

# FIRST FISCAL QUARTER 2019 EXECUTIVE SUMMARY

## VERMONT PENSION INVESTMENT COMMITTEE

November 27, 2018

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# MARKET ENVIRONMENT

NEPC, LLC

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# PERFORMANCE OVERVIEW

## Q3 Market Summary

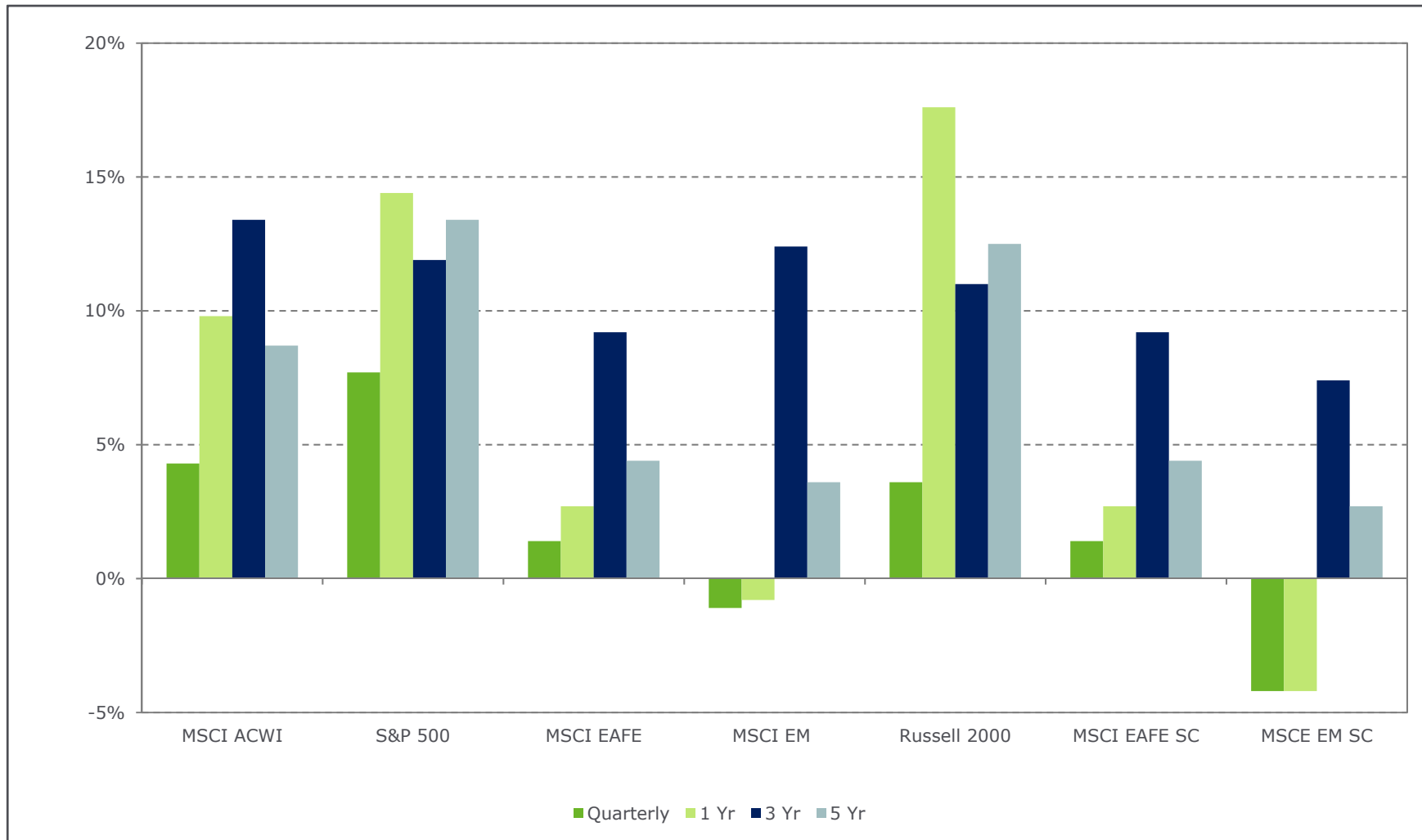
Macro			Equity			Credit			Real Assets		
US Dollar	VIX	US 10-Yr	S&P 500	MSCI EAFE	MSCI EM	US Agg.	High Yield	Dollar EMD	Oil	Gold	REITS
											
0.7%	-4.0	20 bps	7.7%	1.4%	-1.1%	0.0%	2.4%	1.9%	-1.2%	-4.8%	0.7%

- **US equities increased during the quarter, supported by strong macroeconomic data and a tight labor market**
- **Emerging market equities broadly declined with ongoing currency weakness and trade tensions weighing on sentiment**
- **The Federal Reserve hiked rates for the third time this year and is expected to hike rates again in December**

Market segment (index representation) as follows: US Dollar (DXY Index), VIX (CBOE Volatility Index), US 10-Year (US 10-Year Treasury Yield), S&P 500 (US Equity), MSCI EAFE Index (International Developed Equity), MSCI Emerging Markets (Emerging Markets Equity), US Agg (Barclays US Aggregate Bond Index), High Yield (Barclays US High Yield Index), Dollar EMD (JPM Emerging Market Bond Index), Crude Oil (WTI Crude Oil Spot), Gold (Gold Price Spot), and REITs (NAREIT Composite Index).



# Q3 EQUITY INDEX RETURNS



Source: Bloomberg

# Q3 CREDIT INDEX RETURNS



Source: Barclays, S&P, JPM, Bloomberg



# RETURNS FOR KEY INDICES RANKED IN ORDER OF PERFORMANCE

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
MSCI EMERGING MARKETS 32.17	MSCI EMERGING MARKETS 39.39	BC AGGREGATE 5.24	MSCI EMERGING MARKETS 78.51	RUSSELL 2000 GROWTH 29.09	BC AGGREGATE 7.84	MSCI EMERGING MARKETS 18.22	RUSSELL 2000 GROWTH 43.30	S&P 500 13.69	RUSSELL 1000 GROWTH 5.67	RUSSELL 2000 VALUE 31.74	MSCI EMERGING MARKETS 37.28
MSCI EAFE 26.34	RUSSELL 1000 GROWTH 11.81	RUSSELL 2000 VALUE -28.92	RUSSELL 1000 GROWTH 37.21	RUSSELL 2000 26.85	RUSSELL 1000 GROWTH 2.64	RUSSELL 2000 VALUE 18.05	RUSSELL 2000 38.82	RUSSELL 1000 VALUE 13.45	S&P 500 1.38	RUSSELL 2000 21.31	RUSSELL 1000 GROWTH 30.21
RUSSELL 1000 VALUE 22.25	MSCI EAFE 11.17	RUSSELL 2000 -33.79	RUSSELL 2000 GROWTH 34.47	RUSSELL 2000 VALUE 24.5	S&P 500 2.11	RUSSELL 1000 VALUE 17.51	RUSSELL 2000 VALUE 34.52	RUSSELL 1000 13.24	RUSSELL 1000 0.92	RUSSELL 1000 VALUE 17.34	MSCI EAFE 25.03
RUSSELL 2000 VALUE 23.48	RUSSELL 2000 GROWTH 7.06	RUSSELL 1000 VALUE -36.85	MSCI EAFE 31.78	MSCI EMERGING MARKETS 18.88	RUSSELL 1000 1.50	MSCI EAFE 17.32	RUSSELL 1000 GROWTH 33.48	RUSSELL 1000 GROWTH 13.05	BC AGGREGATE 0.55	RUSSELL 1000 12.05	RUSSELL 2000 GROWTH 22.17
RUSSELL 2000 18.37	BC AGGREGATE 6.97	S&P 500 -37.0	RUSSELL 1000 28.43	RUSSELL 1000 GROWTH 16.71	RUSSELL 1000 VALUE 0.39	RUSSELL 1000 16.42	RUSSELL 1000 33.11	BC AGGREGATE 5.97	MSCI EAFE -0.81	S&P 500 11.96	S&P 500 21.83
S&P 500 15.8	RUSSELL 1000 5.77	RUSSELL 1000 -37.6	RUSSELL 2000 27.16	RUSSELL 1000 16.10	RUSSELL 2000 GROWTH -2.91	RUSSELL 2000 16.35	RUSSELL 1000 VALUE 32.53	RUSSELL 2000 GROWTH 5.60	RUSSELL 2000 GROWTH -1.38	RUSSELL 2000 GROWTH 11.32	RUSSELL 1000 21.69
RUSSELL 1000 15.46	S&P 500 5.49	RUSSELL 1000 GROWTH -38.44	S&P 500 26.46	RUSSELL 1000 VALUE 15.51	RUSSELL 2000 -4.18	S&P 500 16.00	S&P 500 32.39	RUSSELL 2000 4.89	RUSSELL 1000 VALUE -3.83	MSCI EMERGING MARKETS 11.19	RUSSELL 2000 14.65
RUSSELL 2000 GROWTH 13.35	RUSSELL 1000 VALUE -0.17	RUSSELL 2000 GROWTH -38.54	RUSSELL 2000 VALUE 20.58	S&P 500 15.06	RUSSELL 2000 VALUE -5.50	RUSSELL 1000 GROWTH 15.26	MSCI EAFE 22.78	RUSSELL 2000 VALUE 4.22	RUSSELL 2000 -4.41	RUSSELL 1000 GROWTH 7.08	RUSSELL 1000 VALUE 13.66
RUSSELL 1000 GROWTH 9.07	RUSSELL 2000 -1.56	MSCI EAFE -43.38	RUSSELL 1000 VALUE 19.69	MSCI EAFE 7.75	MSCI EAFE -12.14	RUSSELL 2000 GROWTH 14.59	BC AGGREGATE -2.02	MSCI EMERGING MARKETS -2.19	RUSSELL 2000 VALUE -7.46	BC AGGREGATE 2.65	RUSSELL 2000 VALUE 7.84
BC AGGREGATE 4.33	RUSSELL 2000 VALUE -9.78	MSCI EMERGING MARKETS -53.33	BC AGGREGATE 5.93	BC AGGREGATE 6.54	MSCI EMERGING MARKETS -18.42	BC AGGREGATE 4.21	MSCI EMERGING MARKETS -2.60	MSCI EAFE -4.90	MSCI EMERGING MARKETS -14.93	MSCI EAFE 1.00	BC AGGREGATE 3.54

QTD	1 Year	3 year	5 Year	10 Year
RUSSELL 1000 GROWTH 9.17	RUSSELL 1000 GROWTH 26.30	RUSSELL 1000 GROWTH 20.55	RUSSELL 1000 GROWTH 16.58	RUSSELL 1000 GROWTH 14.31
S&P 500 7.71	RUSSELL 2000 GROWTH 21.06	RUSSELL 2000 GROWTH 17.98	S&P 500 13.95	RUSSELL 2000 GROWTH 12.65
RUSSELL 1000 7.42	S&P 500 17.91	S&P 500 17.31	RUSSELL 1000 13.67	RUSSELL 1000 12.09
RUSSELL 1000 VALUE 5.70	RUSSELL 1000 17.76	RUSSELL 2000 17.12	RUSSELL 2000 GROWTH 12.14	S&P 500 11.97
RUSSELL 2000 GROWTH 5.52	RUSSELL 2000 15.24	RUSSELL 1000 17.07	RUSSELL 2000 11.07	RUSSELL 2000 11.11
RUSSELL 2000 3.58	RUSSELL 1000 VALUE 9.45	RUSSELL 2000 VALUE 16.12	RUSSELL 1000 VALUE 10.72	RUSSELL 1000 VALUE 9.79
RUSSELL 2000 VALUE 1.60	RUSSELL 2000 VALUE 9.33	RUSSELL 1000 VALUE 13.55	RUSSELL 2000 VALUE 9.92	RUSSELL 2000 VALUE 9.52
MSCI EAFE 1.35	MSCI EAFE 2.74	MSCI EMERGING MARKETS 12.36	MSCI EAFE 4.42	MSCI EMERGING MARKETS 5.40
BC AGGREGATE 0.02	MSCI EMERGING MARKETS -0.81	MSCI EAFE 9.23	MSCI EMERGING MARKETS 3.61	MSCI EAFE 5.38
MSCI EMERGING MARKETS -1.09	BC AGGREGATE -1.22	BC AGGREGATE 1.31	BC AGGREGATE 2.16	BC AGGREGATE 3.77

# TOTAL FUND PERFORMANCE

NEPC, LLC

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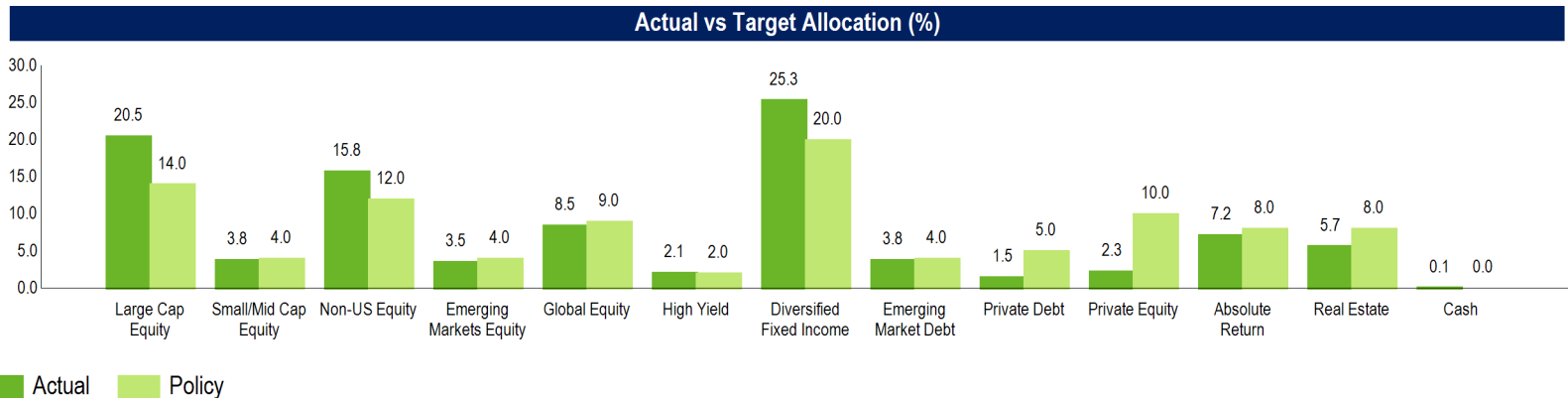
## Vermont State Employees

# TOTAL FUND PERFORMANCE SUMMARY - NET

	Market Value	3 Mo Rank	Fiscal YTD Rank	YTD Rank	1 Yr Rank	3 Yrs Rank	5 Yrs Rank	7 Yrs Rank	10 Yrs Rank								
<b>Total Employees Composite</b>	<b>\$1,866,512,682</b>	<b>2.4%</b>	<b>64</b>	<b>2.4%</b>	<b>64</b>	<b>2.5%</b>	<b>78</b>	<b>6.0%</b>	<b>76</b>	<b>8.9%</b>	<b>70</b>	<b>6.0%</b>	<b>88</b>	<b>7.5%</b>	<b>90</b>	<b>6.9%</b>	<b>69</b>
Allocation Index		2.3%	70	2.3%	70	2.4%	81	6.1%	73	8.8%	75	5.9%	89	7.2%	95	6.4%	88
Policy Index		2.1%	79	2.1%	79	2.3%	81	5.6%	82	8.5%	84	5.9%	89	7.2%	95	6.3%	92
InvestorForce Public DB < \$5 Billion Net Median		2.7%		2.7%		3.3%		7.0%		9.3%		7.0%		8.9%		7.2%	

3 Years Ending September 30, 2018								
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Total Employees Composite	8.92%	70	4.80%	22	1.68	28	2.60	6
Allocation Index	8.77%	75	4.85%	26	1.63	40	2.36	17
Policy Index	8.45%	84	4.55%	10	1.67	30	2.47	10

5 Years Ending September 30, 2018								
	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Sharpe Ratio	Rank	Sortino Ratio RF	Rank
Total Employees Composite	6.02%	88	5.21%	30	1.05	75	1.63	64
Allocation Index	5.88%	89	5.06%	22	1.06	75	1.60	67
Policy Index	5.88%	89	4.77%	9	1.12	64	1.77	38

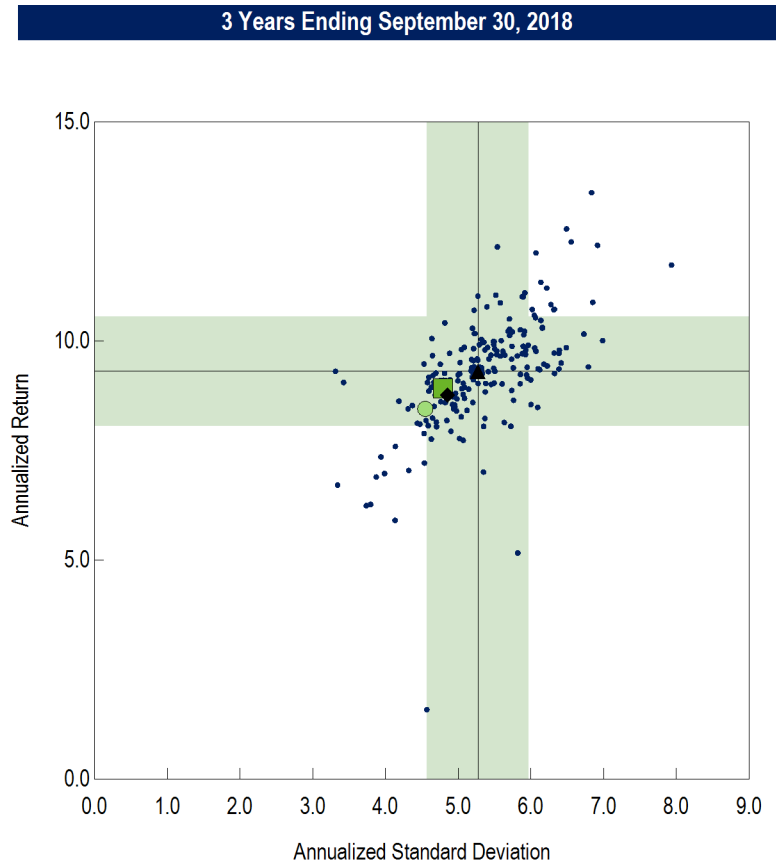


Asset class weights may not add up to 100% due to rounding



# Vermont State Employees

## TOTAL FUND RISK/RETURN - NET



- Total Employees Composite
- ◆ Allocation Index
- Policy Index
- ▲ Universe Median
- 68% Confidence Interval
- InvestorForce Public DB < \$5 Billion Net

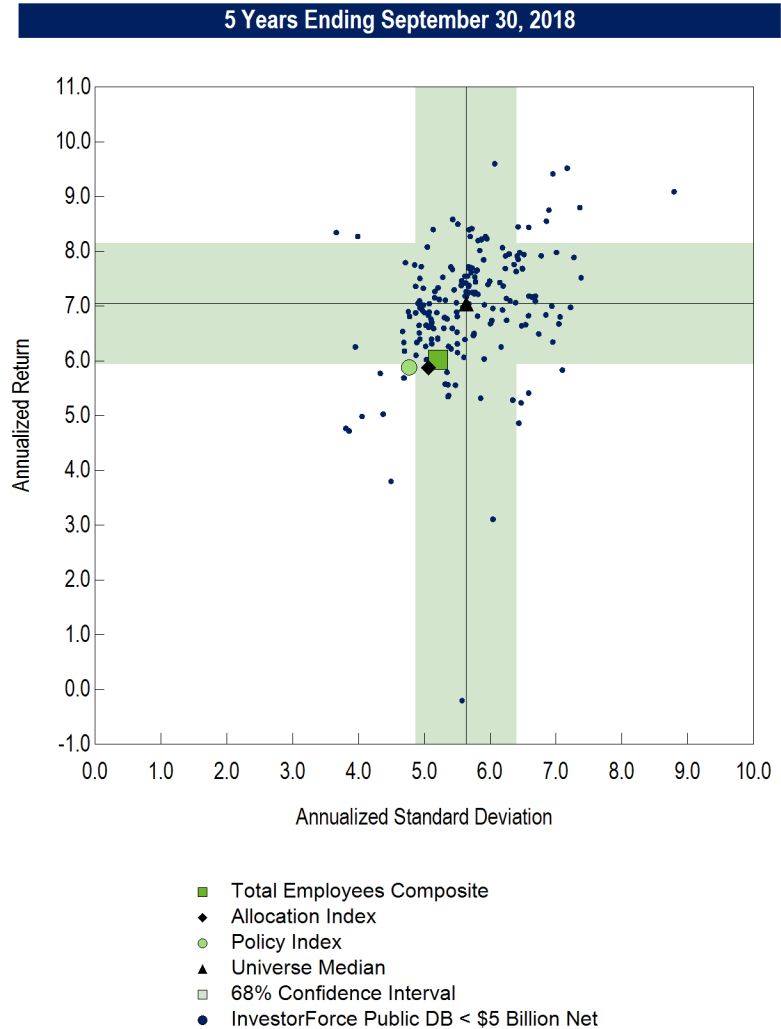
3 Years Ending September 30, 2018

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Employees Composite	8.92%	70	4.80%	22	1.68	28
Allocation Index	8.77%	75	4.85%	26	1.63	40
S&P 500	17.31%	1	9.18%	99	1.79	11
FTSE WGBI TR	1.68%	99	5.88%	77	0.14	99
MSCI ACWI	13.40%	1	9.37%	99	1.34	95
MSCI ACWI ex USA	9.97%	23	10.88%	99	0.84	99
InvestorForce Public DB < \$5 Billion Net Median	9.31%	--	5.27%	--	1.60	--



# Vermont State Employees

## TOTAL FUND RISK/RETURN - NET



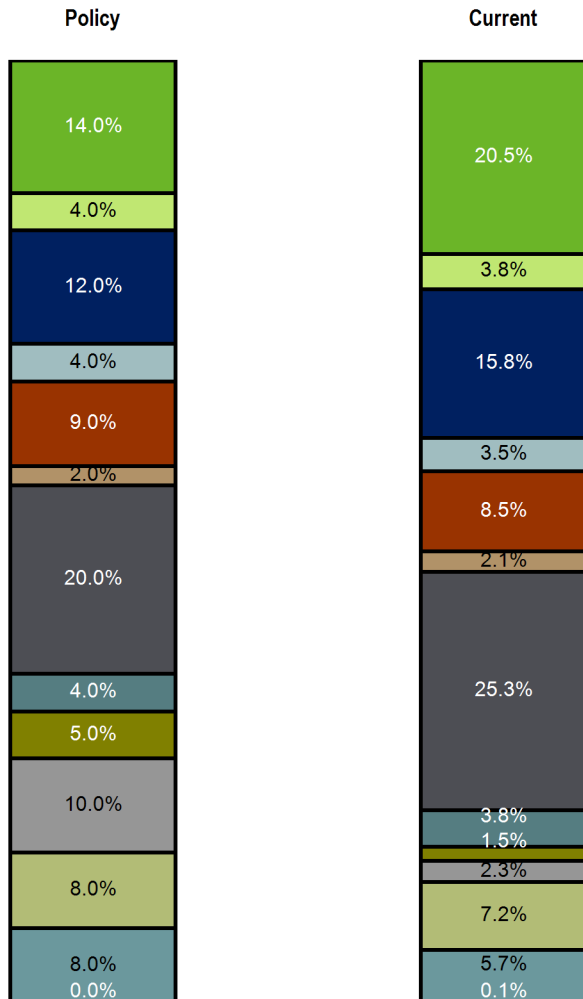
5 Years Ending September 30, 2018

	Anlzd Return	Anlzd Return Rank	Anlzd Standard Deviation	Anlzd Standard Deviation Rank	Sharpe Ratio	Sharpe Ratio Rank
Total Employees Composite	6.02%	88	5.21%	30	1.05	75
Allocation Index	5.88%	89	5.06%	22	1.06	75
S&P 500	13.95%	1	9.55%	99	1.40	7
FTSE WGBI TR	0.20%	99	5.21%	31	-0.06	99
MSCI ACWI	8.67%	3	9.79%	99	0.83	96
MSCI ACWI ex USA	4.12%	99	11.20%	99	0.32	99
InvestorForce Public DB < \$5 Billion Net Median	7.04%	--	5.63%	--	1.17	--



Vermont State Employees

# TOTAL FUND ASSET ALLOCATION VS. POLICY TARGETS



Asset Allocation vs. Target					
		Current	Policy	Current	Difference*
Large Cap Equity	\$381,752,674	14.0%	20.5%	6.5%	
Small/Mid Cap Equity	\$70,479,807	4.0%	3.8%	-0.2%	
Non-US Equity	\$294,449,150	12.0%	15.8%	3.8%	
Emerging Markets Equity	\$66,142,164	4.0%	3.5%	-0.5%	
Global Equity	\$158,481,541	9.0%	8.5%	-0.5%	
High Yield	\$39,827,527	2.0%	2.1%	0.1%	
Diversified Fixed Income	\$472,975,909	20.0%	25.3%	5.3%	
Emerging Market Debt	\$71,691,117	4.0%	3.8%	-0.2%	
Private Debt	\$27,993,296	5.0%	1.5%	-3.5%	
Private Equity	\$42,027,299	10.0%	2.3%	-7.7%	
Absolute Return	\$133,980,149	8.0%	7.2%	-0.8%	
Real Estate	\$105,699,306	8.0%	5.7%	-2.3%	
Cash	\$1,012,743	0.0%	0.1%	0.1%	
<b>Total</b>	<b>\$1,866,512,682</b>	<b>100.0%</b>	<b>100.0%</b>		

