

Wilshire



Wilshire Advisors

Monthly Performance Summary

As of July 31, 2022

IMRF Performance Summary

- The Illinois Municipal Retirement Fund (“IMRF”) ended July 2022 with a market value of \$50.3 billion, up for the month by approximately \$1.88 billion. IMRF returned 4.26% during the month, outperforming the Total Fund Benchmark, which returned 3.80%. Global financial markets rose in July. While the Federal Reserve hiked interest rates by an expected 75 basis points, a strong U.S. jobs report exceeded expectations.
- The U.S. Equity market rebounded strongly in July. The U.S. Equity Portfolio underperformed the benchmark during the month, returning 8.29% versus 9.05%. In aggregate, investment manager performance in Large Cap Value was the largest contributor to relative underperformance.
- Developed International Equity markets were up in July, while Emerging Markets fell. The U.S. dollar strengthened against foreign economies. The International Equity Portfolio outperformed the benchmark during July, returning 3.64% versus 3.42%. Investment manager performance in Large Cap Growth was the largest contributor to relative outperformance.
- U.S. Treasury yields fell in July as credit spreads tightened and bond prices rose. The Fixed Income Portfolio underperformed the benchmark during the month, returning 2.66% versus 2.67%. Investment manager performance in High Yield was the largest contributor to relative underperformance.
- As of July month-end, all underlying asset class allocations in the Portfolio are within the stated four percentage point rebalancing range as outlined by the current Statement of Investment Policy.

Performance referenced above is Net of Fees.

Market Dashboard

Returns though Friday July 29, 2022

Portfolio Allocations	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
Global 60/40	5.17	(5.68)	0.33	5.17	(11.36)	(11.95)	(10.08)	5.10	5.51
Wilshire Risk Parity (12%)	6.56	(7.41)	(0.42)	6.56	(12.37)	(11.31)	(10.33)	3.44	6.72

Strategic Allocation Themes *	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
Growth ¹	6.98	(8.43)	0.12	6.98	(15.66)	(14.61)	(11.15)	8.13	7.88
Defensive Growth ²	4.08	(4.95)	(1.95)	4.08	(11.86)	(11.90)	(9.62)	6.73	8.01
Diversified Credit ³	4.02	(5.81)	(0.26)	4.02	(9.68)	(12.02)	(11.87)	(0.82)	1.48
Real Assets ⁴	6.38	(8.57)	(1.52)	6.38	(11.39)	0.20	5.03	10.44	7.98
Defensive ⁵	2.44	(1.57)	0.64	2.44	(4.69)	(8.16)	(8.98)	(0.17)	1.28

Major Asset Classes	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	9.55	(8.36)	(0.15)	9.55	(16.77)	(13.34)	(7.12)	12.57	12.44
MSCI ACWI-ex-USA (Net)	3.42	(8.60)	0.72	3.42	(13.73)	(15.63)	(16.11)	2.64	2.49
Bloomberg U.S. Aggregate	2.44	(1.57)	0.64	2.44	(4.69)	(8.16)	(8.98)	(0.17)	1.28
Bloomberg U.S. Corporate High Yield	5.90	(6.73)	0.25	5.90	(9.83)	(9.12)	(8.00)	1.94	3.06
Wilshire Global Real Estate Securities	8.06	(8.66)	(5.83)	8.06	(18.04)	(14.08)	(6.22)	3.66	4.96
Bloomberg Commodity	4.26	(10.77)	1.52	4.26	(5.66)	23.49	25.62	16.19	8.80

Source: Bloomberg, All returns are in USD

*Strategic Allocations are comprised of the following asset mixes (rebalanced monthly)

¹ Growth : 100% Global Equity

² Defensive Growth : 60% Low Vol Global Equity, 40% US Convertibles

³ Diversified Credit : 42.5% U.S. High Yield, 42.5% EMD, 15% Banks Loans

⁴ Real Assets : 43% Global REITS/GLI, 33% Commodities, 48% TIPS, 9% Gold, -31% Cash

