



RVK

Quarterly Investment Performance Analysis

Vermont State Teachers' Retirement System

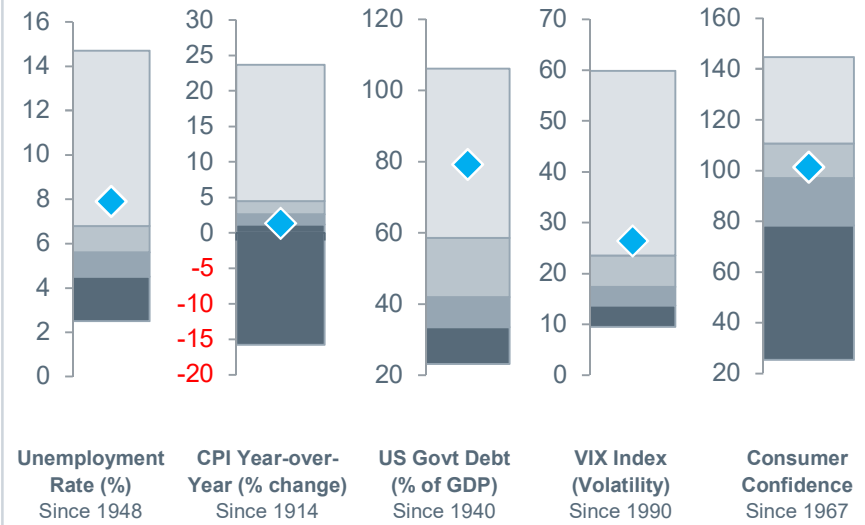
Period Ended: September 30, 2020



Third Quarter Economic Environment

In the first two months of Q3, capital markets generally tracked trends stemming from the latter half of Q2. After strong results in the first two months of the quarter, returns from risk assets reversed in September due to growing concerns over a stagnating recovery and reduced confidence that the US Congress could agree to enact further fiscal stimulus. In addition, the upcoming US presidential and congressional elections offer another source of uncertainty when building expectations for the ongoing economic recovery. The Federal Open Market Committee (FOMC) maintained its accommodative stance and boosted sentiment further by announcing it will use an average inflation target indicating that it could accept levels above its stated 2% target in future periods. Market participants largely saw this as an indication that policy could remain supportive for longer than expected with a fixed inflation target. As of October 1st, the Atlanta Fed's GDPNow annualized estimate for Q3 growth stood at 34.6% which stands in stark contrast to the final reading of the Q2 GDP decline of -31.4%. On a non-annualized basis, the decline in real US GDP, peak to trough, was -10.1%, according to JP Morgan, compared to a -4.0% decline during the great financial crisis. For calendar year 2020, the OECD released a projection in September for a -4.5% contraction in global GDP, which represented an improvement from its June projection for a -6.0% contraction.

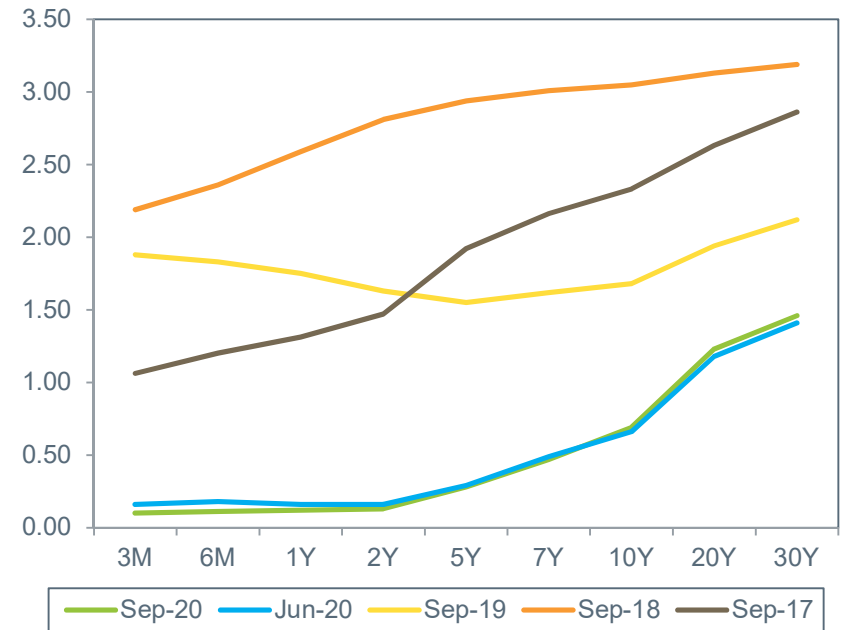
Key Economic Indicators



Economic Indicators	Sep-20	Jun-20	Sep-19	Sep-17	20 Yr
Federal Funds Rate (%)	0.09 ▲	0.08	1.90	1.06	1.57
Breakeven Infl. - 5 Yr (%)	1.49 ▲	1.17	1.35	1.78	1.82
Breakeven Infl. - 10 Yr (%)	1.63 ▲	1.34	1.52	1.85	2.01
CPI YoY (Headline) (%)	1.4 ▲	0.6	1.7	2.2	2.1
Unemployment Rate (%)	7.9 ▼	11.1	3.5	4.2	6.0
Real GDP YoY (%)	-2.9 ▲	-9.0	2.1	2.4	1.8
PMI - Manufacturing	55.4 ▲	52.6	48.2	59.9	52.5
USD Total Wtd Idx	117.35 ▼	120.86	117.99	110.08	103.23
WTI Crude Oil per Barrel (\$)	40.2 ▲	39.3	54.1	51.7	62.2
Gold Spot per Oz (\$)	1,886 ▲	1,781	1,472	1,280	989

Market Performance (%)	QTD	CYTD	1 Yr	5 Yr	10 Yr
S&P 500 (Cap Wtd)	8.93	5.57	15.15	14.15	13.74
Russell 2000	4.93	-8.69	0.39	8.00	9.85
MSCI EAFE (Net)	4.80	-7.09	0.49	5.26	4.62
MSCI EAFE SC (Net)	10.25	-4.20	6.84	7.37	7.33
MSCI Emg Mkts (Net)	9.56	-1.16	10.54	8.97	2.51
Bloomberg US Agg Bond	0.62	6.79	6.98	4.18	3.64
ICE BofAML 3 Mo US T-Bill	0.04	0.64	1.10	1.20	0.64
NCREIF ODCE (Gross)	0.48	-0.11	1.39	6.64	10.27
FTSE NAREIT Eq REIT (TR)	1.44	-17.54	-18.16	3.95	7.90
HFRI FOF Comp	4.26	2.56	5.72	3.09	2.89
Bloomberg Cmdty (TR)	9.07	-12.08	-8.20	-3.09	-6.03

Treasury Yield Curve (%)



Third Quarter Review

Broad Market

In Q3, US markets continued their climb from the Q1 selloff, bolstered by substantial pent-up demand being released with re-openings across the country and continued accommodative monetary policy. Domestic equities continued their strong performance from Q2, albeit to a lesser extent, with the S&P 500 hitting an all-time high in early September before a slight drawback to finish the quarter. The S&P 500 ended Q3 up 8.9%, with positive YTD returns of 5.57%.

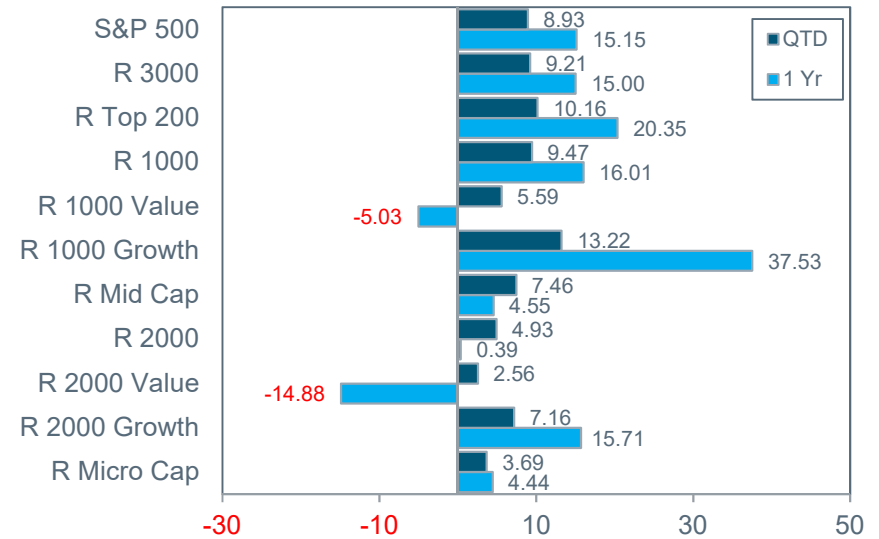
Market Cap

Additionally, larger cap stocks fared best in Q3, a reversal of what was seen in Q2. The Russell Top 200 finished Q3 ahead of its smaller-cap counterparts, returning 10.2%, while the Russell 2000 and Mid Cap indexes returned 4.9% and 7.5%, respectively.

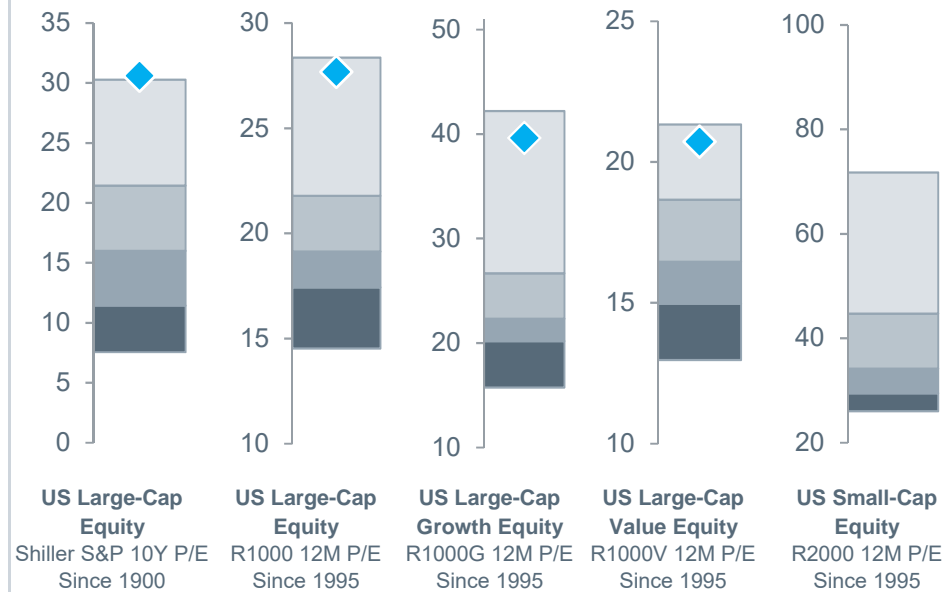
Style and Sector

Growth led value across all market caps by a significant margin once again during Q3. Active management largely struggled once again in Q3.

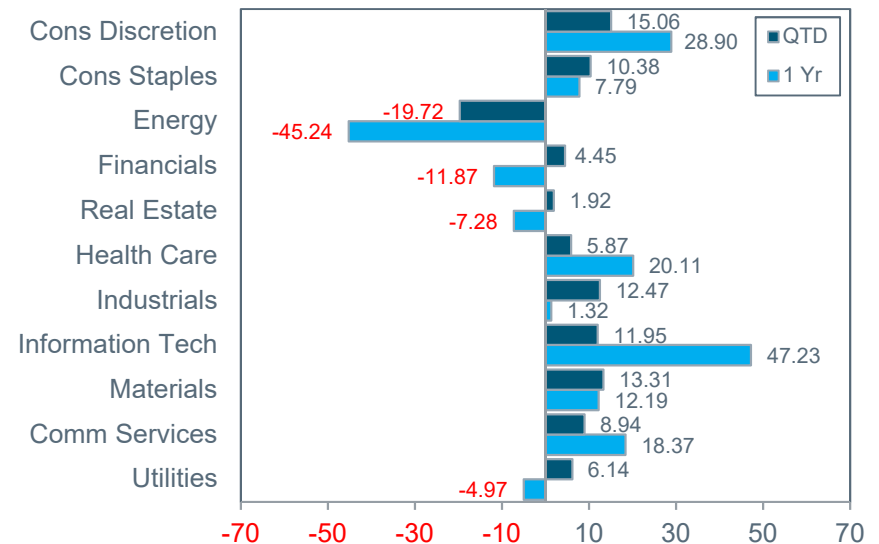
Style and Capitalization Market Performance (%)



Valuations



S&P 500 Index Sector Performance (%)

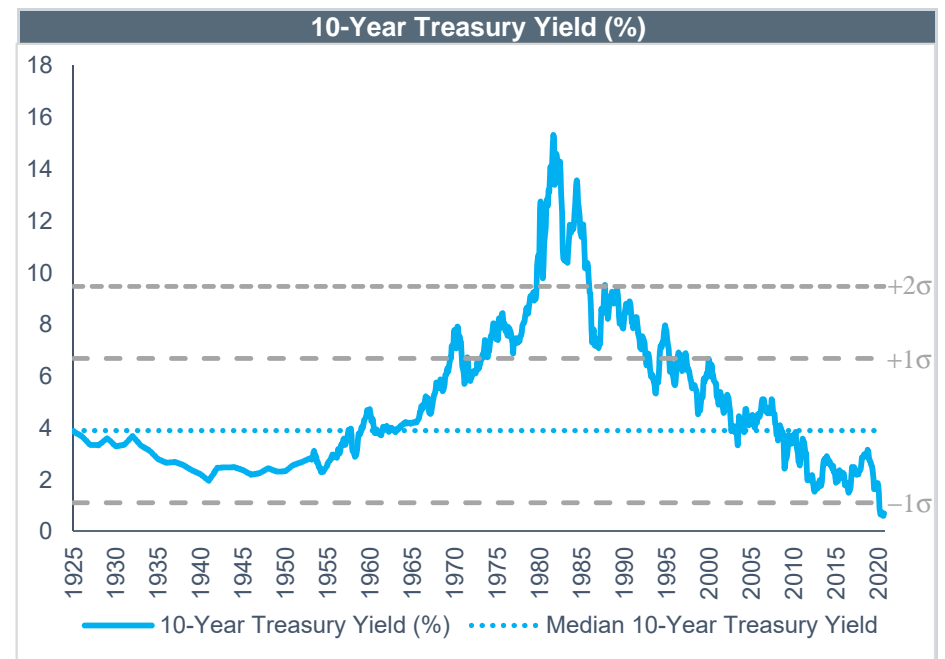
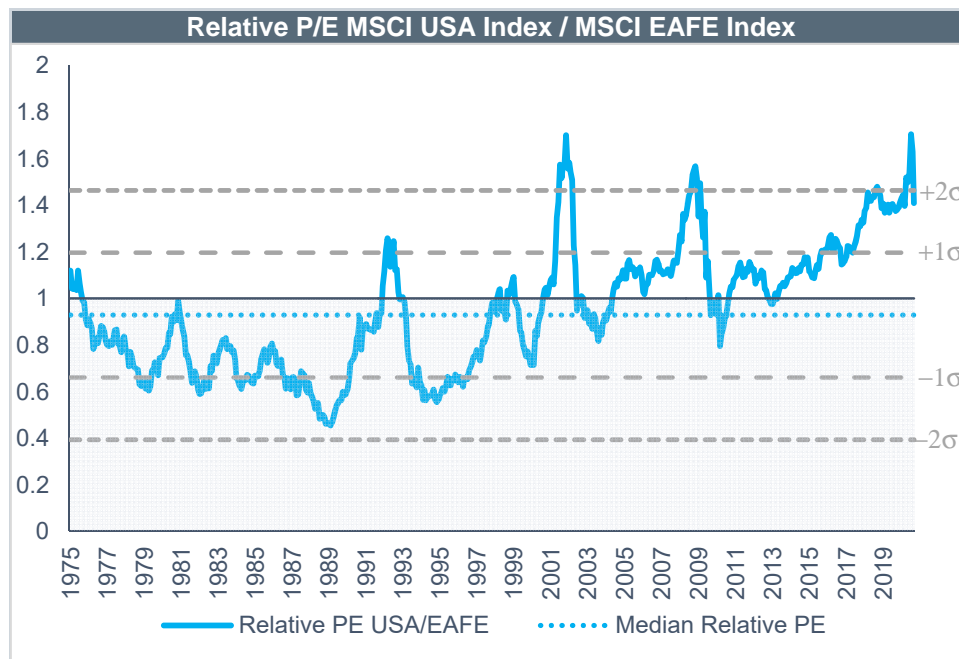
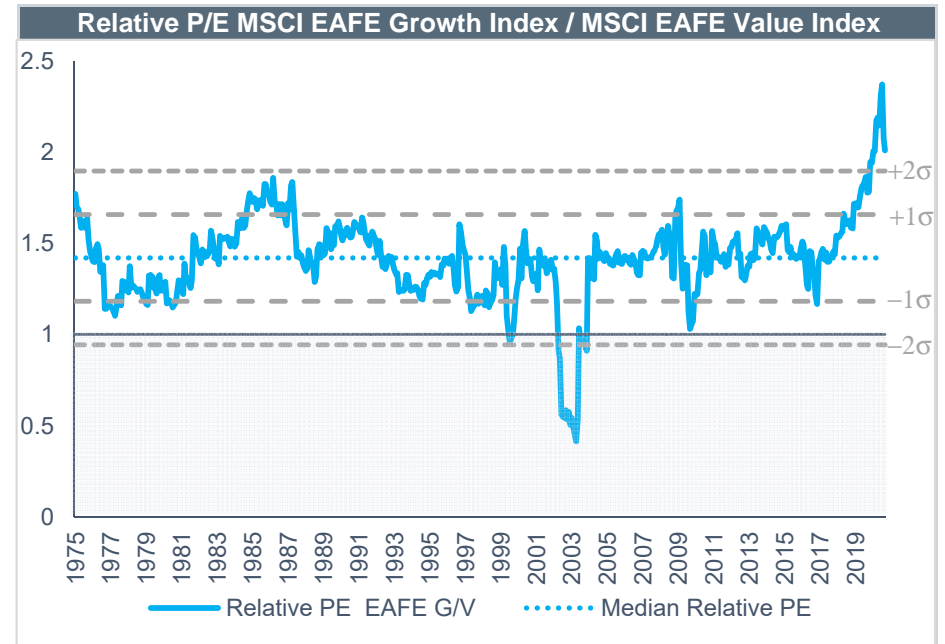
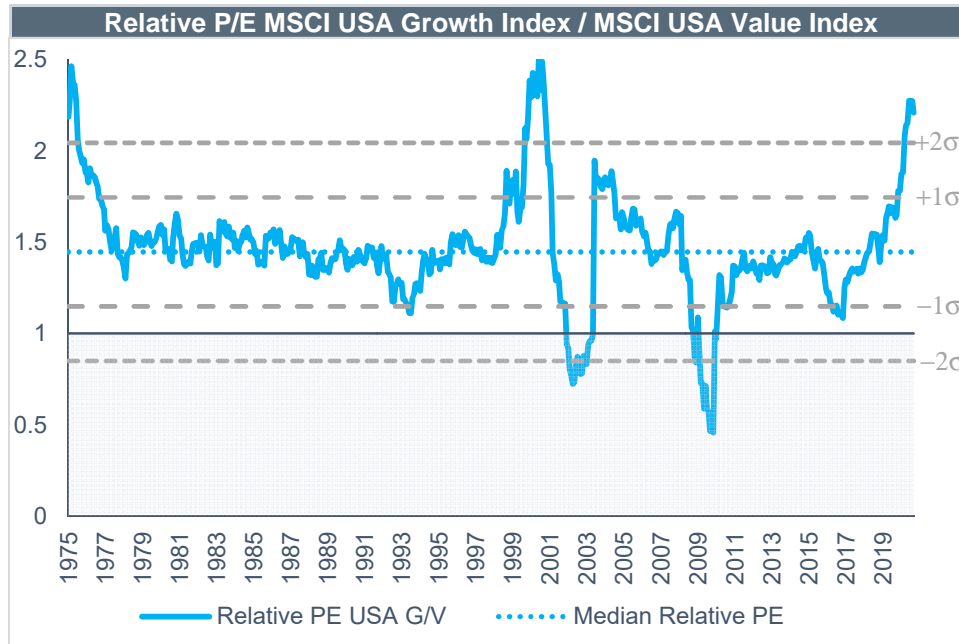


Valuation data courtesy of Bloomberg Professional Service and Robert J. Shiller, Irrational Exuberance, Second Edition. P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers. Current R2000 P/E is unavailable and does not appear in the historical ranges.



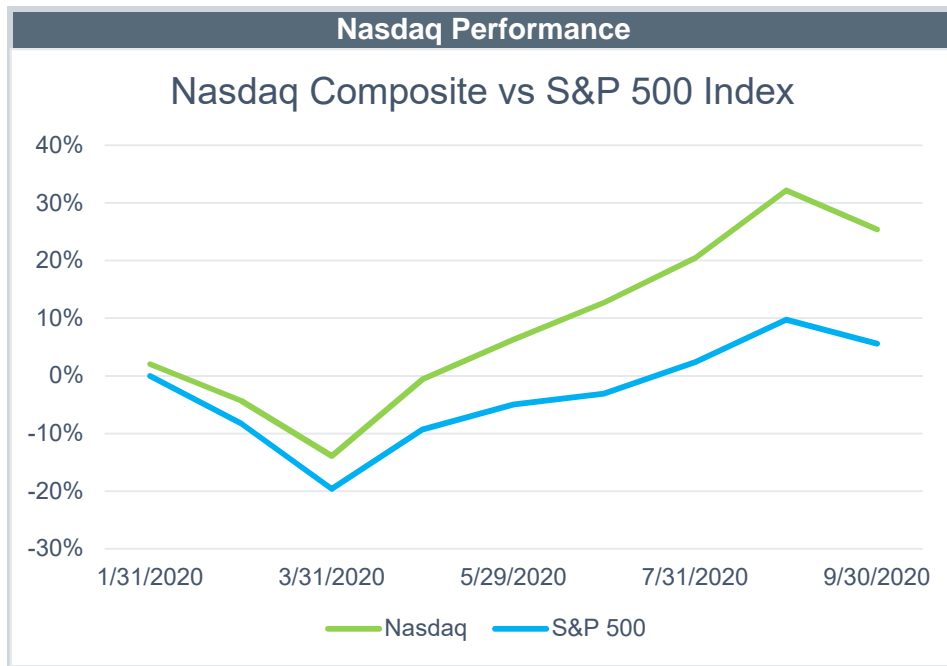
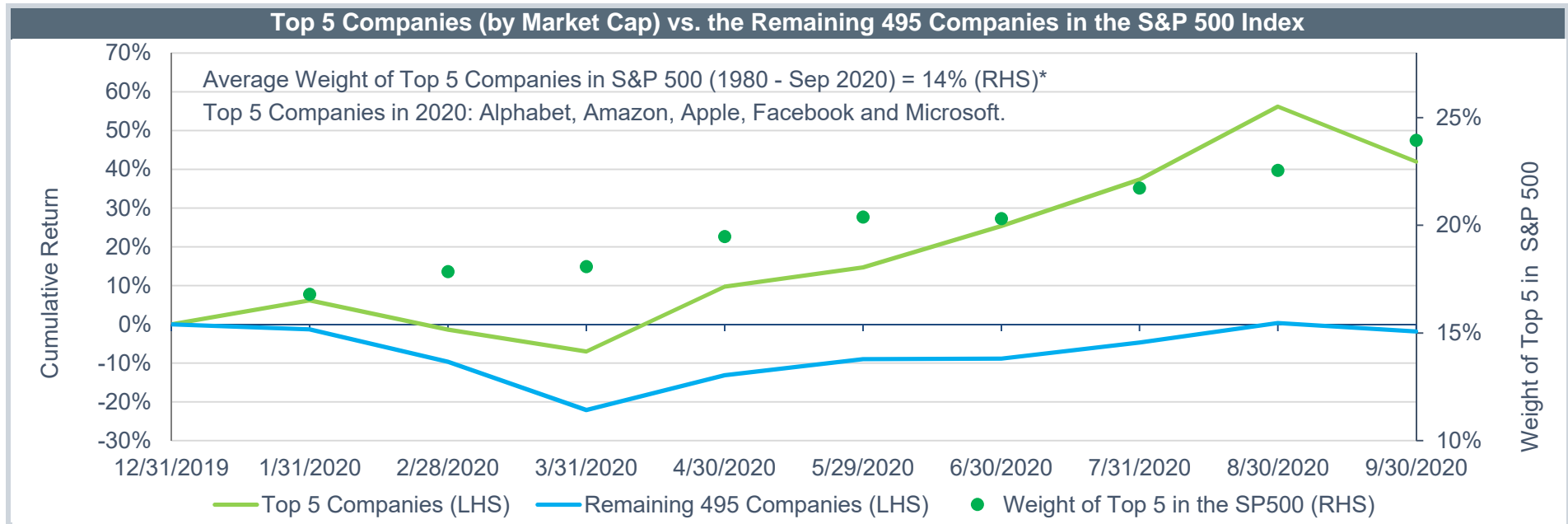
Extreme Pricing Conditions

As of September 30, 2020



Relative valuation ratios are based on historical P/E ratios using trailing 12-month EPS, courtesy of MSCI. Treasury yield data courtesy of Robert Shiller. Data use monthly periodicity. Sigma symbol represents standard deviation.





Top 5 Companies (by Market Cap) & the Combined Weight in S&P500

1980**	1989**	1999	2009	2019
IBM	Exxon	Microsoft	Exxon	Apple
AT&T	General Electric	General Electric	Microsoft	Microsoft
Exxon	IBM	Cisco	Apple	Alphabet
Standard Oil	AT&T	Wal-Mart	Johnson & Johnson	Amazon
Schlumberger	Royal Dutch	Exxon	Procter & Gamb	Facebook
19%	12%	17%	11%	17%

■ Communications
■ Cons. Staples
■ Health Care
■ Technology

■ Cons. Discr.
■ Energy
■ Industrials

*Source: Goldman Sachs Portfolio Strategy Research, "U.S. Kickstart" - April 24, 2020.

**Source: Visual History of the S&P 500 at <https://etfdb.com/history-of-the-s-and-p-500/> . The earliest data available is from Jan 1980.

Data courtesy of Bloomberg Professional Service except when noted. Cumulative returns are calculated assuming hypothetical portfolios consisting of the top 5 companies and of the remaining 495 companies; the weights for each hypothetical portfolio are adjusted based on the actual month end market cap. LHS and RHS refer to the left hand side axis and right hand side axis, respectively.



Third Quarter Review

Developed Markets

Developed international markets had a strong quarter, but remain in negative territory for the year. Growth stocks outperformed value while small outpaced large. The majority of developed market countries had positive returns for the quarter. Active management fared well, with developed equity focused managers beating the benchmark in the large and small cap universes.

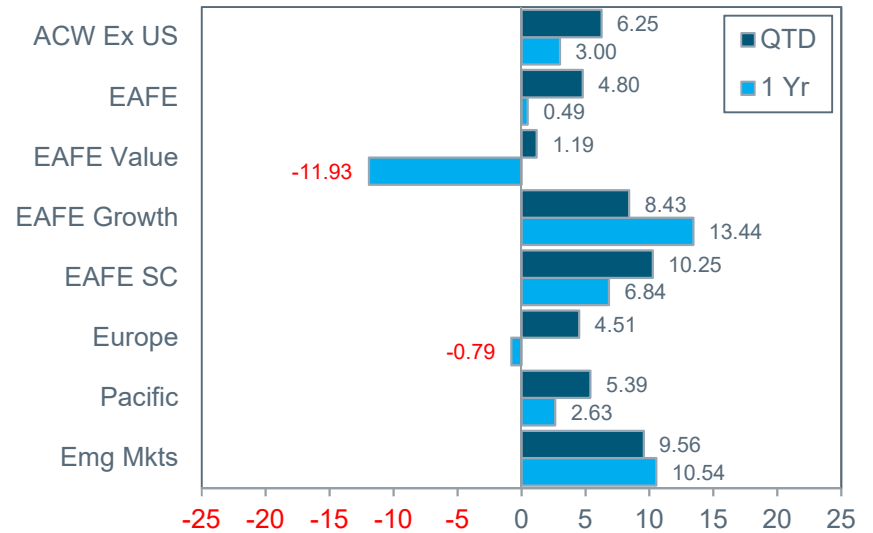
Emerging Markets

Emerging markets outpaced developed markets during Q3. Similar to other regions, value stocks underperformed growth. However, small cap stocks did outperform large within emerging markets. By region, Asia and the Middle East saw double digits returns while Latin America and Eastern Europe delivered negative returns.

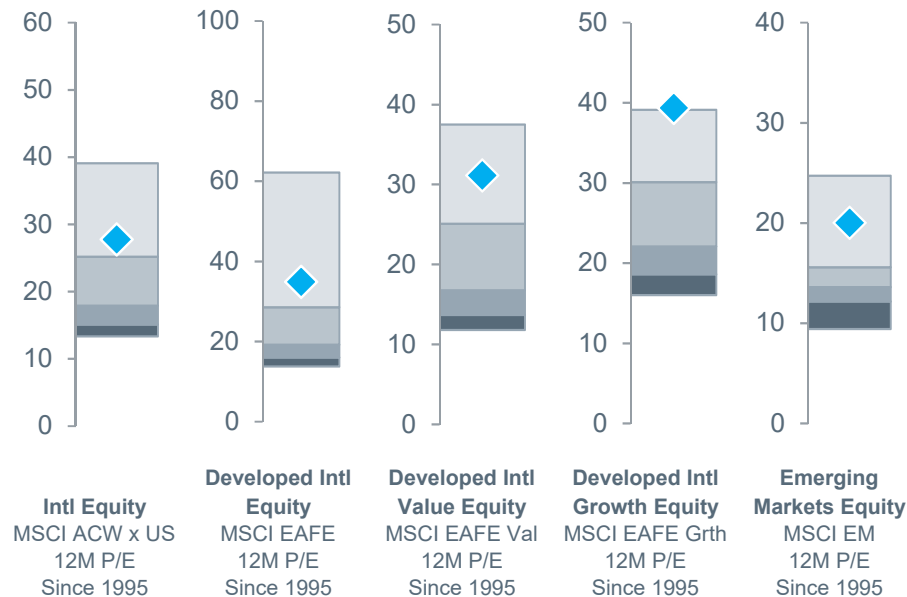
Market Cap & Style

In both developed international markets and emerging markets, value stocks continued to underperform growth, while small-cap stocks outperformed large-cap for the quarter.