Absolute Return includes Grosvenor, Pinnacle Natural Resources, L.P., and Allianz Structured Alpha



# ACTIVE MANAGER RELATIVE PERFORMANCE

	Positive	
QUARTER	<p><b><u>U.S. Equity</u></b></p> <ul style="list-style-type: none"> <li>Champlain Small/Mid Cap (+310)</li> </ul> <p><b><u>Non U.S. Equity</u></b></p> <ul style="list-style-type: none"> <li>Mondrian International (+70)</li> <li>Aberdeen Emerging Markets (+60)</li> </ul> <p><b><u>Fixed Income</u></b></p> <ul style="list-style-type: none"> <li>PIMCO Core Plus (+20)</li> </ul> <p><b><u>Absolute Return</u></b></p> <ul style="list-style-type: none"> <li>Pinnacle Nat'l Resources (+320)</li> <li>Grosvenor Fund of Hedge Funds (+40)</li> <li>Allianz Structured Alpha (+150)</li> </ul>	<p><b><u>Non U.S. Equity</u></b></p> <ul style="list-style-type: none"> <li>Acadian International (-40)</li> <li>Hosking Global (-270)</li> <li>Artisan Global (-80)</li> <li>Acadian (-40)</li> </ul> <p><b><u>Fixed Income</u></b></p> <ul style="list-style-type: none"> <li>PIMCO Unconstrained (-20)</li> <li>GAM Unconstrained (-140)</li> <li>Guggenheim High Yield (-110)</li> <li>Wellington EM Debt (-10)</li> </ul>
	Positive	Negative
1 YEAR	<p><b><u>Domestic Equity</u></b></p> <ul style="list-style-type: none"> <li>Champlain Small/Mid Cap (+820)</li> </ul> <p><b><u>Non U.S. Equity</u></b></p> <ul style="list-style-type: none"> <li>Acadian International (+60)</li> </ul> <p><b><u>Fixed Income</u></b></p> <ul style="list-style-type: none"> <li>PIMCO Core (+20)</li> <li>PIMCO Unconstrained (+240)</li> <li>Wellington EM Debt (+20)</li> </ul> <p><b><u>Absolute Return</u></b></p> <ul style="list-style-type: none"> <li>Pinnacle Nat'l Resources (+870)</li> <li>Grosvenor Fund of Hedge Funds (+340)</li> <li>Allianz Structured Alpha (+190)</li> </ul>	<p><b><u>Non U.S. Equity</u></b></p> <ul style="list-style-type: none"> <li>Mondrian International (-190)</li> <li>Aberdeen Emerging Markets (-590)</li> </ul> <p><b><u>Fixed Income</u></b></p> <ul style="list-style-type: none"> <li>GAM Unconstrained (-300)</li> <li>Guggenheim High Yield (-70)</li> </ul>

Reflects public markets and active management only  
**GREEN** indicates the managers had outperformed their respective benchmarks  
**RED** indicates the managers had underperformed their respective benchmarks  
**(+/-)** is the over/under performance relative to respective benchmarks in basis points



# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – POSITIVE CONTRIBUTORS

	Commentary	Due Diligence Rating
<b>Champlain</b> <i>Small/Mid Cap Equity</i>	<p><b>Returned 7.2%, outperforming the custom benchmark, 50% R2000/50% R2500, by 330bps</b></p> <p><i>Contributors:</i> The overweight and stock selection in health care holdings meaningfully outperformed the benchmark for the quarter and year to date. Gains in Veeva, Bio-Techne, and NuVasive led the quarter. Stock selection in technology and overweight in software accounted for the majority of the outperformance for the sector. Cloud computing holdings have gained with the fundamentals reflecting growth as customer adoption increases. Within industrials, last quarters largest detractor, John Bean Tech (JBT) was this quarters strongest contributor as the company’s quarterly results confirmed any weakness in first quarter was a one time event. Strong stock selection in Consumer Discretionary as Tractor Supply and Ulta Beauty holdings were back in favor.</p> <p><i>Detractors:</i> Overweight and stock selection in Consumer Staples as Campbell Soup owner, Third Point suggests changes to the Campbell Soup recipe. No exposure to Utilities as this sector performed well in the third quarter.</p> <p><i>Positioning:</i> Trimmed consumer holdings that have appreciated as investors have sought safe harbor. Added to industrial holdings that have been sold off as investors anticipate the next recession. Taking advantage of the decline in the technology sector to add selectively to the cloud-based software holdings. While valuations alone warrant selective adds in the software industry, IBM’s intention to acquire Red Hat, Inc. (RHT) will create a meaningful return of capital; and they want to redeploy at least some of that capital back into the industry as opportunities present themselves.</p>	1
<b>Mondrian</b> <i>International Equity</i>	<p><b>Returned 2.3%, outperforming the MSCI EAFE by 70bps</b></p> <p><i>Contributors:</i> Stock selection in Asia Pacific was the driver of positive relative returns, in particular, the position in Fujifilm, CK Hutchinson, and China Mobile. There has been some speculation that the company’s two rivals could be combined to accelerate the commercialization of 5G. TSMC, a Taiwanese semiconductor manufacturer, also generated strong returns after a US competitor halted nanometer chip development, reinforcing TSMC’s leadership in this space. Overweight in telecom and energy sectors as earnings mostly exceeded expectations and oil prices rose as demand was robust and supply tightened. Underweight in the weak real estate, which declined following a rise in bond yields. Underweight Japanese Yen and Australian dollar.</p> <p><i>Detractors:</i> In the context of Brexit-related uncertainty, the portfolio’s positions in domestically-oriented UK stocks detracted. They have added to exposures to take advantage of attractive valuations. Underweight position in Japan detracted as the equity market was supported by yen weakness. Overweight position in Italy as plans from the new Italian government to raise public spending created uncertainty. They have taken the opportunity to add to positions in selected European banks where recent share price weakness led to attractive valuations. Underweight in Swiss frank also detracted.</p>	1



Returns presented are net of investment management fees

# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – POSITIVE CONTRIBUTORS

	Commentary	Due Diligence Rating
<b>Aberdeen</b> <i>Emerging Market Equity</i>	<p><b>Returned -0.50%, outperforming the MSCI Emerging Markets by 60bps</b></p> <p><i>Contributors:</i> Asset allocation and stock selection contributed to returns. The light positioning in China proved beneficial as the market sold off on concerns over Beijing's trade concerns with the US. Holdings in Indonesia with Indocement and Astra International rebounded from previous weakness. Mexico's recovery benefited their holdings, particularly the airport operator, Asur, and the banking and financial services provider, Banorte. Lack of exposure to Alibaba, which fell more than 11% over the quarter, had benefited relative to the benchmark.</p> <p><i>Detractors:</i> Negative stock selection in India as there were signs of distress in the financial sector. Specifically, the Indian lender, Kotak Mahindra Bank, on concerns over the default by the non-banking financial company IL&amp;FS. Underweight to energy as oil prices continued to rally.</p> <p><i>Positioning:</i> Remain underweight in China, where companies fall short on quality and corporate governance. Underweight in Taiwan as the export-oriented economy has a market that offers a narrow selection of companies, the bulk in the tech sector. Underweight in Korea as the well-known brands such as Samsung and Hyundai dominate and can make the business landscape less competitive. Overweight in Hong Kong as it offers companies that have diversified businesses and added advantage of better standards over China. Overweight India as the market has many high-quality companies and the economic growth rate is among the best in Asia. Overweight Brazil as the economy offers a deep market of quality companies at attractive valuations.</p>	<p><b>2</b>            Rating Changed from "1" to "2" in January 2018</p>
<b>PIMCO</b> <i>Core Plus Fixed-Income</i>	<p><b>Returned 0.20%, outperforming the Barclays Aggregate Bond Index by 20bps</b></p> <p><i>Contributors:</i> Contributions from interest rate strategies more than offset detractions from currency and spread sector strategies. Developed market interest rate strategies, particularly country selection in Europe. Positions in non-Agency MBS. Local rate exposure in Brazil.</p> <p><i>Detractors:</i> Underweight investment-grade corporate credit. Tactical exposure to select high carry EM currencies. Positions in Agency MBS.</p> <p><i>Positioning:</i> Underweight duration overall and have a preference for US duration over other developed regions. The intermediate portion of the curve offers more attractive characteristics while longer term rates may rise as the Fed continues to reduce accommodation. Attractive opportunities in credits that benefit from US growth and the housing sector, specifically banks and select financial companies. Tactical with currency positioning, particularly given less conviction in the overall direction of the dollar. Select high carry EM FX may be attractive as diversifying risk exposure.</p>	<p><b>1</b></p>



Returns presented are net of investment management fees

# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – POSITIVE CONTRIBUTORS

	Commentary	Due Diligence Rating
<p><b>Pinnacle Natural Resources (PNR)</b> <i>Absolute Return</i></p>	<p><b>Returned 1.2%, outperforming the Bloomberg Commodity Index by 320bps</b></p> <p><i>Contributors:</i> Exposure to European strategies contributed the most to performance, driven by positions in power, gas, coal, and carbon markets. Exposure to U.S. natural gas markets with higher prices, driven by low U.S. gas stockpiles, warm-weather related demand, and nuclear power plant outages. PNR’s exposure to precious metals and platinum group metals (PGMs) contributed to the portfolio. With the exception of palladium, the precious metals market was lower in the quarter.</p> <p><i>Detractors:</i> Exposure to oil markets detracted the most from the Fund’s performance. Modest losses were also seen in base metals and agricultural/meats exposure. PNR experienced losses in the grains complex. In Q3, abundant supplies, a stronger U.S. Dollar, and the ongoing talks of tariffs and retaliatory measures between the U.S. and China continued to weigh on the agricultural sector. Industrial metals detracted as they were weaker on global trade uncertainty with the U.S.-China trade dispute weighing on the demand outlook.</p> <p><i>Positioning:</i> As of end of the quarter, gross and net exposure were 6.8X and 1.5X, respectively. Exposure to FX/Rates/Index detracted from performance. As of October 1, 2018, PNR had a total of 17 active underlying investments. The Fund redeemed a natural gas focused managed account and added an investment to a physical natural gas and power company.</p>	<p><b>1</b></p>



Returns presented are net of investment management fees



# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – POSITIVE CONTRIBUTORS

	Commentary	Due Diligence Rating
<b>Grosvenor</b> <i>Absolute Return</i>	<p><b>Returned 0.6%, outperforming the HFRI Fund of Funds Composite Index by 40 bps</b></p> <p><i>Contributors:</i> The Fund’s macro, relative value, and credit strategies were notable positive drivers of returns, with modest additional contribution from its multi-strategy and quantitative allocations. A positive multi-strategy performer included a diversified relative value manager which invests primarily in fixed income securities that was energy-heavy benefited. Positive outliers in the Fund’s equity strategy included investments with a European-focused, small- and midcap equity activist, a long-biased healthcare/biotechnology sector specialist, and a pair of core, market-neutral equity investors. The Fund’s dedicated emerging markets debt allocation and an event-driven, long-biased credit fund were also accretive to returns.</p> <p><i>Detractors:</i> The equity strategy component was a minor detractor, and was marked by significant dispersion at the underlying fund level. Material detractors in the third quarter were a China-focused low-net specialist, a long-biased U.S. financials specialist, and a Europe-oriented event-driven manager. Negative performers included the Fund’s dedicated long-volatility investments and an Asia-focused discretionary macro investor.</p> <p><i>Positioning:</i> Based on their cautious view, they have a ‘barbelled’ investment approach, emphasizing lower sensitivity to broader markets. Global volatility and geopolitical turmoil have begun to provide opportunities into which they are deploying capital, seeking to take advantage of expected future dislocation. An example of such an investment is with a macro hedge fund which aims to hedge against mispriced Italian risk premia, as well as other European assets which may face contagion risk stemming from ongoing political turmoil in Italy.</p>	<b>1</b>
<b>Allianz</b> <b>Structured Alpha 500</b> <i>Absolute Return</i>	<p><b>Returned 2.0%, outperforming the 91 Day T-Bills by 150bps</b></p> <p><i>Contributors:</i> The benign environment enabled a hold to all of their range-bound spreads to expiration, with no restructuring of any portfolio positions. In the quarter they were able to capitalize on the S&amp;P 500 index’s ascent by realizing substantial gains on upside directional spreads. These gains, combined with some positive mark-to-market recovery at the beginning of July, enabled the portfolio to perform ahead of target despite a low quarterly average VIX level of 13.</p> <p><i>Detractors:</i> A rising market can dampen return potential as it keeps implied volatility levels down.</p> <p><i>Positioning:</i> With a 2-point increase in the year-over-year average VIX (from 11 to 13), they were able to build range-bound spread profit zones approximately 1.5% wider, allowing for more statistical safety in the event of an equity-market decline.</p>	<b>1</b>



Returns presented are net of investment management fees

# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – **DETRACTORS**

	Commentary	Due Diligence Rating
<p><b>GAM</b> <b>Unconstrained</b> <i>Unconstrained</i> <i>Fixed Income</i></p>	<p><b><u>Liquidation Update</u></b></p> <p>NEPC has been conducting bi-weekly update calls with GAM to receive updates on the orderly liquidation of the Unconstrained Bond Fund. GAM has made significant progress liquidating the Fund’s holdings, including many of the Fund’s illiquid positions, and to date has distributed approximately 66% of the total fund value. The firm has indicated that they intend to make another distribution in late November or early December following the settlement of a sale transaction of one of the illiquid holdings. The firm has continued to liquidate security positions and close out derivative contracts used for hedging throughout October.</p> <p>The largest illiquid positions remaining in the portfolio are the Liberty Industries PPA (Power Purchase Agreement) bonds. GAM has indicated that the renewable energy certification tied to the bonds’ underlying assets has progressed as planned and they believe that the completion of this process later this year will enable the issuer to refinance the bonds at more favorable rates, which will enable GAM to exit the position at or near the current price sometime in December or January 2019. Because the Liberty Industries bonds are denominated in Pound Sterling (GBP), GAM has left a GBP to US Dollar (USD) currency hedge in place to prevent currency losses on the position. As part of NEPC’s ongoing monitoring of the liquidation we have contacted the GAM Fund’s third-party valuation vendor, State Street Bank, to confirm that contract and pricing policies related to the Fund conform with industry standards and that there have been no conflicts between the valuations provided by State Street and GAM’s internal pricing of the Fund holdings.</p> <p>GAM disclosed updated information on the firm’s assets-under-management as part of its 3rd quarter earnings announcement. The firm has seen the total assets managed by its investment management business drop from approximately \$85 billion to \$67 billion during the third quarter, while the assets in its other units have been more stable. On November 6th GAM further disclosed that its Chief Executive, Alexander Friedman, would be leaving the firm and would be replaced on an interim basis by David Jacob, a non-executive Director on the firm’s Advisory Board. Mr. Jacob has significant asset management experience, having most recently served as CEO of Rogge Global Partners. Given Mr. Friedman’s role overseeing the portfolio management team that managed the Unconstrained Bond Fund his departure was not unexpected.</p> <p>GAM has delivered market value statements for October, reporting a positive return of 0.63% during a volatile month for stocks and bonds. NEPC is awaiting updated holdings as of October 31st and will continue to report any further developments as information becomes available.</p>	<p><b>Terminate</b> Rating changed from “1” to terminate in August 2018</p>



# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – **DETRACTORS**

	Commentary	Due Diligence Rating
<p><b>Acadian</b> <i>International Equity</i></p>	<p><b>Returned 1.0%, underperforming the MSCI EAFE by 40bps</b></p> <p><i>Detractors:</i> Small-cap tilt was a headwind in most markets. The underperformance of small caps was most acute in the U.S. A modest exposure to volatility also detracted. Exposure to Turkey adversely impacted their emerging market portion of their strategy. Holdings such as Tencent, Alibaba, and Naspers lagged.</p> <p><i>Contributors:</i> Positive stock selection across most market segments. Growth and momentum continued to deliver strong payoffs. Quality remains positive especially within small-caps. Value offered some support as payoffs to price to intrinsic asset value turned positive in July. More nuanced factors such as short interest and peer momentum also added value highlighting the strength of both traditional and proprietary factors. Factor returns did vary somewhat across regions. Value was particularly strong in emerging markets as previous leaders with elevated valuations such as</p> <p><i>Positioning:</i> Positive on healthcare, energy, and software, driven by positive momentum, whereas automobiles, real estate, and utilities are viewed negatively. Italy and Canada, where valuations remain attractive, are viewed as strongly positive. Portugal leads their ranking supported by valuations and an additional boost from quality. Russia remains at the top of their standings supported by strong value scores. Other top countries include Israel, Austria, and Japan. UK, Ireland, and Belgium, have less encouraging outlooks. Hong Kong remains as a bottom scored country.</p>	<p><b>1</b></p>



Returns presented are net of investment management fees

# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – **DETRACTORS**

	Commentary	Due Diligence Rating
<p><b>PIMCO</b> <i>Unconstrained Fixed Income</i></p>	<p><b>Returned 0.9%, trailing the 3-Month Libor benchmark by 20bps</b></p> <p><i>Contributors:</i> Country selection in the eurozone, short exposure to Japanese and UK interest rates, as well as interest rate strategies in Argentina and Brazil all contributed to performance. Exposure to investment-grade and high yield corporate credits contributed to performance as spreads continued to tighten. Non-Agency mortgage-backed security selection and sector exposure benefitted. Exposure to USD-denominated emerging market debt contributed to performance as the asset class posted positive returns in the quarter.</p> <p><i>Detractors:</i> Exposure to U.S. interest rates detracted as yields rose across the curve in quarter. Exposure to high carry emerging market currencies, primarily the Argentina peso and Turkish lira, detracted from performance as those currencies continued to depreciate despite positive policy developments towards the end of the quarter.</p> <p><i>Positioning:</i> Retain a defensive position on duration with a focus of relative value. See value in being long US duration while remaining short duration in Japan, UK, and the Eurozone. Selectively investing in corporate credit with a focus on high quality positions. Favor long positions in higher yield EM currencies, such as the Russian ruble, Argentine peso, and Turkish lira, versus lower yielding Asian currencies such as Taiwanese and Singapore dollars. Favor US dollar versus developed market currencies as well.</p>	<p><b>1</b></p>



Returns presented are net of investment management fees

# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – **DETRACTORS**

	Commentary	Due Diligence Rating
<b>Hosking</b> Global Equity	<p><b>Returned 1.6%, underperforming the MSCI ACWI Index by 270 bps.</b></p> <p><i>Detractors:</i> The portfolio’s largest overweight sectors have been financials, materials and consumer discretionary, all of which underperformed in the quarter. The underweight to technology stocks, particularly not owning Apple, was a strong drag as was the overweight to emerging markets, notably Russia. Underperformance experienced so far this year is driven by their two largest overweight areas – financials and emerging markets. Underweight North America and overweight Europe 6% detracted.</p> <p><i>Contributors:</i> Amazon was the largest positive contributor. Not owning Facebook, holdings in Belmond, MBK, Delta Air Lines, Motor Oil, not owning Tencent and the holding in TSMC, all benefited. Following a challenging run, some of the long-held positions to US airlines, including Delta and American, were also positives.</p> <p><i>Positioning:</i> The portfolio saw historically low turnover with purchases reflecting a continuation towards areas of the market that remain out of favor. The Amazon position continued to be trimmed. The case for financials remain as banks have expanding net interest margins and have been cost cutting, helping book value per share growth exceed the US stock market. With US shares looking relatively expensive, Emerging Markets continues to remain a better place as inflation rates, current account deficits, and debt coverage ratios are well-contained and most currencies are floating.</p>	<b>1</b>
<b>Artisan</b> Global Equity	<p><b>Returned 3.5%, underperforming the MSCI ACWI Index by 80 bps</b></p> <p><i>Contributors:</i> Though positive on an absolute basis, our portfolio trailed the MSCI AC World in the quarter. Relative weakness was concentrated among our energy and consumer discretionary holdings.</p> <p><i>Detractors:</i> Our health care, technology and communication services holdings were beneficial in the quarter.</p> <p><i>Positioning:</i> Despite rising uncertainty, there remain interesting investing opportunities globally— with many trading at valuations that still look reasonable to us given the opportunity ahead of them. Regardless of the direction markets take in the coming quarters, we will adhere to our disciplined approach, which over the course of our team’s history, has proved sufficiently resilient to withstand a variety of investing environments.</p>	<b>1</b>



Returns presented are net of investment management fees

# INVESTMENT MANAGER – Q1 FISCAL 2019 COMMENTARY – **DETRACTORS**

	Commentary	Due Diligence Rating
<p><b>Wellington Opportunistic Emerging Market Debt</b></p>	<p><b>Returned 1.8%, underperforming the JP Morgan EMBI Global Index by 10 bps</b></p> <p><i>Detractors:</i> Negative security selection in Argentina, specifically an allocation to EUR-denominated sovereign debt. An allocation to local rates in Russia, due to an undervalued and moderate economic recovery with inflation closer to target but manageable, weighed on results. A lack of exposure to Pakistan hurt results. They are cautious on Pakistan due to negative fundamental trends, including declining reserves due to a dependency on external financing, weak fiscal performance due to low revenue collection, and a widening current account deficit due to excessive reliance on oil prices. Negative security selection in Romania, specifically an allocation to EUR-denominated sovereign debt, detracted from results. A slight overweight country allocation to Zambia, due to attractive valuations, hurt performance.</p> <p><i>Contributors:</i> Overweight Azerbaijan given attractive valuations and expected credit quality improvement on the back of fiscal, banking, and current account consolidation. Overweight Sri Lanka due to the reform momentum supported by an IMF. Overweight Senegal given the govt's continuous commitment to the IMF program and to fiscal consolidation. Underweight Turkey and remain cautious given the country's low savings rate, its large current account deficit, which limits its growth potential and is structurally negative, and a shortage of reserves that leaves the central bank exposed to external shocks.</p> <p><i>Positioning:</i> Risk posture shifted to neutral - balancing improved EM fundamentals and attractive valuations against tightening global liquidity, trade protectionism risks and select EM country struggles. Favor select frontier markets with strong reform stories and/or IMF, commodity price support. Favor Gulf Cooperation Council (GCC) countries with reform momentum and attractive valuations relative to credit quality. Favor Central and Eastern European countries with improving fundamentals not recognized by markets. Underweight investment grade countries in Latin America where valuations are tight. Underweight much of Asia due to tight valuations. Favor issuers in Eastern Europe and the Middle East over Asia and Latin America. Positive on Russia and cautious on Turkey, Brazil, and Mexico. Constructive on Argentina. Favor currency in Mexico Peso, Peruvian sol, Czech koruna, Polish zloty, S. African rand and Turkish lira.</p>	<p><b>1</b></p>



Returns presented are net of investment management fees

# NEPC'S DUE DILIGENCE MONITOR

Manager / Fund	Manager Changes/ Announcements (Recent Quarter)	NEPC Due Diligence Committee Recommendations
<b>GAM</b> <i>Unconstrained Fixed Income</i>	Other: Fund Winding Down 8/2018	<b>Terminate</b> Rating changed from "1" to terminate in August 2018
<b>Acadian Asset Management LLC</b> <i>Non-U.S. All-Cap Equity</i>	Loss of Personnel: Acadian names new Director of Implementation 9/2018	No Action

NEPC Due Diligence Status Key	
<b>No Action</b>	Informational items have surfaced; no action is recommended.
<b>Watch</b>	Issues have surfaced to be concerned over; manager can participate in future searches, but current and prospective clients must be made aware of the issues.
<b>Hold</b>	Serious issues have surfaced to be concerned over; manager cannot be in future searches unless a client specifically requests, but current and prospective clients must be made aware of the issues.
<b>Client Review</b>	Very serious issues have surfaced with a manager; manager cannot be in future searches unless a client specifically requests. Current clients must be advised to review the manager.
<b>Terminate</b>	We have lost all confidence in the product; manager would not be recommended for searches and clients would be discouraged from using. The manager cannot be in future searches unless a client specifically requests. Current clients must be advised to replace the manager.