⁵ Defensive : 100% US Core Bonds

Market Returns

Returns though Friday July 29, 2022

US Equity	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	9.55	(8.36)	(0.15)	9.55	(16.77)	(13.34)	(7.12)	12.57	12.44
Standard & Poor's 500	9.22	(8.25)	0.18	9.22	(16.10)	(12.58)	(5.15)	12.85	12.81
Wilshire 4500 Completion	10.39	(9.56)	(1.55)	10.39	(19.88)	(18.18)	(18.17)	9.63	9.57
Wilshire US Large Cap	9.38	(8.43)	(0.36)	9.38	(17.11)	(14.15)	(8.29)	11.04	10.92
Wilshire US Large-Cap Growth	13.05	(8.63)	(2.19)	13.05	(21.94)	(18.88)	(11.87)	14.59	14.39
Wilshire US Large-Cap Value	5.81	(8.48)	1.69	5.81	(11.83)	(7.93)	(3.33)	7.23	7.22
Wilshire US Small Cap	10.05	(9.37)	0.20	10.05	(16.97)	(14.81)	(13.55)	6.97	6.15
Wilshire US Small-Cap Growth	11.54	(8.92)	(0.44)	11.54	(18.98)	(19.08)	(19.71)	6.20	7.39
Wilshire US Small-Cap Value	9.43	(10.41)	0.82	9.43	(16.11)	(10.27)	(6.35)	7.17	4.65
Non-US Equity	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
MSCI ACWI-ex-USA (Net)	3.42	(8.60)	0.72	3.42	(13.73)	(15.63)	(16.11)	2.64	2.49
MSCI EAFE (Net)	4.98	(9.28)	0.75	4.98	(14.51)	(15.56)	(15.08)	2.86	2.67
MSCI EM (Net)	(0.25)	(6.65)	0.44	(0.25)	(11.45)	(17.83)	(21.17)	0.62	1.02
MSCI ACWI-ex-US Small cap (Net)	5.78	(11.04)	(0.92)	5.78	(17.55)	(18.47)	(19.20)	4.94	3.05
Global Equity	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
MSCI ACWI (Net)	6.98	(8.43)	0.12	6.98	(15.66)	(14.61)	(11.15)	8.13	7.88
MSCI ACWI Minimum Volatility (Net)	3.01	(4.14)	(1.10)	3.01	(9.27)	(9.36)	(5.37)	3.48	6.03
Fixed Income	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
Bloomberg U.S. Aggregate	2.44	(1.57)	0.64	2.44	(4.69)	(8.16)	(8.98)	(0.17)	1.28
Bloomberg Long Term Treasury	2.67	(1.47)	(1.89)	2.67	(11.93)	(19.15)	(18.83)	(1.85)	1.15
Bloomberg U.S. TIPS	4.35	(3.16)	(0.99)	4.35	(6.08)	(4.96)	(3.44)	4.48	3.99
Bloomberg U.S. Corporate High Yield	5.90	(6.73)	0.25	5.90	(9.83)	(9.12)	(8.00)	1.94	3.06
Credit Suisse Leveraged Loan	1.87	(2.06)	(2.51)	1.87	(4.35)	(2.66)	(0.87)	2.41	3.21
ICE BofA US Convertible Index	5.69	(6.18)	(3.23)	5.69	(15.65)	(15.67)	(15.82)	11.34	10.73
JPM EMBI Global Diversified	2.89	(6.21)	0.03	2.89	(11.43)	(18.01)	(19.22)	(4.72)	(0.77)
Real Assets	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
Wilshire Global Real Estate Securities	8.06	(8.66)	(5.83)	8.06	(18.04)	(14.08)	(6.22)	3.66	4.96
FTSE Global Core Infrastructure 50/50	4.73	(6.08)	2.41	4.73	(7.32)	0.84	6.50	6.30	7.14
Alerian Midstream Energy	9.99	(12.21)	6.36	9.99	(8.64)	24.56	25.53	10.57	6.65
Bloomberg Commodity	4.26	(10.77)	1.52	4.26	(5.66)	23.49	25.62	16.19	8.80
Gold	(2.29)	(1.64)	(3.14)	(2.29)	(6.72)	(3.46)	(3.40)	7.37	6.82
Bitcoin	27.87	(41.07)	(17.56)	27.87	(59.07)	(48.31)	(39.70)	36.03	54.11

