

NORTH CAROLINA
DEPARTMENT OF STATE TREASURER



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INVESTMENT MANAGEMENT DIVISION

Performance Review

February 24, 2021



Cost-Efficiencies Initiative Update

- Goal:
 - Obtain \$100 million of incremental cost-efficiencies for the NCRS investment program, consistent with fiduciary requirements and investment objectives
 - The \$100 million goal would be measured on a cumulative basis over a four-year timeframe, beginning January 2017
 - The goal is comprehensive of the Pension and Supplemental Retirement Plans
- Progress to date:

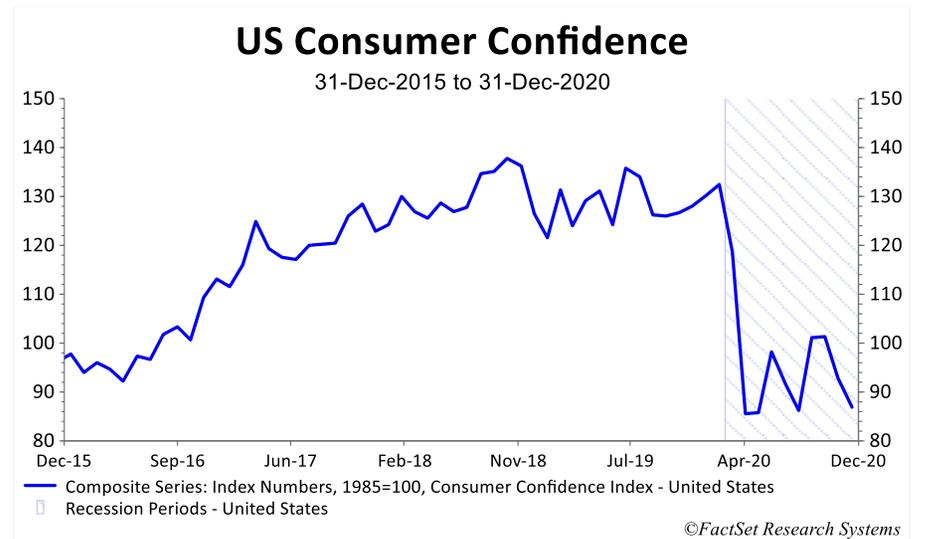
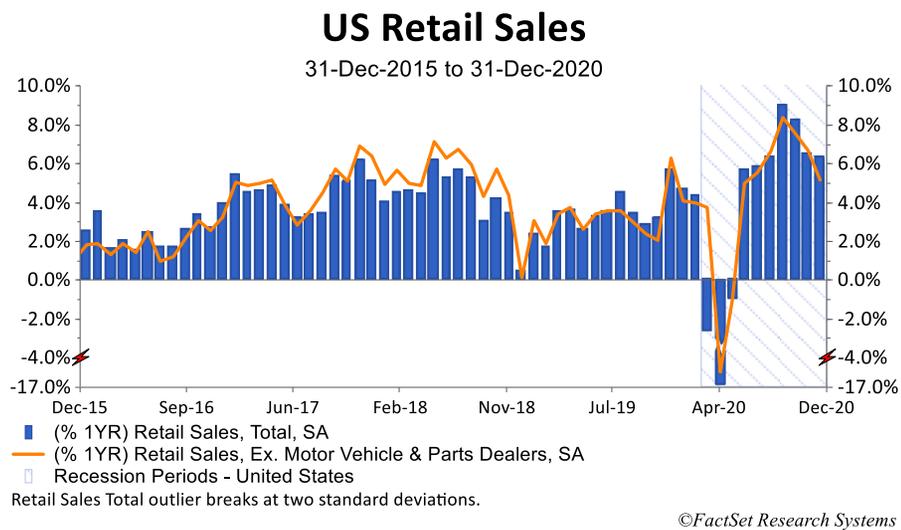
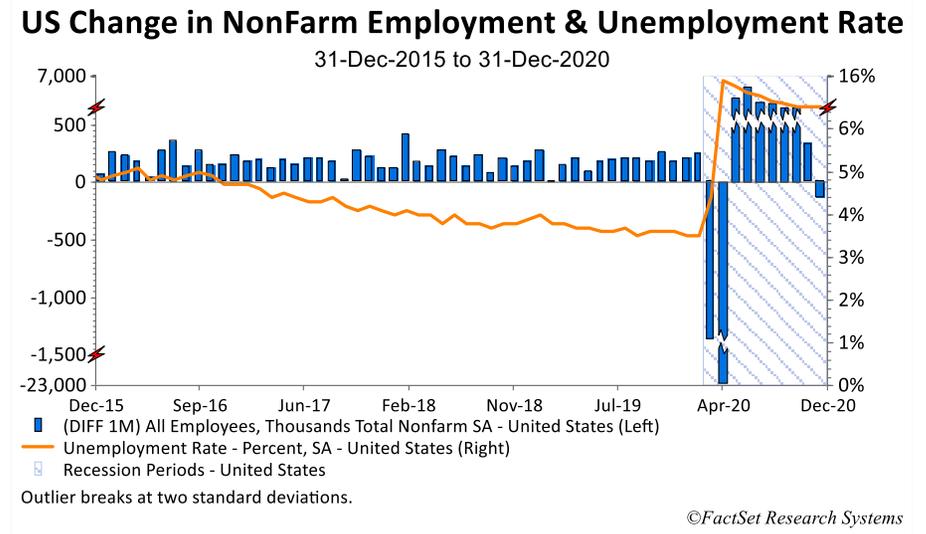
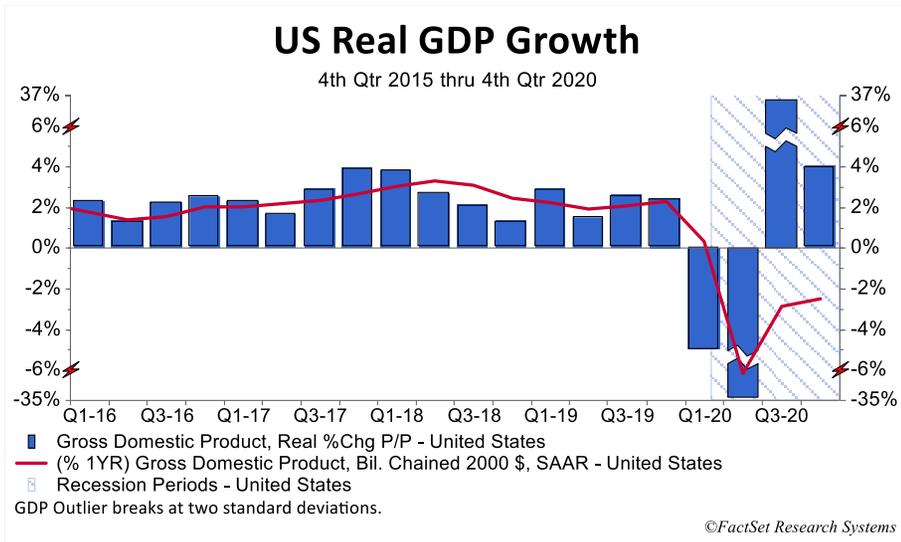
Fully Executed Activities

Realized Savings since Jan 2017 (\$000)

Investment-related services: renegotiations/restructuring	\$48,823
Investment manager terminations/renegotiations	\$301,625
Realized savings through December 2020	\$350,448



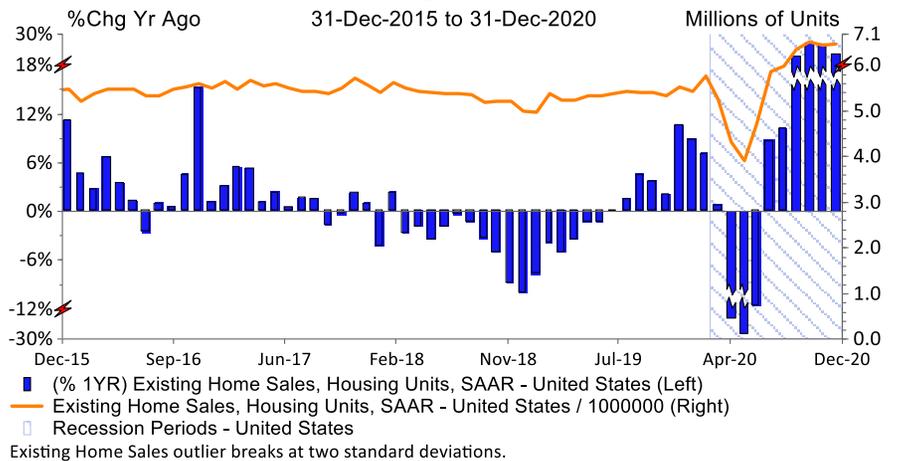
US Economic Environment



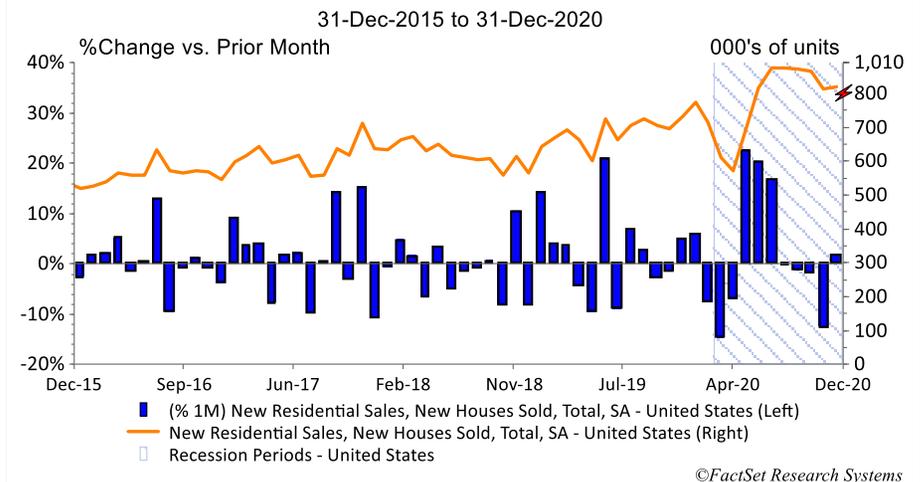


US Economic Environment

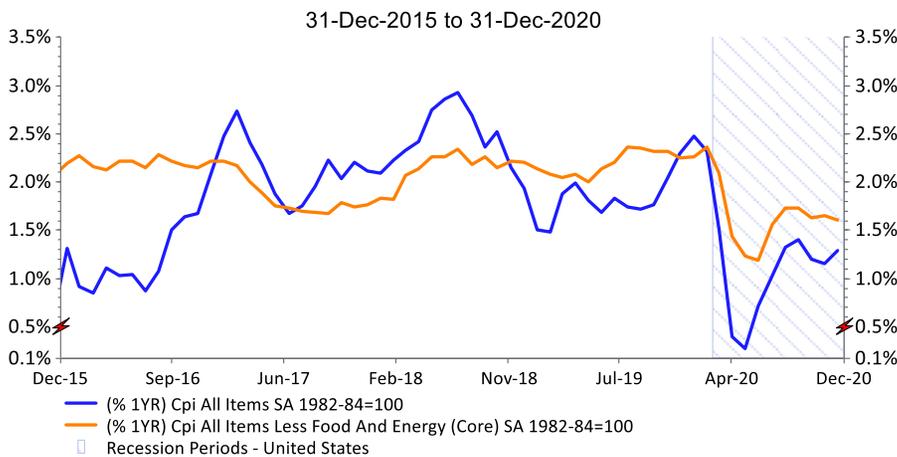
US Existing Home Sales



US New Home Sales



US Consumer Price Inflation

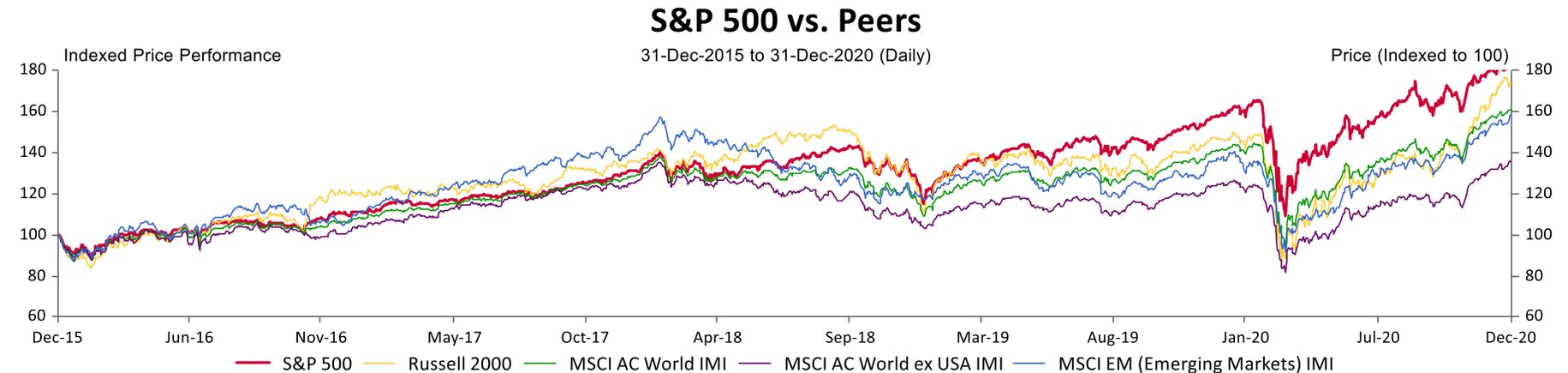
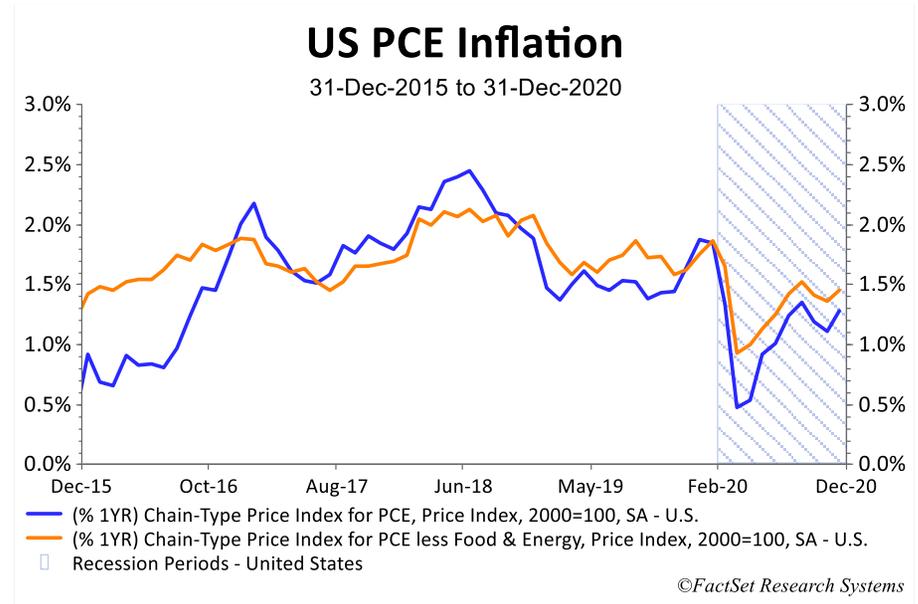
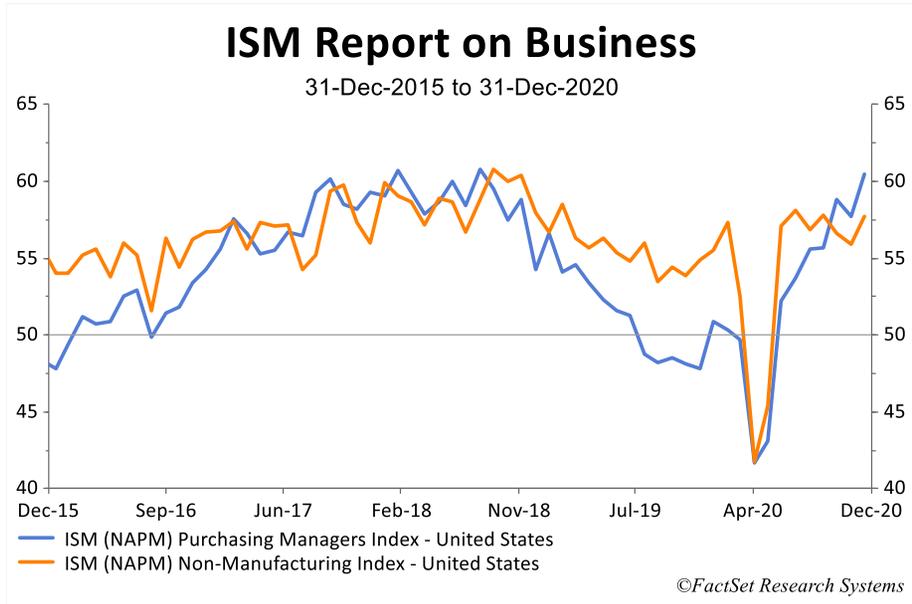