# NEPC'S QUARTERLY DUE DILIGENCE DETAIL

Investment Option	Commentary
<p><b>GAM</b> <i>Unconstrained Fixed Income</i></p>	<p><b><u>Liquidation Update</u></b></p> <p>NEPC has been conducting bi-weekly update calls with GAM to receive updates on the orderly liquidation of the Unconstrained Bond Fund. GAM has made significant progress liquidating the Fund's holdings, including many of the Fund's illiquid positions, and to date has distributed approximately 66% of the total fund value. The firm has indicated that they intend to make another distribution in late November or early December following the settlement of a sale transaction of one of the illiquid holdings. The firm has continued to liquidate security positions and close out derivative contracts used for hedging throughout October.</p> <p>The largest illiquid positions remaining in the portfolio are the Liberty Industries PPA (Power Purchase Agreement) bonds. GAM has indicated that the renewable energy certification tied to the bonds' underlying assets has progressed as planned and they believe that the completion of this process later this year will enable the issuer to refinance the bonds at more favorable rates, which will enable GAM to exit the position at or near the current price sometime in December or January 2019. Because the Liberty Industries bonds are denominated in Pound Sterling (GBP), GAM has left a GBP to US Dollar (USD) currency hedge in place to prevent currency losses on the position. As part of NEPC's ongoing monitoring of the liquidation we have contacted the GAM Fund's third-party valuation vendor, State Street Bank, to confirm that contract and pricing policies related to the Fund conform with industry standards and that there have been no conflicts between the valuations provided by State Street and GAM's internal pricing of the Fund holdings.</p> <p>GAM disclosed updated information on the firm's assets-under-management as part of its 3rd quarter earnings announcement. The firm has seen the total assets managed by its investment management business drop from approximately \$85 billion to \$67 billion during the third quarter, while the assets in its other units have been more stable. On November 6th GAM further disclosed that its Chief Executive, Alexander Friedman, would be leaving the firm and would be replaced on an interim basis by David Jacob, a non-executive Director on the firm's Advisory Board. Mr. Jacob has significant asset management experience, having most recently served as CEO of Rogge Global Partners. Given Mr. Friedman's role overseeing the portfolio management team that managed the Unconstrained Bond Fund his departure was not unexpected.</p> <p>GAM has delivered market value statements for October, reporting a positive return of 0.63% during a volatile month for stocks and bonds. NEPC is awaiting updated holdings as of October 31st and will continue to report any further developments as information becomes available.</p>
<p><b>Acadian Asset Management LLC</b> <i>Non-U.S. All-Cap Equity</i></p>	<p>Acadian Asset Management notified NEPC Research that Director of Long/Short Equities Alex Voitenok has been promoted to Director of Implementation effective September 1, 2018. Mr. Voitenok will lead Acadian's Portfolio Construction and Trading Team. Mr. Voitenok's promotion is the result of Mauricio Karchmer's departure in December 2017. Michael Gleason, Senior Vice President and Portfolio Manager, will assume a leadership role on the Long/Short Team in a joint capacity with Mr. Voitenok as Co-Directors in the interim. Effective 2019, Mr. Gleason will become sole Director of Long/Short Equities Strategy.</p> <p>NEPC Research is comfortable with this transition given the broad and experienced team structure at Acadian. The implementation team has 12 members and Acadian had been searching for Mr. Karchmer's replacement since January 2018. NEPC research recommends NO ACTION.</p>





# NEPC'S QUARTERLY DUE DILIGENCE DETAIL

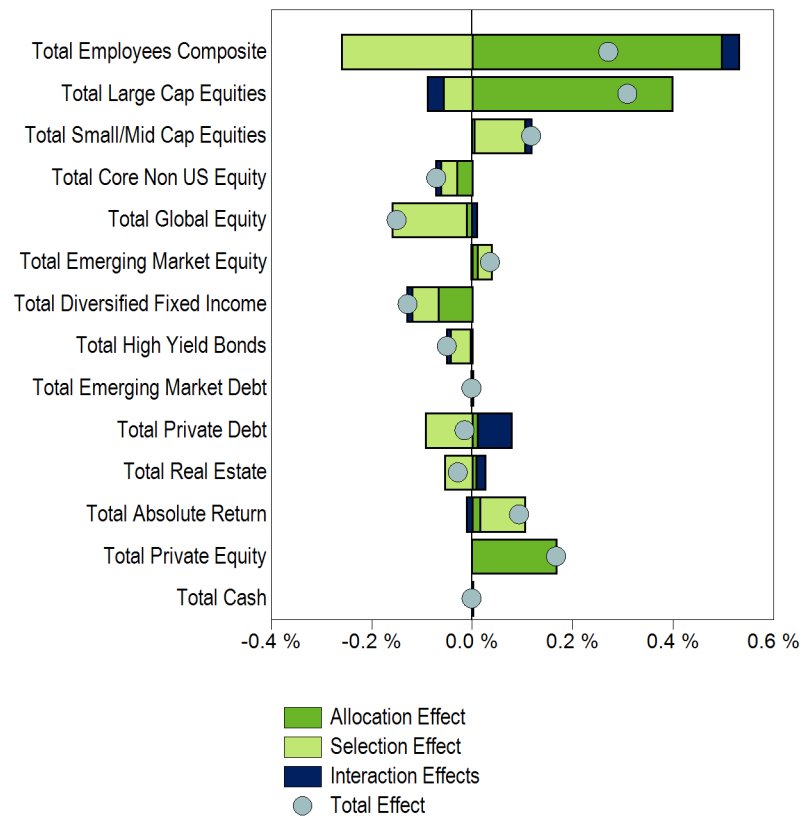
Investment Option	Commentary	NEPC Rating
	<p><b><u>Liquidation Update</u></b></p> <p>NEPC has been conducting bi-weekly update calls with GAM to receive updates on the orderly liquidation of the Unconstrained Bond Fund. GAM has made significant progress liquidating the Fund's holdings, including many of the Fund's illiquid positions, and to date has distributed approximately 66% of the total fund value. The firm has indicated that they intend to make another distribution in late November or early December following the settlement of a sale transaction of one of the illiquid holdings. The firm has continued to liquidate security positions and close out derivative contracts used for hedging throughout October.</p> <p>The largest illiquid positions remaining in the portfolio are the Liberty Industries PPA (Power Purchase Agreement) bonds. GAM has indicated that the renewable energy certification tied to the bonds' underlying assets has progressed as planned and they believe that the completion of this process later this year will enable the issuer to refinance the bonds at more favorable rates, which will enable GAM to exit the position at or near the current price sometime in December or January 2019. Because the Liberty Industries bonds are denominated in Pound Sterling (GBP), GAM has left a GBP to US Dollar (USD) currency hedge in place to prevent currency losses on the position. As part of NEPC's ongoing monitoring of the liquidation we have contacted the GAM Fund's third-party valuation vendor, State Street Bank, to confirm that contract and pricing policies related to the Fund conform with industry standards and that there have been no conflicts between the valuations provided by State Street and GAM's internal pricing of the Fund holdings.</p> <p>GAM disclosed updated information on the firm's assets-under-management as part of its 3rd quarter earnings announcement. The firm has seen the total assets managed by its investment management business drop from approximately \$85 billion to \$67 billion during the third quarter, while the assets in its other units have been more stable. On November 6th GAM further disclosed that its Chief Executive, Alexander Friedman, would be leaving the firm and would be replaced on an interim basis by David Jacob, a non-executive Director on the firm's Advisory Board. Mr. Jacob has significant asset management experience, having most recently served as CEO of Rogge Global Partners. Given Mr. Friedman's role overseeing the portfolio management team that managed the Unconstrained Bond Fund his departure was not unexpected.</p> <p>GAM has delivered market value statements for October, reporting a positive return of 0.63% during a volatile month for stocks and bonds. NEPC is awaiting updated holdings as of October 31st and will continue to report any further developments as information becomes available.</p>	



## Vermont State Employees

# TOTAL FUND ATTRIBUTION ANALYSIS - NET

Attribution Effects Relative to Allocation Index  
3 Months Ending September 30, 2018



Attribution Summary							
3 Months Ending September 30, 2018							
	Wtd. Actual Return	Wtd. Index Return	Excess Return	Selection Effect	Allocation Effect	Interaction Effects	Total Effects
Total Large Cap Equities	7.3%	7.7%	-0.4%	-0.1%	0.4%	0.0%	0.3%
Total Small/Mid Cap Equities	7.3%	4.7%	2.6%	0.1%	0.0%	0.0%	0.1%
Total Core Non US Equity	1.1%	1.4%	-0.3%	0.0%	0.0%	0.0%	-0.1%
Total Global Equity	2.6%	4.3%	-1.7%	-0.1%	0.0%	0.0%	-0.2%
Total Emerging Market Equity	-0.5%	-1.1%	0.6%	0.0%	0.0%	0.0%	0.0%
Total Diversified Fixed Income	-0.2%	0.0%	-0.3%	-0.1%	-0.1%	0.0%	-0.1%
Total High Yield Bonds	0.4%	2.4%	-2.0%	0.0%	0.0%	0.0%	-0.1%
Total Emerging Market Debt	1.8%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Private Debt	0.0%	1.8%	-1.8%	-0.1%	0.0%	0.1%	0.0%
Total Real Estate	1.0%	1.7%	-0.7%	-0.1%	0.0%	0.0%	0.0%
Total Absolute Return	1.3%	0.2%	1.1%	0.1%	0.0%	0.0%	0.1%
Total Private Equity	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.2%
Total Cash	0.0%	0.5%	-0.5%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>2.4%</b>	<b>2.1%</b>	<b>0.3%</b>	<b>-0.3%</b>	<b>0.5%</b>	<b>0.0%</b>	<b>0.3%</b>

Note: Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total returns shown may vary from the calculated returns shown on the performance report

The target return shown for each composite is a custom index, based on aggregated policy indices. This policy index asset weights the underlying policy indices of each option in the plan and the respective benchmark

The allocation, selection, and interaction effects are calculated using the custom index described above along with the policy or target weight of each composite

May not add up due to rounding

Absolute Return's Wtd. index Return is calculated using a weighting of the respective benchmarks for each underlying strategy part of the composite



# **ANALYTICS DEFINITIONS**

Asset Allocation Effect - Measures VPIC's ability to effectively allocate their portfolio's assets to various asset classes. The allocation effect determines whether the overweighting or underweighting of asset classes relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is overweighted in an asset class that outperforms the benchmark. Negative allocation occurs when the portfolio is overweighted in an asset class that underperforms the benchmark and underweighted in an asset class that outperforms the benchmark.

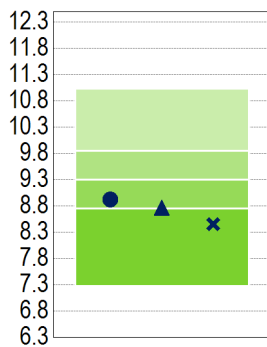
Selection Effect - Measures VPIC's ability to select managers within a given asset class relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by VPIC's allocation to the asset class. The weight of the manager in the portfolio determines the size of the effect -- the larger the manager, the larger the effect is, positive or negative.

Interaction Effect - The interaction effect measures the combined impact of VPIC's manager selection and manager allocation decisions within an asset class. For example, if VPIC had superior manager selection and overweighted that particular asset class, the interaction effect is positive. If VPIC had superior manager selection, but underweighted that asset class, the interaction effect is negative. In this case, VPIC did not take advantage of the superior manager selection by allocating more assets to that asset class.

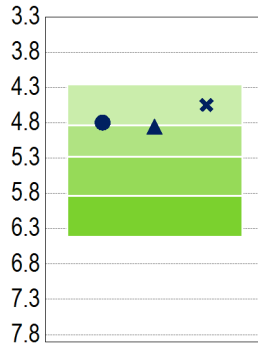
# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE - NET

## Employees Composite vs. InvestorForce Public DB < \$5 Billion Net 3 Years

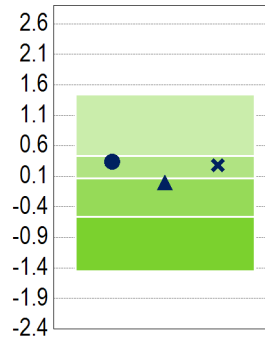
Anlzd Return      Anlzd Standard Deviation      Anlzd Alpha      Sharpe Ratio



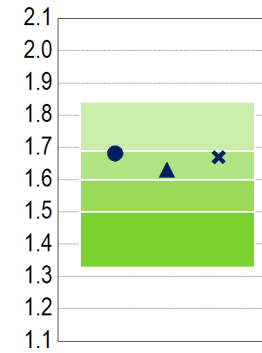
● Total Employees Composite	Value	8.92
	Rank	70
▲ Allocation Index	Value	8.77
	Rank	75
× Policy Index	Value	8.45
	Rank	84
Universe		
	5th %tile	11.04
	25th %tile	9.86
	Median	9.31
	75th %tile	8.77
	95th %tile	7.29



● Total Employees Composite	Value	4.80
	Rank	22
▲ Allocation Index	Value	4.85
	Rank	26
× Policy Index	Value	4.55
	Rank	10
Universe		
	5th %tile	4.25
	25th %tile	4.83
	Median	5.27
	75th %tile	5.83
	95th %tile	6.40



● Total Employees Composite	Value	0.34
	Rank	30
▲ Allocation Index	Value	0.00
	Rank	54
× Policy Index	Value	0.28
	Rank	33
Universe		
	5th %tile	1.44
	25th %tile	0.44
	Median	0.08
	75th %tile	-0.55
	95th %tile	-1.45

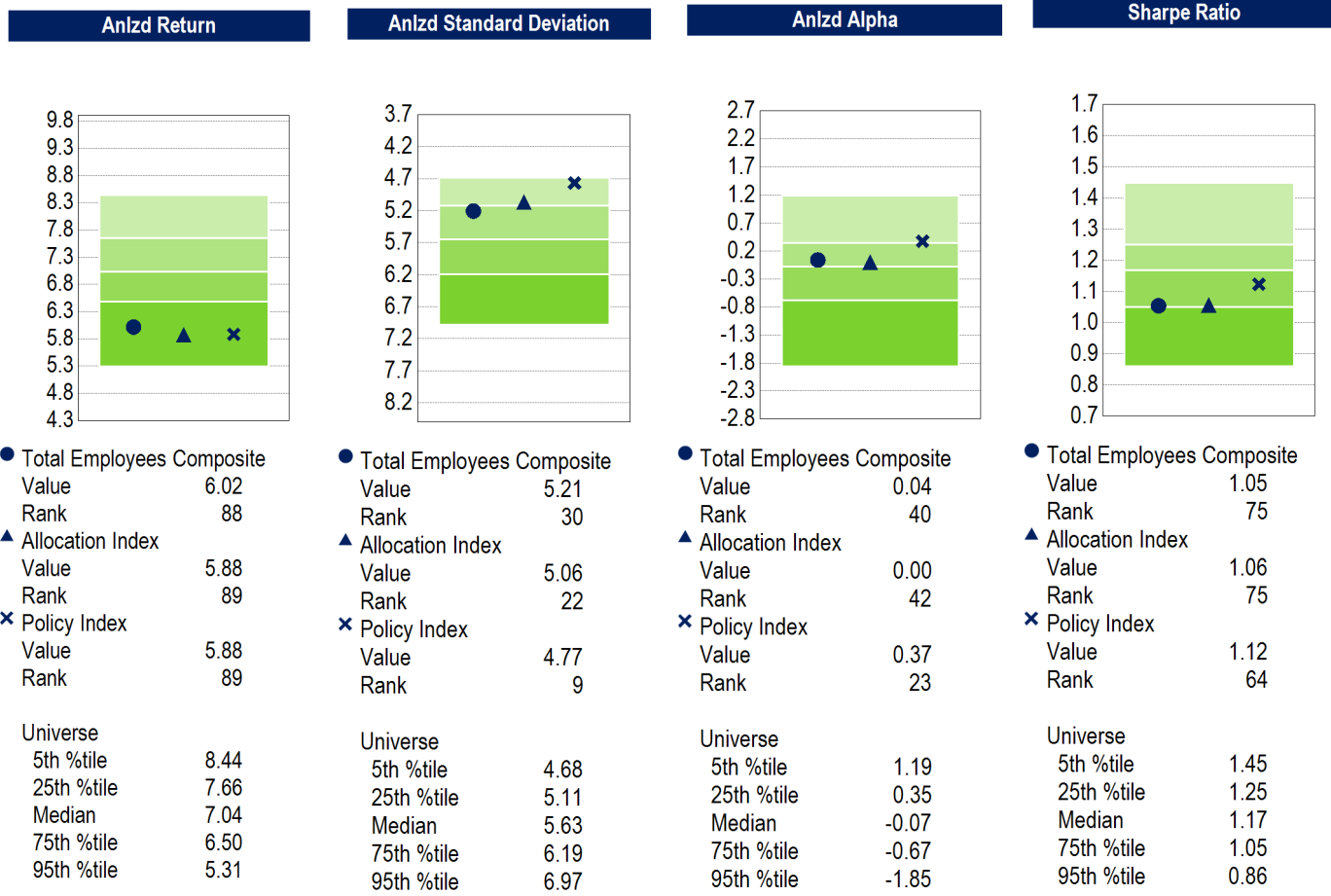


● Total Employees Composite	Value	1.68
	Rank	28
▲ Allocation Index	Value	1.63
	Rank	40
× Policy Index	Value	1.67
	Rank	30
Universe		
	5th %tile	1.84
	25th %tile	1.69
	Median	1.60
	75th %tile	1.50
	95th %tile	1.33



# TOTAL FUND RISK STATISTICS VS. PEER UNIVERSE - NET

## Employees Composite vs. InvestorForce Public DB < \$5 Billion Net 5 Years



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Market Value (\$)	% of Portfolio	Policy %	Ending September 30, 2018														Inception Date
				3 Mo (%) Rank	Fiscal YTD (%) Rank	YTD (%) Rank	1 Yr (%) Rank	3 Yrs (%) Rank	5 Yrs (%) Rank	10 Yrs (%) Rank								
<b>Total Employees Composite</b>	<b>1,866,512,682</b>	<b>100.0</b>	<b>100.0</b>	<b>2.4</b>	<b>64</b>	<b>2.4</b>	<b>64</b>	<b>2.5</b>	<b>78</b>	<b>6.0</b>	<b>76</b>	<b>8.9</b>	<b>70</b>	<b>6.0</b>	<b>88</b>	<b>6.9</b>	<b>69</b>	<b>Jan-92</b>
<i>Allocation Index</i>				2.3	70	2.3	70	2.4	81	6.1	73	8.8	75	5.9	89	6.4	88	Jan-92
<i>Policy Index</i>				2.1	79	2.1	79	2.3	81	5.6	82	8.5	84	5.9	89	6.3	92	Jan-92
<i>InvestorForce Public DB &lt; \$5 Billion Net Median</i>				2.7		2.7		3.3		7.0		9.3		7.0		7.2		Jan-92
<b>Total Domestic Equity</b>	<b>452,232,481</b>	<b>24.2</b>	<b>18.0</b>	<b>7.3</b>	<b>29</b>	<b>7.3</b>	<b>29</b>	<b>11.2</b>	<b>35</b>	<b>18.0</b>	<b>34</b>	<b>16.9</b>	<b>32</b>	<b>13.1</b>	<b>27</b>	<b>--</b>	<b>--</b>	<b>Jul-13</b>
<i>Russell 3000</i>				7.1	31	7.1	31	10.6	39	17.6	36	17.1	30	13.5	23	12.0	41	Jul-13
<i>eV All US Equity Net Median</i>				5.6		5.6		8.4		14.6		15.1		11.6		11.5		Jul-13
<b>Total Large Cap Equities</b>	<b>381,752,674</b>	<b>20.5</b>	<b>14.0</b>	<b>7.3</b>	<b>37</b>	<b>7.3</b>	<b>37</b>	<b>10.0</b>	<b>39</b>	<b>17.1</b>	<b>39</b>	<b>16.9</b>	<b>29</b>	<b>13.6</b>	<b>31</b>	<b>12.7</b>	<b>23</b>	<b>Apr-01</b>
<i>S&amp;P 500</i>				7.7	30	7.7	30	10.6	35	17.9	36	17.3	25	13.9	27	12.0	37	Apr-01
<i>eV US Large Cap Equity Net Median</i>				6.7		6.7		8.3		15.3		15.1		12.2		11.2		Apr-01
<i>SSgA S&amp;P 500 Cap-Wgt</i>	307,841,060	16.5	10.0	7.7	30	7.7	30	10.6	35	17.9	36	17.3	25	14.0	27	--	--	Aug-10
<i>SSgA S&amp;P 500 Equal-Wgt</i>	73,909,877	4.0	4.0	5.4	73	5.4	73	7.4	57	14.2	58	15.5	43	12.4	47	13.1	19	Dec-05
<i>S&amp;P 500 Equal Weighted</i>				5.4	74	5.4	74	7.3	58	13.9	60	15.4	45	12.5	46	13.1	19	Dec-05
<b>Total Small/Mid Cap Equities</b>	<b>70,479,807</b>	<b>3.8</b>	<b>4.0</b>	<b>7.3</b>	<b>24</b>	<b>7.3</b>	<b>24</b>	<b>19.2</b>	<b>14</b>	<b>23.4</b>	<b>23</b>	<b>17.9</b>	<b>20</b>	<b>12.8</b>	<b>17</b>	<b>12.7</b>	<b>29</b>	<b>Apr-01</b>
<i>Russell 2500</i>				4.7	51	4.7	51	10.4	46	16.2	46	16.1	38	11.4	37	12.0	42	Apr-01
<i>eV US Small-Mid Cap Equity Net Median</i>				4.7		4.7		9.0		14.9		14.8		10.6		11.7		Apr-01
<i>Champlain</i>	70,479,807	3.8	4.0	7.3	24	7.3	24	19.2	14	23.9	22	20.7	6	14.9	3	--	--	Oct-09
<i>Custom SMID Cap Equity Index</i>				4.1	57	4.1	57	11.0	45	15.7	47	17.2	25	11.6	31	12.1	40	Oct-09

Long term policy consists of: 14% S&P 500 / 4% Russell 2500 / 12% MSCI EAFE / 4% MSCI Emerging Markets / 9% MSCI ACWI / 2% BBgBarc US High Yield TR / 20% BBgBarc US Aggregate TR / 4% JP Morgan EMBI Global Index / 5% S&P/LSTA Leveraged Loan TR / 10 % Cambridge Associates US All PE / 8% HFRI Fund of Funds Composite Index / 8% NCREIF Property Index

Custom SMID Cap Equity Index is 50% Russell 2500 and 50% Russell 2000 starting 10/1/2017, and 100% Russell 2500 prior, corresponding to the change in strategy

Fiscal Year End is 6/30



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

Ending September 30, 2018																		
	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception Date
<b>Total Non US Equity</b>	<b>519,072,855</b>	<b>27.8</b>	<b>25.0</b>	<b>1.4</b>	<b>20</b>	<b>1.4</b>	<b>20</b>	<b>-3.2</b>	<b>63</b>	<b>1.4</b>	<b>62</b>	<b>11.6</b>	<b>39</b>	<b>5.3</b>	<b>56</b>	<b>--</b>	<b>--</b>	<b>Apr-01</b>
MSCI ACWI ex USA				0.7	33	0.7	33	-3.1	60	1.8	57	10.0	57	4.1	75	5.2	81	Apr-01
eV All ACWI ex-US Equity Net Median				0.2		0.2		-2.4		2.4		10.4		5.6		6.8		Apr-01
<b>Total Core Non US Equity</b>	<b>294,449,150</b>	<b>15.8</b>	<b>12.0</b>	<b>1.1</b>	<b>42</b>	<b>1.1</b>	<b>42</b>	<b>-2.5</b>	<b>57</b>	<b>2.0</b>	<b>53</b>	<b>11.3</b>	<b>26</b>	<b>6.4</b>	<b>30</b>	<b>5.9</b>	<b>67</b>	<b>Apr-01</b>
MSCI EAFE				1.4	35	1.4	35	-1.4	44	2.7	46	9.2	56	4.4	71	5.4	82	Apr-01
eV All EAFE Equity Net Median				0.8		0.8		-2.1		2.4		9.5		5.4		6.5		Apr-01
SSgA ACWI Ex US	165,812,099	8.9	5.0	0.7	39	0.7	39	-2.9	61	1.9	64	10.2	46	4.3	70	--	--	Aug-10
MSCI ACWI ex USA				0.7	40	0.7	40	-3.1	66	1.8	64	10.0	47	4.1	73	5.2	75	Aug-10
eV ACWI ex-US All Cap Equity Net Median				0.4		0.4		-2.2		2.6		9.8		5.9		6.8		Aug-10
Acadian	63,030,234	3.4	3.5	1.0	43	1.0	43	-1.7	46	3.3	42	15.2	6	9.2	9	7.3	35	Nov-05
Mondrian	65,606,818	3.5	3.5	2.1	17	2.1	17	-2.0	50	0.8	66	8.5	70	4.8	65	5.2	85	Oct-05
MSCI EAFE				1.4	35	1.4	35	-1.4	44	2.7	46	9.2	56	4.4	71	5.4	82	Oct-05
<b>Total Global Equity</b>	<b>158,481,541</b>	<b>8.5</b>	<b>9.0</b>	<b>2.6</b>	<b>64</b>	<b>2.6</b>	<b>64</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>Feb-18</b>
MSCI ACWI				4.3	38	4.3	38	3.8	48	9.8	45	13.4	37	8.7	51	8.2	59	Feb-18
eV All Global Equity Net Median				3.6		3.6		3.6		9.0		12.4		8.7		8.6		Feb-18
Artisan Global Opportunities	84,128,054	4.5	4.5	3.5	51	3.5	51	--	--	--	--	--	--	--	--	--	--	Jul-18
Hosking Global Equity	74,353,487	4.0	4.5	1.6	75	1.6	75	--	--	--	--	--	--	--	--	--	--	Feb-18
MSCI ACWI				4.3	38	4.3	38	3.8	48	9.8	45	13.4	37	8.7	51	8.2	59	Feb-18
<b>Total Emerging Market Equity</b>	<b>66,142,164</b>	<b>3.5</b>	<b>4.0</b>	<b>-0.5</b>	<b>23</b>	<b>-0.5</b>	<b>23</b>	<b>-11.3</b>	<b>73</b>	<b>-6.7</b>	<b>80</b>	<b>9.4</b>	<b>74</b>	<b>1.8</b>	<b>86</b>	<b>7.2</b>	<b>27</b>	<b>Feb-08</b>
MSCI Emerging Markets				-1.1	29	-1.1	29	-7.7	24	-0.8	26	12.4	34	3.6	52	5.4	63	Feb-08
eV Emg Mkts Equity Net Median				-2.8		-2.8		-9.5		-3.2		11.2		3.7		6.0		Feb-08
Aberdeen	66,142,164	3.5	4.0	-0.5	23	-0.5	23	-11.3	73	-6.7	80	9.4	74	1.8	86	7.2	27	Feb-08
MSCI Emerging Markets				-1.1	29	-1.1	29	-7.7	24	-0.8	26	12.4	34	3.6	52	5.4	63	Feb-08



