

NORTH CAROLINA
DEPARTMENT OF STATE TREASURER



Dale R. Folwell, CPA
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INVESTMENT MANAGEMENT DIVISION

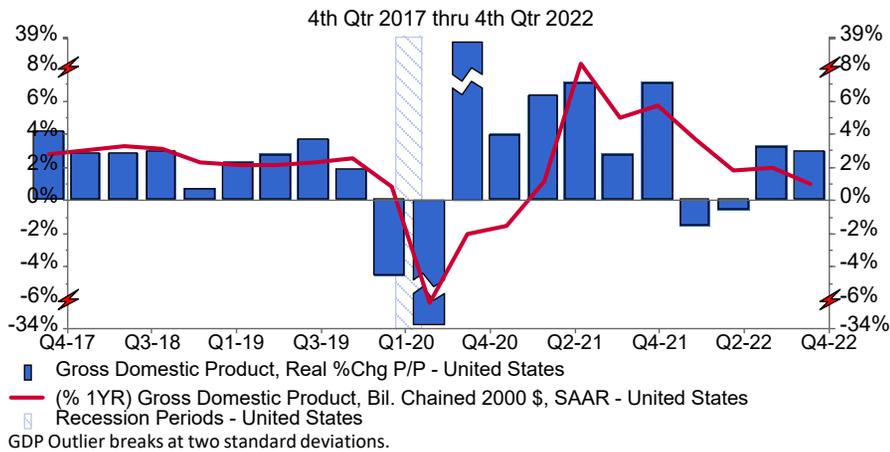
Performance Review

February 22, 2023



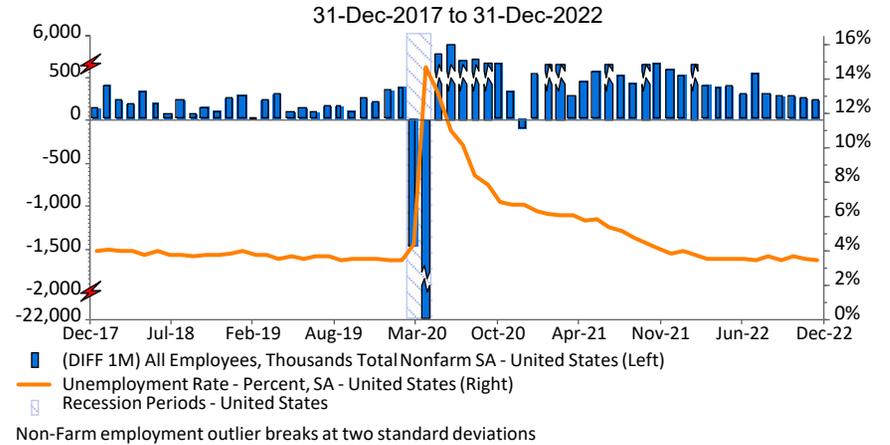
US Economic Environment

US Real GDP Growth



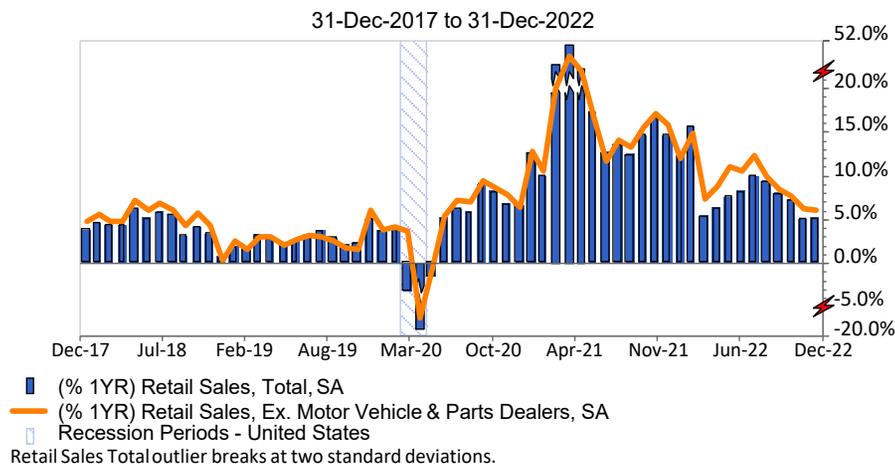
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US Change in NonFarm Employment & Unemployment Rate



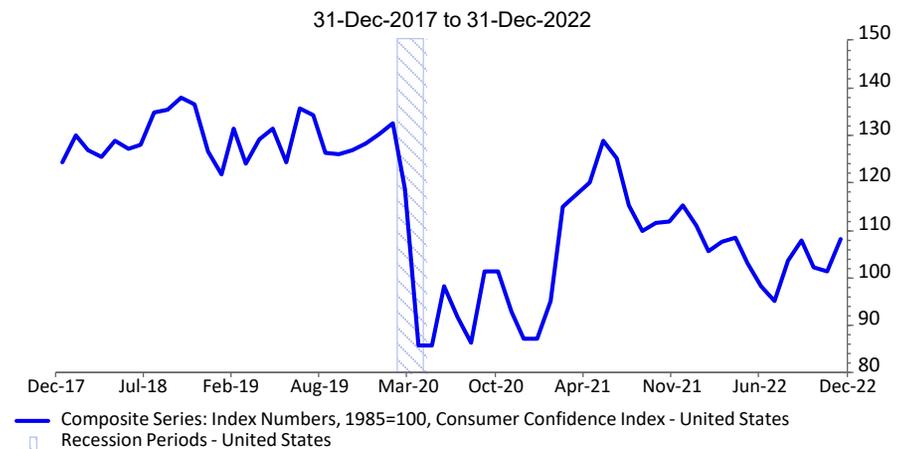
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US Retail Sales



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US Consumer Confidence



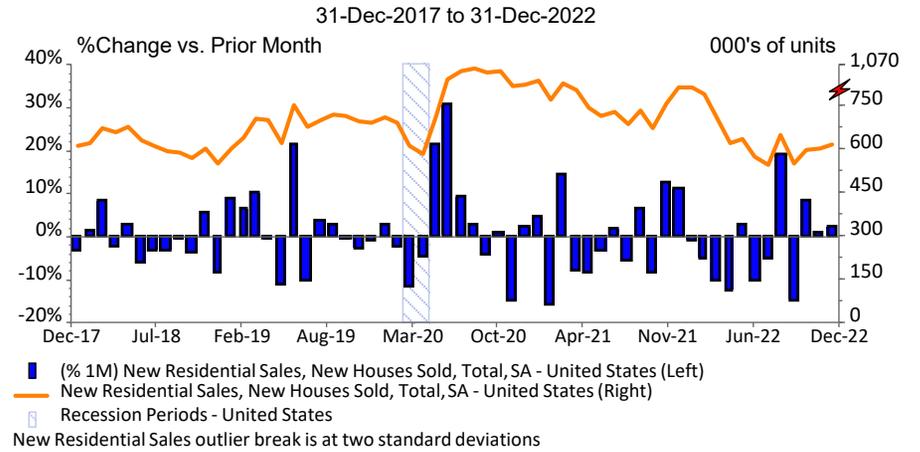
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US Economic Environment

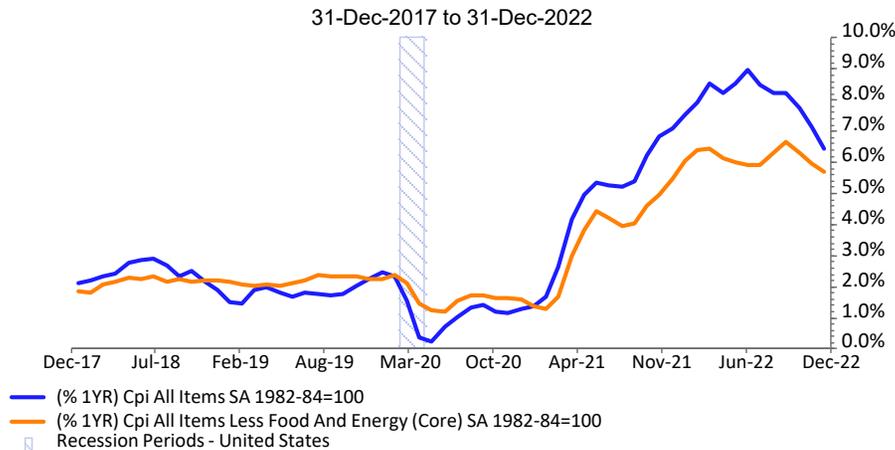
US Existing Home Sales



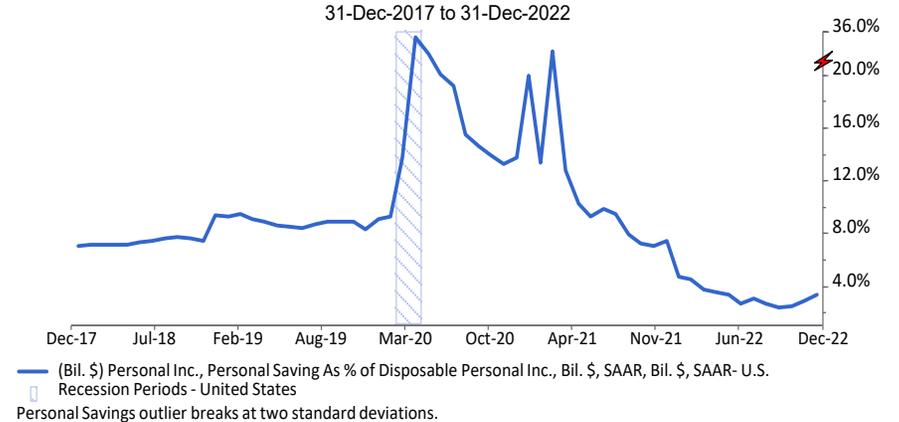
US New Home Sales



US Consumer Price Inflation



US Personal Savings Rate

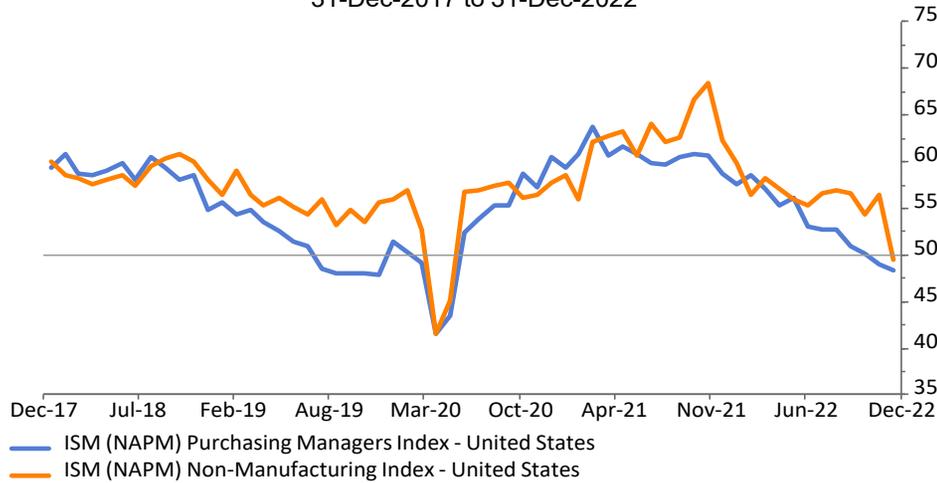




US and Global Economic Environment

ISM Report on Business

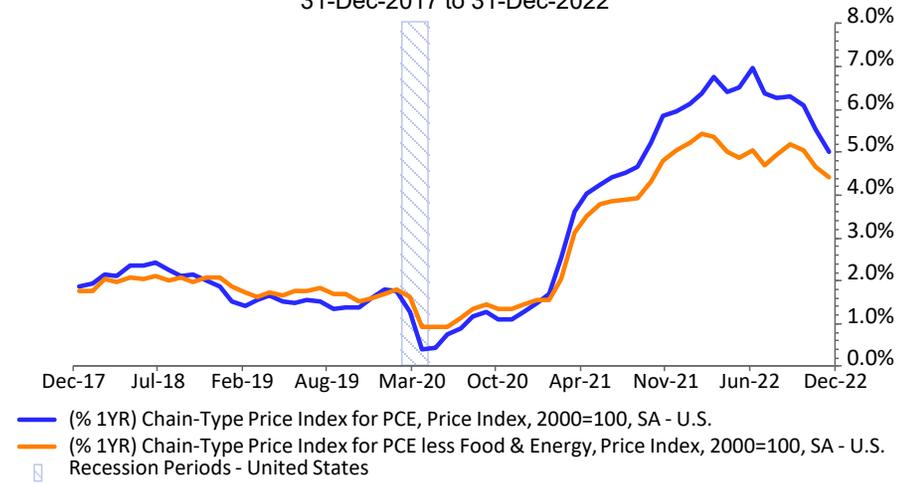
31-Dec-2017 to 31-Dec-2022



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US PCE Inflation

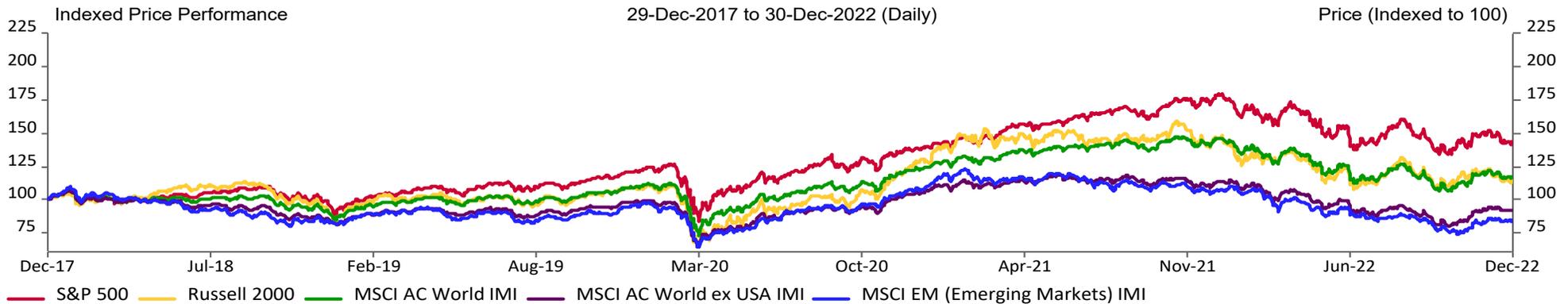
31-Dec-2017 to 31-Dec-2022



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S&P 500 vs. Peers

29-Dec-2017 to 30-Dec-2022 (Daily)