US Personal Savings Rate





US and Global Economic Environment

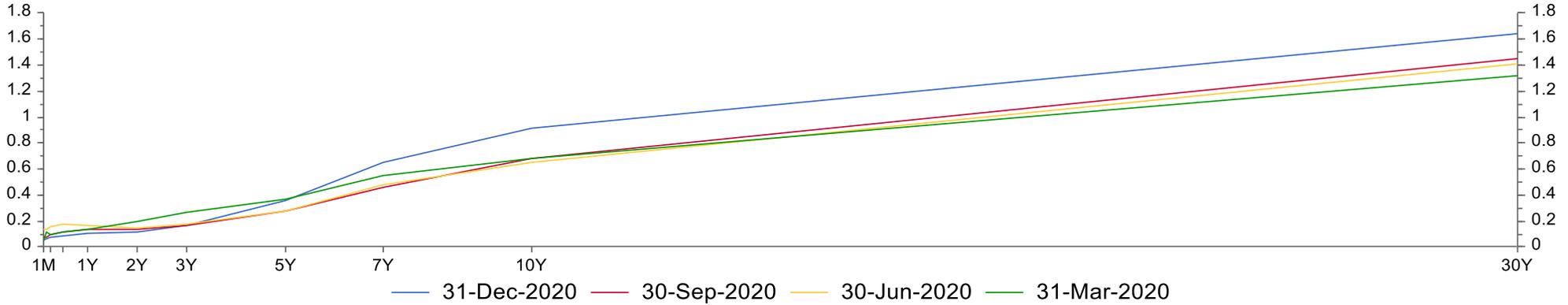


Source: FactSet Prices



Market Environment

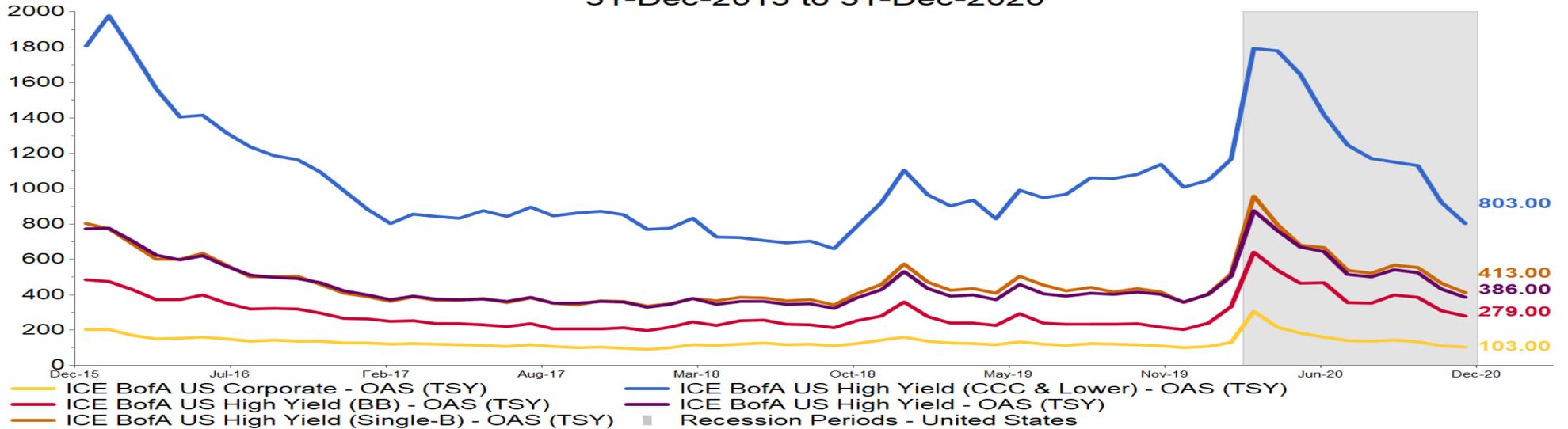
United States Treasury Yield Curve



Source: FactSet Interest Rate Database

Corporate Credit OAS (BofAML Indices)

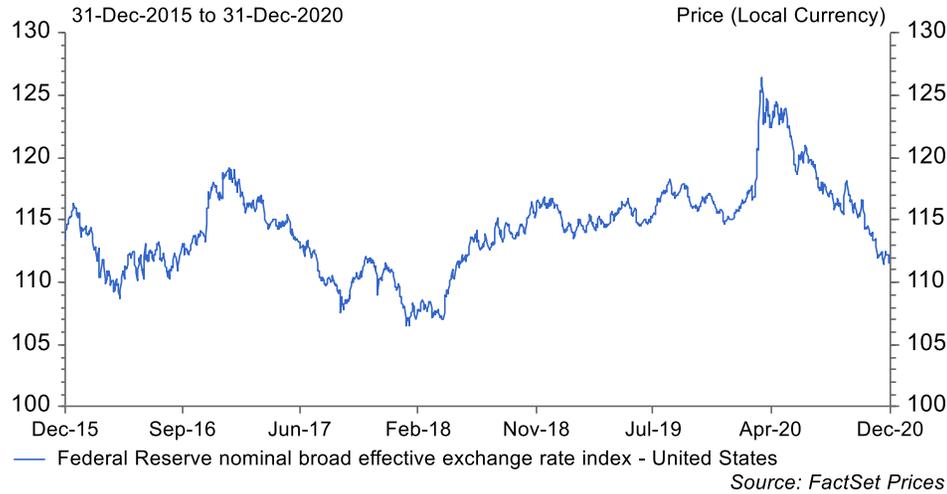
31-Dec-2015 to 31-Dec-2020



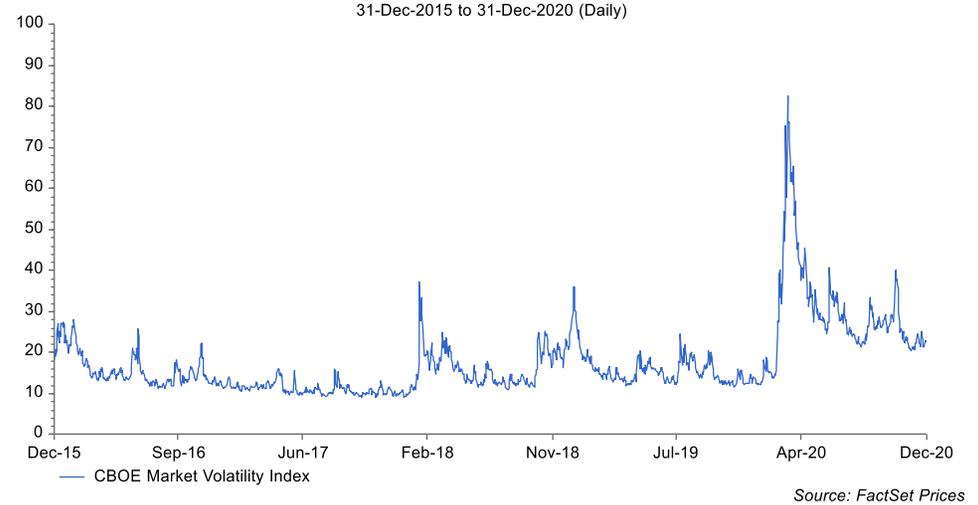


Market Environment

Closing Price Fed Nominal Broad Dollar Index



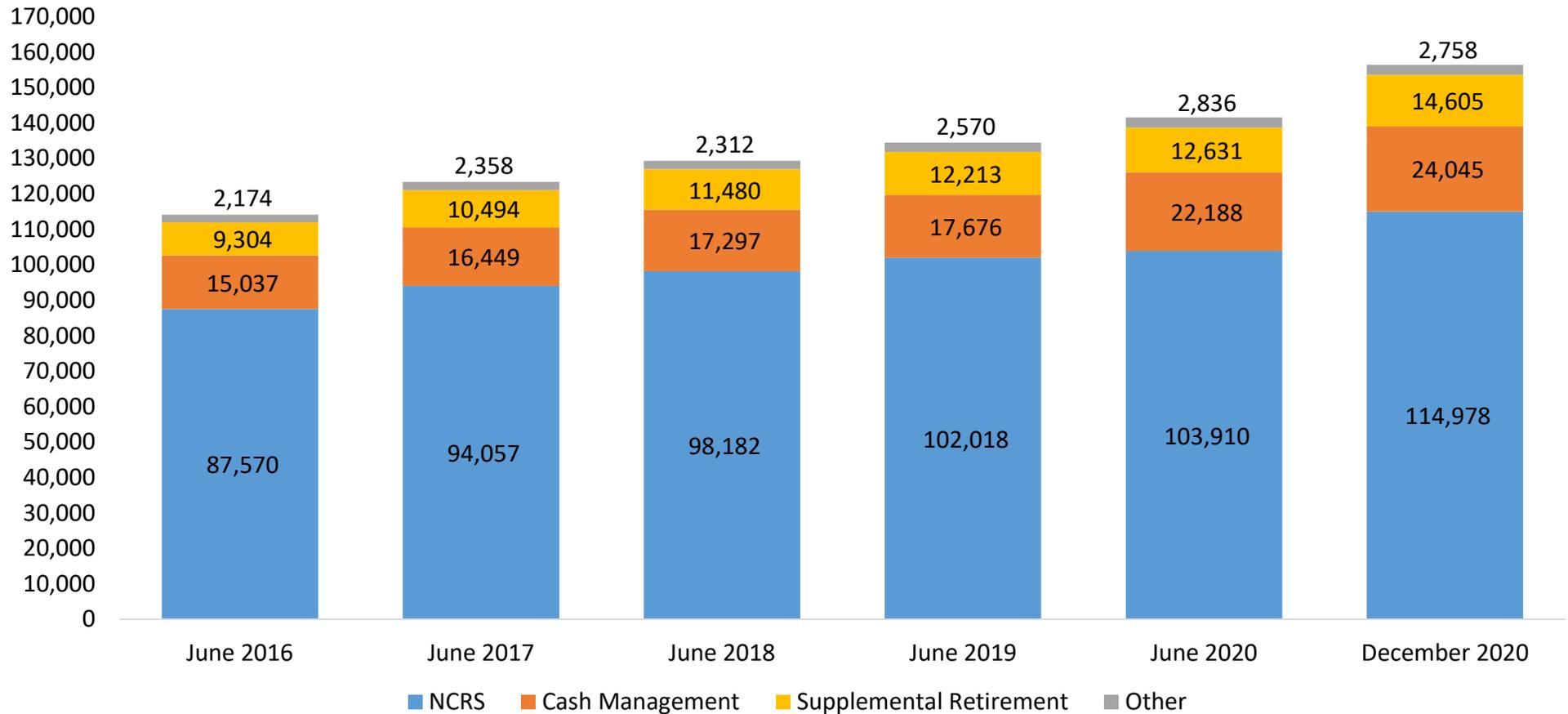
Closing Price CBOE VIX Index



Countries	Real GDP YoY		Unemployment		CPI YoY		Countries	Real GDP YoY		Unemployment		CPI YoY	
	Date	Value	Date	Value	Date	Value		Date	Value	Date	Value	Date	Value
U.S.	12/20	-2.5	12/20	6.7	12/20	1.4	Asia/Pacific/Latam						
Europe							China	12/20	6.5			12/20	0.2
Germany	12/20	-3.9	12/20	6.0	12/20	-0.3	India	09/20	-7.5			08/20	5.6
France	12/20	-5.0	12/20	8.9	12/20	0.0	Japan	09/20	-5.7	12/20	2.9	12/20	-1.2
U.K.	09/20	-8.6	11/20	5.0	12/20	0.6	Indonesia	09/20	-3.5			12/20	1.7
Italy	12/20	-6.6	12/20	9.0	12/20	-0.2	Brazil	09/20	-3.9			12/20	4.5
Spain	12/20	-9.1	12/20	16.2	12/20	-0.5	Australia	09/20	-3.8	12/20	6.6	12/20	0.9

Assets Under Management (\$MM)

\$156.4 billion as of December 31, 2020



Note: The Cash Management Program does not include Assets with Fiscal Agent, which are reflected in the Bond Proceeds Fund. These funds, which may have been reported in the Cash Management Program previously, have now been removed for all years shown in this report to more accurately reflect the Cash Management Program balance.



NCRS Asset Allocation

As of December 31, 2020

	Market Value (\$MM)	%	Target	Range		Relative %	Relative \$ (\$MM)
				Minimum	Maximum		
Growth	58,195	50.61%	58.00%	37.00%	71.00%	-7.39%	(8,492)
Public Equity	42,485	36.95%	42.00%	37.00%	47.00%	-5.05%	(5,806)
Private Equity	6,133	5.33%	6.00%	0.00%	8.75%	-0.67%	(766)
Non Core Real Estate	2,975	2.59%	3.00%	0.00%	8.00%	-0.41%	(474)
Opportunistic Fixed Income	6,602	5.74%	7.00%	0.00%	7.50%	-1.26%	(1,446)
Rates & Liquidity	43,420	37.76%	29.00%	24.00%	42.00%	8.76%	10,076
IG Fixed Income & Cash	33,989	29.56%	28.00%	24.00%	32.00%	1.56%	1,795
Pension Cash	9,430	8.20%	1.00%	0.00%	10.00%	7.20%	8,281
Inflation Sensitive & Diversifiers	11,152	9.70%	11.00%	4.00%	16.00%	-1.30%	(1,496)
Inflation Sensitive	5,558	4.83%	6.00%	2.00%	7.50%	-1.17%	(1,340)
Core Real Estate	5,593	4.86%	5.00%	2.00%	10.00%	-0.14%	(156)
Multi-Strategy	2,212	1.92%	2.00%	0.00%	4.00%	-0.08%	(88)
Grand Total	114,978	100.00%					



NCRS Asset Allocation (Unaudited)

As of February 16, 2021

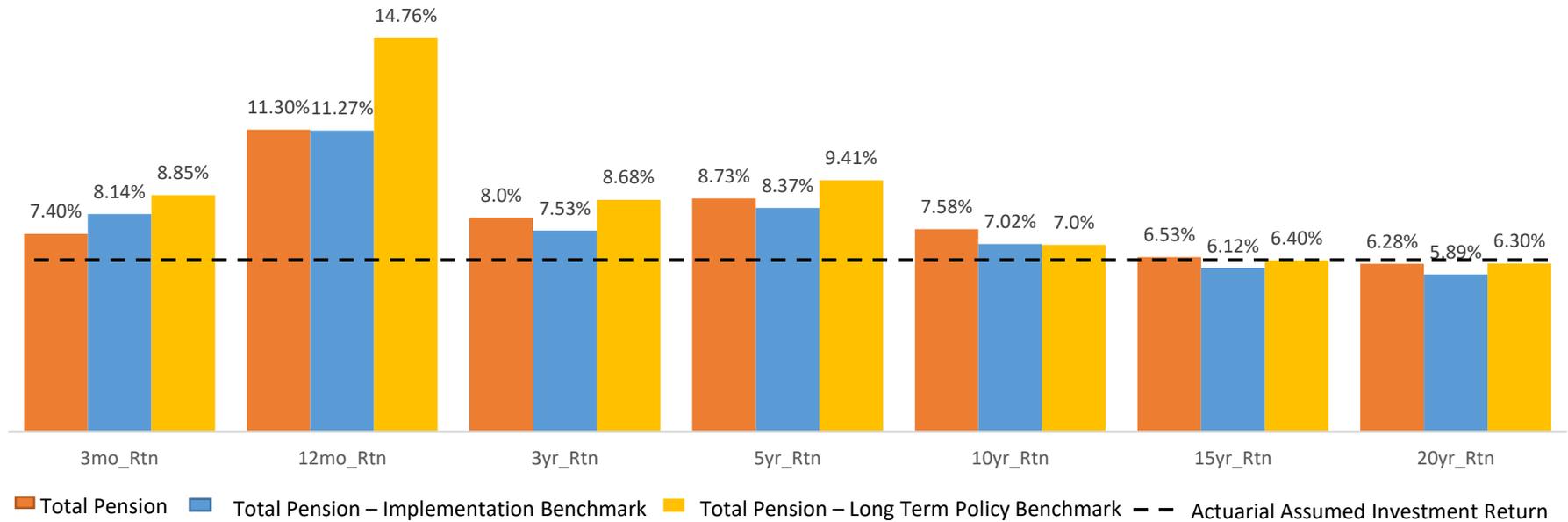
	Market Value (\$MM)	%	Target	Range		Relative %	Relative \$ (\$MM)
				Minimum	Maximum		
Growth	\$57,939	49.52%	58.00%	37.00%	71.00%	-8.48%	(\$9,916)
Public Equity	42,205	36.08%	42.00%	37.00%	47.00%	-5.92%	(6,931)
Private Equity	6,105	5.22%	6.00%	0.00%	8.75%	-0.78%	(914)
Non Core Real Estate	2,983	2.55%	3.00%	0.00%	8.00%	-0.45%	(527)
Opportunistic Fixed Income	6,645	5.68%	7.00%	0.00%	7.50%	-1.32%	(1,544)
Rates & Liquidity	45,733	39.09%	29.00%	24.00%	42.00%	10.09%	11,806
IG Fixed Income & Cash	33,293	28.46%	28.00%	24.00%	32.00%	0.46%	535
Pension Cash	12,440	10.63%	1.00%	0.00%	10.00%	9.63%	11,270
Inflation Sensitive & Diversifiers	11,141	9.52%	11.00%	4.00%	16.00%	-1.48%	(1,728)
Inflation Sensitive	5,546	4.74%	6.00%	2.00%	7.50%	-1.26%	(1,473)
Core Real Estate	5,594	4.78%	5.00%	2.00%	10.00%	-0.22%	(255)
Multi-Strategy	2,178	1.86%	2.00%	0.00%	4.00%	-0.14%	(161)
Grand Total	\$116,991	100.00%					



NCRS Total Net Portfolio Return vs. Benchmarks

As of December 31, 2020

Annualized Returns



Notes:

Actuarial Assumed Investment Return was lowered from 7.0% to 6.5% as of December 31, 2020