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Ending September 30, 2018																	
	Market Value (\$)	% of Portfolio	Policy %	3 Mo (%)	Rank	Fiscal YTD (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception Date
<b>Total Fixed Income</b>	<b>584,494,553</b>	<b>31.3</b>	<b>26.0</b>	<b>0.1</b>	<b>74</b>	<b>0.1</b>	<b>74</b>	<b>-1.2</b>	<b>71</b>	<b>-0.5</b>	<b>59</b>	<b>3.9</b>	<b>29</b>	<b>3.3</b>	<b>39</b>	<b>--</b>	<b>--</b>	<b>Jul-13</b>
<i>BBgBarc US Aggregate TR</i>				0.0	78	0.0	78	-1.6	80	-1.2	83	1.3	68	2.2	58	3.8	60	Jul-13
<i>eV All US Fixed Inc Net Median</i>				0.4		0.4		-0.3		-0.1		2.0		2.4		4.3		Jul-13
<b>Total Diversified Fixed Income</b>	<b>472,975,909</b>	<b>25.3</b>	<b>20.0</b>	<b>-0.2</b>	<b>90</b>	<b>-0.2</b>	<b>90</b>	<b>-1.1</b>	<b>69</b>	<b>-0.4</b>	<b>56</b>	<b>2.5</b>	<b>42</b>	<b>2.7</b>	<b>46</b>	<b>4.9</b>	<b>41</b>	<b>Jul-03</b>
<i>BBgBarc US Aggregate TR</i>				0.0	78	0.0	78	-1.6	80	-1.2	83	1.3	68	2.2	58	3.8	60	Jul-03
<i>eV All US Fixed Inc Net Median</i>				0.4		0.4		-0.3		-0.1		2.0		2.4		4.3		Jul-03
SSgA Barclays Aggregate Index	205,317,412	11.0	8.0	0.0	77	0.0	77	-1.6	67	-1.3	77	1.3	74	--	--	--	--	Feb-15
PIMCO Core Plus	109,846,977	5.9	4.0	0.2	72	0.2	72	-1.3	59	-1.0	73	1.9	77	2.2	84	--	--	Oct-09
<i>BBgBarc US Aggregate TR</i>				0.0	86	0.0	86	-1.6	77	-1.2	79	1.3	96	2.2	87	3.8	99	Oct-09
<i>eV US Core Plus Fixed Inc Net Median</i>				0.3		0.3		-1.2		-0.7		2.3		2.8		5.2		Oct-09
GAM Unconstrained Bond	14,188,264	0.8	0.0	-0.8	87	-0.8	87	-0.3	56	-0.9	65	3.8	64	--	--	--	--	Jun-15
PIMCO Unconstrained	32,529,011	1.7	2.0	0.9	44	0.9	44	1.6	29	1.8	43	4.2	57	2.1	82	--	--	Jul-11
<i>PIMCO Unconstrained Custom Index</i>				1.1	35	1.1	35	-1.0	62	-0.6	62	--	--	--	--	--	--	Jul-11
<i>3-Month Libor Total Return USD</i>				0.6	57	0.6	57	1.7	26	2.1	34	1.3	97	0.9	95	0.7	99	Jul-11
<i>eV Global Unconstrained Fixed Inc Net Median</i>				0.8		0.8		0.5		0.9		4.4		2.8		4.4		Jul-11
BlackRock TIPS	111,094,245	6.0	6.0	-0.8	65	-0.8	65	-0.9	47	0.3	54	2.0	48	1.3	40	--	--	Dec-09
<i>BBgBarc US TIPS TR</i>				-0.8	63	-0.8	63	-0.8	45	0.4	40	2.0	47	1.4	37	3.3	52	Dec-09
<b>Total High Yield Bonds</b>	<b>39,827,527</b>	<b>2.1</b>	<b>2.0</b>	<b>0.4</b>	<b>98</b>	<b>0.4</b>	<b>98</b>	<b>0.5</b>	<b>96</b>	<b>1.3</b>	<b>88</b>	<b>6.3</b>	<b>66</b>	<b>4.7</b>	<b>59</b>	<b>7.8</b>	<b>68</b>	<b>Jan-05</b>
<i>BBgBarc US High Yield TR</i>				2.4	20	2.4	20	2.6	26	3.0	33	8.1	14	5.5	21	9.5	11	Jan-05
<i>eV US High Yield Fixed Inc Net Median</i>				2.1		2.1		2.0		2.6		6.8		4.8		8.3		Jan-05
Guggenheim	1,466,458	0.1		1.3		1.3		1.3		2.3		7.0		--		--		Dec-13
PIMCO High Yield	38,348,775	2.1																

PIMCO Unconstrained Custom Index is 25% HY, 25% EMD, 50% BC Agg

BlackRock TIPS Universe - eV US TIPS / Inflation Fixed Inc Net

KDP residual Market Value: \$12,295

PIMCO High Yield was funded by Guggenheim on 08/27/2018 therefore 3 month performance is unavailable





## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Market Value (\$)	% of Portfolio	Policy %	Ending September 30, 2018														Inception Date
				3 Mo (%)	Rank	Fiscal YTD (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	
<b>Total Emerging Market Debt</b>	<b>71,691,117</b>	<b>3.8</b>	<b>4.0</b>	<b>1.8</b>	<b>18</b>	<b>1.8</b>	<b>18</b>	<b>-3.5</b>	<b>28</b>	<b>-2.7</b>	<b>34</b>	<b>7.0</b>	<b>19</b>	<b>5.0</b>	<b>15</b>	--	--	<b>Nov-09</b>
<i>JP Morgan EMBI Global Index</i>				1.9	18	1.9	18	-3.5	27	-2.9	36	5.7	47	4.6	21	7.3	34	Nov-09
<i>eV All Emg Mkts Fixed Inc Net Median</i>				1.0		1.0		-5.3		-4.4		5.6		3.3		6.5		Nov-09
Wellington Opportunistic EMD	71,691,117	3.8	4.0	1.8	18	1.8	18	-3.5	28	-2.7	34	7.0	19	5.0	15	--	--	Jan-10
<i>JP Morgan EMBI Global Index</i>				1.9	18	1.9	18	-3.5	27	-2.9	36	5.7	47	4.6	21	7.3	34	Jan-10
<b>Total Private Debt</b>	<b>27,993,296</b>	<b>1.5</b>	<b>5.0</b>	<b>0.0</b>	--	<b>0.0</b>	--	<b>4.1</b>	--	--	--	--	--	--	--	--	--	<b>Jan-18</b>
<i>S&amp;P/LSTA Leveraged Loan TR</i>				1.8	--	1.8	--	4.0	--	5.2	--	5.3	--	4.1	--	6.1	--	Jan-18
BlueBay Direct Lending Fund III	4,985,911	0.3	2.5	0.0	--	0.0	--	--	--	--	--	--	--	--	--	--	--	Jul-18
Benefit Street Partners	23,007,385	1.2	2.5	0.0	--	0.0	--	4.2	--	--	--	--	--	--	--	--	--	Jan-18
<i>S&amp;P/LSTA Leveraged Loan TR</i>				1.8	--	1.8	--	4.0	--	5.2	--	5.3	--	4.1	--	6.1	--	Jan-18
<b>Total Real Estate</b>	<b>105,699,306</b>	<b>5.7</b>	<b>8.0</b>	<b>1.0</b>	--	<b>1.0</b>	--	<b>5.0</b>	--	<b>8.1</b>	--	<b>7.7</b>	--	<b>10.0</b>	--	--	--	<b>May-12</b>
<i>NCREIF Property Index</i>				1.7	--	1.7	--	5.3	--	7.2	--	7.8	--	9.6	--	6.4	--	May-12
<b>Total Real Estate Core</b>	<b>87,033,054</b>	<b>4.7</b>	<b>4.5</b>	<b>1.2</b>	--	<b>1.2</b>	--	<b>4.6</b>	--	<b>6.8</b>	--	<b>6.8</b>	--	<b>9.6</b>	--	--	--	<b>May-12</b>
UBS Trumbull	86,930,401	4.7	4.5	1.2	--	1.2	--	4.6	--	6.8	--	6.3	--	8.2	--	4.8	--	Oct-96
<b>Total Real Estate Non-Core</b>	<b>18,666,252</b>	<b>1.0</b>	<b>3.5</b>	<b>0.0</b>	--	<b>0.0</b>	--	<b>6.6</b>	--	<b>13.9</b>	--	<b>12.3</b>	--	--	--	--	--	<b>May-12</b>
Siguler Guff DREOF II	12,794,870	0.7	1.0	0.0	--	0.0	--	8.4	--	17.8	--	13.7	--	--	--	--	--	Jun-14
Siguler Guff DREOF II Co-Investment	5,871,382	0.3	0.5	0.0	--	0.0	--	2.2	--	3.6	--	--	--	--	--	--	--	Nov-16
Brookfield Strategic Real Estate Partners III	0	0.0	2.0	0.0	--	0.0	--	--	--	--	--	--	--	--	--	--	--	Jun-18
<i>NCREIF Property Index</i>				1.7	--	1.7	--	5.3	--	7.2	--	7.8	--	9.6	--	6.4	--	Jun-18

Market values are final as of Q2 2018 capital statements and cash adjusted to date for Benefit Street Partners, BlueBay Direct Lending Fund III, Siguler Guff DREOF II, and Siguler Guff DREOF II Co-Investment

Market value is final as of Q3 2018 capital statement for UBS Trumbull

Transwestern/Aslan III residual market value of \$102,653 is included in the Total Real Estate composite



## Vermont State Employees

# TOTAL FUND PERFORMANCE DETAIL - NET

	Market Value (\$)	% of Portfolio	Policy %	Ending September 30, 2018														Inception Date
				3 Mo (%)	Rank	Fiscal YTD (%)	Rank	YTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	
<b>Total Absolute Return</b>	<b>133,980,149</b>	<b>7.2</b>	<b>8.0</b>	<b>1.3</b>	<b>31</b>	<b>1.3</b>	<b>31</b>	<b>5.5</b>	<b>19</b>	<b>7.8</b>	<b>21</b>	<b>3.7</b>	<b>57</b>	<b>3.4</b>	<b>67</b>	--	--	<b>Dec-10</b>
<i>HFRI Fund of Funds Composite Index</i>				0.2	68	0.2	68	0.9	73	3.0	70	3.3	63	3.2	74	2.5	89	Dec-10
<i>eV Alt Fund of Funds - Multi-Strategy Median</i>				0.8		0.8		2.7		4.1		3.9		4.3		4.6		Dec-10
Pinnacle Natural Resources, L.P.	47,116,033	2.5	3.0	1.2	21	1.2	21	8.8	3	11.3	7	--	--	--	--	--	--	Jul-16
<i>Bloomberg Commodity Index</i>				-2.0	82	-2.0	82	-2.0	77	2.6	74	-0.1	99	-7.2	72	-6.2	99	Jul-16
Grosvenor	53,295,727	2.9	3.0	0.6	56	0.6	56	3.9	37	6.4	27	4.3	43	4.1	58	--	--	Dec-10
Allianz Structured Alpha	33,568,388	1.8	2.0	2.4	10	2.4	10	3.6	42	5.1	38	6.7	16	7.5	12	8.0	9	Apr-08
<i>91 Day T-Bills</i>				0.5	61	0.5	61	1.3	68	1.6	81	0.9	93	0.5	97	0.3	99	Apr-08
<i>eV Alt Fund of Funds - Multi-Strategy Median</i>				0.8		0.8		2.7		4.1		3.9		4.3		4.6		Apr-08
<b>Total Private Equity</b>	<b>42,027,299</b>	<b>2.3</b>	<b>10.0</b>	<b>0.0</b>	--	<b>0.0</b>	--	<b>15.8</b>	--	<b>18.0</b>	--	<b>15.7</b>	--	<b>18.4</b>	--	--	--	<b>Dec-12</b>
<i>Cambridge Associates US All PE</i>				0.0	--	0.0	--	8.7	--	14.2	--	13.2	--	12.7	--	11.7	--	Dec-12
<b>Total Cash</b>	<b>1,012,743</b>	<b>0.1</b>	<b>0.0</b>															
Vermont Cash	1,012,743	0.1	0.0															

Allianz Structured Alpha was included Diversified Fixed income composite prior to 04/01/2016

Absolute Return composite formerly shown as Hedge Funds composite. As of 04/01/2016, Absolute Return includes Allianz Structured Alpha

Harbourvest values based on final Capital Account Statements for Q2 2018 and cash adjusted to date

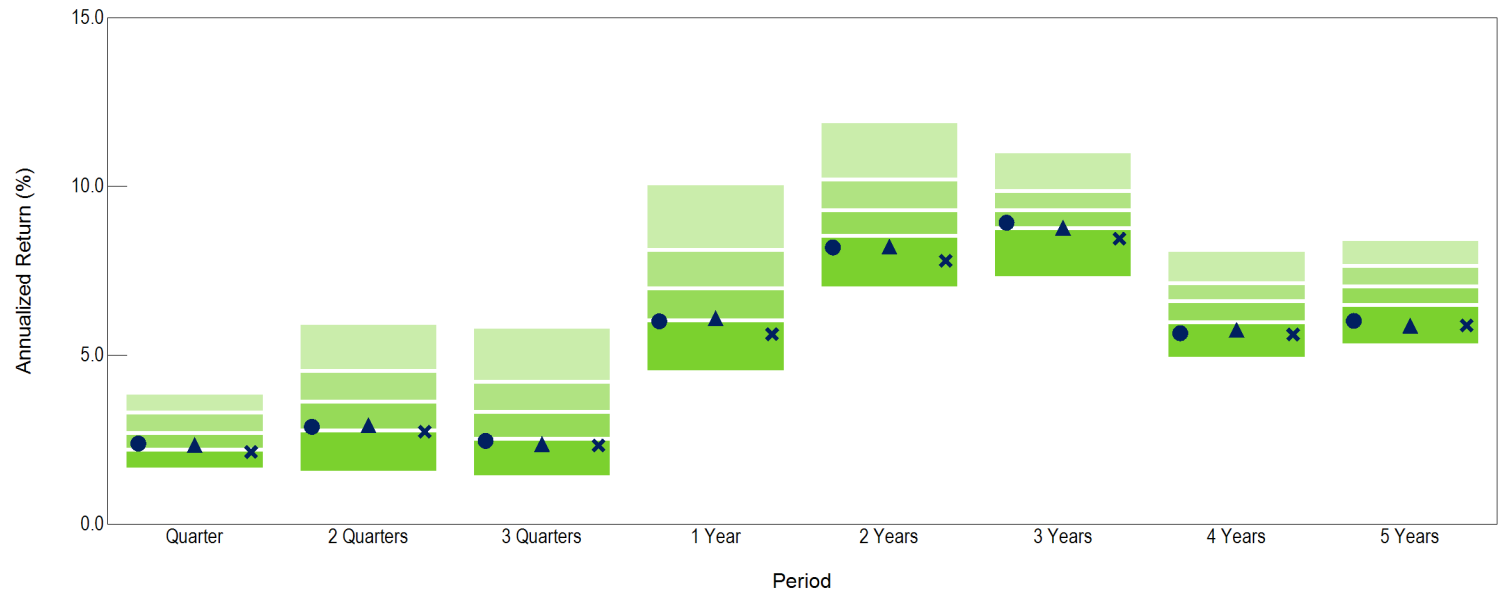
Pinnacle Natural Resources, L.P. September 2018 market value is reflected by the manager



## Vermont State Employees

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE - NET

Total Employees Composite vs. InvestorForce Public DB < \$5 Billion Net



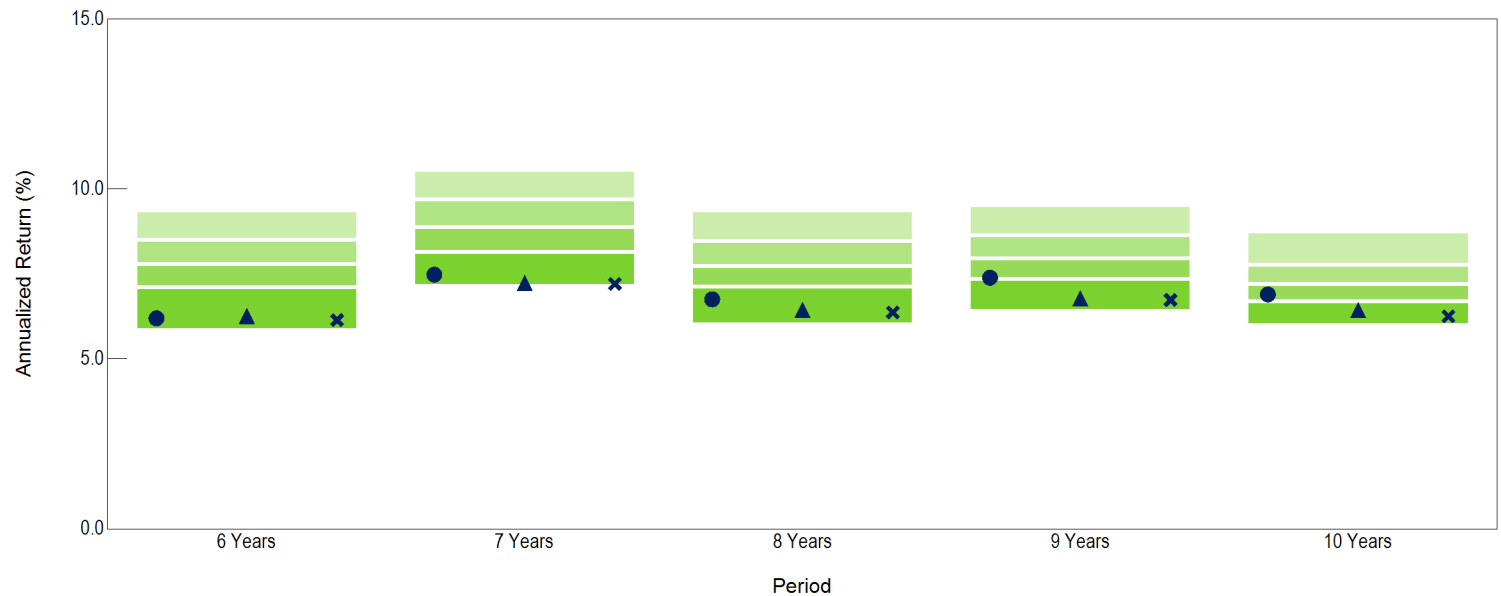
	Return (Rank)															
5th Percentile	3.9		5.9		5.8		10.1		11.9		11.0		8.1		8.4	
25th Percentile	3.3		4.5		4.2		8.1		10.2		9.9		7.1		7.7	
Median	2.7		3.6		3.3		7.0		9.3		9.3		6.6		7.0	
75th Percentile	2.2		2.8		2.5		6.1		8.5		8.8		6.0		6.5	
95th Percentile	1.6		1.5		1.4		4.5		7.0		7.3		4.9		5.3	
# of Portfolios	229		228		228		227		218		212		208		195	
● Total Employees Composite	2.4	(64)	2.9	(71)	2.5	(78)	6.0	(76)	8.2	(84)	8.9	(70)	5.7	(86)	6.0	(88)
▲ Allocation Index	2.3	(70)	2.9	(69)	2.4	(81)	6.1	(73)	8.2	(83)	8.8	(75)	5.7	(84)	5.9	(89)
× Policy Index	2.1	(79)	2.7	(76)	2.3	(81)	5.6	(82)	7.8	(90)	8.5	(84)	5.6	(87)	5.9	(89)



## Vermont State Employees

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE - NET

Total Employees Composite vs. InvestorForce Public DB < \$5 Billion Net



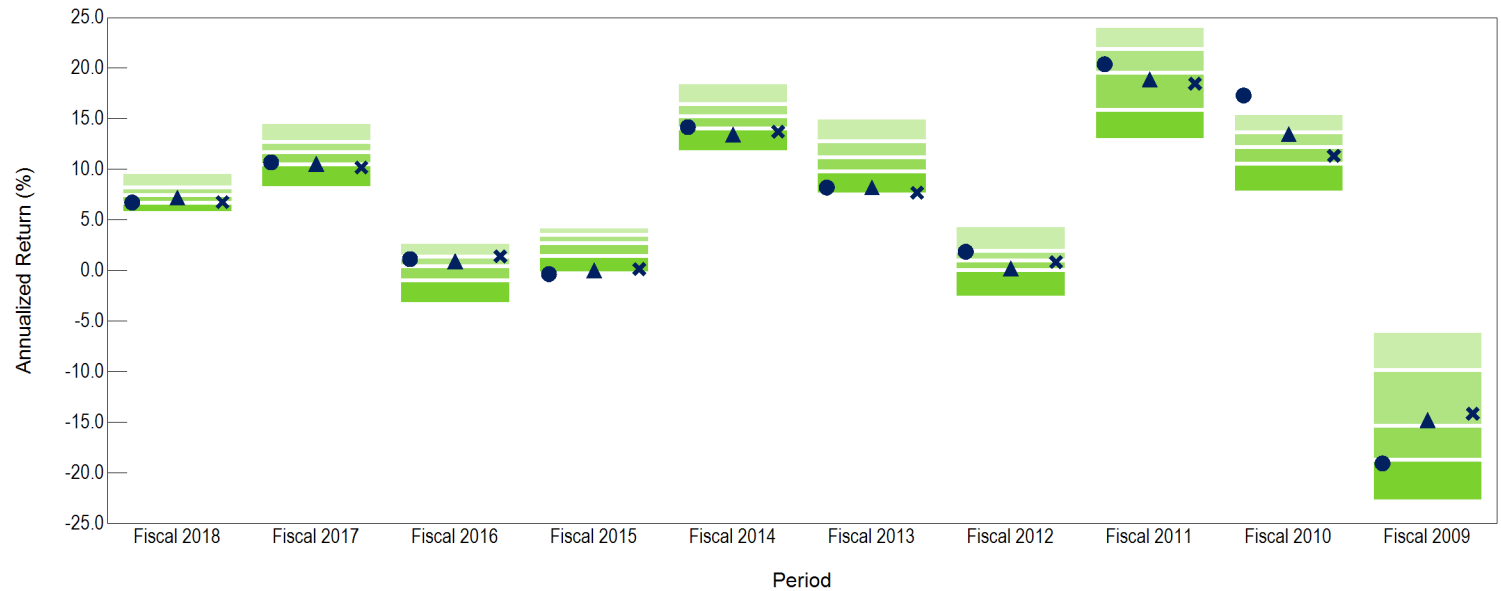
	Return (Rank)									
5th Percentile	9.4		10.6		9.4		9.5		8.7	
25th Percentile	8.5		9.7		8.5		8.7		7.8	
Median	7.8		8.9		7.7		8.0		7.2	
75th Percentile	7.1		8.2		7.1		7.4		6.7	
95th Percentile	5.9		7.2		6.0		6.4		6.0	
# of Portfolios	189		176		164		154		147	
● Total Employees Composite	6.2	(91)	7.5	(90)	6.8	(88)	7.4	(73)	6.9	(69)
▲ Allocation Index	6.3	(90)	7.2	(95)	6.4	(93)	6.8	(93)	6.4	(88)
× Policy Index	6.1	(92)	7.2	(95)	6.4	(94)	6.7	(93)	6.3	(92)