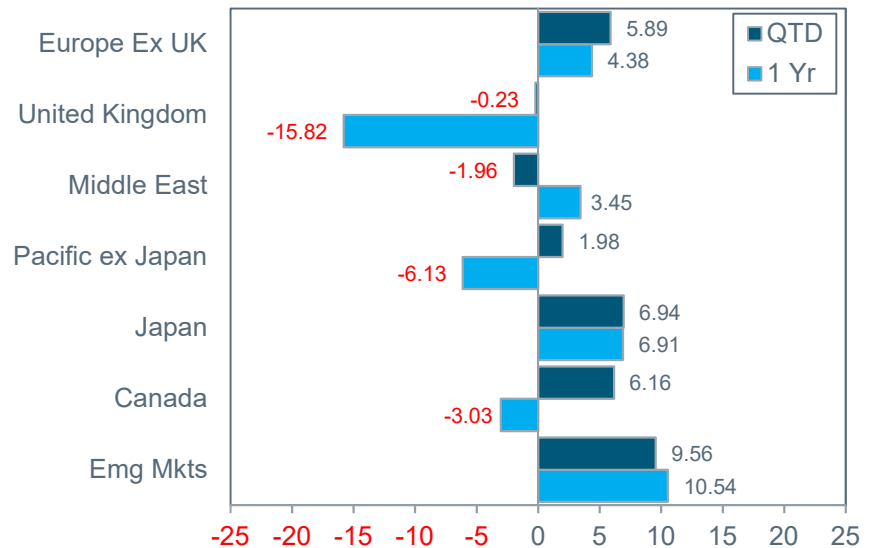
MSCI Style and Capitalization Market Performance (%)



Valuations



MSCI Region Performance (%)



Valuation data courtesy of Bloomberg Professional Service.

P/E metrics shown represent the 5th through 95th percentiles to minimize the effect of outliers.

All returns are shown net of foreign taxes on dividends.

Third Quarter Review

Broad Market

The Bloomberg US Aggregate Index returned a modest 0.6% in Q3, ending the quarter with a yield of just 1.2% as Treasury yields remained at historic lows. Although yields initially declined across the Treasury curve, longer-maturity yields rose again in August amid a record issuance of Treasury debt and the Fed's new policy announcement to shift to average inflation targeting resulting in a modest steepening of the curve.

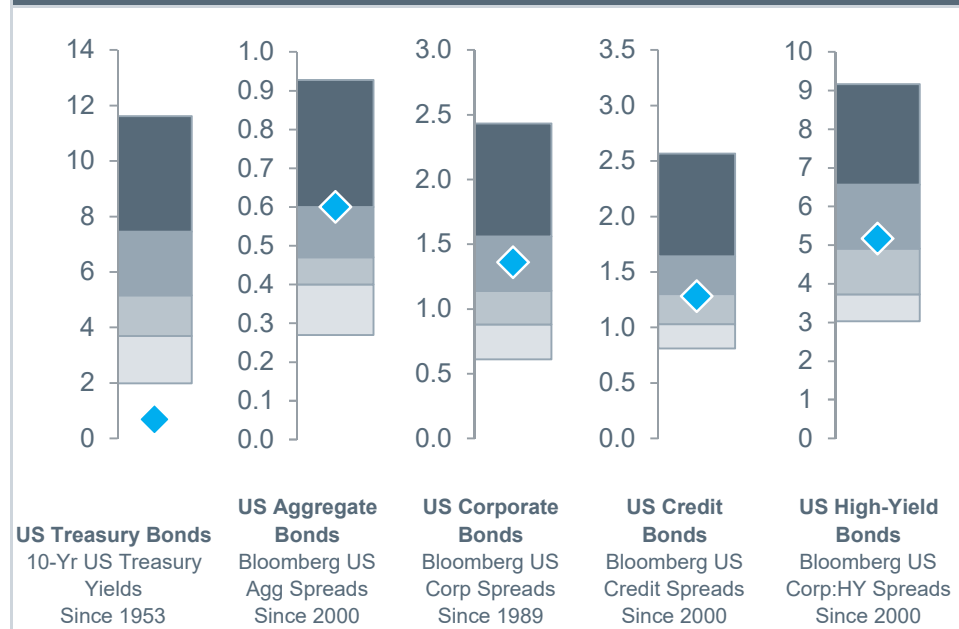
Credit Market

Credit markets extended their rally as the hunt for yield continued, and the Bloomberg US Corporate Investment Grade Index returned 1.5% in Q3 despite record-setting issuance.

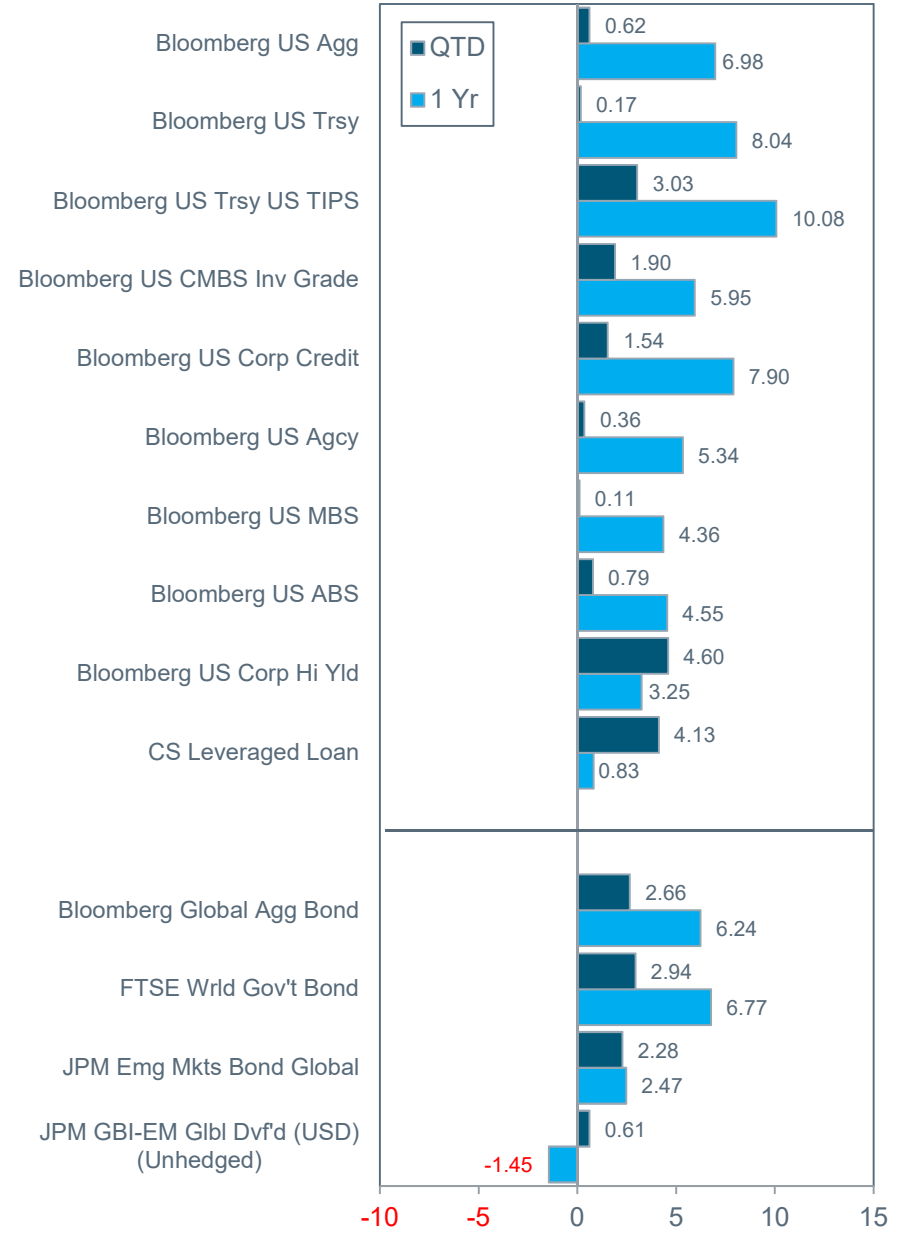
Emerging Market Debt

Emerging market debt also extended its rally, as the JPMorgan EMBI Global Diversified Index returned 2.3% in Q3 despite momentum slowing later in the quarter as uncertainty around the global economic recovery increased.

Valuations



Fixed Income Performance (%)



Valuation data courtesy of Bloomberg Professional Service. Valuations shown represent the 5th through 95th percentiles to minimize the effect of outliers.



Third Quarter Review - Absolute Return

General Market - Hedge Funds

Broad hedge fund benchmarks indicated that the industry protected capital relatively well during the heightened equity market volatility in September. The HFRI Fund Weighted Composite Index added to Q2 gains with a return of 4.1% in Q3, bringing the index return into positive territory YTD at 0.5%. Positive performance for the HFRI Hedged Equity and HFRI Event Driven indices helped contribute to the overall index returns.

General Market - Global Tactical Asset Allocation (GTAA)

GTAA strategies RVK follows closely generated positive returns in Q3 ranging from low to high single digits. As with past quarters, long-biased strategies reported mixed performance versus a static and less diversified blend of 60% US equity and 40% US fixed income. The value bias exhibited by some managers in emerging markets has caused them to lag peers. Strategies that have kept risk at relatively higher levels and favored US or other developed markets had a strong quarter with returns ranging from mid to high single digits.

Third Quarter Review - Real Assets

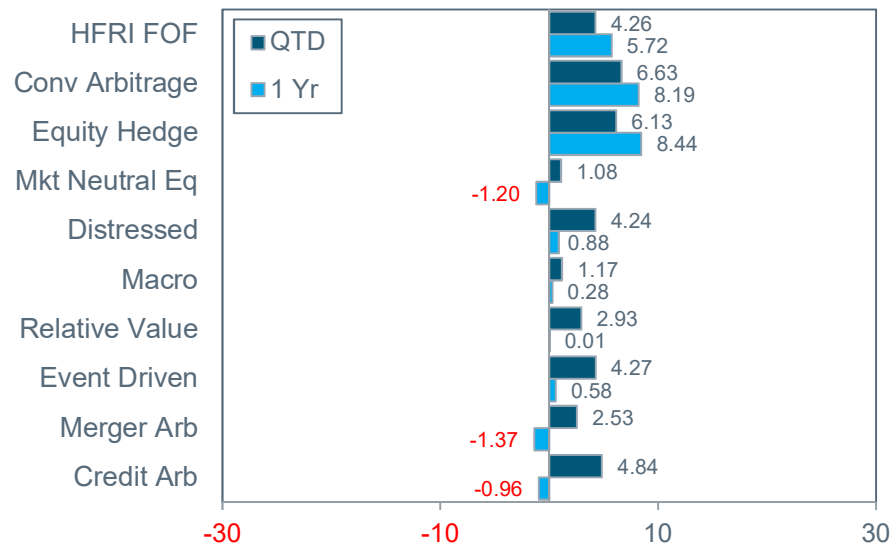
General Market - Diversified Inflation Strategies (DIS)

Performance for DIS managers that RVK follows closely largely saw positive absolute performance during Q3, with many strategies posting returns in the low single digits. Commodities and TIPS indices generally fared better than REITs, listed infrastructure, and global natural resource equities. Divergence across managers within the space was relatively limited when compared to the wide spread in results for the YTD period.

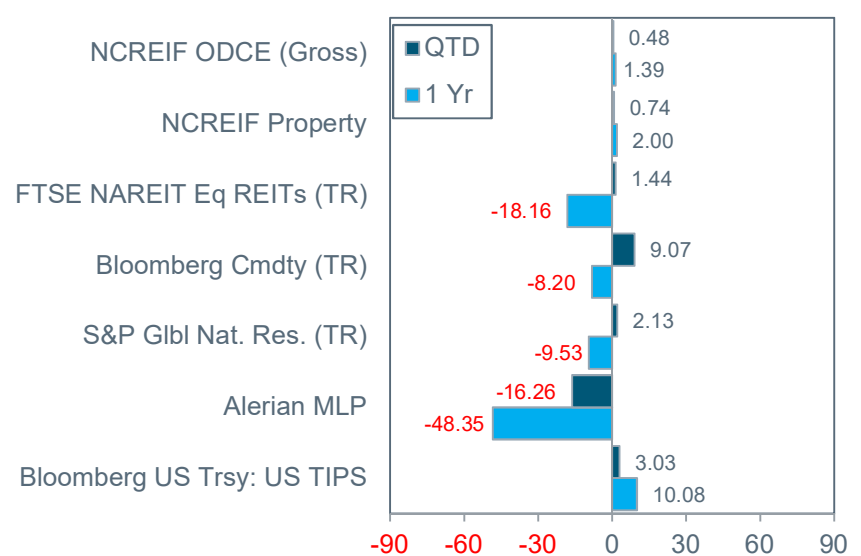
General Market - Real Estate

Core private real estate returned 0.5% during the third quarter, as reported by the NFI-ODCE Index, with the total return comprised of a positive contribution of 1.0% from income and a negative contribution of 0.5% from price appreciation. While the income component remained relatively healthy, price appreciation experienced a further decrease, albeit to a lesser degree relative to the prior quarter. Investors in publicly traded real estate outperformed their private market counterparts.

HFRI Hedge Fund Performance (%)



Real Asset Performance (%)



Annual Asset Class Performance

As of September 30, 2020

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	YTD
Best	35.03	39.38	8.44	78.51	27.94	22.49	20.00	38.82	30.14	15.02	21.31	37.28	8.35	31.49	14.20
	32.18	16.23	5.24	58.21	26.85	15.99	18.23	32.39	19.31	9.59	17.13	33.01	1.87	26.00	9.22
	26.34	15.97	2.06	46.78	22.04	13.56	18.06	29.30	13.69	3.20	11.96	25.03	0.01	25.53	6.79
	19.31	11.63	-2.35	31.78	18.88	8.29	17.32	22.78	12.50	1.38	11.77	21.83	-1.26	24.96	5.57
	18.37	11.17	-10.01	28.01	16.83	7.84	16.35	13.94	5.97	0.55	11.19	14.65	-2.08	22.01	3.38
	16.32	10.25	-21.37	27.17	16.36	4.98	16.00	8.96	4.89	0.05	9.27	13.79	-3.14	19.59	2.56
	15.79	6.97	-26.16	26.46	15.12	2.11	15.81	7.69	4.03	-0.27	8.77	10.71	-4.02	18.44	0.64
	15.26	6.60	-30.43	25.94	15.06	1.81	12.71	7.44	3.64	-0.81	8.52	7.77	-4.38	17.21	0.62
	11.86	5.86	-33.79	18.91	14.41	0.10	10.94	2.47	3.37	-1.44	6.67	7.62	-4.62	14.32	-0.11
	10.39	5.49	-35.65	11.47	10.16	-4.18	8.78	0.07	2.45	-1.99	4.68	7.50	-4.68	8.72	-1.16
	4.85	5.00	-37.00	11.41	7.75	-5.72	6.98	-2.02	0.04	-3.30	2.65	5.23	-11.01	8.43	-4.20
	4.34	1.87	-37.74	5.93	6.54	-12.14	4.79	-2.60	-2.19	-4.41	2.18	3.54	-11.25	8.39	-7.09
	2.72	1.45	-43.38	1.92	6.31	-13.32	4.21	-8.61	-4.90	-4.47	1.00	3.01	-13.79	7.69	-8.69
	2.07	-1.57	-47.01	0.21	5.70	-15.94	0.11	-8.83	-4.95	-14.92	0.51	1.70	-14.58	5.34	-12.08
Worst	0.49	-15.70	-53.33	-29.76	0.13	-18.42	-1.06	-9.52	-17.01	-24.66	0.33	0.86	-17.89	2.28	-17.54

VSTRS	S&P 500 - US Large Cap	R 2000 - US Small Cap	MSCI EAFE (Net) - Int'l Dev.	MSCI EAFE SC (Net) - Int'l SC	MSCI EM (Net) - Int'l Emg Mkts	Bloombrg US Agg Bond - FI	Bloombrg US Corp Hi Yield - FI	Bloombrg US Trsy US TIPS - FI	Bloombrg US Gov Credit Lng - FI	NCREIF ODCE (Gross) - Real Estate	FTSE NAREIT Eq REITs Index (TR)	HFRI FOF Comp Index - ARS	Bloombrg Cmdty (TR) - Commod.	ICE BofAML 3 Mo T-Bill - Cash Equiv
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NCREIF ODCE (Gross) performance is reported quarterly; performance is shown N/A in interim-quarter months.



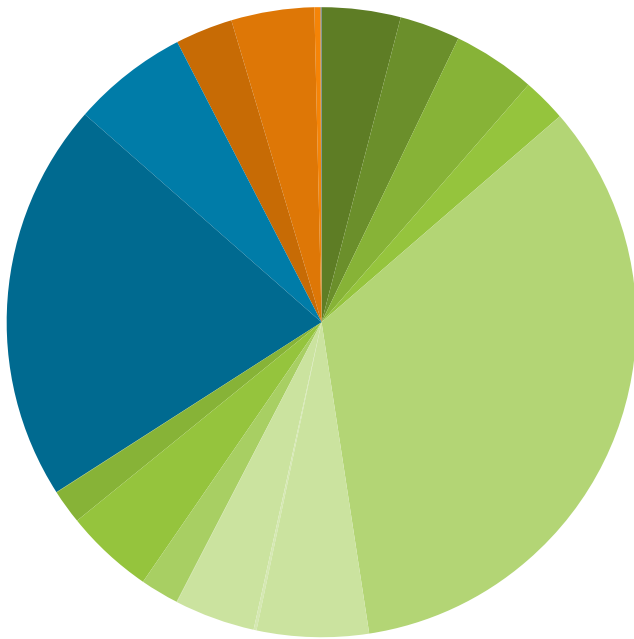
VSTRS



Vermont State Teachers' Retirement System
 Asset Allocation By Manager

As of September 30, 2020

September 30, 2020 : \$2,113,634,293



	Market Value (\$)	Allocation (%)
Blackrock S&P 500 (EqI Wtd) (CF)	85,535,242	4.05
Champlain US Mid Cap Core (SA)	65,685,871	3.11
SSgA Russell 2000 Growth (Ex Tobacco) (SA)	3,371	0.00
Acadian International All Cap (SA)	90,044,476	4.26
Mondrian International (SA)	47,619,968	2.25
Wellington Small Cap Value (SA)	1,089	0.00
SGA International Small Cap (CF)	23,898	0.00
BlackRock MSCI ACW IMI (CF)	716,668,930	33.91
Artisan Global Opportunities (CF)	121,241,163	5.74
PIMCO Liquidation (SA)	3,116,022	0.15
Wellington Opportunistic EMD (CF)	87,370,390	4.13
PIMCO Unconstrained (SA)	485,027	0.02
Private Debt	41,738,038	1.97
Private Equity	96,343,394	4.56
Non-Core Real Estate	37,231,274	1.76
Pinnacle Natural Resources (CF)	474,879	0.02
BlackRock US Agg (CF)	433,914,375	20.53
PIMCO Core Plus (SA)	126,043,910	5.96
BlackRock TIPS (CF)	62,351,570	2.95
UBS Trumbull Properties (CF)	90,104,431	4.26
Private Infrastructure/Land	6,523,978	0.31
JPM Cash Account (CF)	350	0.00
Vermont Cash (SA)	1,108,742	0.05
BlackRock Transition (SA)	3,904	0.00

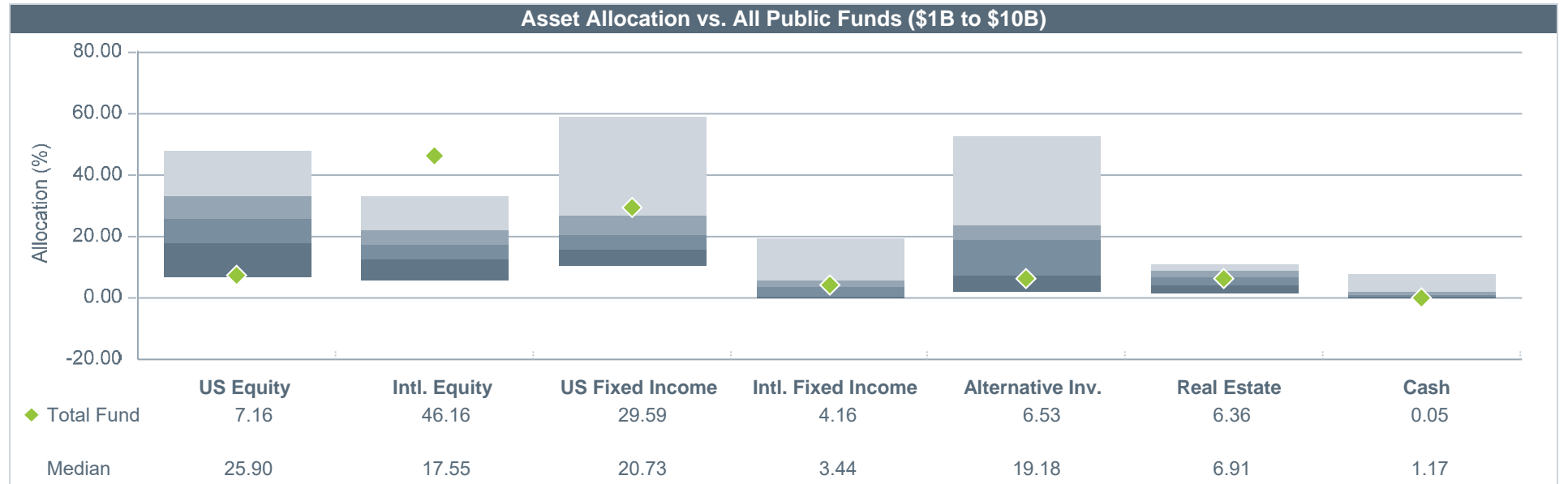
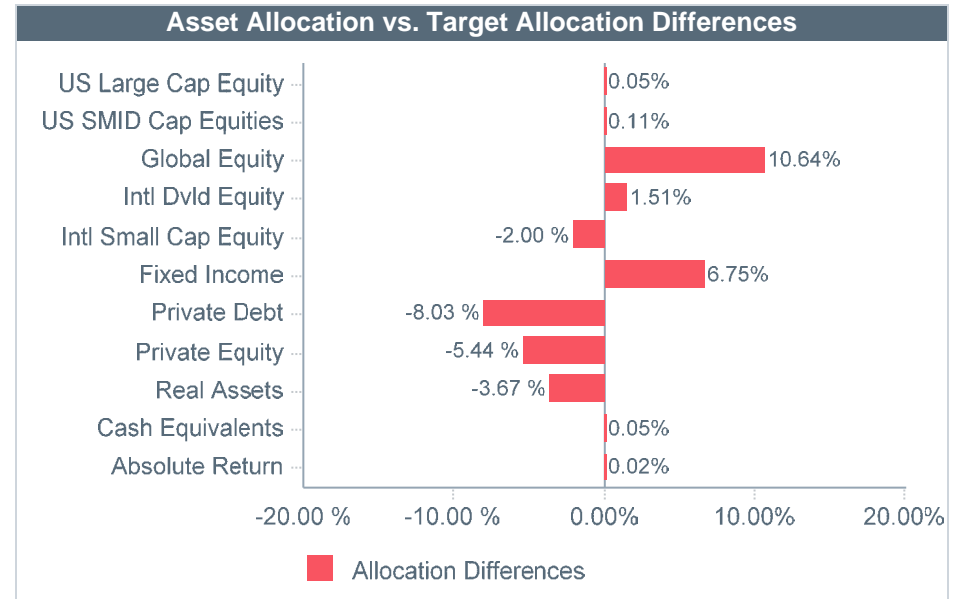
Allocations shown may not sum up to 100% exactly due to rounding. Market values for SGA International Small Cap (CF), Wellington Small Cap Value (SA), SSgA Russell 2000 Growth (SA), Pinnacle Natural Resources (CF) and PIMCO Unconstrained (SA) represent residual assets after liquidation. Angelo Gordon Direct Lending IV was funded during 09/2020.



Total Fund

Asset Allocation vs. Target and Plan Sponsor Peer Group

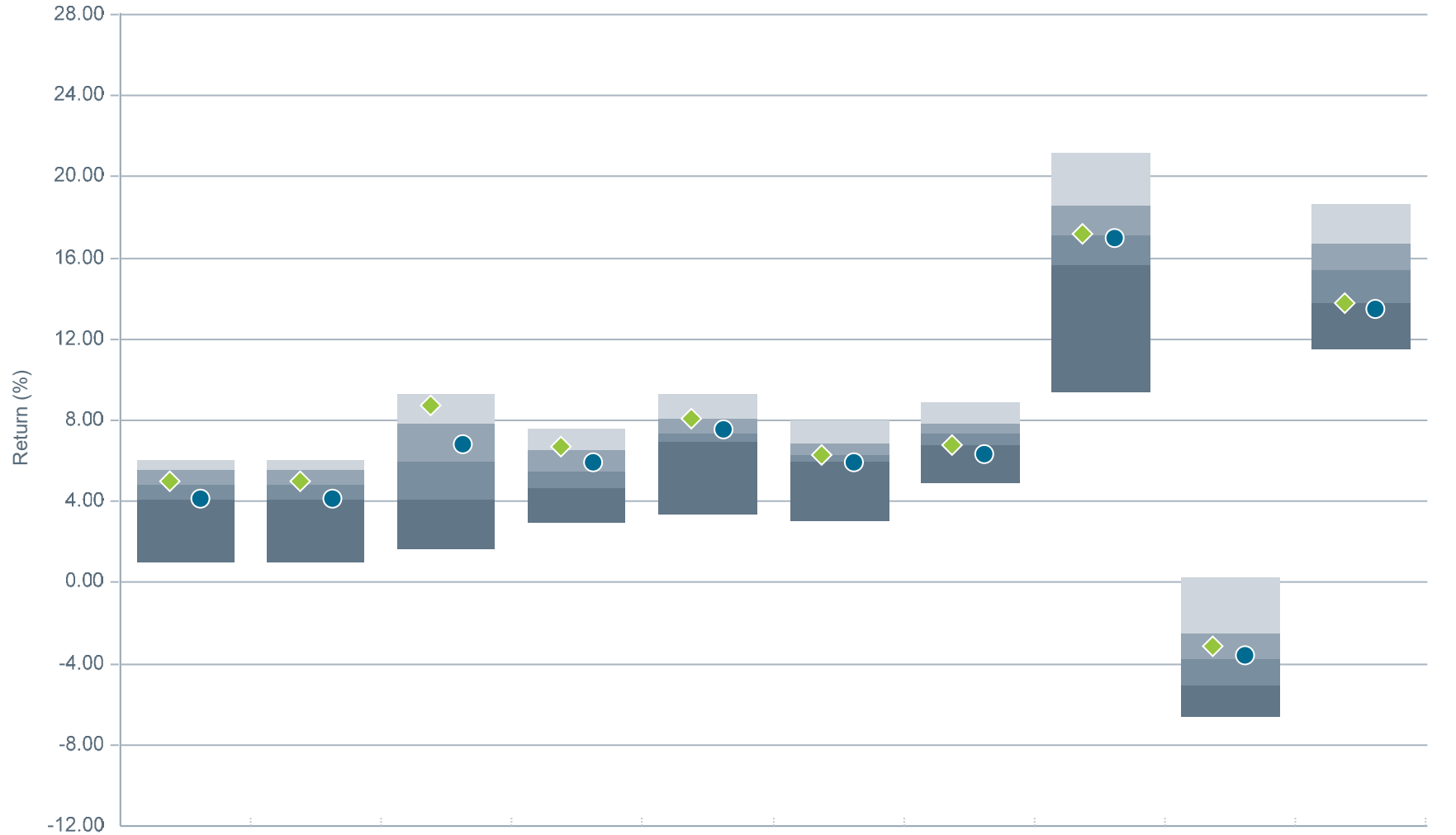
Asset Allocation vs. Target Allocation			
	Market Value (\$)	Allocation (%)	Target (%)
US Large Cap Equity	85,535,242	4.05	4.00
US SMID Cap Equities	65,690,331	3.11	3.00
Global Equity	837,910,093	39.64	29.00
Intl Dvld Equity	137,664,444	6.51	5.00
Intl Small Cap Equity	23,898	0.00	2.00
Fixed Income	713,281,294	33.75	27.00
Private Debt	41,738,038	1.97	10.00
Private Equity	96,343,394	4.56	10.00
Real Assets	133,860,034	6.33	10.00
Cash Equivalents	1,112,646	0.05	0.00
Absolute Return	474,879	0.02	0.00
Total Fund	2,113,634,293	100.00	100.00



Parentheses contain percentile ranks. Allocations shown may not sum up to 100% exactly due to rounding. In bottom chart, International Equity includes Global Equity.

