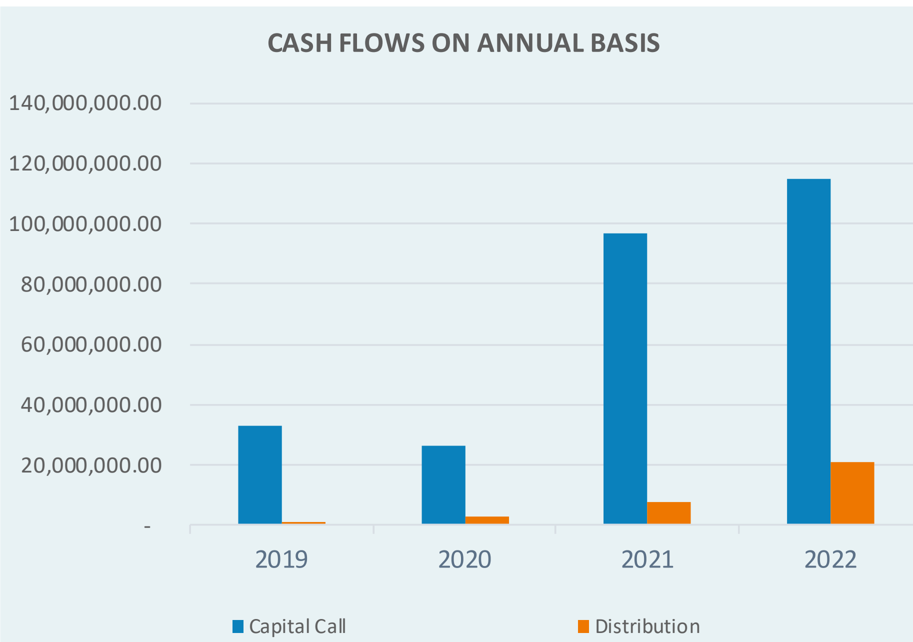
— The Private Credit's performance, as measured by net IRR, is 6.76%, 526 bps above the same cash flow invested in the S&P LSTA U.S. Leveraged Loan 100 Index of 1.50%. The capital-weighted average life of investments is 1.5 years. While IRR is a meaningful measure of performance at this stage, the portfolio is still growing and not yet mature.

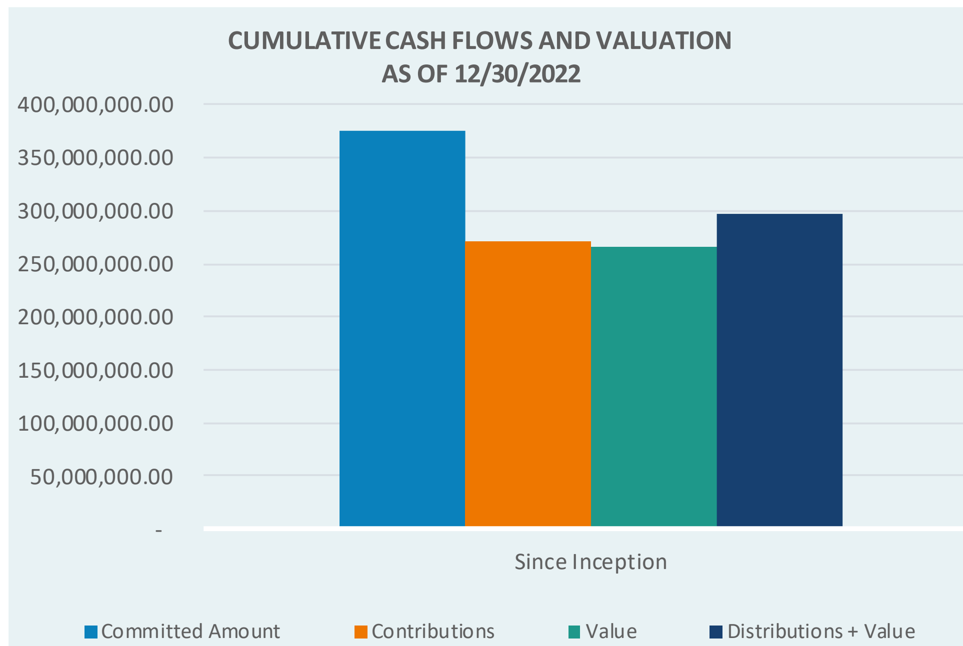
— The portfolio is currently valued at $265.4M. Together with $31.5M in realized distributions (0.12x DPI), Private Credit's Total Value at $296.8M is approximately $26.0M above $270.8M cost (1.10x TVPI), net of fees.

— Capital calls continued to dominate the portfolio's cash-flow activity as new investments are made to reach the target exposure.

— The Portfolio has five commitments to date:

- Owl Rock First Lien, LP *(Levered)* $80M
- HPS Specialty Loan Fund V, LP *(Unlevered)* $75M
- BlackRock Direct Lending Fund IX, LP *(Unlevered)* $75M
- Monroe Private Credit Fund IV, L.P. *(Unlevered)* $75M
- Ares Senior Direct Lending Fund II, L.P. *(Levered)* $70M





PERSPECTIVES
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PERIOD ENDING: DECEMBER 31, 2022

Real Assets Review

Alameda County Employees' Retirement Association

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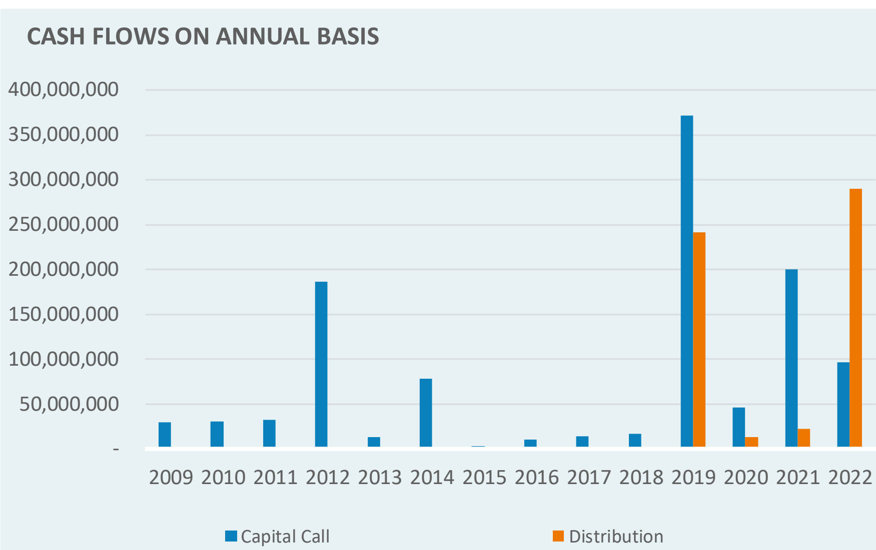
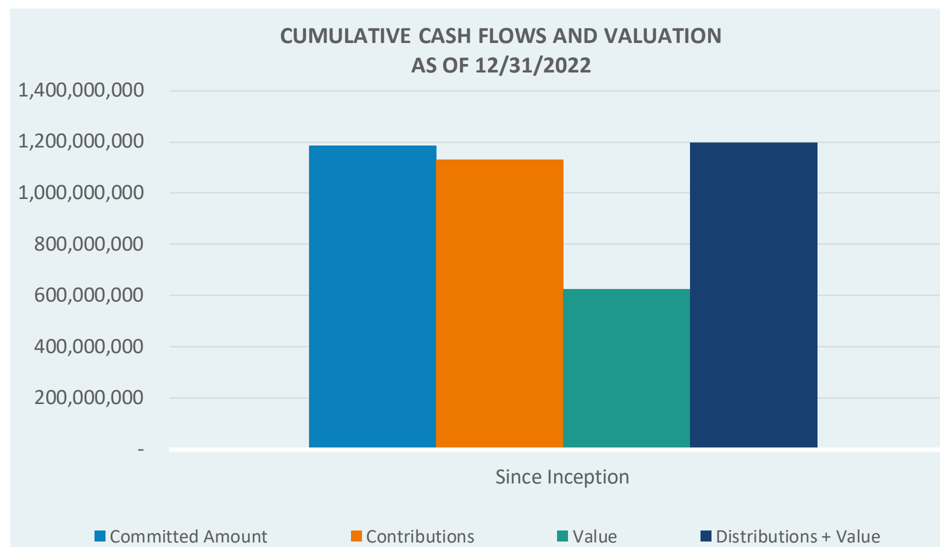
Real Asset Performance

Performance

— ACERA's Real Asset Pool has produced a 1.25% IRR since inception. The portfolios performance has been driven primarily by the large weighting in commodity futures (Gresham and AQR) and poor returns from a couple early energy funds. That said, the portfolio is beginning to see the success of more recent fund investments in natural resources and infrastructure that have matured and are delivering top quartile or near top quartile returns.





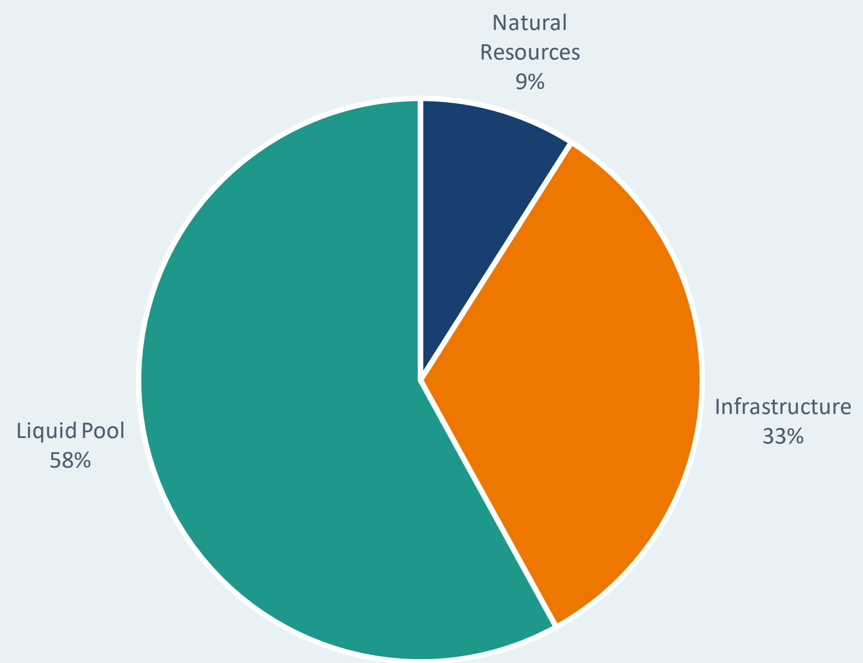
	1-Year	3-Year	5-Year	10-Year	Since Inception
Natural Resources Funds	**19.57%**	**21.30%**	**7.21%**	**1.43%**	**1.16%**
S&P Global Natural Resources Index [1]	*15.32%*	*13.00%*	*9.80%*	*6.88%*	*6.70%*
Infrastructure Funds	**8.48%**	**11.87%**	**12.09%**		**11.46%**
S&P Global Infrastructure Index [1]	*-1.40%*	*2.39%*	*3.62%*	*3.71%*	*3.71%*
Liquid Pool Funds	**7.01%**	**7.90%**	**5.18%**	**0.15%**	**0.41%**
Bloomberg Commodity Index [1]	*0.00%*	*6.96%*	*4.11%*	*-1.36%*	*-1.20%*
Total Real Assets	**8.19%**	**9.55%**	**6.27%**	**1.11%**	**1.25%**
Blended Real Assets Benchmark [2]	*5.87%*	*7.14%*	*5.68%*	*6.46%*	*6.25%*

[1] Benchmarks: Identical cash flows invested in the appropriate benchmarks through the life of the portfolio up through 12/31/2022. Analysis provided by Solovis.

[2] Blended Real Assets Benchmark calculated on a time-weighted return basis. Blended returns are weighted as follows: 60% S&P Global Infrastruture Index, 35% S&P Global Natural Resources Index, and 5% Bloomberg Commodity Index.