## Vermont State Employees

# TOTAL FUND RETURN SUMMARY VS. PEER UNIVERSE - NET

Total Employees Composite vs. InvestorForce Public DB < \$5 Billion Net



	Return (Rank)									
	Fiscal 2018	Fiscal 2017	Fiscal 2016	Fiscal 2015	Fiscal 2014	Fiscal 2013	Fiscal 2012	Fiscal 2011	Fiscal 2010	Fiscal 2009
5th Percentile	9.7	14.7	2.8	4.4	18.6	15.1	4.5	24.2	15.5	-6.0
25th Percentile	8.3	12.8	1.4	3.6	16.5	12.8	2.0	21.9	13.7	-9.8
Median	7.5	11.7	0.5	2.7	15.3	11.2	1.0	19.6	12.3	-15.3
75th Percentile	6.7	10.6	-0.9	1.5	14.1	9.9	0.1	15.9	10.6	-18.7
95th Percentile	5.7	8.2	-3.3	-0.2	11.7	7.5	-2.6	13.0	7.7	-22.8
# of Portfolios	186	259	239	212	156	139	132	124	116	113
● Total Employees Composite	6.7 (76)	10.7 (71)	1.1 (32)	-0.3 (96)	14.2 (72)	8.2 (95)	1.9 (29)	20.4 (39)	17.3 (1)	-19.1 (78)
▲ Allocation Index	7.2 (60)	10.5 (76)	0.9 (37)	0.0 (95)	13.4 (89)	8.2 (95)	0.2 (72)	18.9 (57)	13.5 (29)	-14.8 (47)
× Policy Index	6.8 (75)	10.2 (81)	1.4 (25)	0.1 (94)	13.7 (83)	7.7 (95)	0.8 (55)	18.5 (60)	11.3 (65)	-14.1 (43)



# REAL ESTATE PERFORMANCE ANALYSIS (AS OF 6/30/2018)

Investment Name	Vintage Year	Commitment Amount	QTD	YTD	1 Year	3 Year	5 Year	Inception
Transwestern Aslan Realty Partnership III	2005	5,000,000			-7.10	10.94	5.98	-15.27
Siguler Guff Distressed Real Estate Opportunities II	2014	40,000,000	1.28	5.60	17.57	13.35		11.59
Siguler Guff DREOF II Co-Investment	2016	15,000,000	0.41	0.99	13.67			12.99
Brookfield Strategic Real Estate Partners III, L.P.	2017	100,000,000						
<b>Total: State of Vermont</b>		<b>160,000,000</b>	<b>1.02</b>	<b>4.31</b>	<b>16.57</b>	<b>13.29</b>	<b>11.62</b>	<b>5.87</b>



# REAL ESTATE PERFORMANCE ANALYSIS (AS OF 6/30/2018)

Investment Name	Fund Type	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
1 Transwestern Aslan Realty Partnership III	RE Value Add	2005	5,000,000	5,000,000	0	0	1,446,198	0	1,446,198	-3,553,802	100%	0.29	0.29	-15.27%
2 Siguler Guff Distressed Real Estate Opportunities II	RE Opportunistic	2014	40,000,000	32,620,000	7,380,000	0	11,425,153	33,212,936	44,638,089	12,018,089	82%	0.35	1.37	11.59%
3 Siguler Guff DREOF II Co-Investment	RE Opportunistic	2016	15,000,000	11,910,217	3,089,783	0	0	13,989,474	13,989,474	2,079,257	79%	0.00	1.17	12.99%
4 Brookfield Strategic Real Estate Partners III, L.P.	RE Opportunistic	2017	100,000,000	0	100,000,000	0	0	0	0	0	0%	0.00	0.00	N/A
<b>Total: State of Vermont</b>			<b>160,000,000</b>	<b>49,530,217</b>	<b>110,469,783</b>	<b>0</b>	<b>12,871,351</b>	<b>47,202,410</b>	<b>60,073,761</b>	<b>10,543,544</b>	<b>31%</b>	<b>0.26</b>	<b>1.21</b>	<b>5.87%</b>



# PRIVATE DEBT PERFORMANCE ANALYSIS (AS OF 6/30/2018)

Investment Name	Vintage Year	Commitment Amount	QTD	YTD	1 Year	3 Year	5 Year	Inception
Benefit Street Partners Senior Secured Opportunites Fund, LP	2017	70,000,000	0.81	2.66				4.47
BlueBay Direct Lending Fund III	2017	70,000,000	-12.37					-1.30
<b>Total: State of Vermont</b>		<b>140,000,000</b>	<b>0.73</b>	<b>2.55</b>				<b>4.35</b>





# PRIVATE DEBT PERFORMANCE ANALYSIS (AS OF 6/30/2018)

Investment Name	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
1 Benefit Street Partners Senior Secured Opportunites Fund, LP	2017	70,000,000	54,533,364	15,466,636	1,333,567	2,185,992	55,451,835	57,637,827	1,770,896	78%	0.04	1.03	4.47%
2 BlueBay Direct Lending Fund III	2017	70,000,000	3,063,645	66,936,355	0	0	3,023,898	3,023,898	-39,747	4%	0.00	0.99	-1.30%
<b>Total: State of Vermont</b>		<b>140,000,000</b>	<b>57,597,009</b>	<b>82,402,991</b>	<b>1,333,567</b>	<b>2,185,992</b>	<b>58,475,733</b>	<b>60,661,725</b>	<b>1,731,149</b>	<b>41%</b>	<b>0.04</b>	<b>1.03</b>	<b>4.35%</b>



# PRIVATE EQUITY PERFORMANCE ANALYSIS (AS OF 6/30/2018)

Investment Name	Vintage Year	Commitment Amount	QTD	YTD	1 Year	3 Year	5 Year	Inception
HarbourVest Partners Dover Street VIII	2012	25,000,000	8.65	9.66	19.70	12.71	18.32	22.16
HarbourVest Partners IX-Buyout	2012	24,000,000	6.12	9.91	22.63	18.24	18.10	17.59
HarbourVest Partners IX-Credit Opportunities	2012	4,000,000	3.27	5.95	19.02	12.84	13.32	14.97
HarbourVest Partners IX-Venture	2012	12,000,000	6.60	11.71	21.75	11.89	16.57	16.43
HarbourVest HIPEP VII	2014	15,000,000	4.68	10.25	22.44	16.80		16.90
HarbourVest Partners X Buyout Fund	2015	45,500,000	6.74	12.35	28.05			32.43
HarbourVest Partners X Venture Fund	2015	19,500,000	4.38	10.65	26.06			27.42
HarbourVest Partners Dover Street IX	2016	40,000,000	11.77	20.32	37.86			66.30
HarbourVest HIPEP VIII	2017	60,000,000	13.45					30.50
HarbourVest Partners Co-Investment Fund V	2018	25,000,000						
HarbourVest Partners XI Buyout Fund	2018	75,000,000						
HarbourVest Partners XI Micro Buyout	2018	12,500,000						
HarbourVest Partners XI Venture Fund	2018	37,500,000						
<b>Total: State of Vermont</b>		<b>395,000,000</b>	<b>7.41</b>	<b>13.35</b>	<b>26.14</b>	<b>18.84</b>	<b>20.49</b>	<b>21.42</b>

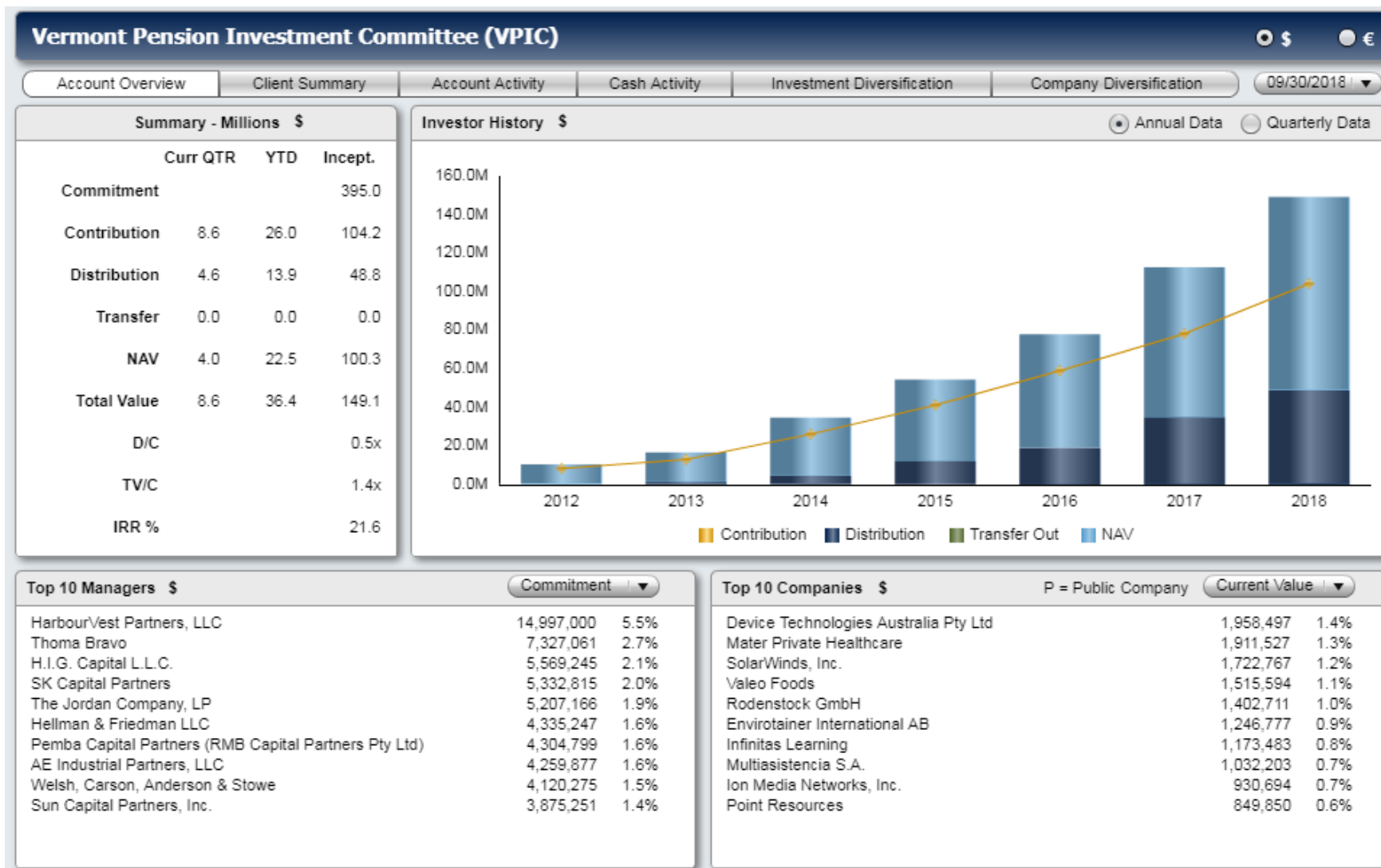


# PRIVATE EQUITY PERFORMANCE ANALYSIS (AS OF 6/30/2018)

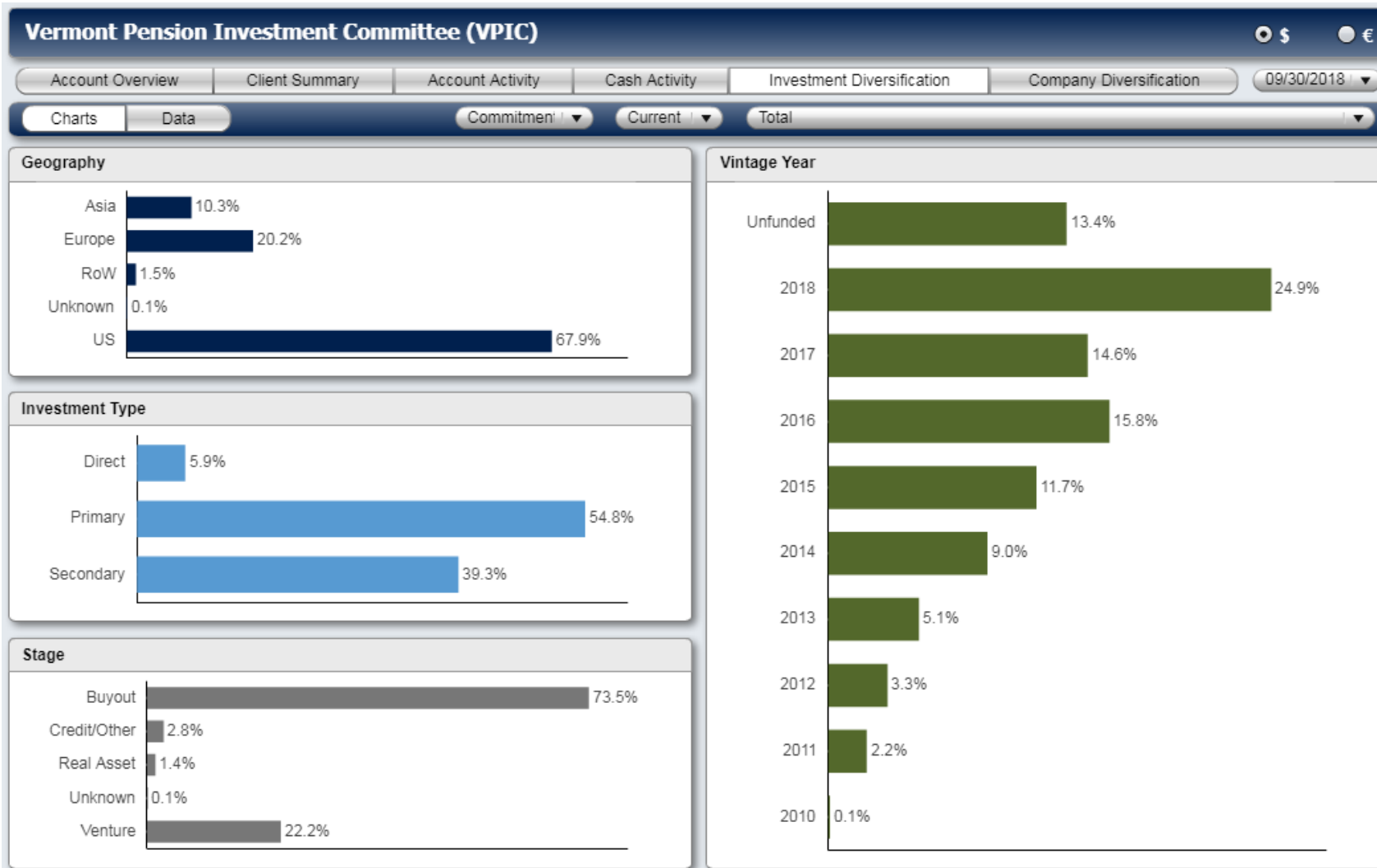
Investment Name	Fund Type	Vintage Year	Commitment Amount	Paid in Capital	Capital to be Funded	Additional Fees	Cumulative Distributions	Valuation	Total Value	Net Benefit	Call Ratio	DPI Ratio	TVPI Ratio	IRR
1 HarbourVest Partners IX-Venture	Venture	2012	12,000,000	11,400,000	600,000	37,671	4,630,980	13,345,224	17,976,204	6,538,533	95%	0.40	1.57	16.43%
2 HarbourVest Partners IX-Buyout	Buyouts	2012	24,000,000	18,060,000	5,940,000	47,188	10,504,392	17,268,610	27,773,002	9,665,814	75%	0.58	1.53	17.59%
3 HarbourVest Partners Dover Street VIII	Secondaries	2012	25,000,000	22,125,000	2,875,000	0	22,377,702	11,991,533	34,369,235	12,244,235	89%	1.01	1.55	22.16%
4 HarbourVest Partners IX-Credit Opportunities	Distressed	2012	4,000,000	2,700,000	1,300,000	10,265	1,396,905	2,488,868	3,885,773	1,175,508	68%	0.52	1.43	14.97%
5 HarbourVest HIPEP VII	Fund of Funds	2014	15,000,000	7,837,500	7,162,500	0	858,585	9,260,916	10,119,501	2,282,001	52%	0.11	1.29	16.90%
6 HarbourVest Partners X Venture Fund	Venture	2015	19,500,000	7,458,750	12,041,250	1,672	369,019	9,110,745	9,479,764	2,019,342	38%	0.05	1.27	27.42%
7 HarbourVest Partners X Buyout Fund	Buyouts	2015	45,500,000	8,190,000	37,310,000	2,787	850,805	11,098,285	11,949,090	3,756,303	18%	0.10	1.46	32.43%
8 HarbourVest Partners Dover Street IX	Secondaries	2016	40,000,000	12,800,000	27,200,000	0	3,221,854	14,584,439	17,806,293	5,006,293	32%	0.25	1.39	66.30%
9 HarbourVest HIPEP VIII	Fund of Funds	2017	60,000,000	5,100,000	54,900,000	0	0	6,655,698	6,655,698	1,555,698	9%	0.00	1.31	30.50%
10 HarbourVest Partners XI Venture Fund	Venture	2018	37,500,000	0	37,500,000	0	0	0	0	0	0%	0.00	0.00	N/A
11 HarbourVest Partners XI Buyout Fund	Buyouts	2018	75,000,000	0	75,000,000	0	0	0	0	0	0%	0.00	0.00	N/A
12 HarbourVest Partners XI Micro Buyout	Buyouts	2018	12,500,000	0	12,500,000	0	0	0	0	0	0%	0.00	0.00	N/A
13 HarbourVest Partners Co-Investment Fund V	Co-Investment	2018	25,000,000	0	25,000,000	0	0	0	0	0	0%	0.00	0.00	N/A
<b>Total: State of Vermont</b>			<b>395,000,000</b>	<b>95,671,250</b>	<b>299,328,750</b>	<b>99,583</b>	<b>44,210,242</b>	<b>95,804,318</b>	<b>140,014,560</b>	<b>44,243,727</b>	<b>24%</b>	<b>0.46</b>	<b>1.46</b>	<b>21.42%</b>



# PRIVATE EQUITY INVESTMENT PORTFOLIO SUMMARY AS OF 9/30/2018



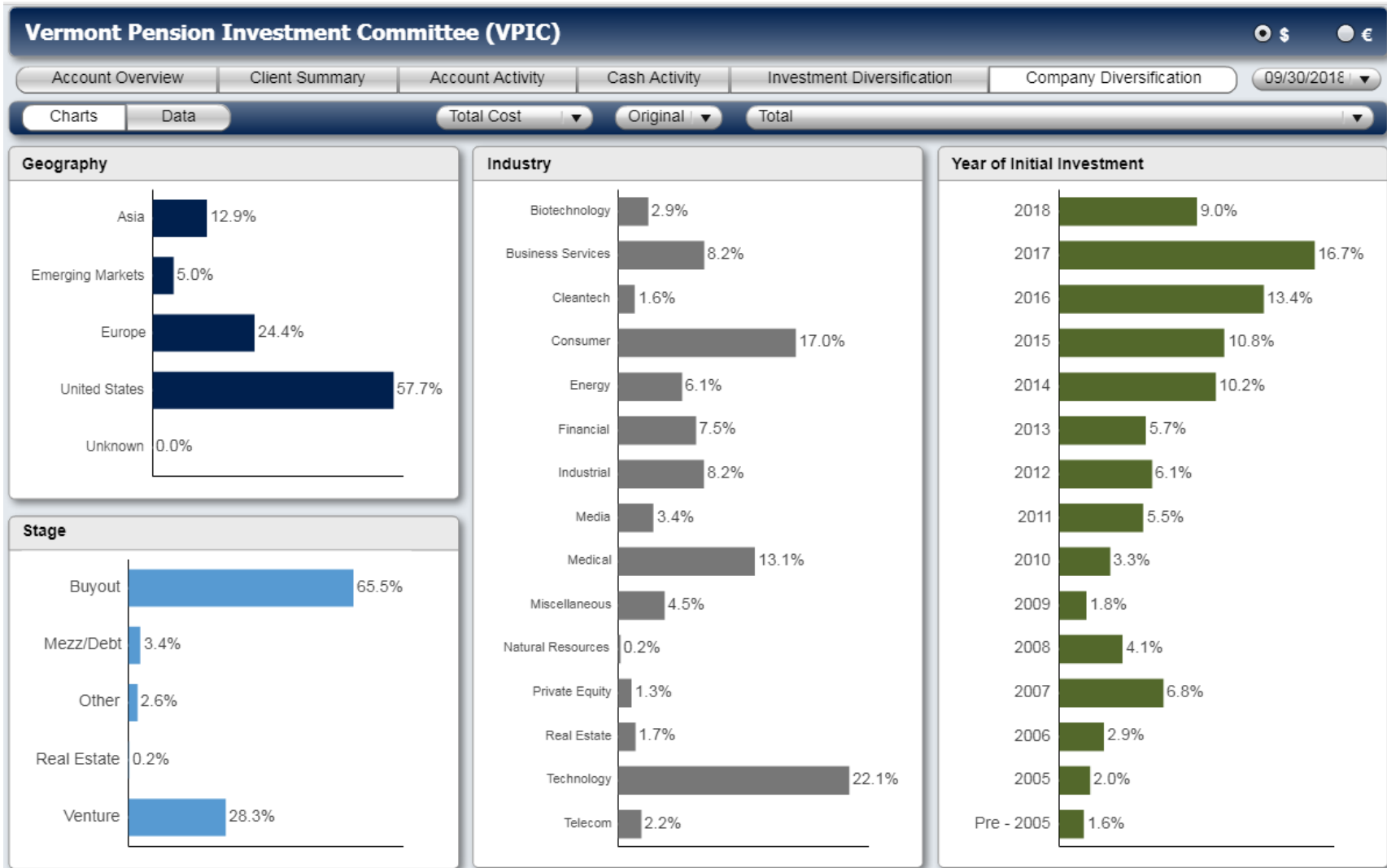
# PRIVATE EQUITY INVESTMENT DIVERSIFICATION AS OF 9/30/2018



Note:  
Data provided by HarbourVest and has not been independently verified by NEPC



# PRIVATE EQUITY COMPANY DIVERSIFICATION AS OF 9/30/2018



Note:  
Data provided by HarbourVest and has not been independently verified by NEPC



**State of Vermont**  
**ICM Adjusted Ending Value**

6/30/2018

Investment	Index Set Name	Cumulative Contributions	Cumulative Distributions	Adjusted Valuation	Valuation ICM	Valuation Spread	IRR	IRR ICM	IRR Spread	Kaplan-Schoar PME
HarbourVest HIPEP VII	MSCI ACWI	7,837,500	858,585	9,260,916	8,064,006	1,196,910	16.90	8.51	8.39	1.13
HarbourVest HIPEP VIII	MSCI ACWI	5,100,000	0	6,655,698	5,067,102	1,588,596	30.50	-0.65	31.15	1.31
HarbourVest Partners Co-Investment Fund V	MSCI ACWI		0				0.00	0.00	0.00	0.00
HarbourVest Partners Dover Street IX	MSCI ACWI	12,800,000	3,221,854	14,584,439	10,165,613	4,418,826	66.30	8.06	58.24	1.33
HarbourVest Partners Dover Street VIII	MSCI ACWI	22,125,000	22,377,702	11,991,533	2,696,777	9,294,756	22.16	7.14	15.02	1.33
HarbourVest Partners IX-Buyout	MSCI ACWI	18,107,188	10,504,392	17,268,610	10,657,532	6,611,078	17.59	6.75	10.84	1.30
HarbourVest Partners IX-Credit Opportunities	MSCI ACWI	2,710,265	1,396,905	2,488,868	1,802,667	686,201	14.97	7.16	7.81	1.20
HarbourVest Partners IX-Venture	MSCI ACWI	11,437,671	4,630,980	13,345,224	8,969,454	4,375,770	16.43	6.47	9.96	1.31
HarbourVest Partners X Buyout Fund	MSCI ACWI	8,192,787	850,805	11,098,285	8,509,093	2,589,192	32.43	10.88	21.55	1.28
HarbourVest Partners X Venture Fund	MSCI ACWI	7,460,422	369,019	9,110,745	7,692,195	1,418,550	27.42	8.57	18.85	1.18
HarbourVest Partners XI Buyout Fund	MSCI ACWI		0				0.00	0.00	0.00	0.00
HarbourVest Partners XI Micro Buyout	MSCI ACWI		0				0.00	0.00	0.00	0.00
HarbourVest Partners XI Venture Fund	MSCI ACWI		0				0.00	0.00	0.00	0.00
<b>Total: State of Vermont</b>		<b>95,770,833</b>	<b>44,210,242</b>	<b>95,804,318</b>	<b>63,624,440</b>	<b>32,179,878</b>	<b>21.42</b>	<b>7.24</b>	<b>14.18</b>	<b>1.29</b>

**State of Vermont**  
**ICM Adjusted Ending Value**

6/30/2018

Investment	Index Set Name	Cumulative Contributions	Cumulative Distributions	Adjusted Valuation	Valuation ICM	Valuation Spread	IRR	IRR ICM	IRR Spread	Kaplan-Schoar PME
HarbourVest HIPEP VII	S&P 500 Total Return	7,837,500	858,585	9,260,916	8,758,813	502,103	16.90	13.49	3.41	1.05
HarbourVest HIPEP VIII	S&P 500 Total Return	5,100,000	0	6,655,698	5,270,715	1,384,983	30.50	3.35	27.15	1.26
HarbourVest Partners Co-Investment Fund V	S&P 500 Total Return		0				0.00	0.00	0.00	0.00
HarbourVest Partners Dover Street IX	S&P 500 Total Return	12,800,000	3,221,854	14,584,439	10,538,812	4,045,627	66.30	13.14	53.16	1.29
HarbourVest Partners Dover Street VIII	S&P 500 Total Return	22,125,000	22,377,702	11,991,533	6,003,054	5,988,479	22.16	13.40	8.76	1.18
HarbourVest Partners IX-Buyout	S&P 500 Total Return	18,107,188	10,504,392	17,268,610	14,357,752	2,910,858	17.59	13.28	4.31	1.11
HarbourVest Partners IX-Credit Opportunities	S&P 500 Total Return	2,710,265	1,396,905	2,488,868	2,330,871	157,997	14.97	13.34	1.63	1.04
HarbourVest Partners IX-Venture	S&P 500 Total Return	11,437,671	4,630,980	13,345,224	11,656,307	1,688,917	16.43	12.96	3.47	1.10
HarbourVest Partners X Buyout Fund	S&P 500 Total Return	8,192,787	850,805	11,098,285	9,043,548	2,054,737	32.43	15.59	16.84	1.21
HarbourVest Partners X Venture Fund	S&P 500 Total Return	7,460,422	369,019	9,110,745	8,121,969	988,776	27.42	14.47	12.95	1.12
HarbourVest Partners XI Buyout Fund	S&P 500 Total Return		0				0.00	0.00	0.00	0.00
HarbourVest Partners XI Micro Buyout	S&P 500 Total Return		0				0.00	0.00	0.00	0.00
HarbourVest Partners XI Venture Fund	S&P 500 Total Return		0				0.00	0.00	0.00	0.00
<b>Total: State of Vermont</b>		<b>95,770,833</b>	<b>44,210,242</b>	<b>95,804,318</b>	<b>76,081,841</b>	<b>19,722,477</b>	<b>21.42</b>	<b>13.41</b>	<b>8.01</b>	<b>1.15</b>