Source: Bloomberg, All returns are in USD

Factor/Relative Returns

Returns through Friday July 29, 2022

Asset Class Differentials	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
Stocks (ACWI) > Bonds (BB US Aggregate)	4.54	(6.86)	(0.53)	4.54	(10.97)	(6.45)	(2.17)	8.30	6.60
Stocks (ACWI) > Mkt Alts (Equity Hedged)	3.98	(4.28)	(0.13)	3.98	(10.36)	(9.83)	(8.44)	4.13	4.89
Mkt Alts (Relative Value) > Bonds (BB US Aggregate)	(1.03)	(0.67)	(1.08)	(1.03)	0.60	2.40	2.48	0.12	(0.68)
Equity & Real Assets Differentials	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
US Small > Large	0.64	(0.90)	0.37	0.64	(0.00)	(0.67)	(5.35)	(4.48)	(5.05)
US Value > Growth	(6.84)	0.19	4.00	(6.84)	10.29	11.94	10.37	(5.21)	(5.01)
ACWI-ex-US > US	(6.12)	(0.24)	0.87	(6.12)	3.05	(2.29)	(8.99)	(9.93)	(9.94)
EM > EAFE	(5.23)	2.63	(0.31)	(5.23)	3.06	(2.27)	(6.09)	(2.24)	(1.65)
ACWI-ex-US Currency Impact	(0.17)	(2.59)	0.86	(0.17)	(5.40)	(6.89)	(9.40)	(2.34)	(2.30)
EAFE Currency Impact	(0.21)	(2.93)	0.95	(0.21)	(6.68)	(8.89)	(12.34)	(2.70)	(2.50)
EM Currency Impact	(0.36)	(2.09)	0.61	(0.36)	(3.38)	(4.24)	(5.26)	(2.70)	(2.45)
Global Low Volatility > ACWI	(3.97)	4.29	(1.22)	(3.97)	6.39	5.24	5.78	(4.65)	(1.85)
Global RE > ACWI	1.08	(0.23)	(5.94)	1.08	(2.38)	0.53	4.93	(4.47)	(2.91)
Commodities > Global RE	(3.80)	(2.11)	7.35	(3.80)	12.38	37.56	31.85	12.53	3.83
Commodities > TIPS	(0.09)	(7.61)	2.52	(0.09)	0.42	28.44	29.06	11.71	4.81
Gold > Commodities	(6.55)	9.14	(4.67)	(6.55)	(1.06)	(26.94)	(29.02)	(8.82)	(1.97)
Fixed Income Differentials	MTD	JUN	MAY	QTD	Q2 2022	YTD	1 Year	3 Year	5 Year
Duration (US Core > US Core 1-3 Years)	1.91	(0.88)	0.03	1.91	(4.06)	(5.55)	(5.77)	(0.56)	0.20
IG Credit > Treasury	1.64	(1.92)	0.75	1.64	(3.48)	(3.92)	(3.94)	0.21	0.76
High Yield > IG Credit	2.67	(3.93)	(0.69)	2.67	(2.57)	2.49	4.46	2.01	1.28
High Yield > Loans	3.79	(4.57)	2.79	3.79	(5.37)	(6.58)	(7.29)	(0.60)	(0.16)
TIPS > Treasury	1.29	(2.19)	(1.68)	1.29	(1.62)	3.09	5.85	4.58	2.61
EMD > Dev Hdg	(0.59)	(3.13)	0.72	(0.59)	(4.71)	(9.98)	(9.93)	(2.34)	(1.84)
EMD > High Yield	(3.80)	2.16	(0.26)	(3.80)	1.11	(6.27)	(8.41)	(5.10)	(3.10)
Non-US > US Core	(0.52)	(2.93)	(0.64)	(0.52)	(6.32)	(6.72)	(9.59)	(3.96)	(3.11)
Non-US Hdg > US Core	0.25	0.12	(1.38)	0.25	0.69	2.74	2.50	(0.64)	0.52
FI Currency Impact	(0.77)	(3.05)	0.74	(0.77)	(7.01)	(9.47)	(12.09)	(3.33)	(3.63)