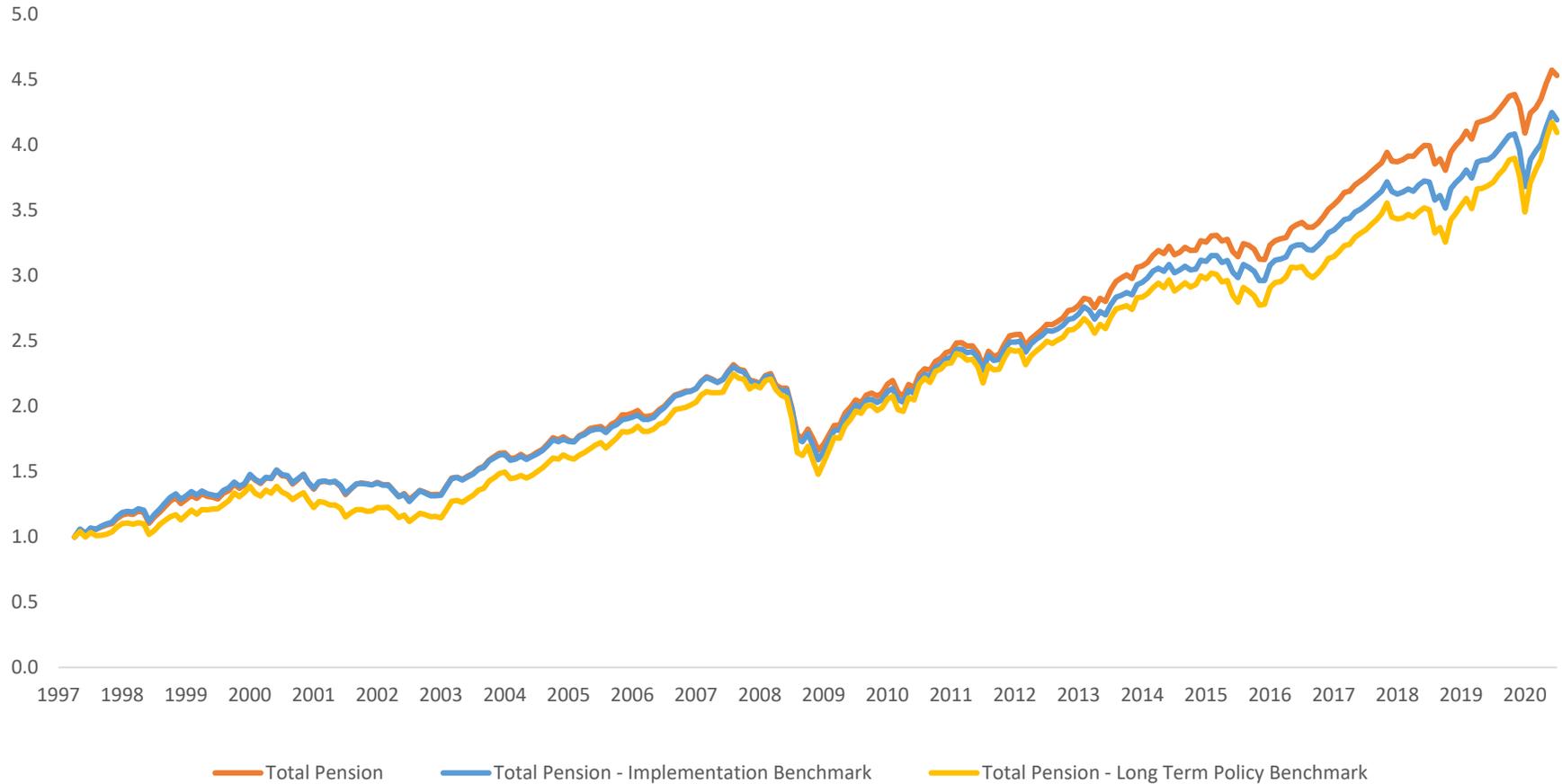
Returns for periods greater than one year are annualized.

Implementation Benchmark is a blend of the Asset Class Benchmarks at policy weights. It is currently weighted as follows: 58% Growth Benchmark; 29% Rates & Liquidity Benchmark; 11% Inflation Sensitive & Diversifiers Benchmark; and 2% Multi-Strategy Benchmark.

Long-Term Policy Benchmark is comprised of 57% MSCI ACWI IMI Net; 33% BOAML 5+ Years U.S. Treasury Index; 6% Bloomberg Commodity Index; and 4% BOAML 1-3 Years U.S. Inflation-Linked Treasury Index.



Growth of a Dollar Through December 31, 2020



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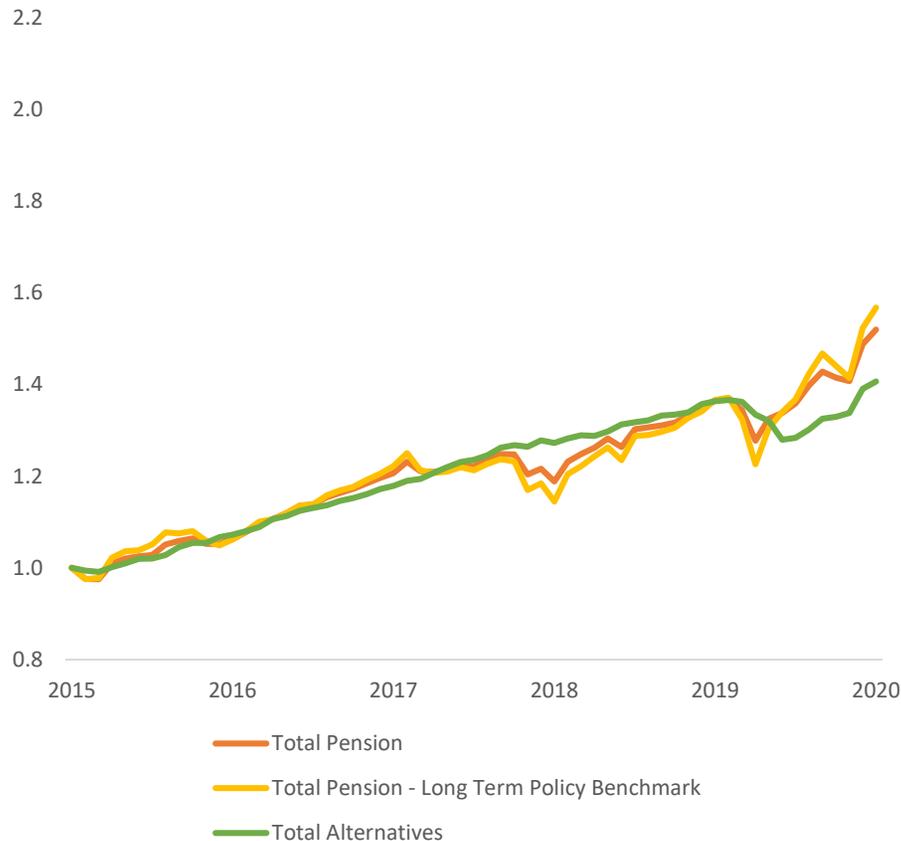
Notes:

Long-Term Policy Benchmark is comprised of 57% MSCI ACWI IMI Net; 33% BOAML 5+ Years U.S. Treasury Index; 6% Bloomberg Commodity Index; and 4% BOAML 1-3 Years U.S. Inflation-Linked Treasury Index.



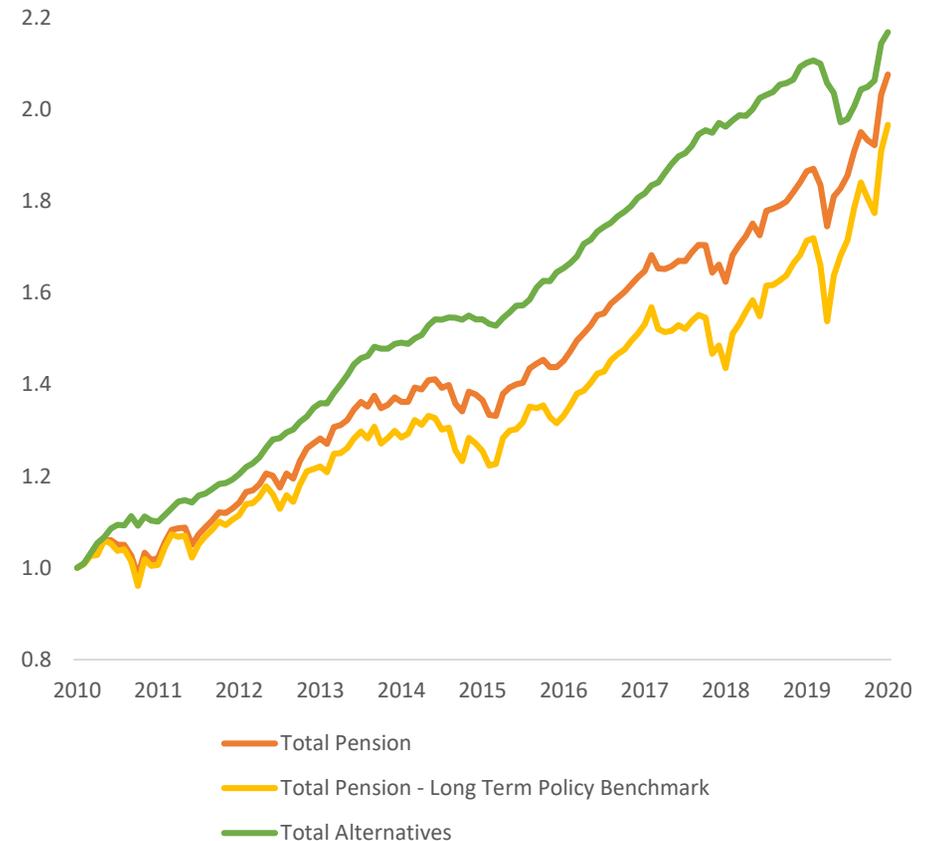
Growth of a Dollar

5 Years Ending December 31, 2020



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10 Years Ending December 31, 2020



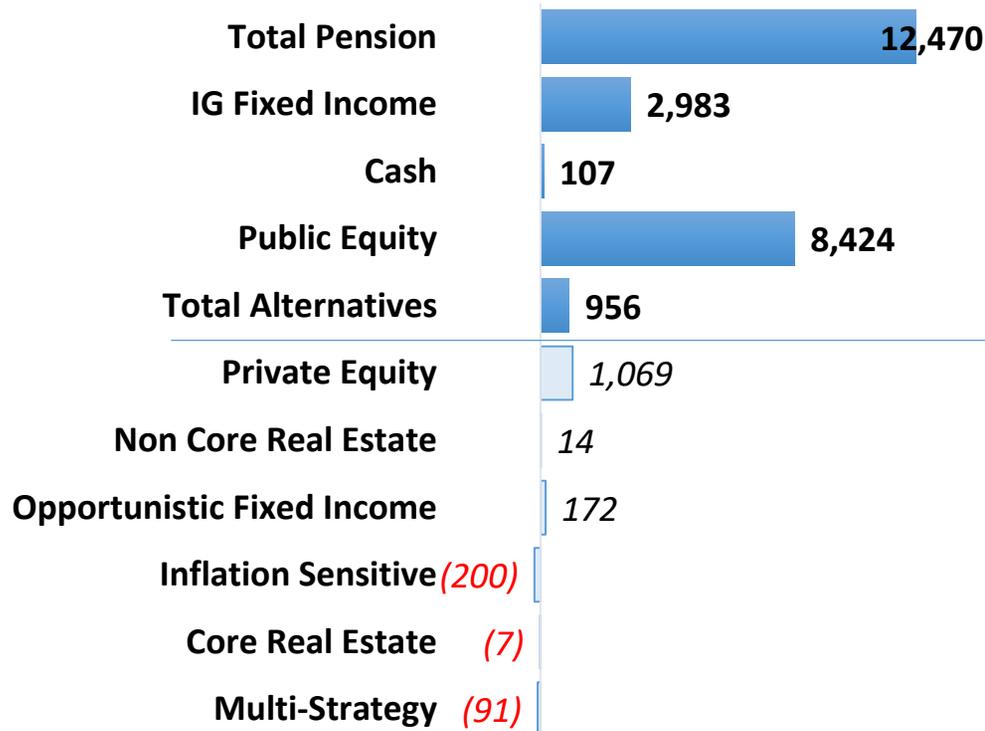
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Note: NCRS Alternatives includes the following: Core Real Estate; Inflation Sensitive – Private Natural Resources; Inflation Sensitive – Real Assets and Other Diversifiers; Multi-Strategy Investments; Non-Core Real Estate; Opportunistic Fixed Income; Private Equity; Equity Hedge Strategies; and closed-end Public Natural Resource funds.

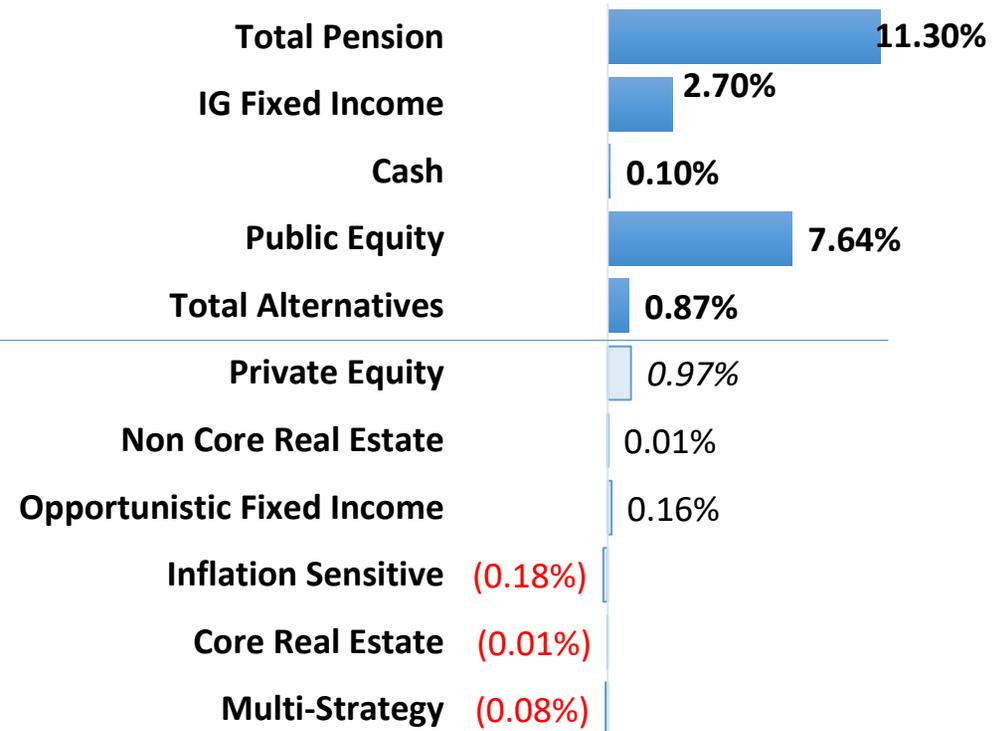
Estimated Contribution to Total Plan Return – 1 Year

As of December 31, 2020

Contribution to Total Plan \$ Earnings (millions)



Contribution to Total Plan % Returns



Notes:

1.) Estimated Contributions are based on average market value and the total return for the period.