Vermont State Teachers' Retirement System
 All Public Plans (\$1B to \$10B) (Custom PG)
 Plan Sponsor Peer Group Analysis

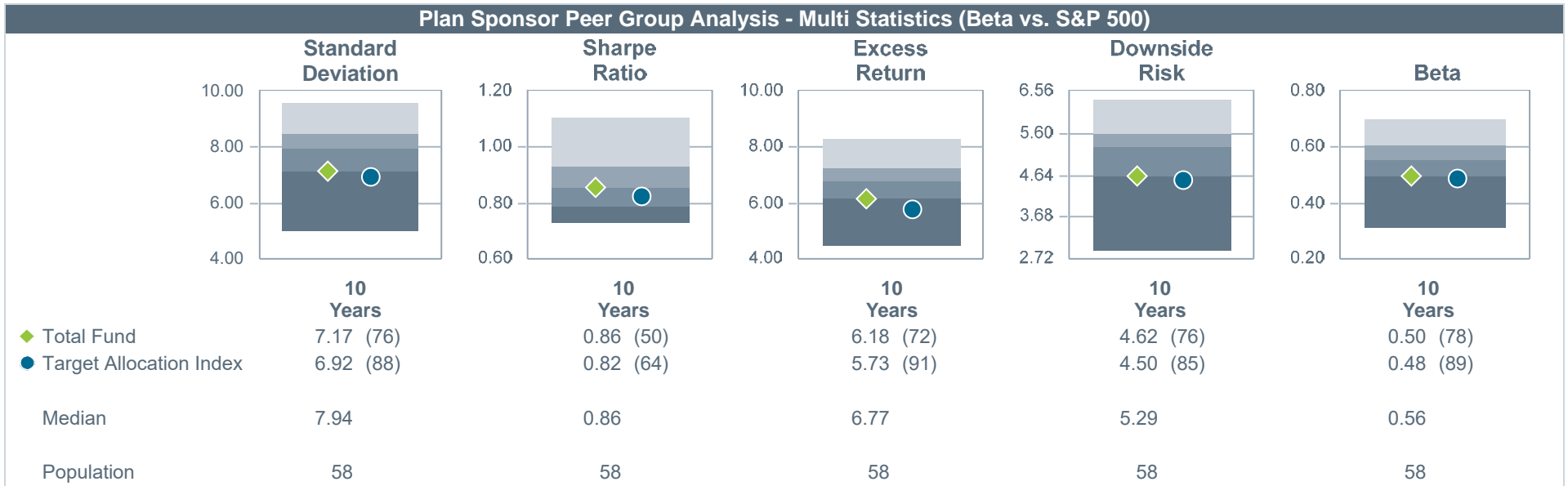
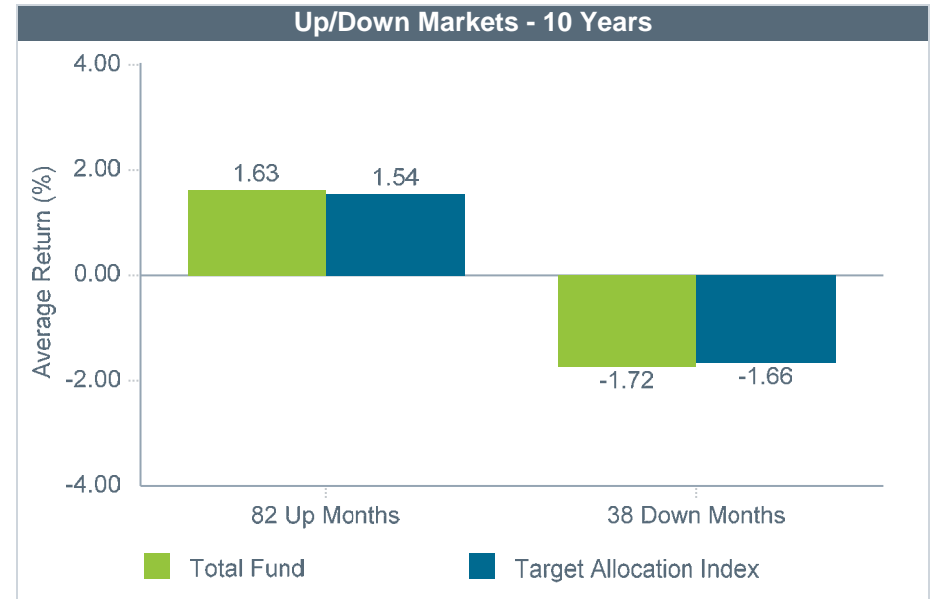
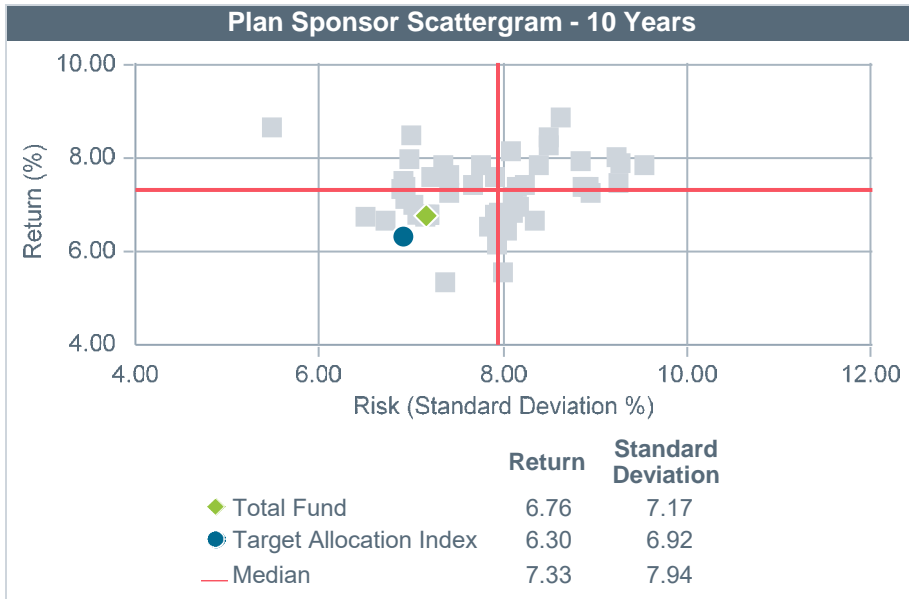
As of September 30, 2020



	QTD	FYTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017
◆ Total Fund	5.02 (49)	5.02 (49)	8.74 (13)	6.67 (18)	8.10 (24)	6.29 (48)	6.76 (71)	17.21 (46)	-3.14 (39)	13.79 (75)
● Target Allocation Index	4.13 (74)	4.13 (74)	6.77 (42)	5.88 (34)	7.47 (47)	5.92 (78)	6.30 (91)	16.91 (52)	-3.63 (47)	13.43 (81)
Median	4.83	4.83	5.93	5.44	7.37	6.28	7.33	17.08	-3.80	15.39
Population	65	65	65	65	64	64	58	72	50	19

Performance shown is net of fees. Parentheses contain percentile ranks.





Performance shown is net of fees. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

Vermont State Teachers' Retirement System
 Asset Allocation & Performance - Net of Fees

As of September 30, 2020

	Allocation		Performance (%)									
	Market Value (\$)	Actual (%)	QTD	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	2019	Since Incep.	Inception Date
Total Fund	2,113,634,293	100.00	5.02	5.02	8.74	6.67	8.10	6.76	5.68	17.21	5.80	07/01/2005
Target Allocation Index			4.13	4.13	6.77	5.88	7.47	6.30	5.69	16.91	5.84	
Difference			0.89	0.89	1.97	0.79	0.63	0.46	-0.01	0.30	-0.04	
Actual Allocation Index			4.28	4.28	6.32	5.42	7.21	6.10	5.39	17.11	5.55	
Difference			0.74	0.74	2.42	1.25	0.89	0.66	0.29	0.10	0.25	
Growth Assets	1,393,583,032	65.93	-	-	-	-	-	-	-	-	-1.47	09/01/2020
MSCI ACW IM Index (USD) (Net)			8.11	8.11	9.57	6.47	9.97	8.47	6.52	26.35	-3.10	
Difference			-	-	-	-	-	-	-	-	1.63	
Downturn Hedging Assets	559,958,285	26.49	-	-	-	-	-	-	-	-	-0.01	09/01/2020
Bloomberg US Agg Bond Index			0.62	0.62	6.98	5.24	4.18	3.64	4.48	8.72	-0.05	
Difference			-	-	-	-	-	-	-	-	0.04	
Inflation Hedging Assets	158,980,330	7.52	-	-	-	-	-	-	-	-	-0.14	09/01/2020
Consumer Price Index+5%			2.20	2.20	6.44	6.87	6.90	6.86	6.90	7.40	0.55	
Difference			-	-	-	-	-	-	-	-	-0.69	

Performance shown is net of fees. Allocations shown may not sum up to 100% exactly due to rounding. Manager inception dates shown represent the first full month of available performance. Fiscal year ends 6/30. Please see addendum for custom benchmark definitions. Private Asset market values, performance and benchmarks are valued quarterly and shown as of most recently available quarter end, adjusted for subsequent cash flows. Interim periods assume a 0% return.



Vermont State Teachers' Retirement System
Asset Allocation & Performance - Net of Fees

As of September 30, 2020

	Allocation			Performance (%)									
	Market Value (\$)	Actual (%)	Policy (%)	QTD	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	2019	Since Incep.	Inception Date
Total Fund	2,113,634,293	100.00	100.00	5.02	5.02	8.74	6.67	8.10	6.76	5.68	17.21	5.80	07/01/2005
Target Allocation Index				4.13	4.13	6.77	5.88	7.47	6.30	5.69	16.91	5.84	
Difference				0.89	0.89	1.97	0.79	0.63	0.46	-0.01	0.30	-0.04	
Actual Allocation Index				4.28	4.28	6.32	5.42	7.21	6.10	5.39	17.11	5.55	
Difference				0.74	0.74	2.42	1.25	0.89	0.66	0.29	0.10	0.25	
All Public Plans (\$1B to \$10B)				4.83	4.83	5.93	5.44	7.36	7.36	5.86	17.08	6.02	
Rank				49	49	14	18	24	73	73	46	76	
Domestic Equity	151,225,573	7.15	7.00	6.84	6.84	6.61	7.83	11.24	-	-	24.22	11.28	01/01/2011
Russell 3000 Index				9.21	9.21	15.00	11.65	13.69	13.48	9.13	31.02	12.58	
Difference				-2.37	-2.37	-8.39	-3.82	-2.45	-	-	-6.80	-1.30	
US Large Cap Equity	85,535,242	4.05	4.00	6.77	6.77	2.59	5.75	10.05	11.71	8.28	22.55	8.36	07/01/2005
S&P 500 Index (Cap Wtd)				8.93	8.93	15.15	12.28	14.15	13.74	9.19	31.49	9.29	
Difference				-2.16	-2.16	-12.56	-6.53	-4.10	-2.03	-0.91	-8.94	-0.93	
Blackrock S&P 500 (Eq Wtd) (CF)	85,535,242	4.05	-	6.77	6.77	2.58	-	-	-	-	-	4.02	06/01/2019
S&P 500 Index (Eq Wtd)				6.75	6.75	2.50	6.49	10.27	12.03	8.92	29.24	8.19	
Difference				0.02	0.02	0.08	-	-	-	-	-	-4.17	
IM U.S. Large Cap Equity (MF) Median				8.90	8.90	14.43	11.39	12.86	12.51	8.58	30.00	17.21	
Rank				69	69	71	-	-	-	-	-	83	
US SMID Cap Equities	65,690,331	3.11	3.00	6.94	6.94	11.75	11.47	13.20	13.26	9.18	27.30	9.27	07/01/2005
Russell 2500 Index				5.88	5.88	2.22	4.45	8.97	10.81	7.92	27.77	8.12	
Difference				1.06	1.06	9.53	7.02	4.23	2.45	1.26	-0.47	1.15	
Champlain US Mid Cap Core (SA)	65,685,871	3.11	-	6.94	6.94	11.74	11.63	14.58	13.90	-	27.29	14.04	10/01/2009
Custom SMID Cap Equity Index				5.41	5.41	1.31	3.11	8.83	10.54	7.74	26.65	11.02	
Difference				1.53	1.53	10.43	8.52	5.75	3.36	-	0.64	3.02	
IM U.S. SMID Cap Equity (MF) Median				6.34	6.34	3.82	4.65	9.03	10.41	7.97	27.58	11.26	
Rank				45	45	38	33	26	23	-	54	27	
Global Equity	837,910,093	39.64	29.00	9.03	9.03	13.75	-	-	-	-	26.57	1.88	02/01/2018
MSCI ACW IM Index (USD) (Net)				8.11	8.11	9.57	6.47	9.97	8.47	6.52	26.35	3.04	
Difference				0.92	0.92	4.18	-	-	-	-	0.22	-1.16	

Performance shown is net of fees. Allocations shown may not sum up to 100% exactly due to rounding. Manager inception dates shown represent the first full month of available performance. Fiscal year ends 6/30. Please see addendum for custom benchmark definitions. Private Asset market values, performance and benchmarks are valued quarterly and shown as of most recently available quarter end, adjusted for subsequent cash flows. Interim periods assume a 0% return.

Vermont State Teachers' Retirement System
Asset Allocation & Performance - Net of Fees

As of September 30, 2020

	Allocation			Performance (%)									
	Market Value (\$)	Actual (%)	Policy (%)	QTD	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	2019	Since Incep.	Inception Date
BlackRock MSCI ACW IMI (CF)	716,668,930	33.91	-	8.15	8.15	10.01	-	-	-	-	-	7.85	07/01/2019
MSCI ACW IM Index (USD) (Net)				8.11	8.11	9.57	6.47	9.97	8.47	6.52	26.35	7.43	
Difference				0.04	0.04	0.44	-	-	-	-	-	0.42	
IM Global Equity (MF) Median				7.64	7.64	9.35	5.34	8.49	8.25	6.25	26.37	6.76	
Rank				45	45	49	-	-	-	-	-	47	
Artisan Global Opportunities (CF)	121,241,163	5.74	-	14.16	14.16	39.19	-	-	-	-	36.05	18.80	06/01/2018
MSCI ACW IM Index (USD) (Net)				8.11	8.11	9.57	6.47	9.97	8.47	6.52	26.35	5.65	
Difference				6.05	6.05	29.62	-	-	-	-	9.70	13.15	
IM Global Equity (MF) Median				7.64	7.64	9.35	5.34	8.49	8.25	6.25	26.37	5.10	
Rank				11	11	10	-	-	-	-	6	7	
International Equity	137,688,342	6.51	7.00	6.12	6.12	-0.60	-0.95	5.86	-	-	19.31	3.53	01/01/2011
MSCI EAFE Index (USD) (Net)				4.80	4.80	0.49	0.62	5.26	4.62	3.73	22.01	4.05	
Difference				1.32	1.32	-1.09	-1.57	0.60	-	-	-2.70	-0.52	
Acadian International All Cap (SA)	90,044,476	4.26	-	8.94	8.94	6.54	0.81	8.66	7.02	-	18.21	5.19	11/01/2005
MSCI EAFE IM Index (USD) (Net)				5.56	5.56	1.38	0.73	5.55	4.97	4.03	22.44	4.24	
Difference				3.38	3.38	5.16	0.08	3.11	2.05	-	-4.23	0.95	
IM All EAFE (MF) Median				5.59	5.59	1.19	0.34	4.78	4.45	3.64	21.59	3.90	
Rank				11	11	31	43	11	13	-	78	21	
Mondrian International (SA)	47,619,968	2.25	-	1.09	1.09	-10.23	-4.06	2.29	3.38	3.19	19.29	3.73	07/01/2005
MSCI EAFE Index (USD) (Net)				4.80	4.80	0.49	0.62	5.26	4.62	3.73	22.01	4.34	
Difference				-3.71	-3.71	-10.72	-4.68	-2.97	-1.24	-0.54	-2.72	-0.61	
IM All EAFE (MF) Median				5.59	5.59	1.19	0.34	4.78	4.45	3.64	21.59	4.27	
Rank				100	100	95	84	81	76	61	69	64	
Fixed Income	713,281,294	33.75	27.00	1.20	1.20	7.20	5.12	5.53	-	-	9.25	4.78	01/01/2011
Bloomberg US Agg Bond Index				0.62	0.62	6.98	5.24	4.18	3.64	4.48	8.72	3.87	
Difference				0.58	0.58	0.22	-0.12	1.35	-	-	0.53	0.91	
Core/Core Plus Fixed Income	559,958,285	26.49	0.00	-	-	-	-	-	-	-	-	-0.01	09/01/2020
Bloomberg US Agg Bond Index				0.62	0.62	6.98	5.24	4.18	3.64	4.48	8.72	-0.05	
Difference				-	-	-	-	-	-	-	-	0.04	

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Vermont State Teachers' Retirement System
Asset Allocation & Performance - Net of Fees

As of September 30, 2020

	Allocation			Performance (%)									
	Market Value (\$)	Actual (%)	Policy (%)	QTD	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	2019	Since Incep.	Inception Date
BlackRock US Agg (CF)	433,914,375	20.53	-	0.62	0.62	6.97	-	-	-	-	-	7.69	06/01/2019
Bloomberg US Agg Bond Index				0.62	0.62	6.98	5.24	4.18	3.64	4.48	8.72	7.99	
Difference				0.00	0.00	-0.01	-	-	-	-	-	-0.30	
IM U.S. Broad Mkt Core FI (MF)				1.19	1.19	6.96	5.03	4.16	3.65	4.35	8.76	7.94	
Rank				88	88	50	-	-	-	-	-	61	
PIMCO Core Plus (SA)	126,043,910	5.96	-	1.61	1.61	8.25	5.29	4.54	3.81	-	8.30	4.48	10/01/2009
Bloomberg US Agg Bond Index				0.62	0.62	6.98	5.24	4.18	3.64	4.48	8.72	4.04	
Difference				0.99	0.99	1.27	0.05	0.36	0.17	-	-0.42	0.44	
IM U.S. Broad Mkt Core+ FI (MF)				1.64	1.64	6.82	5.02	4.61	4.05	4.90	9.32	4.64	
Rank				53	53	21	36	53	64	-	73	62	
TIPS	62,351,570	2.95	0.00	-	-	-	-	-	-	-	-	-0.36	09/01/2020
Bloomberg US Trsy US TIPS Index				3.03	3.03	10.08	5.79	4.61	3.57	4.21	8.43	-0.37	
Difference				-	-	-	-	-	-	-	-	0.01	
BlackRock TIPS (CF)	62,351,570	2.95	-	3.04	3.04	10.04	5.71	4.57	3.50	-	8.33	3.68	12/01/2009
Bloomberg US Trsy US TIPS Index				3.03	3.03	10.08	5.79	4.61	3.57	4.21	8.43	3.73	
Difference				0.01	0.01	-0.04	-0.08	-0.04	-0.07	-	-0.10	-0.05	
IM U.S. TIPS (MF) Median				3.01	3.01	8.47	4.75	3.84	2.77	3.48	7.53	2.98	
Rank				48	48	21	19	15	7	-	25	11	
Emerging Markets Debt	87,370,390	4.13	0.00	-	-	-	-	-	-	-	-	-1.84	09/01/2020
JPM Emg Mkts Bond Gbl Index (USD)				2.28	2.28	2.47	3.27	6.03	5.21	6.52	14.42	-1.65	
Difference				-	-	-	-	-	-	-	-	-0.19	
Wellington Opportunistic EMD (CF)	87,370,390	4.13	-	2.49	2.49	3.94	3.59	6.98	5.65	-	15.84	6.52	12/01/2009
JPM Emg Mkts Bond Gbl Index (USD)				2.28	2.28	2.47	3.27	6.03	5.21	6.52	14.42	6.12	
Difference				0.21	0.21	1.47	0.32	0.95	0.44	-	1.42	0.40	
IM Emerging Markets Debt (MF) Median				2.31	2.31	1.44	2.14	5.41	4.02	5.48	13.58	4.97	
Rank				48	48	10	12	3	3	-	9	4	
High Yield Fixed Income	3,116,022	0.15	0.00	5.68	5.68	-1.92	-0.02	3.48	4.87	-	6.31	5.69	06/01/2006
Bloomberg US Corp Hi Yld Index				4.60	4.60	3.25	4.21	6.79	6.47	7.10	14.32	7.13	
Difference				1.08	1.08	-5.17	-4.23	-3.31	-1.60	-	-8.01	-1.44	

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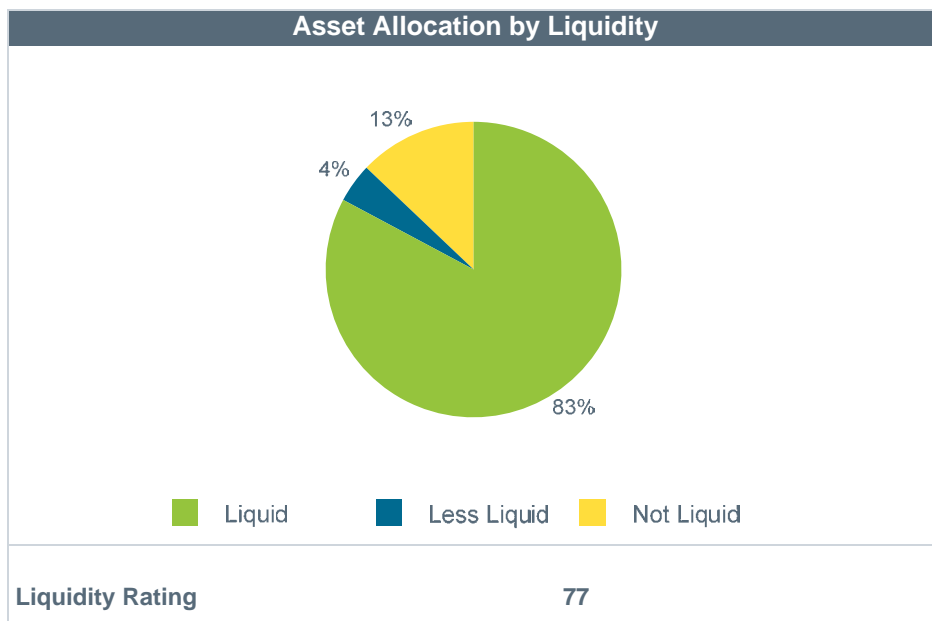
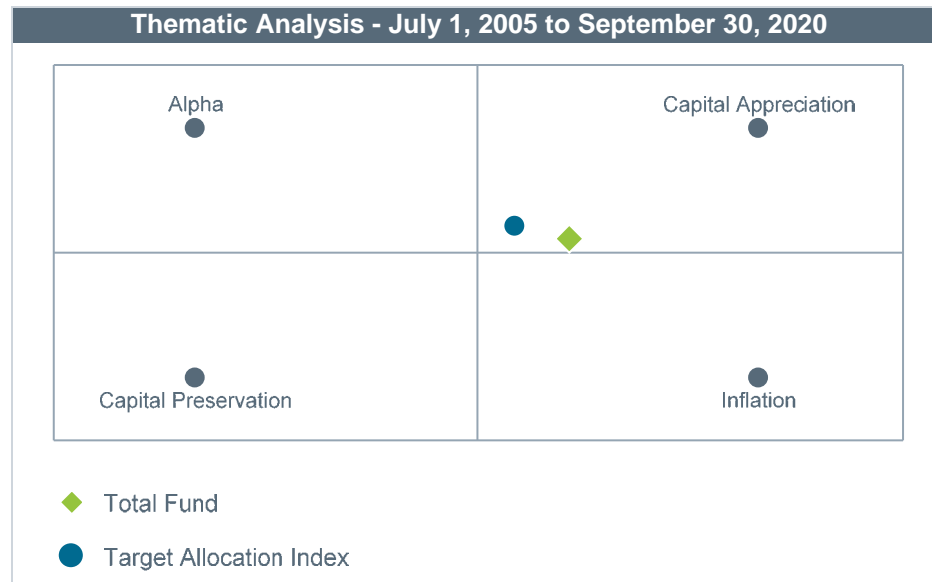
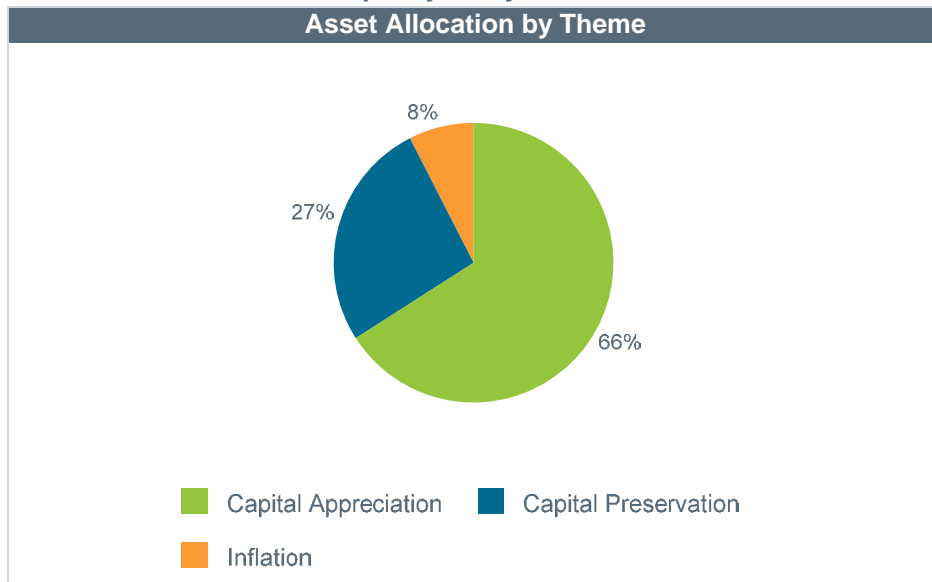
Vermont State Teachers' Retirement System
Asset Allocation & Performance - Net of Fees

As of September 30, 2020

	Allocation			Performance (%)									
	Market Value (\$)	Actual (%)	Policy (%)	QTD	FYTD	1 Year	3 Years	5 Years	10 Years	15 Years	2019	Since Incep.	Inception Date
PIMCO Liquidation (SA)	3,116,022	0.15	-	5.68	5.68	-1.93	-	-	-	-	6.31	-0.79	08/01/2018
Bloomberg US Corp Hi Yld Index				4.60	4.60	3.25	4.21	6.79	6.47	7.10	14.32	5.04	
Difference				1.08	1.08	-5.18	-	-	-	-	-8.01	-5.83	
IM U.S. High Yield Bonds (MF) Median				4.50	4.50	1.89	3.08	5.31	5.37	5.80	13.51	3.77	
Rank				9	9	94	-	-	-	-	99	99	
Private Debt	41,738,038	1.97	10.00	7.02	7.02	2.67	-	-	-	-	7.55	4.82	01/01/2018
S&P/LSTA Lvg'd Loan Index				4.14	4.14	1.06	3.10	4.01	4.26	4.44	8.64	2.98	
Difference				2.88	2.88	1.61	-	-	-	-	-1.09	1.84	
Private Equity	96,343,394	4.56	10.00	12.90	12.90	13.98	17.28	16.07	-	-	22.34	15.47	01/01/2013
Cambridge US Prvt Eq Index				0.00	0.00	2.08	9.09	10.65	12.50	11.68	13.85	11.70	
Difference				12.90	12.90	11.90	8.19	5.42	-	-	8.49	3.77	
Real Assets	133,860,034	6.33	10.00	-3.15	-3.15	-2.20	1.68	4.08	-	-	-1.83	9.02	01/01/2011
NCREIF Property Index				0.74	0.74	2.00	5.11	6.28	9.37	7.44	6.42	9.11	
Difference				-3.89	-3.89	-4.20	-3.43	-2.20	-	-	-8.25	-0.09	
Core Real Estate	90,104,781	4.26	0.00	-2.43	-2.43	-1.20	1.17	3.52	-	-	-2.64	8.78	01/01/2011
NCREIF ODCE Index (AWA) (Net)				0.27	0.27	0.52	4.25	5.69	9.26	5.71	4.39	8.99	
Difference				-2.70	-2.70	-1.72	-3.08	-2.17	-	-	-7.03	-0.21	
UBS Trumbull Properties (CF)	90,104,431	4.26	-	-2.43	-2.43	-1.06	1.22	3.44	7.03	5.33	-2.51	5.47	07/01/2005
NCREIF ODCE Index (AWA) (Net)				0.27	0.27	0.52	4.25	5.69	9.26	5.71	4.39	5.94	
Difference				-2.70	-2.70	-1.58	-3.03	-2.25	-2.23	-0.38	-6.90	-0.47	
Non-Core Real Estate	37,231,274	1.76	0.00	-5.05	-5.05	-4.54	4.78	7.65	-	-	0.83	8.34	09/01/2014
NCREIF Property Index				0.74	0.74	2.00	5.11	6.28	9.37	7.44	6.42	7.80	
Difference				-5.79	-5.79	-6.54	-0.33	1.37	-	-	-5.59	0.54	
Private Infrastructure/Land	6,523,978	0.31	0.00	-	-	-	-	-	-	-	-	0.00	08/01/2020
NCREIF Farmland Index (TR)				0.96	0.96	3.84	5.33	6.13	10.85	12.84	4.81	0.96	
Difference				-	-	-	-	-	-	-	-	-0.96	
Cash Equivalents	1,112,646	0.05	0.00	0.00	0.00	0.66	0.50	0.30	-	-	1.06	0.18	01/01/2011
ICE BofAML 3 Mo US T-Bill Index				0.04	0.04	1.10	1.69	1.20	0.64	1.29	2.28	0.65	
Difference				-0.04	-0.04	-0.44	-1.19	-0.90	-	-	-1.22	-0.47	