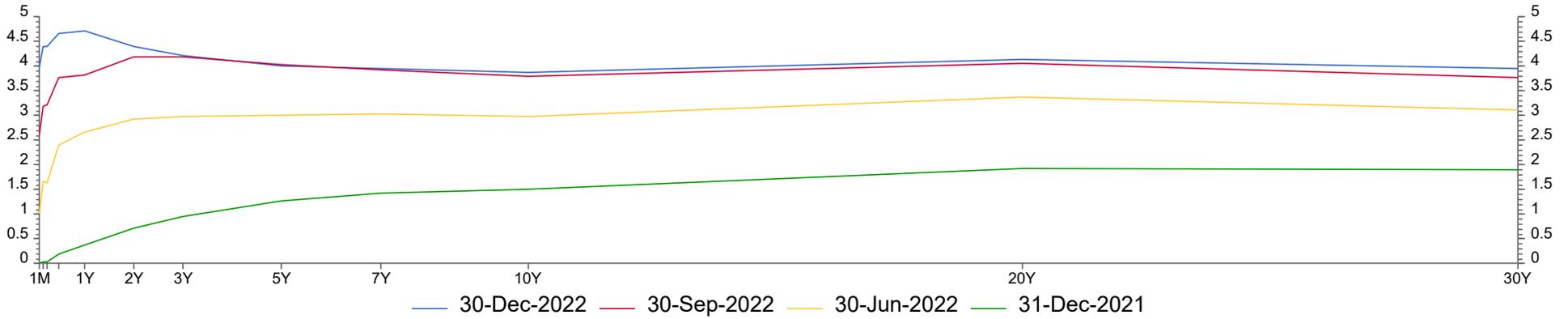


Source: FactSet Prices



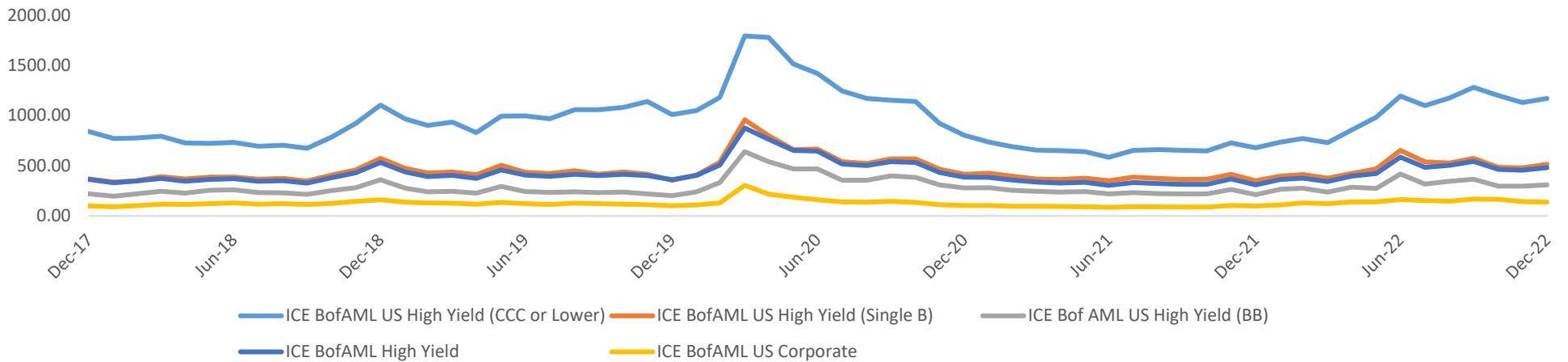
Market Environment

United States Treasury Yield Curve



Source: FactSet Interest Rate Database

Corporate Credit OAS (BofAML Indices)



Source: Bloomberg

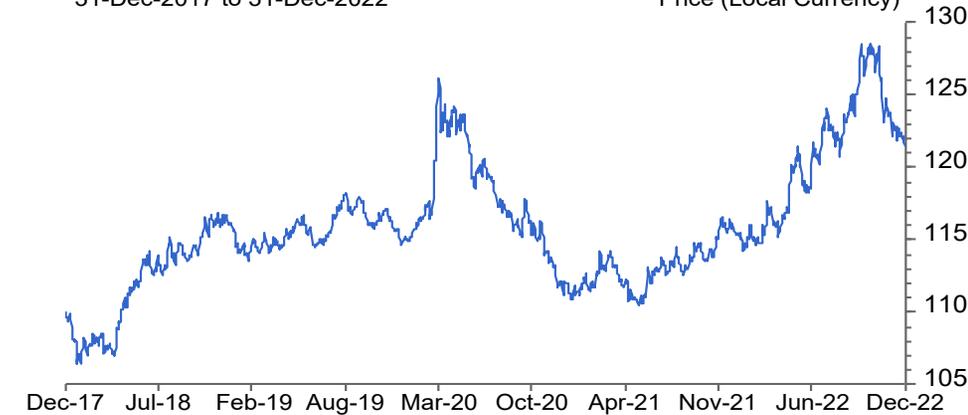


Market Environment

Closing Price Fed Nominal Broad Dollar Index

31-Dec-2017 to 31-Dec-2022

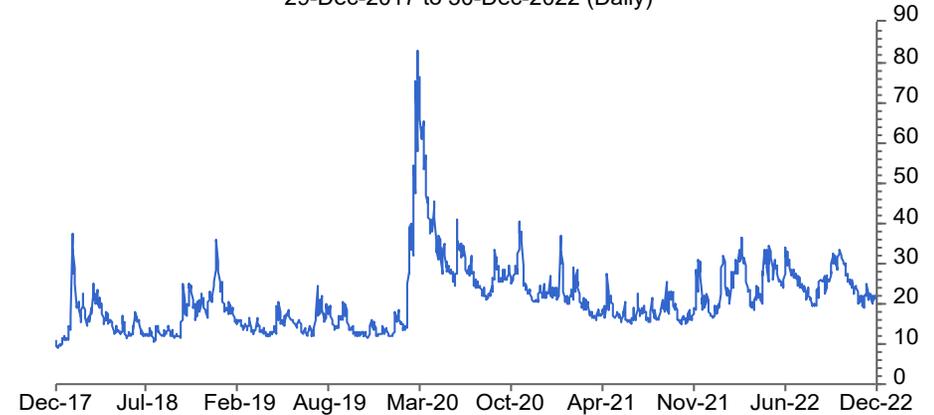
Price (Local Currency)



— Federal Reserve nominal broad effective exchange rate index - United States
Source: FactSet Prices

Closing Price CBOE VIX Index

29-Dec-2017 to 30-Dec-2022 (Daily)



— CBOE Market Volatility Index
Source: FactSet Prices

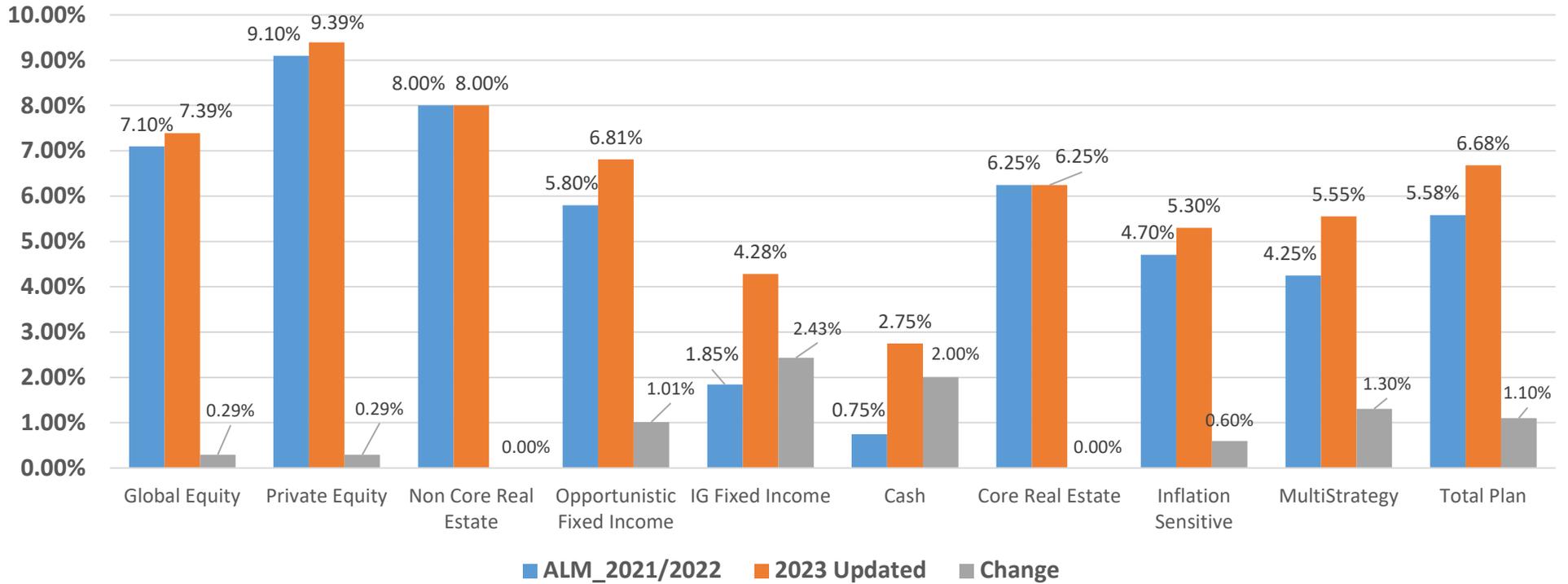
Countries	Real GDP YoY		Unemployment		CPI YoY		Countries	Real GDP YoY		Unemployment		CPI YoY	
	Date	Value	Date	Value	Date	Value		Date	Value	Date	Value	Date	Value
U.S.	12/22	1.0	12/22	3.5	12/22	6.5	Asia/Pacific/Latam						
Europe							China	12/22	2.9			12/22	1.8
Germany	12/22	1.1	12/22	5.5	12/22	8.6	India	09/22	6.3			11/22	5.4
France	09/22	1.0	11/22	7.0	12/22	5.9	Japan	09/22	1.5	11/22	2.5	12/22	4.0
U.K.	09/22	1.9	11/22	3.7	12/22	10.5	Indonesia	09/22	5.7			12/22	5.5
Italy	09/22	2.6	11/22	7.8	12/22	11.6	Brazil	09/22	3.6			12/22	5.8
Spain	12/22	2.7	11/22	12.4	12/22	5.7	Australia	09/22	5.9	12/22	3.5	12/22	7.8

Source: Bloomberg



Capital Market Expectations

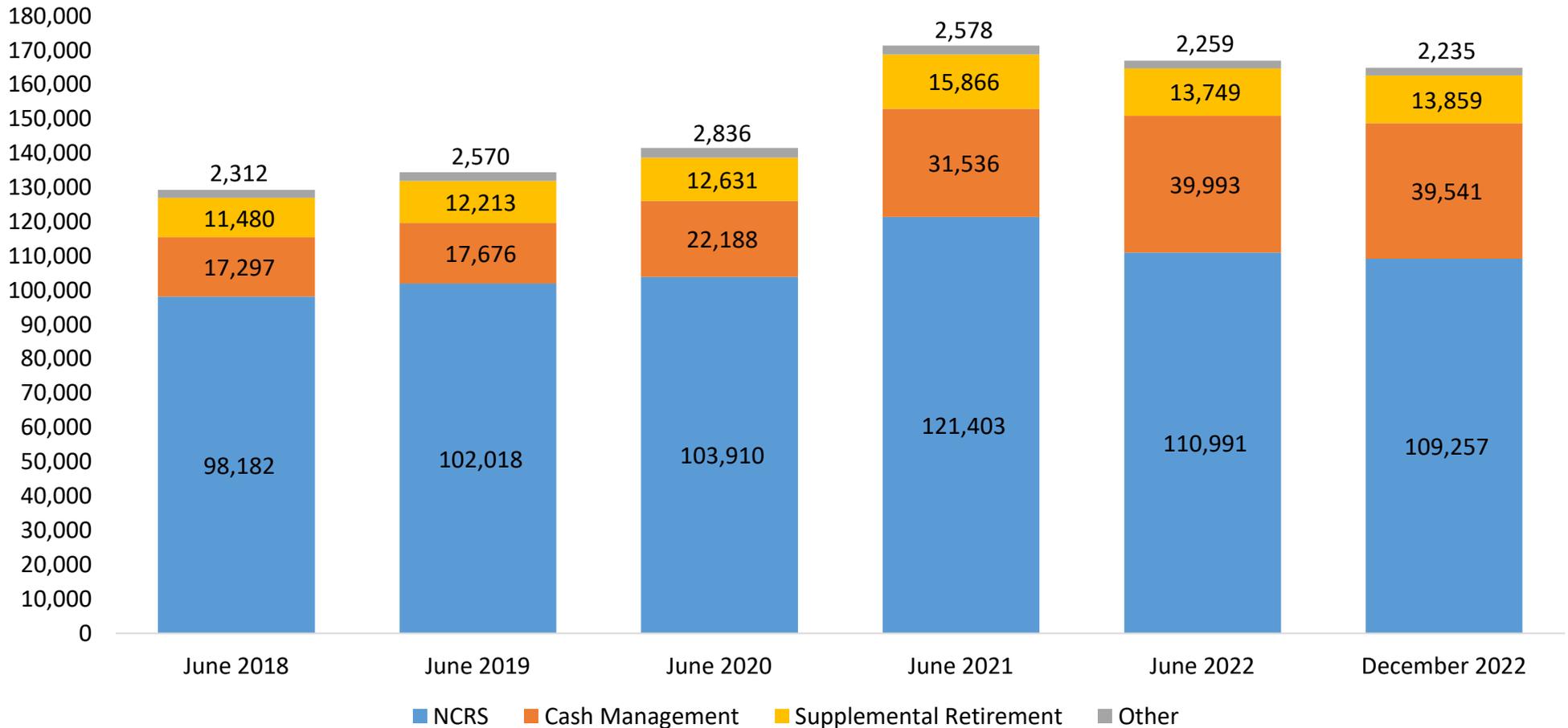
10 Year Geometric Expected Returns - 2021 / 2022 ALM vs 2023 Updates



Source: Callan and NCDST.

Assets Under Management (\$MM)

\$164.9 billion as of December 31, 2022



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, 2022

	Market Value (\$MM)	%	Target	Range		Relative %	Relative \$ (\$MM)
				Minimum	Maximum		
Growth	52,301	47.87%	55.0%	37.0%	68.0%	-7.13%	(7,791)
Public Equity	36,696	33.59%	38.0%	33.0%	43.0%	-4.41%	(4,822)
Private Equity	6,241	5.71%	7.0%	0.0%	8.8%	-1.29%	(1,407)
Non Core Real Estate	2,444	2.24%	3.0%	0.0%	8.0%	-0.76%	(834)
Opportunistic Fixed Income	6,920	6.33%	7.0%	0.0%	7.5%	-0.67%	(728)
Rates & Liquidity	42,985	39.34%	33.0%	23.0%	48.0%	6.34%	6,930
IG Fixed Income & Cash	29,112	26.65%	28.0%	23.0%	33.0%	-1.35%	(1,480)
Pension Cash	13,873	12.70%	5.0%	0.0%	10.0%	7.70%	8,411
Inflation Sensitive & Diversifiers	11,748	10.75%	11.0%	4.0%	16.0%	-0.25%	(270)
Inflation Sensitive	5,223	4.78%	6.0%	2.0%	7.5%	-1.22%	(1,332)
Core Real Estate	6,525	5.97%	5.0%	2.0%	10.0%	0.97%	1,062
Multi-Strategy	2,223	2.03%	1.0%	0.0%	4.0%	1.03%	1,130
Grand Total	109,257	100.00%					



NCRS Asset Allocation (Preliminary)

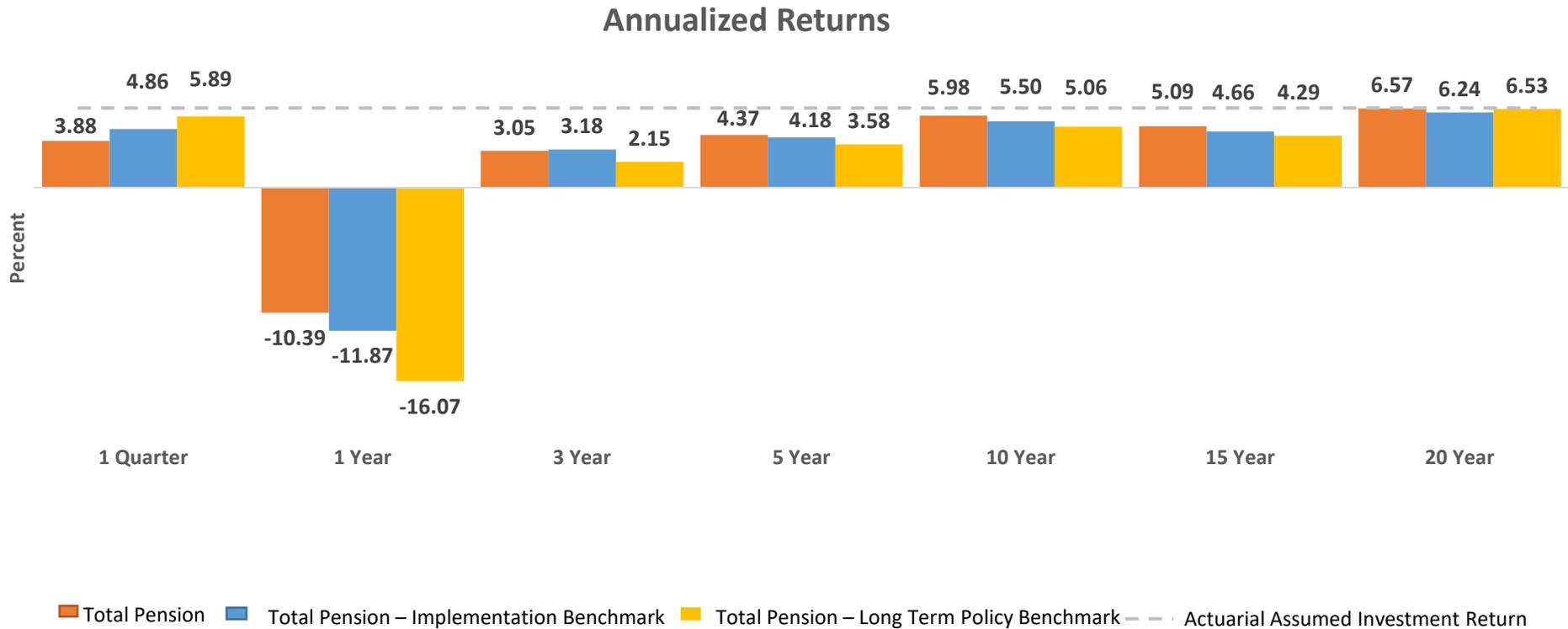
As of February 13, 2023

	Market Value (\$MM)	%	Target	Range		Relative %	Relative \$ (\$MM)
				Minimum	Maximum		
Growth	55,557	49.13%	55.0%	37.0%	68.0%	-5.87%	(6,639)
Public Equity	39,926	35.31%	38.0%	33.0%	43.0%	-2.69%	(3,046)
Private Equity	6,178	5.46%	7.0%	0.0%	8.8%	-1.54%	(1,738)
Non Core Real Estate	2,539	2.25%	3.0%	0.0%	8.0%	-0.75%	(854)
Opportunistic Fixed Income	6,914	6.11%	7.0%	0.0%	7.5%	-0.89%	(1,002)
Rates & Liquidity	43,421	38.40%	33.0%	23.0%	48.0%	5.40%	6,103
IG Fixed Income & Cash	29,673	26.24%	28.0%	23.0%	33.0%	-1.76%	(1,991)
Pension Cash	13,748	12.16%	5.0%	0.0%	15.0%	7.16%	8,094
Inflation Sensitive & Diversifiers	11,840	10.47%	11.0%	4.0%	16.0%	-0.53%	(599)
Inflation Sensitive	5,213	4.61%	6.0%	2.0%	7.5%	-1.39%	(1,572)
Core Real Estate	6,627	5.86%	5.0%	2.0%	10.0%	0.86%	973
Multi-Strategy	2,266	2.00%	1.0%	0.0%	4.0%	1.00%	1,135
Grand Total	113,085	100.00%					