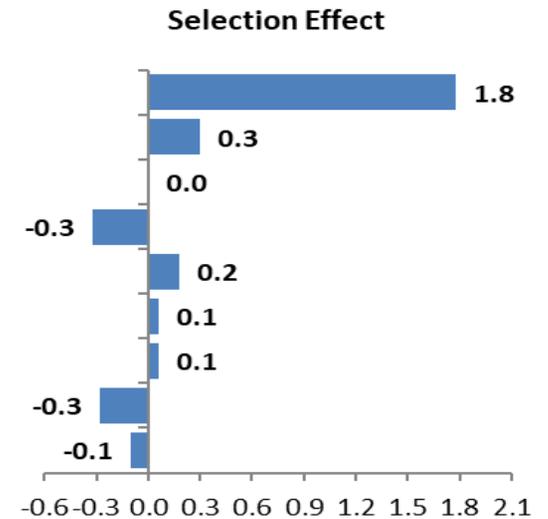
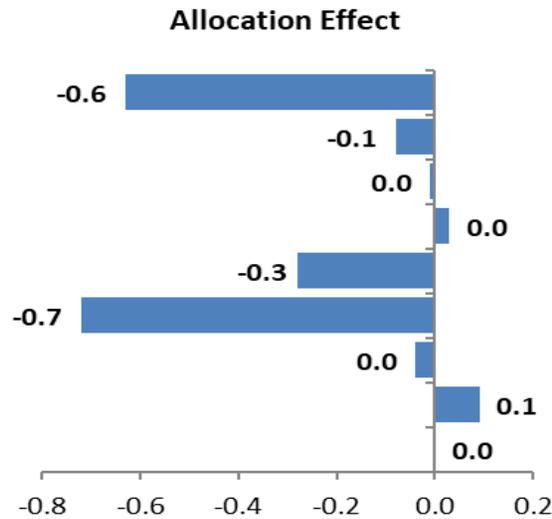
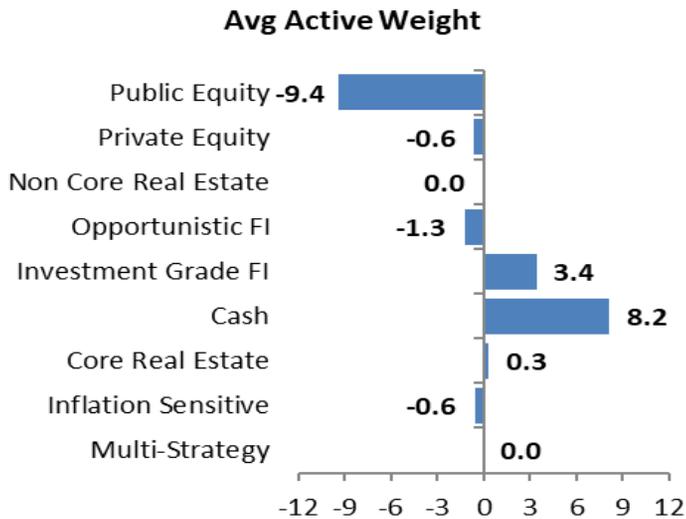
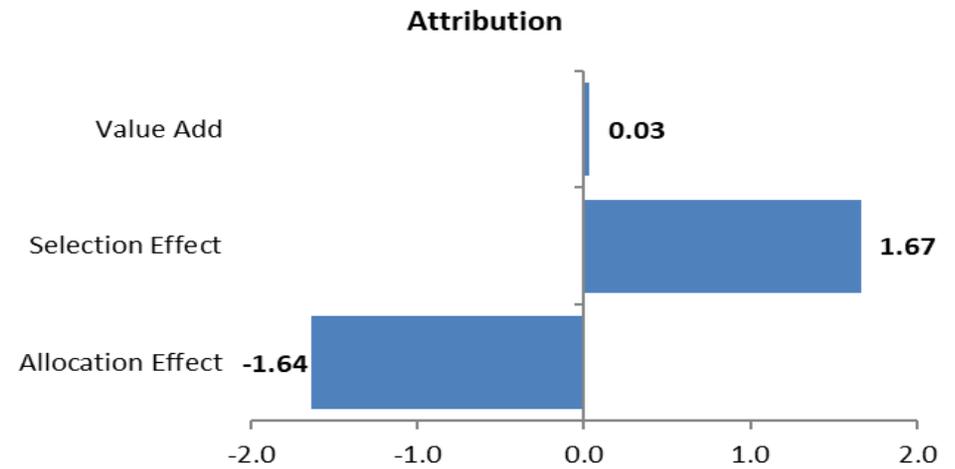
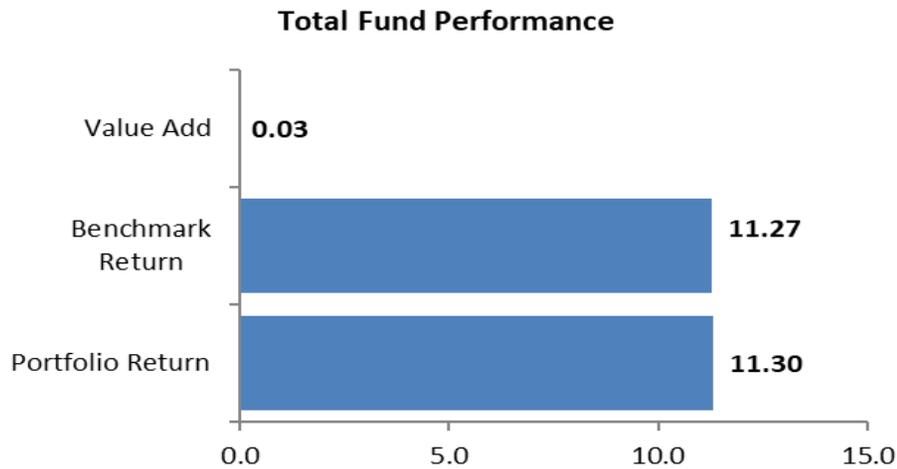
Contribution to Total Plan \$ Earnings = Average \$ Market Value * % Total Return for each asset class

Contribution to Total Plan % Returns = Average Market Value % weight * % Total Return for each asset class

2.) Alternatives for this analysis include the following: Private Equity, Non-Core Real Estate, Opportunistic Fixed Income, Inflation Sensitive, Core Real Estate, and Multi-Strategy investments.

NCRS Net of Fees Return Attribution

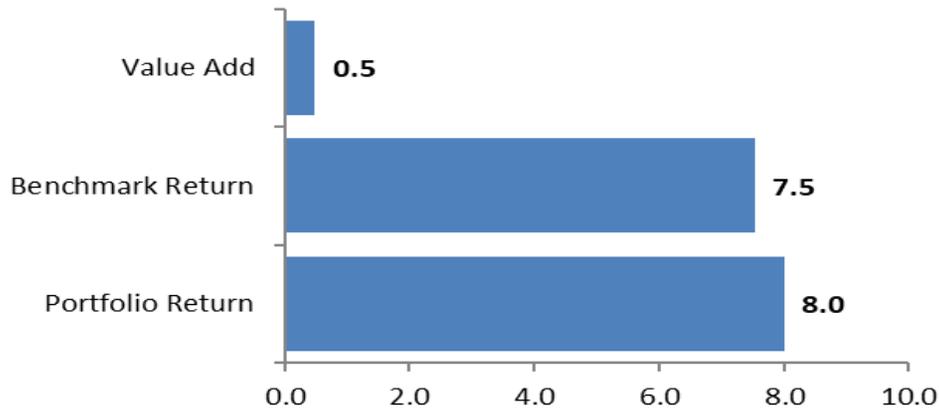
Total Fund vs. Implementation Benchmark: 1 Year Ending December 31, 2020