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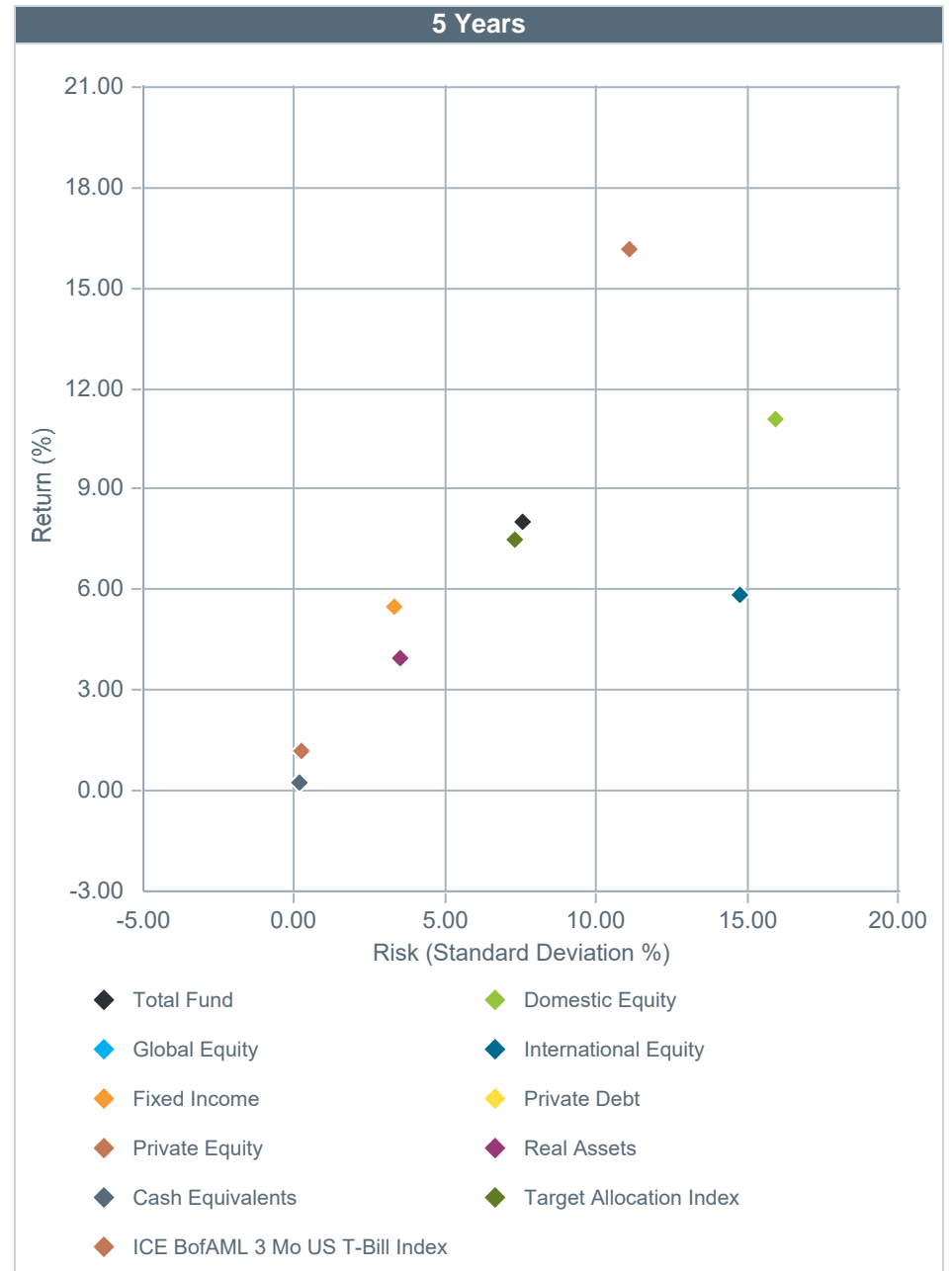
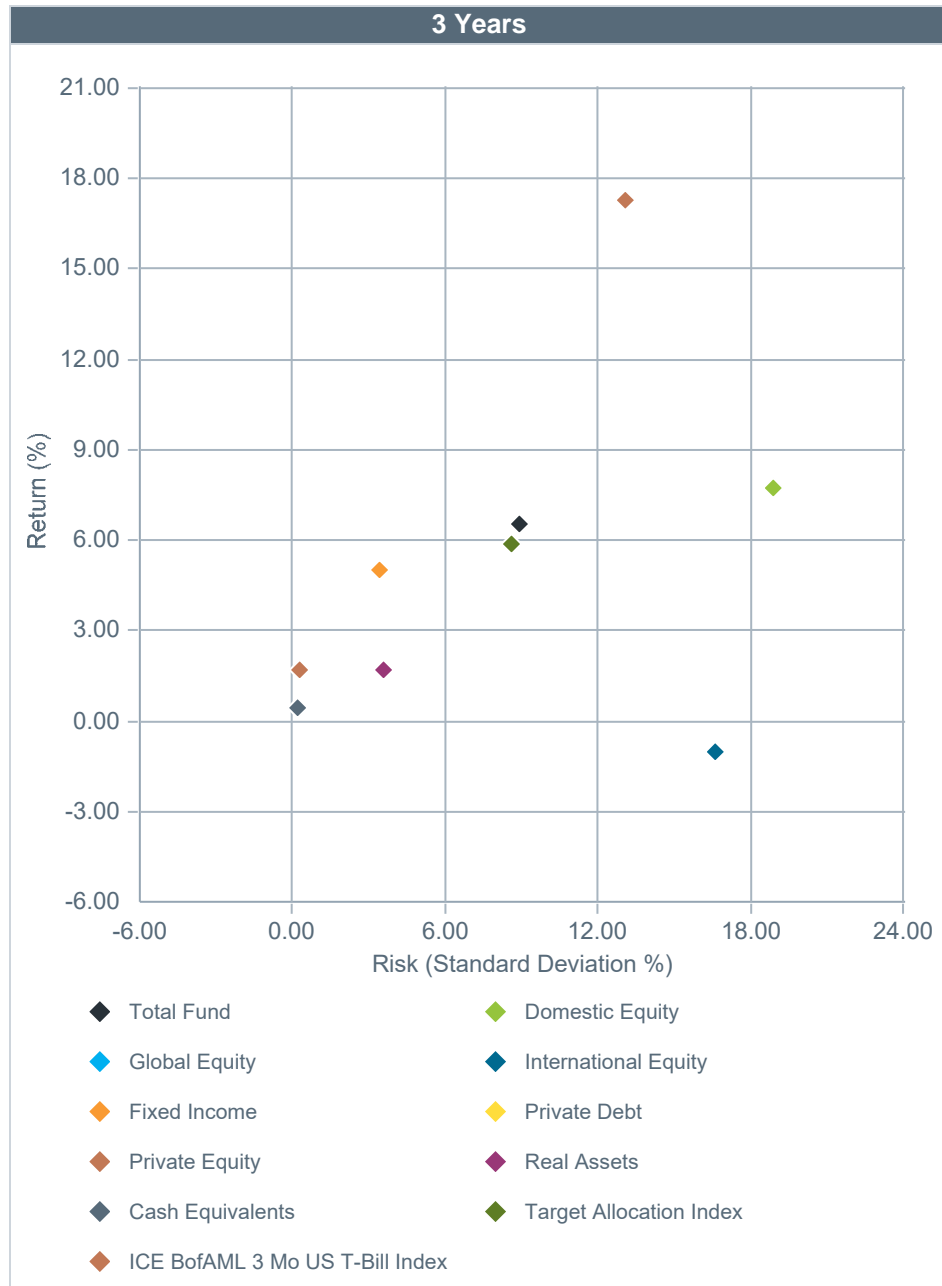
Correlation Matrix - 10 Years

	A	B	C	D
A	1.00			
B	0.71	1.00		
C	-0.29	-0.42	1.00	
D	0.60	0.79	-0.12	1.00

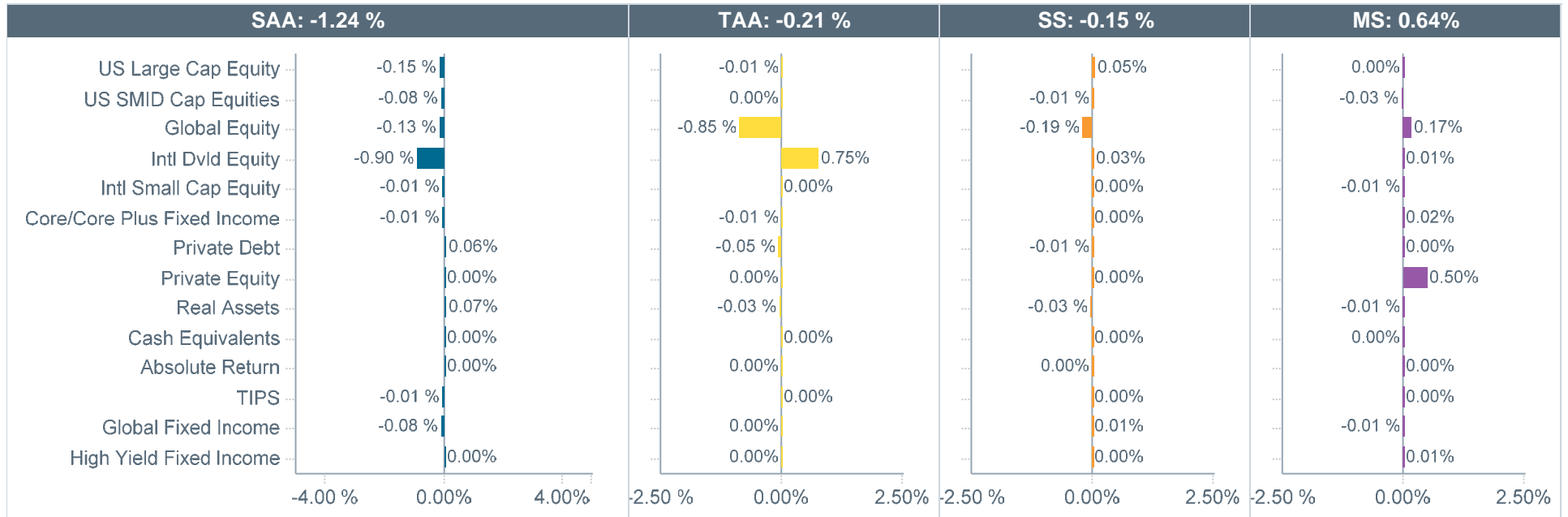
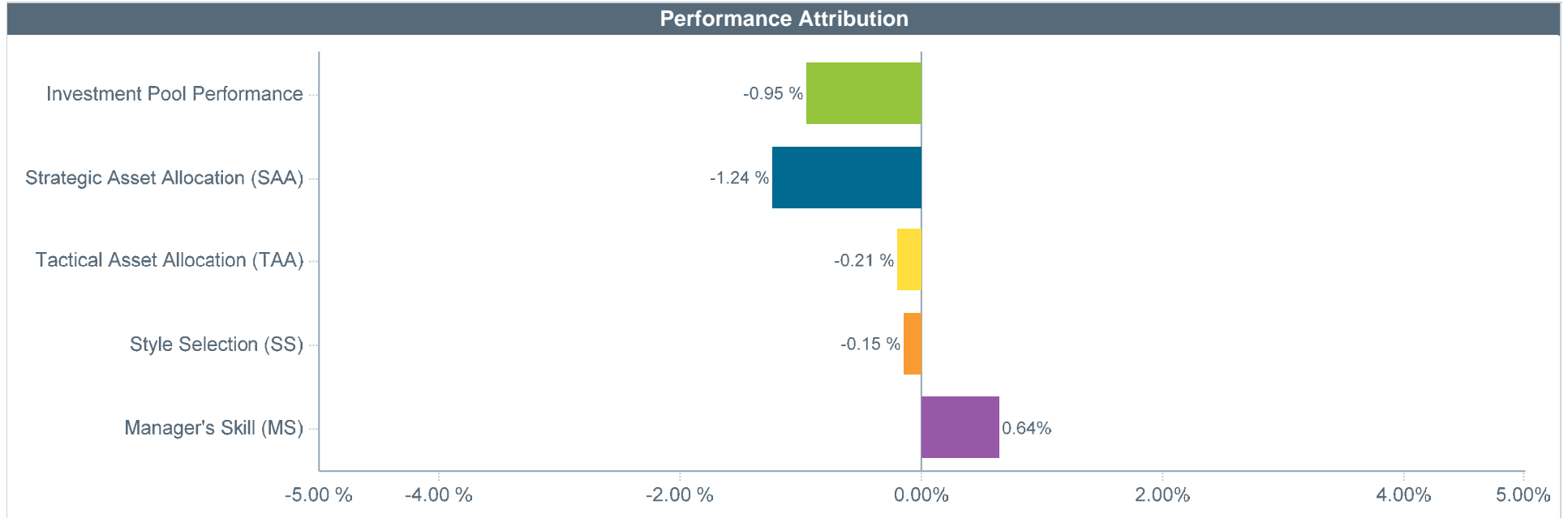
A = HFRI EH: Equity Market Neutral Index (Alpha)
 B = MSCI ACW Index (USD) (Gross) (Capital Appreciation)
 C = Bloomberg US Gov't Bond Index (Capital Preservation)
 D = Real Return Custom Index (Inflation)

Asset Allocation by Theme is based on dedicated manager allocations; as such, thematic allocations are approximations. The RVK Liquidity Rating is calculated using beginning of month investment weights applied to each corresponding asset class liquidity rating. Please see the Glossary for additional information regarding liquidity, thematic, and custom index descriptions. Allocations may not sum to 100% due to rounding.





Performance shown is net of fees. Calculation is based on monthly periodicity. Funds or composites with less history than the specified time period will not appear in the chart.

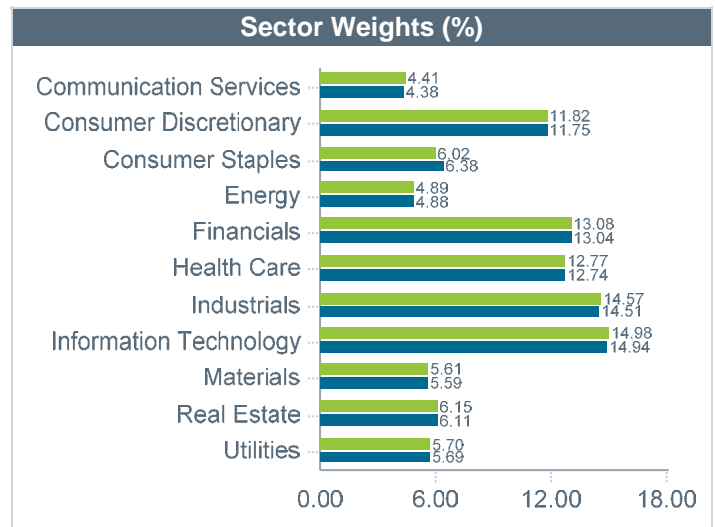
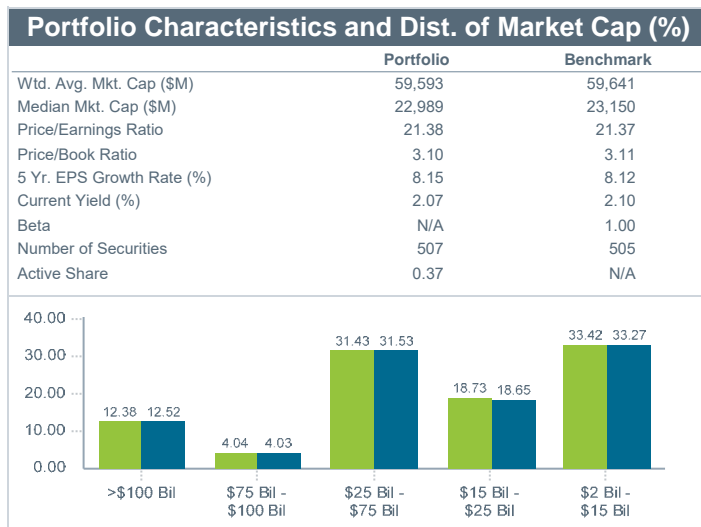
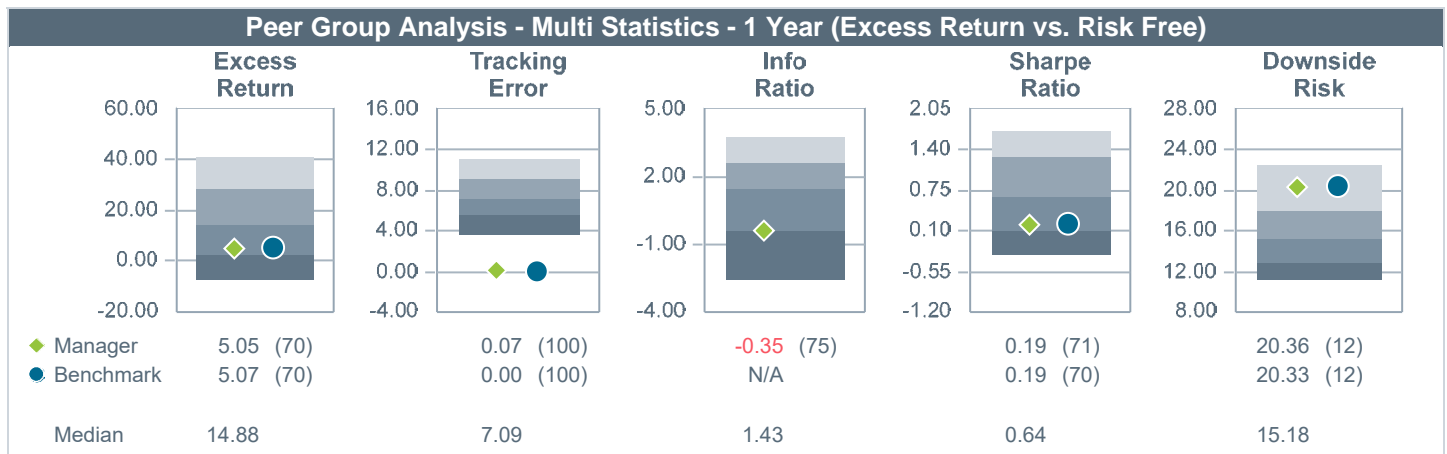
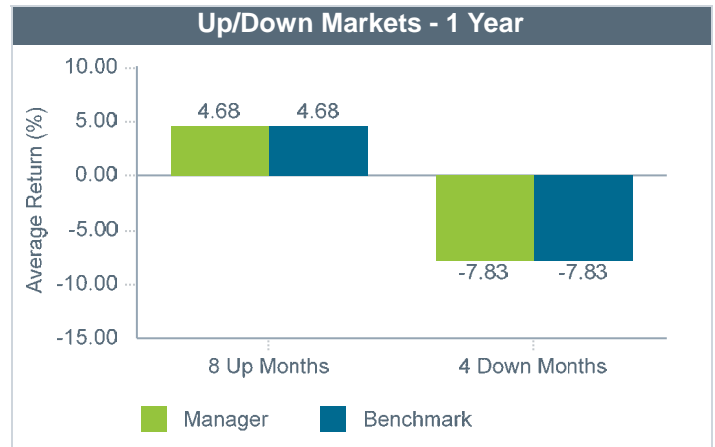
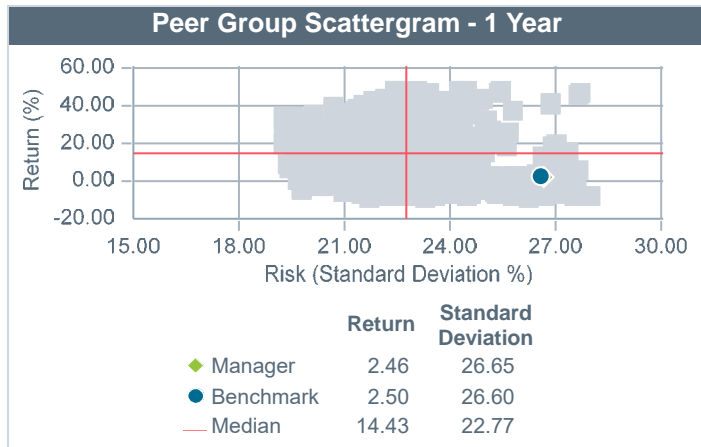


Performance shown is net of fees. Calculation is based on monthly. Private Asset market values, performance and benchmarks are valued quarterly and shown as of most recently available quarter end, adjusted for subsequent cash flows. RVK cautions that the interpretation of time-weighted data on non-marketable investments, such as Private Equity, is imperfect at best and can potentially be misleading. See Glossary for additional information regarding the Total Fund Attribution - IDP calculation.

Investment Manager Profiles

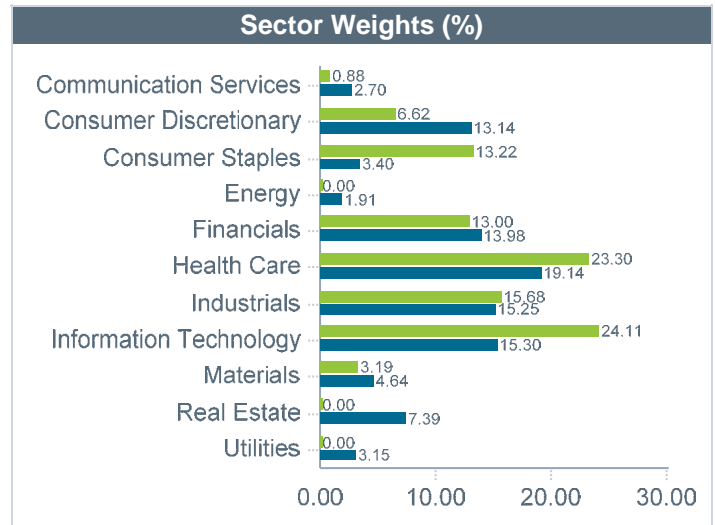
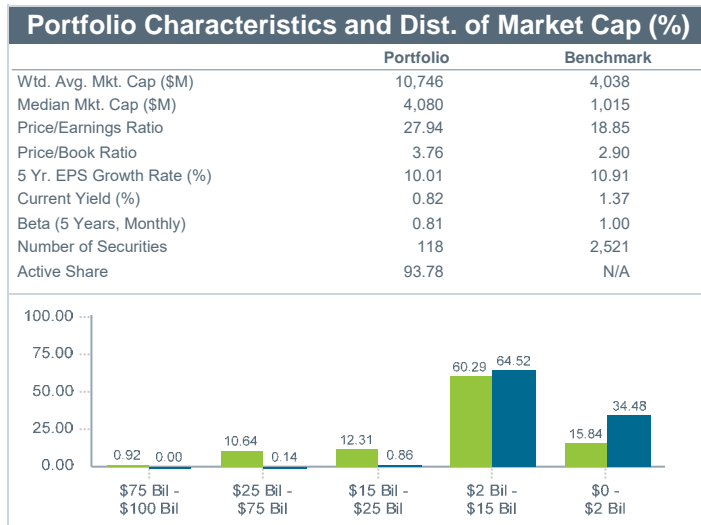
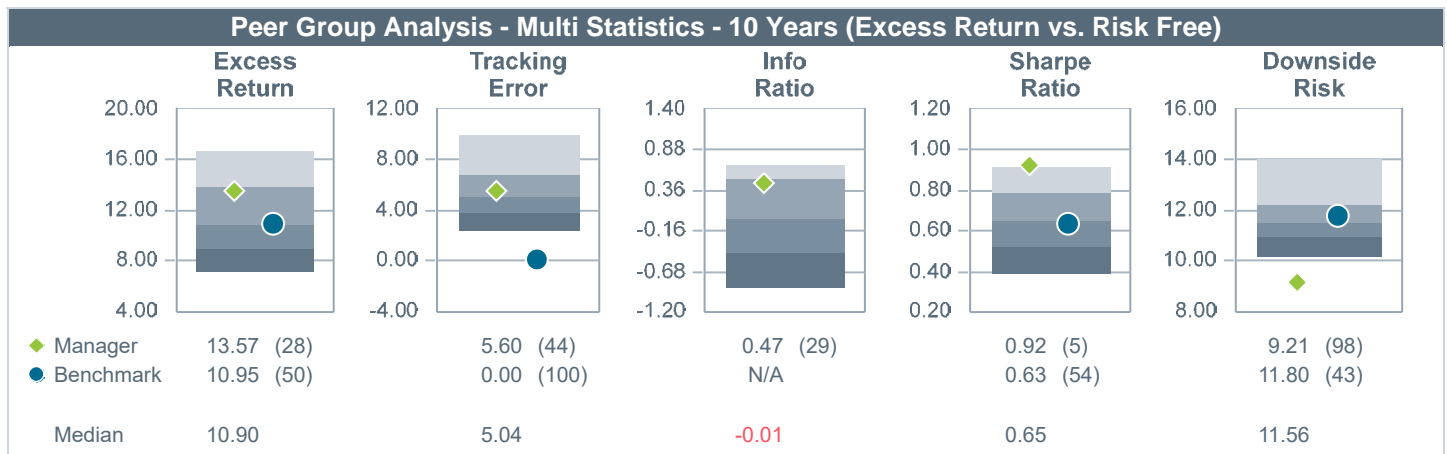
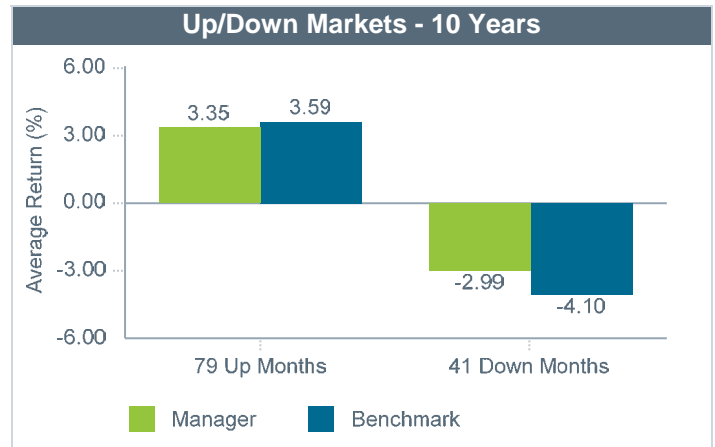
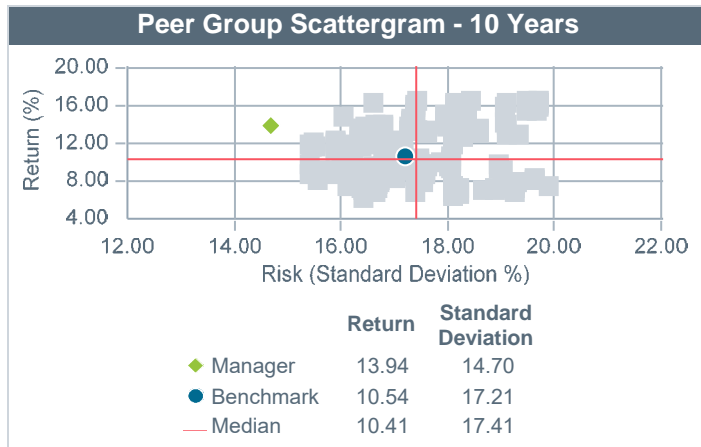


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	6.74	2.46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benchmark	6.75	2.50	6.49	10.27	9.68	12.03	29.24	-7.64	18.90	14.80	-2.20
Difference	-0.01	-0.04	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peer Group Median	8.90	14.43	11.39	12.86	11.53	12.51	30.00	-5.04	21.88	9.05	0.79
Rank	69	71	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Population	1,946	1,877	1,697	1,520	1,362	1,175	1,854	1,867	1,796	1,711	1,579



Performance shown is net of fees and product specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

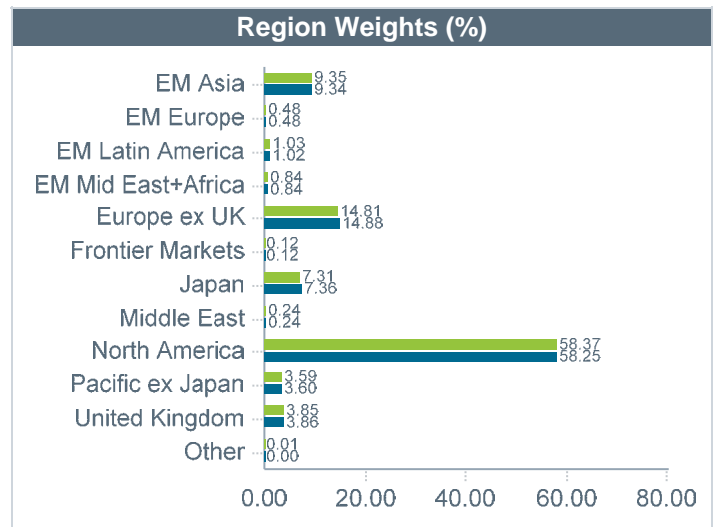
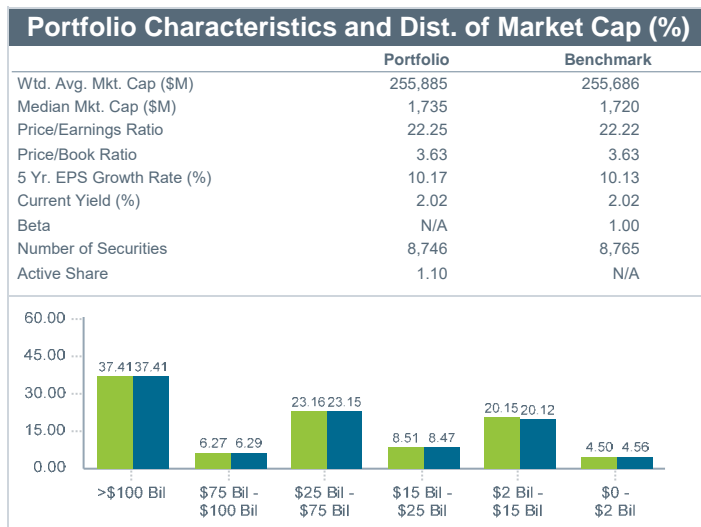
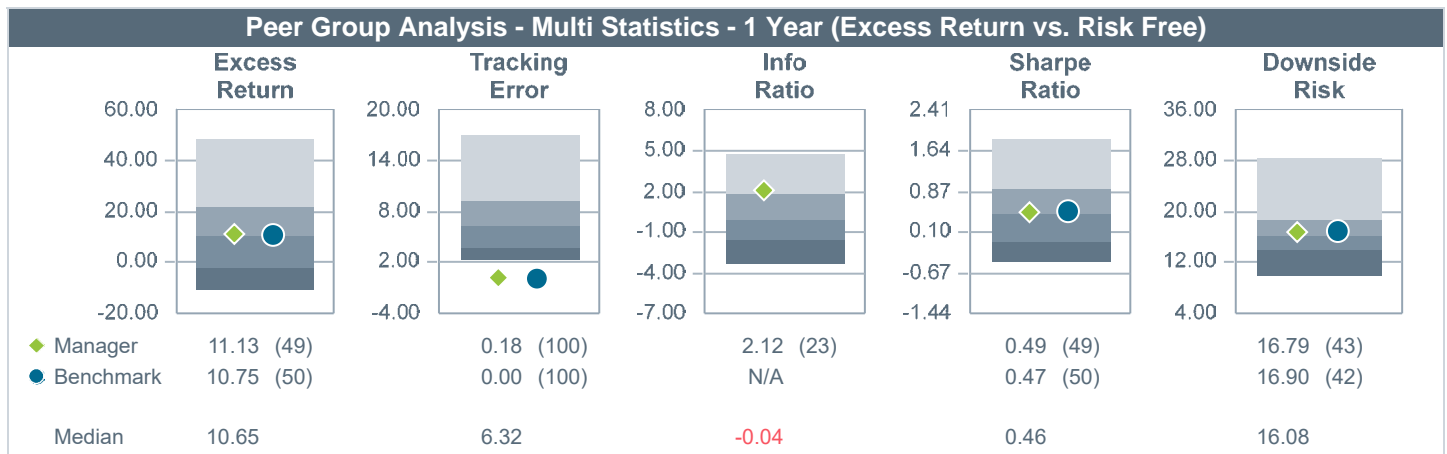
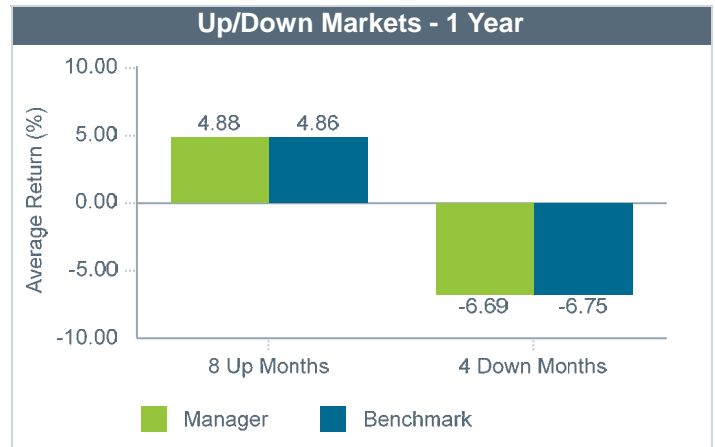
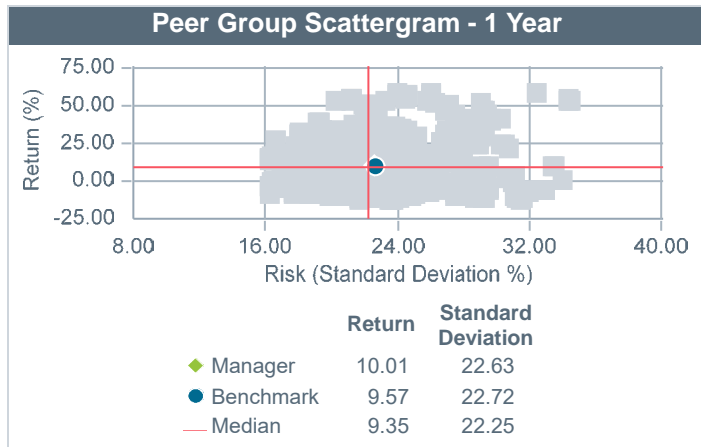
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	6.94	11.74	11.64	14.57	12.35	13.94	27.29	0.47	17.33	19.16	1.76
Benchmark	5.41	1.31	3.11	8.83	7.32	10.54	26.65	-10.50	14.67	22.77	-4.50
Difference	1.53	10.43	8.53	5.74	5.03	3.40	0.64	10.97	2.66	-3.61	6.26
Peer Group Median	6.34	3.82	4.65	9.03	7.95	10.41	27.57	-10.16	17.94	14.60	-2.80
Rank	45	38	33	26	17	22	53	10	53	25	9
Population	478	461	432	372	333	276	493	492	465	428	400



Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

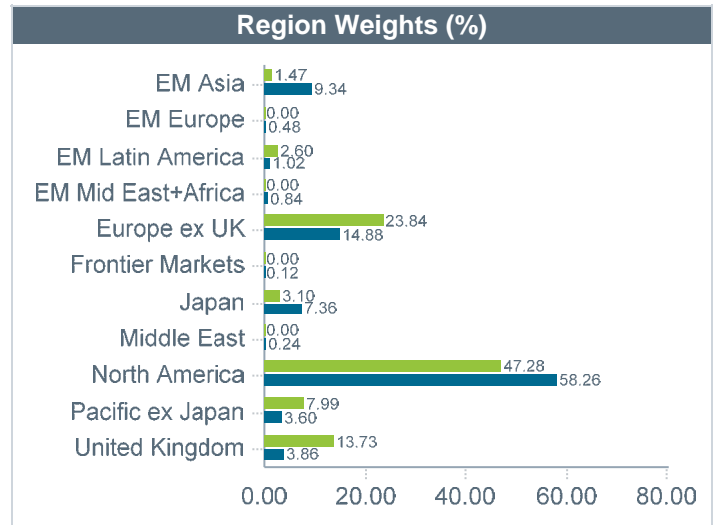
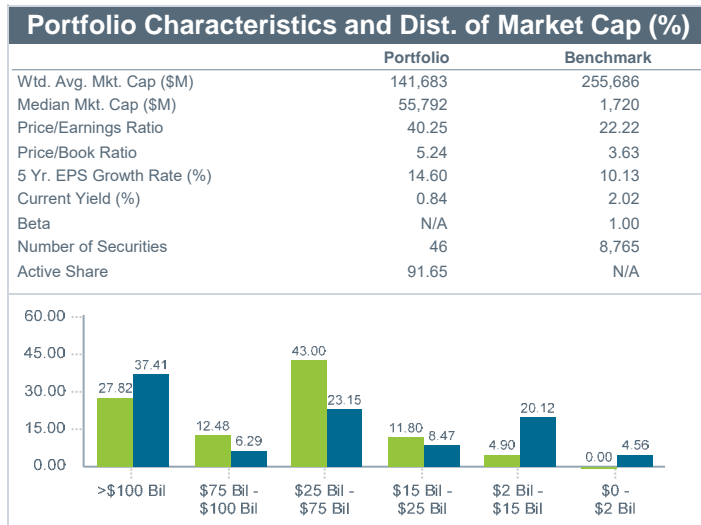
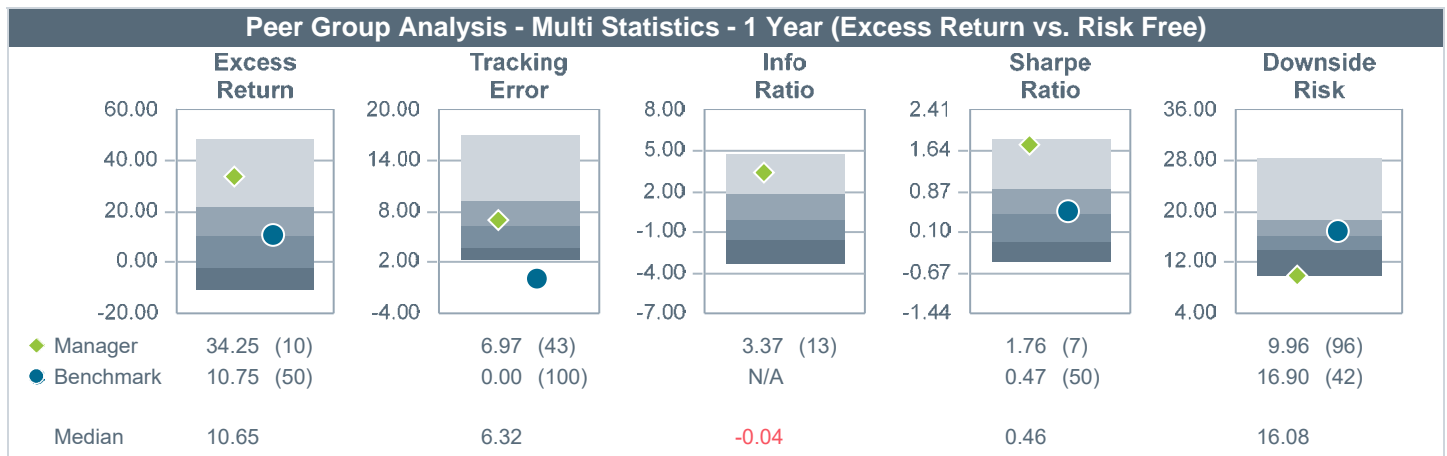
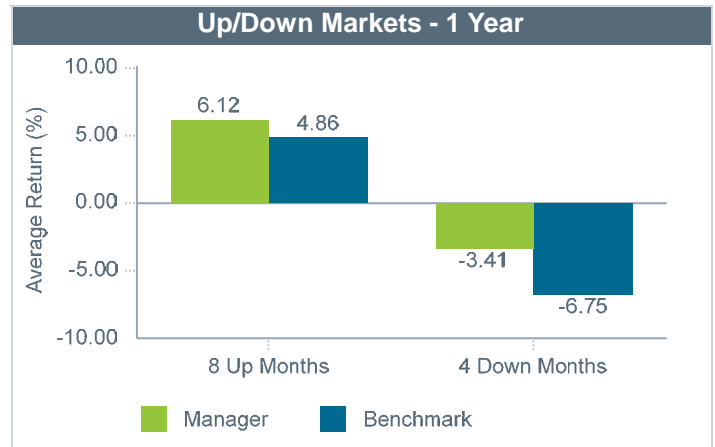
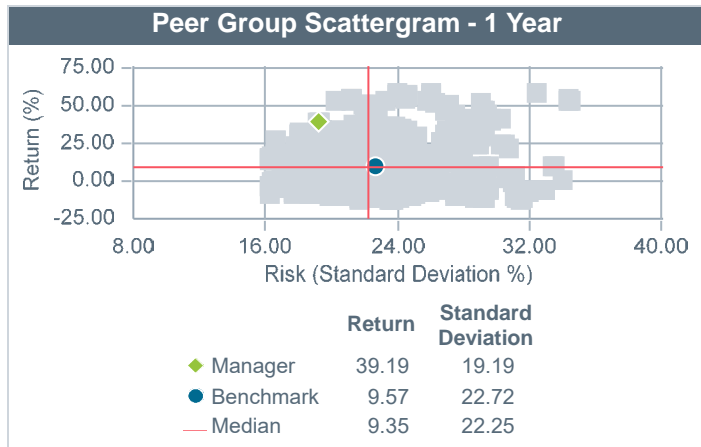


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	8.15	10.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benchmark	8.11	9.57	6.47	9.97	7.60	8.47	26.35	-10.08	23.95	8.36	-2.19
Difference	0.04	0.44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peer Group Median	7.64	9.35	5.34	8.49	7.05	8.25	26.37	-9.72	22.33	6.34	-1.65
Rank	45	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Population	1,432	1,344	1,167	960	817	601	1,403	1,402	1,314	1,197	1,098



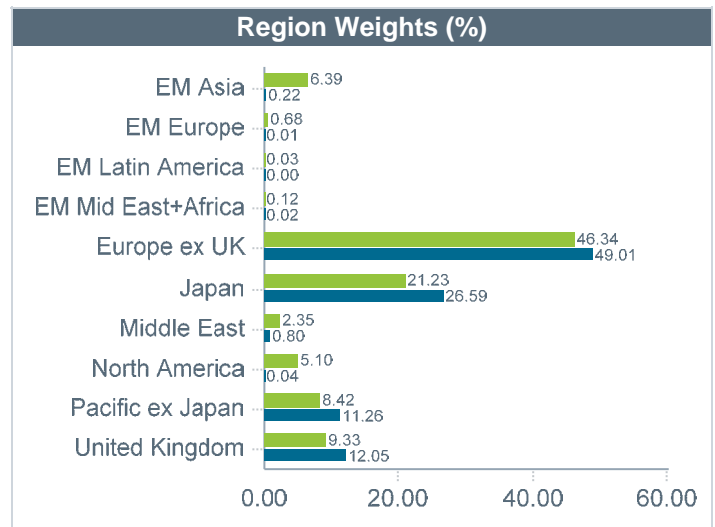
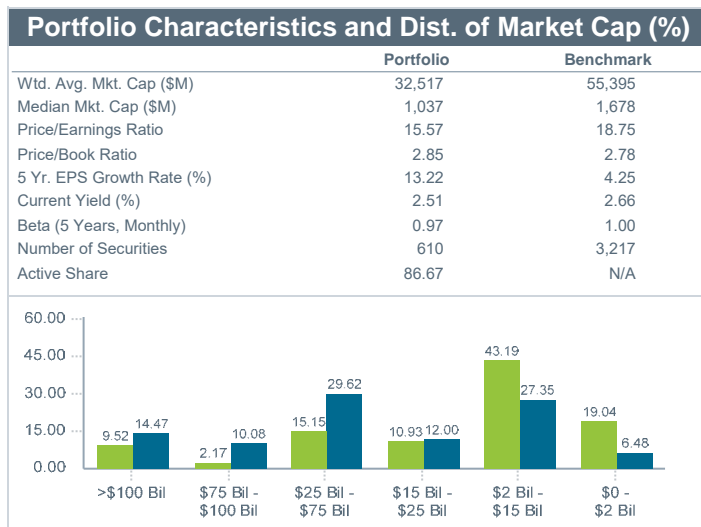
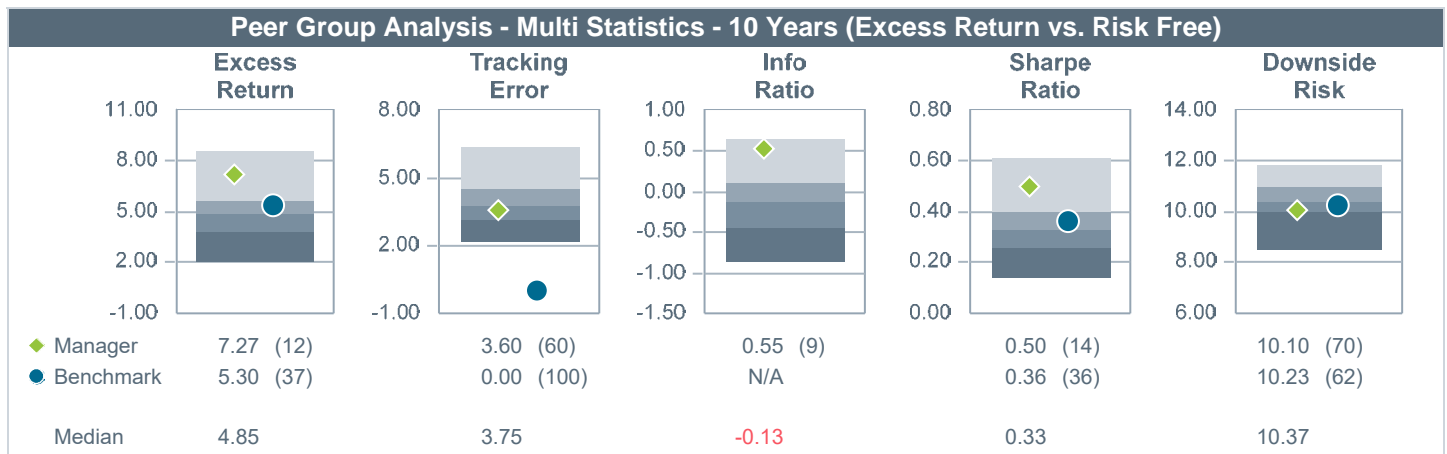
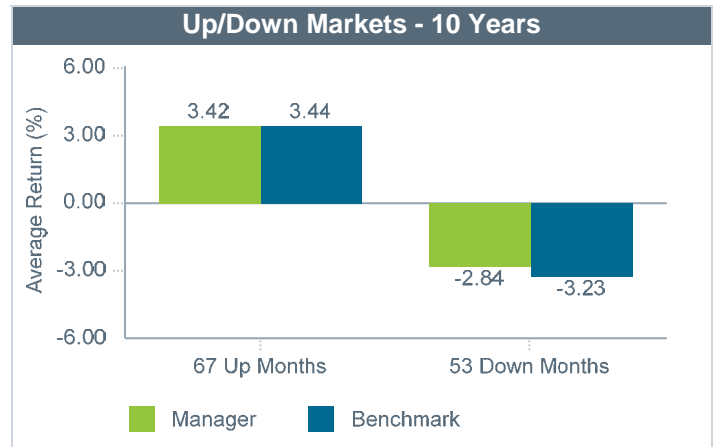
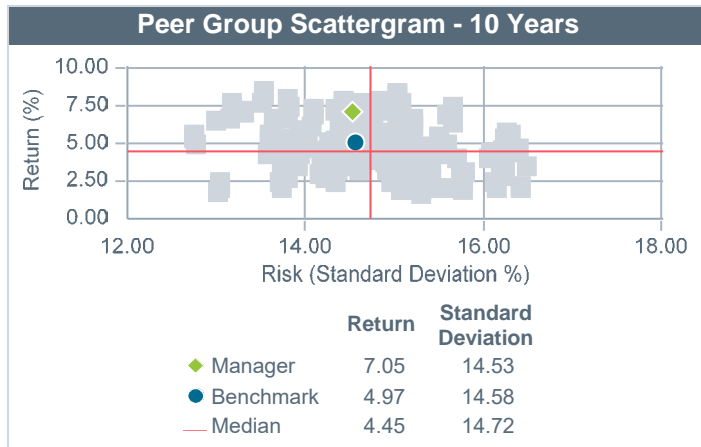
Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	14.16	39.19	N/A	N/A	N/A	N/A	36.05	N/A	N/A	N/A	N/A
Benchmark	8.11	9.57	6.47	9.97	7.60	8.47	26.35	-10.08	23.95	8.36	-2.19
Difference	6.05	29.62	N/A	N/A	N/A	N/A	9.70	N/A	N/A	N/A	N/A
Peer Group Median	7.64	9.35	5.34	8.49	7.05	8.25	26.37	-9.72	22.33	6.34	-1.65
Rank	11	10	N/A	N/A	N/A	N/A	6	N/A	N/A	N/A	N/A
Population	1,432	1,344	1,167	960	817	601	1,403	1,402	1,314	1,197	1,098



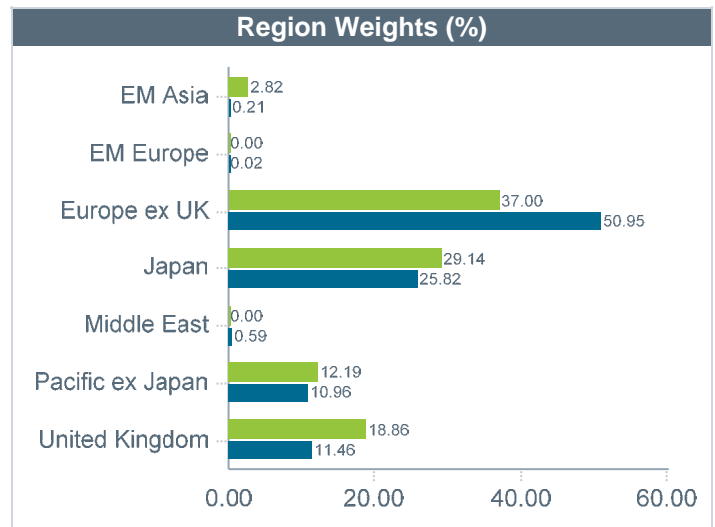
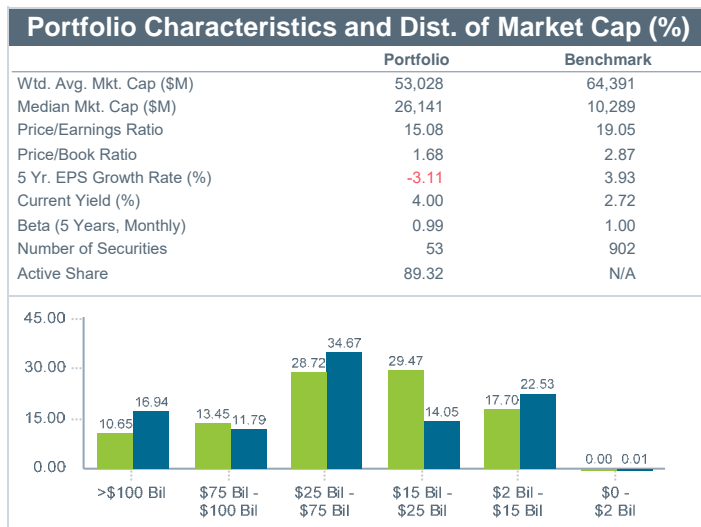
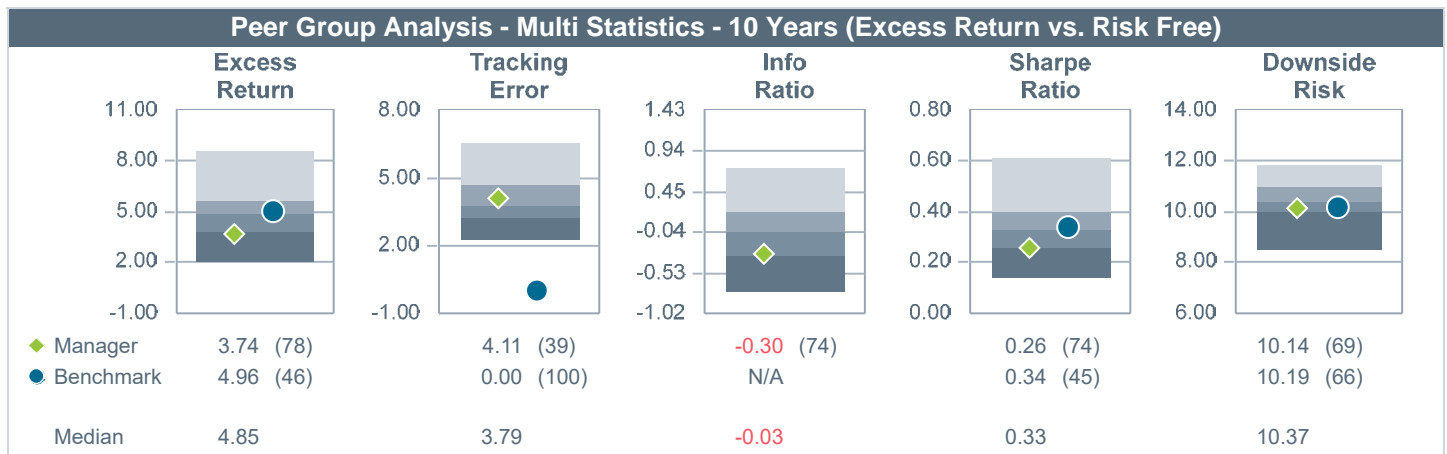
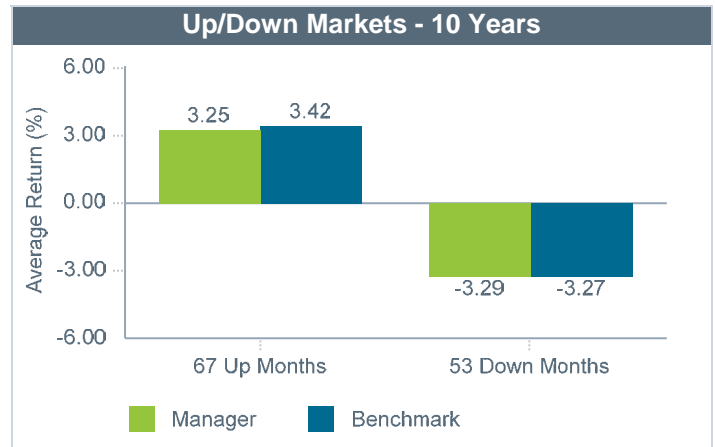
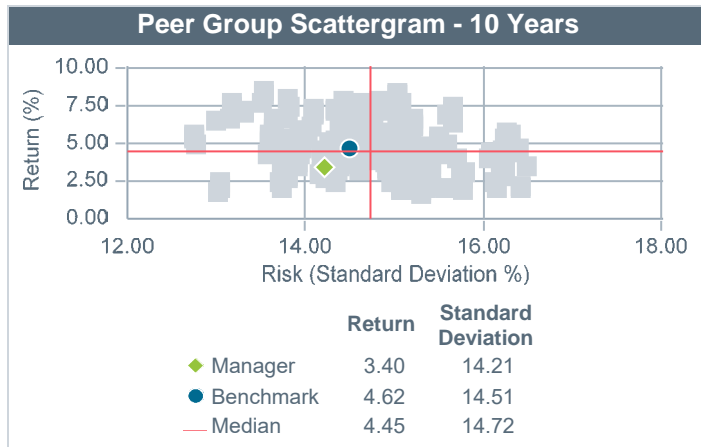
Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	8.94	6.54	0.81	8.67	6.42	7.05	18.22	-15.89	36.78	7.45	2.75
Benchmark	5.56	1.38	0.73	5.55	3.37	4.97	22.44	-14.40	26.16	1.15	0.49
Difference	3.38	5.16	0.08	3.12	3.05	2.08	-4.22	-1.49	10.62	6.30	2.26
Peer Group Median	5.59	1.19	0.34	4.78	2.83	4.45	21.59	-15.90	25.26	0.09	-0.17
Rank	11	31	43	11	10	12	78	50	3	4	18
Population	607	607	607	576	490	408	643	672	699	670	600



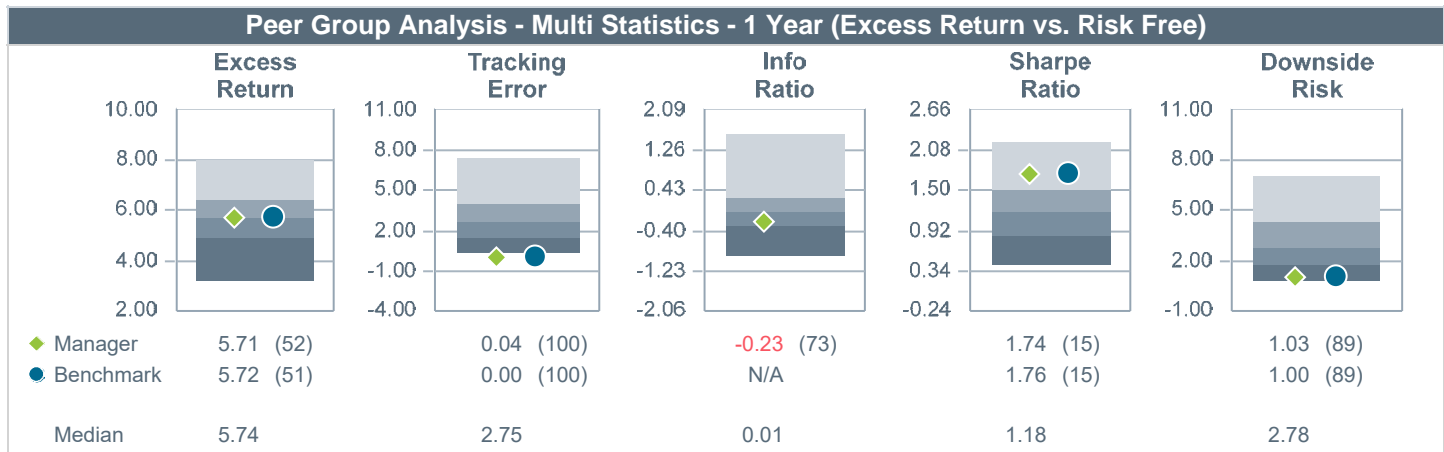
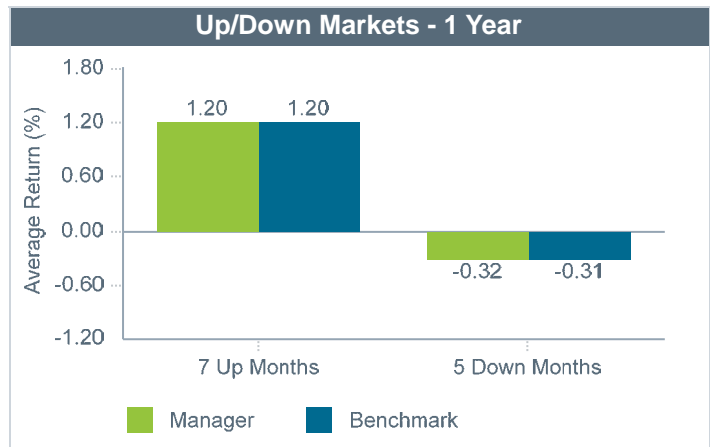
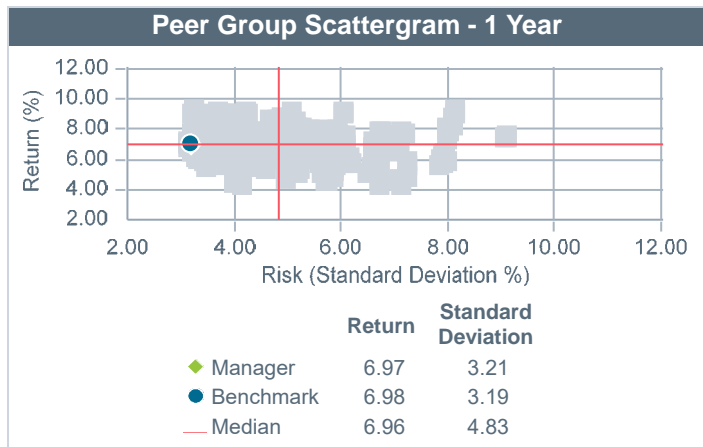
Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	1.09	-10.23	-4.06	2.29	1.46	3.40	19.29	-11.66	22.08	4.37	-3.17
Benchmark	4.80	0.49	0.62	5.26	3.01	4.62	22.01	-13.79	25.03	1.00	-0.81
Difference	-3.71	-10.72	-4.68	-2.97	-1.55	-1.22	-2.72	2.13	-2.95	3.37	-2.36
Peer Group Median	5.59	1.19	0.34	4.78	2.83	4.45	21.59	-15.90	25.26	0.09	-0.17
Rank	100	95	84	81	79	76	69	14	85	8	86
Population	607	607	607	576	490	408	643	672	699	670	600