NCRS Total Net Portfolio Return vs. Benchmarks

As of December 31, 2022



Notes:

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

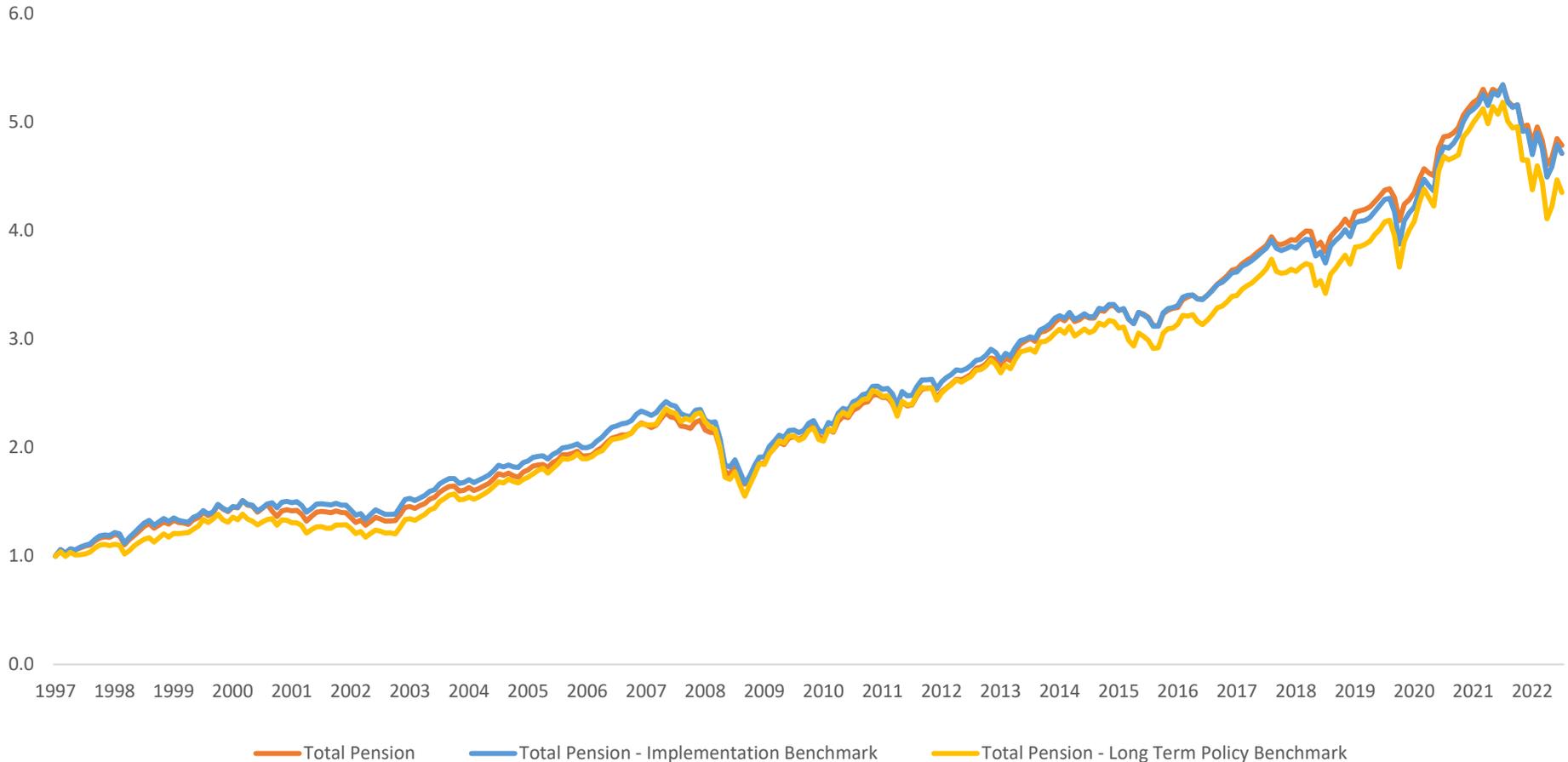
Returns for periods greater than one year are annualized.

Implementation Benchmark is a blend of the Asset Class Benchmarks at policy weights. It is currently weighted as follows: 55% Growth Benchmark; 33% Rates & Liquidity Benchmark; 11% Inflation Sensitive & Diversifiers Benchmark; and 1% Multi-Strategy Benchmark.

Long-Term Policy Benchmark is comprised of 56% MSCI ACWI IMI Net, 28% BOAML 5+ Years U.S. Treasury Index, 6.5% Bloomberg Commodity Index, 5% BOAML 3 Month Treasury Bill Index, and 4.5% BOAML 1-3 Years U.S. Inflation-Linked Treasury Index.



Growth of a Dollar Through December 31, 2022



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Notes:

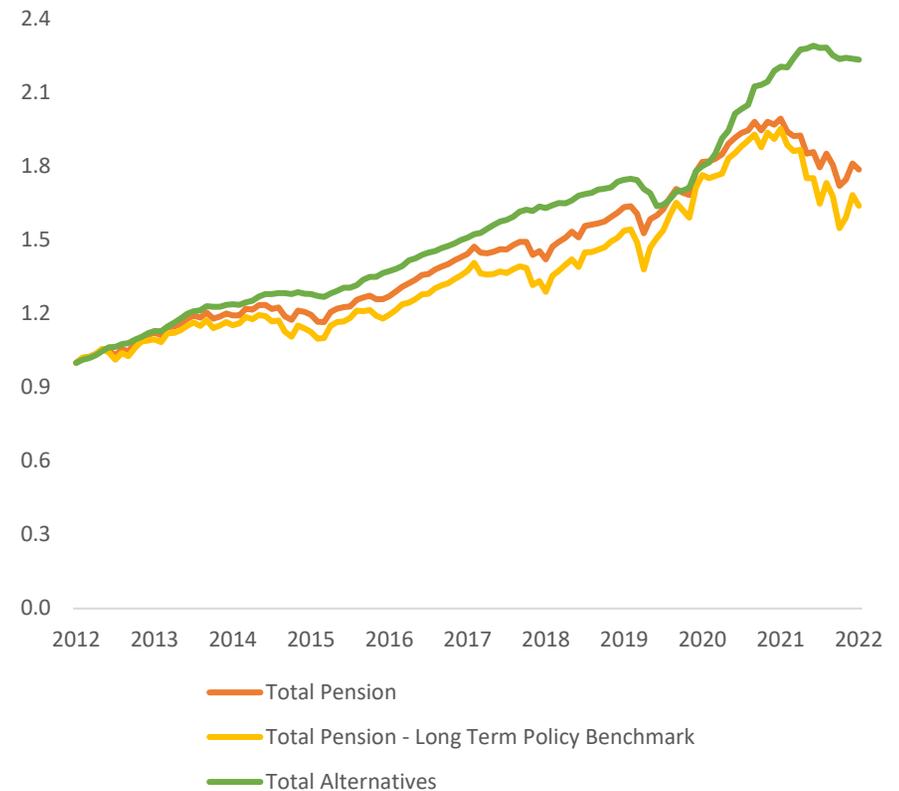
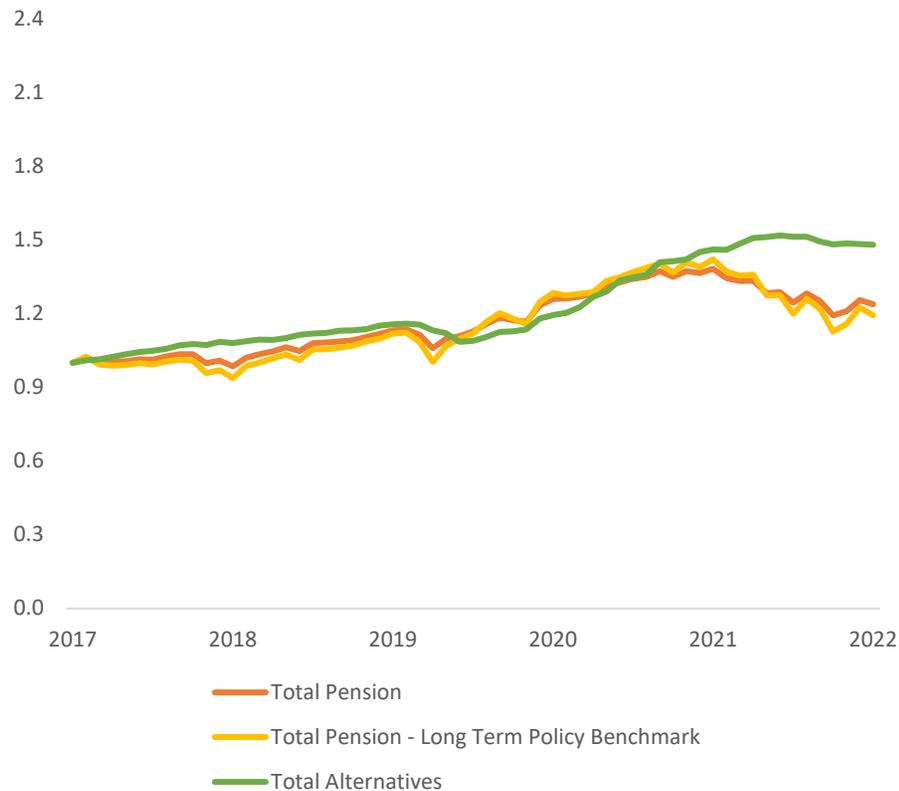
Long-Term Policy Benchmark is comprised of 56% MSCI ACWI IMI Net, 28% BOAML 5+ Years U.S. Treasury Index, 6.5% Bloomberg Commodity Index, 5% BOAML 3 Month Treasury Bill Index, and 4.5% BOAML 1-3 Years U.S. Inflation-Linked Treasury Index.



Growth of a Dollar

5 Years Ending December 31, 2022

10 Years Ending December 31, 2022



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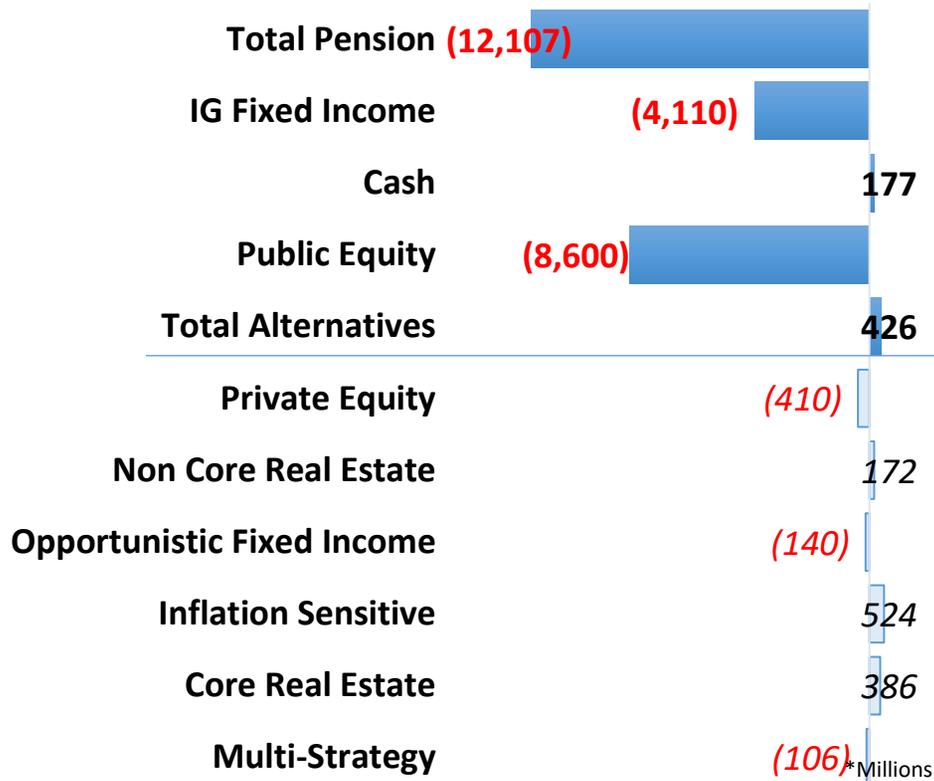
Note: NCRS Alternatives includes the following: Core Real Estate; Inflation Sensitive – Private Natural Resources; Inflation Sensitive – Real Assets and Other Diversifiers; Multi-Strategy Investments; Non-Core Real Estate; Opportunistic Fixed Income; Private Equity; Equity Hedge Strategies; and closed-end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



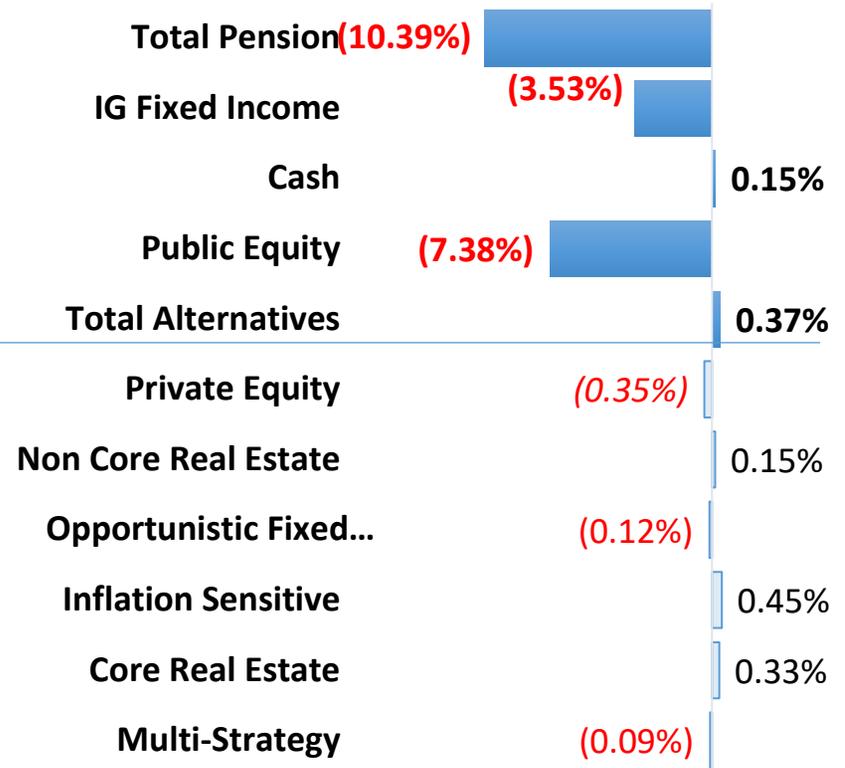
Estimated Contribution to Total Plan Return – 1 Year