Investment Type	Commitment	Current Exposure	Current Exposure as % of Portfolio
Natural Resources	104,000,000	55,915,451	9.0%
Infrastructure	240,000,000	207,108,517	33.1%
Liquid Pool	842,235,893	362,147,561	57.9%
Total Portfolio	**1,186,235,893**	**625,171,529**	**100.0%**

REAL ASSETS PORTFOLIO: CURRENT EXPOSURE



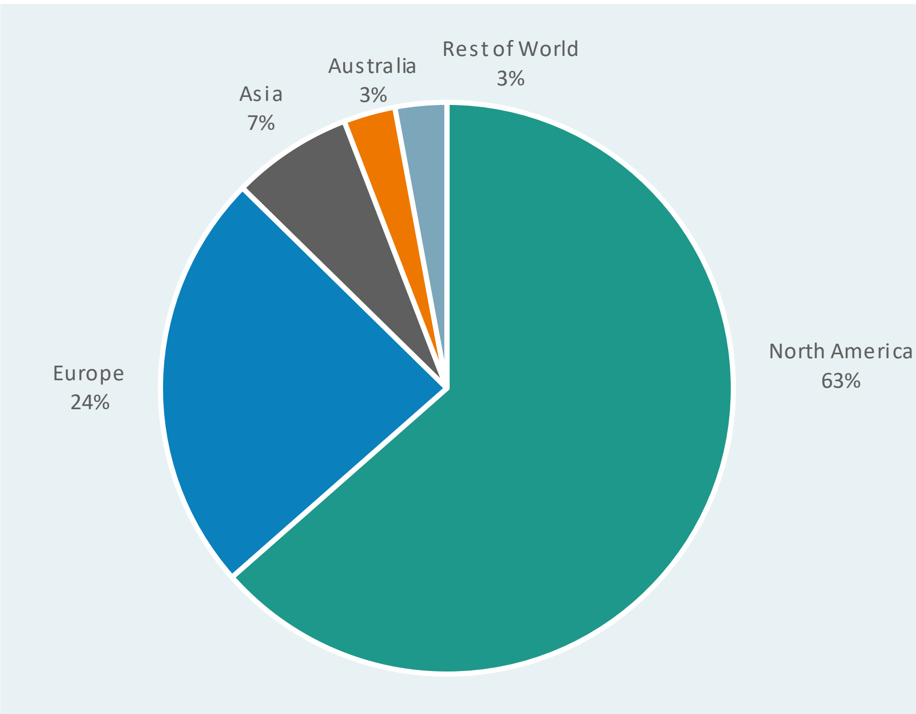
Geography
Portfolio Diversification

Period Ending: December 31, 2022

Geography	Reported Fair Value
North America	141,191,584
Europe	53,035,322
Asia	15,144,123
Australia	6,494,380
Rest of World	6,476,074
Total Portfolio*	**222,341,482**

* *Excludes open-end vehicles and liquid assets.*

** *Rest of World includes New Zealand and Senegal.*

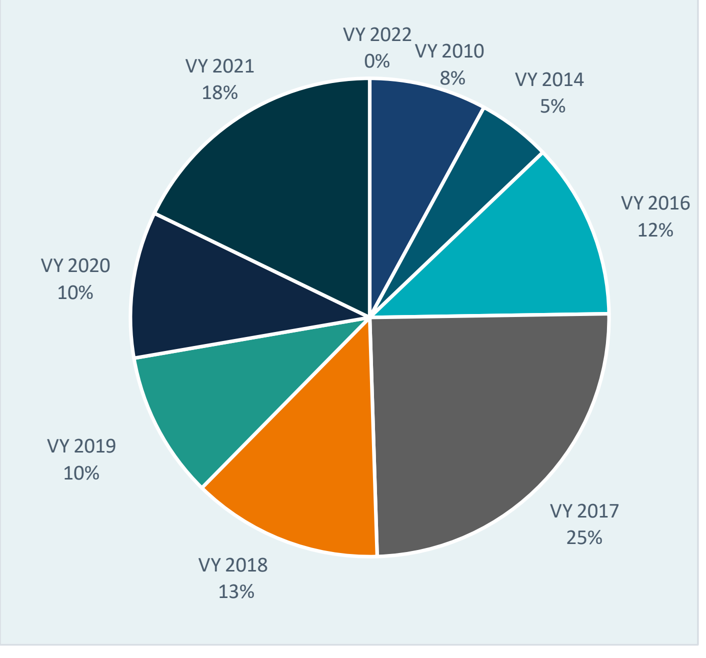


Vintage Year
Portfolio Diversification

Period Ending: December 31, 2022

Vintage Year	Commitment as of 12/31/2022	% of Portfolio Commitment	Reported Value as of 12/31/2022
2010	24,000,000	7.9%	0
2014	15,000,000	4.9%	9,483,992
2016	35,000,000	11.5%	43,135,202
2017	75,000,000	24.7%	76,619,620
2018	40,000,000	13.2%	39,099,159
2019	30,000,000	9.9%	12,354,472
2020	30,000,000	9.9%	15,593,780
2021	55,000,000	18.1%	26,055,257
2022	0	0.0%	0
Total Portfolio	**304,000,000**	**100%**	**222,341,482**

* *Excludes open-end vehicles and liquid assets.*



— The opportunity set for new investments has been challenging within real assets this year. The relative outperformance within natural resources and infrastructure compared to the rest of the market has been encouraging for client portfolios but also brings some valuation concerns to the asset classes. We plan to bring an energy transition fund to ACERA in June. Plans to allocate to a second core infrastructure fund have been put on hold until we see valuations adjust to the new higher rate environment.

Verus

PERSPECTIVES THAT DRIVE ENTERPRISE SUCCESS

JUNE 2023

Real Assets Outlook

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Key themes

Key themes for 2023

Observations driving our outlook

What's next for inflation…

In our Outlook last year, we said the following "We believe inflation will likely begin falling later in 2022" and though that turned out to be true, we came to that conclusion because we believed the Fed would choke off the pressures of inflation. Coming into 2023, it appeared as though inflation would continue to retreat lower, albeit slowly, but unexpected price increases have complicated the picture. There are now banking instability issues, geopolitics, a softening economy and a dozen other headline issues weighing on investors' minds. But staying on inflation, we believe the Fed will do what it says and keep policy tight until inflation returns to their target level. We do not want to be on the other side of that trade. We expect rates to stay higher for longer and that could present challenges and opportunities across private markets which have broadly failed to adjust equity values for the new higher rate environment.

Dislocations in real estate

Market dynamics within real estate have shifted dramatically over the last year. The multi-decade decline in interest rates that have provided a tailwind in real estate reversed in mid-2022. Cap rates are typically correlated with changes in interest rates over the long term, however private real estate cap rates have not kept pace with the move to higher rates recently, reflecting reluctance to mark assets to the new rate regime. Transactions have slowed the last three quarters with wide bid-ask spreads persisting. Over the near term, we expect rising cap rates, slower growth and higher borrowing costs to continue to pressure private real estate valuations and likely trigger pockets of stress and distress. Further compounding issues, banks and other lenders have pulled back from the market creating a financing gap for asset owners.

Values remain elevated across infrastructure

Infrastructure was one of the few bright spots in 2022 as valuations held-up and transaction activity was robust. In a year when inflation and rising interest rates depressed equity and debt valuations, slowed transaction activity and disrupted capital markets, real assets (excl. real estate) performed remarkably well. The issue we see today is that valuations are stretched, debt costs are going up, but equity valuations have yet to adjust to a higher interest rate environment. A slowing of transaction activity would be one sign that sponsors are becoming more price sensitive. Until we see valuations adjust lower, especially in core/core plus infrastructure, we would be cautious about putting fresh capital into the asset class.

Declining interest in natural resources looks to continue

Commodity-related investments experienced a marked rebound in performance in 2021 and 2022, following years of disappointing performance. It was a vindication of sorts, in that when inflation finally took hold, the asset class delivered on the promise of providing an inflation hedge. After years of declining interest from investors, oil and gas companies rode high as they outperformed every other sector in the equity universe. And yet, with all this renewed attention, the fundraising environment for natural resource funds remains bleak. The challenging market for exits among oil/gas companies, the global trends in ESG and the declining rate of inflation, among other factors, has resulted in muted interest from institutional investors.