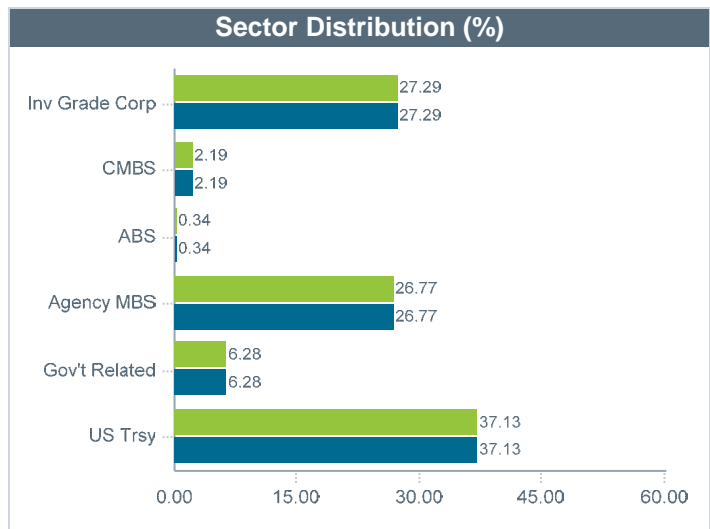
Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	0.62	6.97	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benchmark	0.62	6.98	5.24	4.18	3.97	3.64	8.72	0.01	3.54	2.65	0.55
Difference	0.00	-0.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Peer Group Median	1.19	6.96	5.03	4.16	3.88	3.65	8.76	-0.63	3.59	2.86	0.09
Rank	88	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Population	500	494	455	402	342	297	511	506	498	469	433



Portfolio Characteristics

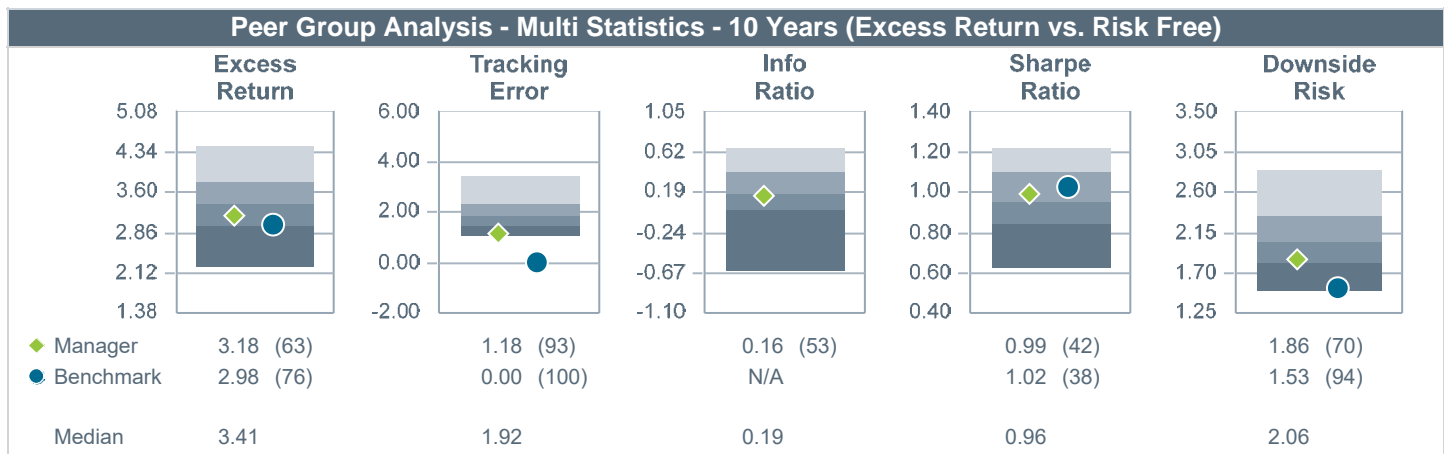
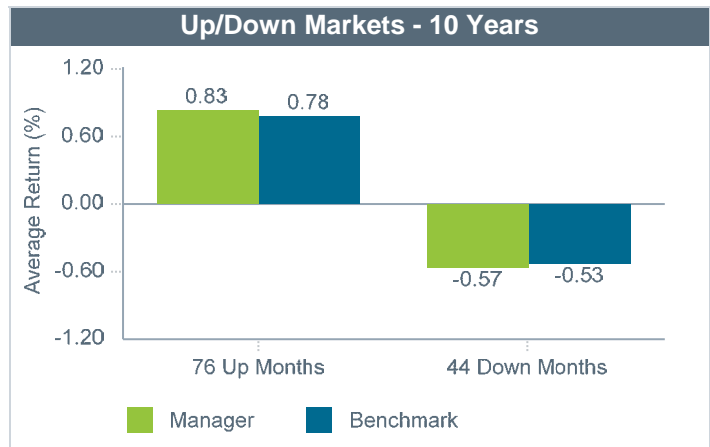
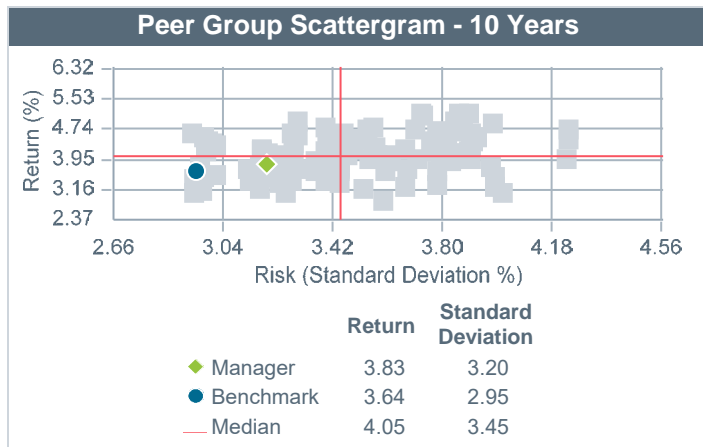
	Portfolio	Benchmark
Effective Duration	6.12	6.12
Spread Duration	6.35	6.35
Avg. Maturity	8.18	8.18
Avg. Quality	Aa1/Aa2	Aa1/Aa2
Yield To Maturity (%)	1.19	1.19
Coupon Rate (%)	2.90	2.90
Current Yield (%)	N/A	N/A
Holdings Count	11,912	11,912



Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. Portfolio characteristics are proxied using benchmark statistics.

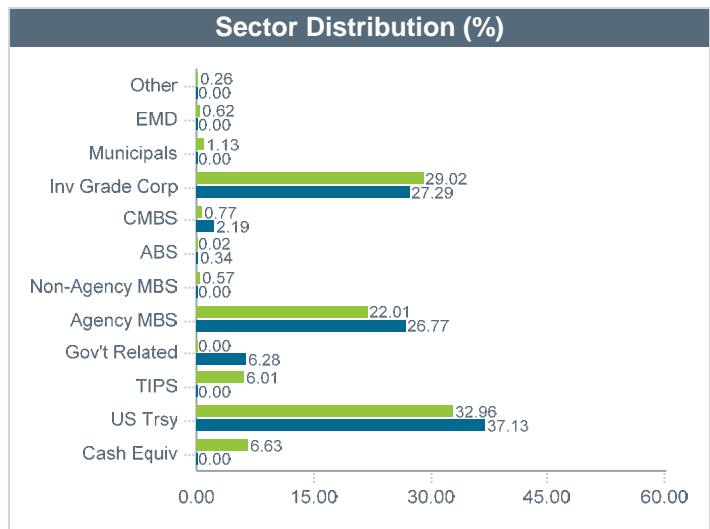


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	1.61	8.25	5.29	4.55	4.02	3.83	8.30	0.05	4.76	2.54	0.83
Benchmark	0.62	6.98	5.24	4.18	3.97	3.64	8.72	0.01	3.54	2.65	0.55
Difference	0.99	1.27	0.05	0.37	0.05	0.19	-0.42	0.04	1.22	-0.11	0.28
Peer Group Median	1.64	6.82	5.02	4.61	4.12	4.05	9.32	-0.94	4.49	4.19	-0.26
Rank	53	21	36	53	56	64	73	19	40	86	6
Population	319	312	258	208	187	150	308	284	266	229	206



Portfolio Characteristics

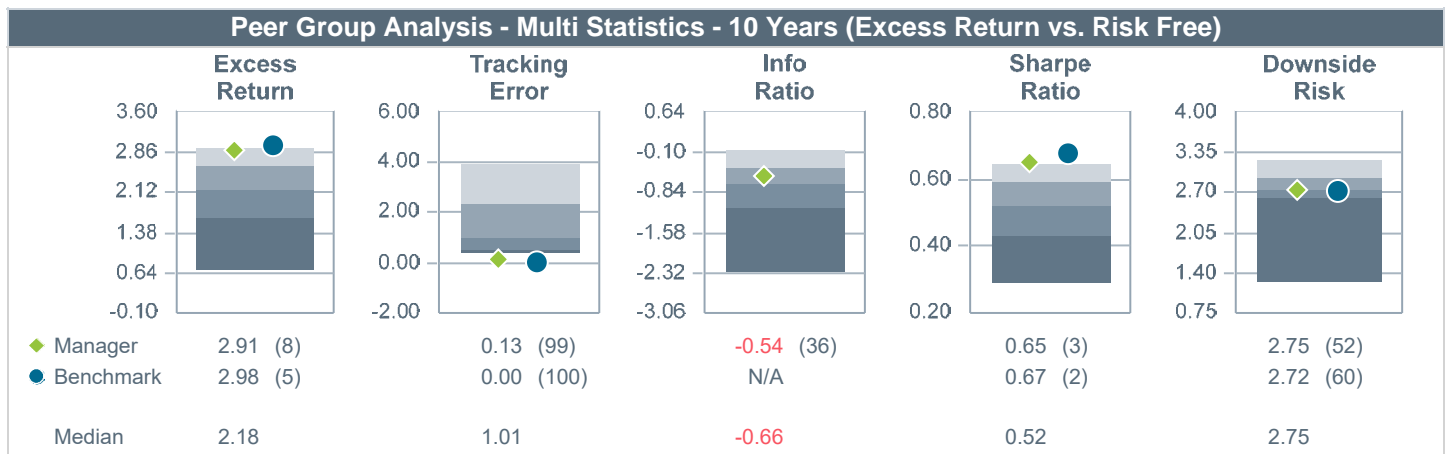
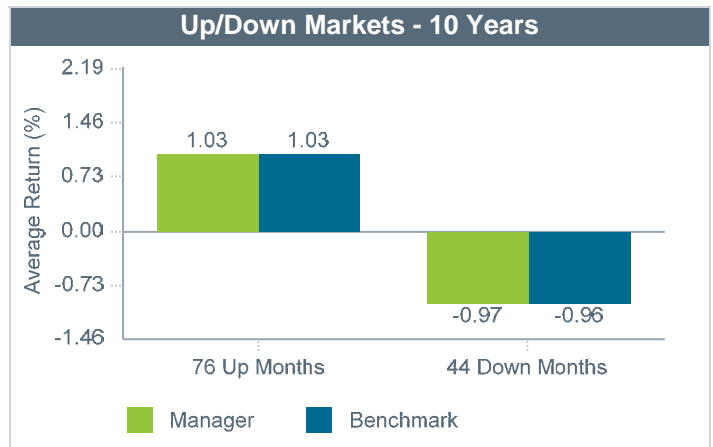
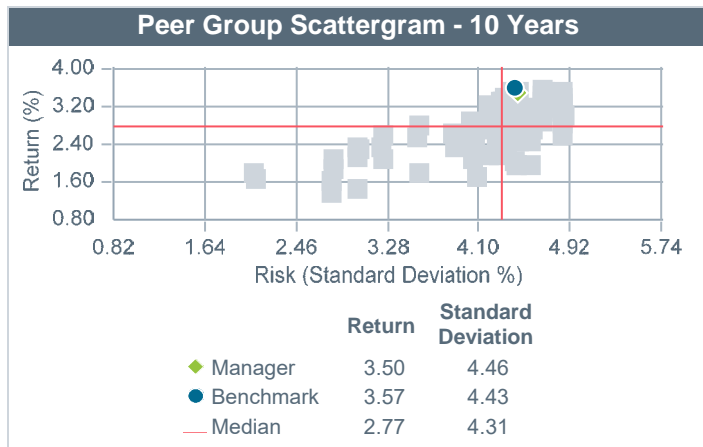
	Portfolio	Benchmark
Effective Duration	5.97	6.12
Spread Duration	3.85	6.35
Avg. Maturity	7.32	8.18
Avg. Quality	Aa2	Aa1/Aa2
Yield To Maturity (%)	1.26	1.19
Coupon Rate (%)	2.06	2.90
Current Yield (%)	1.91	N/A
Holdings Count	266	11,912



Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. Allocation to "other" includes convertibles, euro/Yankees, preferred stock, supra national and pooled funds.

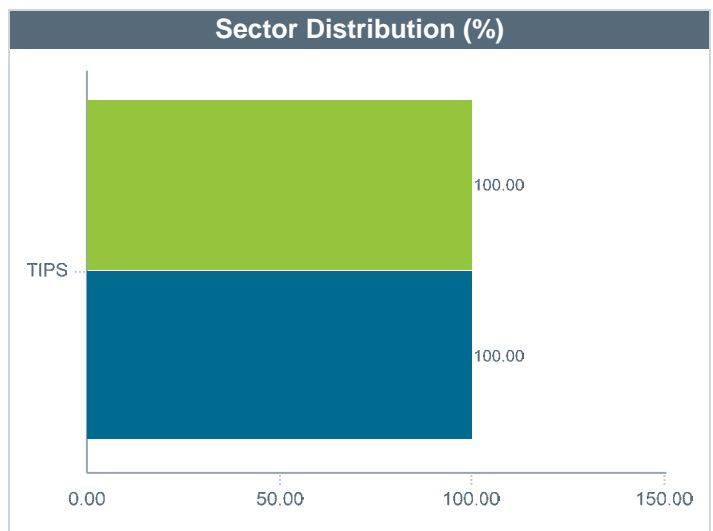


Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	3.04	10.04	5.71	4.57	3.32	3.50	8.33	-1.36	2.98	4.67	-1.39
Benchmark	3.03	10.08	5.79	4.61	3.38	3.57	8.43	-1.26	3.01	4.68	-1.44
Difference	0.01	-0.04	-0.08	-0.04	-0.06	-0.07	-0.10	-0.10	-0.03	-0.01	0.05
Peer Group Median	3.01	8.47	4.75	3.84	2.42	2.77	7.53	-1.57	2.62	4.39	-2.13
Rank	48	21	19	15	10	7	25	42	31	38	26
Population	212	211	199	171	141	111	221	227	228	220	197



Portfolio Characteristics

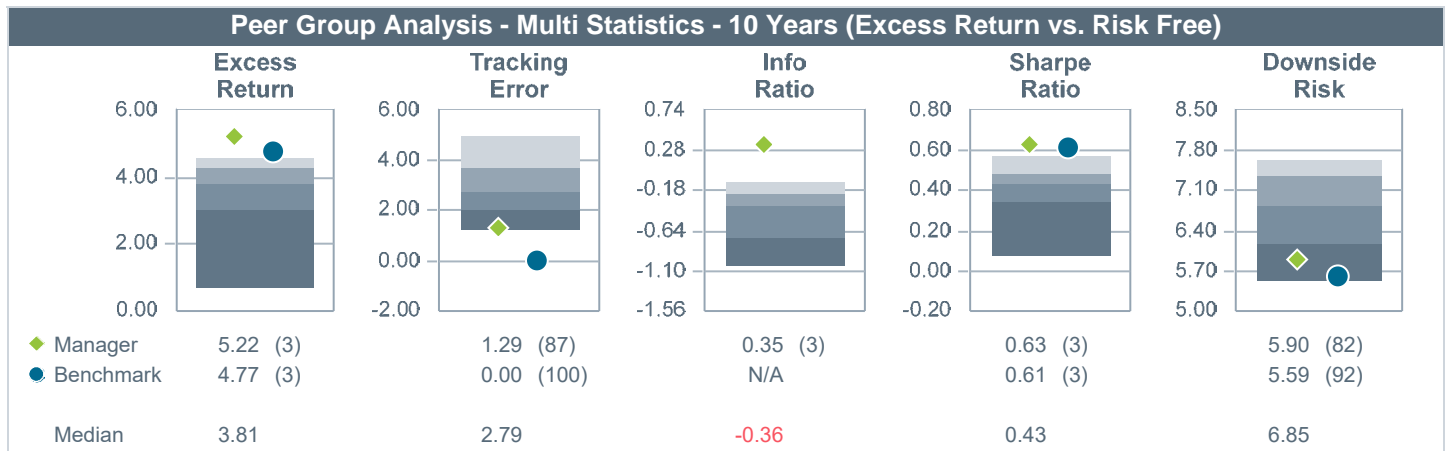
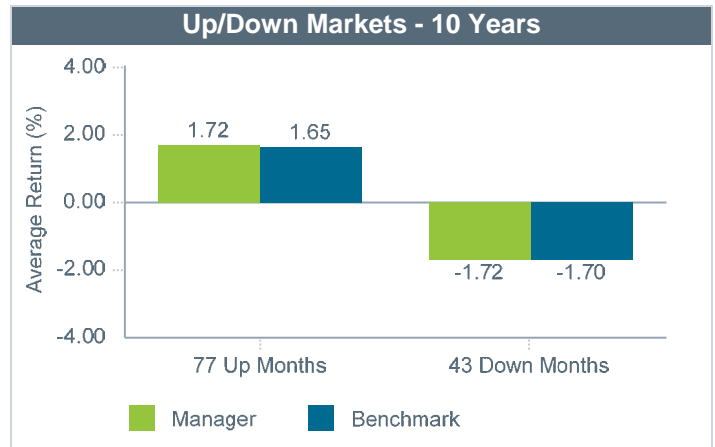
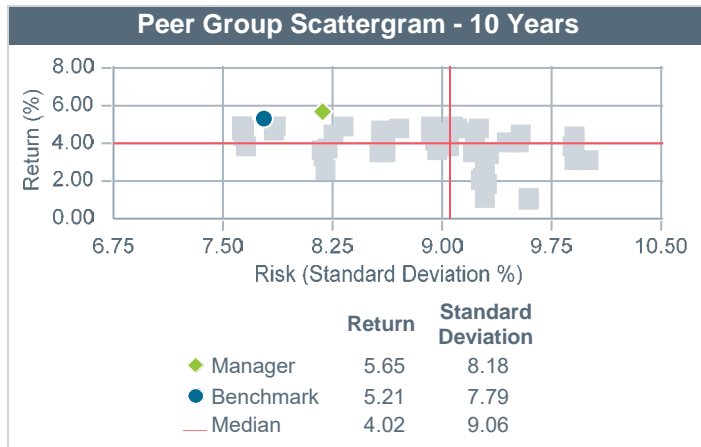
	Portfolio	Benchmark
Effective Duration	5.19	5.19
Spread Duration	5.19	5.19
Avg. Maturity	8.39	8.39
Avg. Quality	Aaa	Aaa
Yield To Maturity (%)	0.68	0.68
Coupon Rate (%)	0.68	0.68
Current Yield (%)	N/A	N/A
Holdings Count	42	42



Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. Portfolio characteristics are proxied using benchmark statistics.

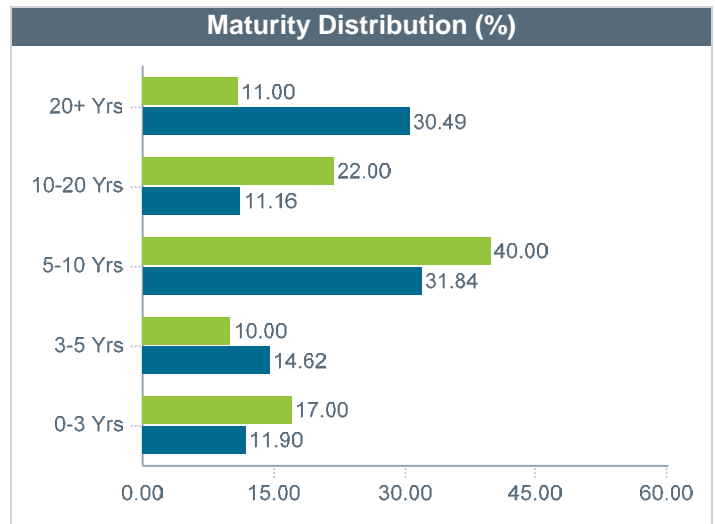


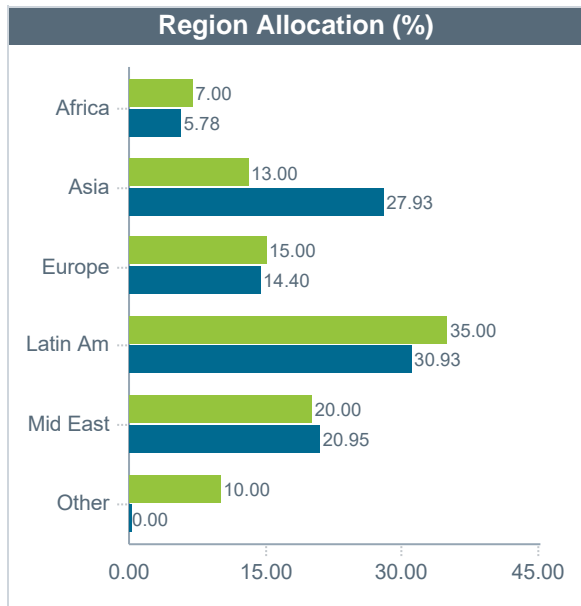
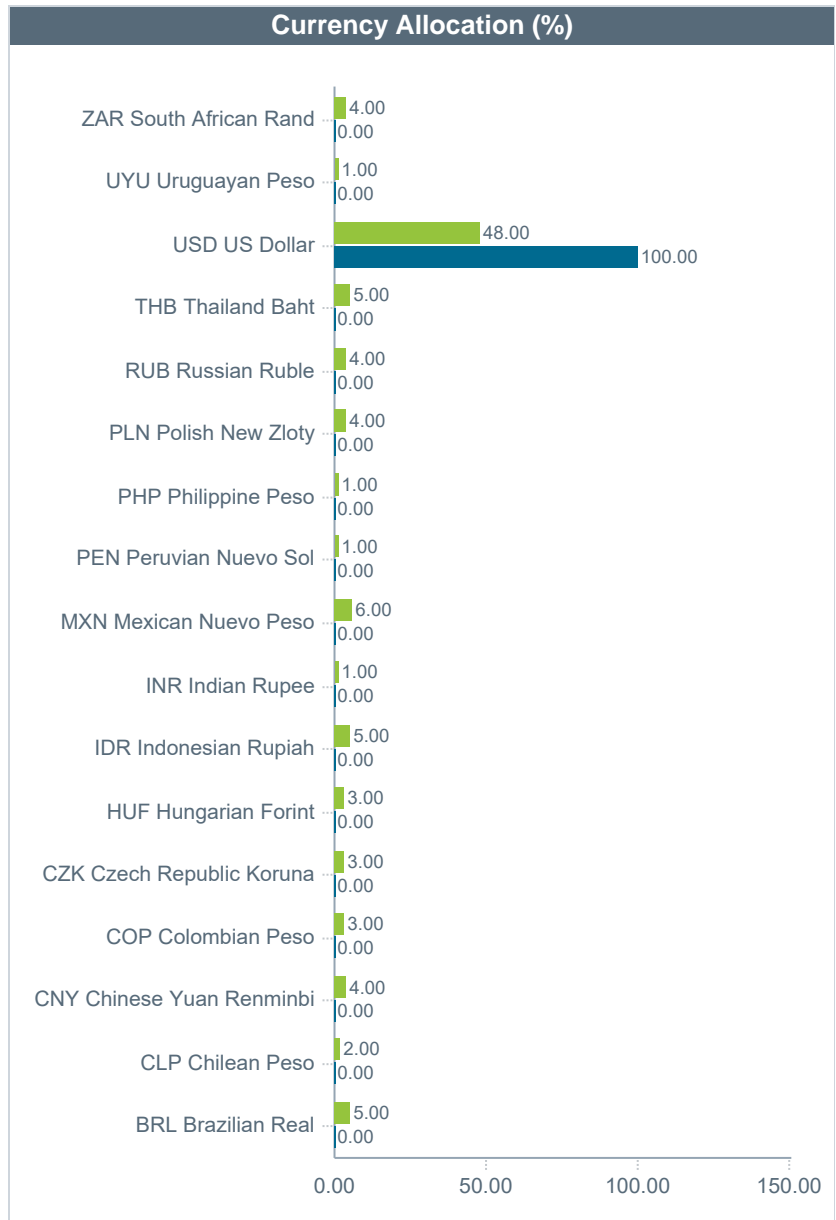
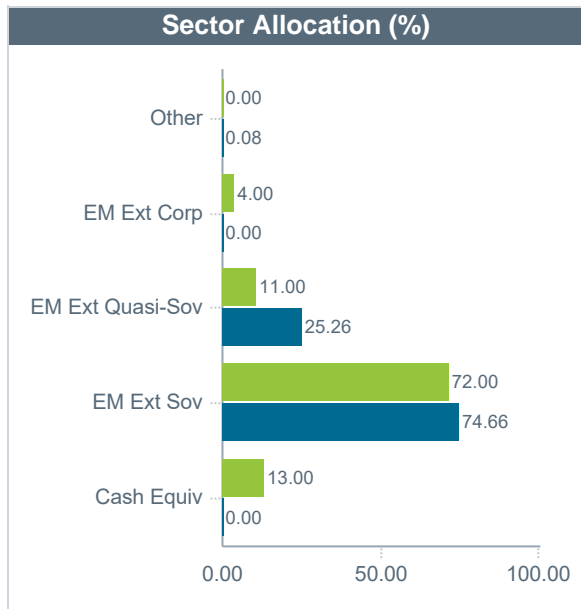
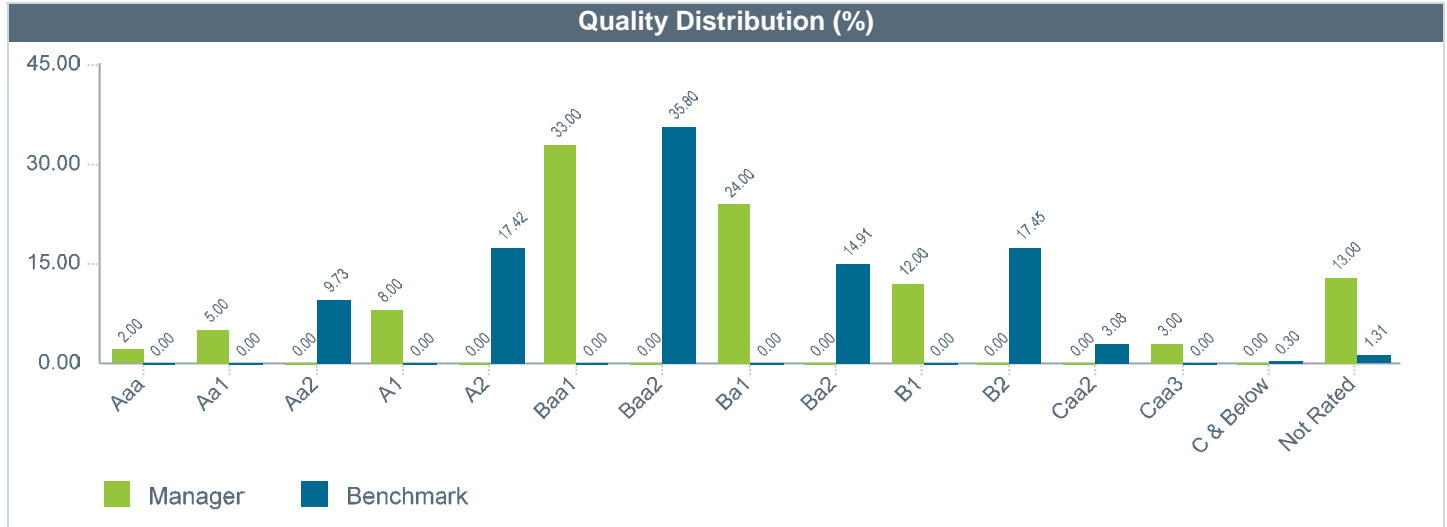
Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	2.49	3.94	3.59	6.98	5.53	5.65	15.84	-5.78	10.56	12.85	-0.97
Benchmark	2.28	2.47	3.27	6.03	5.16	5.21	14.42	-4.61	9.32	10.19	1.23
Difference	0.21	1.47	0.32	0.95	0.37	0.44	1.42	-1.17	1.24	2.66	-2.20
Peer Group Median	2.31	1.44	2.14	5.41	3.79	4.02	13.58	-5.92	10.49	10.42	-2.57
Rank	48	10	12	3	3	3	9	48	50	28	32
Population	270	264	242	193	141	67	274	275	265	233	210



Portfolio Characteristics (%)

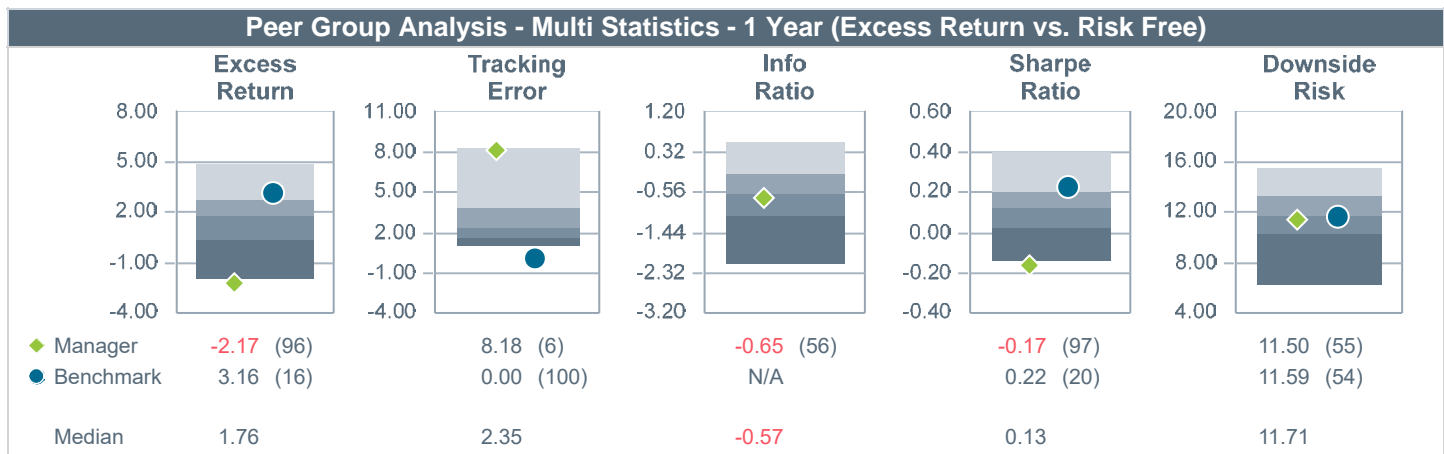
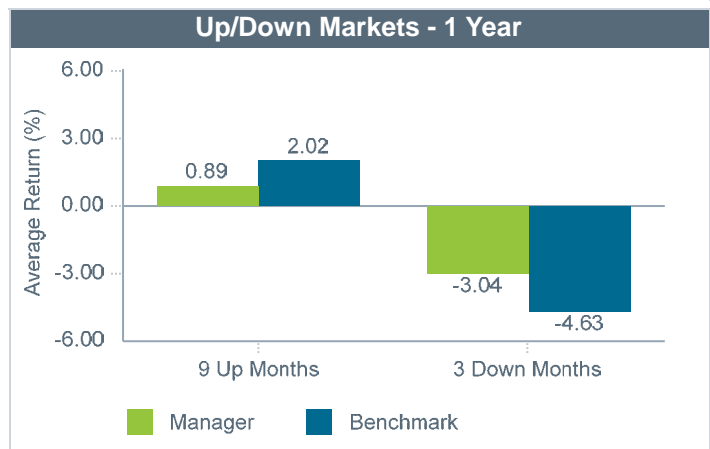
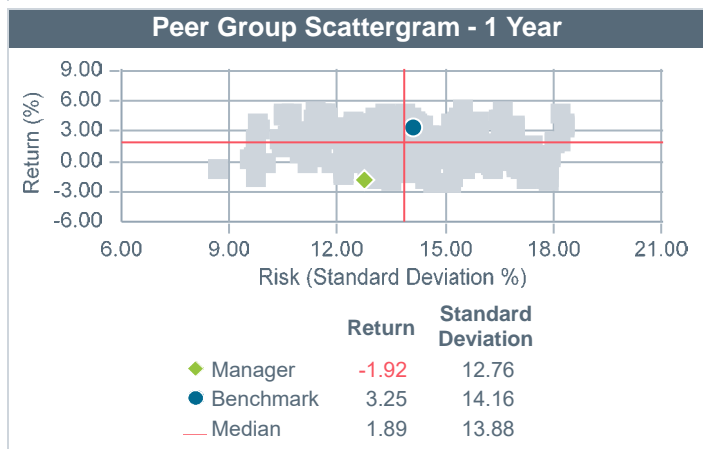
	Portfolio	Benchmark
Effective Duration	6.76	8.26
Spread Duration	6.17	8.03
Avg. Maturity	9.89	13.64
Avg. Quality	Baa2	Baa3
Yield To Maturity (%)	4.81	4.20
Coupon Rate (%)	4.87	4.82
Current Yield (%)	5.12	4.66
Holdings Count	156	836





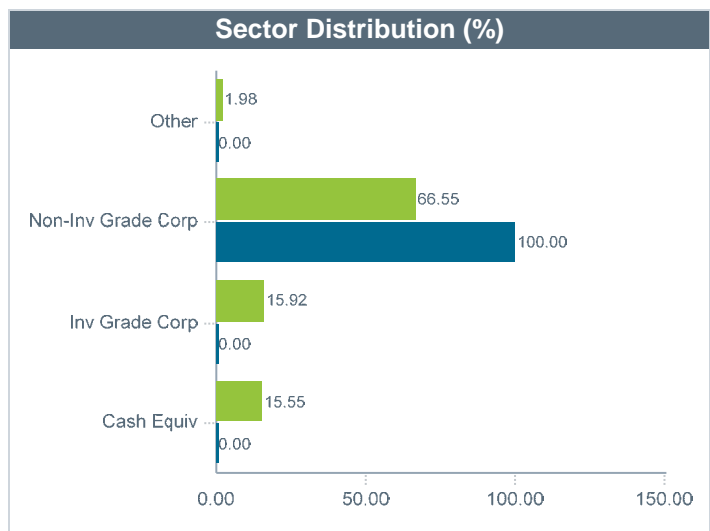
Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. Sector allocation to "Other" consists of electric. Region allocation to "Other" consists of developed countries.