**State of Vermont  
ICM Adjusted Ending Value**

6/30/2018

<b>Investment</b>	<b>Index Set Name</b>	<b>Cumulative Contributions</b>	<b>Cumulative Distributions</b>	<b>Adjusted Valuation</b>	<b>Valuation ICM</b>	<b>Valuation Spread</b>	<b>IRR</b>	<b>IRR ICM</b>	<b>IRR Spread</b>	<b>Kaplan-Schoar PME</b>
Beneft Street Partners Senior Secured Opportunites Fund, LP	BC US Agg Total Return Unhedged	55,866,931	2,185,992	55,451,835	53,429,105	2,022,730	4.47	-0.63	5.10	1.04
BlueBay Direct Lending Fund III	BC US Agg Total Return Unhedged	3,063,645	0	3,023,898	3,073,446	-49,548	-1.30	0.32	-1.62	0.98
<b>Total: State of Vermont</b>		<b>58,930,576</b>	<b>2,185,992</b>	<b>58,475,733</b>	<b>56,502,551</b>	<b>1,973,182</b>	<b>4.35</b>	<b>-0.61</b>	<b>4.96</b>	<b>1.03</b>

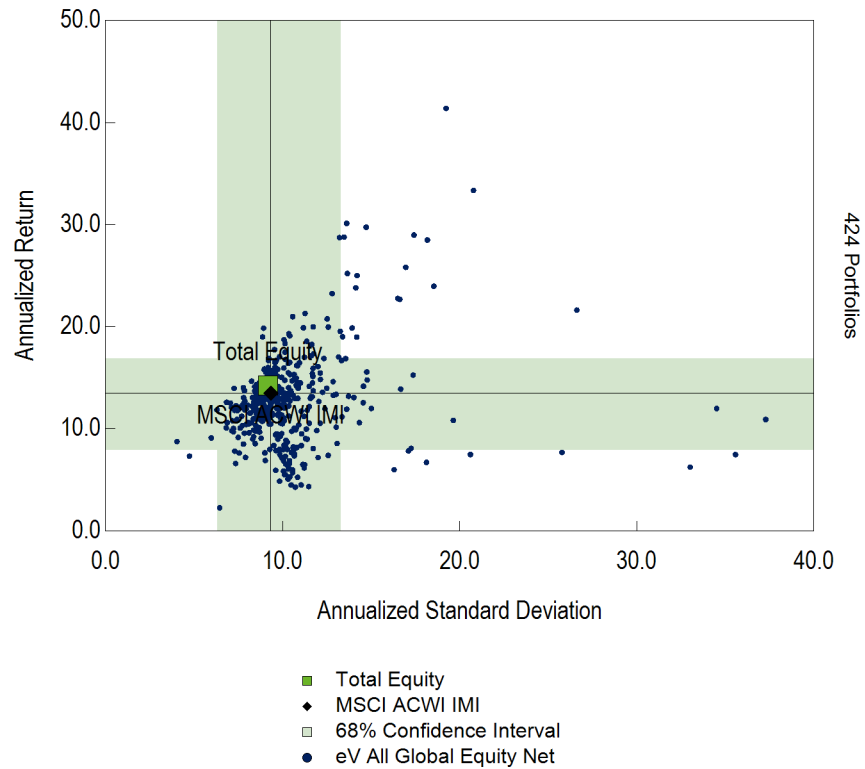
**State of Vermont  
ICM Adjusted Ending Value**

6/30/2018

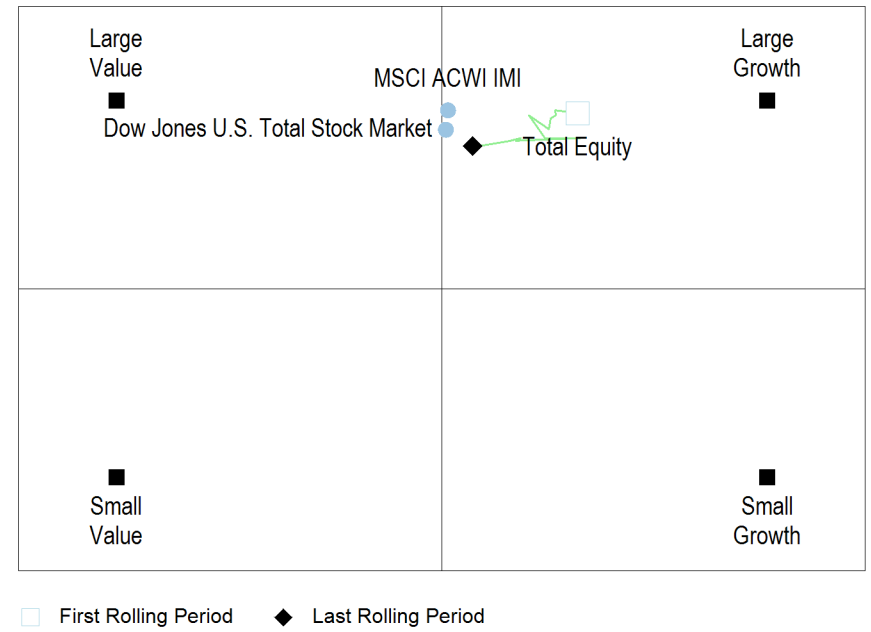
<b>Investment</b>	<b>Index Set Name</b>	<b>Cumulative Contributions</b>	<b>Cumulative Distributions</b>	<b>Adjusted Valuation</b>	<b>Valuation ICM</b>	<b>Valuation Spread</b>	<b>IRR</b>	<b>IRR ICM</b>	<b>IRR Spread</b>	<b>Kaplan-Schoar PME</b>
Brookfield Strategic Real Estate Partners III, L.P.	FTSE NAREIT		0				0.00	0.00	0.00	0.00
Siguler Guff Distressed Real Estate Opportunities II	FTSE NAREIT	32,620,000	11,425,153	33,212,936	28,715,609	4,497,327	11.59	7.62	3.97	1.11
Siguler Guff DREOF II Co-Investment	FTSE NAREIT	11,910,217	0	13,989,474	13,462,475	526,999	12.99	9.77	3.22	1.04
<b>Total: State of Vermont</b>		<b>44,530,217</b>	<b>11,425,153</b>	<b>47,202,410</b>	<b>42,178,085</b>	<b>5,024,325</b>	<b>11.76</b>	<b>7.90</b>	<b>3.86</b>	<b>1.09</b>

# TOTAL EQUITY COMPOSITE

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2018



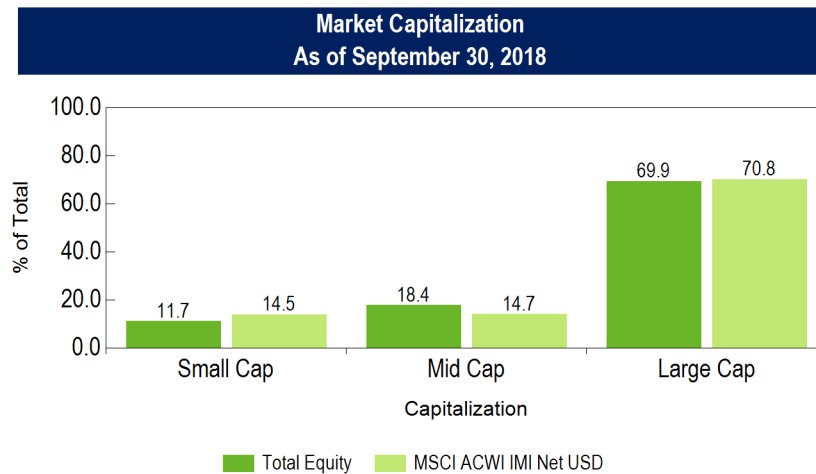
U.S. Effective Style Map  
3 Years Ending September 30, 2018



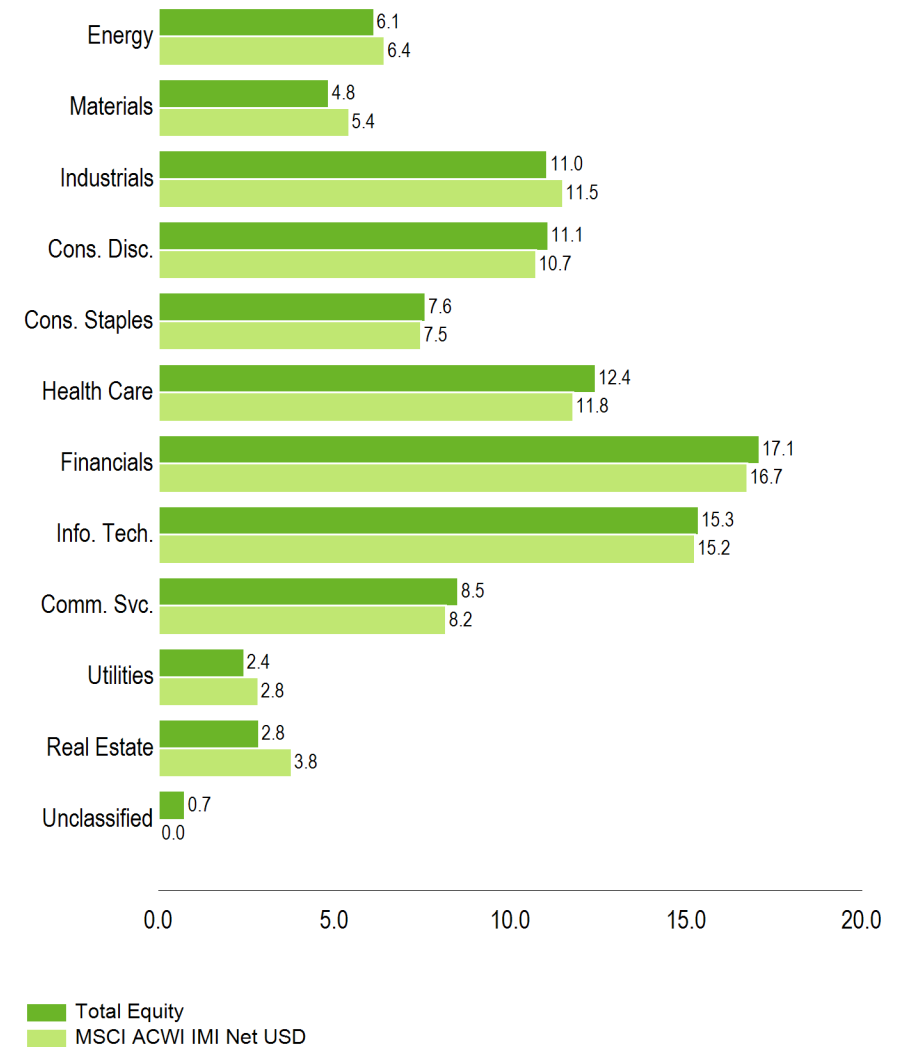
# TOTAL EQUITY COMPOSITE

Characteristics		
	Portfolio	MSCI ACWI IMI Net USD
Number of Holdings	3,180	8,870
Weighted Avg. Market Cap. (\$B)	113.91	129.37
Median Market Cap. (\$B)	10.35	1.79
Price To Earnings	27.38	21.47
Price To Book	4.81	3.57
Price To Sales	3.73	3.17
Return on Equity (%)	19.68	17.49
Yield (%)	2.13	2.31

	Portfolio Q3-18	Index Q3-18
<b>Region Weighting</b>		
North America ex U.S.	1.80	3.07
United States	56.81	54.78
Europe Ex U.K.	13.32	14.34
United Kingdom	5.10	5.33
Pacific Basin Ex Japan	5.61	4.97
Japan	6.15	7.94
Emerging Markets	11.00	9.23
Other	0.22	0.35



## Sector Allocation (%) vs MSCI ACWI IMI Net USD



# TOTAL EQUITY COMPOSITE

Top Ten Holdings	
APPLE	1.4%
AMAZON.COM	1.4%
MICROSOFT	1.2%
VISA 'A'	0.9%
BANK OF AMERICA	0.8%
TENCENT HOLDINGS	0.8%
ALPHABET A	0.7%
BERKSHIRE HATHAWAY 'B'	0.6%
ALPHABET 'C'	0.6%
IHS MARKIT	0.6%

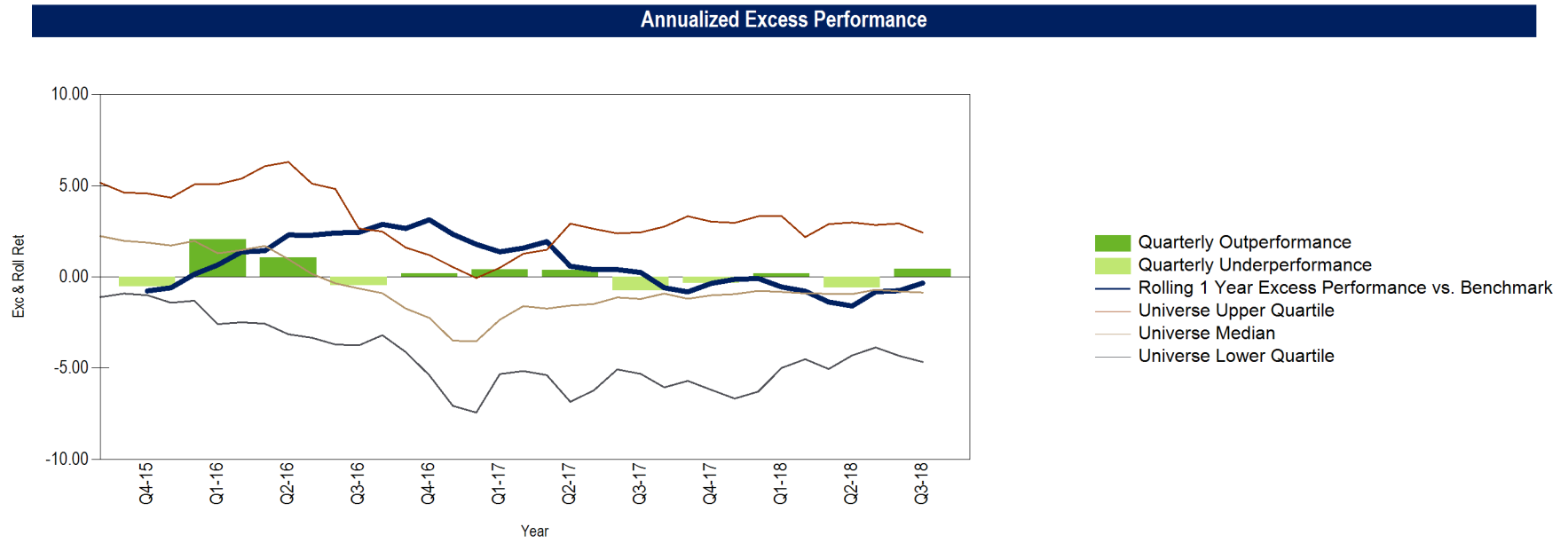
Top Positive Contributors		
	Relative Contribution %	Return %
TAIWAN SEMICON.MNFG.	0.1%	21.1%
VISA 'A'	0.1%	13.5%
OKTA CL.A	0.0%	39.7%
NUVASIVE	0.0%	36.2%
LONZA GROUP	0.0%	29.2%
BOSTON SCIENTIFIC	0.0%	17.7%
FACEBOOK CLASS A	0.0%	-15.4%
ATLASSIAN 'A'	0.0%	53.8%
ANTHEM	0.0%	15.5%
VALE ON ADR 1:1	0.0%	18.7%

Top Negative Contributors		
	Relative Contribution %	Return %
APPLE	-0.1%	22.4%
TENCENT HOLDINGS	-0.1%	-17.7%
MICROSOFT	-0.1%	16.4%
JD.COM 'A' ADR 1:2	0.0%	-33.0%
AMAZON.COM	0.0%	17.8%
NOBLE ENERGY	0.0%	-11.3%
HANGZHOU HIK VIS.DIG. TECH.'A'	0.0%	-25.5%
JOHNSON & JOHNSON	0.0%	14.6%
PFIZER	0.0%	22.5%
STATE STREET	0.0%	-9.5%

Equity Sector Attribution											
	Total Effects	Selection Effect	Attribution Effects				Returns		Sector Weights		
			Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.1%	-0.1%	0.0%	0.0%	1.5%	2.6%	6.2%	6.4%			
Materials	0.2%	0.2%	0.0%	0.0%	2.5%	-0.1%	4.9%	5.6%			
Industrials	0.1%	0.1%	0.0%	0.0%	6.2%	5.4%	11.2%	11.3%			
Consumer Discretionary	0.1%	0.1%	0.0%	0.0%	3.2%	2.5%	13.0%	12.6%			
Consumer Staples	-0.1%	0.0%	0.0%	-0.1%	0.7%	1.9%	8.0%	7.7%			
Health Care	0.2%	0.1%	0.0%	0.0%	11.7%	10.6%	11.5%	11.1%			
Financials	0.0%	0.0%	0.0%	0.0%	2.5%	2.3%	17.5%	16.9%			
Information Technology	0.1%	0.1%	0.0%	0.0%	6.3%	5.8%	18.9%	18.9%			
Communication Services	0.0%	0.0%	0.0%	0.0%	5.4%	5.2%	2.5%	2.6%			
Utilities	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	2.5%	2.9%			
Real Estate	0.0%	0.0%	0.0%	0.0%	-1.7%	-1.0%	3.0%	4.0%			
Cash	0.0%	0.0%	0.0%	0.0%	0.5%	--	0.7%	0.0%			
<b>Portfolio</b>	<b>0.4%</b>	<b>=</b>	<b>0.4%</b>	<b>+</b>	<b>0.1%</b>	<b>+</b>	<b>0.0%</b>	<b>4.4%</b>	<b>4.0%</b>	<b>100.0%</b>	<b>100.0%</b>

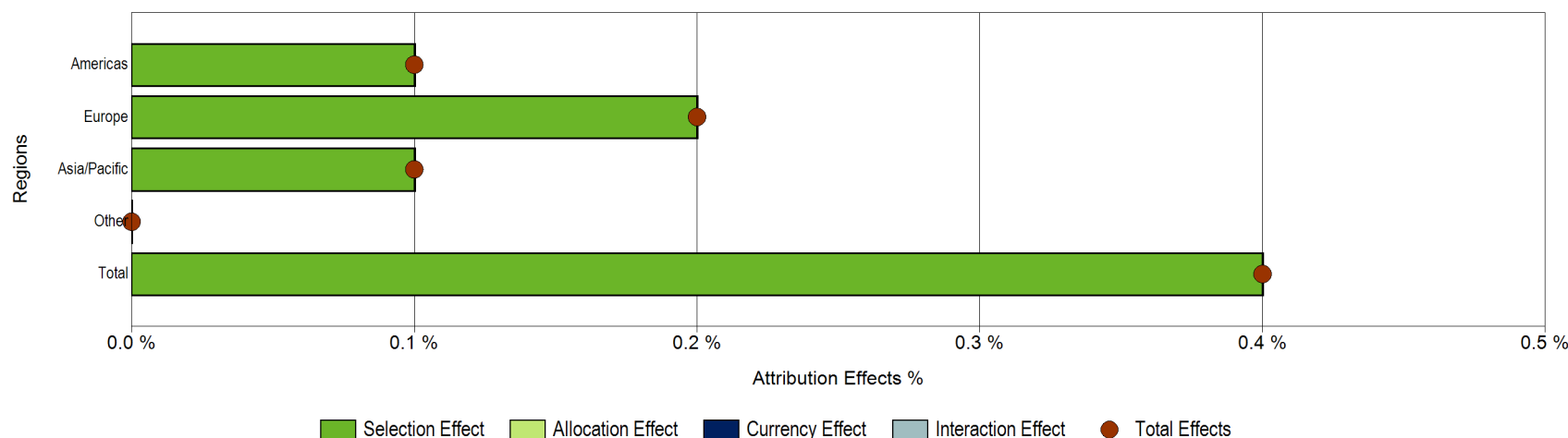


# TOTAL EQUITY COMPOSITE



# TOTAL EQUITY COMPOSITE

Total Equity Performance Attribution vs. MSCI ACWI IMI Net USD  
Quarter Ending September 30, 2018



	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
<b>Totals</b>									
Americas	6.9%	6.7%	58.6%	57.9%	0.1%	0.0%	0.0%	0.0%	0.1%
Europe	1.5%	0.6%	19.6%	20.4%	0.2%	0.0%	0.0%	0.0%	0.2%
Asia/Pacific	0.8%	0.3%	20.0%	20.5%	0.1%	0.0%	0.0%	0.0%	0.1%
Other	-5.0%	-3.2%	1.1%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Cash	0.5%	--	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>4.4%</b>	<b>4.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.4%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.4%</b>
<b>Totals</b>									
Developed	4.9%	4.7%	87.9%	88.8%	0.1%	0.0%	0.0%	0.0%	0.2%
Emerging*	1.1%	-1.3%	11.4%	11.2%	0.3%	0.0%	-0.1%	0.0%	0.3%
Frontier**	-20.0%	--	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cash	0.5%	--	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



# TOTAL EQUITY COMPOSITE

Country Allocation				
	Manager	Index	Manager	Index
	Allocation (USD)	Allocation (USD)	Return (USD)	Return (USD)
<b>Americas</b>				
Brazil*	1.1%	0.6%	5.1%	5.2%
Canada	1.8%	3.1%	3.1%	0.8%
Chile*	0.2%	0.1%	-4.4%	-1.5%
Colombia*	0.0%	0.1%	-4.1%	-3.6%
Mexico*	0.6%	0.3%	14.8%	7.5%
Peru*	0.0%	0.0%	-1.0%	-2.2%
United States	54.9%	53.6%	7.0%	7.1%
<b>Total-Americas</b>	<b>58.6%</b>	<b>57.9%</b>	<b>6.9%</b>	<b>6.7%</b>
<b>Europe</b>				
Austria	0.2%	0.1%	-1.4%	0.8%
Belgium	0.2%	0.4%	-1.7%	-4.1%
Czech Republic*	0.0%	0.0%	4.2%	3.5%
Denmark	0.7%	0.5%	1.5%	1.5%
Finland	0.3%	0.4%	4.1%	2.0%
France	2.4%	3.2%	3.5%	2.5%
Germany	2.4%	2.8%	0.9%	-0.6%
Greece*	0.1%	0.0%	17.4%	-12.5%
Hungary*	0.1%	0.0%	2.2%	4.1%
Ireland	0.2%	0.2%	6.7%	-5.1%
Italy	1.1%	0.8%	-1.9%	-3.4%
Luxembourg	0.1%	0.0%	-5.4%	4.0%
Netherlands	1.5%	1.1%	-1.1%	-1.5%
Norway	0.2%	0.3%	9.8%	6.3%
Poland*	0.1%	0.1%	6.6%	9.6%
Portugal	0.0%	0.1%	-2.8%	-1.6%
Russia*	0.4%	0.4%	-1.1%	6.6%
Spain	1.2%	1.0%	1.5%	-2.2%
Sweden	0.9%	0.9%	5.7%	6.1%
Switzerland	2.0%	2.3%	10.3%	6.4%
United Kingdom	5.7%	5.8%	-1.9%	-2.0%
<b>Total-Europe</b>	<b>19.6%</b>	<b>20.4%</b>	<b>1.5%</b>	<b>0.6%</b>