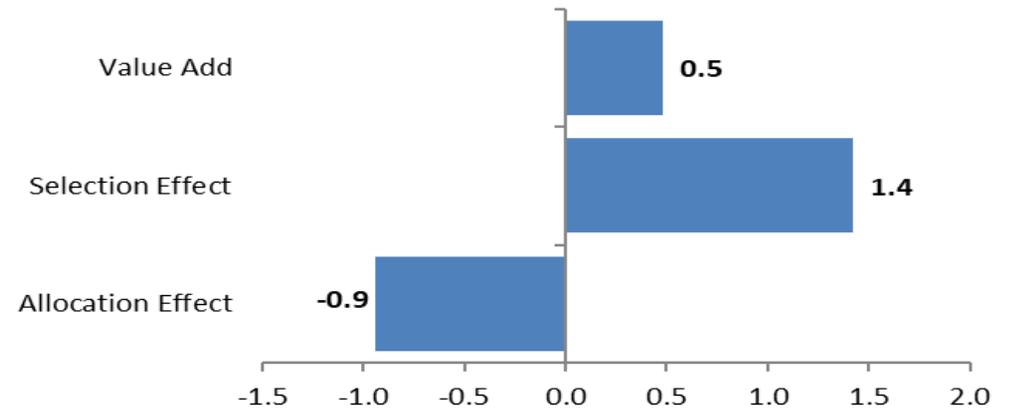
NCRS Net of Fees Return Attribution

Total Fund vs. Implementation Benchmark: 3 Years Ending December 31, 2020

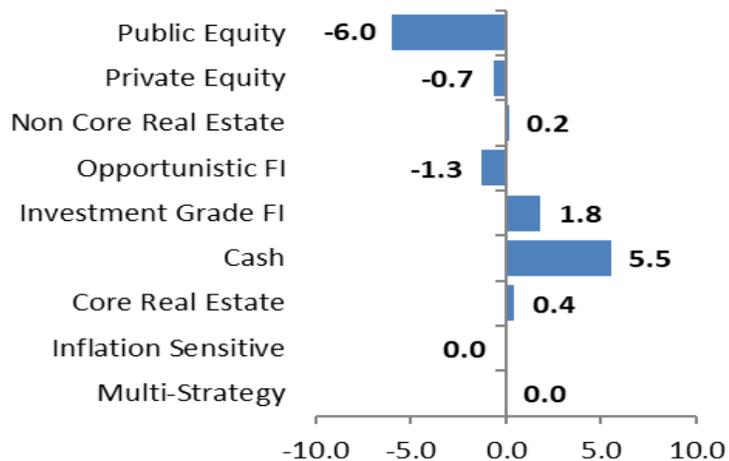
Total Fund Performance



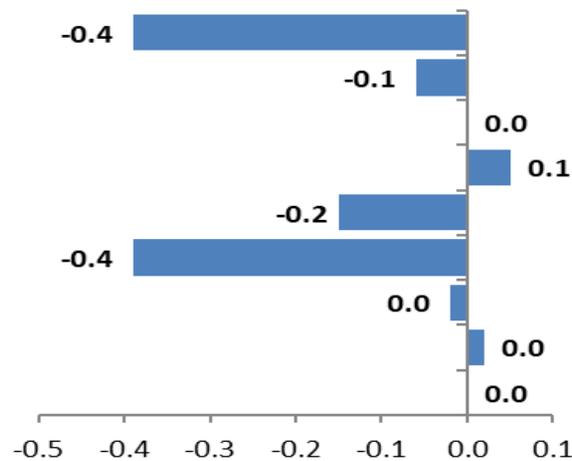
Attribution



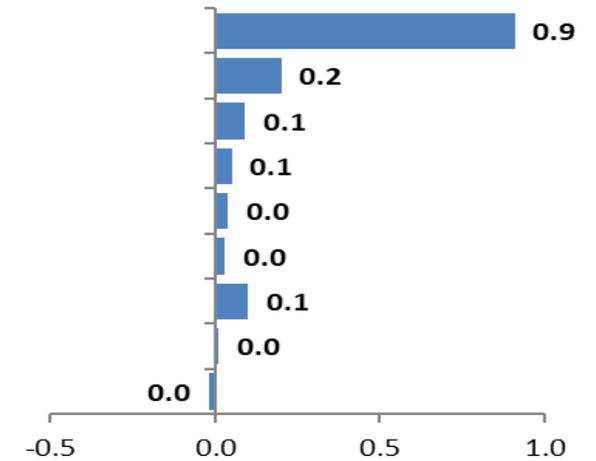
Avg Active Weight



Allocation Effect



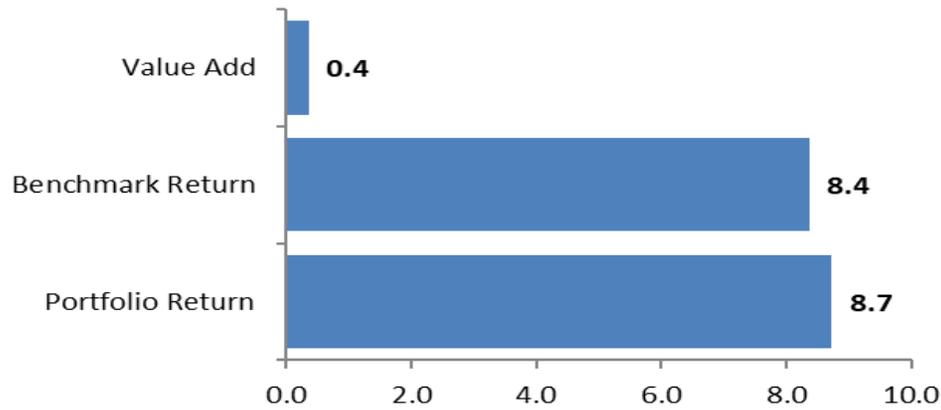
Selection Effect



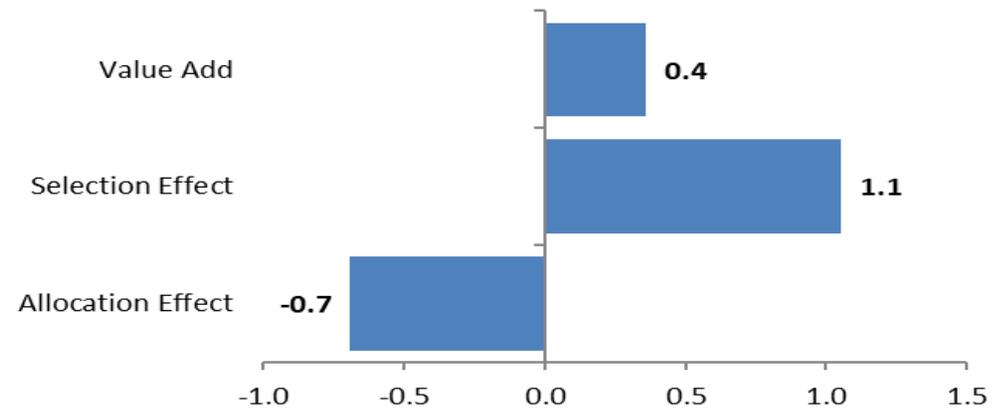
NCRS Net of Fees Return Attribution

Total Fund vs. Implementation Benchmark: 5 Years Ending December 31, 2020

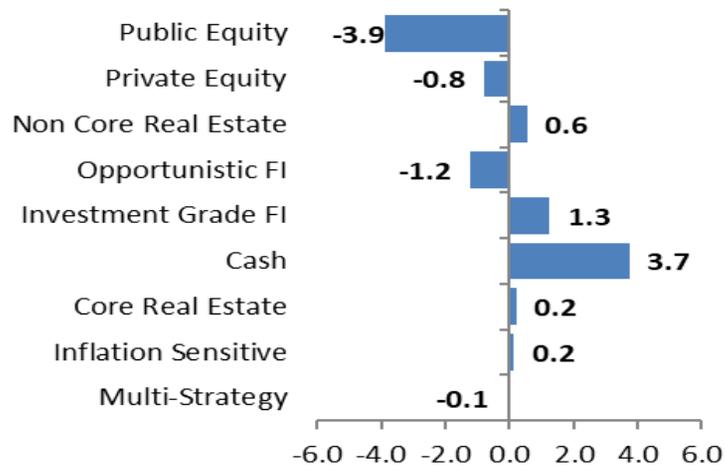
Total Fund Performance



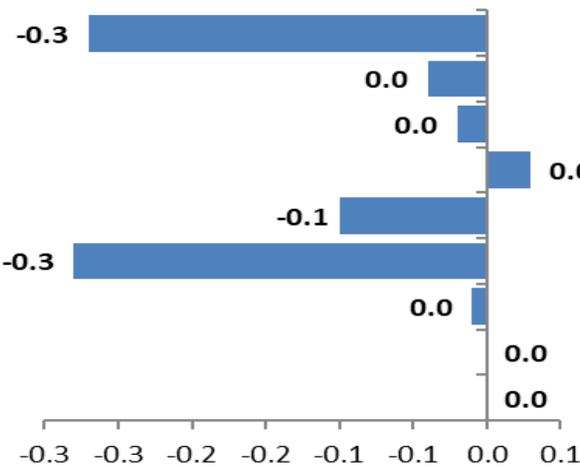
Attribution



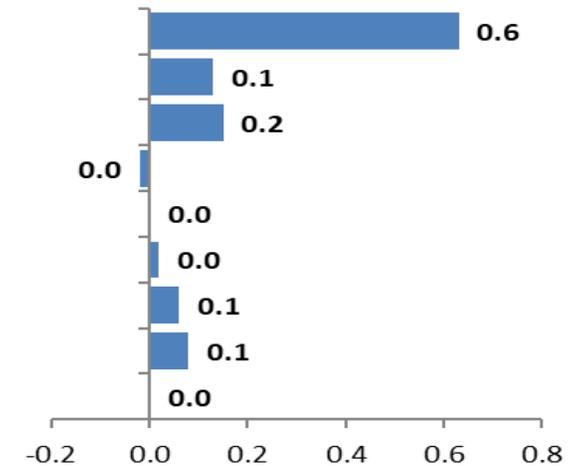
Avg Active Weight



Allocation Effect



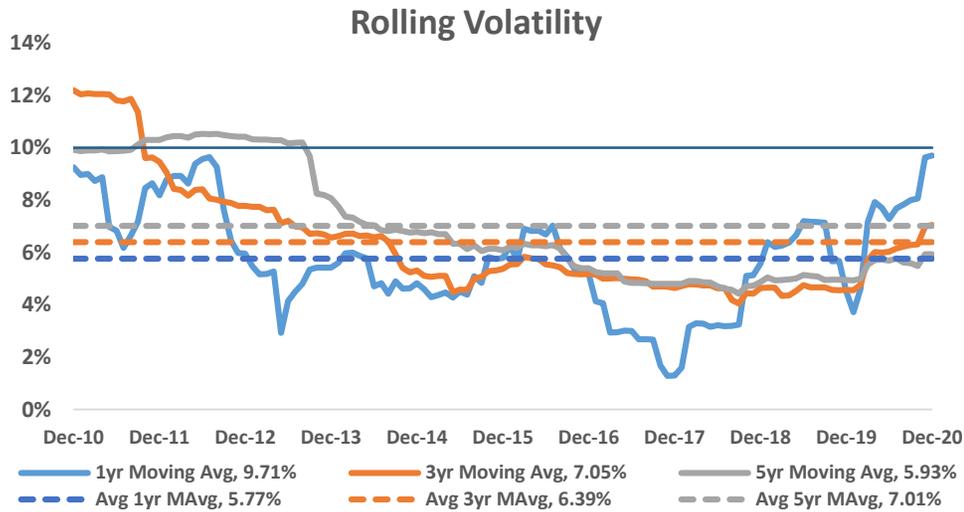
Selection Effect



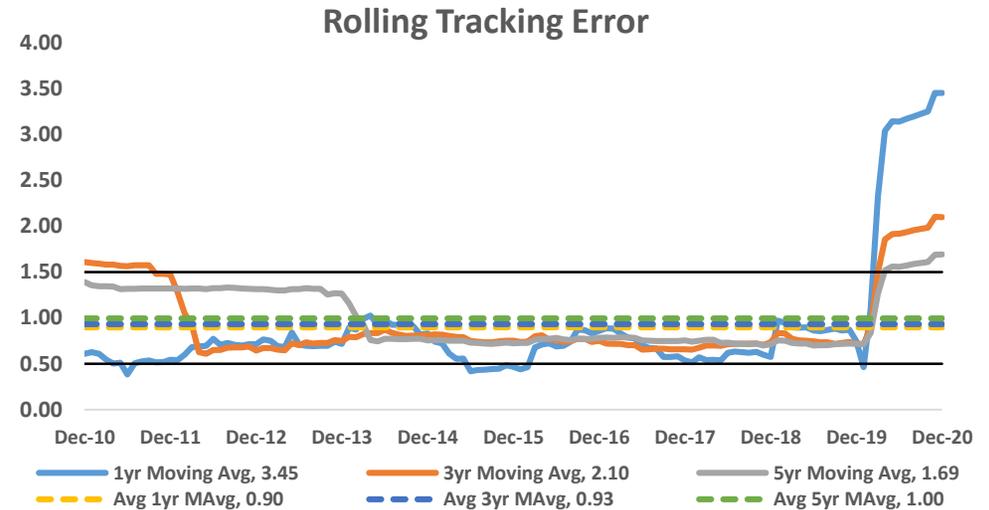


NCRS Net of Fees Risk Metrics

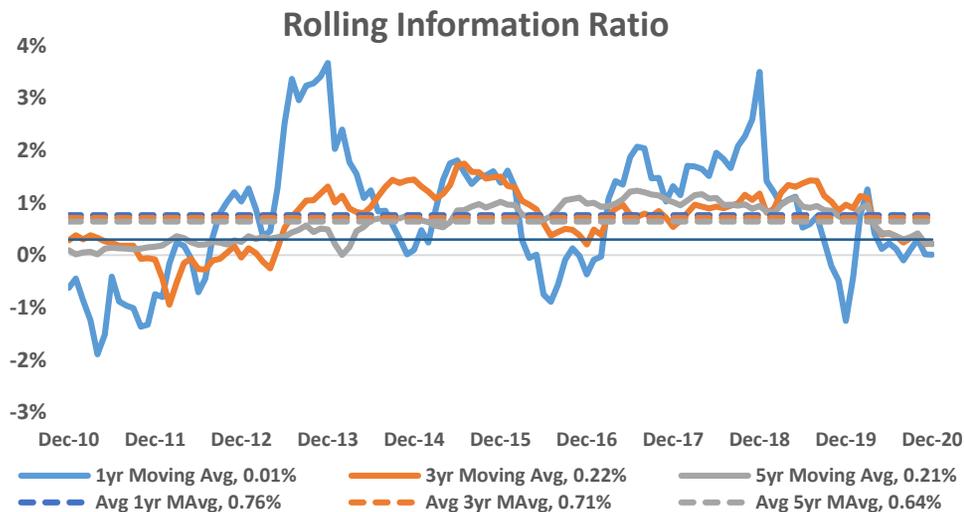
As of December 31, 2020



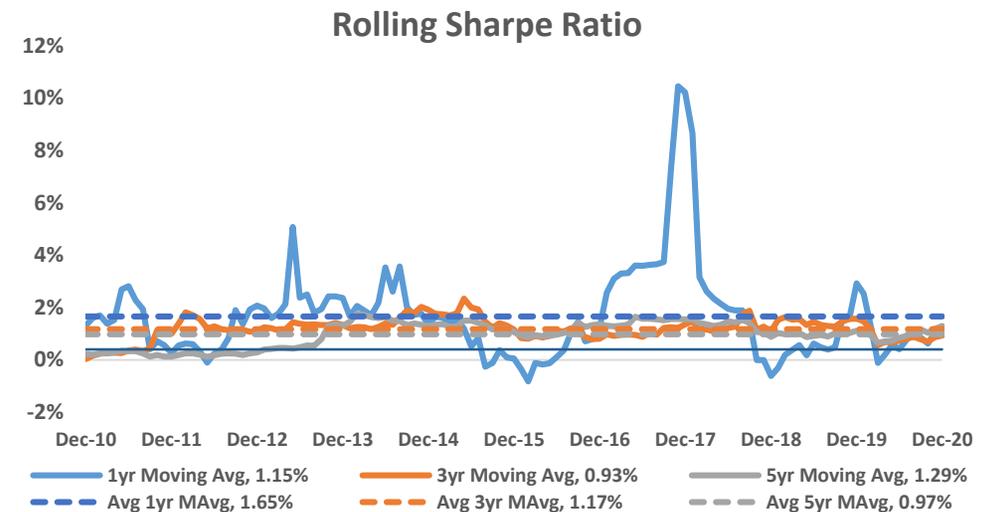
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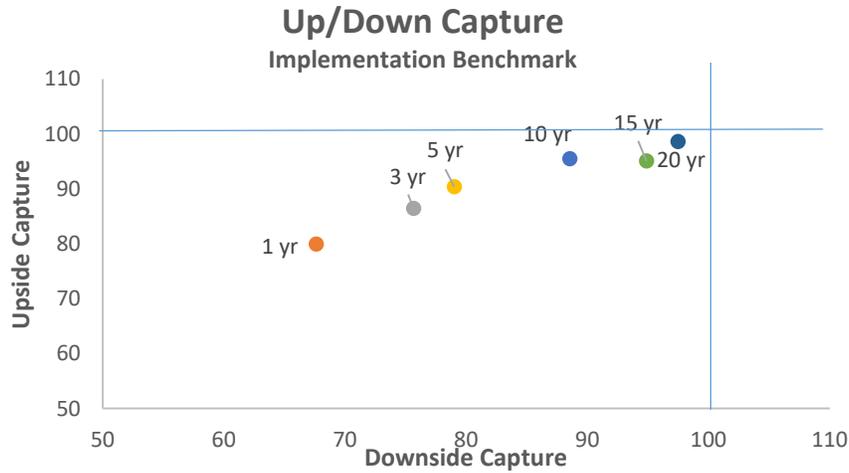
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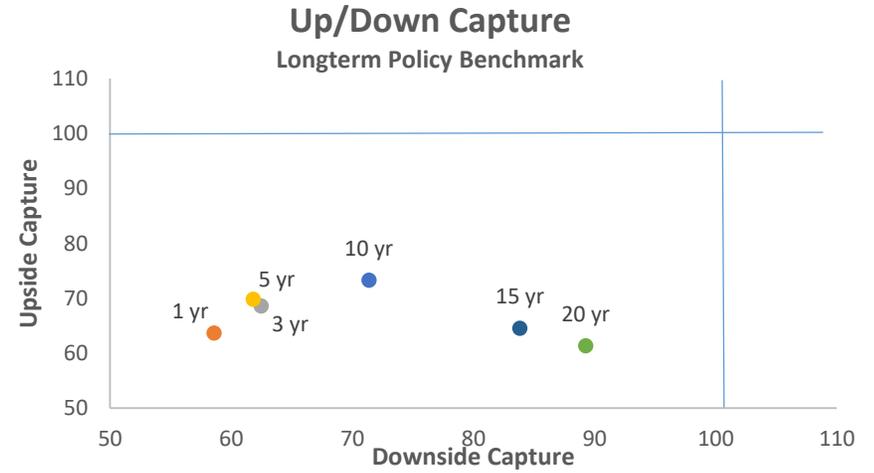
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NCRS Net of Fees Risk Metrics

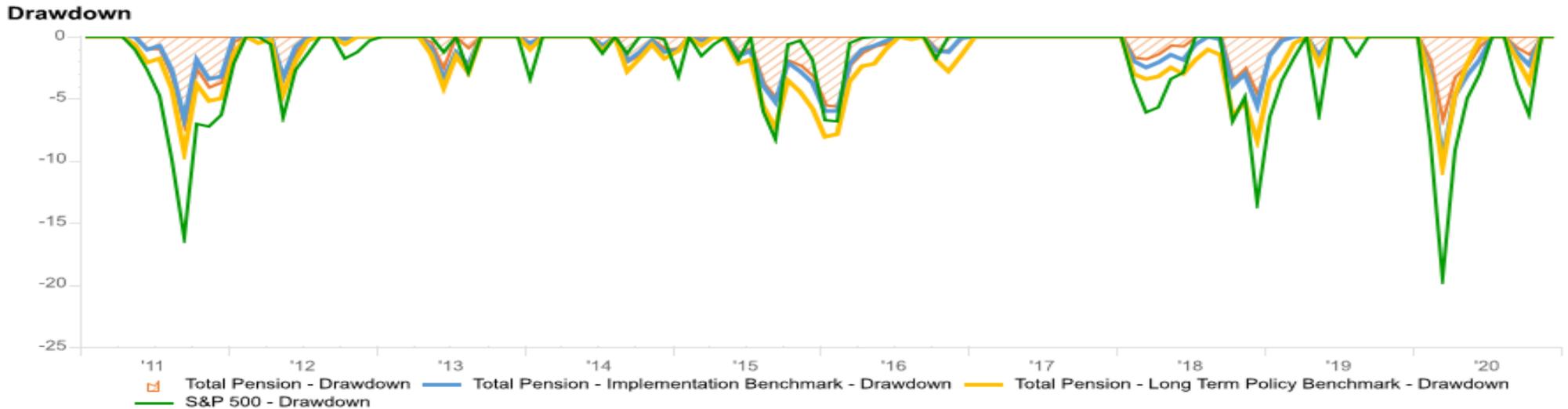
As of December 31, 2020



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NCRS Gross of Fees Return and Risk

BNY Mellon Universe: US Public Funds > \$20B; Data as of December 31, 2020

Returns	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
25th Percentile	13.11	9.22	10.48	8.93	7.52	7.13
Median Percentile	11.93	8.45	9.72	8.45	7.13	6.82
75th Percentile	11.07	7.98	9.38	7.91	6.91	6.64
NCRS	11.60	8.40	9.21	8.10	6.99	6.64
Percentile Rank (1 = highest performance)	59	65	83	59	65	75

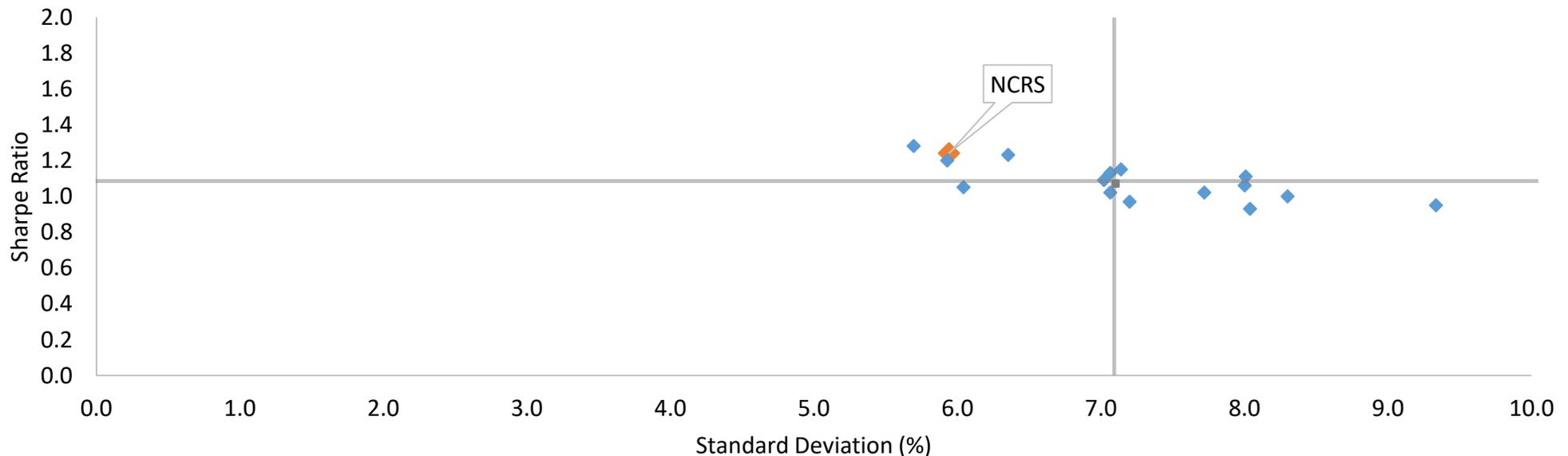
Risk	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
25th Percentile	14.25	10.48	8.56	8.01	9.47	9.52
Median Percentile	12.99	9.18	7.63	7.10	9.05	8.75
75th Percentile	11.42	7.94	6.65	6.12	8.20	8.36
NCRS	9.30	6.94	5.87	5.94	7.48	7.48
Percentile Rank (1 = highest risk)	95	95	95	83	89	94

NCRS Gross of Fees Sharpe Ratio

BNY Mellon Universe: US Public Funds > \$20B; Data as of December 31, 2020

Sharpe	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
25th Percentile	1.00	0.85	1.22	1.19	0.74	0.67
Median Percentile	0.91	0.78	1.10	1.07	0.70	0.63
75th Percentile	0.81	0.71	1.04	1.00	0.64	0.58
NCRS	1.16	0.97	1.33	1.24	0.78	0.70
Percentile Rank (1 = highest performance)	6	12	6	12	12	7

10 Year Plot: Sharpe Ratio vs. Volatility

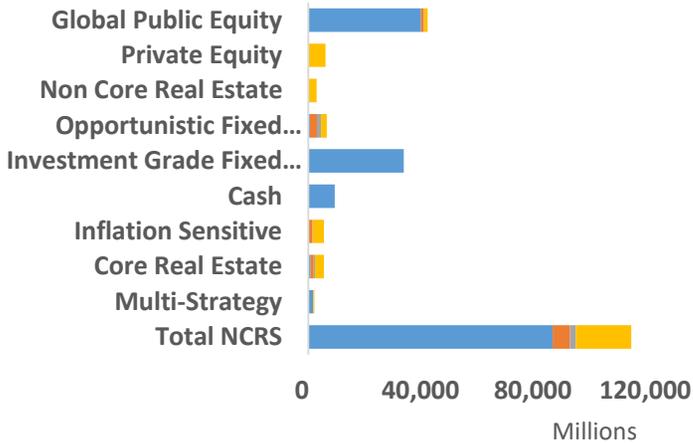


Note: Data shown is gross of fees with the exception of incentive payments, which have been deducted from NAV when applicable.

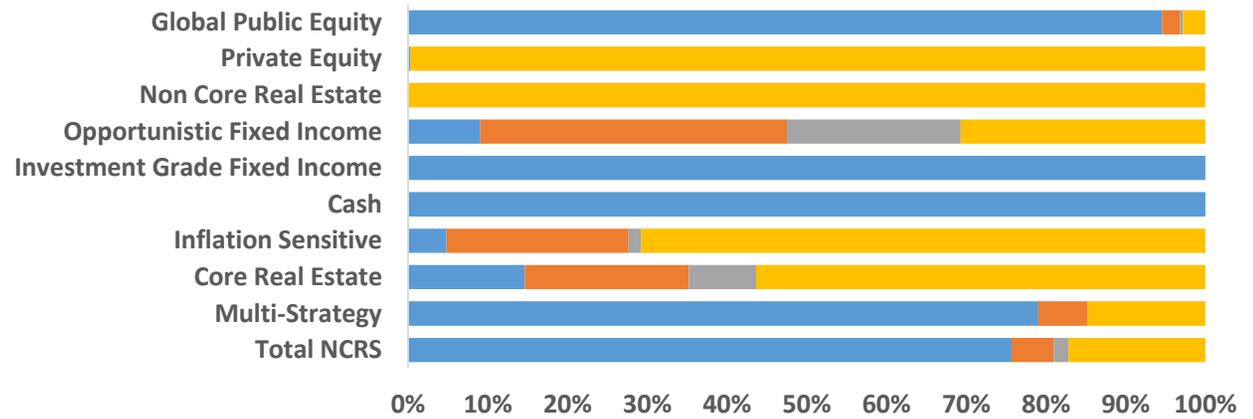
NCRS Liquidity Profile

As of December 31, 2020

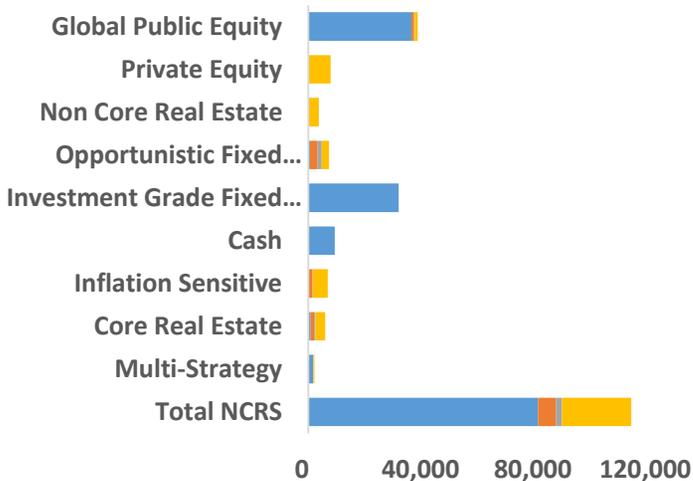
Liquidity Allocation (\$ Market Value)