As of December 31, 2022

Contribution to Total Plan \$ Earnings



Contribution to Total Plan % Returns



Notes:

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

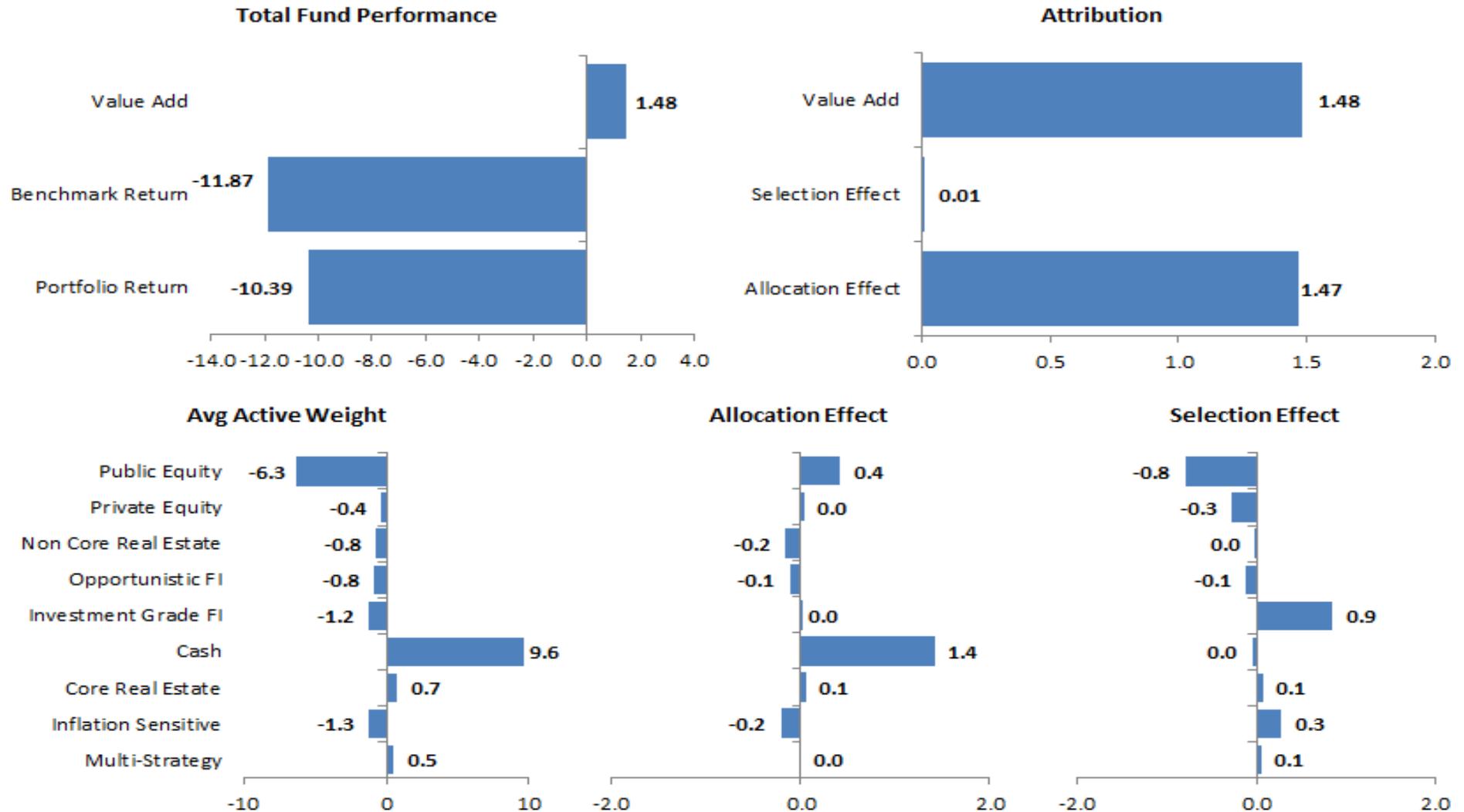
Contribution to Total Plan \$ Earnings = Average \$ Market Value * % Total Return for each asset class

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

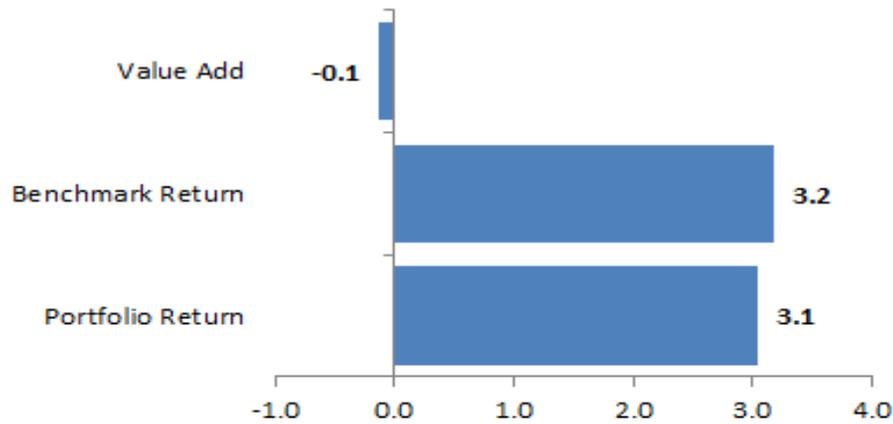
Total Fund vs. Implementation Benchmark: 1 Year Ending December 31, 2022