Outlook summary

Outlook summary

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Core real estate	Core real estate was up 7.5% in 2022, primarily due to a strong start to the year in the first two quarters. The momentum has shifted however, as rising interest rates have put downward pressure on valuations. The appraisal process has been slow to recognize this as transactions have been falling since the 3rd quarter of 2022, hampering the ability to find comparable sales. Redemption queues are as high as they've been since the GFC. We expect further write-downs to hit core real estate funds in 2023.	— Cap rates have not yet fully adjusted to the new higher interest rate environment. 4th quarter of 2022 saw a modest adjustment, but we expect more to come over the next several quarters — Core real estate returns tend to have high correlation to overall GDP growth. There are risks to weakening fundamentals if a recession materializes.	We recommend clients continue to rebalance/reduce exposure to core ODCE funds where possible, although redemption exit queues are in place for most funds. We recommend continued diversification into alternative property types to reduce existing exposures to office, which may face longer term challenges.	**Negative**
Value-add real estate	Transaction levels have slowed down dramatically as wide bid-ask spreads are persisting. Value-add GPs are seeing few opportunities right now as sellers are still reluctant to transact at the clearing prices currently being offered. Increasing borrowing costs will likely apply pressure on returns for strategies reliant upon higher leverage. An economic slowdown is expected to reduce rent growth opportunities.	— Rising interest rates will increase borrowing costs on higher leveraged value-add strategies, pressuring total returns. — Slowing rent growth as the economy cools has the potential to further reduce forecasted returns	We continue to favor strategies with limited focus on office and those less reliant on high leverage. Asset management value-add will be important as cap rate compression and market growth will be less reliable sources of return. Patience will be a virtue for management teams as transactions, when they happen today, have yet to fully adjust for higher borrowing costs.	**Neutral**
Opportunistic real estate	Over the last couple of years, pockets of stress have occurred in Covid-19 affected sectors such as office, retail and hospitality. The rising interest rate environment is producing stress and distress across the real estate spectrum as the cost of financing balloons, loan-to-values move up and lenders pull out of the market. Borrowers will be forced to get creative with financing as they often lack fresh equity capital and want to minimize their dilution. Preferred equity gap financing, structured solutions and investments in debt may see attractive opportunities. We could see the reemergence of NPL portfolios in Europe as banks shed assets to shore-up their balance sheets.	— Rising interest rates will increase borrowing costs on higher leveraged strategies, pressuring total returns. — Competition could be a challenge as large sums of capital have been raised waiting for this opportunity to emerge. — Increasing construction costs due to materials and labor may pressure development strategies.	Non-core funds with vintage years during periods of economic stress tend to be some of the best performing vintages. The impact from higher rates will likely create more attractive entry points. Loans coming due at higher borrowing costs and at higher loan-to-values sets the stage for opportunities to provide rescue capital. GPs with experience in distressed situations and those able to be flexible up and down the cap stack are viewed favorably.	**Positive**
Real estate debt	Lending rates have increased, both from floating rate base rates as well as spreads. Traditional lending sources (banks and insurance companies) are retreating from writing loans as they move to reduce risk across their balance sheets. The wall of maturities coming due over the next few years will need refinancing and private lenders are well positioned to take advantage of the opportunity.	— Rising rates, while generally positive for lending strategies, could also decrease transaction volumes and therefore increase competition for deals. — Loan defaults are also on the horizon so having capabilities to structure workouts will be important	Senior lending strategies look attractive as borrowing costs have risen, both in base rates and spreads. Private capital providers look attractive as there will be less competition from traditional lending sources.	**Positive**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
REITs	REITs were down 27.0% in 2022, reflecting an implied cap rate increase across sectors. REITs rallied back in early 2023, erasing about half of the loss they experienced in 2022 but have more recently sold-off again as financials have come under pressure. While REITs valuations are somewhat pricing in a higher rate environment, we would not characterize the current valuations as cheap or compelling.	— REITs have higher leverage than core real estate — Rising interest rates can have a negative effect on REITs and all yield-sensitive assets over short periods. — REITs are sensitive to economic decline and general equity market volatility.	Verus believes REITs can provide liquid exposure to real estate with the following caveats: high sensitivity to equity market volatility over shorter holding periods, higher leverage and higher exposures to non-core sectors. Active management is preferred. REIT valuations are currently at a slight discount; however, this has been volatile and difficult to time. If we see a substantial sell-off in 2023, we could pivot to a positive outlook, but we are not there yet.	**Neutral**
Commodities	Commodities had another impressive year in 2022, led by the energy sector, which was up +36% for the year. The asset classes final year returns masked what was a highly volatile year as Fed rate rises began putting pressure on inflation forces. While still early in the year, commodities are experiencing selling pressure as central banks continue to tighten monetary policy in order to stamp out inflation.	— Central banks have signaled their primary goal is to contain inflation which, if successful, would be a headwind for commodities. — Investors have benefitted from steep backwardation in oil-related commodities, but as front month contracts move lower, the curve trade is likely to erode.	Verus does not view commodity futures as an attractive asset class to hold long term. As an inflation hedge, commodities are one of the best exposures to own that benefits from early stages of inflation. We are even more cautious about a position in commodities this year and would consider reallocating some of your exposure to more attractive segments of the market.	Negative
TIPS	Rising inflation has led to positive total returns and outperformance of TIPS relative to nominal bonds. Breakeven rates have risen sharply following the lows in 2020, especially in 5-year break-evens. Currently, TIPS have a negative yield and are susceptible to rising rates though that can be offset if inflation continues to exceed market expectations. The other concern is the unwinding of the Fed balance sheet where TIPS are widely held, putting additional selling pressure on the bonds.	— Decreasing inflation expectations or rising nominal interest rates would be a headwind to TIPS. — Continued low rates creates a high cost of carry.	Low absolute current yields and uncertain inflation expectations has led to low total return expectations for TIPS, especially relative to other real asset investment opportunities. If inflation continues higher, TIPS could provide protection to portfolios.	**Neutral**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Core Infrastructure	Performance in core infrastructure was strong in 2022, as capital flowed into the sector and valuations improved, especially for energy-related assets. Along with performance, the high inflationary environment increased LP interest in the asset class. Fundraising continues to increase as more managers offer evergreen fund structures. We expect the higher interest rate environment to be a headwind to valuations and would not be surprised to see write-downs beginning to ripple through the open-end market in 2023. While relatively resilient to recessionary forces, sub-sectors linked to GDP like transportation and logistics may also face challenges.	— Strong fundraising trends in infrastructure has elevated valuations and increased competition for high quality assets. — Infrastructure assets provide varying degrees of inflation protection. While some assets have contracted annual revenue increases tied to CPI, many others have pre-determined increases at 2-3% or no adjustments at all. — Core assets are sensitive to interest rates and with inflation trending down, increased costs of capital could erode margins and push valuations lower.	Entry today is less attractive given rich valuations and an elevated interest rate environment. We prefer allocations to value-add, although core can still maintain defense characteristics from sectors less exposed to GDP risk. We would recommend waiting on new commitments to core open-end infrastructure funds until we get a better sense for the path of interest rates and/or we begin to see funds adjust valuations lower to account for the higher cost of capital environment.	**Negative**
Value-add Infrastructure	Transaction activity has been robust the past 12 months, despite the rising rate environment. As inflation slows and cost of capital stays elevated, we would expect that to cool as buyers adjust valuations lower. There remains a significant capital need for more modern infrastructure in order to keep up with the digital economy and electrification of the grid. We would be cautious about strategies that expose investors to technology risk and/or commercialization risk in both sectors.	— Many GPs that have been successful in the sector have grown rapidly, raising $15+ billion-dollar funds. Deploying this amount of capital while still delivering alpha becomes a challenge for most private market managers. — Increased interest rates will have two affects: eroding margins as the cost of debt increases and increasing cap rates as investors demand a higher equity return. The change in expectations around what is “market value” is likely to slow transactions.	The asset class offers a compelling return profile that aligns well with long duration pools of capital. Value-add infrastructure comes with higher operational/execution risk than core so investors should expect a broader range of outcomes and greater emphasis on manager selection. Given the shift in interest rate environment, we expect valuations to improve but that transition could be bumpy.	**Neutral**
Energy Transition	New development projects of renewable assets will continue to accelerate as solar and wind farms are now the cheapest form of new build electricity. Outside of traditional solar & wind, there are potentially higher returning opportunities for newer technologies such as battery storage and CC&S. Policies like the Inflation Reduction Act will act as a catalyst, increasing adoption and making technologies more viable. Growth in electric vehicles is expected to strain our existing power generation capabilities and transmission infrastructure which presents an investment opportunity but does challenge the transition away from hydrocarbons.	— The market is becoming more competitive with over 4x as much capital fundraised today as compared to the last decade. — Several approaches that reduce our carbon emissions such as green hydrogen and carbon capture technology are nascent and commercially unproven. Investments in this space will take venture-like risk and rely on significant cost reductions as well as favorable policy regimes to be successful.	Energy demand growth will increase opportunities in the energy transition sector but the opportunity to achieve an attractive return remains difficult given competition. Sectors like EV infrastructure and Distributed Energy Resources offer decreased technology risk and attractive markets for growth. Tailwinds for the strategy make for interesting opportunities though we are seeing risk underpriced in the marketplace so backing the right manager will be critical.	**Neutral**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Oil & Gas	Much of what we wrote about Oil/Gas investing in 2022 still applies now. The one crucial difference is that tightening central bank policy now brings demand uncertainty and higher financing costs for producers. Reinvestment in new oil & gas supply is still an issue, even with higher commodity prices, as E&P companies favor returning cash to investors and governments place additional burdens on hydrocarbon extraction. There remains tailwinds in favor of commodity producers but the demand picture from slowing economic activity adds additional risk. We still believe that private markets capital that funded a lot of the growth in energy production will continue to shrink as institutions shift capital towards cleaner forms of energy.	— Oil/gas producers made record profits in 2022, though those are set to come down as commodity prices fall and operating costs skyrocket. The temptation to allocate capital to the sector is understandable but for private capital investors, we still believe the exit risk is too high for us to gain comfort. Older oil/gas funds are still struggling for liquidity and absent a complete reversal of a low carbon future, we think that will only get worse 7-10 years down the road as funds investing today look for an exit. — Longer-term, oil demand is expected to decline as non-carbon sources of power outcompete hydrocarbons.	Higher commodity prices continue to reward owners of commodity producers with record profits. There was a time when investing in oil/gas funds was a reasonable strategy, albeit highly cyclical. Today, the challenges in liquidity, regulatory policy and demand uncertainty make underwriting formidable. For investors with a confident view on the direction of energy commodity prices, we would consider public market investment opportunities in E&P over an illiquid private fund investment.	**Negative**
Midstream Energy / MLPs	Midstream indices were up around 30% in 2022, outperforming most other sectors. The last two Outlooks highlighted the challenges that private midstream funds would face in deploying capital to traditional gathering and processing deals and that was largely accurate. Public midstream companies are outcompeting private funds with a lower cost of capital and the opportunity set is narrower today than it was 10 years ago. While we were negative on the midstream asset class last year, we still find it challenging to recommend an investment in an asset class with long-term demand uncertainty.	— The public midstream market appears stronger and more attractive than it has been in recent years but the long-term outlook for the asset class remains weak. The near-term performance for the asset class is likely to be attractive but tactical trades into the asset class have been incredibly challenging to time. After two years of exceptionally high returns, MLPs are still trailing listed infrastructure by a wide margin on a 5-, 7- and 10-year basis.	We retain a negative outlook for midstream energy, despite the positive tailwinds that higher oil/gas prices could bring to this sector in the near-term. Longer-term, we think the unknown risks remain too high for our comfort.	**Negative**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Mining	There has been a lot of hype around demand growth in industrial metals as the transition to clean energy moves forward. Notable price jumps in metals/minerals like Lithium, Cobalt and Copper over the past few years as demand has surged lend credibility to the story. We see the same long-term trends as others and have been positive on the sector for many years. Industrial metals did soften in 2022 and are down so far in 2023 though long-term the tailwinds of demand appear intact. That said, a global economic slowdown and uncertainty around China consumption has put near-term pressure on many mining commodities. We still prefer the tailwinds of mining to petroleum but would not be surprised if prices cool off in 2023.	— Global GDP growth and the economy in China are the two biggest risks in the sector. China represents a disproportionately large buyer of industrial metals, so its economy and industrial output have a large impact on metal prices. — Recycling, substitution and more efficient extraction methods are always a concern as commodity prices move higher. High commodity prices tend to end the same way, with lower commodity prices as either demand falls or with unexpected surges in supply. — Investors need to be keenly aware of the jurisdictions that they have exposure to, and the companies track record on ESG issues.	Longer-term, we believe the demand outlook looks favorable for several industrial metals. We would not be surprised to see near-term price weakness as new supply comes online but that could be a more interesting entry point. The mining majors are flush with cash which could trigger an M&A cycle which would be good for the junior miners. However, there are a host of idiosyncratic risks in funding mining operations outside of the macro-economic environment. We will look for skilled GPs with a track record of successfully managing these risks while generating attractive returns.	**Positive**
Timberland	Timberland was up 12.9% in 2022, most of which was appreciation driven. Unlike other commodity sectors that experienced meaningfully higher prices, sawtimber prices, at least for southern pine, were up a modest 1.6% in 2022. Income, as a component of the NCREIF Timberland return, was actually lower in 2022 than it was in 2021. Land values went up in 2022 due to lower discount rates but we question how sustainable that will be if cash flows are flat to negative YoY. Housing starts have collapsed in the past 12 months as mortgage rates more than doubled, which is a bearish sign for lumber demand. Overall, we do not see returns keeping up with their 2021 and 2022 levels for the asset class.	— Projected lower inflation levels, slowing housing construction and higher input costs are just some of the issues creating headwinds for the asset class. The Southern U.S. timber region has yet to see the sawtimber price appreciation that other regions have experienced and appear set to miss out on the surging lumber prices that hit consumer the last few years. — Liquidity has been an issue for the asset class for the better part of a decade and fundraising trends have yet to improve to the point that we could see transactions becoming robust.	Despite the last two years of above average returns, we would continue to avoid allocations to timberland. There are more attractive options available in real assets and many that have cash flows that justify the higher valuation. Fundraising has been slow to non-existent for closed-end timber funds for several years which has resulted in a slow transaction market.	**Negative**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Agriculture	After several years of flat cropland prices, 2021 and 2022 saw a meaningful jump in land values on the back of higher commodity prices. Supply disruptions from Covid and more recently, the War in Ukraine, sent grain prices to multi-decade highs that have begun to stabilize in 2023. Fundraising has been slow in the last few years as income returns remained unattractive, and investors favored other asset classes. Still, agriculture investments remain a reasonable hedge against inflation and provide a stable return profile from land appreciation and yield. Structural drivers are making agriculture more attractive as global demand rises and the amount of arable land remains relatively stable.	— Agriculture is a highly illiquid asset class that is not suited to tactical investment opportunities. The asset class does look more attractive today, relative to recent history, but enthusiasm should be tempered given the long hold periods (>10 years) and volatile commodity prices. We would recommend diversifying across crop types and geography within the U.S. — The War in Ukraine has revealed the extent to which Eastern Europe and Ukraine have been major suppliers of certain grains and their disruptions impact on global commodities. It has also highlighted the risk that comes from investing outside stable markets like the U.S. While Ukraine was not a preferred destination for U.S. institutional investors in agriculture, the returns available in emerging economies are not high enough to overcome the currency and economic/political risk.	Agriculture crops are broadly broken down into row and permanent crops with row crops benefiting the most from recent supply disruptions. Row crops also make up around 75% of all acreage planted in the U.S. so liquidity and market depth is greater, relative to permanent crops. That said, row crops have lower income potential and less value-add optionality. For investors seeking pure-play cropland investments, we would recommend diversifying across row and permanent crops focused on the U.S. market. The fragmented nature of farmland in the U.S. has made scaling a challenge so we would be weary of strategies seeking to deploy large pools of capital (>$1B). We also view agriculture investments where crop and land are a component of a broader value-add investment strategy as attractive.	**Neutral**

Current conditions and outlooks

Real estate performance – Recent history

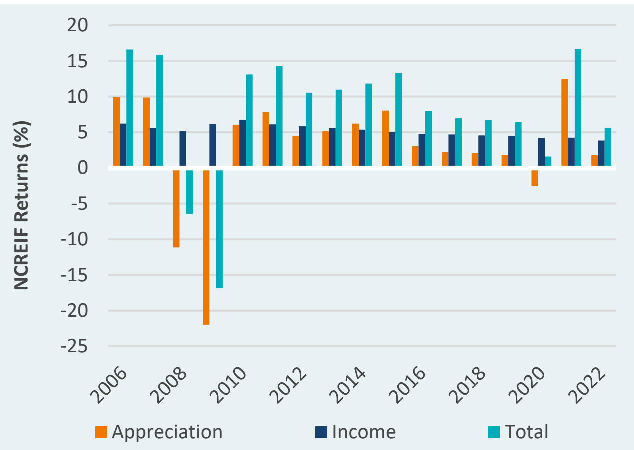
— Core real estate (NFI-ODCE Index) was up 7.5% in 2022, primarily due to a strong start to the year in the first two quarters. The momentum has shifted however as rising interest rates have put downward pressure on valuations. Returns turned negative in 4Q'22 (-5.0%) and continued in 1Q'23 (-3.3%). We expect further write-downs to hit core real estate funds in 2023.

— Property type sector dispersion remained high in 2022 with industrial (+14.6%) and multifamily (+7.1%) leading the way. Office and retail were the laggards with office turning negative at -3.4%.

— Public real estate securities (REITs) were early to recognize the changing landscape within real estate. In 2022, REITs were down 26.9% (Wilshire REIT Index). Valuations have rebounded a little in early 2023 with REITs returning a positive 2.3% in 1Q'23.

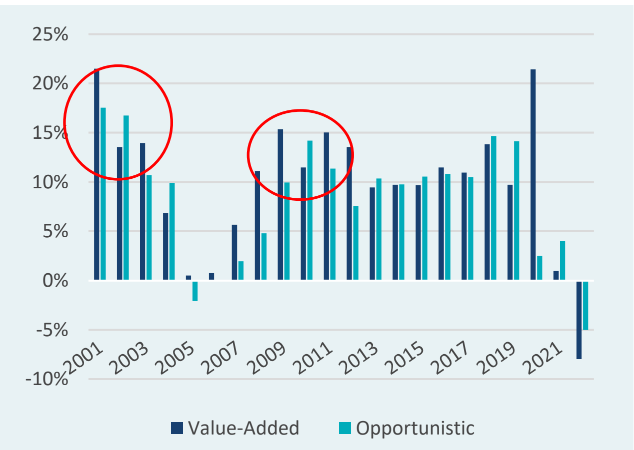
— Non-core real estate vintage funds have historically outperformed during recessionary years and early recovery periods (e.g., 2000-2003 and 2009-2011) as market dislocations created attractive entry valuations. Given the recent stress in the market, current non-core vintages could be attractive, especially opportunistic strategies with a focus on distress.

NCREIF PROPERTY INDEX RETURNS (CORE)



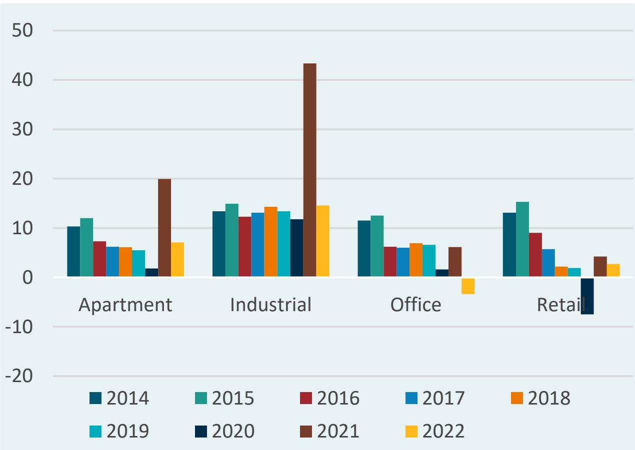
Source: NCREIF, as of 12/31/22

VINTAGE YEAR MEDIAN RETURN (%)
NON-CORE REAL ESTATE



Source: Thomason Reuters, as of 9/30/22

CORE SECTOR ANNUAL RETURNS (%)

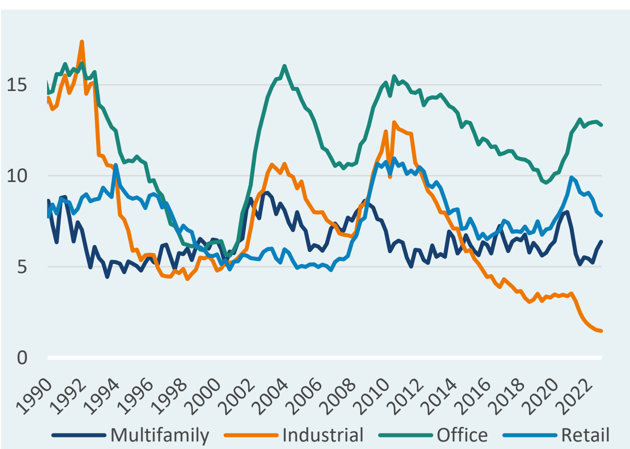


Source: NCREIF, as of 12/31/22

Real estate fundamentals

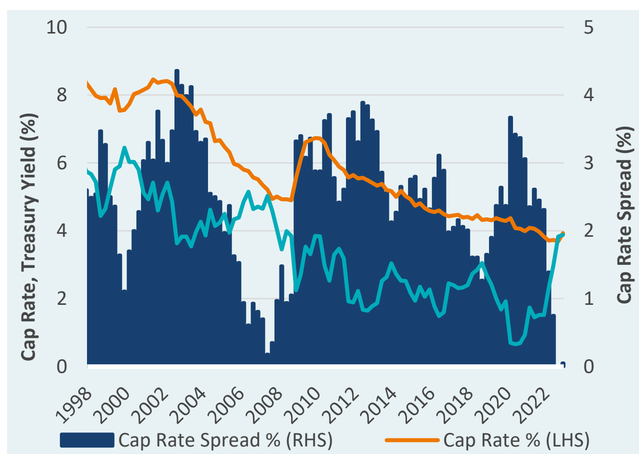
- Private real estate fundamentals have remained relatively steady in terms of vacancy rates and rental growth, with the office sector being a notable exception.
- Cap rates spreads however, have shrunk to zero as cap rates have yet to fully adjust to the higher interest rate environment. While cap rates and interest rates do not trade in lock step over shorter time periods, they generally correlate with each other over the long run. Since mid 2022, interest rates have climbed 2.5%, while cap rates have climbed only 0.5% combined in Q4'22 and Q1'22. The valuation process tends to lag, and we expect upward pressure on cap rates to continue through 2023.
- Vacancy rates for office have stayed elevated as the sector remains under pressure from continued work from home trends. Vacancy rates for industrial, retail and multifamily remain low, although there has been an uptick over the last couple of quarters.
- NOI growth has come down from the highs of 2021 and early 2022 but remain positive for all sectors including office, although office has been bouncing around zero.