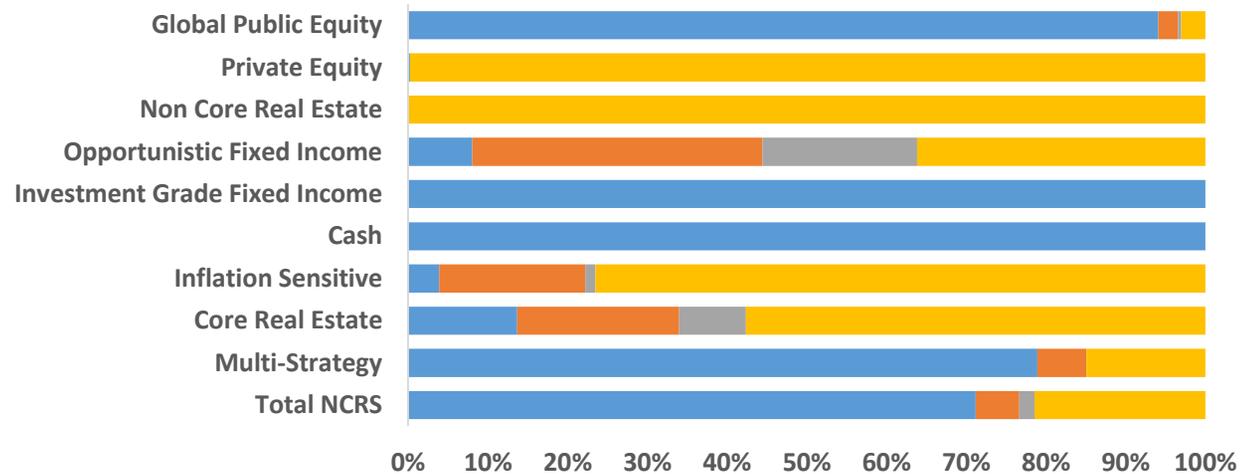
Liquidity Allocation (% Market Value)



Liquidity Allocation (\$ Market Value + Unfunded)



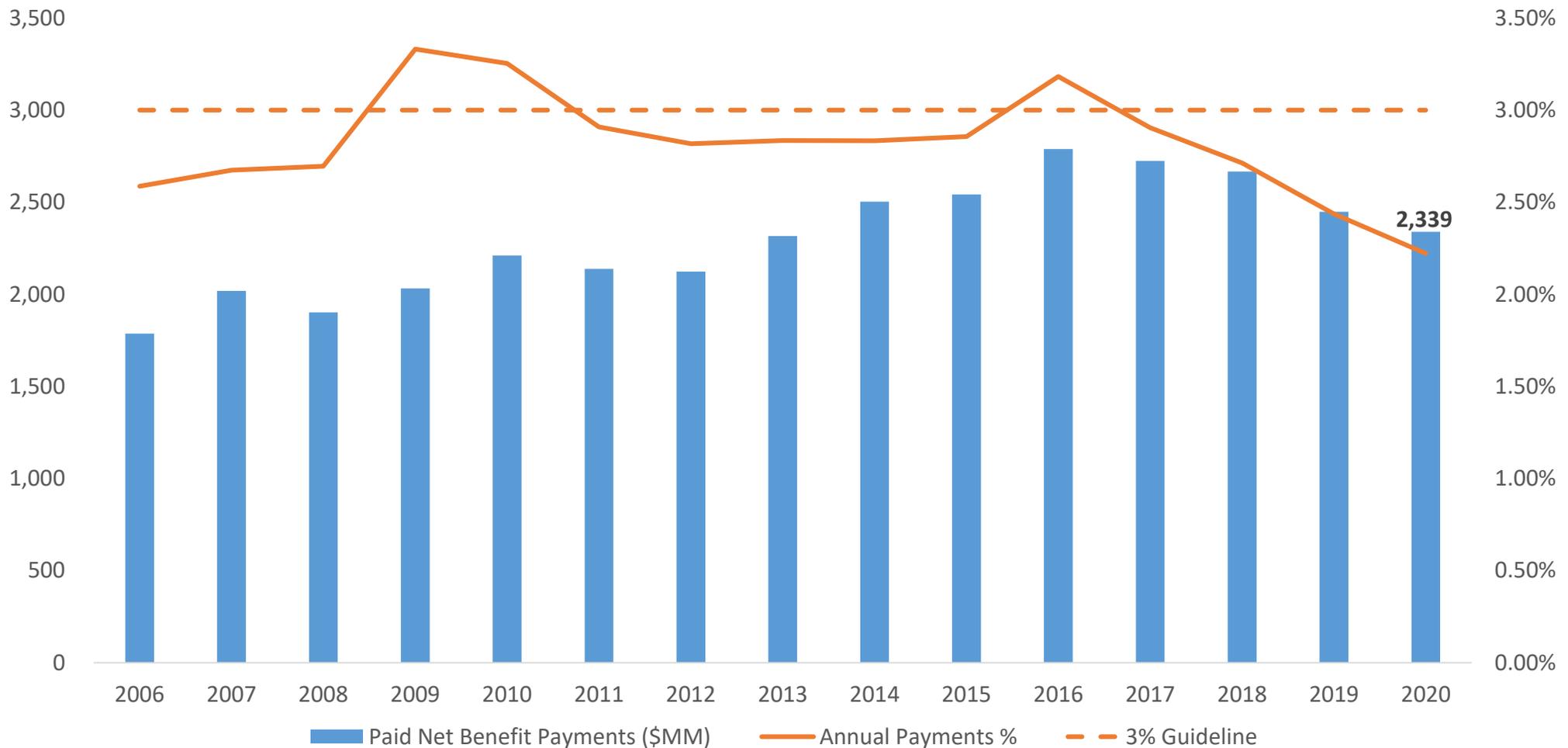
Liquidity Allocation (% Market Value + Unfunded)



Note: ■ Level 1 Liquidity = T+3; ■ Level 2 = T+3 to 12 Months; ■ Level 3 = 12 to 24 Months; ■ Level 4 = Greater than 24 Months

NCRS Liquidity Profile

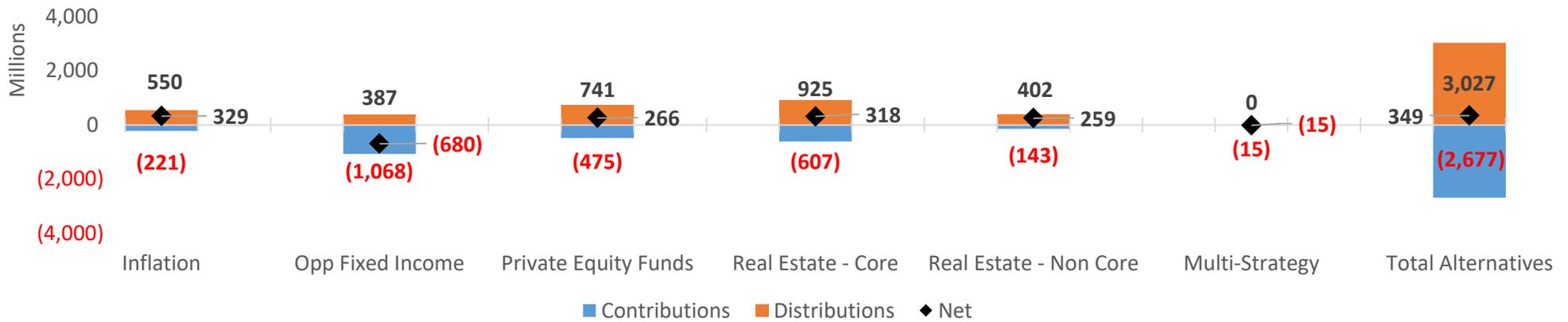
Net benefit payments by calendar year



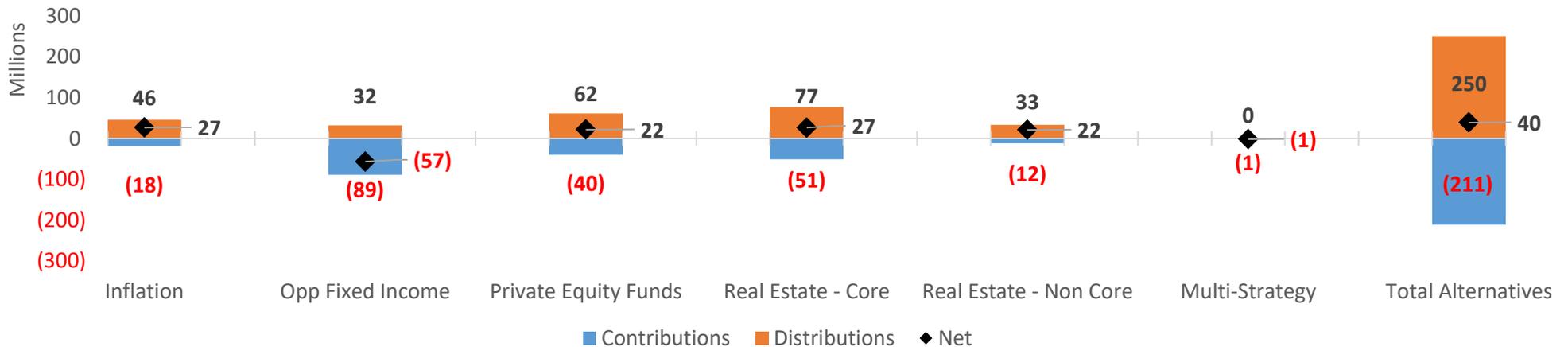
NCRS Alternatives Liquidity Profile

Through December 31, 2020

Prior 12-Months
Total Cash Flows by Alternative Asset Class (\$MM)



Prior 12-Months
Average Monthly Cash Flows by Alternative Asset Class (\$MM)

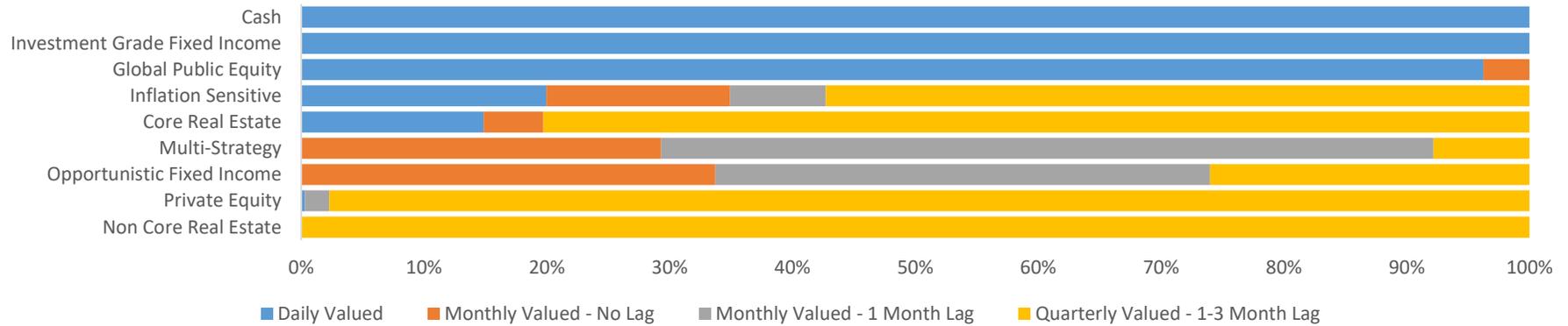




NCRS Valuation Lag Profile

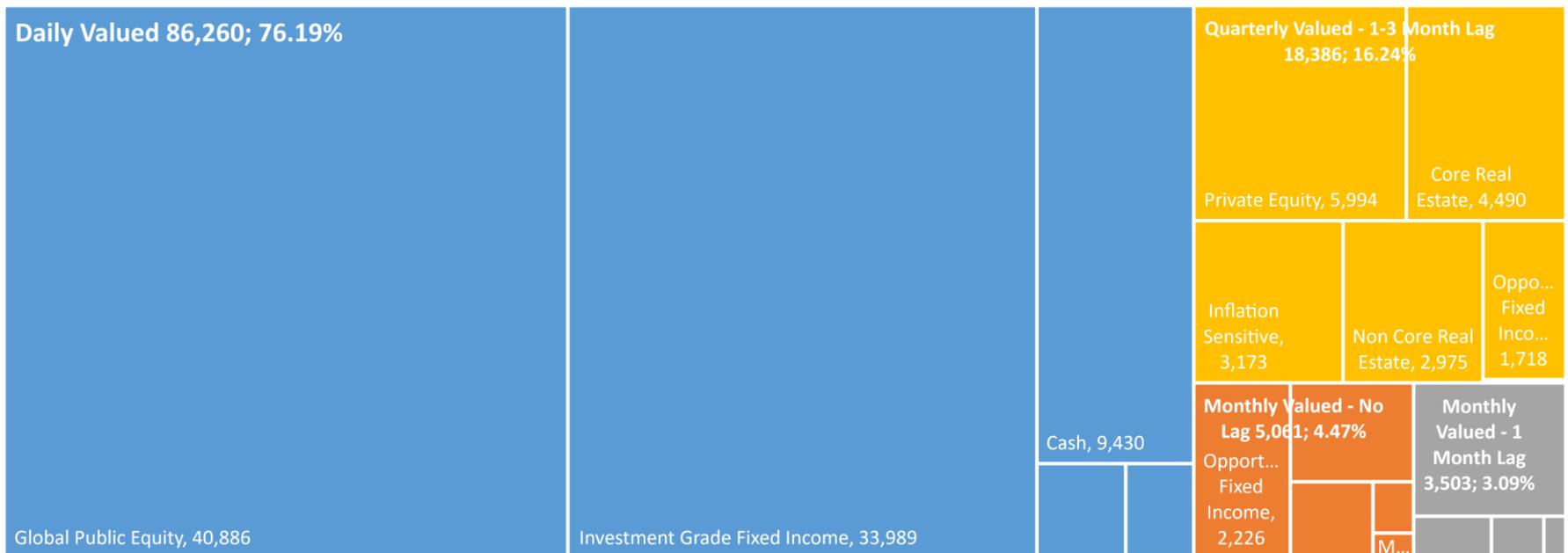
As of December 31, 2020

PORTFOLIO VALUATION LAG



VALUATION LAG BY PORTFOLIO

in Millions





NCRS Asset Class Net of Fees Performance

As of December 31, 2020

	Market Value (\$MM)	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
Growth	\$58,195	17.83	11.24	12.25	9.99	7.33	6.39
Benchmark ¹		14.54	9.03	10.69	8.60	6.55	5.54
Public Equity	\$42,485	22.23	12.34	13.62	10.32	7.74	6.70
Benchmark ²		16.17	9.63	11.77	8.97	6.81	5.61
Private Equity	\$6,133	18.86	15.00	12.54	11.70	9.20	4.88
Benchmark ³		12.75	10.87	9.95	10.88	10.28	8.64
Non-Core Real Estate	\$2,975	0.45	7.76	9.46	11.89	6.16	6.05
Benchmark ⁴		0.38	4.97	5.50	8.28	4.57	6.66
Opportunistic Fixed Income	\$6,602	2.85	4.04	5.24	5.85	-	-
Benchmark ⁵		7.47	2.99	5.32	2.51	-	-
Rates & Liquidity	\$43,420	7.34	5.32	4.63	4.57	5.39	5.84
Benchmark ⁶		8.50	5.96	5.13	4.89	5.34	5.78
IG Fixed Income	\$33,989	9.34	6.25	5.28	4.91	5.61	6.01
Benchmark ⁷		8.80	6.12	5.27	4.97	5.40	5.82
Cash	\$9,430	1.06	1.73	1.46	-	-	-
Benchmark ⁸		0.48	1.47	1.11	0.58	-	-
Inflation Sensitive & Diversifiers	\$11,152	-1.86	3.46	5.17	3.60	2.61	3.90
Benchmark ⁹		0.00	2.53	4.04	3.56	2.04	3.83
Inflation Sensitive	\$5,558	-3.50	1.73	3.95	0.33	0.99	2.88
Benchmark ¹⁰		0.69	1.63	2.84	-0.60	2.97	3.27
Core Real Estate	\$5,593	-0.13	5.32	6.54	8.40	5.49	6.08
Benchmark ¹¹		-0.92	3.55	5.44	8.65	5.58	6.53
Multi-Strategy	\$2,212	-4.13	1.58	4.76	6.91	5.36	-
Benchmark ¹²		0.16	2.28	4.87	5.92	6.09	-
Total Pension Plan	\$114,978	11.30	8.00	8.73	7.58	6.53	6.28
Implementation Benchmark ¹³		11.27	7.53	8.37	7.02	6.12	5.89
Long-Term Policy Benchmark ¹⁴		14.76	8.68	9.41	7.00	6.40	6.30



NCRS Calendar Year Asset Class Return Diversification

As of December 31, 2020

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Non-Core Real Estate 17.28%	Public Equity 17.59%	Public Equity 26.27%	Non-Core Real Estate 19.45%	Non-Core Real Estate 14.84%	Non-Core Real Estate 11.73%	Public Equity 24.44%	Private Equity 18.32%	Public Equity 27.91%	Public Equity 22.23%
Private Equity 13.87%	Multi-Strategy 14.70%	Multi-Strategy 22.61%	Private Equity 14.02%	Private Equity 9.20%	Public Equity 7.33%	Multi-Strategy 13.58%	Non-Core Real Estate 13.32%	Total Pension 14.88%	Private Equity 18.86%
IG Fixed Income & Cash 10.82%	Opportunistic Fixed Income 13.95%	Opportunistic Fixed Income 16.56%	Core Real Estate 10.41%	Core Real Estate 8.28%	Inflation Sensitive 7.19%	Total Pension 13.53%	Inflation Sensitive 6.88%	Multi-Strategy 14.82%	Total Pension 11.30%
Core Real Estate 7.89%	Core Real Estate 13.67%	Non-Core Real Estate 12.88%	IG Fixed Income & Cash 8.51%	Multi-Strategy 0.85%	Opportunistic Fixed Income 7.09%	Non-Core Real Estate 12.40%	Opportunistic Fixed Income 5.69%	Core Real Estate 10.71%	IG Fixed Income & Cash 9.34%
Multi-Strategy 6.15%	Total Pension 11.84%	Total Pension 12.28%	Total Pension 6.19%	Pension Cash 0.58%	Core Real Estate 6.68%	Private Equity 11.95%	Core Real Estate 5.67%	IG Fixed Income & Cash 10.33%	Opportunistic Fixed Income 2.85%
Opportunistic Fixed Income 2.22%	Non-Core Real Estate 7.78%	Private Equity 11.72%	Public Equity 3.68%	Total Pension 0.29%	Total Pension 6.26%	Core Real Estate 10.12%	Pension Cash 1.88%	Non-Core Real Estate 9.93%	Pension Cash 1.06%
Total Pension 2.12%	IG Fixed Income & Cash 7.29%	Core Real Estate 11.28%	Opportunistic Fixed Income 3.40%	IG Fixed Income & Cash 0.28%	Private Equity 6.05%	Inflation Sensitive 7.53%	IG Fixed Income & Cash -0.57%	Private Equity 8.15%	Non-Core Real Estate 0.45%
Inflation Sensitive -5.47%	Private Equity 5.74%	Inflation Sensitive -1.32%	Multi-Strategy 2.69%	Public Equity -1.26%	Multi-Strategy 6.00%	Opportunistic Fixed Income 7.05%	Total Pension -1.47%	Opportunistic Fixed Income 3.61%	Core Real Estate -0.13%
Public Equity -7.20%	Inflation Sensitive 1.06%	IG Fixed Income & Cash -3.49%	Pension Cash 0.45%	Opportunistic Fixed Income -2.61%	IG Fixed Income & Cash 3.24%	IG Fixed Income & Cash 4.42%	Multi-Strategy -4.79%	Pension Cash 2.20%	Inflation Sensitive -3.50%
			Inflation Sensitive -0.65%	Inflation Sensitive -9.05%	Pension Cash 0.98%	Pension Cash 1.12%	Public Equity -9.32%	Inflation Sensitive 2.09%	Multi-Strategy -4.13%