Performance											
	QTD	1 Year	3 Years	5 Years	7 Years	10 Years	2019	2018	2017	2016	2015
Manager	5.68	-1.92	N/A	N/A	N/A	N/A	6.30	N/A	N/A	N/A	N/A
Benchmark	4.60	3.25	4.21	6.79	5.33	6.47	14.32	-2.08	7.50	17.13	-4.47
Difference	1.08	-5.17	N/A	N/A	N/A	N/A	-8.02	N/A	N/A	N/A	N/A
Peer Group Median	4.50	1.89	3.08	5.31	4.08	5.37	13.51	-2.91	6.65	13.49	-3.85
Rank	9	94	N/A	N/A	N/A	N/A	99	N/A	N/A	N/A	N/A
Population	668	660	606	522	442	338	686	673	630	598	548



Portfolio Characteristics

	Portfolio	Benchmark
Effective Duration	1.03	3.75
Spread Duration	18.31	3.75
Avg. Maturity	2.92	6.34
Avg. Quality	B1	Ba3/B1
Yield To Maturity (%)	8.71	6.12
Coupon Rate (%)	5.26	6.04
Current Yield (%)	6.10	N/A
Holdings Count	31	2,139



Performance shown is net of fees and client specific. Calculation is based on monthly periodicity. Parentheses contain percentile ranks. Allocation to "other" includes convertibles, euro/Yankees, preferred stock, supra national and pooled funds.

General Comments

- Through this reporting period, Vermont Pension Investment Committee has committed a total of \$1,004,150,000 to 24 non-marketable alternative investments.
- The average age of active investments (based upon vintage year and weighted by commitment) was 2.85 years.
- A total of \$406,031,529 has been called or otherwise contributed to date.
- Distributions have totaled \$129,539,944 since plan inception.
- The residual estimated value of interests in these partnerships/investments is \$386,379,047.
- Since inception net performance for the investments are as follows:
 - Annualized since-inception estimated Internal Rate of Return (IRR) of 13.21%.
 - Were an investment into the benchmark index (MSCI ACW IM Index (USD) (Net)) ("Index IRR") made with the identical cash-flow pattern, the resulting return would be equal to 6.23% indicating roughly 697 basis points of annualized out-performance.
 - For every \$1 paid into the portfolio, \$1.27 has been returned as a distribution or is held in residual value (multiple on invested capital = 1.27x).

Private Credit - Direct Lending

- Private Credit - Direct Lending funds account for 21.41% of commitments, 24.88% of contributed funds, 16.53% of distributed funds, and 22.80% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 4.46%
 - MSCI ACW IM Index (USD) (Net) IRR of 4.53%
 - A multiple on invested capital of 1.08x.

Private Credit - Distressed/Special Situations

- Private Credit - Distressed/Special Situations funds account for 0.40% of commitments, 0.79% of contributed funds, 1.58% of distributed funds, and 0.66% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 11.98%
 - MSCI ACW IM Index (USD) (Net) IRR of 7.85%
 - A multiple on invested capital of 1.44x.

Private Equity - Buyout

- Private Equity - Buyout funds account for 25.59% of commitments, 19.19% of contributed funds, 18.36% of distributed funds, and 20.82% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 18.47%
 - MSCI ACW IM Index (USD) (Net) IRR of 8.84%
 - A multiple on invested capital of 1.34x.

Private Equity - Fund of Funds

- Private Equity - Fund of Funds funds account for 5.98% of commitments, 3.55% of contributed funds, 1.36% of distributed funds, and 3.98% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 13.94%
 - MSCI ACW IM Index (USD) (Net) IRR of 3.73%
 - A multiple on invested capital of 1.19x.

Private Equity - Natural Resources

- Private Equity - Natural Resources funds account for 2.90% of commitments, 0.48% of contributed funds, 0.00% of distributed funds, and 0.38% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR - Not Material
 - MSCI ACW IM Index (USD) (Net) IRR - Not Material
 - A multiple on invested capital of 0.75x.

Private Equity - Non-US Private Equity

- Private Equity - Non-US Private Equity funds account for 1.49% of commitments, 2.89% of contributed funds, 1.84% of distributed funds, and 3.67% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 13.95%
 - MSCI ACW IM Index (USD) (Net) IRR of 6.70%
 - A multiple on invested capital of 1.41x.

Private Equity - Secondaries

- Private Equity - Secondaries funds account for 16.43% of commitments, 15.65% of contributed funds, 30.73% of distributed funds, and 14.03% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 23.76%
 - MSCI ACW IM Index (USD) (Net) IRR of 6.47%
 - A multiple on invested capital of 1.48x.

Private Equity - Venture

- Private Equity - Venture funds account for 6.87% of commitments, 8.22% of contributed funds, 8.60% of distributed funds, and 11.46% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 20.61%
 - MSCI ACW IM Index (USD) (Net) IRR of 6.85%
 - A multiple on invested capital of 1.66x.

Real Estate - Opportunistic

- Real Estate - Opportunistic funds account for 15.44% of commitments, 21.25% of contributed funds, 21.00% of distributed funds, and 19.15% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR of 6.90%
 - MSCI ACW IM Index (USD) (Net) IRR of 6.05%
 - A multiple on invested capital of 1.17x.

Real Estate - Value Added

- Real Estate - Value Added funds account for 3.49% of commitments, 3.10% of contributed funds, 0.00% of distributed funds, and 3.05% of reported residual value.
- Pooled portfolio since inception performance is as follows:
 - Annualized since-inception IRR - Not Material
 - MSCI ACW IM Index (USD) (Net) IRR - Not Material
 - A multiple on invested capital of 0.94x.

Vermont Pension Investment Committee
Alternative Investment Private Equity Fund Performance Listing

As of June 30, 2020

Fund Name	Vintage	Asset Class	Commitment (\$)	Paid In Capital (\$)	Distributions (\$)	Valuation (\$)	Fund IRR (%)	Quartile	Index IRR (%)	Fund Multiple
HarbourVest Partners IX - Buyout, LP	2011	Private Equity - Buyout	24,000,000	20,507,188	16,721,402	18,539,872	17.09	2nd	7.69	1.72
HarbourVest Partners IX - Venture, LP	2011	Private Equity - Venture	12,000,000	11,437,671	9,246,293	15,075,822	18.77	1st	7.31	2.13
Dover Street VIII, LP (HarbourVest)	2012	Private Equity - Secondaries	25,000,000	22,750,000	27,459,196	8,895,293	19.76	2nd	8.62	1.60
HarbourVest International Private Equity Partners VII Partnership, LP	2014	Private Equity - Non-US Private Equity	15,000,000	11,737,500	2,377,172	14,164,776	13.95	2nd	6.70	1.41
HarbourVest International Private Equity Partners VIII Partnership, LP	2014	Private Equity - Fund of Funds	60,000,000	14,400,000	1,765,903	15,372,400	13.94	2nd	3.73	1.19
HarbourVest Partners X - Buyout, LP	2015	Private Equity - Buyout	45,500,000	23,662,787	6,611,085	25,828,578	21.13	1st	6.35	1.37
HarbourVest Partners X - Venture, LP	2015	Private Equity - Venture	19,500,000	13,115,422	1,753,900	19,849,489	25.87	1st	5.02	1.65
Dover Street IX, LP (HarbourVest)	2016	Private Equity - Secondaries	40,000,000	30,800,000	12,353,441	30,772,223	26.19	1st	4.52	1.40
Dover Street X, LP (HarbourVest)	2018	Private Equity - Secondaries	100,000,000	10,000,000	0	14,541,495	N/M	N/A	N/M	1.45
HarbourVest Partners XI - Buyout Fund, LP	2018	Private Equity - Buyout	75,000,000	13,500,000	280,027	14,182,624	N/M	N/A	N/M	1.07
HarbourVest Partners XI - Micro Buyout Fund, LP	2018	Private Equity - Buyout	12,500,000	1,875,000	47,052	1,816,964	N/M	N/A	N/M	0.99
HarbourVest Partners Co-Investment Fund V, LP	2019	Private Equity - Buyout	25,000,000	8,750,000	0	10,191,982	33.84	N/A	5.70	1.16
HarbourVest Partners XI - Venture Fund, LP	2019	Private Equity - Venture	37,500,000	8,812,500	141,513	9,356,439	N/M	N/A	N/M	1.08
Pontifax Global Food and Agriculture Technology Fund II, LP	2019	Private Equity - Natural Resources	29,150,000	1,945,692	0	1,468,027	N/M	N/A	N/M	0.75
Siguler Guff Small Buyout Opportunities Fund IV	2019	Private Equity - Buyout	50,000,000	8,125,000	120,545	8,529,120	N/M	N/A	N/M	1.06
NB Strategic Co-Investment Partners IV LP	2020	Private Equity - Buyout	25,000,000	1,498,452	0	1,357,889	N/M	N/A	N/M	0.91
			595,150,000	202,917,212	78,877,529	209,942,992	20.05		7.22	1.42

Certain valuations (marked with a **) are preliminary estimates of valuation as of the date of reporting and reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. Index IRR represents the dollar-weighted returns calculated using the MSCI ACW IM Index (USD) (Net) assuming an index investment with the same cash flow timing. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated. Applicable IRRs are marked with 'N/M' for not material. Fund IRR is the annualized since-inception net internal rate for the indicated fund or composite. Fund Multiple is the since inception sum of distributions and valuation divided by paid in capital. Quartile data is based on information provided by Preqin.



Vermont Pension Investment Committee
Alternative Investment Real Estate Fund Performance Listing

As of June 30, 2020

Fund Name	Vintage	Asset Class	Commitment (\$)	Paid In Capital (\$)	Distributions (\$)	Valuation (\$)	Fund IRR (%)	Quartile	Index IRR (%)	Fund Multiple
Siguler Guff Distressed Real Estate Opportunities Fund II	2013	Real Estate - Opportunistic	40,000,000	35,272,308	21,829,574	26,385,277	8.62	1st	7.27	1.37
Siguler Guff DREOF II Co-Investment Fund	2016	Real Estate - Opportunistic	15,000,000	12,669,146	5,369,010	10,625,227	8.27	1st	5.21	1.26
Blue Vista Real Estate Partners V	2018	Real Estate - Value Added	35,000,000	12,600,000	0	11,794,966	N/M	N/A	N/M	0.94
Brookfield Strategic Real Estate Partners III	2019	Real Estate - Opportunistic	100,000,000	38,360,482	8,001	36,978,438	-4.21	4th	0.81	0.96
			190,000,000	98,901,937	27,206,585	85,783,908	6.53		6.02	1.14

Certain valuations (marked with a **) are preliminary estimates of valuation as of the date of reporting and reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. Index IRR represents the dollar-weighted returns calculated using the Monthly Compounded NCREIF ODCE Index (AWA) (Net) assuming an index investment with the same cash flow timing. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated. Applicable IRRs are marked with 'N/M' for not material. Fund IRR is the annualized since-inception net internal rate for the indicated fund or composite. Fund Multiple is the since inception sum of distributions and valuation divided by paid in capital. Quartile data is based on information provided by Prequin.



Vermont Pension Investment Committee
Alternative Investment Private Credit Fund Performance Listing

As of June 30, 2020

Fund Name	Vintage	Asset Class	Commitment (\$)	Paid In Capital (\$)	Distributions (\$)	Valuation (\$)	Fund IRR (%)	Quartile	Index IRR (%)	Fund Multiple
HarbourVest Partners IX - Credit Opportunities Fund, LP	2011	Private Credit - Distressed/Special Situations	4,000,000	3,210,265	2,047,385	2,561,944	11.98	2nd	3.67	1.44
Benefit Street Partners Senior Secured Opportunities Fund	2016	Private Credit - Direct Lending	70,000,000	70,000,000	13,439,215	60,890,730	2.82	4th	2.09	1.06
(Arcmont) Direct Lending Fund III (USD-L) SLP	2018	Private Credit - Direct Lending	70,000,000	26,930,071	7,969,231	21,853,258	8.59	N/A	-1.10	1.11
Benefit Street Partners Senior Secured Opportunities Fund II (Levered US)	2019	Private Credit - Direct Lending	75,000,000	4,072,045	0	5,346,215	N/M	N/A	N/M	1.31
			219,000,000	104,212,381	23,455,831	90,652,147	4.93		1.64	1.09

Certain valuations (marked with a **) are preliminary estimates of valuation as of the date of reporting and reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. Index IRR represents the dollar-weighted returns calculated using the S&P/LSTA Lvg'd Loan Index assuming an index investment with the same cash flow timing. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated. Applicable IRRs are marked with 'N/M' for not material. Fund IRR is the annualized since-inception net internal rate for the indicated fund or composite. Fund Multiple is the since inception sum of distributions and valuation divided by paid in capital. Quartile data is based on information provided by Preqin.



Average Commitment-weighted Active Investment Age (in years): 2.94

Vintage Year	Commitment (\$)	Paid In Capital (\$)	Distributions (\$)	Valuation (\$)	Vintage Year IRR (%)	Index IRR (%)	Vintage Year Multiple	Cumulative Multiple
2011	36,000,000	31,944,859	25,967,695	33,615,694	17.82	7.52	1.87	1.87
2012	25,000,000	22,750,000	27,459,196	8,895,293	19.76	8.62	1.60	1.75
2014	75,000,000	26,137,500	4,143,075	29,537,176	13.95	5.62	1.29	1.60
2015	65,000,000	36,778,209	8,364,985	45,678,067	23.20	5.77	1.47	1.56
2016	40,000,000	30,800,000	12,353,441	30,772,223	26.19	4.52	1.40	1.53
2018	187,500,000	25,375,000	327,079	30,541,082	N/M	N/M	1.22	1.48
2019	141,650,000	27,633,192	262,058	29,545,568	21.53	19.52	1.08	1.43
2020	25,000,000	1,498,452	0	1,357,889	N/M	N/M	0.91	1.42
TOTAL	595,150,000	202,917,212	78,877,529	209,942,992	20.05	7.22		1.42

Index IRR represents the dollar-weighted returns calculated using the MSCI ACW IM Index (USD) (Net) assuming an index investment with the same cash flow timing. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated. Applicable IRRs are marked with 'N/M' for not material. Vintage Year IRR is the annualized since-inception net internal rate for the indicated fund or composite. This report may contain valuations for investments that are preliminary estimates of valuation as of the date of reporting which reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. Vintage Year Multiple is the since inception sum of distributions and valuation divided by paid in capital. Cumulative Multiple is the since inception sum of distributions and valuation divided by paid in capital for all investments through the indicated vintage year.



Average Commitment-weighted Active Investment Age (in years): 2.98

Vintage Year	Commitment (\$)	Paid In Capital (\$)	Distributions (\$)	Valuation (\$)	Vintage Year IRR (%)	Index IRR (%)	Vintage Year Multiple	Cumulative Multiple
2013	40,000,000	35,272,308	21,829,574	26,385,277	8.62	7.55	1.37	1.37
2016	15,000,000	12,669,146	5,369,010	10,625,227	8.27	5.87	1.26	1.34
2018	35,000,000	12,600,000	0	11,794,966	N/M	N/M	0.94	1.26
2019	100,000,000	38,360,482	8,001	36,978,438	-4.21	2.43	0.96	1.14
TOTAL	190,000,000	98,901,937	27,206,585	85,783,908	6.53	6.56		1.14

Index IRR represents the dollar-weighted returns calculated using the Monthly Compounded NCREIF Property Index assuming an index investment with the same cash flow timing. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated. Applicable IRRs are marked with 'N/M' for not material. Vintage Year IRR is the annualized since-inception net internal rate for the indicated fund or composite. This report may contain valuations for investments that are preliminary estimates of valuation as of the date of reporting which reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. Vintage Year Multiple is the since inception sum of distributions and valuation divided by paid in capital. Cumulative Multiple is the since inception sum of distributions and valuation divided by paid in capital for all investments through the indicated vintage year.

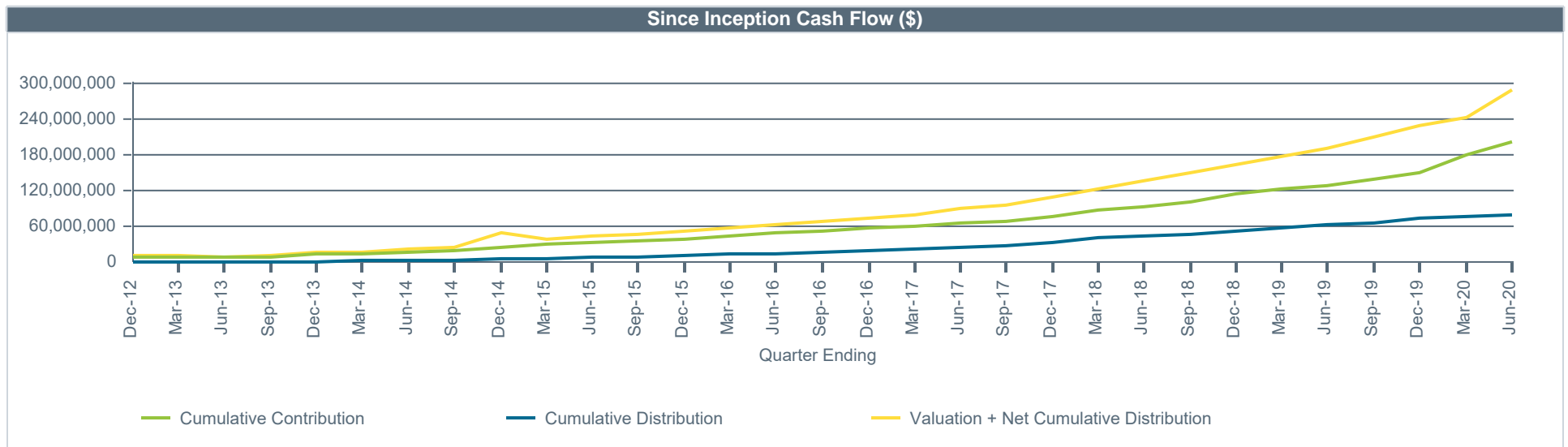
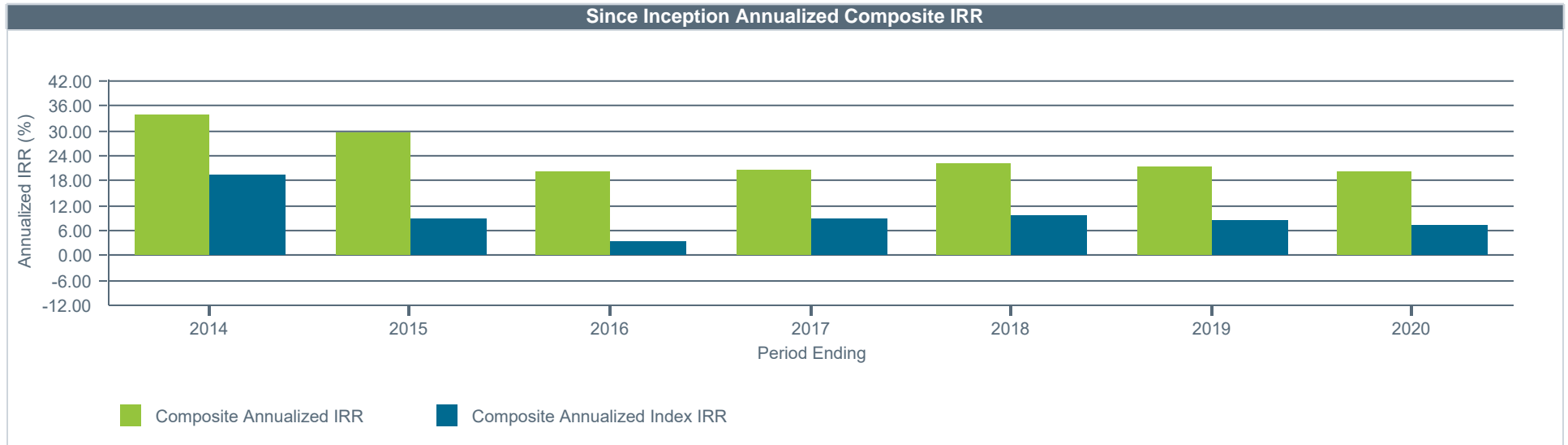


Average Commitment-weighted Active Investment Age (in years): 2.50

Vintage Year	Commitment (\$)	Paid In Capital (\$)	Distributions (\$)	Valuation (\$)	Vintage Year IRR (%)	Index IRR (%)	Vintage Year Multiple	Cumulative Multiple
2011	4,000,000	3,210,265	2,047,385	2,561,944	11.98	3.67	1.44	1.44
2016	70,000,000	70,000,000	13,439,215	60,890,730	2.82	2.09	1.06	1.08
2018	70,000,000	26,930,071	7,969,231	21,853,258	8.59	-1.10	1.11	1.09
2019	75,000,000	4,072,045	0	5,346,215	N/M	N/M	1.31	1.10
TOTAL	219,000,000	104,212,381	23,455,831	90,652,147	4.93	1.64		1.09

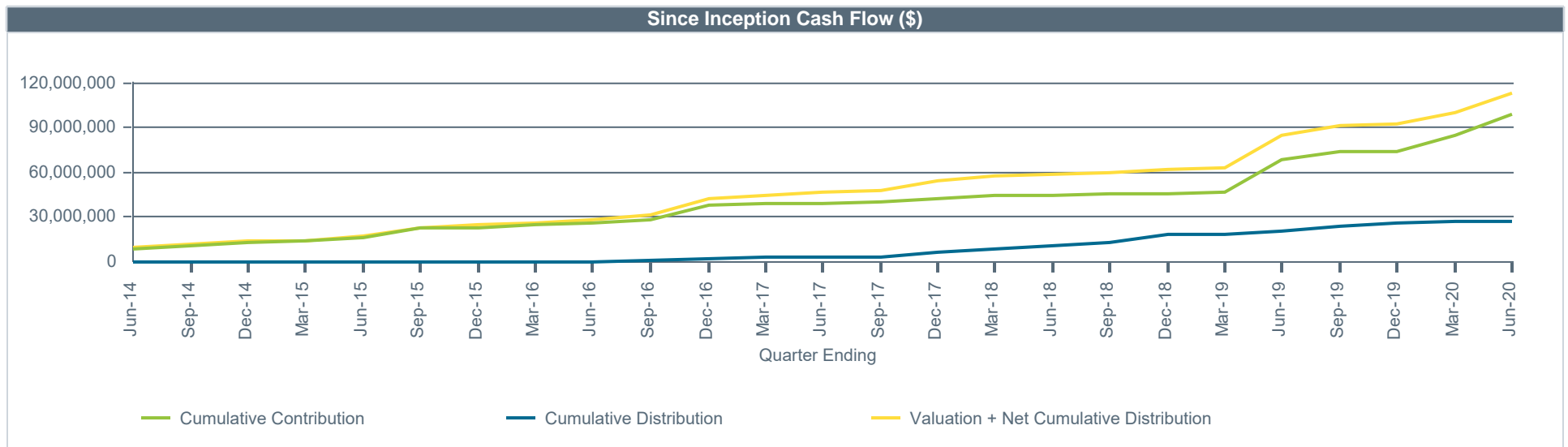
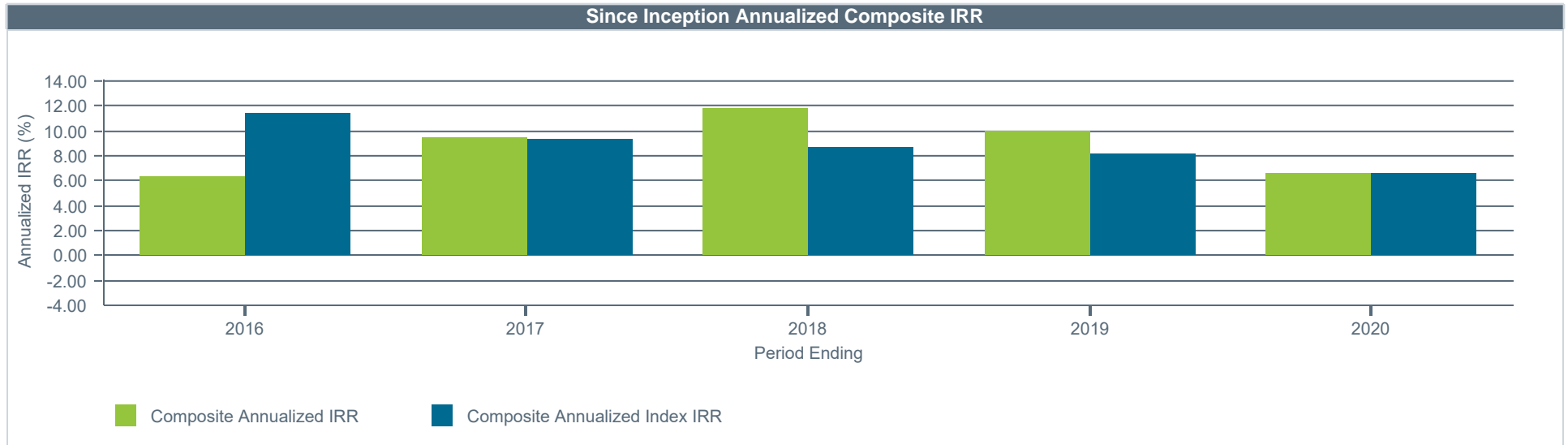
Index IRR represents the dollar-weighted returns calculated using the S&P/LSTA Lvg'd Loan Index assuming an index investment with the same cash flow timing. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated. Applicable IRRs are marked with 'N/M' for not material. Vintage Year IRR is the annualized since-inception net internal rate for the indicated fund or composite. This report may contain valuations for investments that are preliminary estimates of valuation as of the date of reporting which reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. Vintage Year Multiple is the since inception sum of distributions and valuation divided by paid in capital. Cumulative Multiple is the since inception sum of distributions and valuation divided by paid in capital for all investments through the indicated vintage year.