VACANCY BY PROPERTY TYPE



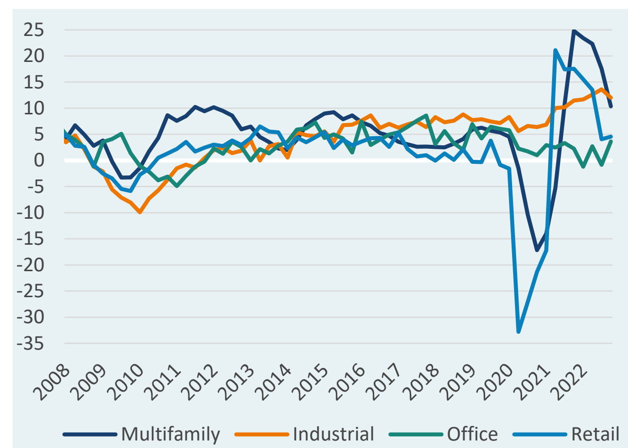
Source: NCREIF, as of 12/31/22

CAP RATE SPREADS



Source: FRED, NCREIF, as of 12/31/22

4-QTR ROLLING NOI GROWTH (%) BY PROPERTY TYPE



Source: NCREIF, as of 12/31/22

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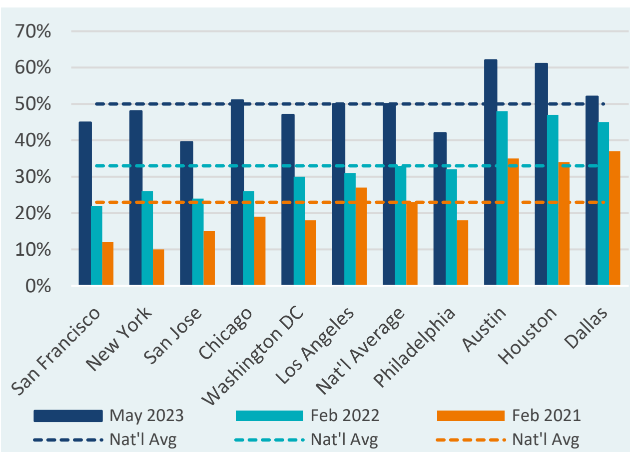
Challenges in office

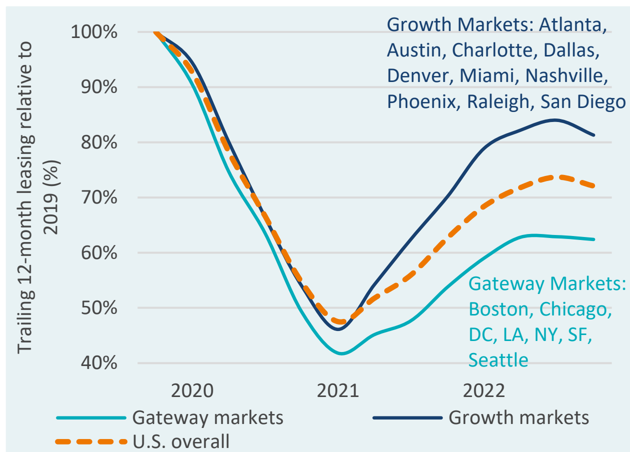
- Employees have increased office utilization from a year ago with the pandemic in the rearview mirror, however structural shifts remain with most companies embracing a hybrid work environment. Physical occupancy remains around 50% of pre-covid levels.
- Domestic migration has aided some office markets with stronger leasing volumes relative to gateway markets. Even growthier markets are still experiencing a decline in leasing relative to pre-pandemic levels.
- We continue to see a bifurcation in demand with new leasing activity gravitating towards newer office buildings with more attractive amenities. Office buildings delivered since 2015 have experienced positive net absorption since Covid began while all other buildings are facing net tenant outflows.
- The leasing cycle for office tends to averages 5-7 years, so many leases are still paying at pre-pandemic levels. We are in the midst of the rental re-pricing as well as overall asset valuation uncertainty. It will take several years to work through the system and fully reset pricing. Capital seeking investment in the office sector has dried up and re-financing is a challenge as lenders are all reducing exposures to the sector.

OFFICE PHYSICAL USAGE TRENDS



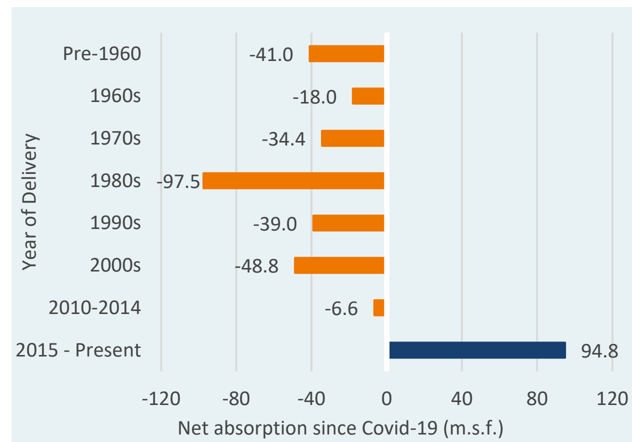
Source: Kastle, 5/8/23

REGIONAL LEASING VOLUME TRACKING OFFICE RE-ENTRY



Source: JLL, March 2023

FLIGHT TO QUALITY – NET LEASING ACTIVITY



Source: JLL, March 2023

Cap rates

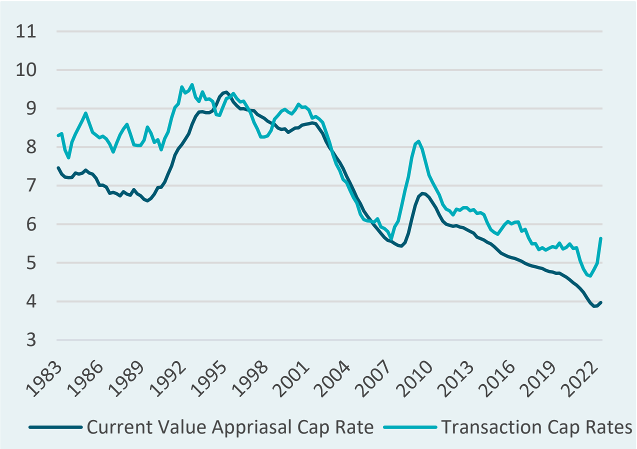
— Private real estate appraisal cap rates have been slow to react to the rising interest rate environment. This is not atypical, as the appraisal process generally lags when there is a decline in transaction volumes and fewer comparable sales or "comps" for appraisers to use as a data set.

— For transactions that are taking place, there is a widening gap with appraised values indicated there is more downside to come in private valuations as they adjust to "market".

— We have also seen a widening gap over the last several years between property types as industrial and multifamily have been more in favor with investors versus office and retail. There has been a small uptick in cap rates for all property types over the last couple of quarters.

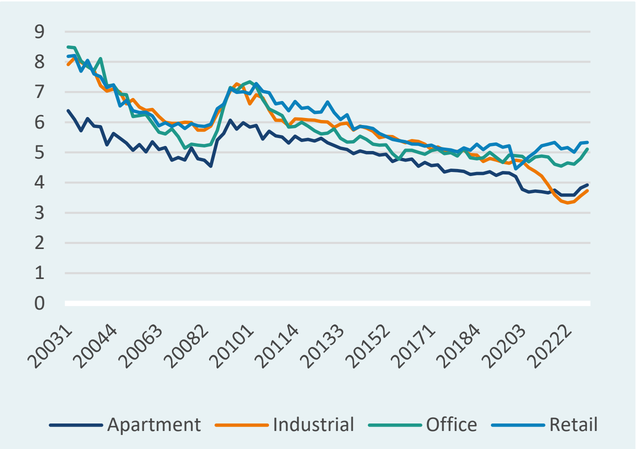
— We can also look to the public real estate markets for an idea of where cap rates are heading. We have seen implied cap rates move higher in the REIT market, lending additional credence to our view that cap rates in private real estate are set to move further this year. Usually, implied cap rates are more volatile but can be a leading indicator directionally as they are quicker to respond than the appraisal process.

PRIVATE CAP RATES (4-QTR MOVING AVERAGES)



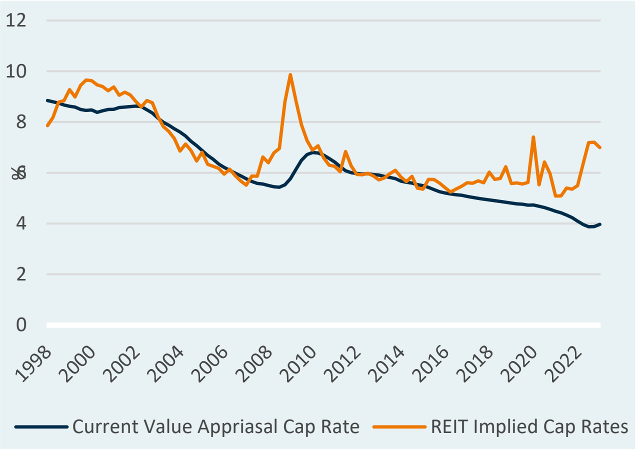
Source: NCREIF, 3/31/2023

CURRENT VALUE CAP RATES BY PROPERTY TYPE



Source: NCREIF, 3/31/2023

PRIVATE CAP RATES VS REIT IMPLIED CAP RATES



Source: NCREIF, JPMorgan, March 2023

Real estate – New supply and absorption

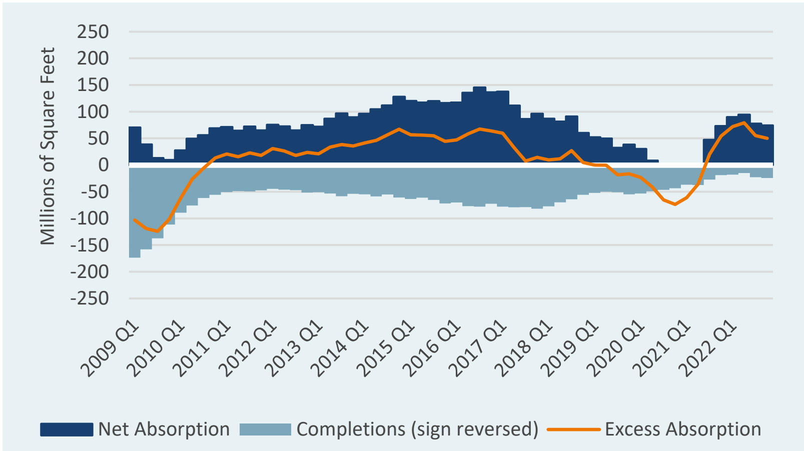
Demand has declined recently while new completions remains elevated.

Office remains severely oversupplied as demand has fallen off and completions in process pre-Covid continue to deliver.

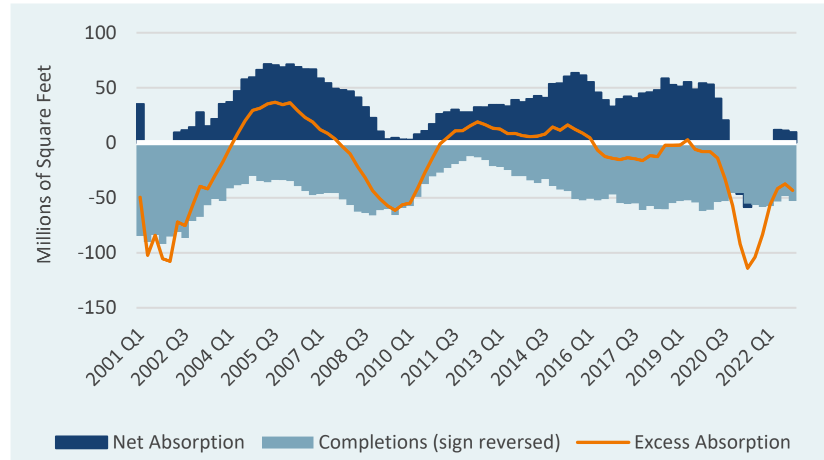
Demand has dropped recently for multi-family and industrial while completions remain elevated. Net absorption has turned negative on multifamily and is now flat in industrial.