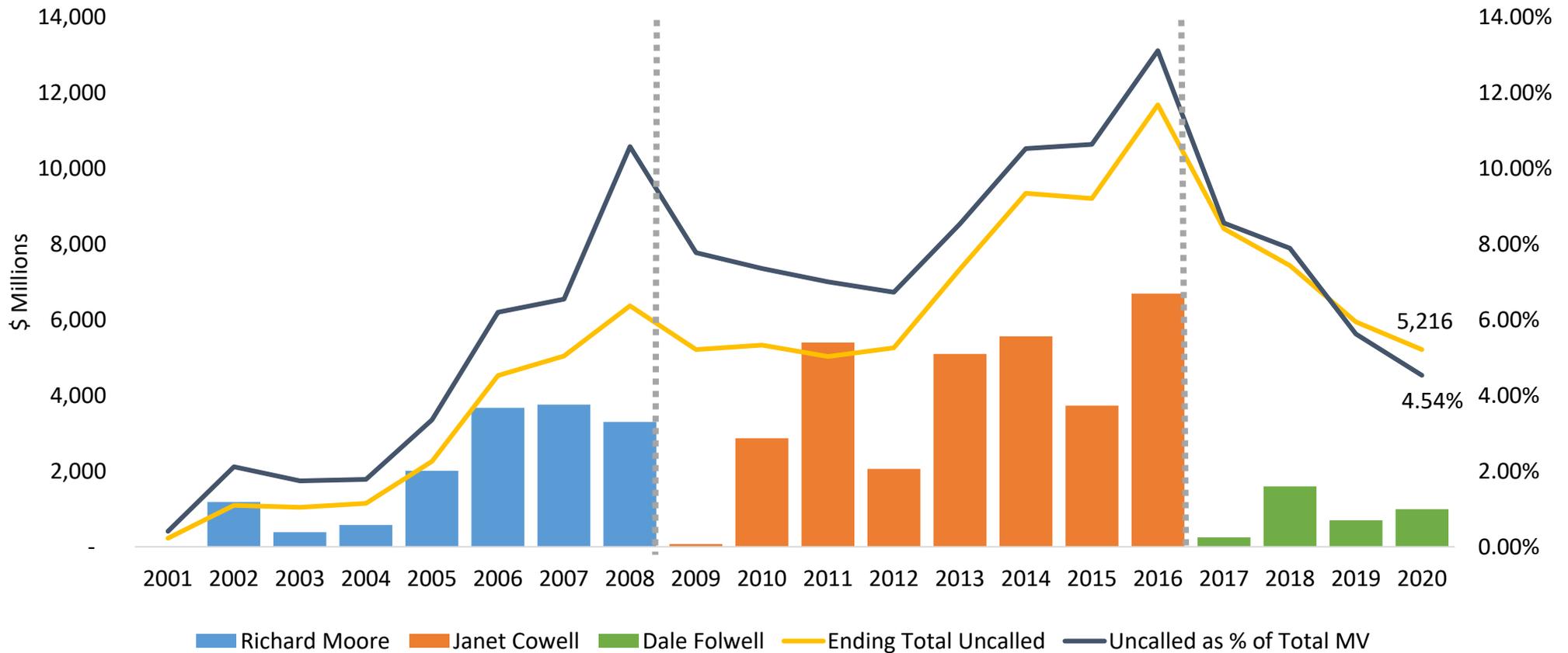
New, Incremental, & Unfunded Investment Commitments

Since November 18th IAC Meeting As of December 31, 2020

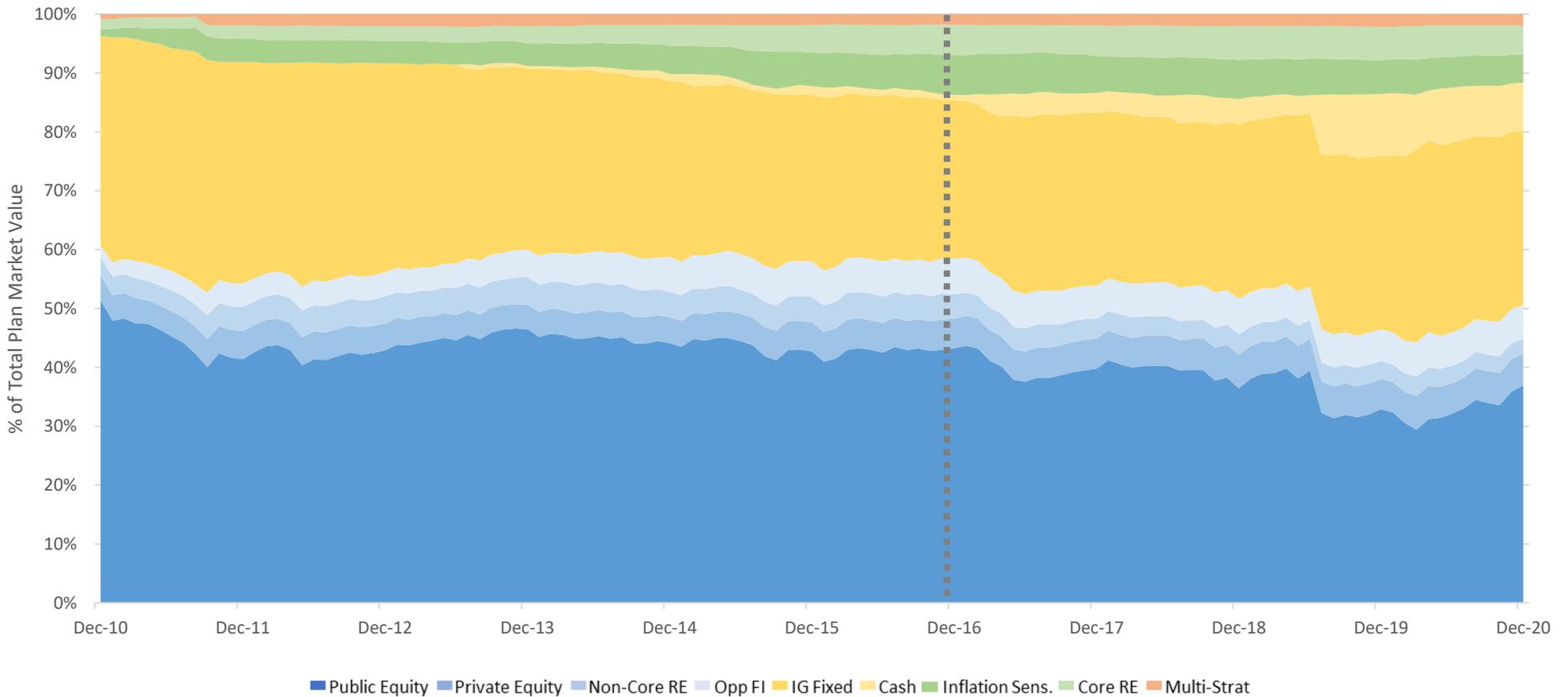
<u>Fund Name</u>	<u>Firm Name</u>	<u>New or Incremental Commitment (\$MM)</u>	<u>Closing Date</u>
Public Equity			
None			
Private Equity			
None			
Non-Core Real Estate			
None			
Opportunistic Fixed Income			
None			
Inflation Sensitive			
None			
Core Real Estate			
None			
Multi-Strategy			
None			

<u>Asset Class</u>	<u>Unfunded Commitments (\$MM)</u>
Public Equity	0
Private Equity	1,790
Non-Core Real Estate	827
Opportunistic Fixed Income	837
Inflation Sensitive	1,362
Core Real Estate	395
Multi Strategy	3
Total	5,214

New and Total Unfunded Private Asset Class Commitments By Calendar Year of Closing



Asset Allocation History as of December 31, 2020





Exited Investments

Since November 18th IAC Meeting

<u>Fund Name</u>	<u>Redemption Amount (\$MM)</u>	<u>Redemption Effective</u>
Public Equity		
BlackRock MSCI ACWI ex US IMI	3,000	1/7/2021
Private Equity		
None		
Non-Core Real Estate		
None		
Opportunistic Fixed Income		
None		
Inflation Sensitive		
None		
Core Real Estate		
None		
Multi Strategy		
None		



Top 20 Investment Managers

As of December 31, 2020

	Manager	Market Value (\$)	Uncalled (\$)	% MV	% MV Cum.
1	Internal Fixed Income	43,419,654,754	-	37.8%	37.8%
2	Internal Equity	15,032,286,144	-	13.1%	50.8%
3	BlackRock, Inc.	12,013,883,951	-	10.4%	61.3%
4	Baillie Gifford	4,894,027,607	-	4.3%	65.5%
5	Wellington Management	3,122,839,721	-	2.7%	68.3%
6	Mondrian Investment Partners Limited	2,743,125,354	-	2.4%	70.6%
7	Rockwood Capital	2,684,863,825	168,515,769	2.3%	73.0%
8	Walter Scott & Partners	2,559,069,710	-	2.2%	75.2%
9	Blackstone Group	2,500,594,659	1,131,857,098	2.2%	77.4%
10	Gladius Capital Management LP	1,920,466,853	3,327,917	1.7%	79.1%
11	Angelo, Gordon & Co.	1,804,581,973	49,036,361	1.6%	80.6%
12	ValueAct Capital	1,178,985,282	-	1.0%	81.6%
13	Landmark Partners, Inc.	1,022,255,494	1,150,526,600	0.9%	82.5%
14	HPS Investment Partners, LLC	840,399,331	185,153,236	0.7%	83.3%
15	DoubleLine Capital LP	837,329,706	-	0.7%	84.0%
16	Earnest Partners	728,598,956	-	0.6%	84.6%
17	Brigade Capital Management	725,517,559	-	0.6%	85.3%
18	Franklin Templeton Investments	725,482,345	-	0.6%	85.9%
19	Campbell Group LLC, The	701,940,934	-	0.6%	86.5%
20	LBA Realty	654,367,463	9,900,990	0.6%	87.1%
	96 Remaining Managers*	14,867,890,462	2,515,907,545	12.9%	100.0%
Total		114,978,162,083	5,214,225,515	100.0%	100.0%

*Manager count consists of all manager accounts with a market value greater than \$5.1 million and new, not yet funded, accounts.



Appendix



NCRS Public Equity Net of Fees Performance

As of December 31, 2020

	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Public Equity	\$42,485	16.47	22.23	12.34	13.62	10.32
Benchmark ²		15.59	16.17	9.63	11.77	8.97
Domestic Portfolio	\$19,038	14.43	22.85	15.60	15.85	13.97
Russell 3000		14.68	20.89	14.49	15.43	13.79
Non-US Portfolio	\$23,026	18.43	21.13	9.17	12.13	6.88
Custom Benchmark		17.22	11.12	4.83	8.98	5.06
Equity Hedge	\$420	5.28	(5.82)	0.03	2.70	-
MSCI ACWI (Beta Adjusted)		6.23	7.10	4.23	5.01	-

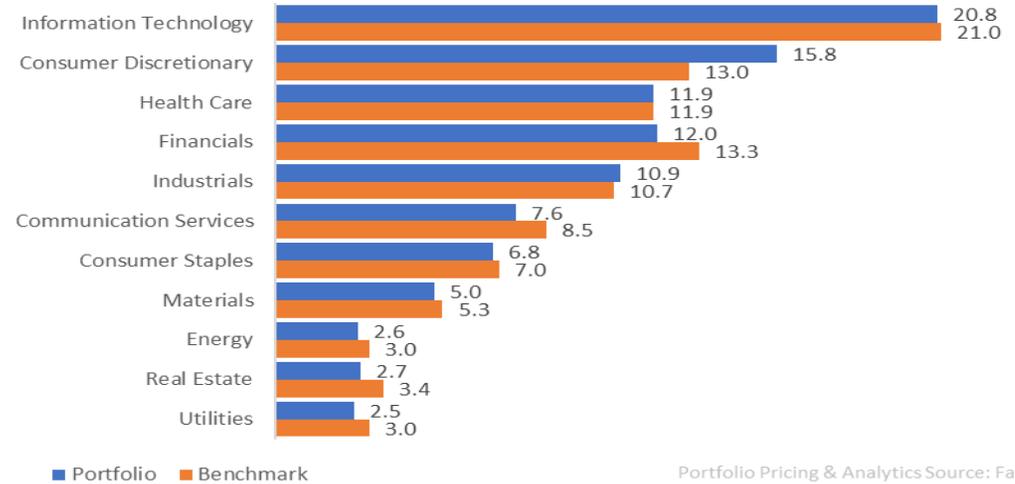


NCRS Public Equity Portfolio Characteristics

As of December 31, 2020

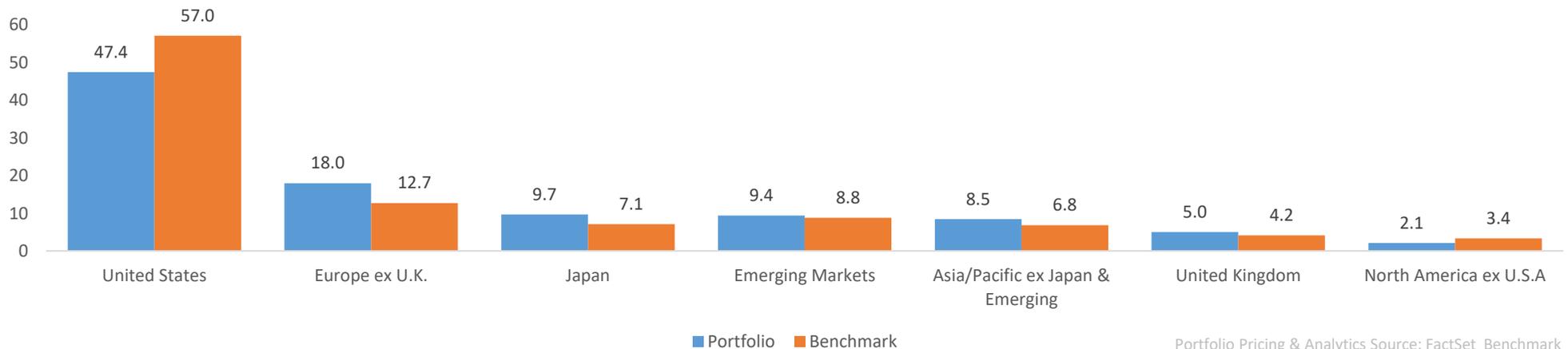
Portfolio Characteristics		
	Portfolio	MSCI ACWI IMI
Price/Earnings	25.2	24.0
Dividend Yield	1.7	1.8
Price/Book	2.6	2.5
Market Capitalization	238,246	270,560
Return On Equity	16.6	18.2

@FactSet Research Systems



Portfolio Pricing & Analytics Source: FactSet
Benchmark Pricing & Analytics Source: FactSet

Total Equity Regional Allocation



Portfolio Pricing & Analytics Source: FactSet
Benchmark Pricing & Analytics Source: FactSet



NCRS Private Equity Portfolio

As of December 31, 2020

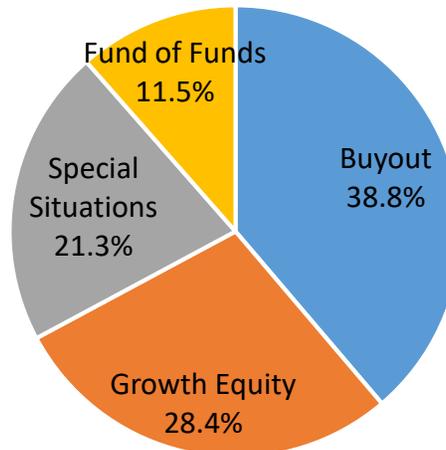
Net of Fees Performance (%)

	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Private Equity	\$6,133	10.06	18.86	15.00	12.54	11.70
Benchmark ³		8.99	12.75	10.87	9.95	10.88
Buyout	\$2,371	12.79	14.75	14.04	12.62	10.65
Growth	\$1,736	9.18	39.97	22.98	17.52	16.58
Special Situations	\$1,305	7.03	6.44	8.29	7.60	6.82
Fund of Funds	\$702	9.35	13.03	13.15	10.87	12.41