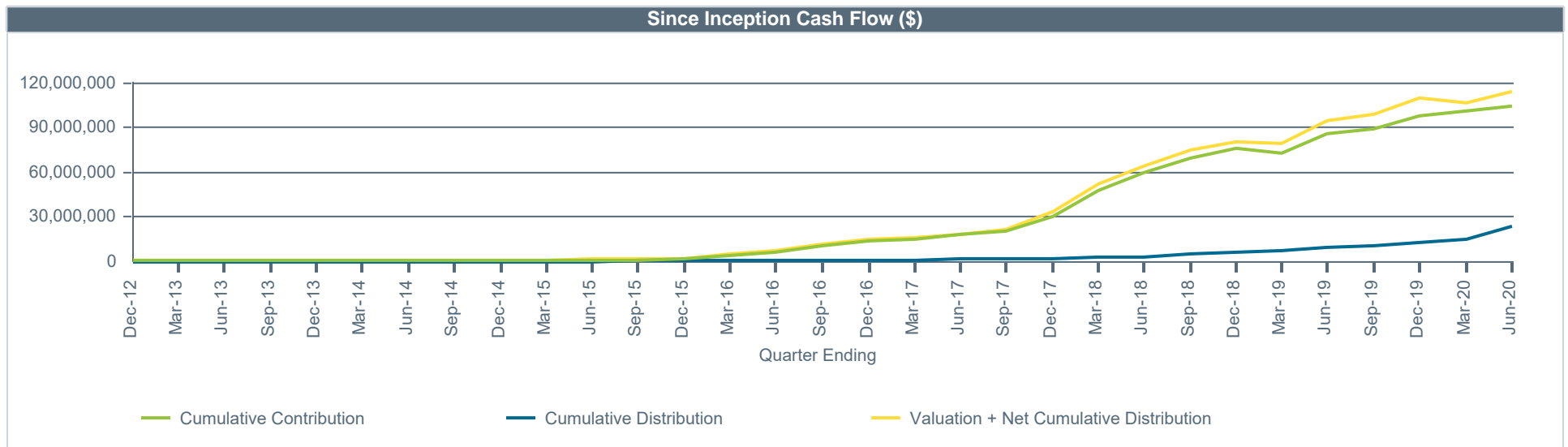
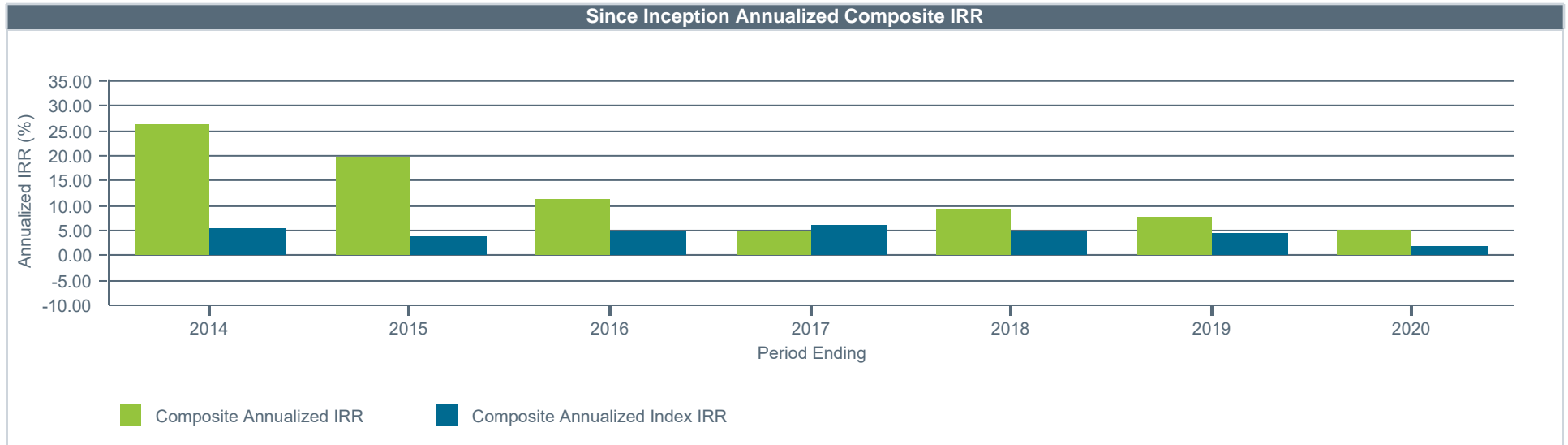
Index IRR represents the dollar-weighted returns calculated using the MSCI ACW IM Index (USD) (Net) assuming an index investment with the same cash flow timing. This report may contain valuations for investments that are preliminary estimates of valuation as of the date of reporting which reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated.





Index IRR represents the dollar-weighted returns calculated using the Monthly Compounded NCREIF Property Index assuming an index investment with the same cash flow timing. This report may contain valuations for investments that are preliminary estimates of valuation as of the date of reporting which reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated.





Index IRR represents the dollar-weighted returns calculated using the S&P/LSTA Lvg'd Loan Index assuming an index investment with the same cash flow timing. This report may contain valuations for investments that are preliminary estimates of valuation as of the date of reporting which reflect the estimated impact of subsequent net cash contributions/distributions. These figures may be used in calculations contained in this report. IRRs are shown only for investments with one year or more of cash flows and for which an accurate IRR could be calculated.



Addendum & Glossary



**Vermont State Teachers' Retirement System
Fee Schedule**

As of September 30, 2020

	Fee Schedule	Market Value As of 09/30/2020 (\$)	Estimated Annual Fee (\$)	Estimated Annual Fee (%)
Blackrock S&P 500 (EqI Wtd) (CF)	0.020 % of Assets	85,535,242	17,107	0.020
Champlain US Mid Cap Core (SA)	0.850 % of First \$50 M 0.750 % of Next \$50 M 0.650 % Thereafter	65,685,871	542,644	0.826
BlackRock MSCI ACW (CF)	0.025 % of Assets	716,668,930	179,167	0.025
Artisan Global Opportunities (CF)	0.750 % of Assets	121,241,163	909,309	0.750
Acadian International All Cap (SA)	0.700 % of First \$25 M 0.600 % of Next \$25 M 0.500 % of Next \$25 M 0.300 % Thereafter	90,044,476	495,133	0.550
Mondrian International (SA)	0.500 % of First \$50 M 0.350 % of Next \$50 M 0.300 % Thereafter	47,619,968	238,100	0.500
BlackRock US Agg (CF)	0.030 % of Assets	433,914,375	130,174	0.030
PIMCO Core Plus (SA)	0.190 % of Assets	126,043,910	239,483	0.190
BlackRock TIPS (CF)	0.025 % of Assets	62,351,570	15,588	0.025
Wellington Opportunistic EMD (CF)	0.550 % of Assets	87,370,390	480,537	0.550
PIMCO Liquidation (SA)	0.300 % of Assets	3,116,022	9,348	0.300
UBS Trumbull Properties (CF)	0.955 % of First \$10 M 0.825 % of Next \$15 M 0.705 % of Next \$25 M 0.790 % of Next \$50 M 0.670 % of Next \$150 M 0.600 % of Next \$150 M 0.560 % of Next \$200 M 0.520 % Thereafter	90,104,431	712,325	0.791
Total Fund		2,113,634,293	3,968,916	0.188

Mutual Fund fees are sourced from Morningstar and/or the investment manager. UBS also has a variable fee ranging from 0.00% to 0.25%. The variable fee has been suspended from 4/01/2018 to 3/31/2022. Total fund fee shown excludes fees on Private Assets.

Performance Related Comments

- RVK began monitoring the plan's assets as of 9/2020. Prior data was provided by the previous consultant.
- Performance shown is net of fees.
- Inception dates shown represent the first full month of available performance.
- Fiscal year ends 6/30.
- Private Asset market values, performance and benchmarks are valued quarterly and shown as of most recently available quarter end, adjusted for subsequent cash flows. Interim periods assume a 0% return.
- Inception dates for allocation buckets are when RVK started calculating performance in 09/2020.
- PIMCO Liquidation (SA) consists of residual assets from Vermont Pension's High Yield allocation.

Decisions Made by the Committee Over the Last 18 Months

Manager Additions

- Blackrock S&P 500 (EqI Wtd) (CF), BlackRock MSCI ACW IMI (CF), BlackRock US Agg (CF), Nuveen Global Agriculture (CF), Angelo Gordan Direct Lending, Harbourvest Dover X, Harbourvest XI Funds, Siguer Guff SBOF IV, Neuberger Berman, Benefit Street Partners II, Blue Vista Real Estate Partners.

Manager Liquidations

- SGA International Small Cap (CF), Pinnacle Natural Resources, KDP High Yield, Allianz Structured Alpha, Guggenheim High Yield, PIMCO Unconstrained Bond Fund, Grosvenor Hedge Fund of Funds, Aberdeen International Equities, Hosking Partners Global Equity Fund.

Historical Transition Comments

- SGA International Small Cap (CF) was liquidated during 09/2020. Remaining market value represents residual assets.
- Angelo Gordon Direct Lending IV was funded during 09/2020.
- Wellington Small Cap Value (SA), SSgA Russell 2000 Growth (SA), Pinnacle Natural Resources (CF) and PIMCO Unconstrained (SA) were liquidated prior to 09/2020. Remaining market values represent residual assets.

Benchmark Comments

- The Target Allocation Index consists of 4% S&P 500 Index (Cap Wtd), 3% Russell 2500 Index, 5% MSCI EAFE Index, 29% MSCI ACW IM Index (USD) (Net), 2% MSCI EAFE Small Cap Index, 20% Bloomberg US Aggregate Bond Index, 3% Bloomberg US Treasury US TIPS Index (TR), 4% JP Morgan Emerging Mkts Bond Gbl Index, 10% S&P/LSTA Leveraged Loan Index (TR), 10% Cambridge US PE Index and 10% NCREIF Property Index.
- The Actual Allocation Indices are calculated monthly using beginning of month investment weights applied to each corresponding benchmark return.
- The Custom SMID Cap Equity Index consists of 50% Russell 2500 index and 50% Russell 2000 index.

Glossary

Active Return - The difference between the investment manager/composite performance relative to the performance of an appropriate market benchmark.

Active Share - Measures the degree to which the holdings of a fund differ from the holdings of the benchmark. Active share is calculated by taking the sum of the absolute value of the differences of the weight of each holding in the fund versus the weight of each holding in the benchmark and dividing by two.

Alpha - A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. It is a measure of the portfolio's historical performance not explained by movements of the market or a portfolio's non-systematic return.

Alpha Ratio - A measure of a portfolio's non-systematic return per unit of downside risk. It is measured by dividing the alpha of a portfolio by the downside risk. The non-systematic return is a measure of a portfolio's historical performance not explained by movements of the market.

Average Quality - Bond quality ratings are reported using the investment managers' and the index providers' preferred rating agency. *Average Quality for managers unable to provide this statistic is instead provided by Morningstar; if unavailable on Morningstar, it has been estimated using a credit quality distribution provided by the manager.* There are two primary rating agencies in the US. *Moody's* assigns ratings on a system that employs up to four symbols (consisting of letters and numbers), such as, Aaa, Aa2, etc., with Aaa being the highest or safest rating. *Standard & Poor's (S&P)* employs a system that uses + and - along with letters, such as AAA, AA+, etc. The two rating agencies' systems are summarized below:

<u>S&P</u>	<u>Moody's</u>	<u>Explanation</u>	<u>S&P</u>	<u>Moody's</u>	<u>Explanation</u>
Higher Credit Quality – Investment Grade			Lower Credit Quality – Below Investment Grade		
AAA	Aaa	Prime/Highest credit quality	BB+	Ba1	Speculative/Low credit quality
AA+	Aa1	High credit quality	BB	Ba2	
AA	Aa2		BB-	Ba3	
AA-	Aa3		B+	B1	Highly speculative
A+	A1	Upper-medium credit quality	B	B2	
A	A2		B-	B3	
A-	A3		CCC+	Caa1	Substantial credit/default risk
BBB+	Baa1	Lower-medium credit quality	CCC	Caa2	Extremely speculative
BBB	Baa2		CCC-	Caa3	
BBB-	Baa3		CC	Ca	Vulnerable to default
			C	Ca	
			D	C	In default

Benchmark Effect - The difference between the blended return of each respective managers' benchmark within a composite and the composite's benchmark return.

Beta - A measure of the sensitivity of a portfolio to the movements in the market. It is a measure of a portfolio's non-diversifiable or systematic risk.

Box Plots - A graphical representation of the distribution of observations. From top to bottom, the four boxes represent the spread between the maximum value and the minimum value in each quartile. A quartile represents the values that divide the observations into four quarters (i.e., 1st quartile, 2nd quartile, 3rd quartile, and 4th quartile). The median observation is where the 2nd quartile and 3rd quartile meet.

Buy and Hold Attribution - At the beginning of the time period under analysis, the manager and benchmark portfolios are broken down into segments (i.e., styles, sectors, countries, and regions) based on the desired type of attribution. The formula assumes zero turn-over to the manager and benchmark portfolios throughout the period and calculates the segment returns ("buy and hold returns") to arrive at performance attribution. Due to portfolio turnover, buy and hold attribution may not accurately represent quarterly performance relative to the benchmark. Country, region, sector, and style allocations are as of the date one quarter prior to the reporting date, and the returns shown are for those segments throughout the quarter reported. Due to disclosure guidelines set by each investment manager, equity characteristics shown are as of the most recent date available. The following is the methodology for segment classification:

Sector - Attribution is calculated using the Global Industry Classification Standard (GICS), which is a detailed and comprehensive structure for sector and industry analysis. Stocks are classified by their primary sector as defined by S&P Capital IQ data.

Country/Region - Attribution is calculated using the Morgan Stanley Capital International (MSCI) region standards. Stocks are classified by their domicile country/region, as defined by S&P Capital IQ data, and thus may differ from the classification of the investment manager and/or index provider.

Style - Stocks are classified into the following style boxes: large/mid/small vs. growth/neutral/value. Stocks are classified along large/mid/small categories at the time of the Russell index rebalancing, using the index market cap boundaries as cutoff points. Stocks are classified along growth/neutral/value categories at the time of the Russell index rebalancing, using the price/book ratio as supplied by S&P Capital IQ. Stocks in the Russell 3000 Index portfolio are sorted by price/book ratio; names with the highest price/book ratio that make up 1/3 of the total market capitalization are assigned to the growth category, and names that make up the subsequent 1/3 of the total market capitalization are assigned to the neutral category, while the balance of the names are assigned to the value category. Stocks are unclassified when there is not enough data to determine a size and style metric.

Portfolio Characteristics and Buy and Hold Attribution reports utilize product-specific data for all mutual funds and commingled funds.

Capital Markets Review -

Breakeven Inflation - Measures the expected inflation rate at each stated maturity by taking the difference between the real yield of the inflation-linked maturity curve and the yield of the closest nominal Treasury maturity.

Consumer Confidence - Measures domestic consumer confidence as defined by the degree of optimism on the state of the economy that consumers express through saving and spending.

Consumer Price Index (CPI) - Measures the change in the price level of consumer goods and services.

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- Federal Funds Rate** - The interest rate at which a depository institution lends funds maintained at the Federal Reserve to another depository institution overnight. It is one of the most influential interest rates in the US economy, since it affects monetary and financial conditions, which in turn have a bearing on key aspects of the broad economy including employment, growth and inflation.
- Option-Adjusted Spread** - Measures the flat spread of an index or bond to the Treasury yield curve after removing the effect of any embedded options.
- Purchasing Managers Index (PMI)** - Measures economic activity by surveying purchasing managers on a monthly basis as to whether business conditions have improved, worsened, or stayed the same.
- Real Gross Domestic Product (Real GDP)** - An inflation-adjusted measure that reflects the value of all goods and services produced by an economy in a given year.
- Unemployment Rate** - The percentage of the total labor force that is unemployed but actively seeking employment.
- US Dollar Total Weighted Index** - Measures the value of the US Dollar relative to a basket of other world currencies. It is calculated as the weighted geometric mean of the dollar's value versus the EUR, GBP, CAD, SEK, CHF, and JPY.
- VIX** - Measures the implied volatility of S&P 500 Index options by looking at the market's expectation of the S&P 500 Index volatility over the next 30 day period. Commonly referred to as the "fear index" or the "fear gauge."
- Cash Flow Effect** – The composite's active return minus the sum of each managers' active return minus the benchmark effect.
- Consistency** - The percentage of quarters that a product achieved a rate of return higher than that of its benchmark. The higher the consistency figure, the more value a manager has contributed to the product's performance.
- Convexity** - A measure of the shape of the curve that describes the relationship between bond prices and bond yields.
- Correlation** - A statistical measure of the relationship between asset class returns. A value of 1.00 is a perfect correlation; that is, the asset classes always move in the same direction. A value of -1.00 indicates a perfect negative correlation, in which the asset classes always move in opposite directions of each other. A value of 0 indicates there is no relationship between the direction of returns of the two asset classes. Correlation calculations only consider the direction of changes relative to two variables and not the magnitude of those changes.
- Coupon Rate** - The percentage rate of interest paid on a bond or fixed income security; it is typically paid twice per year.
- Current Yield** - The annual income of a security divided by the security's current price.
- Down Market Capture** - Down market by definition is negative benchmark return and down market capture represents the ratio in % terms of the average portfolios return over the benchmark during the down market period. The lower the value of the down market capture the better the product's performance.
- Downside Risk** - A measure similar to standard deviation that focuses only on the negative movements of the return series. It is calculated by taking the standard deviation of the negative returns for the selected periodicity. The higher the factor, the riskier the product.
- Earnings Per Share** - It is backward looking, calculated using the one year current EPS divided by the one year EPS five years ago.
- Effective Duration** - The approximate percentage change in a bond's price for a 100 basis point change in yield.
- Excess Return vs. Market** - Average of the monthly arithmetic difference between the manager's return and the benchmark return over a specified time period, shown on an annualized basis.
- Excess Return vs. Risk Free** - Average of the monthly arithmetic difference between the manager's return and the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise) over a specified time period, shown on an annualized basis.
- Excess Risk** - A measure of the standard deviation of a portfolio's performance relative to the risk-free return.
- Expense Ratios** - Morningstar is the source for mutual fund expense ratios.
- Gain/Loss** - The net increase or decrease in the market value of a portfolio excluding its Net Cash Flow for a given period.
- Indices** - All indices and related information are considered intellectual property and are licensed by each index provider. The indices may not be copied, used, or distributed without the index provider's prior written approval. Index providers make no warranties and bear no liability with respect to the indices, any related data, their quality, accuracy, suitability, and/or completeness.
- Information Ratio** - Measured by dividing the active rate of return by the tracking error. The higher the information ratio, the more value-added contribution by the manager.
- Liability Driven Investing (LDI)** - A method to optimally structure asset investments relative to liabilities. The change in liabilities is estimated by the Ryan Labs Generic PPA Index of appropriate duration for that Plan. This benchmark is based on generic data and is therefore an approximation. RVK is not an actuarial firm, and does not have actuarial expertise.
- Estimated Funded Status** - The estimated ratio of a Plan's assets relative to its future liabilities. This is calculated by dividing the Plan's asset market value by the estimated present value of its liabilities. The higher the estimated funded status, the better the Plan's ability to cover its projected benefit obligations. An estimated funded status of 100% indicates a Plan that is fully funded.
- Estimated PV of Liabilities** - An estimate of a Plan's future liabilities in present value terms. The beginning of the period liability is provided by the Plan's actuary. The period-end present value liability estimate provided in this report is derived by applying the estimated percentage change generated using the Ryan Labs Generic PPA Index with duration similar to that reported on the most recent actuarial valuation report.
- Duration of Liabilities** - The sensitivity of the value of a Plan's liabilities to changes in interest rates, as calculated by the Plan's actuary.
- Duration of Assets** - The dollar-weighted average duration of all the individual Plan assets.
- Estimated Plan Hedge Ratio** - The estimate of how well a Plan's investment portfolio is hedged against changes in interest rates - a primary driver of funded status movements. This is calculated by dividing the dollar-weighted values of both the Plan asset duration by the liability duration and

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multiplying by the estimated funded status. An estimated plan hedge ratio of zero indicates that the Plan's liabilities have not been hedged, whereas a value of one indicates fully hedged.

Modified Duration - The approximate percentage change in a bond's price for a 100 basis point change in yield, assuming the bonds' expected cash flows do not change.

Mutual Fund Performance - Whenever possible, manager performance is extended for any share class that does not have 10 years of history. Using Morningstar's methodology, a single ticker within the same fund family (often the oldest share class) is chosen to append historical performance.

Net Cash Flow - The sum, in dollars, of a portfolio's contributions and withdrawals. This includes all management fees and expenses only when performance shown is gross of fees.

Peer Groups -

Plan Sponsor Peer Groups - RVK utilizes the Mellon Analytical Solutions Trust Universe along with the Investment Metrics Plan Sponsor Universe. The combined Mellon Analytical Solutions Trust Universe and Investment Metrics Plan Sponsor Universe is used for comparison of total fund composite results and utilizes actual client performance compiled from consultant and custodian data. The Plan Sponsor Peer Group database includes performance and other quantitative data for over 2,100 plans which include corporate, endowment, foundation, public, and Taft Hartley plans. Plan Sponsor Peer Groups are gross of fees.

Investment Manager Peer Groups - RVK utilizes Investment Metrics' Peer Groups for investment manager peer comparison and ranking. The Investment Metrics Peer Group database includes performance and other quantitative data for over 840 investment management firms and 29,000 investments products, across more than 160 standard peer groups. Mutual Fund Peer Groups are net of fees.

Percentile Rankings - Percentile rank compares an individual fund's performance with those of other funds within a defined peer group of managers possessing a similar investment style. Percentile rank identifies the percentage of a fund's peer group that has a higher return (or other comparative measurement) than the fund being ranked. Conversely, 100 minus the individual fund's ranking will identify the percentage of funds within the peer group that have a lower return than the fund being ranked.

1 - Highest Statistical Value 100 - Lowest Statistical Value

Example: American Funds AMCP;R-4 (RAFEX) is ranked in the 4th percentile within the IM US Equity Large-Cap Growth Funds (MF) Peer Group for the Sharpe Ratio. Within the IM US Equity Large-Cap Growth Funds peer group, 4% of the other funds performed better than American Funds AMCP;R-4 (RAFEX), while 96% of the funds performed worse.

Performance Methodology - RVK calculates performance for investment managers and composites using different methodologies.

Investment Managers - Performance is calculated for interim periods between all large external cash flows for a given month and geometrically linked to calculate period returns. An external cash flow is defined as cash, securities, or assets that enter or exit a portfolio. RVK defines a "large cash flow" as a net aggregate cash flow of $\geq 10\%$ of the beginning-period portfolio market value or any cash flow that causes RVK calculated performance to deviate from manager/custodian reported performance in excess of 5 basis points for a given month.

Composites - The Modified Dietz methodology is utilized to calculate asset class, sub-asset class, and total fund composite performance. The Modified Dietz method calculates a time-weighted total rate of return that considers the timing of external cash flows; however, it does not utilize interim period performance to mitigate the impact of significant cash in- and outflows to the composite.

RVK calculates performance beginning with the first full month following inception. Since inception performance may vary from manager reported performance due to RVK using the first full month of returns as the inception date. Performance for both managers and composites is annualized for periods greater than one year.

Portfolio Characteristics - Due to disclosure guidelines set by each investment manager, portfolio characteristics shown are as of the most recent date available.

Price to Earnings Ratio - The ratio valuing a company's current share price relative to its trailing 12-month per-share earnings (EPS).

Private Equity Quartile Ranks - Private Equity quartile ranks are generated using vintage year peer group data provided by Thomson Reuters, and are based on each fund's annualized, since inception internal rate of return (IRR). Three Private Equity peer groups are available via Thomson Reuters: Buyout, Venture, and All Private Equity. Ranks are available quarterly, at a one-quarter lag.

R-Squared - The percentage of a portfolio's performance explained by the behavior of the appropriate benchmark. High R-Squared means a higher correlation of the portfolio's performance to the appropriate benchmark.

Return - Compounded rate of return for the period.

% Return - The time-weighted rate of return of a portfolio for a given period.

Risk Free Benchmark - ICE BofAML 3 Mo US T-Bill Index unless specified otherwise.

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RVK Liquidity Rating - A qualitative method for determining the relative amount of liquidity in a portfolio. The characteristics considered when determining relative liquidity include trading volume, gates for redemption, leverage, nature of transactions, and pricing mechanisms. The RVK Liquidity Rating is calculated using beginning of month investment weights applied to each corresponding asset class liquidity rating.

<u>Asset Class</u>	<u>RVK Liquidity Rating</u>	<u>Asset Class</u>	<u>RVK Liquidity Rating</u>
<u>Liquid Investments</u>		<u>Less Liquid Investments</u>	
T-Bills and Treasuries	100	Fixed Income Plus Sector	50
Cash Equivalents	98	Stable Value (Plan Sponsor Directed)	50
TIPS	95	Hedge Funds of Funds	35
US Large Cap Equity	95		
Diversified Real Return	93		
Stable Value (Participant Directed)	91		
Global Equity	90	<u>Not Liquid Investments</u>	
Non-US Large Cap Equity	90	Core Real Estate	25
Global Tactical Asset Allocation	88	Core Plus Real Estate	15
MLPs	85	Non-Core Real Estate	5
US Mid Cap Equity	85	Private Equity Funds of Funds	5
US SMid Cap Equity	85		
US Small Cap Equity	85		
REITs	85		
Non-US Small Cap Equity	85		
Emerging Markets Equity	85		
Core Fixed Income	85		
Core Plus Fixed Income	80		

Sector Allocation - Negative fixed income sector allocation reflects manager's use of derivatives, short selling, or interest rate swaps.

Sharpe Ratio - Represents the excess rate of return over the risk-free return (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise), divided by the standard deviation of the excess return to the risk free asset. The result is the absolute rate of return per unit of risk. The higher the value, the better the product's historical risk-adjusted performance.

Simple Alpha - The difference between the manager's return and the benchmark's return.

Spread Duration - The approximate percentage change in a bond's price for a 100 basis point change in its spread over a Treasury of the same maturity.

Standard Deviation - A statistical measure of the range of a portfolio's performance. The variability of a return around its average return over a specified time period.

Thematic Classification - Represents dedicated manager allocations; as such, thematic allocations are approximations. RVK categorizes the following asset classes as Alpha, Capital Appreciation, Capital Preservation, and Inflation:

<u>Alpha</u>	<u>Capital Appreciation</u>	<u>Capital Preservation</u>	<u>Inflation</u>
Absolute Return Strategies	Public Equity	Core Fixed Income	TIPS
Currency Overlay	Private Equity	CMBS Fixed Income	Bank Loans
	Preferred Securities	Asset Backed Fixed Income	Core Real Estate
	High Yield	Domestic Core Plus Fixed Income	Real Return
	Convertible Fixed Income	Mortgage Backed Fixed Income	Inflation Hedges
	TALF Funds	International Developed Fixed Income	REITs
	Distressed Debt	Cash Equivalents	Commodities
	Emerging Market Fixed Income	Stable Value	
	Value Added Real Estate		
	Opportunistic Real Estate		

Time Period Abbreviations - **QTD** - Quarter-to-Date. **CYTD** - Calendar Year-to-Date. **FYTD** - Fiscal Year-to-Date. **YOY** - Year Over Year.

Total Fund Attribution - The Investment Decision Process (IDP) model provides an approach to evaluating investment performance that applies to all asset classes and investment styles. The IDP model is based on a top-down hierarchy framework of investment decisions, with each decision contributing to the overall profit or loss. The IDP approach starts from the strategic asset allocation and follows the flow of the investments down to the manager's skill.

Strategic Asset Allocation (SAA) - The percentage return gained or lost from the long-term strategic asset allocation decision, the most significant determinant of long-term performance. SAA is the product of the target asset allocation multiplied by the corresponding benchmark returns.

Tactical Asset Allocation (TAA) - The percentage return gained or lost from not having been precisely allocated at the target asset allocation mix, whether by deviations that are tactical in nature or a by-product of moving towards the target mix. TAA is the product of the actual asset allocation multiplied by the broad asset class benchmarks, less the SAA.

Style Selection (SS) - The percentage return gained or lost from intentional style biases within each asset class (e.g. value rather than core or overweight to emerging markets relative to benchmark). SS is the product of the actual manager allocation within each asset class multiplied by their specific benchmark, less TAA.

Manager's Skill (MS) - The percentage return gained or lost from manager value added relative to their specific benchmark. MS is the product of the actual manager allocation multiplied by their achieved excess return.

Total Fund Beta - Total Fund Beta is calculated using the S&P 500 as the benchmark. It represents a measure of the sensitivity of the total fund to movements in the S&P 500 and is a measure of the Total Fund's non-diversifiable or systematic risk.



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Tracking Error - A measure of the standard deviation of a portfolio's performance relative to the performance of an appropriate market benchmark.

Treynor Ratio - Similar to Sharpe ratio, but focuses on beta rather than excess risk (standard deviation). Treynor ratio represents the excess rate of return over the risk-free rate (i.e., ICE BofAML 3 Mo US T-Bill Index unless specified otherwise) divided by the beta. The result is the absolute rate of return per unit of risk. The higher the value, the better historical risk-adjusted performance.

Unit Value - The dollar value of a portfolio, assuming an initial nominal investment of \$100, growing at the compounded rate of %Return for a given period.

Up Market Capture - Up market by definition is positive benchmark return and up market capture represents the ratio in % terms of the average portfolio's return over the benchmark during the up market period. The higher the value of the up market capture the better the product's performance.

Yield to Maturity - The rate of return achieved on a bond or other fixed income security assuming the security is bought and held to maturity and that the coupon interest paid over the life of the bond will be reinvested at the same rate of return. The 30-Day SEC Yield is similar to the Yield to Maturity and is reported for mutual funds.

Yield to Worst - The bond yield calculated by using the worst possible yield taking into consideration all call, put, and optional sink dates.

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