Retail is the one bright spot for this metric, as new completions remain muted while leasing activity has picked up.

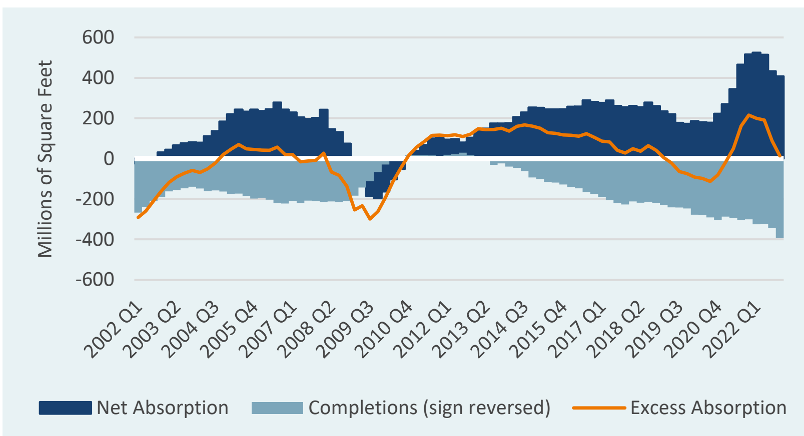
RETAIL



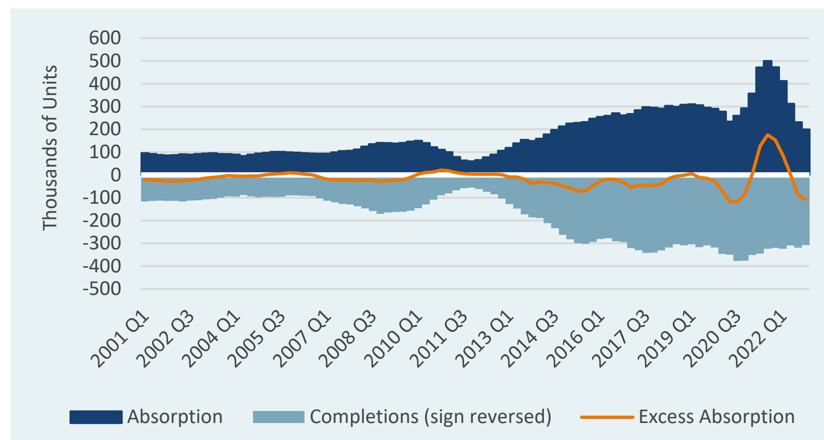
OFFICE



INDUSTRIAL



MULTIFAMILY

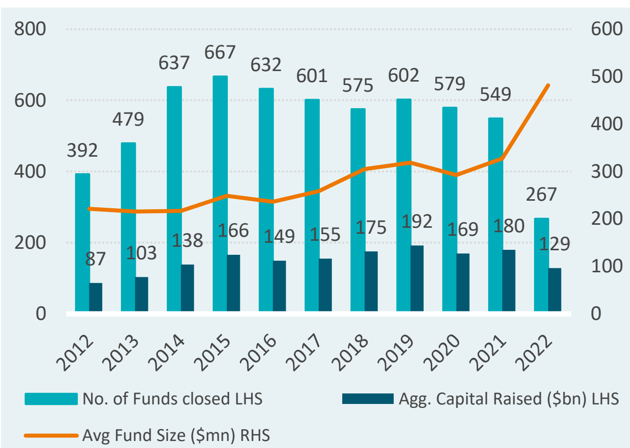


Source: American Realty Advisors utilizing CoStar data as of 12/31/22

Real estate fundraising

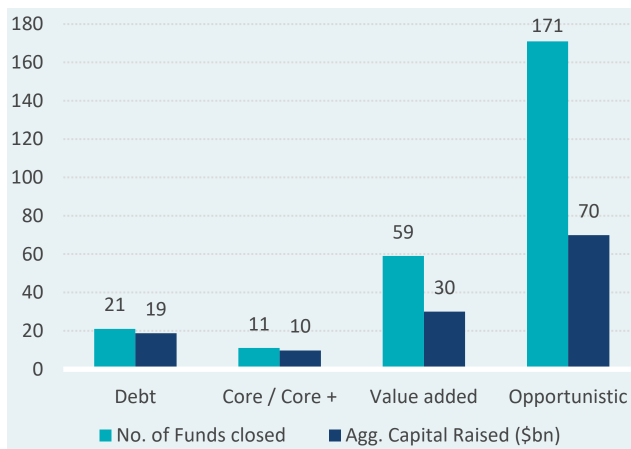
- The number of funds closed declined substantially over the last year with the total amount of capital raised coming down slightly, leading to a much higher average fund size.
- Dry powder in the closed-end fund space has come down in recent years off record highs but remain elevated. Transaction volumes declined in the second half of 2022.
- The majority of closed-end funds that closed the last couple of years were targeting opportunistic and distressed strategies, a shift from prior years where value add was substantially higher.
- Current core real estate open-end fund redemption queues total over $33 billion from 20 core funds that Verus recently surveyed, which has grown more than two-fold in the last year. Core funds are in the process of re-pricing, delivering negative returns, and with some investor's overweight real estate, redemption activity has hit levels not seen since the GFC.

HISTORICAL PRIVATE REAL ESTATE CLOSED-END FUNDRAISING ($B)



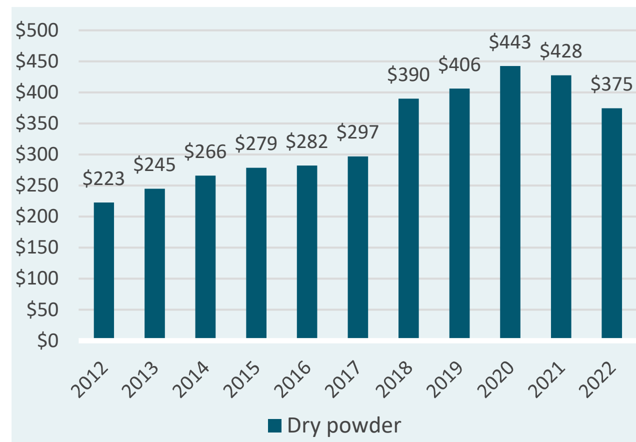
Source: Pitchbook, as of 12/31/22

20222 PRIVATE REAL ESTATE CLOSED-END FUNDRAISING ($B) BY STRATEGY



Source: Pitchbook, as of 12/31/22 (Opportunistic includes Distressed)

DRY POWDER ($B) – CLOSED-END FUNDS



Source: Pitchbook, 12/31/2022

Real estate debt

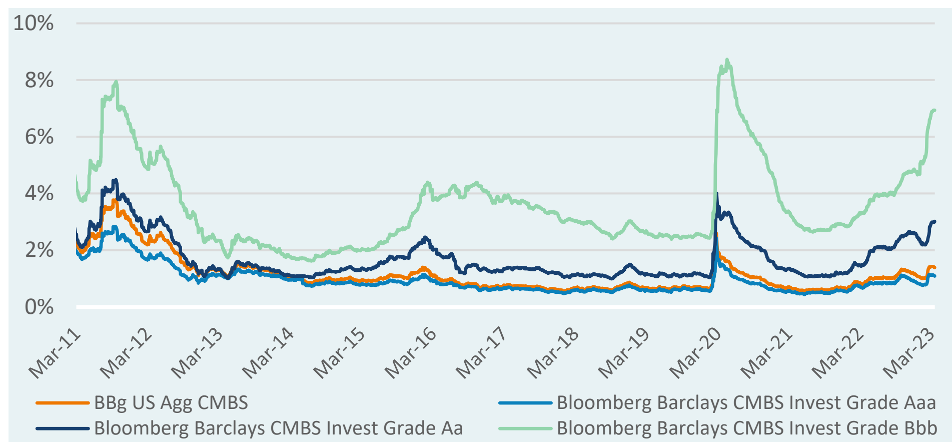
- Lending standards have tightened up for all loan types. Private lending spreads have widened, and lenders are requiring more conservative loan-to-values for new loans. CMBS spreads for most tranches have steadily increased over the last year.
- Rising interest rates are benefitting floating rate lending strategies going forward. Base rates have increased significantly as the Secured Overnight Financing Rate (SOFR) has risen from near zero to over 5% in the last year.
- Within real estate debt strategies, we are less favorable about the riskier segment of the loan market (i.e. construction loans, structured equity, etc.) as LTVs come down and lenders become owners. Having the capital and operational capabilities to assume ownership is necessary in this market environment.
- We would also caution that some evergreen debt strategies are experiencing defaults/write-downs and are likely to see additional valuation pressures, especially in the office sector.
- Transaction volumes have fallen off over the last several quarters, although for deals that are taking place, private capital is facing less competition from traditional lenders (banks and insurance companies) as many are de-risking their portfolios.

PRIVATE LENDING SPREADS

	Stable Asset Whole Loans	Transitional Asset Whole Loans	Lower Risk Mezzanine	Transitional Asset Mezzanine & Preferred Equity	Developmental Asset Mezzanine & Preferred Equity
Capital Stack	0 - 60% LTV	0 - 75% LTV	50-65% LTV	65-85% LTC	65 - 85% LTC
Duration	2-5 Years	2-5 Years	2-7 Years	2-4 Years	2-4 Years
Typical Lending Spreads	SOFR + 1.5-2.0%	SOFR + 2.85 – 4.50%	SOFR + 4.0-6.0%	SOFR + 6.0 - 8.0%	SOFR + 12-15%

Source: PGIM, as of 3/31/23

CMBS SPREADS

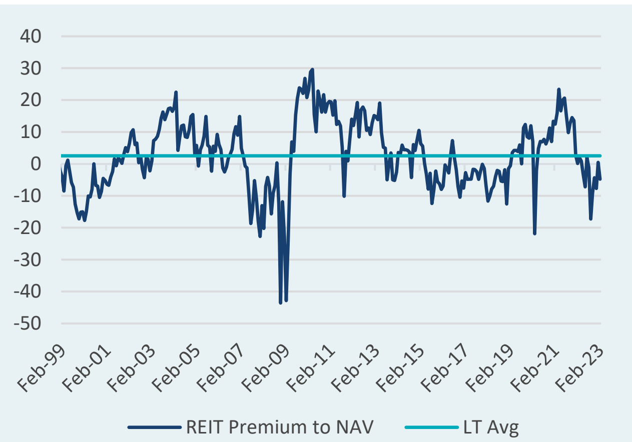


Source: Bloomberg, as of 3/22/2023

REITs

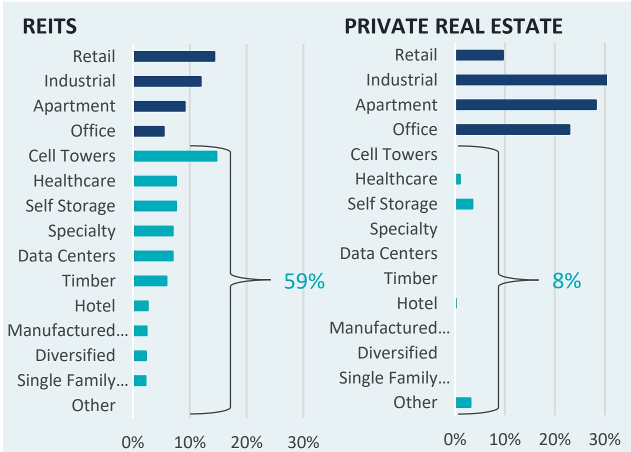
- REITs were earlier than private real estate in experiencing valuation adjustments in 2022, when interest rates began to rise. U.S. REITs were down 24% for the full year in 2022 but have seen a slight recovery in 1Q 2023 of +3%.
- REITs traded at a steep discount to NAV for much of the 2nd half of 2022, however a slight recovery in early 2023 has them now trading at less of a discount to NAV.
- Sector dispersion continues to be high, although most major sectors were off significantly in 2023 (office, industrial, apartments, healthcare and self-storage were all down over 22%.) Some segments of retail (shopping centers and free standing) were down less, only 7% and 13%. Office continues to be the biggest laggard, down 38% in 2022 and down another 16% in 1Q 2023.
- REITs do offer differentiated exposures vs private core real estate. Outside of the four main property types, core real estate exposure to niche property types is 8%, while REIT exposure to those same niche sectors is almost 60%.
- We are neutral on REITs given only modest discounts to NAV (which is likely overvalued) but given volatility in the asset class, that could change to positive if we see a deep drawdown later this year.

REIT PREMIUM TO NAV



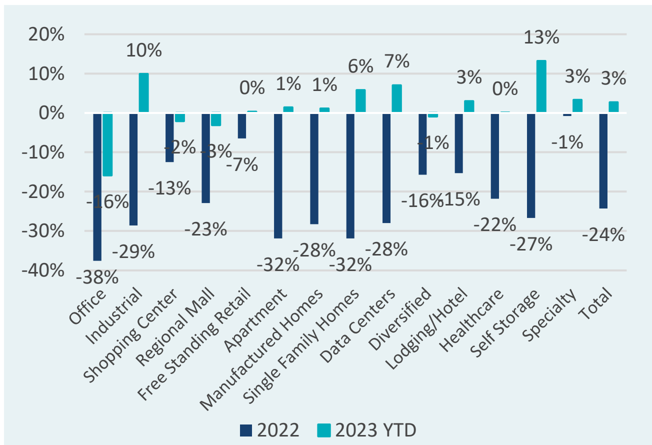
Source: JPMorgan, as of 2/28/23

NICHE SECTOR WEIGHTS IN REITS VS PRIVATE RE



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

REIT PERFORMANCE BY SUB SECTOR



Source: Duff & Phelps, Bloomberg, as of 3/31/2023

Commodities

— Commodities were one of the few bright spots in 2022, up 16% for the year, led by energy commodities. During the first quarter of 2023, prices reversed themselves as inflation slowed and demand fell.