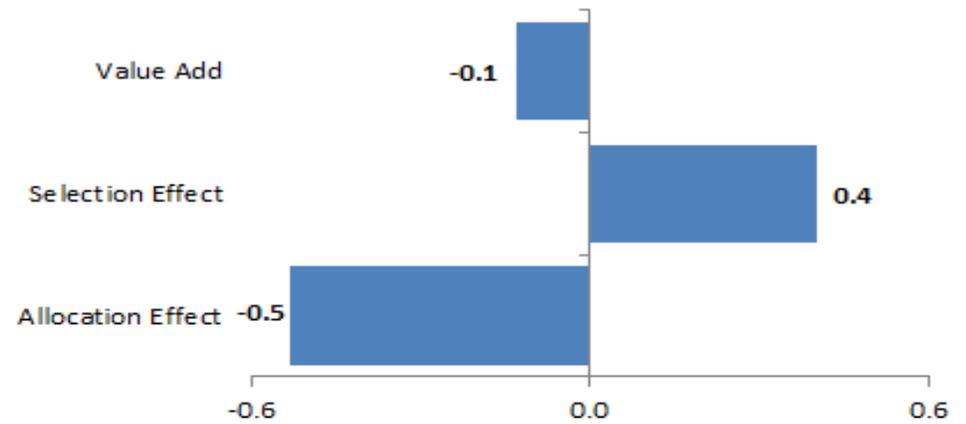
NCRS Net of Fees Return Attribution

Total Fund vs. Implementation Benchmark: 3 Years Ending December 31, 2022

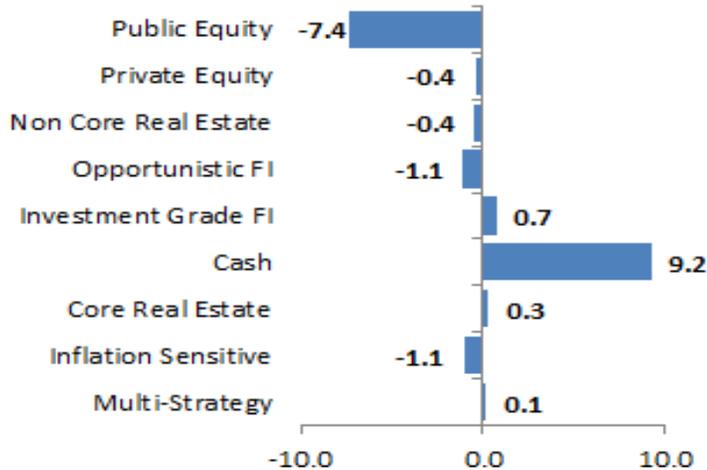
Total Fund Performance



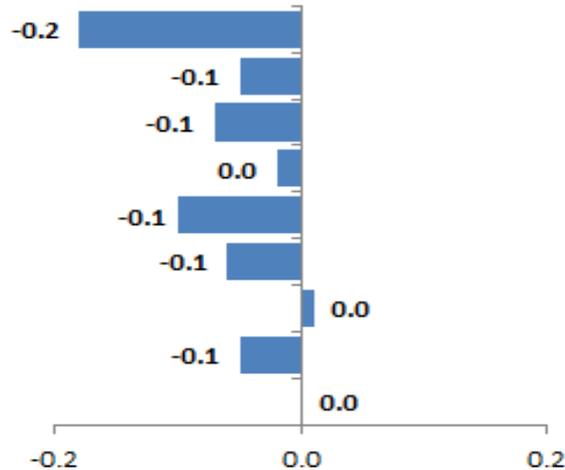
Attribution



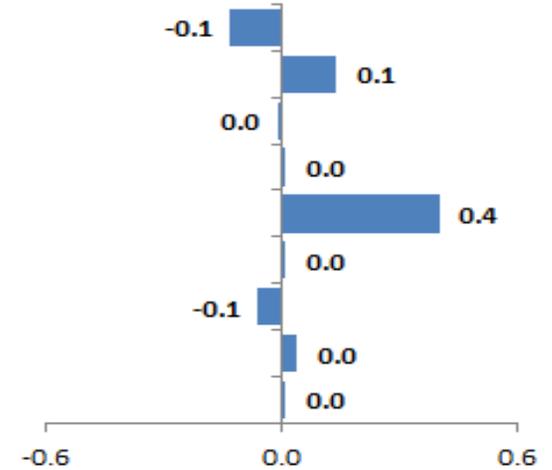
Avg Active Weight



Allocation Effect

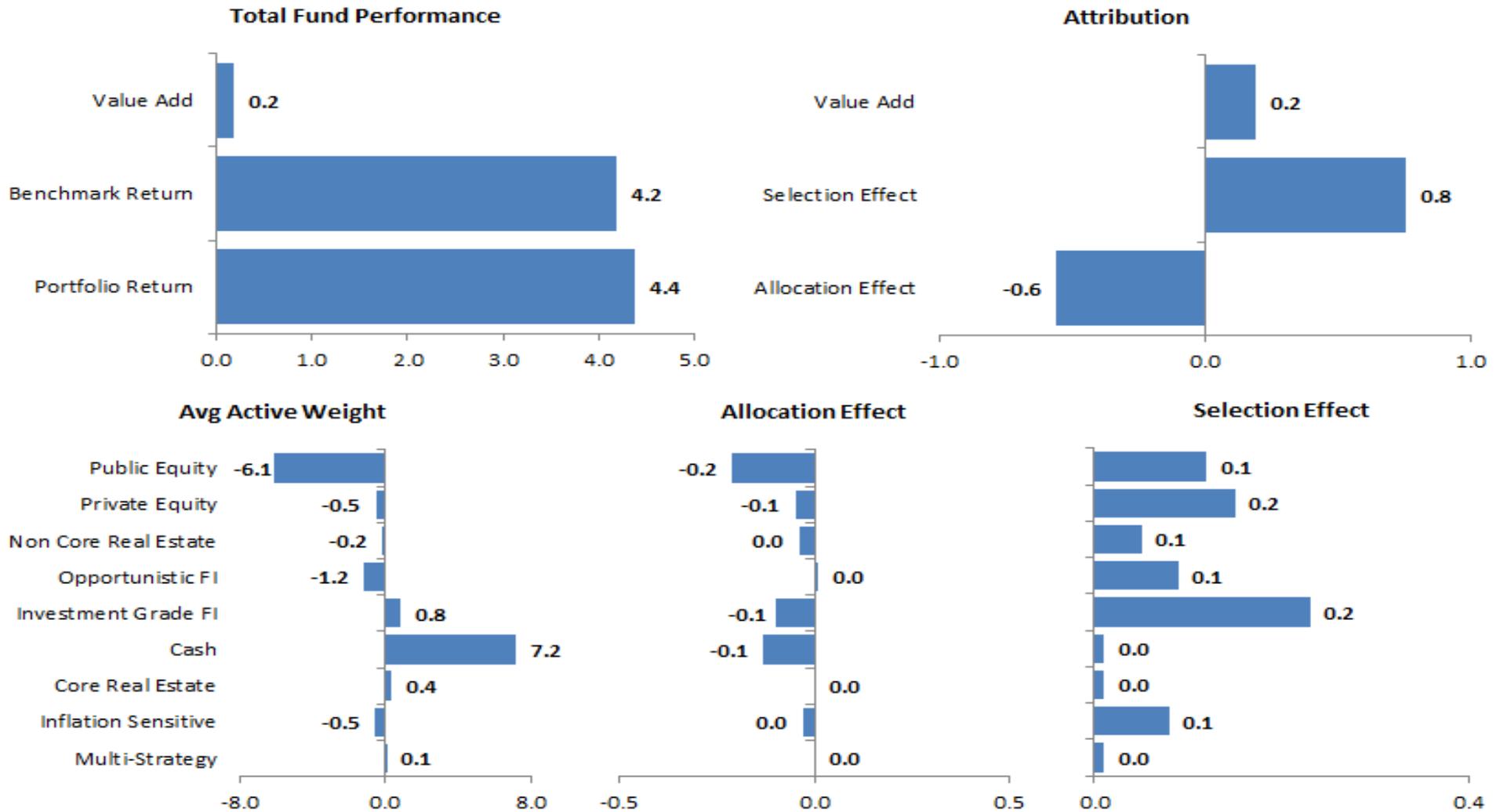


Selection Effect



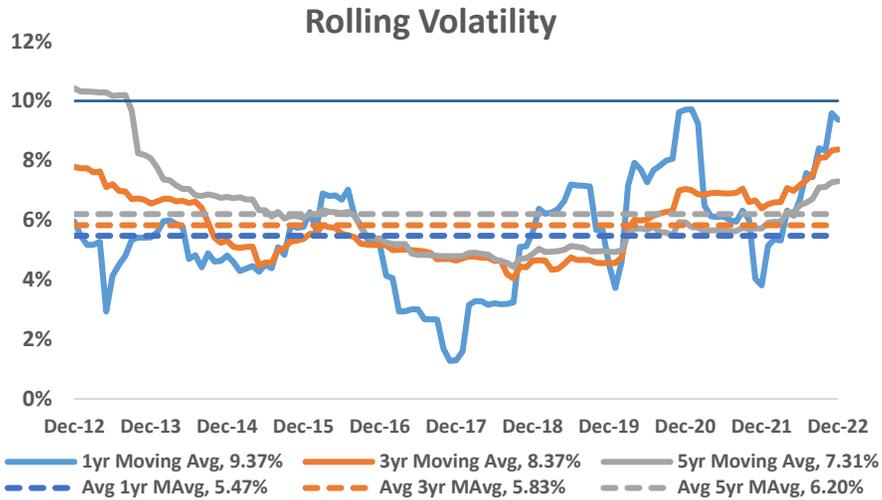
NCRS Net of Fees Return Attribution

Total Fund vs. Implementation Benchmark: 5 Years Ending December 31, 2022

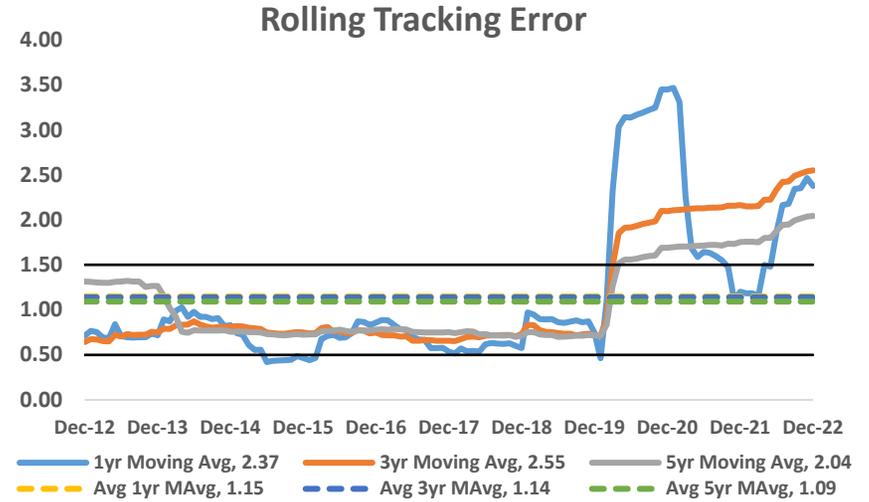


NCRS Net of Fees Risk Metrics

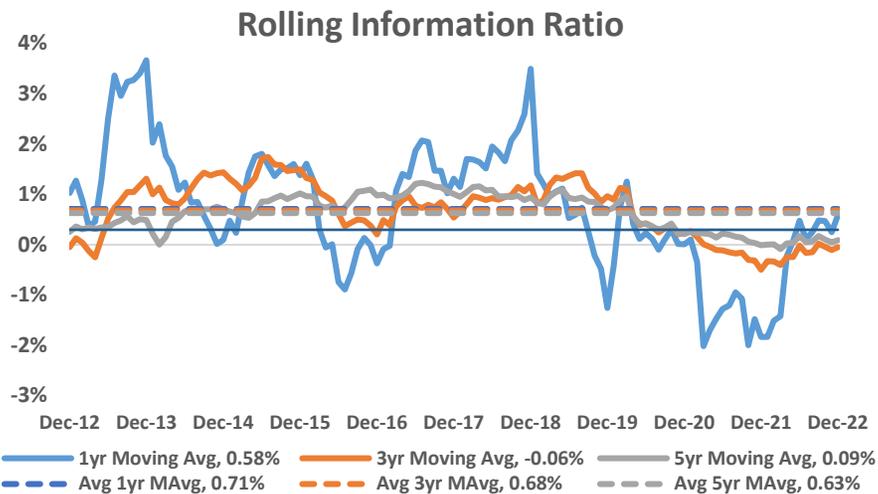
As of December 31, 2022



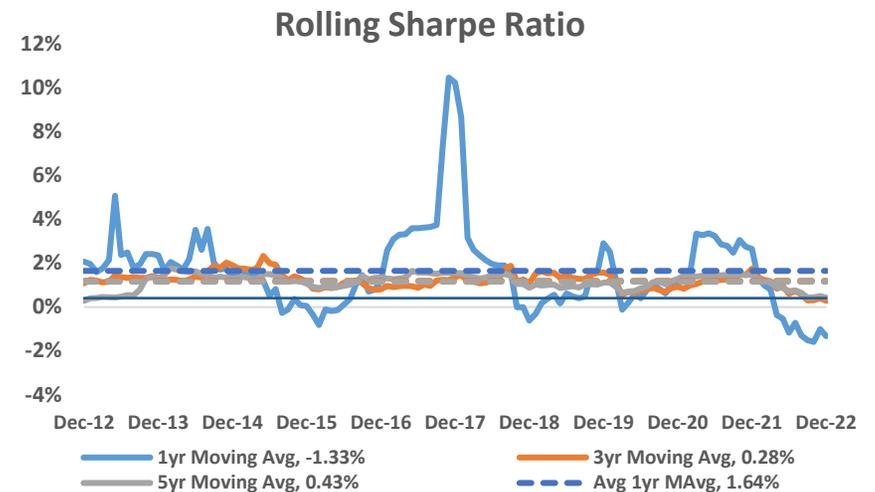
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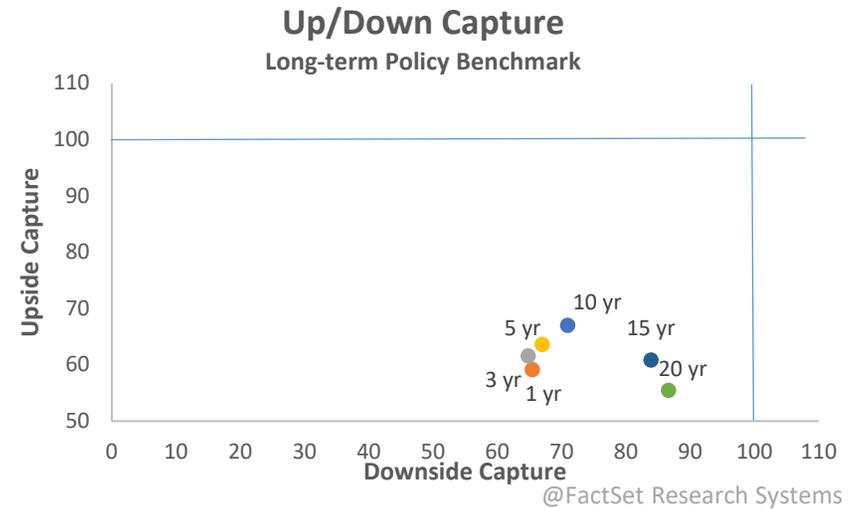
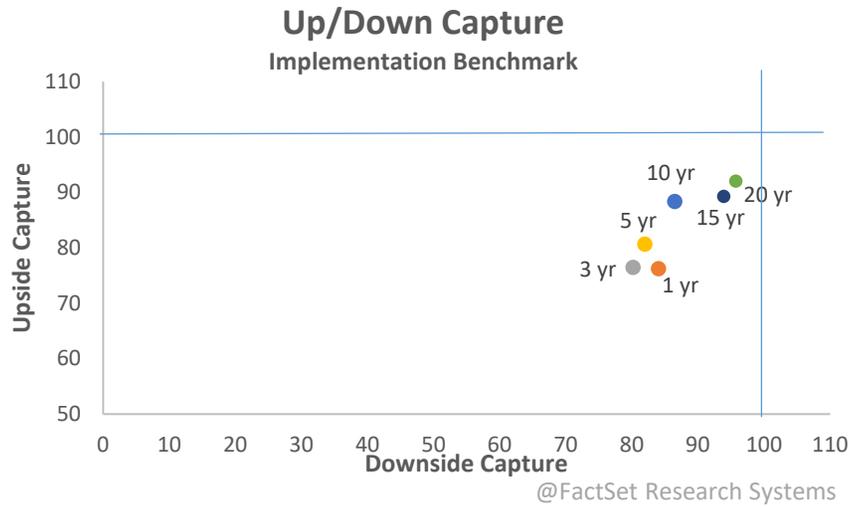
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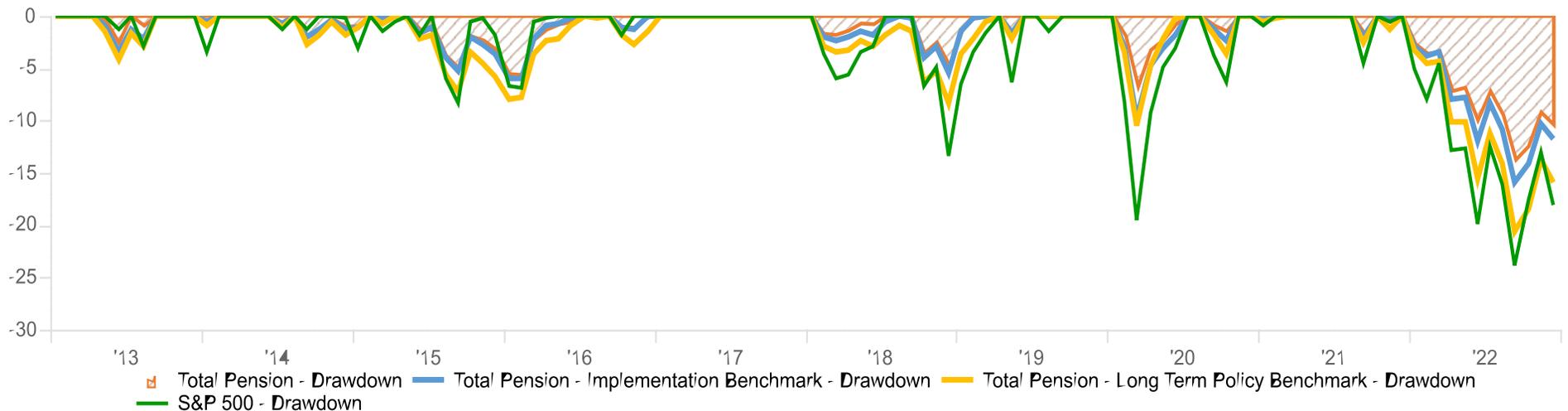
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NCRS Net of Fees Risk Metrics

As of December 31, 2022



Drawdown





NCRS Gross of Fees Return and Risk

BNY Mellon Universe: US Public Funds > \$20B; Data as of December 31, 2022

Returns	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
25th Percentile	-5.86	7.76	7.30	8.30	6.35	8.23
Median Percentile	-10.83	6.23	6.65	7.94	6.11	7.85
75th Percentile	-11.93	4.29	5.75	7.14	5.55	7.72
NCRS	-10.06	3.37	4.74	6.48	5.55	6.96
Percentile Rank (1 = highest performance)	44	88	88	82	75	87

Risk	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
25th Percentile	11.94	11.66	10.04	8.12	9.95	9.22
Median Percentile	10.17	10.13	8.78	7.21	9.23	8.57
75th Percentile	8.17	9.11	8.00	6.78	8.38	8.04
NCRS	8.94	8.24	7.23	6.12	7.79	7.30
Percentile Rank (1 = highest risk)	63	94	94	88	88	94

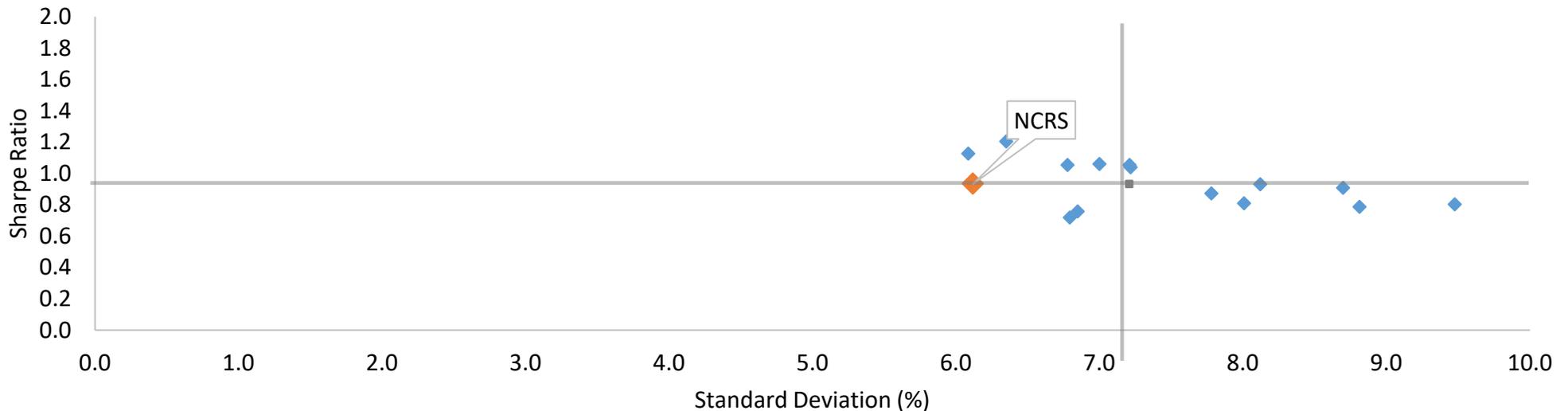
Note: Data shown is gross of fees with the exception of incentive payments, which have been deducted from NAV when applicable.

NCRS Gross of Fees Sharpe Ratio

BNY Mellon Universe: US Public Funds > \$20B; Data as of December 31, 2022

Sharpe	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
25th Percentile	-0.85	0.75	0.75	1.05	0.65	0.84
Median Percentile	-1.08	0.52	0.58	0.93	0.63	0.78
75th Percentile	-1.18	0.39	0.50	0.80	0.55	0.72
NCRS	-1.30	0.36	0.50	0.93	0.65	0.79
Percentile Rank (1 = highest performance)	94	82	69	44	25	40

10 Year Plot: Sharpe Ratio vs. Volatility

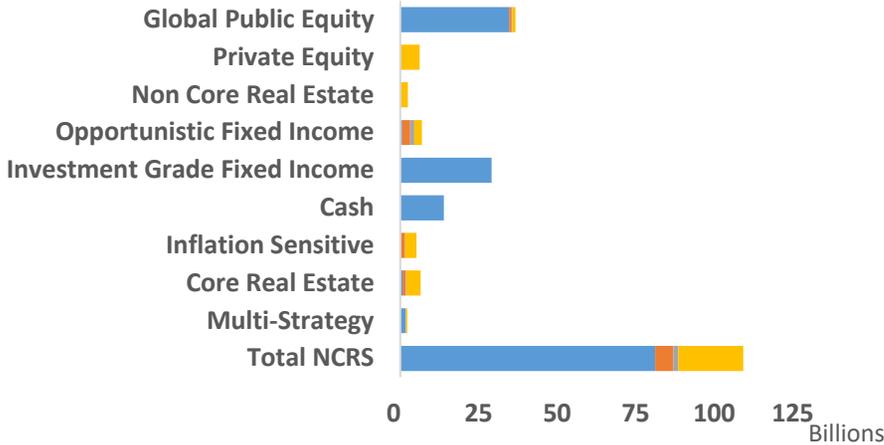


Note: Data shown is gross of fees with the exception of incentive payments, which have been deducted from NAV when applicable.

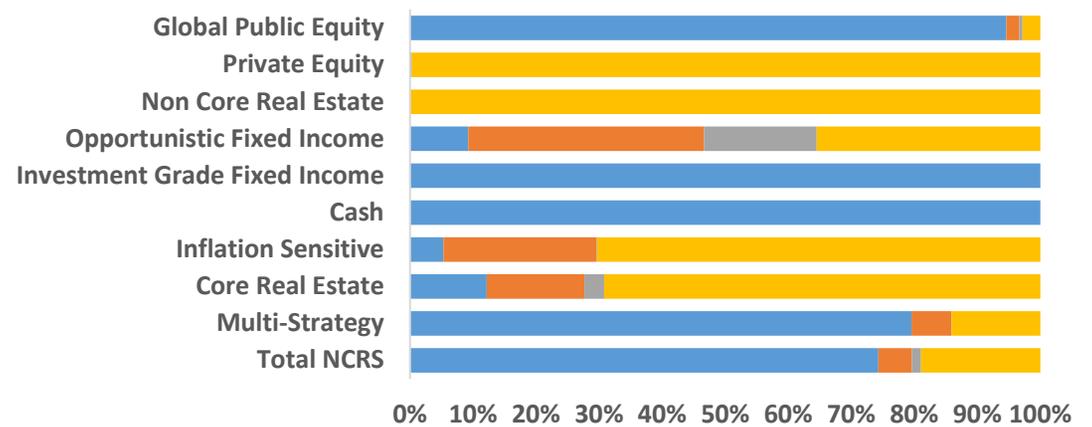
NCRS Liquidity Profile

As of December 31, 2022

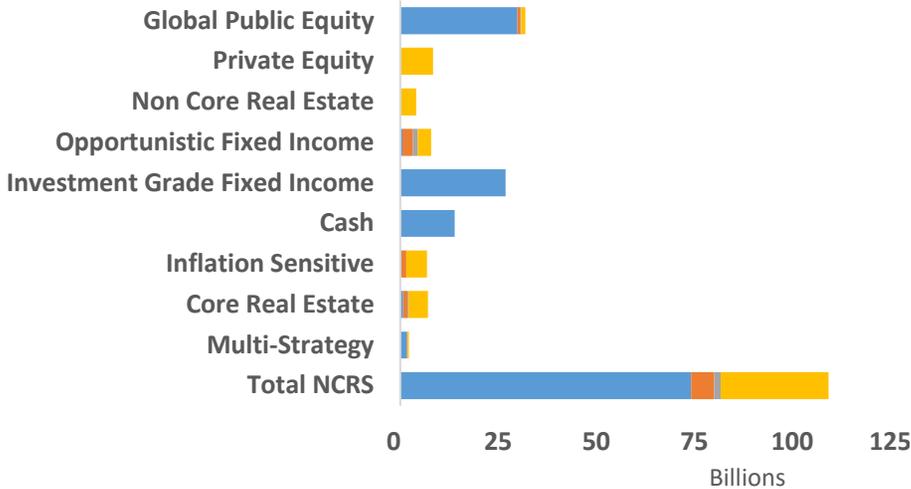
Liquidity Allocation (\$ Market Value)