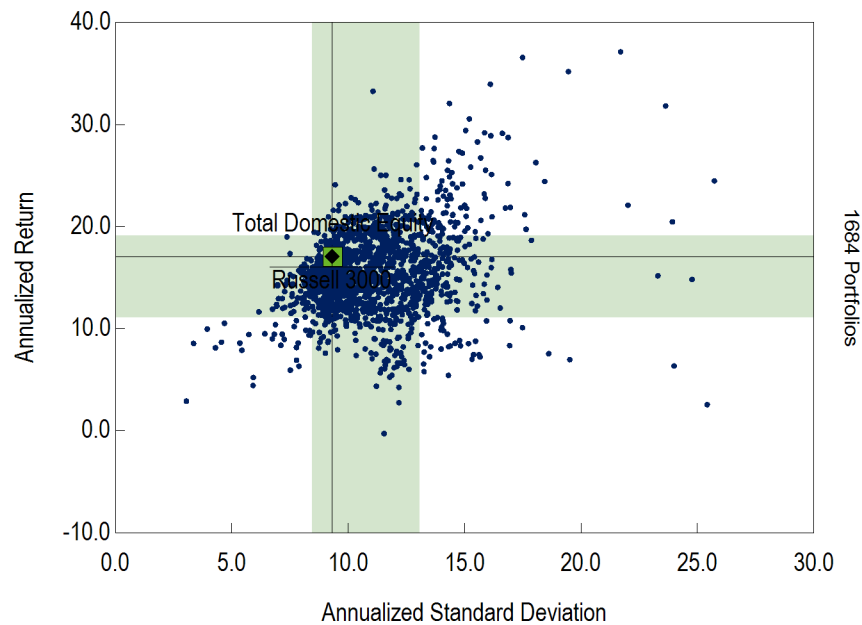
Country Allocation				
	Manager	Index	Manager	Index
	Allocation (USD)	Allocation (USD)	Return (USD)	Return (USD)
<b>AsiaPacific</b>				
Australia	1.7%	2.2%	2.6%	-0.8%
China*	1.6%	3.4%	-4.7%	-7.5%
Hong Kong	3.3%	1.1%	-6.0%	-1.5%
India*	1.7%	1.1%	-6.0%	-4.4%
Indonesia*	0.4%	0.2%	10.6%	0.5%
Japan	6.3%	8.2%	0.1%	3.0%
Korea*	1.8%	1.7%	-1.2%	0.5%
Malaysia*	0.4%	0.3%	7.3%	3.2%
New Zealand	0.1%	0.1%	-2.5%	2.2%
Pakistan*	0.0%	0.0%	1.8%	-4.2%
Philippines*	0.4%	0.1%	-1.8%	0.2%
Singapore	0.8%	0.4%	3.7%	2.0%
Sri Lanka**	0.0%	0.0%	-1.4%	-3.1%
Taiwan*	1.1%	1.4%	17.1%	5.0%
Thailand*	0.4%	0.3%	17.1%	15.0%
<b>Total-AsiaPacific</b>	<b>20.0%</b>	<b>20.5%</b>	<b>-1.7%</b>	<b>0.2%</b>
<b>Other</b>				
Egypt*	0.0%	0.0%	-3.1%	-11.1%
Israel	0.1%	0.2%	3.1%	8.6%
Qatar*	0.0%	0.1%	10.8%	10.4%
South Africa*	0.8%	0.7%	-10.8%	-6.7%
Turkey*	0.2%	0.1%	-11.5%	-20.7%
United Arab Emirates*	0.0%	0.1%	3.5%	0.8%
<b>Total-Other</b>	<b>1.1%</b>	<b>1.2%</b>	<b>-10.7%</b>	<b>-3.3%</b>
<b>Totals</b>				
Developed	88.0%	88.8%	-1.0%	4.7%
Emerging*	11.3%	11.2%	1.1%	-1.4%
Frontier**	0.0%	0.0%	-1.4%	--
Cash	0.7%		0.2%	





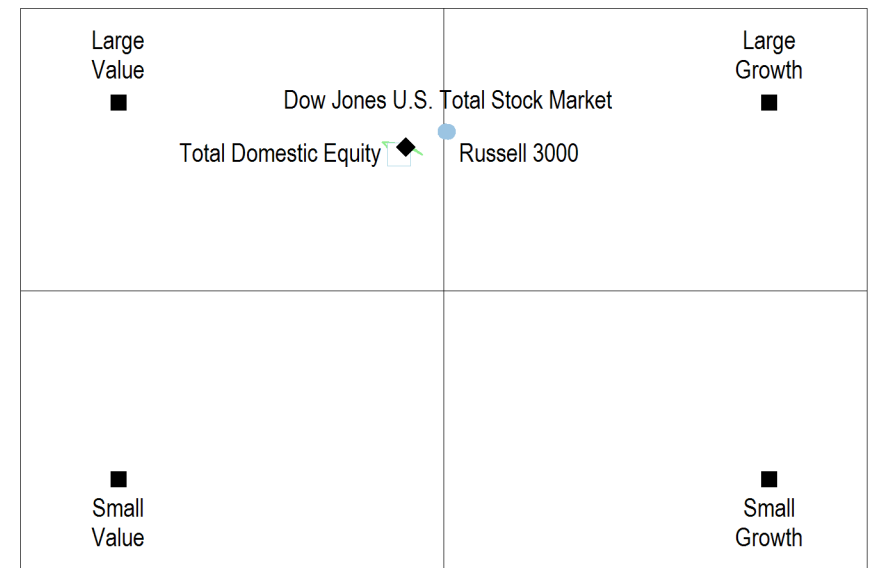
# DOMESTIC EQUITY COMPOSITE

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2018



- Total Domestic Equity
- ◆ Russell 3000
- 68% Confidence Interval
- eV All US Equity Net

U.S. Effective Style Map  
3 Years Ending September 30, 2018



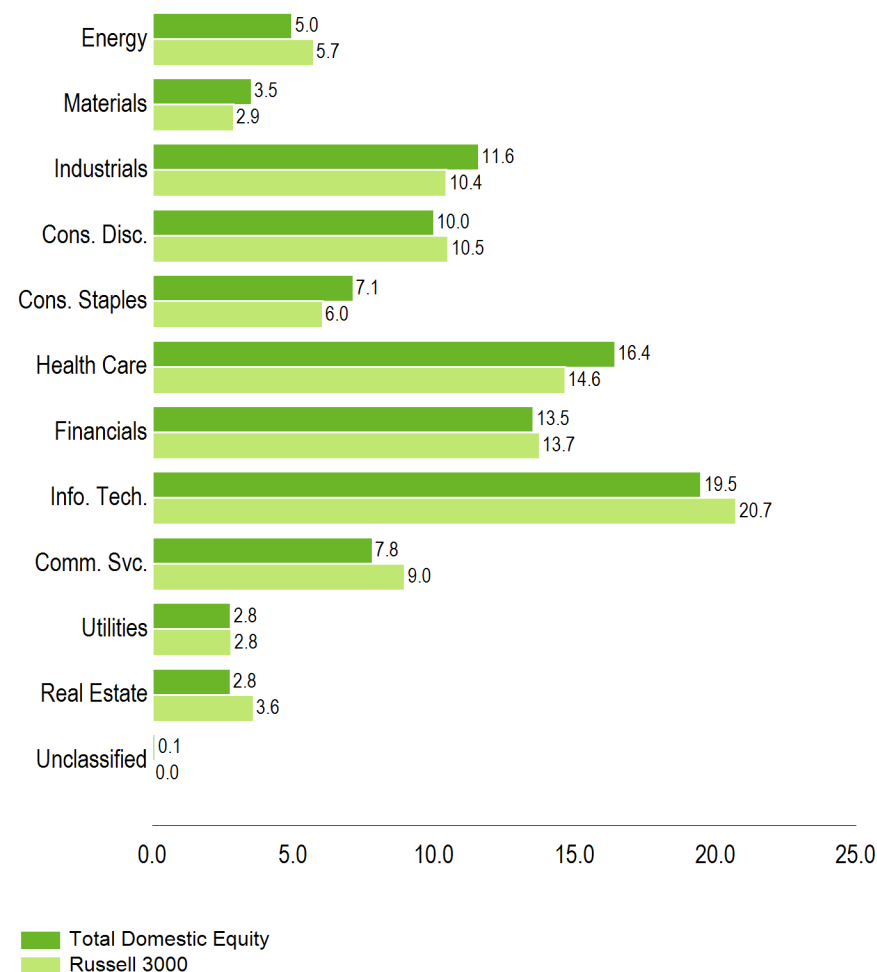
- First Rolling Period
- ◆ Last Rolling Period



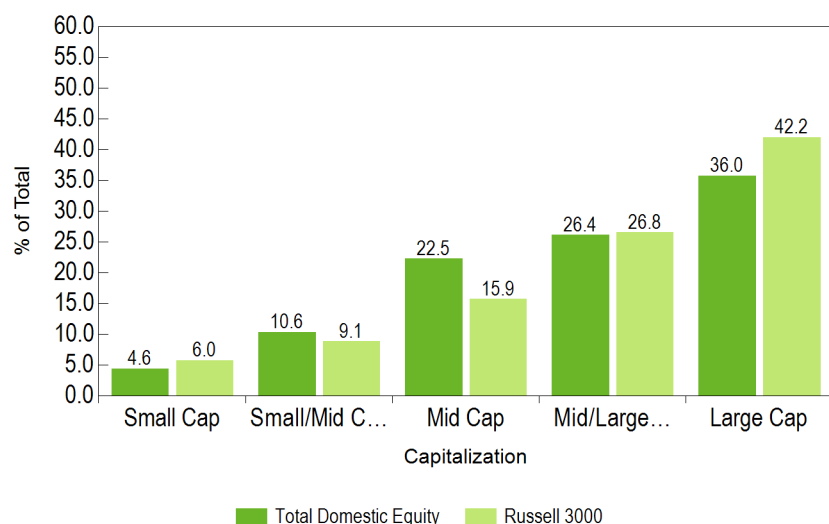
# DOMESTIC EQUITY COMPOSITE

Characteristics		
	Portfolio	Russell 3000
Number of Holdings	609	3,024
Weighted Avg. Market Cap. (\$B)	162.74	190.97
Median Market Cap. (\$B)	19.86	1.79
Price To Earnings	31.02	24.08
Price To Book	6.57	4.88
Price To Sales	4.18	4.05
Return on Equity (%)	21.54	20.19
Yield (%)	1.70	1.76
Beta	1.00	1.00
R-Squared	0.99	1.00

## Sector Allocation (%) vs Russell 3000



## Market Capitalization As of September 30, 2018



# DOMESTIC EQUITY COMPOSITE

Top Ten Holdings	
APPLE	2.9%
MICROSOFT	2.4%
AMAZON.COM	2.3%
BERKSHIRE HATHAWAY 'B'	1.1%
FACEBOOK CLASS A	1.1%
JP MORGAN CHASE & CO.	1.1%
JOHNSON & JOHNSON	1.0%
ALPHABET 'C'	1.0%
EXXON MOBIL	1.0%
ALPHABET A	1.0%

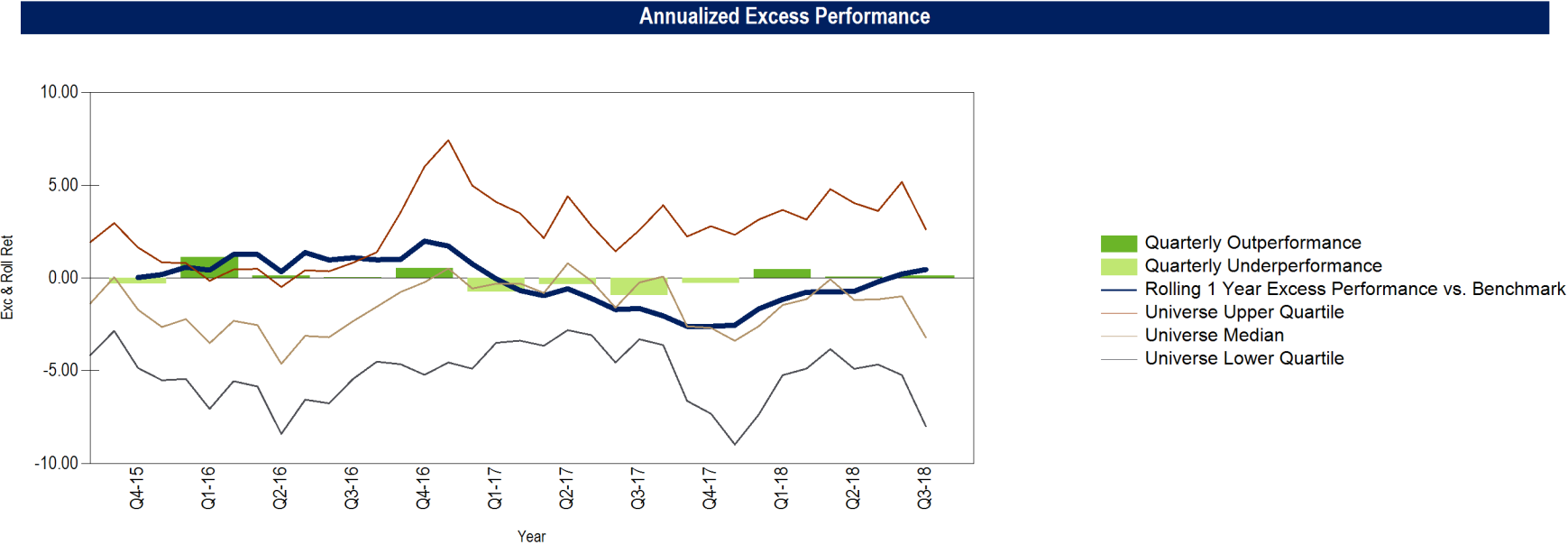
Top Positive Contributors		
	Relative Contribution %	Return %
FACEBOOK CLASS A	0.2%	-15.4%
TAIWAN SEMICON.MNFG.	0.1%	21.1%
GENERAL ELECTRIC	0.0%	-16.3%
LONZA GROUP	0.0%	29.2%
CHINA MOBILE	0.0%	13.7%
NOVARTIS 'R'	0.0%	14.0%
NUVASIVE	0.0%	36.2%
OKTA CLA	0.0%	39.7%
AMADEUS IT GROUP	0.0%	17.8%
WELLS FARGO & CO	0.0%	-4.5%

Top Negative Contributors		
	Relative Contribution %	Return %
APPLE	-0.5%	22.4%
MICROSOFT	-0.3%	16.4%
AMAZON.COM	-0.3%	17.8%
BERKSHIRE HATHAWAY 'B'	-0.1%	14.7%
JOHNSON & JOHNSON	-0.1%	14.6%
PFIZER	-0.1%	22.5%
TENCENT HOLDINGS	-0.1%	-17.7%
JP MORGAN CHASE & CO.	-0.1%	8.9%
CISCO SYSTEMS	-0.1%	13.9%
MERCK & COMPANY	-0.1%	17.7%

	Equity Sector Attribution						Returns		Sector Weights		
	Total Effects	Selection Effect	Attribution Effects			Portfolio	Benchmark	Portfolio	Benchmark		
			Allocation Effect	Interaction Effects							
Energy	0.0%	0.1%	0.0%		0.0%	1.4%	0.6%	6.2%	5.9%		
Materials	0.0%	0.1%	-0.1%		0.0%	2.5%	0.1%	4.8%	3.1%		
Industrials	-0.3%	-0.3%	0.0%		-0.1%	6.2%	9.1%	11.1%	10.3%		
Consumer Discretionary	-0.4%	-0.4%	0.0%		-0.1%	3.2%	6.6%	12.9%	13.1%		
Consumer Staples	-0.4%	-0.2%	0.0%		-0.2%	0.7%	5.3%	7.9%	6.2%		
Health Care	-0.4%	-0.3%	-0.2%		0.0%	11.7%	13.7%	11.4%	13.8%		
Financials	-0.3%	-0.1%	-0.1%		-0.1%	2.5%	3.7%	17.3%	14.2%		
Information Technology	-0.7%	-0.7%	-0.1%		0.1%	6.3%	9.3%	18.7%	24.8%		
Communication Services	-0.1%	0.0%	0.0%		0.0%	5.4%	7.9%	2.4%	1.8%		
Utilities	0.0%	-0.1%	0.0%		0.0%	0.0%	2.5%	2.5%	2.9%		
Real Estate	0.0%	-0.1%	0.1%		0.0%	-1.7%	0.4%	3.0%	3.8%		
Cash	-0.1%	0.0%	-0.1%		0.0%	0.5%	--	1.7%	0.0%		
<b>Portfolio</b>	<b>-2.8%</b>	<b>=</b>	<b>-1.9%</b>	<b>+</b>	<b>-0.6%</b>	<b>+</b>	<b>-0.3%</b>	<b>4.4%</b>	<b>7.1%</b>	<b>100.0%</b>	<b>100.0%</b>

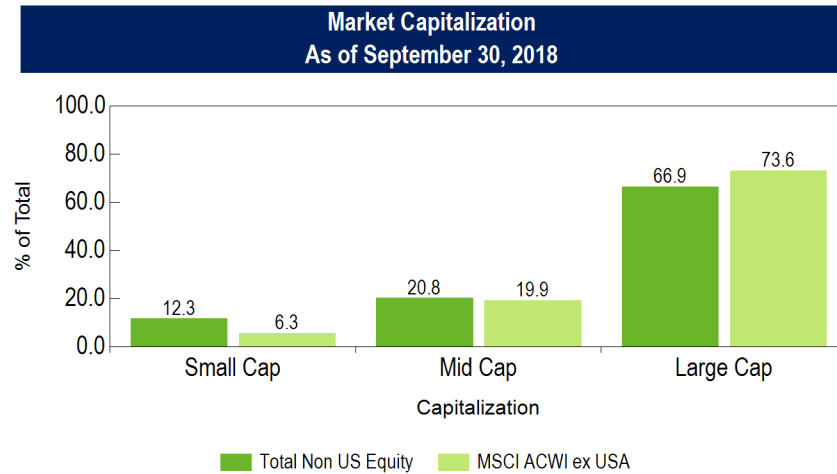


# DOMESTIC EQUITY COMPOSITE

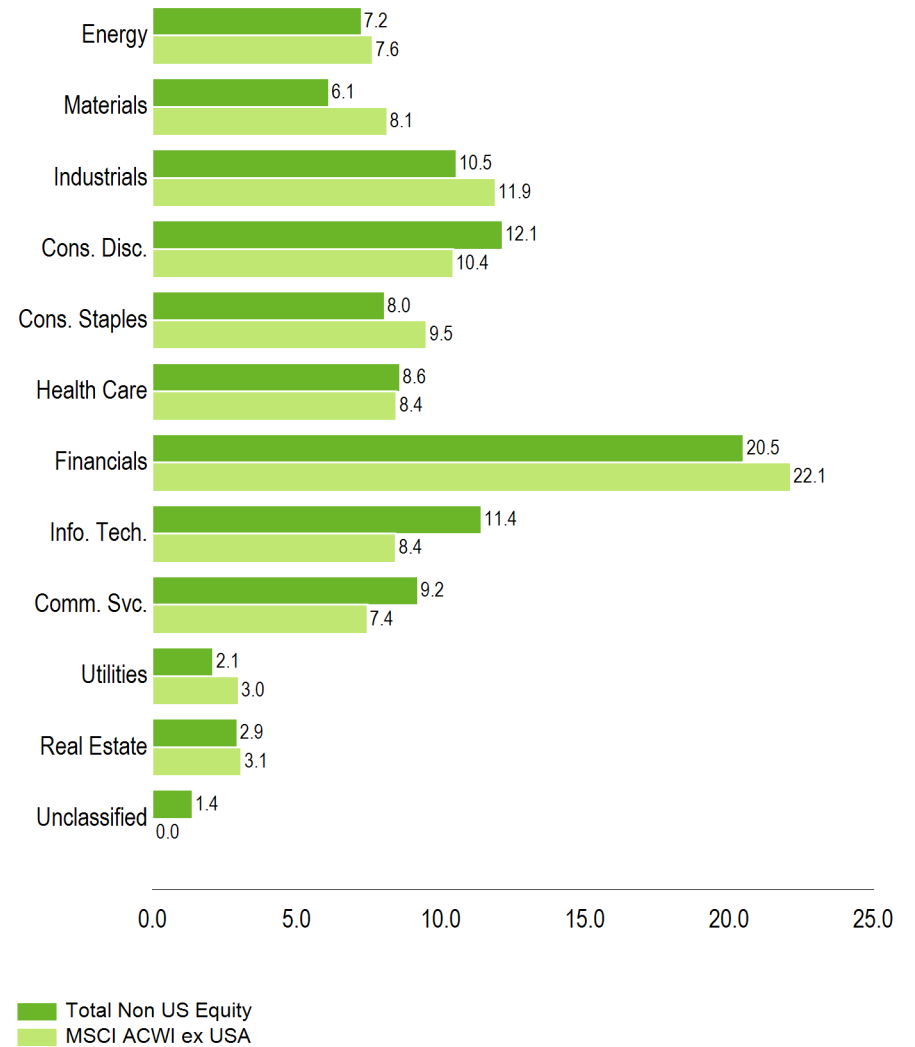


# TOTAL NON US EQUITY

Characteristics		
	Portfolio	MSCI ACWI ex USA
Number of Holdings	2,666	2,166
Weighted Avg. Market Cap. (\$B)	66.02	62.23
Median Market Cap. (\$B)	7.32	7.68
Price To Earnings	23.76	18.84
Price To Book	3.60	2.62
Price To Sales	3.28	2.40
Return on Equity (%)	17.91	15.63
Yield (%)	2.55	3.00
Beta	0.97	1.00
Region Weighting		
	Portfolio Q3-18	Index Q3-18
North America ex U.S.	3.13	6.61
United States	15.83	0.42
Europe Ex U.K.	26.03	32.18
United Kingdom	9.99	11.48
Pacific Basin Ex Japan	10.98	11.10
Japan	12.05	16.66
Emerging Markets	21.55	20.95
Other	0.43	0.60

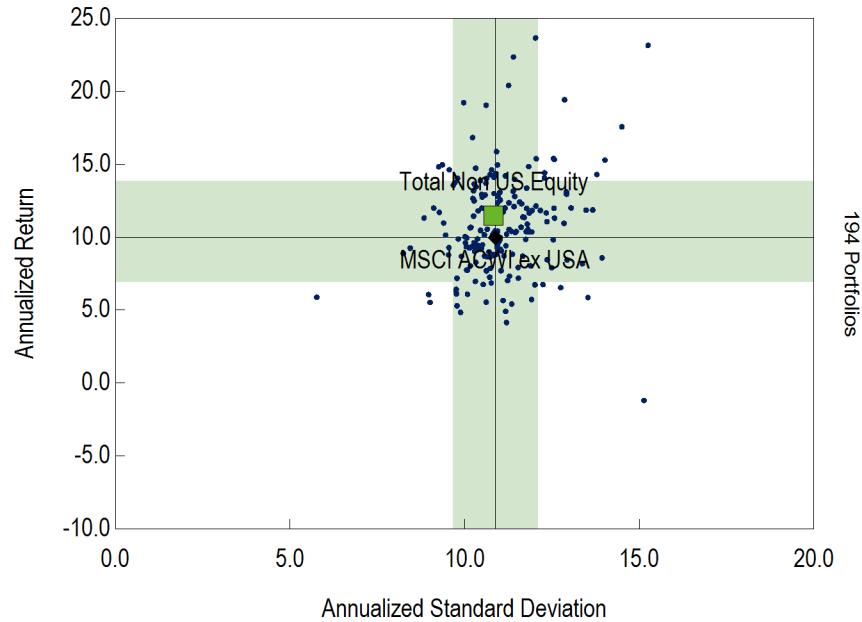


## Sector Allocation (%) vs MSCI ACWI ex USA



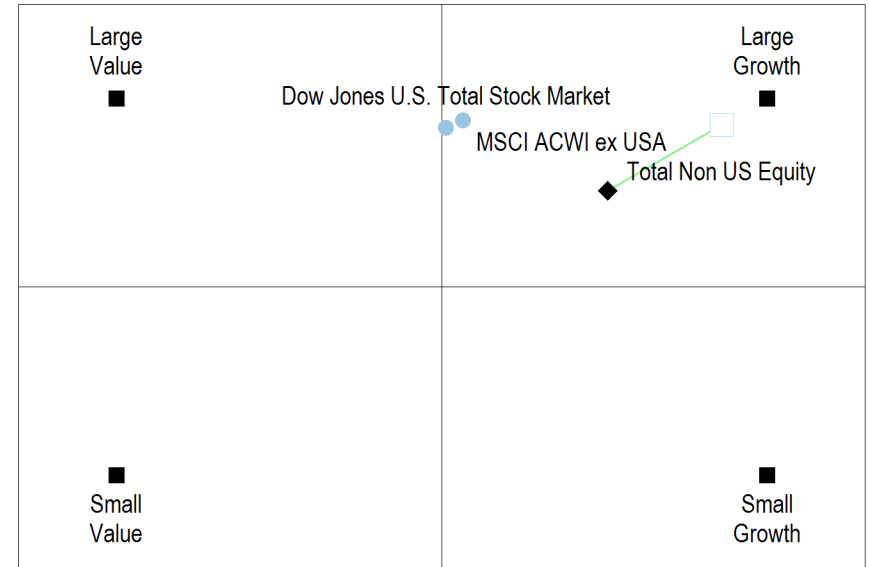
# TOTAL NON US EQUITY

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2018



- Total Non US Equity
- ◆ MSCI ACWI ex USA
- 68% Confidence Interval
- eV All ACWI ex-US Equity Net