— The roll return component of the index remains positive though that has seen a sharp versal in 2023 and could turn negative if supply stocks build up across petroleum commodities.

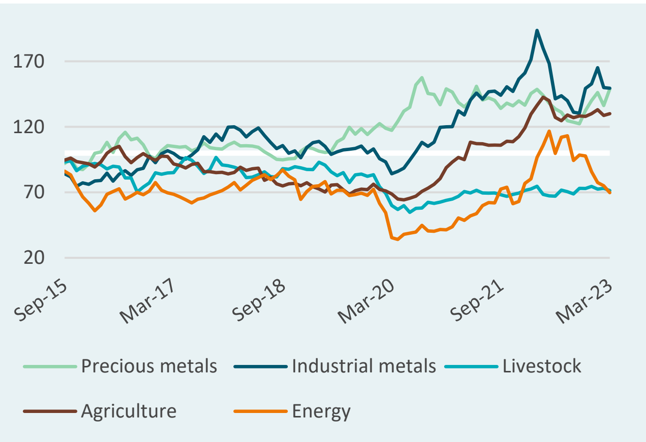
— Commodities have been a rewarding asset class to own over the last 2 years, but we don't see those returns being sustained. We moved towards a negative outlook this year in commodities, as wee see better opportunities to allocate investor capital.

INDEX AND SECTOR PERFORMANCE

	Month	QTD	YTD	1 Year	3 Year	5 Year	10 Year
Bloomberg Commodity	(0.2)	(5.4)	(5.4)	(12.5)	20.8	5.4	(1.7)
Bloomberg Agriculture	1.0	0.0	0.0	(3.6)	23.7	8.4	(0.5)
Bloomberg Energy	(6.9)	(18.7)	(18.7)	(25.1)	25.4	(1.5)	(9.2)
Bloomberg Grains	3.3	(2.4)	(2.4)	(7.8)	21.5	7.7	(2.0)
Bloomberg Industrial Metals	(0.3)	(2.1)	(2.1)	(22.1)	21.1	5.9	2.1
Bloomberg Livestock	(2.3)	(4.3)	(4.3)	(2.8)	6.0	(2.6)	(3.0)
Bloomberg Petroleum	(2.5)	(5.9)	(5.9)	(4.8)	49.4	6.6	(4.3)
Bloomberg Precious Metals	9.2	6.3	6.3	(0.4)	8.3	7.1	0.3
Bloomberg Softs	0.2	9.3	9.3	(2.3)	23.4	7.1	(1.6)

Source: Morningstar, as of 3/31/23

SECTOR PERFORMANCE

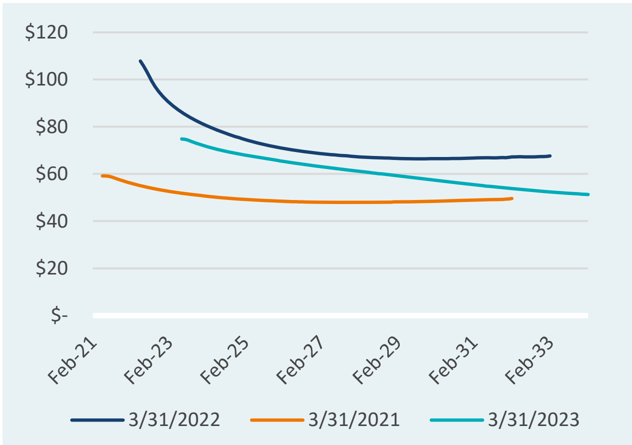


Source: Bloomberg, as of 3/31/2023

ROLL RETURN

Source: Bloomberg, as of 3/31/2023

CURVE SHAPE (WTI)

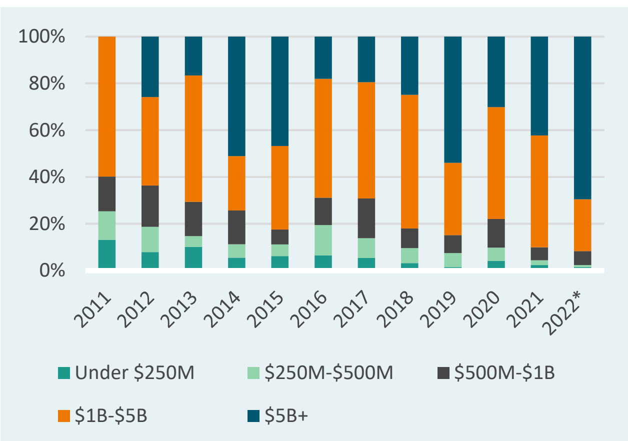


Source: Bloomberg, as of 3/31/23

Private infrastructure

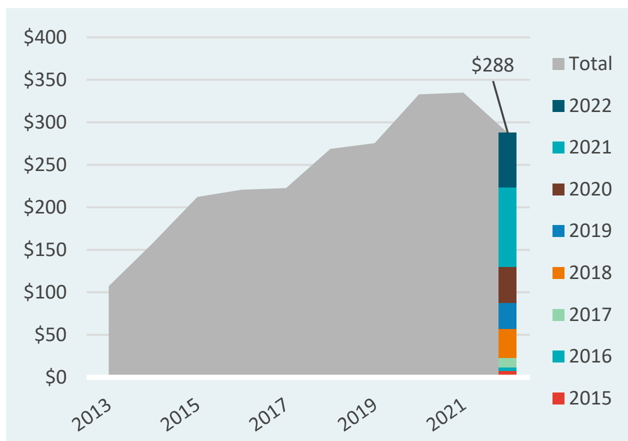
- Infrastructure fundraising slowed in 2022, much like we saw across other private market asset classes. Despite falling short of the all-time high-water mark for fundraising set in 2021, infrastructure continues to absorb much of the capital allocated to real assets. Several fundraising trends have come center stage: Mega-funds are the new normal with eight managers reaching a final close above $5B in the year. Moreover, the top 10 managers by size make up 80% of the capital raised; Digitization and decarbonization focused funds made up nearly 50% of funds raised; Geographically, North America is in favor accounting for ~70% of fundraising.
- Dry powder is down relative to the last two years in part due to a slower fundraising and managers ability to take down larger deals. After a strong start, deal volumes declined 27% at the tail end of 2022 as financing became more expensive and economic uncertainty weighed on the market.
- Returns over the last year in infrastructure outperformed nearly all other private asset classes. In this regard, Infrastructure delivered on one of its key goals, to provide inflation protected returns. Going forward, we see headwinds for the asset class as higher financing costs, slowing inflation and slowing GDP growth become priced into what are fairly rich valuations.

INFRASTRUCTURE FUNDRAISE BY FUND SIZE (%)



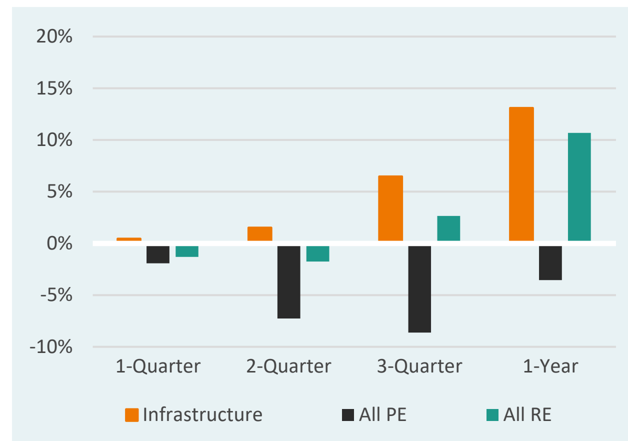
Source: Pitchbook, as of 9/30/2022

INFRASTRUCTURE MANAGER BY FUND SIZE



Source: Pitchbook , as of 9/30/2022

Q3 '22 TRAILING POOLED IRR

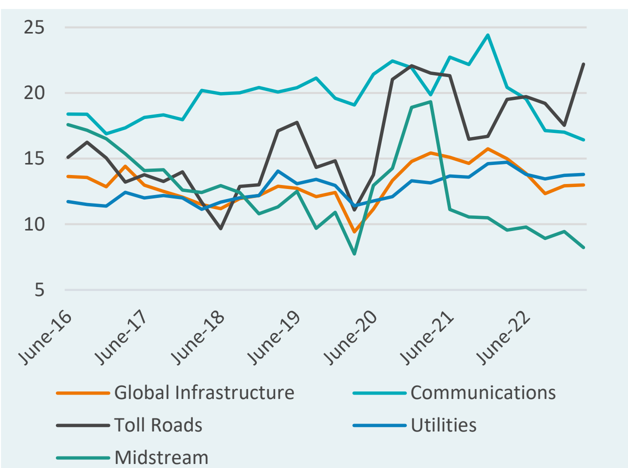


Source: Refinitiv C|A, as of 9/30/2022

Private infrastructure (continued)

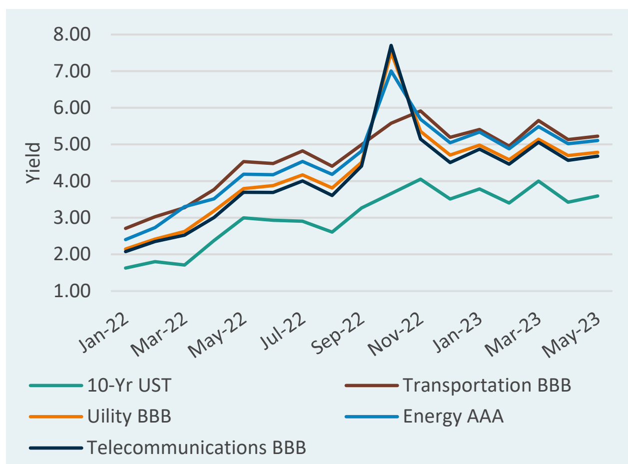
- Inflation brought forth a regime change in the cost of capital, a stark difference from the previous period of low interest rates, the impact of which has yet to be reflected in equity values. If rates stay elevated, discount rate increases should flow through to valuations. We expect that assets priced on ultra low interest rates and have bond-like fixed cash flows will be particularly susceptible to changing discount rates (ex. PPA contracts).
- Non-core infrastructure is arguably more sensitive to the rising cost of capital because of exposure to floating rate, non-investment grade debt. This can be somewhat offset by higher growth in cash flows and value-add potential by management teams. One trend we have noticed is the blurring of lines between infrastructure and traditional private equity buyouts as new industries around growing themes are added to the mix: Energy Transition, Healthcare, Waste and Digital Infrastructure have all been added into the fold. While many assets have infrastructure characteristics, many managers are accepting a period of significant investment and negative cash flow, along with development, technology, and commercial risks.
- Sector divergence is likely to be meaningful as we anticipate a decline in GDP over the coming quarters. Some areas of transportation that only recently recovered from pandemic impacts, are likely to feel the weight of recession forces as global trade slows. Telecommunications has data growth tailwinds, though valuations could come under pressure. Utilities and Social infrastructure should remain resilient.

INFRASTRUCTURE VALUATIONS – EV/EBITDA



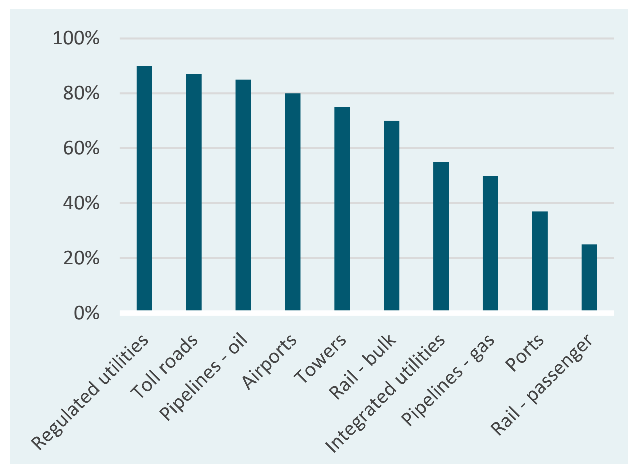
Source: Bloomberg; Dow Jones Brookfield; S&P Indices, as of 3/31/2023