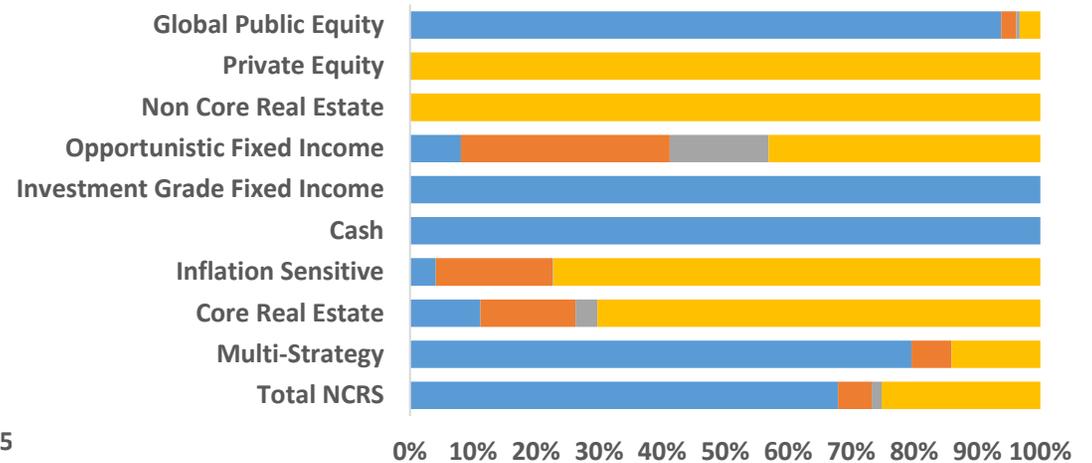
Liquidity Allocation (% Market Value)



Liquidity Allocation (\$ Market Value + Unfunded)



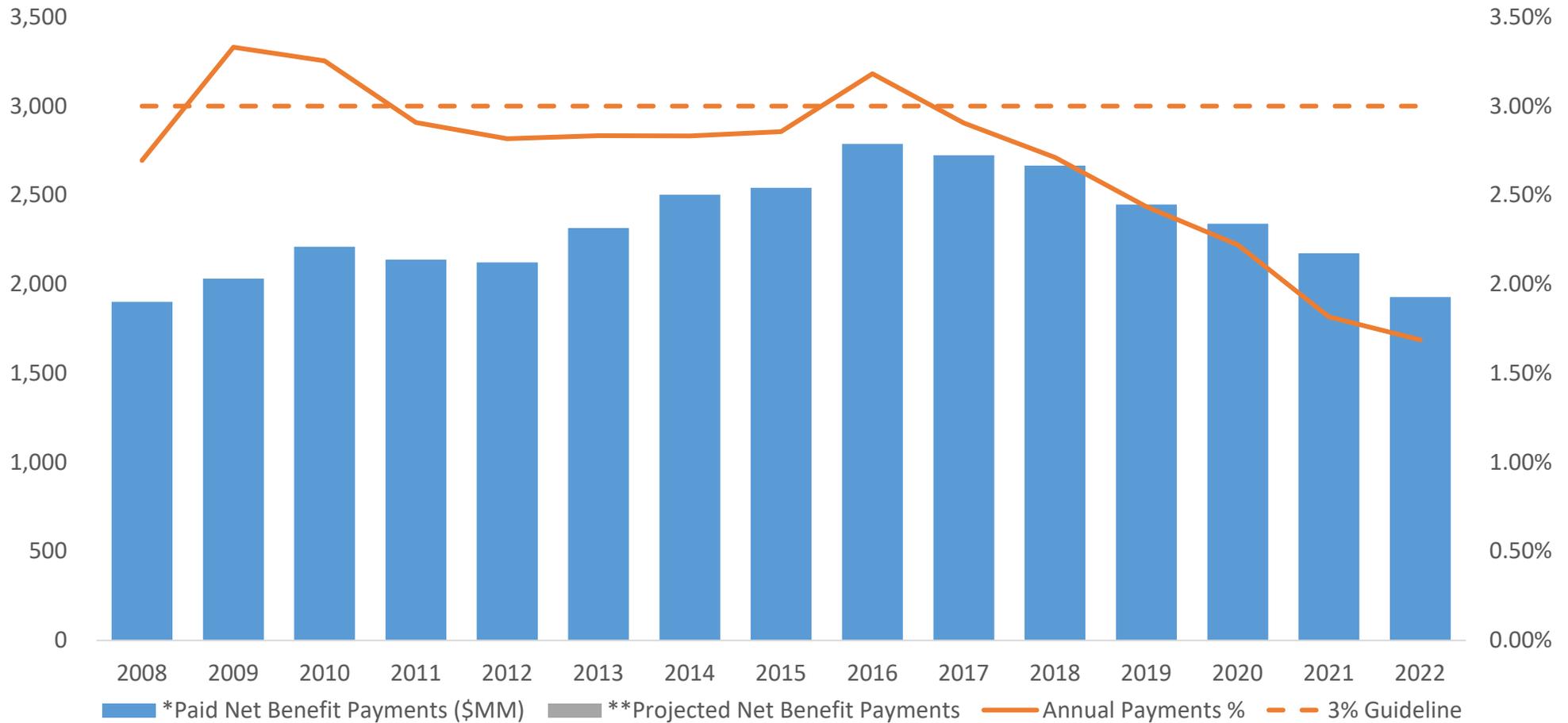
Liquidity Allocation (% Market Value + Unfunded)



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



*Benefit payments exclude transfers from the Retiree Health Premium Fund as of January 1, 2022

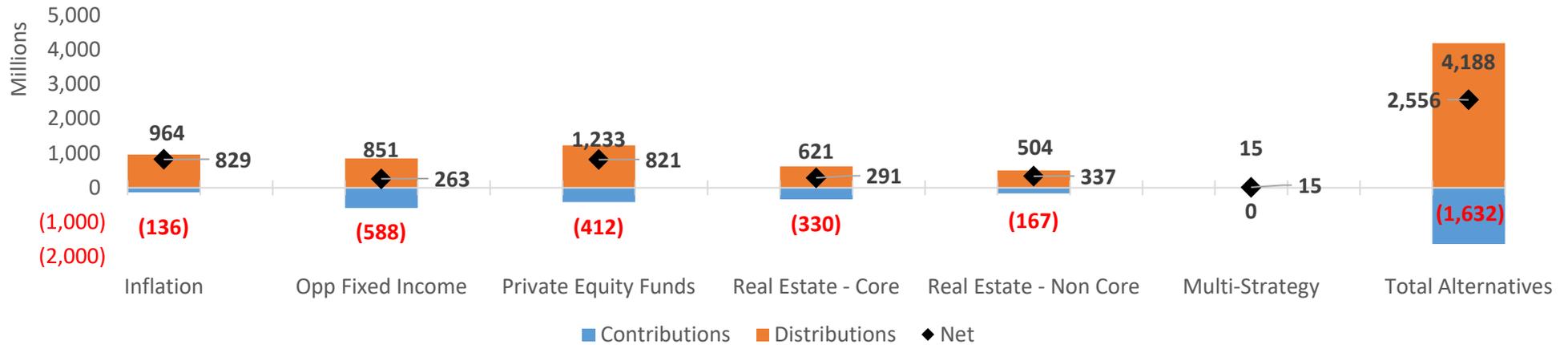
**Projected Net Benefit Payments for remainder of calendar year

NCRS Alternatives Liquidity Profile

Through December 31, 2022

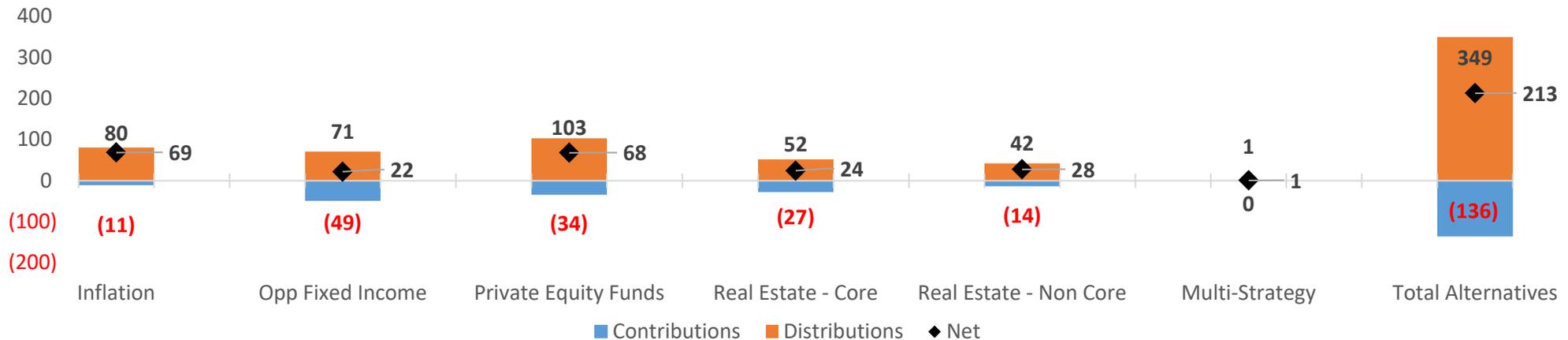
Prior 12-Months

Total Cash Flows by Alternative Asset Class (\$MM)



Prior 12-Months

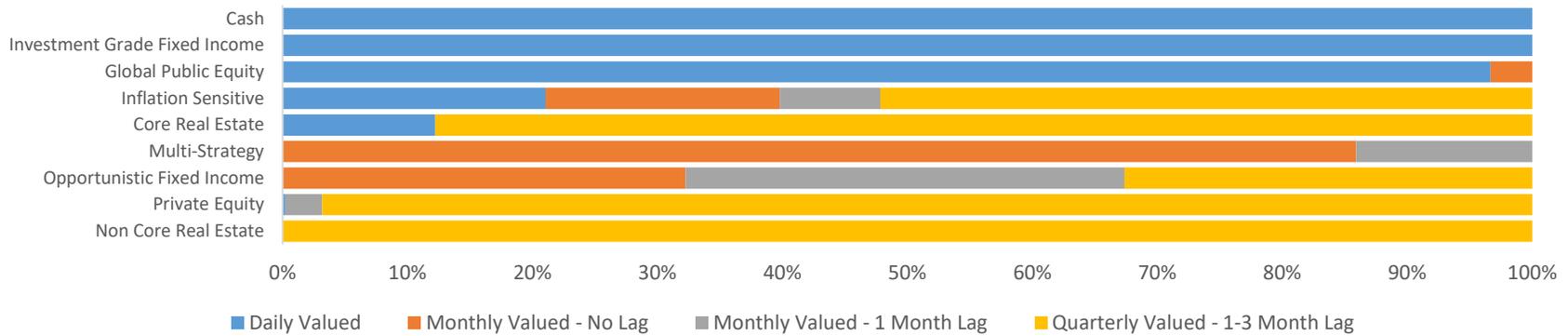
Average Monthly Cash Flows by Alternative Asset Class (\$MM)



NCRS Valuation Lag Profile

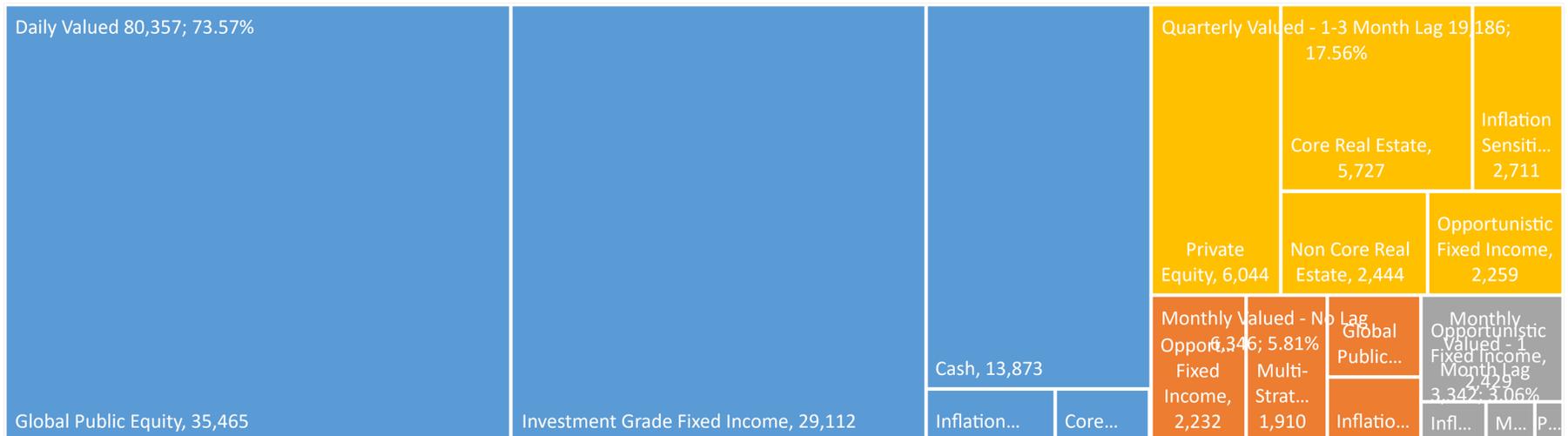
As of December 31, 2022

PORTFOLIO VALUATION LAG



VALUATION LAG BY PORTFOLIO

in Millions





NCRS Asset Class Net of Fees Performance

As of December 31, 2022

	Market Value (\$MM)	1 Year	3 Years	5 Years	10 Years	15 Years	20 Years
Growth	52,301	-15.47%	5.72%	6.66%	8.86%	5.72%	8.11%
Benchmark ¹		-13.11%	5.81%	6.04%	7.92%	5.05%	7.58%
Public Equity	36,696	-20.5%	3.62%	5.24%	8.34%	5.5%	7.92%
Benchmark ²		-18.4%	3.85%	4.9%	7.76%	4.95%	7.37%
Private Equity	6,241	-5.81%	18.34%	16.22%	13.35%	9.42%	9.63%
Benchmark ³		-1.16%	15.38%	13.17%	11.77%	9.16%	12.03%
Non-Core Real Estate	2,444	6.6%	7.73%	9.26%	11.72%	4.8%	7.3%
Benchmark ⁴		7.22%	7.99%	7.73%	8.38%	2.56%	7.26%
Opportunistic Fixed Income	6,920	-1.91%	5.82%	5.35%	5.73%	6.19%	-
Benchmark ⁵		.02%	5.4%	3.54%	3.33%	1.45%	-
Rates & Liquidity	42,985	-8.5%	-1.05%	1.07%	1.73%	3.92%	4.18%
Benchmark ⁶		-14.69%	-3.15%	-.08%	1.23%	3.37%	3.76%
IG Fixed Income	29,112	-12.74%	-2.16%	.54%	1.52%	3.78%	4.07%
Benchmark ⁷		-15.82%	-3.51%	-.27%	1.17%	3.33%	3.73%
Cash	13,873	1.22%	.81%	1.31%	-	-	-
Benchmark ⁸		1.57%	.69%	1.2%	.72%	-	-
Inflation Sensitive & Diversifiers	11,748	7.41%	6.09%	6.15%	5.13%	2.58%	4.58%
Benchmark ⁹		3.49%	6.13%	5.2%	4.57%	1.41%	4.23%
Inflation Sensitive	5,223	9.43%	5.74%	5.23%	2.86%	.84%	3.65%
Benchmark ¹⁰		2.63%	4.55%	3.57%	1.35%	1.55%	4.17%
Core Real Estate	6,525	5.76%	6.54%	7.19%	8.26%	5.4%	6.74%
Benchmark ¹¹		4.46%	7.96%	7.12%	8.57%	5.36%	7.26%
Multi-Strategy	2,223	-4.48%	-.45%	1.52%	5.13%	4.28%	5.17%
Benchmark ¹²		-6.95%	-.73%	.89%	4.43%	3.33%	6.02%
Total Pension Plan	109,257	-10.39%	3.05%	4.37%	5.98%	5.09%	6.57%
Implementation Benchmark ¹³		-11.87%	3.18%	4.18%	5.50%	4.66%	6.24%
Long-Term Policy Benchmark ¹⁴		-16.07%	2.15%	3.58%	5.06%	4.29%	6.53%