U.S. Effective Style Map  
3 Years Ending September 30, 2018

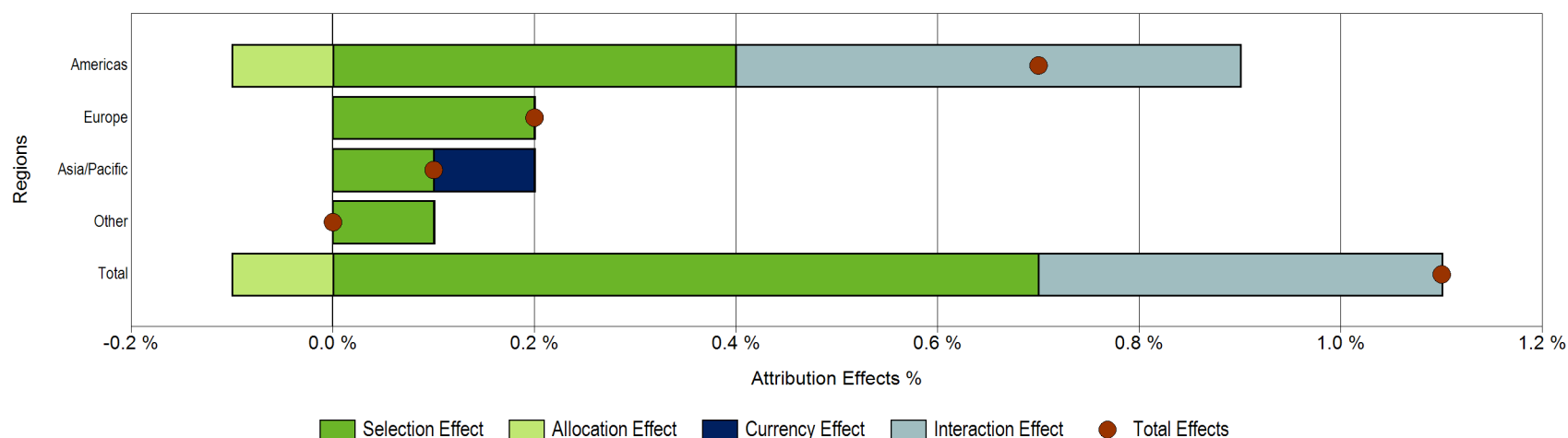


- First Rolling Period
- ◆ Last Rolling Period



# TOTAL NON US EQUITY

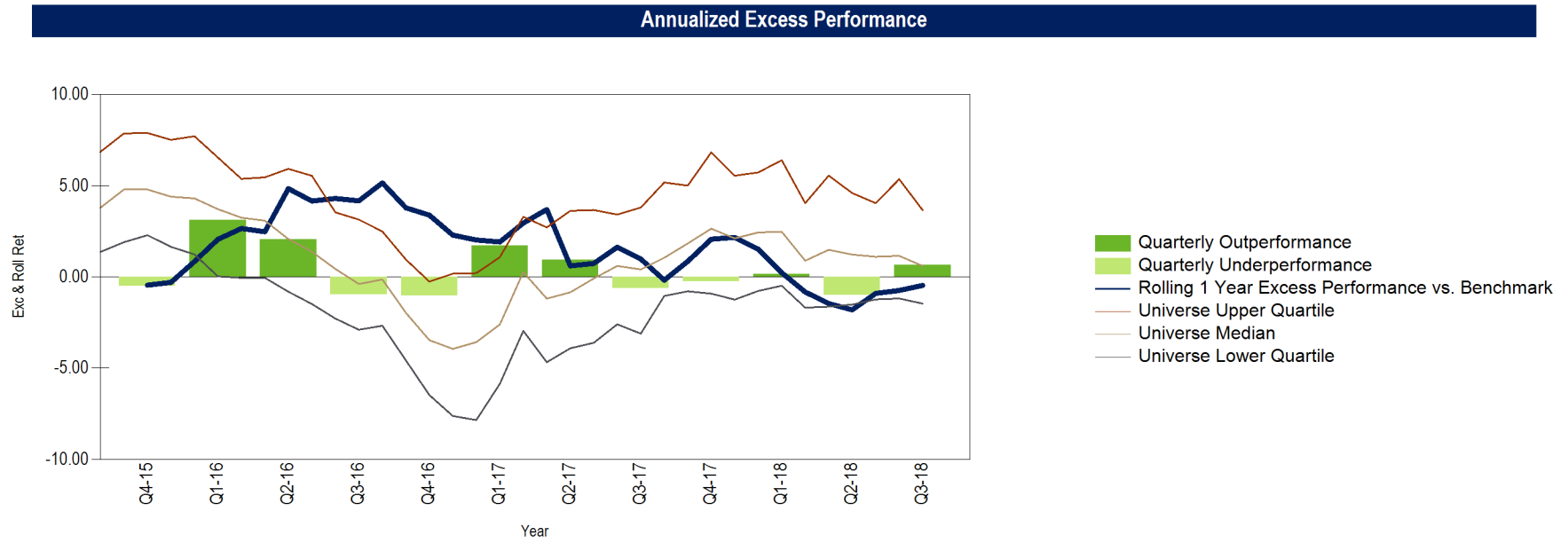
Total Non US Equity Performance Attribution vs. MSCI ACWI ex USA  
Quarter Ending September 30, 2018



	Returns and Weights				Attribution Effects				
	Manager Return	Index Return	Manager Weight	Index Weight	Selection Effect	Allocation Effect	Currency Effect	Interaction Effect	Total Effects
<b>Totals</b>									
Americas	5.1%	2.0%	22.0%	9.3%	0.4%	-0.1%	0.0%	0.5%	0.7%
Europe	1.5%	1.0%	37.3%	44.4%	0.2%	0.0%	0.0%	0.0%	0.2%
Asia/Pacific	0.8%	0.6%	38.0%	43.7%	0.1%	0.0%	0.1%	0.0%	0.1%
Other	-5.0%	-4.3%	2.1%	2.5%	0.1%	0.0%	0.0%	0.0%	0.0%
Cash	0.5%	--	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>Total</b>	<b>1.9%</b>	<b>0.8%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.7%</b>	<b>-0.1%</b>	<b>0.0%</b>	<b>0.4%</b>	<b>1.1%</b>
<b>Totals</b>									
Developed	2.1%	1.3%	77.7%	75.1%	0.4%	0.0%	0.1%	0.0%	0.6%
Emerging*	1.1%	-0.9%	21.7%	24.9%	0.7%	0.0%	-0.1%	-0.1%	0.5%
Frontier**	-20.0%	--	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cash	0.5%	--	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%



# TOTAL NON US EQUITY





# TOTAL NON US EQUITY

Top Ten Holdings	
TENCENT HOLDINGS	1.5%
VISA 'A'	1.1%
IHS MARKIT	1.1%
SAMSUNG ELTN.PREF.	1.1%
TAIWAN SEMICON.MNFG.	1.0%
BANK OF AMERICA	0.9%
ROYAL DUTCH SHELL	0.7%
BP	0.7%
NOVARTIS 'R'	0.6%
LLOYDS BANKING GROUP	0.6%

Top Positive Contributors		
	Relative Contribution %	Return %
VISA 'A'	0.1%	13.5%
AMAZON.COM	0.1%	17.8%
ALIBABA GROUP HLDG.SPN. ADR 1:1	0.1%	-11.2%
BOSTON SCIENTIFIC	0.1%	17.7%
LONZA GROUP	0.1%	29.2%
ANTHEM	0.1%	15.5%
TAIWAN SEMICON.MNFG.	0.1%	21.1%
ATLISSIAN 'A'	0.1%	53.8%
VALE ON ADR 1:1	0.1%	18.7%
TECHTRONIC INDS.	0.1%	15.5%

Top Negative Contributors		
	Relative Contribution %	Return %
JD.COM 'A' ADR 1:2	-0.1%	-33.0%
SOFTBANK GROUP	-0.1%	40.6%
NESTLE 'R'	-0.1%	8.2%
TENCENT HOLDINGS	-0.1%	-17.7%
NOBLE ENERGY	-0.1%	-11.3%
HANGZHOU HIK VIS.DIG. TECH.'A'	-0.1%	-25.5%
STATE STREET	0.0%	-9.5%
KOTAK MAHINDRA BANK	0.0%	-19.6%
ROCHE HOLDING	0.0%	9.6%
SANDS CHINA	0.0%	-15.3%

	Equity Sector Attribution										
	Total Effects	Selection Effect	Attribution Effects			Returns		Sector Weights			
			Allocation Effect	Interaction Effects	Portfolio	Benchmark	Portfolio	Benchmark			
Energy	-0.2%	-0.2%	0.0%	0.0%	2.2%	4.5%	7.2%	7.4%			
Materials	0.2%	0.2%	0.0%	0.0%	2.7%	0.5%	6.1%	8.2%			
Industrials	0.0%	0.0%	0.0%	0.0%	3.1%	2.8%	11.1%	11.6%			
Consumer Discretionary	0.2%	0.2%	-0.1%	0.0%	-0.7%	-2.6%	13.5%	11.3%			
Consumer Staples	0.0%	0.0%	0.0%	-0.1%	-1.3%	-0.5%	8.6%	9.7%			
Health Care	0.3%	0.3%	0.0%	0.0%	8.3%	4.4%	7.8%	8.1%			
Financials	0.0%	0.0%	0.0%	0.0%	1.7%	1.6%	21.0%	21.8%			
Information Technology	0.6%	0.6%	-0.1%	0.2%	2.7%	-2.4%	15.4%	11.9%			
Communication Services	0.0%	0.0%	0.0%	0.0%	4.6%	3.6%	3.4%	3.7%			
Utilities	0.0%	-0.1%	0.0%	0.0%	-3.2%	-0.9%	2.2%	3.0%			
Real Estate	0.0%	0.0%	0.0%	0.0%	-3.7%	-3.5%	3.1%	3.2%			
Cash	0.0%	0.0%	0.0%	0.0%	0.5%	--	0.5%	0.0%			
<b>Portfolio</b>	<b>1.1%</b>	<b>=</b>	<b>1.1%</b>	<b>+</b>	<b>-0.2%</b>	<b>+</b>	<b>0.2%</b>	<b>1.9%</b>	<b>0.8%</b>	<b>100.0%</b>	<b>100.0%</b>



# TOTAL NON US EQUITY

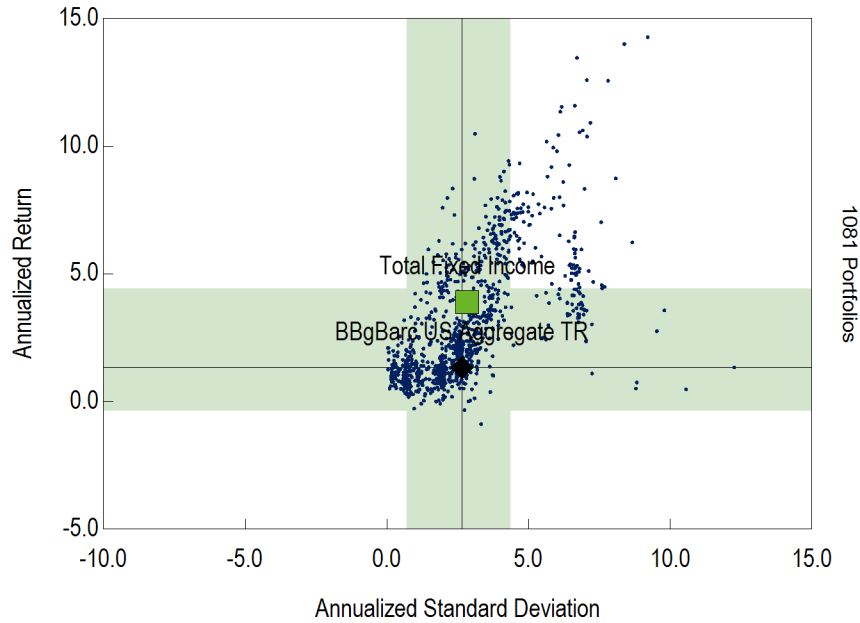
Country Allocation				
	Manager	Index	Manager	Index
	Allocation (USD)	Allocation (USD)	Return (USD)	Return (USD)
<b>Americas</b>				
Brazil*	2.1%	1.5%	5.1%	6.2%
Canada	3.2%	6.6%	2.7%	0.9%
Chile*	0.4%	0.3%	-4.4%	-1.9%
Colombia*	0.1%	0.1%	-4.1%	-2.4%
Mexico*	1.1%	0.7%	14.8%	6.9%
Peru*	0.0%	0.1%	-1.0%	-2.1%
United States	15.2%	0.0%	5.1%	7.4%
<b>Total-Americas</b>	<b>22.0%</b>	<b>9.3%</b>	<b>5.1%</b>	<b>2.0%</b>
<b>Europe</b>				
Austria	0.4%	0.2%	-1.4%	0.4%
Belgium	0.4%	0.7%	-1.7%	-5.2%
Czech Republic*	0.0%	0.0%	4.2%	4.0%
Denmark	1.2%	1.1%	1.5%	2.4%
Finland	0.6%	0.7%	4.1%	3.2%
France	4.4%	7.5%	3.5%	2.9%
Germany	4.5%	6.5%	0.9%	-0.6%
Greece*	0.1%	0.1%	17.4%	-18.1%
Hungary*	0.2%	0.1%	2.2%	4.7%
Ireland	0.4%	0.4%	6.7%	-5.3%
Italy	2.0%	1.6%	-1.9%	-4.2%
Luxembourg	0.1%	0.0%	-5.4%	0.8%
Netherlands	2.8%	2.4%	-1.1%	-1.6%
Norway	0.3%	0.5%	9.8%	6.9%
Poland*	0.2%	0.3%	6.6%	11.0%
Portugal	0.1%	0.1%	-2.8%	-0.4%
Russia*	0.9%	0.9%	-1.1%	7.2%
Spain	2.3%	2.1%	1.5%	-2.4%
Sweden	1.6%	1.6%	5.7%	6.5%
Switzerland	3.8%	5.3%	10.3%	7.3%
United Kingdom	10.9%	12.4%	-1.9%	-1.6%
<b>Total-Europe</b>	<b>37.3%</b>	<b>44.4%</b>	<b>1.5%</b>	<b>1.0%</b>

Country Allocation				
	Manager	Index	Manager	Index
	Allocation (USD)	Allocation (USD)	Return (USD)	Return (USD)
<b>AsiaPacific</b>				
Australia	3.3%	4.8%	2.6%	-0.8%
China*	3.1%	8.1%	-4.7%	-7.3%
Hong Kong	6.4%	2.5%	-6.0%	-0.9%
India*	3.2%	2.1%	-6.0%	-2.3%
Indonesia*	0.8%	0.5%	10.6%	2.0%
Japan	12.0%	16.7%	0.1%	3.7%
Korea*	3.3%	3.6%	-1.2%	0.3%
Malaysia*	0.7%	0.6%	7.3%	3.8%
New Zealand	0.1%	0.1%	-2.5%	2.6%
Pakistan*	0.0%	0.0%	1.8%	-4.8%
Philippines*	0.7%	0.2%	-1.8%	1.1%
Singapore	1.6%	0.9%	3.7%	2.2%
Sri Lanka**	0.0%	0.0%	-1.4%	-3.1%
Taiwan*	2.0%	2.9%	17.1%	7.1%
Thailand*	0.8%	0.6%	17.1%	13.7%
<b>Total-AsiaPacific</b>	<b>38.1%</b>	<b>43.6%</b>	<b>-1.7%</b>	<b>0.5%</b>
<b>Other</b>				
Egypt*	0.0%	0.0%	-3.1%	-7.5%
Israel	0.2%	0.4%	3.1%	5.1%
Qatar*	0.1%	0.2%	10.8%	11.5%
South Africa*	1.4%	1.6%	-10.8%	-7.1%
Turkey*	0.4%	0.2%	-11.5%	-20.3%
United Arab Emirates*	0.1%	0.2%	3.5%	1.4%
<b>Total-Other</b>	<b>2.1%</b>	<b>2.5%</b>	<b>-10.7%</b>	<b>-4.4%</b>
<b>Totals</b>				
Developed	77.8%	75.2%	-1.4%	1.4%
Emerging*	21.6%	24.8%	1.1%	-1.0%
Frontier**	0.0%	0.0%	-1.4%	--
Cash	0.5%		0.2%	



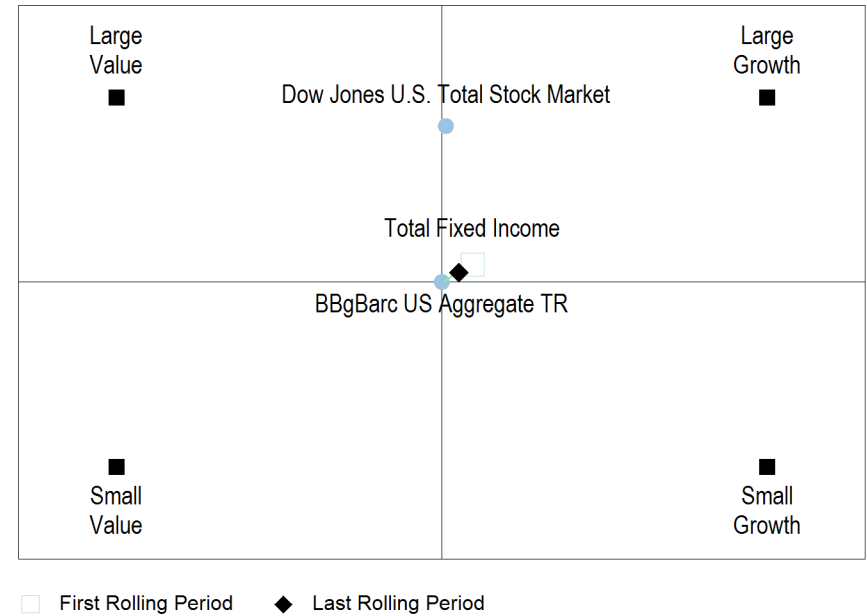
# TOTAL FIXED INCOME COMPOSITE

Annualized Return vs. Annualized Standard Deviation  
3 Years Ending September 30, 2018

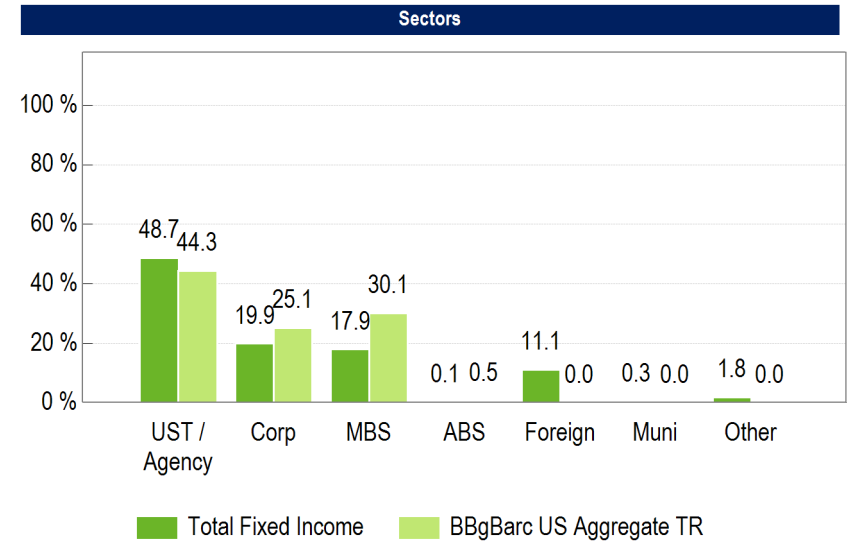
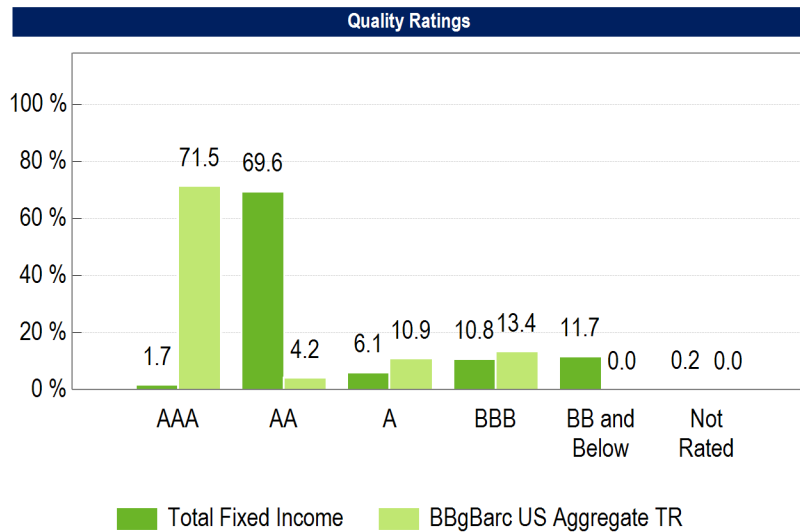
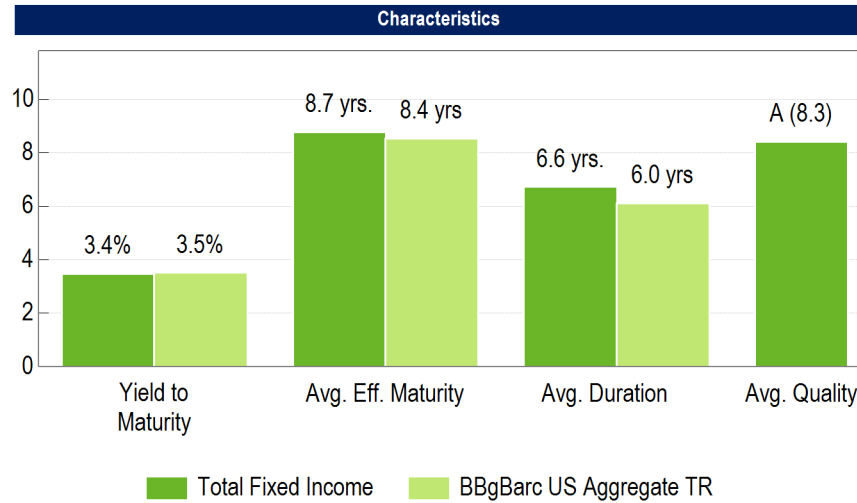


- Total Fixed Income
- ◆ BBgBarc US Aggregate TR
- 68% Confidence Interval
- eV All US Fixed Inc Net

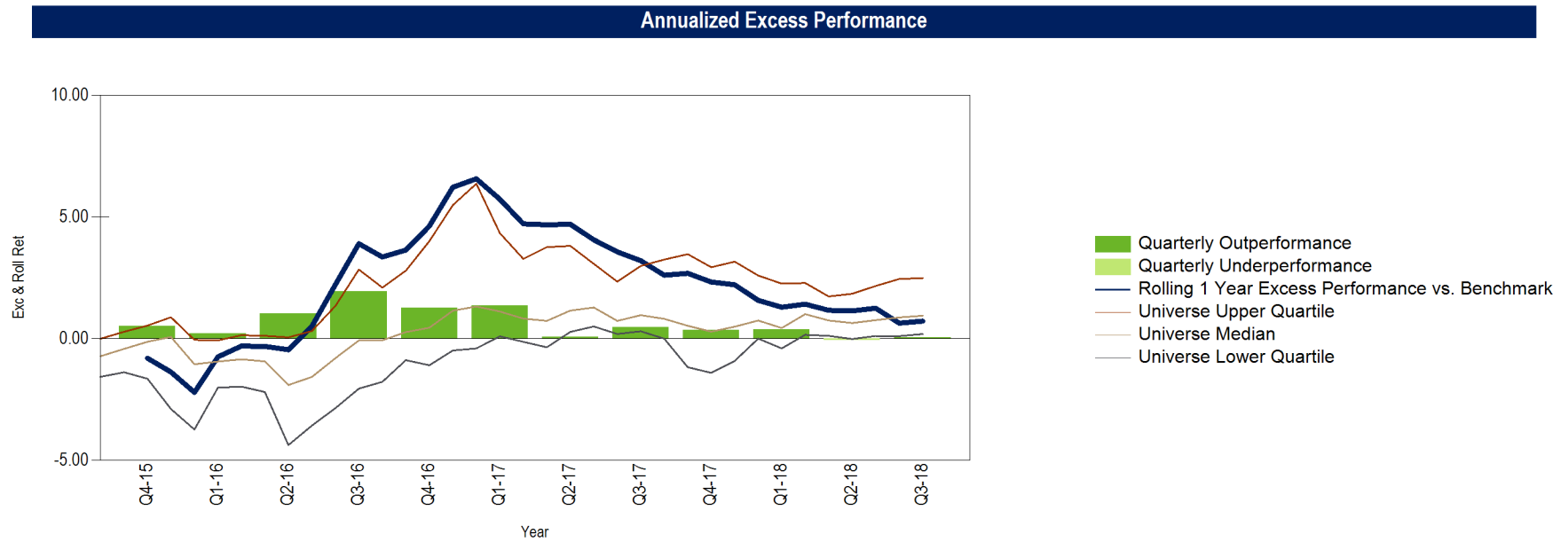
U.S. Effective Style Map  
3 Years Ending September 30, 2018



# TOTAL FIXED INCOME COMPOSITE



# TOTAL FIXED INCOME COMPOSITE



# APPENDIX

NEPC, LLC

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# INFORMATION DISCLAIMER

- **Past performance is no guarantee of future results.**
- **The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.**
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