IRR by Vintage Year

	Pre-2004	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
NCRS	12.02	6.81	5.20	3.39	9.49	9.35	7.72	20.08	9.11	13.50	12.17	17.00	18.11	25.20	11.26	11.42	N/A	N/A	9.21
# of Funds	28	3	11	21	15	17	3	1	6	6	9	4	9	6	7	3	N/A	N/A	149

Strategy Allocation (Based on Valuation)



*Private Equity returns include a stock distribution account, in the amount of roughly \$18.6 million, which does not fall under any specific sub-section. 36



NCRS Non-Core Real Estate Portfolio

As of December 31, 2020

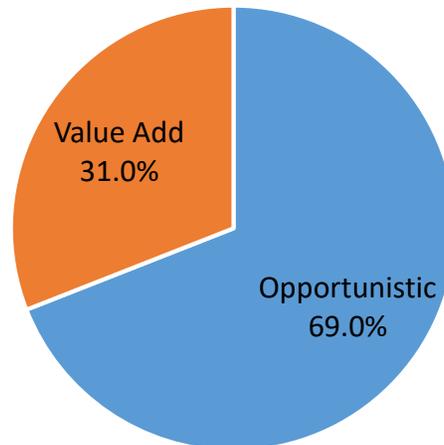
Net of Fees Performance (%)

	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Non-Core Real Estate	\$2,975	4.69	0.45	7.76	9.46	11.89
Benchmark ⁴		3.09	0.38	4.97	5.50	8.28
Opportunistic	\$2,054	3.55	0.84	8.05	9.32	11.18
Value Add	\$921	7.31	(0.32)	7.02	9.50	12.98

IRR by Vintage Year

	<u>Pre-2004</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>Total</u>
NCRS	9.12	15.69	-1.43	2.83	2.24	15.79	N/A	16.01	17.55	16.72	13.76	5.13	7.37	11.07	N/A	8.00	16.14	N/A	6.57
# of Funds	16	3	15	13	8	6	N/A	6	7	5	7	7	6	7	N/A	1	1	N/A	107

Strategy Allocation (Based on Valuation)





NCRS Opportunistic Fixed Income Portfolio

As of December 31, 2020

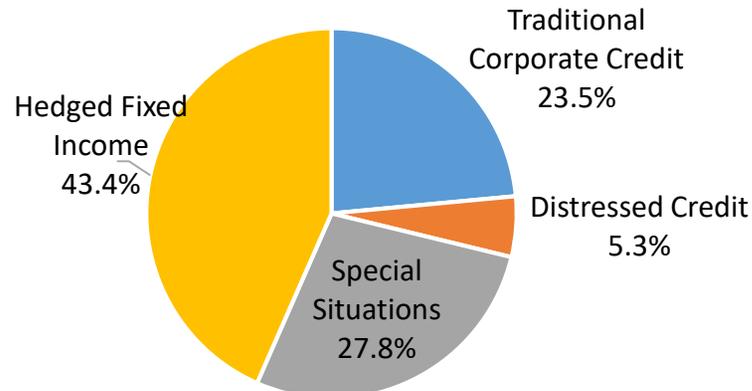
Net of Fees Performance (%)

	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Opportunistic Fixed Income	\$6,602	6.53	2.85	4.04	5.24	5.85
Benchmark ⁵		6.13	7.47	2.99	5.32	2.51
Traditional Corporate Credit	\$1,552	6.19	8.99	6.00	7.13	7.24
Distressed Credit	\$348	7.13	8.42	5.42	8.15	8.77
Special Situations	\$1,836	5.32	(4.24)	4.36	5.97	12.02
Hedged Fixed Income	\$2,866	7.43	4.74	3.07	3.89	3.59

IRR by Vintage Year

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>Total</u>
NCRS	2.87	N/A	16.92	7.86	22.42	5.30	4.16	2.91	4.49	2.98	8.02	6.03	15.40	N/A	5.27	24.42	5.55
# of Funds	1	N/A	1	3	1	4	9	2	7	3	1	8	2	N/A	1	2	42

Strategy Allocation (Based on Valuation)





NCRS Rates & Liquidity Portfolio

As of December 31, 2020

Net of Fees Performance (%)

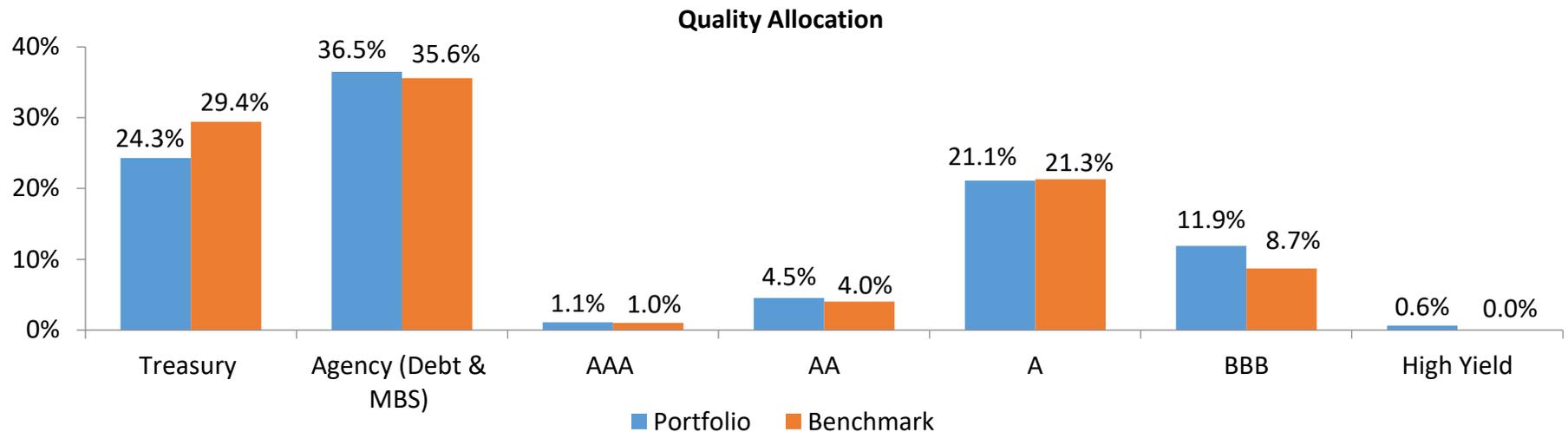
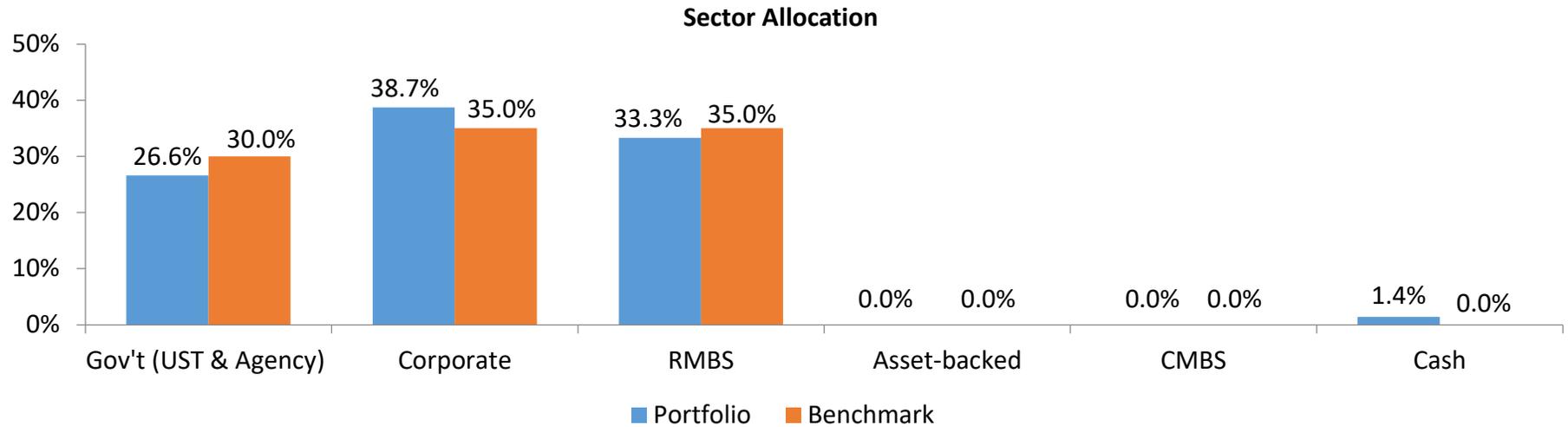
	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Rates & Liquidity	\$43,420	0.76	7.34	5.32	4.63	4.57
Benchmark ⁶		0.61	8.50	5.96	5.13	4.89
IG Fixed Income	\$33,989	0.94	9.34	6.25	5.28	4.91
Core Fixed Income	\$30,848	1.03	10.09	6.73	5.70	5.18
IG Fixed Income Cash	\$3,141	0.11	1.18	1.62	1.37	-
Pension Cash	\$9,430	0.10	1.06	1.73	1.46	-

Core Fixed Income Portfolio Characteristics

	<u>Avg. Coupon</u>	<u>Yield to Worst</u>	<u>Effective Duration</u>
Government (Treasury & Agency)	3.8%	1.0%	10.7
Corporate	4.2%	2.0%	10.3
Mortgage	3.3%	0.5%	1.8
Total	3.8%	1.2%	7.5

NCRS Core Fixed Income Portfolio Characteristics

As of December 31, 2020





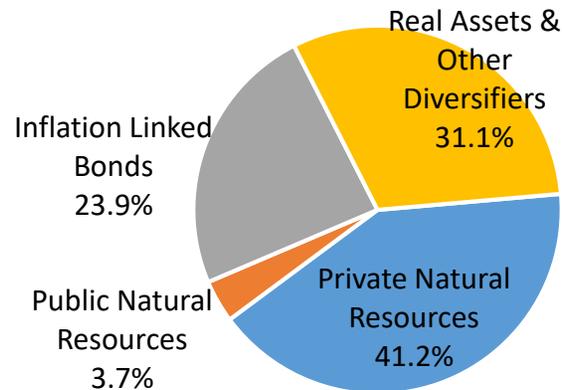
NCRS Inflation Sensitive Portfolio

As of December 31, 2020

	Net of Fees Performance (%)					
	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Inflation Sensitive	\$5,558	2.68	(3.50)	1.73	3.95	0.33
Benchmark ¹⁰		-	-	-	-	-
Private Natural Resources	\$2,292	1.73	(6.83)	(2.35)	1.49	1.54
Public Natural Resources	\$208	10.85	(3.65)	(3.03)	(0.75)	(5.65)
Inflation Linked Bonds	\$61	1.12	3.72	2.94	2.36	-
Real Assets & Other Diversifiers	\$1,729	2.60	(3.76)	5.56	7.10	-

	IRR by Vintage Year															
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
NCRS	0.32	-8.19	-6.29	N/A	-9.16	-6.62	5.44	5.70	6.68	4.75	4.07	1.21	18.24	36.51	N/A	0.78
# of Funds	3	2	2	N/A	3	9	7	11	12	4	4	1	3	2	N/A	61

Strategy Allocation (Based on Valuation)





NCRS Core Real Estate Portfolio

As of December 31, 2020

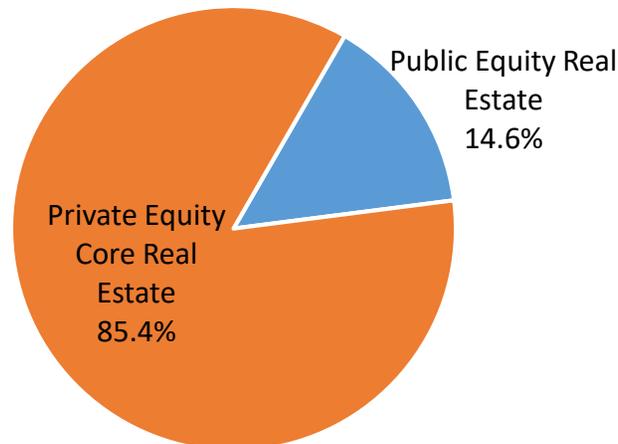
Net of Fees Performance (%)

	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Core Real Estate	\$5,593	3.67	(0.13)	5.32	6.54	8.40
Benchmark ¹¹		-	-	-	-	-
Public Equity Real Estate	\$819	12.98	(2.94)	4.56	6.43	7.43
Private Equity Core Real Estate	\$4,775	2.24	0.30	5.45	6.58	8.97

IRR by Vintage Year

	<u>Pre-2004</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>Total</u>
NCRS	7.57	9.76	-8.33	4.65	1.39	9.06	N/A	23.62	N/A	N/A	4.88	6.13	7.78	7.63	N/A	7.17	N/A	N/A	6.95
# of Funds	5	1	1	2	3	1	N/A	1	N/A	N/A	2	6	2	9	N/A	1	N/A	N/A	34

Strategy Allocation (Based on Valuation)





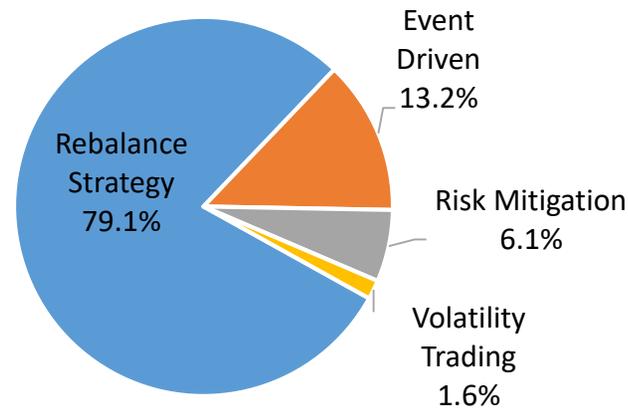
NCRS Multi-Strategy Portfolio

As of December 31, 2020

Net of Fees Performance (%)

	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Multi-Strategy	\$2,212	6.22	(4.13)	1.58	4.76	6.91
Benchmark ¹²		6.03	0.16	2.28	4.87	5.92
Rebalance Strategy	\$1,749	5.90	(0.74)	4.07	6.89	-
Event Driven	\$291	13.67	2.68	2.51	-	-
Risk Mitigation	\$136	(3.55)	11.42	(2.50)	-	-
Volatility Trading	\$36	6.15	(73.83)	(41.61)	-	-

Strategy Allocation (Based on Valuation)





Notes:

All data presented are based on currently available information at time of publication and may be revised subsequently.

1. The Growth Benchmark is a blend of the Public Equity Benchmark, Private Equity Benchmark, Non-Core Real Estate Benchmark, & Opportunistic FI Benchmark at policy weights.
2. The Public Equity Benchmark is a dynamically weighted combination of the MSCI ACWI IMI Net (Long-Only) and a beta adjusted MSCI ACWI IMI Net (Hedged Equity).
3. The Private Equity Benchmark is comprised of the following Burgiss Group Private iQ indices: 50% Buyout, 20% Venture Capital, and 30% Distressed.
4. The Non-Core Real Estate Benchmark is comprised of the following Burgiss Group Private iQ indices: 80% U.S. Non-Core Real Estate (Opportunistic and Value-Added) and 20% Non-U.S. Non-Core Real Estate (Opportunistic and Value-Added).
5. The Opportunistic Fixed Income Benchmark is a comprised of 50% HFRX Distressed Securities Index, 20% HFRX Relative Value Index, 15% Credit Suisse Leveraged Loan Index, and 15% BOAML High Yield Index.
6. The Rates & Liquidity Benchmark is a blend of the IG Fixed Income & Cash Benchmark and the Pension Cash Benchmark at policy weights.
7. The IG Fixed Income & Cash Benchmark is comprised 10% iMoneyNet First Tier Institutional Money Market Funds Net Index and 90% custom BOAML Core Investment Grade Index. The custom BOAML core index comprised of the following weightings: 30% BOAML 5+ Years Governments, 35% BOAML 5+ Years Investment Grade Corporates, and 35% BOAML Mortgage Master.
8. The Pension Cash Benchmark is the iMoneyNet First Tier Institutional Money Market Funds Net Index.
9. The Inflation Sensitive & Diversifiers Benchmark is a blend of the Inflation Sensitive Benchmark and the Core Real Estate Benchmark at policy weights.
10. The Inflation Sensitive Benchmark is the dynamically weighted combination of the Bank of America Merrill Lynch 1-3 Years U.S. Inflation-Linked Treasury Index (TIPS), the Bloomberg Commodities Index (Commodities), and a combination of the benchmarks of investments classified within Private Natural Resources or Other Real Assets and Diversifiers.
11. The Core Real Estate Benchmark is comprised of 80% NCREIF ODCE Net and 20% FTSE EPRA NAREIT Global Index.
12. The Multi-Strategy Benchmark is comprised of a dynamically weighted combination of the HFRX ED: Multi-Strategy Index, net of fees, and the market value weighted benchmarks for any other total fund strategies within the Portfolio.
13. The Implementation Benchmark is a blend of the Asset Class Benchmarks at policy weights. It is currently weighted as follows: 58% Growth Benchmark, 29% Rates & Liquidity Benchmark, 11% Inflation Sensitive & Diversifiers Benchmark, and 2% Multi-Strategy Benchmark.
14. The Long-Term Policy Benchmark is comprised of 57% MSCI ACWI IMI Net, 33% BOAML 5+ Years U.S. Treasury Index, 6% Bloomberg Commodity Index, and 4% BOAML 1-3 Years U.S. Inflation-Linked Treasury Index.

*Source: BofA Merrill Lynch, used with permission. See disclaimer on next page.



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