RISING COST OF CAPITAL



Source: Bloomberg; ICE BofA Indices, as of 3/31/2023

DEGREE OF INFLATION PROTECTION BY SECTOR

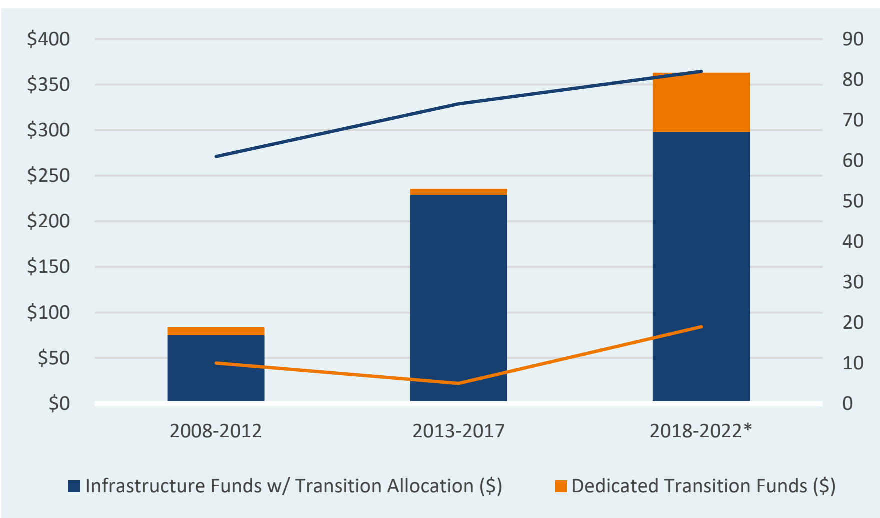


Source: First Sentier Investors

Infrastructure – Energy transition

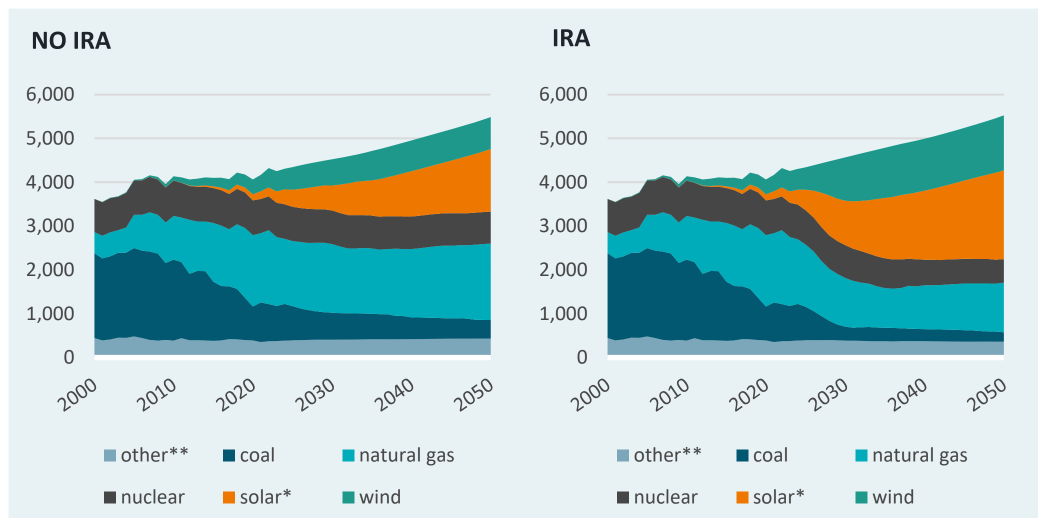
- Fundraising within energy transition infrastructure has ballooned over the past four years. Capital is coming from both infrastructure managers starting new sector focused strategies, while other are allocating a portion of their general infrastructure strategies to invest in clean energy themes. From 2018 to 2022, $65B was raised for sustainable infrastructure as compared to the prior eight-year period (‘08-’17) that raised $6.5 billion. This doesn’t account for the 82 general infrastructure funds which broadly plan to invest some portion of their capital in sustainable infrastructure. While the scale of capital needed to meet clean energy goals is vast, we see risk being underpriced and likely disappointing returns in the future for less experienced managers.
- Policy initiatives like the Bipartisan Infrastructure Bill (BIL) (2021) and the Inflation Reduction Act (IRA) (2022) have created an estimated $400 billion in energy and climate funding, most of which is in the form of tax credits aimed at catalyzing private investment in clean energy, transportation and manufacturing. The IRA bill is widely considered to be the most consequential legislation ever passed for the clean energy industry.
- For the first time in 30 years electricity demand growth is estimated to increase to 2-4% a year, driven by the plug-in of the transportation sector (EV’s). Growing energy demand, pared with net zero emissions targets will create large opportunities for renewables and the infrastructure required to deliver those electrons.

FUNDRAISING IN ENERGY TRANSITION ($B)



Source: Pitchbook, as of 12/31/2022

U.S.NET ELECTRICITY GENERATION BY FUEL (BILLION KW-HOURS)

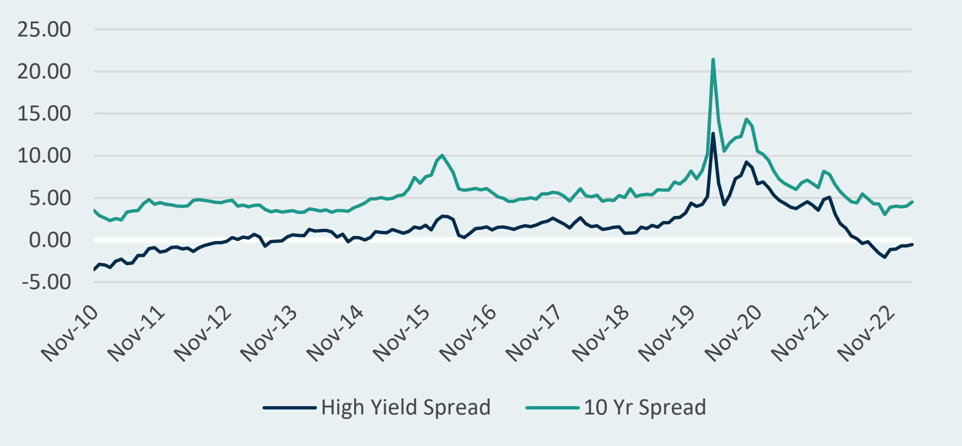


Source: Annual Energy Outlook 2023

Midstream energy/MLPs

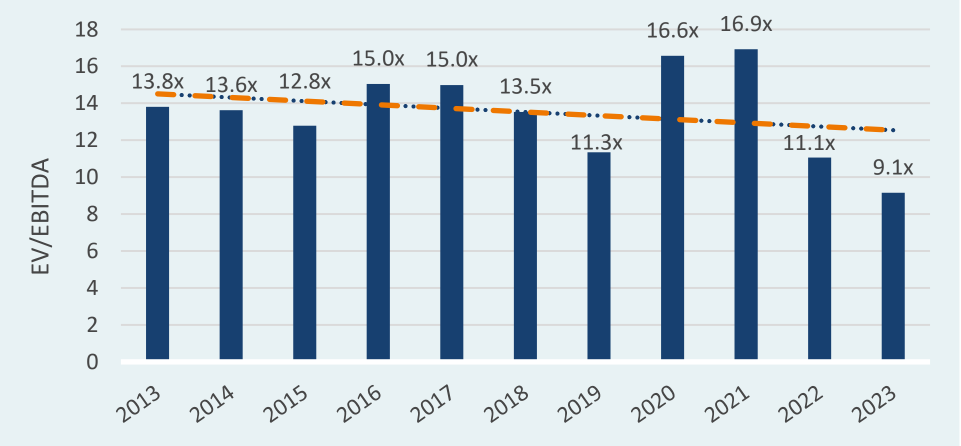
- Midstream energy stocks were up 31.0% in 2022. For the second year in a row, energy midstream stocks, had strong returns on both a relative and absolute return basis. Strong commodity prices led to growing volumes in both gas and oil, leading to higher earnings and at the same time, investor interest in companies that could deliver more near-term cash flows.
- Yields for listed midstream companies now trade slightly below high yield bonds but at a premium to Treasuries. The recent shift lower in relative yields is a function of the dramatic increase in interest rates but does reduce the relative attractiveness of the sectors yield income. We remain concerned about the long-term viability of the asset class and future growth opportunities.
- EV cars are not a fad or strictly the domain of green conscious consumers. They simply are more practical and efficient than ICE vehicles. With roughly 50% of oil demand coming from motor vehicle use, that is a powerful headwind for the suppliers of oil. Even if oil will be with us for decades to come, we struggle to justify a dedicated allocation to a commodity with growth headwinds when there are many other investment opportunities available.
- Natural gas does not face the same obvious demand challenges and, in fact, has strong tailwinds around export in the U.S. While some greener fuels like hydrogen could displace natural gas, that outcome is far from certain. That fact does not change our view though, that the midstream asset class fails to offer a compelling long-term investment thesis.

MLP SPREADS VS HIGH YIELD & TREASURIES



Source: Bloomberg, as of 3/31/2023

MIDSTREAM VALUATIONS (EV/EBITDA)

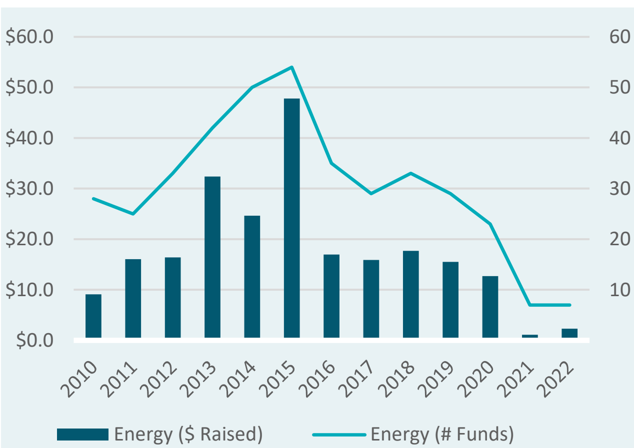


Source: Bloomberg; Alerian MLP Index, as of 3/31/2023

Energy – Oil/gas

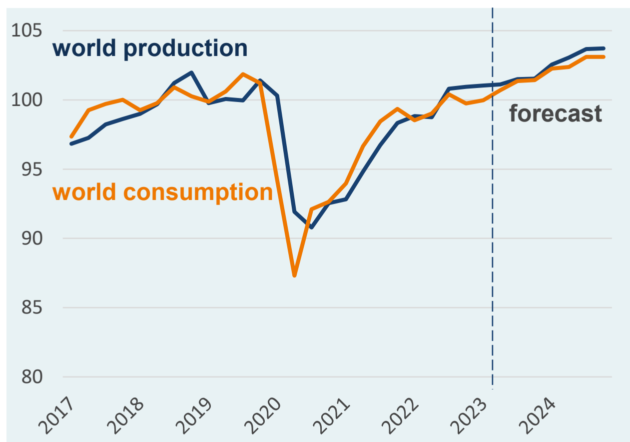
- According to Pitchbook figures, fundraising within oil/gas funds remains challenging though we have seen a notable uptick in traditional oil/gas GPs coming back to market for the first time in 5+ years. The spike in commodity prices and subsequent move higher in portfolio valuations has given confidence to the industry that some LPs will revisit allocating to oil and gas upstream funds. We expect that the top 3 or 4 GPs in the sector will find investors though fundraising is slow and could be challenged further if oil prices move lower from here.
- Some good news on the exit front, we have seen a few deals completed in 2023, mostly in the Permian basin. Strategics appear to be testing the M&A market by going after the most attractive assets in the Permian basin. With natural gas prices collapsing back down to $2/MMBtu, liquidity for gas heavy assets is likely to remain elusive. If the oil/gas funds are able to raise new capital, we would not be surprised to see them buying some of these legacy sponsor-backed companies which would create an exit for older funds, though new capital has to wonder who will buy from them down the road.
- The problem of liquidity and the transition away from hydrocarbons remain existential threats to the private oil/gas sector. We could see a role for natural gas for decades to come but oil demand appears more in doubt. Electric vehicles are more efficient, require less maintenance and if we can resolve some of the supply chain challenges, will displace combustion engines globally. Investors interested in exposure to oil/gas would be better off in public market securities than illiquid private funds.

FUNDRAISING IN OIL/GAS



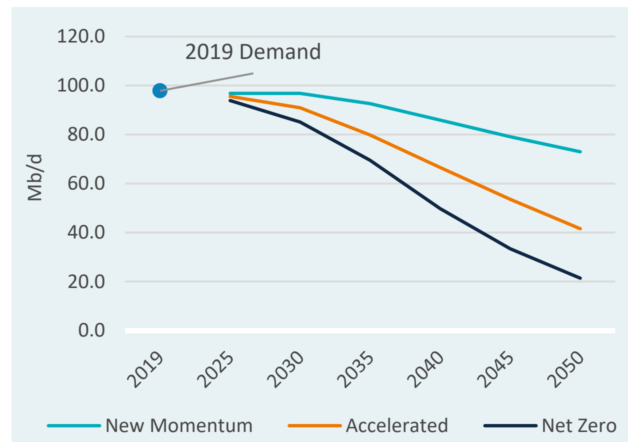
Source: Pitchbook, as of 12/31/2022

WORLD OIL PRODUCTION & CONSUMPTION*



Source: EIA; *includes all liquid fuels

GLOBAL OIL DEMAND FORECAST UNDER LOWER CARBON EMISSION SCENARIOS

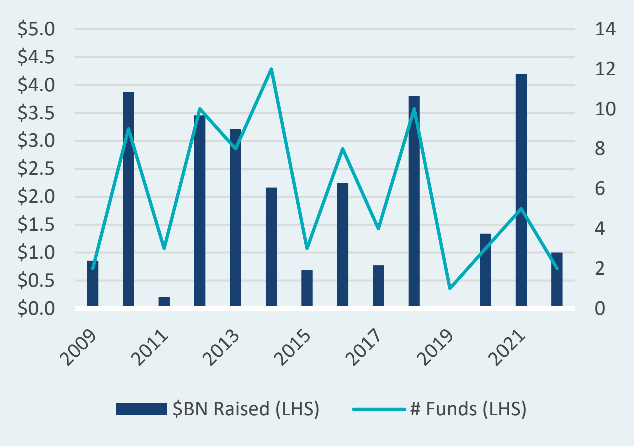


Source: BP Energy Outlook 2023

Metals and mining

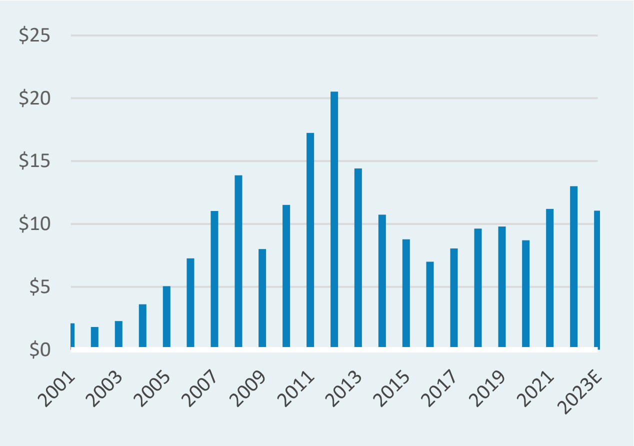
- Fundraising in the private equity mining segment picked up some in 2021 with a couple large funds in market, but subsequently declined in 2022. Raising equity capital in metals and mining has been a challenge since the global financial crisis but that has worsened in the last 5 years. We have seen some investor interest in royalty/streaming funds and in mining lending, where we have deployed client capital, but even that niche market is a small opportunity.
- After a modest recovery from a cyclical low in 2016, non-ferrous mining exploration budgets have been on the upswing, hitting a recent peak in 2022. Budgets are expected to decline in 2023, though the consensus is that more spending will be needed to meet future demand for metals/minerals important to clean energy. Prices moved lower in 2022 for industrial metals and are likely to face near-term headwinds if economic activity slows. Precious metals, on the other hand, have rallied the last several months as the banking crisis fueled the buying of safe-haven assets.
- We are more bullish on base/industrial metals which longer-term will benefit from a shift away from fossil fuels. We are less bullish on bulk and energy-related commodities. Our overall outlook within mining is positive with a notable challenge in finding enough investment opportunities that meet our underwriting criteria.