See slide 44 for benchmark descriptions



NCRS Calendar Year Asset Class Return Diversification

As of December 31, 2022

2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
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 48.03%	Inflation Sensitive 9.43%
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%	Opportunistic Fixed Income 17.46%	Non-Core Real Estate 6.6%
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%	Non-Core Real Estate 16.75%	Core Real Estate 5.76%
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%	Public Equity 14.51%	Pension Cash 1.22%
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%	Core Real Estate 14.51%	Opportunistic Fixed Income (1.91%)
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%	Inflation Sensitive 11.97%	Multi-Strategy (4.48%)
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%	Total Pension 9.71%	Private Equity (5.81%)
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%)	Multi-Strategy 7.74%	Total Pension (10.39%)
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%)	Pension Cash 0.15%	IG Fixed Income & Cash (12.74%)
	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%)	IG Fixed Income & Cash (1.84%)	Public Equity (20.5%)



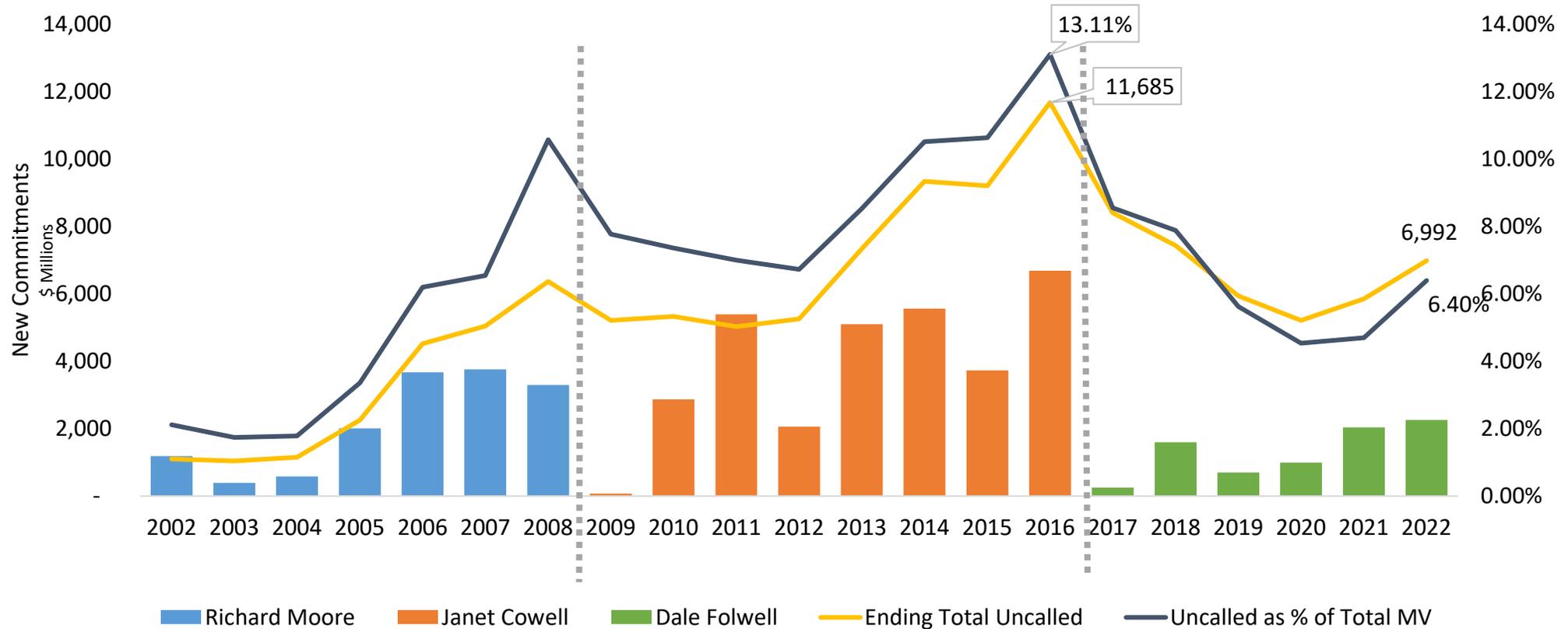
New, Incremental, & Unfunded Investment Commitments

Since November 9th IAC Meeting As of December 31, 2022

<u>Fund Name</u>	<u>Firm Name</u>	<u>New or Incremental Commitment (\$MM)</u>	<u>Closing Date</u>
Public Equity			
Private Equity			
Non-Core Real Estate			
RXR NC Development Partners 1	RXR Realty	200	12/28
Opportunistic Fixed Income			
Centerbridge Special Credit Partners IV Co-Invest	Centerbridge Capital Partners	300	1/12
Inflation Sensitive			
None			
Core Real Estate			
None			
Multi-Strategy			
None			

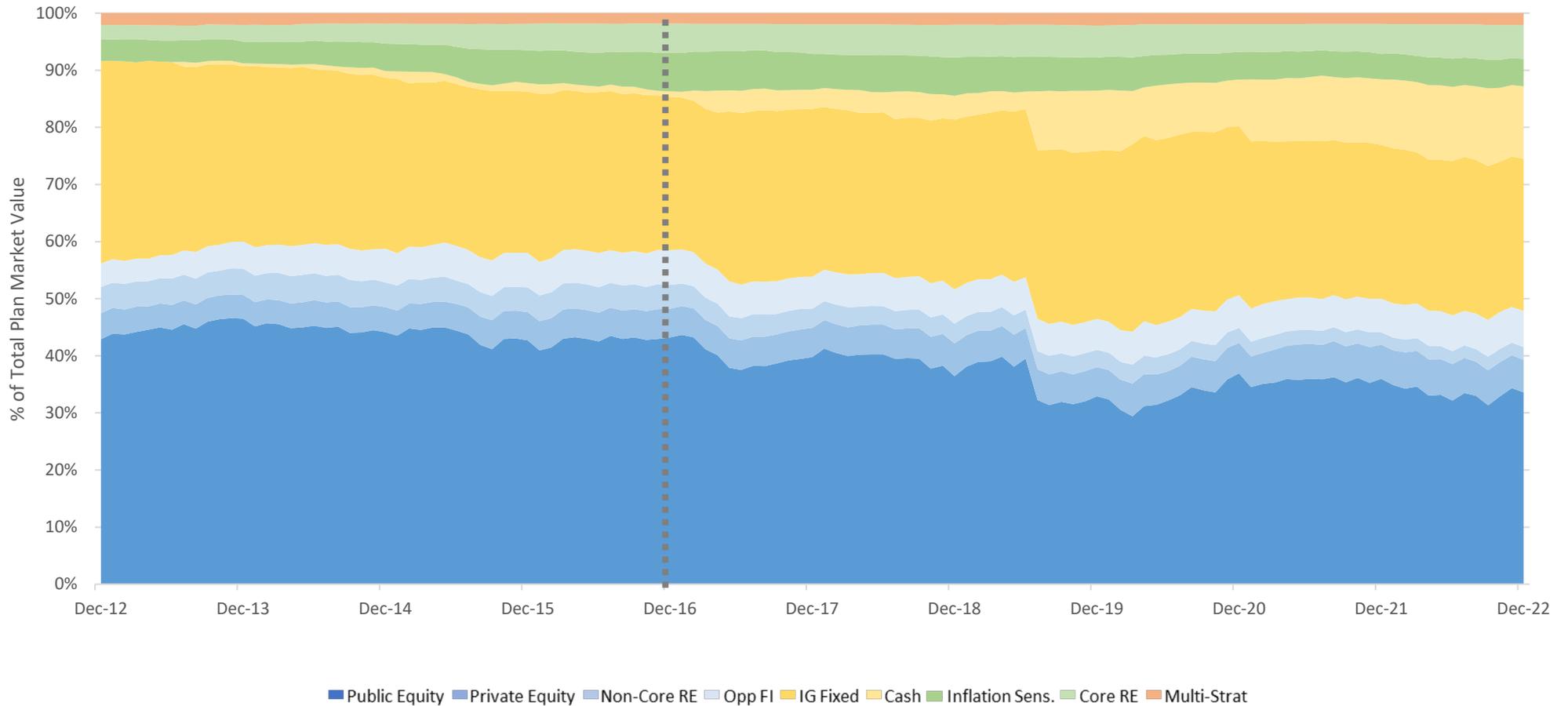
<u>Asset Class</u>	<u>Unfunded Commitments (\$MM)</u>
Public Equity	0
Private Equity	2,161
Non-Core Real Estate	1,676
Opportunistic Fixed Income	965
Inflation Sensitive	1,601
Core Real Estate	589
Multi Strategy	0
Total	6,992

New and Total Unfunded Private Asset Class Commitments By Calendar Year of Closing through December 31, 2022





Asset Allocation History as of December 31, 2022





Exited Investments

Since November 9th IAC Meeting

<u>Fund Name</u>	<u>Redemption Amount (\$MM)</u>	<u>Redemption Effective</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		



Top 20 Investment Managers

As of December 31, 2022

	Manager	Market Value (\$)	Uncalled (\$)	% MV	% MV Cum.
1	Internal Fixed Income	42,985,230,732	-	39.3%	39.3%
2	Internal Equity	16,437,170,905	-	15.0%	54.4%
3	BlackRock, Inc.	8,282,820,542	-	7.6%	62.0%
4	Rockwood Capital	2,940,373,589	144,491,366	2.7%	64.7%
5	Baillie Gifford	2,838,388,599	-	2.6%	67.3%
6	Wellington Management	2,810,879,389	-	2.6%	69.8%
7	Blackstone Group	2,698,021,443	1,178,486,004	2.5%	72.3%
8	Mondrian Investment Partners Limited	2,568,620,104	-	2.4%	74.7%
9	Walter Scott & Partners	2,186,442,032	-	2.0%	76.7%
10	Gladius Capital Management LP	1,909,638,370	-	1.7%	78.4%
11	Landmark Partners, Inc.	1,725,883,304	1,961,132,197	1.6%	80.0%
12	Angelo, Gordon & Co.	1,630,978,402	30,704,254	1.5%	81.5%
13	ValueAct Capital	1,228,626,965	-	1.1%	82.6%
14	LBA Realty	1,129,867,424	196,039,604	1.0%	83.6%
15	HPS Investment Partners, LLC	1,084,811,440	56,339,715	1.0%	84.6%
16	DoubleLine Capital LP	816,736,487	-	0.7%	85.4%
17	Earnest Partners	760,798,187	-	0.7%	86.1%
18	Rockpoint Group, LLC	753,704,788	83,864,970	0.7%	86.8%
19	Campbell Group LLC, The	712,159,180	-	0.7%	87.4%
20	Monarch Alternative Capital	689,700,000	-	0.6%	88.0%
	82 Remaining Managers*	13,066,336,479	3,341,333,446	12.0%	100.0%
	Total	109,257,188,359	6,992,391,556	100.0%	100.0%

*Manager count consists of all manager accounts with a market value greater than \$5.0 million and new, not yet funded, accounts.



Appendix



NCRS Public Equity Net of Fees Performance

As of December 31, 2022

	Market Value (\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Public Equity	\$36,696	10.10	(20.50)	3.62	5.24	8.34
Benchmark ²		9.84	(18.40)	3.85	4.90	7.76
Domestic Portfolio	\$20,099	7.19	(19.99)	6.96	9.00	12.21
Russell 3000		7.18	(19.21)	7.07	8.79	12.13
Non-US Portfolio	\$16,594	13.85	(21.01)	0.03	1.46	4.76
Custom Benchmark		14.15	(16.58)	0.20	0.85	3.98

Non-US Custom Benchmark: As of October 2010, the Non U.S. Benchmark is the MSCI ACWI ex US IMI Net Index. Prior to October 2010, the Non-U.S. Benchmark was a blend of MSCI EAFE and MSCI Emerging Markets at policy weights.

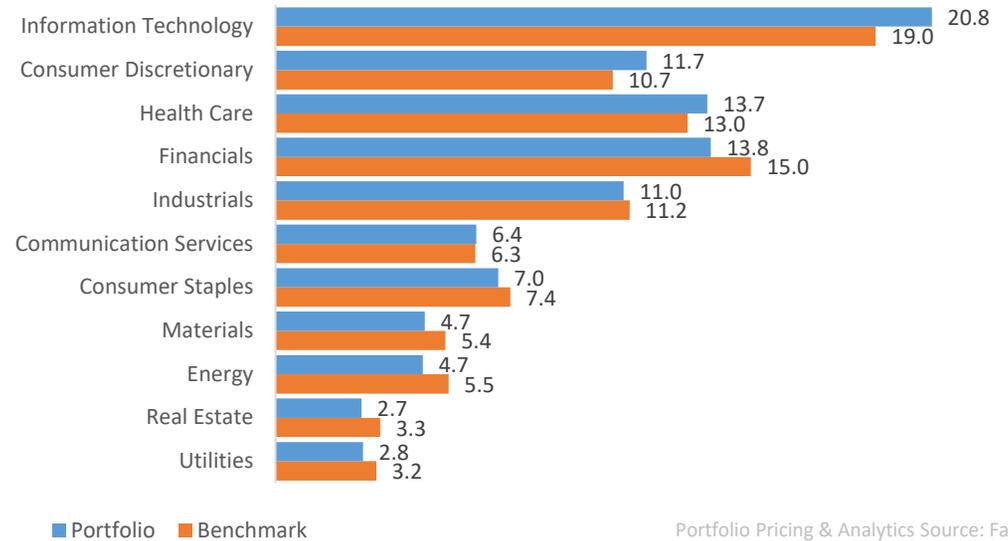


NCRS Public Equity Portfolio Characteristics

As of December 31, 2022

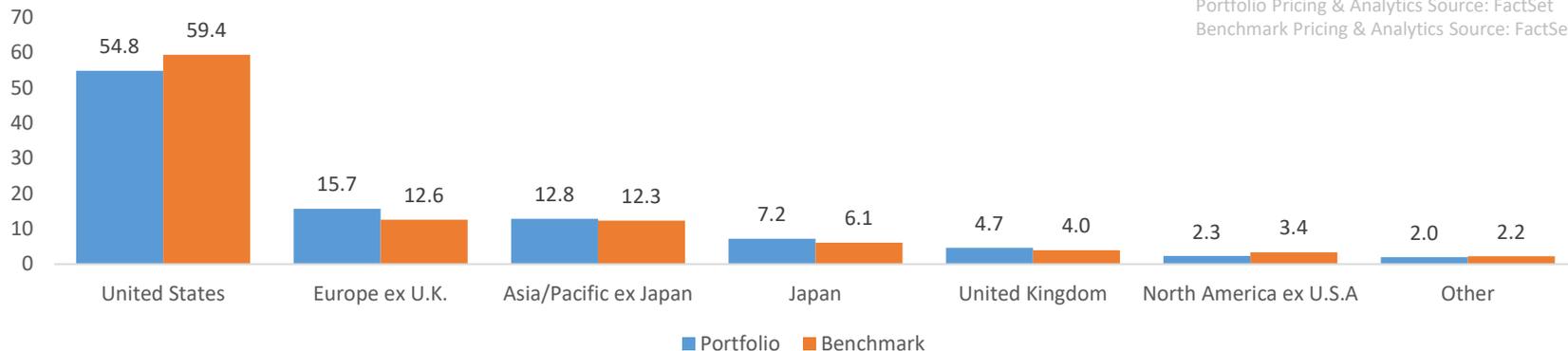
Portfolio Characteristics		
	Portfolio	MSCI ACWI IMI
Price/Earnings	16.2	14.6
Dividend Yield	2.0	2.3
Price/Book	2.5	2.3
Market Capitalization	239,450	240,401
Return On Equity	20.6	20.7

@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

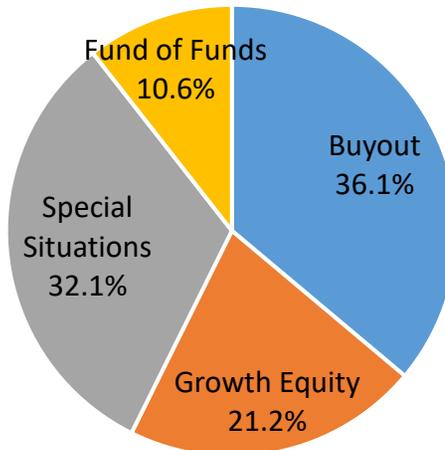
As of December 31, 2022

	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Private Equity	\$6,241	(1.38)	(5.81)	18.34	16.22	13.35
Benchmark ³		(1.24)	(1.16)	15.38	13.17	11.77
Buyout	\$2,248	1.66	5.62	20.52	17.74	13.48
Growth	\$1,322	0.85	(25.96)	15.24	15.26	14.49
Special Situations	\$1,997	(5.36)	3.07	17.98	14.40	10.15
Fund of Funds	\$658	(2.96)	(10.22)	18.29	16.23	14.49

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>2021</u>	<u>2022</u>	<u>Total</u>
NCRS	12.02	6.82	5.11	3.42	9.47	10.38	8.65	19.89	9.19	13.97	12.91	14.61	20.12	23.62	21.87	20.16	N/A	-11.78	-4.96	0.00	10.25
# of Funds	28	3	11	21	15	17	3	1	6	6	9	4	9	6	7	3	N/A	1	3	2	155

Strategy Allocation (Based on Valuation)



*Private Equity returns include a stock distribution account, in the amount of roughly \$15 million, which does not fall under any specific sub-section.



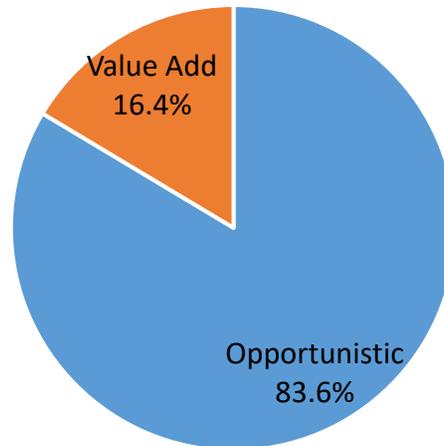
NCRS Non-Core Real Estate Portfolio

As of December 31, 2022

Net of Fees Performance (%)						
	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Non-Core Real Estate	\$2,444	(2.15)	6.60	7.73	9.26	11.72
Benchmark ⁴		(0.87)	7.22	7.99	7.73	8.38
Opportunistic	\$2,043	(2.07)	7.52	8.56	9.86	11.80
Value Add	\$401	(2.50)	1.78	4.90	7.26	11.02

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>2021</u>	<u>2022</u>	<u>Total</u>
NCRS	8.91	15.69	-1.47	3.08	2.15	15.36	N/A	15.90	17.42	15.51	12.34	4.47	8.95	11.87	N/A	13.98	29.71	N/A	N/A	-2.24	6.75
# of Funds	16	3	15	13	8	6	N/A	6	7	5	7	7	6	7	N/A	1	1	N/A	N/A	4	112

Strategy Allocation (Based on Valuation)



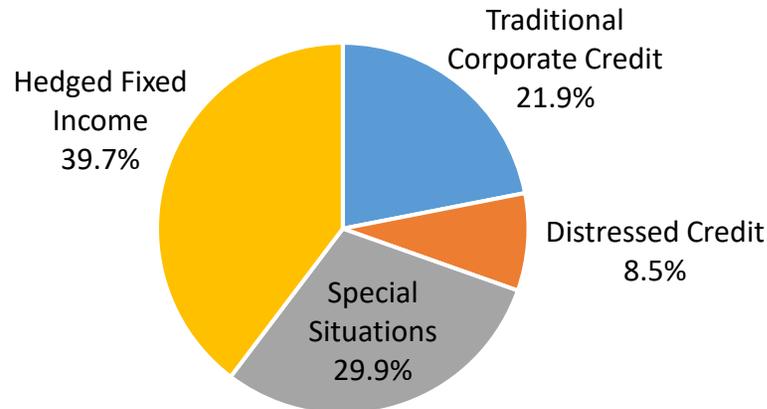
NCRS Opportunistic Fixed Income Portfolio

As of December 31, 2022

Net of Fees Performance (%)						
	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Opportunistic Fixed Income	\$6,920	(0.58)	(1.91)	5.82	5.35	5.73
Benchmark ⁵		4.75	0.02	5.40	3.54	3.33
Traditional Corporate Credit	\$1,518	(1.78)	(6.65)	4.13	4.29	5.44
Distressed Credit	\$587	(1.03)	(2.01)	11.31	8.31	9.16
Special Situations	\$2,070	1.24	4.17	6.17	7.27	10.45
Hedged Fixed Income	\$2,746	(1.16)	(3.37)	6.06	4.51	4.27

		IRR by Vintage Year																		
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
NCRS		2.87	N/A	16.92	7.13	22.42	5.00	4.92	3.59	4.96	3.41	8.40	6.88	10.80	N/A	8.38	14.94	11.83	0.20	5.91
# of Funds		1	N/A	1	3	1	4	9	2	7	3	1	8	2	N/A	1	2	1	2	48

Strategy Allocation (Based on Valuation)





NCRS Rates & Liquidity Portfolio

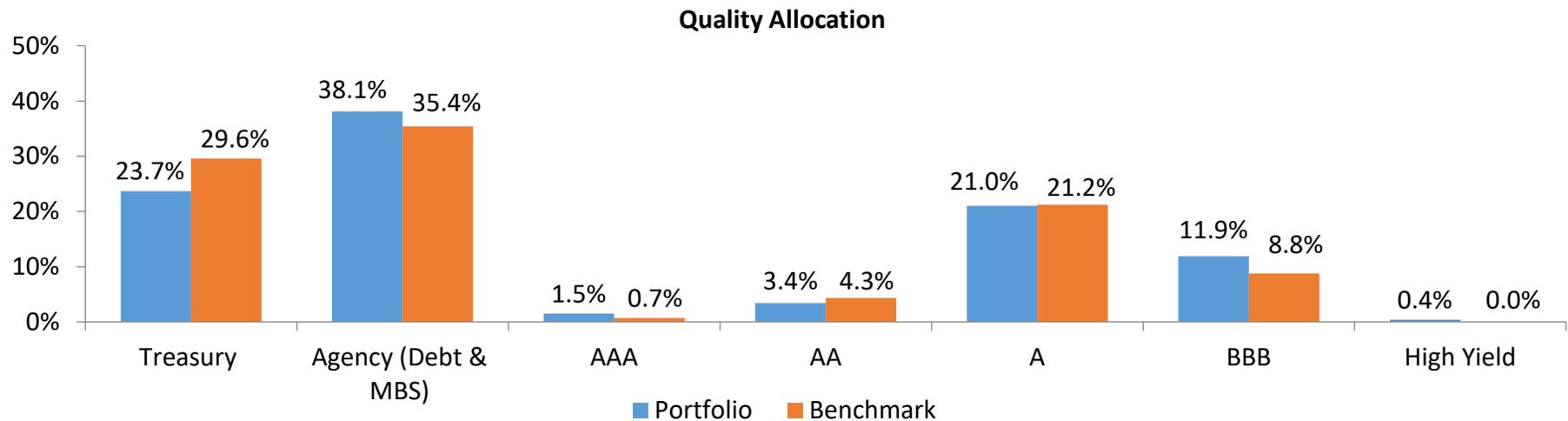
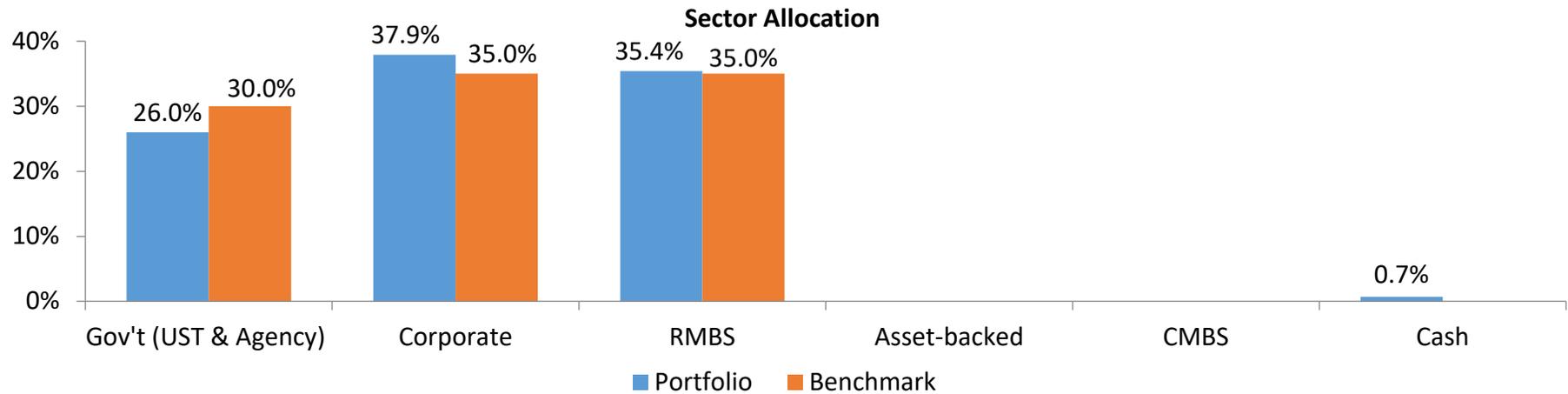
As of December 31, 2022

	Net of Fees Performance (%)					
	Market Value	3 Month	1 Year	3 Years	5 Years	10 Years
Rates & Liquidity	\$42,985	1.74	(8.50)	(1.05)	1.07	1.73
Benchmark ⁶		2.05	(14.69)	(3.15)	(0.08)	1.23
IG Fixed Income	\$29,112	2.26	(12.74)	(2.16)	0.54	1.52
Core Fixed Income	\$25,417	2.43	(14.47)	(2.65)	0.37	1.51
IG Fixed Income Cash	\$2,815	0.47	0.90	0.75	1.19	-
IG Short Credit	\$880	-	-	-	-	-
Pension Cash	\$13,873	0.68	1.22	0.81	1.31	-

Core Fixed Income Portfolio Characteristics			
	<u>Avg. Coupon</u>	<u>Yield to Worst</u>	<u>Effective Duration</u>
Government (Treasury & Agency)	3.6%	4.1%	8.2
Corporate	4.1%	5.3%	8.3
Mortgage	3.1%	4.6%	5.6
Total	3.6%	4.8%	7.3

NCRS Core Fixed Income Portfolio Characteristics

As of December 31, 2022





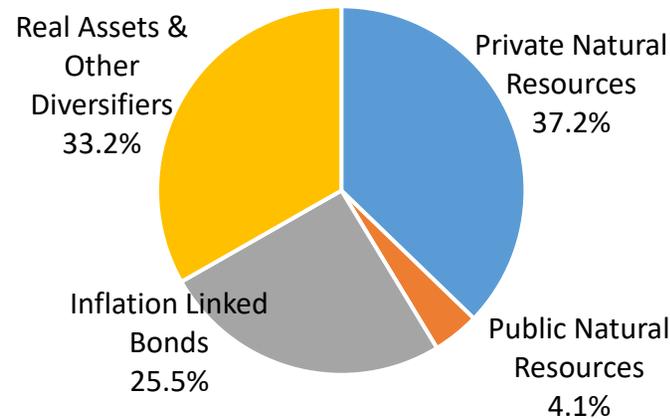
NCRS Inflation Sensitive Portfolio

As of December 31, 2022

Net of Fees Performance (%)						
	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Inflation Sensitive	\$5,223	1.55	9.43	5.74	5.23	2.86
Benchmark ¹⁰		1.16	2.63	4.55	3.57	1.35
Private Natural Resources	\$1,944	0.93	12.27	5.67	3.36	3.31
Public Natural Resources	\$214	1.26	15.99	12.42	6.10	(1.23)
Inflation Linked Bonds	\$1,329	1.00	(4.39)	1.03	2.18	-
Real Assets & Other Diversifiers	\$1,736	2.73	16.31	8.81	9.51	8.74

IRR by Vintage Year																		
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
NCRS	0.95	-7.73	-5.67	N/A	-5.51	-5.70	5.55	7.22	7.42	8.56	2.57	3.80	25.93	27.21	N/A	52.53	N/A	2.24
# of Funds	3	2	2	N/A	3	9	7	11	12	4	3	1	3	2	N/A	5	N/A	67

Strategy Allocation (Based on Valuation)





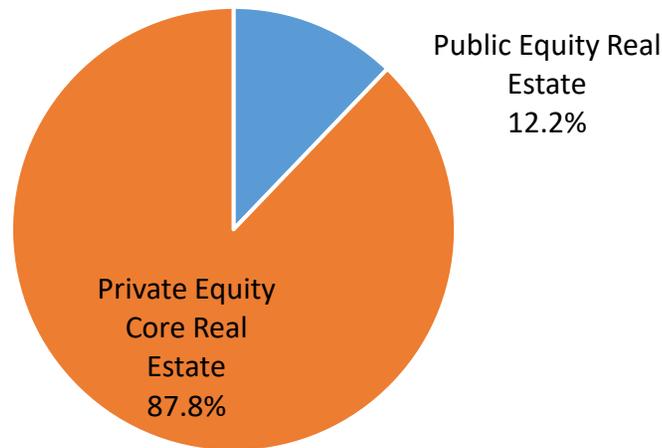
NCRS Core Real Estate Portfolio

As of December 31, 2022

Net of Fees Performance (%)						
	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Core Real Estate	\$6,525	0.30	5.76	6.54	7.19	8.26
Benchmark ¹¹		1.79	4.46	7.96	7.12	8.57
Public Equity Real Estate	\$794	5.38	(28.00)	(4.50)	0.52	4.50
Private Equity Core Real Estate	\$5,731	(0.30)	12.37	8.34	8.25	8.96

IRR by Vintage Year																					
	Pre-2004	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
NCRS	7.51	9.74	-8.33	4.26	1.39	8.90	N/A	23.62	N/A	N/A	5.08	6.95	6.80	6.94	N/A	15.77	N/A	N/A	18.83	N/A	7.18
# 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	3	N/A	37

Strategy Allocation (Based on Valuation)



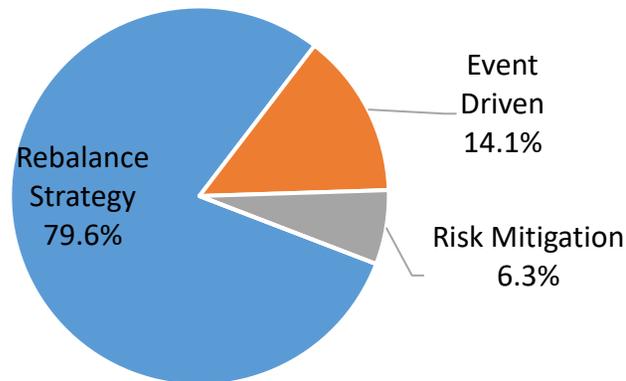


NCRS Multi-Strategy Portfolio

As of December 31, 2022

	Net of Fees Performance (%)					
	(\$MM)	3 Month	1 Year	3 Years	5 Years	10 Years
Multi-Strategy	\$2,223	3.52	(4.48)	(0.45)	1.52	5.13
Benchmark ¹²		2.69	(6.95)	(0.73)	0.89	4.43
Rebalance Strategy	\$1,769	4.75	(5.17)	0.13	2.66	6.36
Event Driven	\$313	(2.06)	(4.31)	4.96	3.94	-
Risk Mitigation	\$141	1.37	4.15	4.96	(0.77)	-
Volatility Trading	-	-	-	-	-	-

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: Effective 7/1/2022 at 45% Buyout, 25% 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% Custom NCREIF ODCE Net Index 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: 55% Growth Benchmark, 33% Rates & Liquidity Benchmark, 11% Inflation Sensitive & Diversifiers Benchmark, and 1% Multi-Strategy Benchmark.
14. The Long-Term Policy Benchmark is comprised of 56% MSCI ACWI IMI Net, 28% BOAML 5+ Years U.S. Treasury Index, 6.5% Bloomberg Commodity Index, 5% BOAML 3 Month Treasury Bill Index, and 4.5% 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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