FUNDRAISING IN MINING



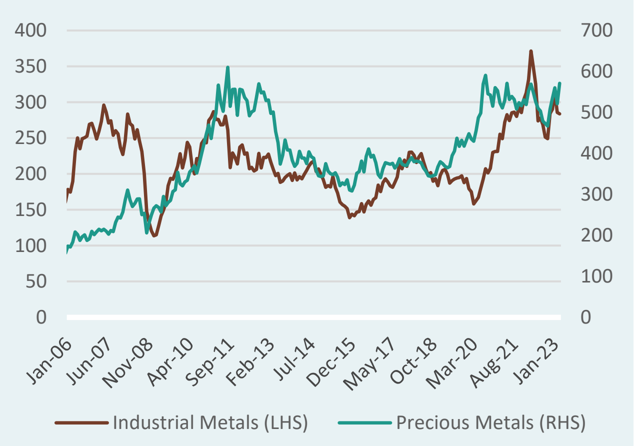
Source: Pitchbook, as of 12/31/2022

CAPITAL EXPENDITURE IN MINING ($B)



Source: S&P Global Market Intelligence; Non-Ferrous budget

METAL PRICES



Source: Bloomberg, as of 3/31/2022

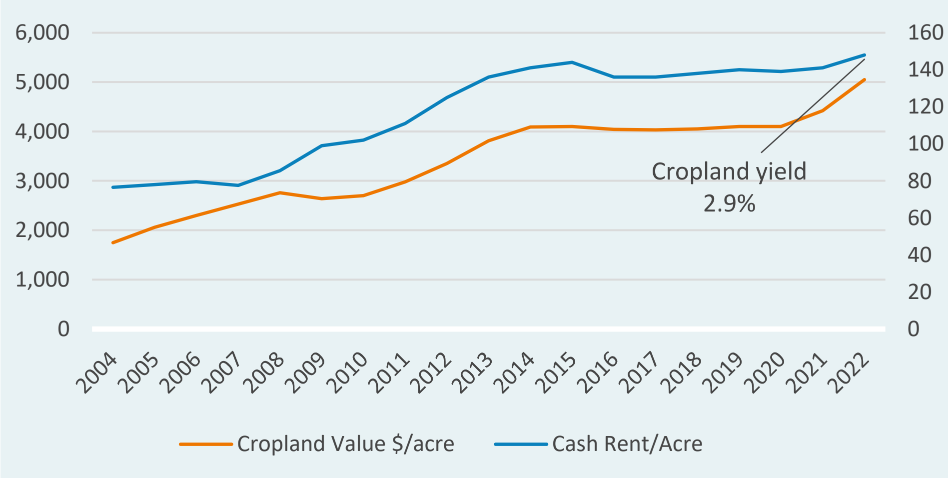
Agriculture

— Cropland values nationally rose in 2022 to $5,050/acre, an increase of more than 14% over the prior years 8.0% rise. This is a notable change since 2015 when farmland values leveled off in a low agriculture price market. Verus has been generally been bearish on farmland investments as income yields have trended around 3.0% and a catalyst for appreciation was lacking. The War in Ukraine and the subsequent global disruption in Ag crop supply chains has put a premium on stable countries with certainty of supply. Elevated crop prices is likely to reverse somewhat in the coming years but there is an improved outlook for Ag investing in the U.S. and certain other OECD countries.

— In the row crop segment, higher crop prices sent land values up double digits in many markets, though most expect elevated corn, wheat and soybean prices to come down. Permanent crops on the other hand, have seen land values come down or stay flat, as nut prices and citrus have declined for varying reasons. Ag investing is notoriously challenging, as the last 10 years have shown, with weather, tariffs, wars and changing consumer habits all playing a role in the asset classes returns. We believe diversifying across crop types and looking for strategies that can invest in post-farmgate assets is the best way to mitigate idiosyncratic events and capture a higher return.

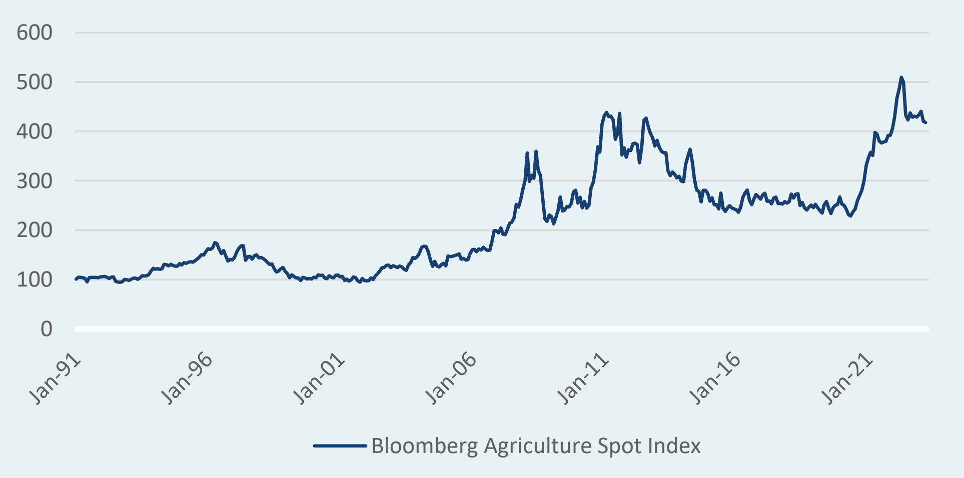
— Following several years of poor returns in Agriculture, row crop assets spiked in value with higher crop prices. While we do not see the asset class as an overly compelling buying opportunity, on a relative basis, the Ag market looks more attractive today than in prior years.

U.S. NATIONAL CROPLAND VALUES VS CASH RENTS



Source: USDA, as of 12/31/2022

BLOOMBERG AGRICULTURE PRICES



Source: Bloomberg, as of 3/31/2023

Appendix

Detailed returns by asset class

Pooled Returns by asset class	1 Year	3 Year	5 Year	10 Year
NCRIEF ODCE	7.5%	9.9%	8.7%	10.1%
Refinitiv Real Estate – Value-Add	8.5%	10.9%	10.1%	11.4%
Pitchbook Real Estate - Value-Add	19.3%	13.6%	12.4%	12.8%
Refinitiv Global Infrastructure	9.4%	10.8%	10.3%	10.7%
Refinitiv Global Natural Resources	25.2%	8.7%	5.1%	3.6%
Pitchbook Oil/Gas	33.7%	11.7%	6.9%	4.9%
Pitchbook Mining	8.6%	4.1%	2.3%	2.9%
NCRIEF Timberland	12.9%	7.5%	5.4%	5.8%
NCRIEF Farmland	9.6%	6.8%	6.4%	8.8%
Public Index (as of 12/31/22)				
Russell 3000	-19.2%	7.1%	8.8%	12.1%
MSCI ACWI	-18.0%	4.5%	5.8%	8.5%
S&P Global Infrastructure	-0.2	1.7%	3.9%	6.5%
S&P Global Natural Resources	10.3%	11.6%	7.3%	4.9%
FTSE NAREIT Global	-23.6%	-5.1%	-0.1%	3.4%
FTSE NAREIT U.S.	-24.9%	-1.0%	3.0%	6.0%

Source: Refinitiv C|A as of September 30,2022; Pitchbook as of September 30, 2022; NCREIF as of December 31, 2022

The role of real assets

	Strategy	GDP sensitivity	Inflation sensitivity	Income orientation	Return enhancing	Risk reducing	Liquidity
Privately-traded real assets	Private real estate core	High	Moderate	High	Moderate	Moderate	Moderate
	Private real estate value added	High	Low/None	Moderate	High	Low/None	Low/None
	Private real estate opportunistic	High	Low/None	Low/None	High	Low/None	Low/None
	Private infrastructure	Moderate	Moderate	High	Moderate	Moderate	Low/None
	Timber	Low/None	Low/None	Low/None	Moderate	High	Low/None
	Farmland / agriculture	Low/None	Moderate	Moderate	High	High	Low/None
Publicly-traded real assets	TIPS	Low/None	Moderate	Low/None	Low/None	High	High
	Commodity futures	Moderate	High	Low/None	Low/None	Moderate	High
	REITs	Moderate	Low/None	Moderate	High	Low/None	High
	MLPs	Moderate	Moderate	High	High	Moderate	High
	Listed infrastructure	Moderate	Moderate	Moderate	High	Low/None	High
	Natural resources equity	Moderate	High	Low/None	High	Low/None	High

Magnitude	Low/None	Moderate	High

Note: the summary above was determined using historical averages and correlations on a relative basis within each category. It is important to note that investments within these asset classes are often heterogeneous and may possess different qualities and sensitivities (see Appendix for further details).

Glossary of terms

Adjusted Funds From Operations (AFFO): A measurement which is helpful in analyzing real estate investment trusts (REITs). The AFFO typically equals the trust's funds from operations (FFO) but is adjusted for ongoing capital expenditures which are necessary for upkeep of the REIT's assets.

Backwardation: Also, sometimes called normal backwardation, is the market condition where the price of a commodities forward or futures contract is trading below the expected spot price at maturity.

Capitalization Rates: The rate of return of a real estate investment, which is calculated by dividing the property's net operating income by the property's purchase price.

Core Real Estate: This category of real estate will include a preponderance of stabilized properties. Core real estate should achieve relatively high income returns and exhibit relatively low volatility. Core real estate funds tend to use less leverage.

Consumer Price Index (CPI): A measure of purchasing power and inflation that takes the average prices of a basket of consumer goods and services, such as food, medical care, and transportation, and compares the same basket of goods in terms of prices to the same period in a previous year. Changes in CPI are used to assess price changes associated with the cost of living.

Contango: When the futures price of a commodity is above the expected future spot price. A futures or forward curve is upward sloping when the market is in contango.

Double Promote: A joint venture private equity structure is considered to have a "double promote" if the sponsor of a project is in fact comprised of two separate parties who each have a profit waterfall agreement or cash flow disbursements.

Dry Powder: Investment reserves raised by investment funds to cover future obligations or to purchase assets in the future.

GDP: The total value of all services and goods produced within a country's borders, for a given time period. This calculation includes both private and public consumption, government expenditures, investments, along with total exports net of total imports.

Internal Rate of Return (IRR): the IRR is the discount rate that equates the present value of cash outflows (investment) with the present value of cash inflows (return of capital). IRR is often referred to as a dollar-weighted rate of return that accounts for the timing of cash inflows and outflows.

***LIBOR*:** Is a benchmark rate that some of the world's largest banks charge each other for short-term loans. It stands for London Interbank Offered Rate and serves as the first step in calculating interest rates on various loans throughout the world.

Master Limited Partnerships (MLPs): A limited partnership structure which is publicly traded on an exchange. MLPs combine the tax benefits of a limited partnership with the liquidity of publicly traded securities. To qualify as an MLP, the entity must generate 90% of its income from the production, processing and transportation of oil, natural gas and coal.

Net Operating Income (NOI): A calculation which is used to analyze real estate investments that generate income. NOI is the property's annual income generated by operations after deducting all expenses incurred from those operations. The growth rate in NOI is a common metric used in determining the health of a property.

OPEC: The Organization of Petroleum Exporting Countries (OPEC) is a group consisting of 12 of the world's major oil-exporting nations. OPEC is a cartel that aims to manage the supply of oil in an effort to influence the price of oil on the world market.

Opportunistic Real Estate: An opportunistic fund is one that includes preponderantly non-core assets. The fund as a whole is expected to derive most of its return from property appreciation which may result in volatile returns. These funds may employ a variety of tools such as development, significant leasing risk and potentially high leverage.

Real Estate Investment Trusts (REITs): A REIT is a company that owns and operates commercial real estate properties. REITs can be publicly traded or privately held. There are two main type of REITs: Equity REITs which generate income from the operation of properties, and Mortgage REITs, which invest in mortgages or mortgage securities.

Glossary of terms (continued)

Timber Investment Management Organizations (TIMOs): A management group that invests in timberland assets for institutional investors. TIMOs will purchase, manage and sell various timberland properties on behalf of investors.

Treasury Inflation Protected Securities (TIPS): A treasury bond that is adjusted to eliminate the effects of inflation on interest and principal payments, as measured by the Consumer Price Index (CPI). TIPS are issued in terms of five, ten and twenty years and are auctioned twice per year.

Value-Added Real Estate: A value-added real estate fund often holds a combination of core assets and other assets characterized by less dependable cash flows. These strategies are likely to have moderate lease exposure and employ moderate leverage. Consequentially, these strategies seek significant returns from property appreciation and typically exhibit moderate volatility.

Vacancy Rates: The vacancy rate is calculated as the total number of unoccupied units of a property divided by the total units of the property, at a particular point in time.

Vintage Year: Represents the year the first capital call or portfolio company investment was made. .

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