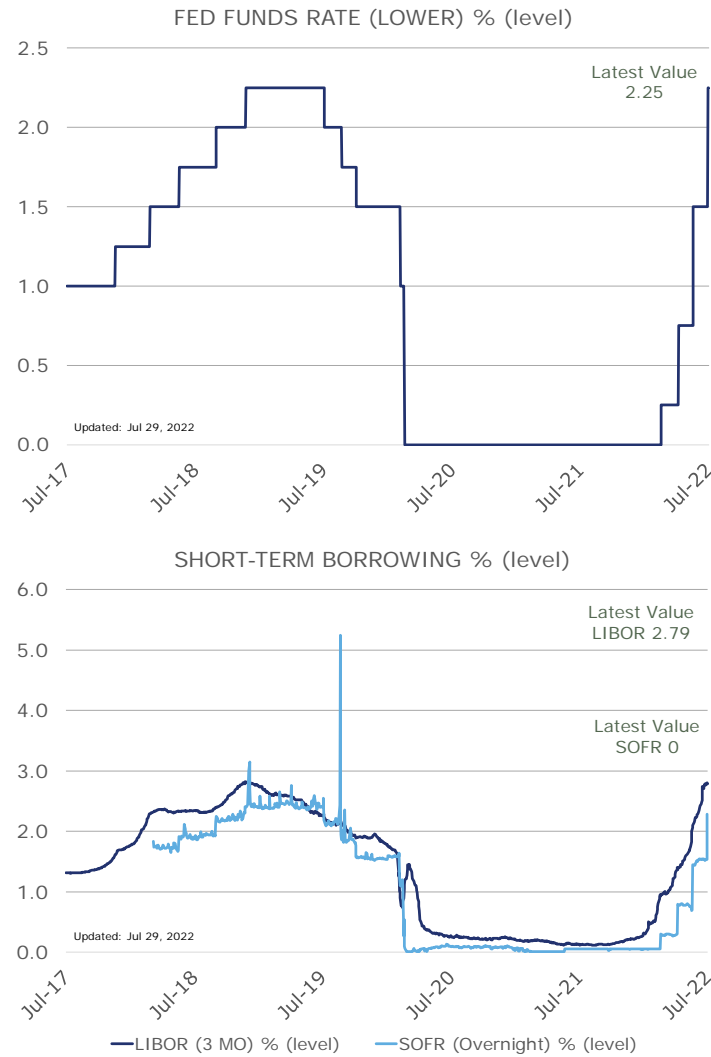
Source: Bloomberg, All returns are in USD

Market Yields & Breakeven Inflation

Market Yields	Previous 3 Month-ends				Previous 2 Quarter-ends		EOY Prior	1 Yr Ago	3 Yrs Ago	5 Yrs Ago
	07/29/22	06/30/22	05/31/22	04/29/22	06/30/22	03/31/22	12/31/21	07/29/21	07/29/19	07/28/17
Govt/Treasury Yields										
Fed Funds Target Rate (Upper)	2.50	1.75	1.00	0.50	1.75	0.50	0.25	0.25	2.50	1.25
2-Year Treasury	2.89	2.96	2.56	2.72	2.96	2.34	0.73	0.21	1.86	1.35
5-Year Treasury	2.68	3.04	2.82	2.96	3.04	2.46	1.26	0.74	1.85	1.84
10-Year Treasury	2.65	3.02	2.85	2.94	3.02	2.34	1.51	1.27	2.07	2.29
30-Year Treasury	3.01	3.19	3.05	3.00	3.19	2.45	1.90	1.92	2.59	2.90
10-Year Real Treasury	0.10	0.67	0.20	(0.00)	0.67	(0.49)	(1.10)	(1.15)	0.30	0.47
Term Spreads										
5 - 2 Year Treasury Spread	(0.21)	0.08	0.26	0.23	0.08	0.12	0.53	0.53	(0.02)	0.48
10 - 5 Year Treasury Spread	(0.03)	(0.03)	0.02	(0.02)	(0.03)	(0.13)	0.25	0.53	0.22	0.45
10 - 2 Year Treasury Spread	(0.24)	0.05	0.28	0.21	0.05	(0.00)	0.77	1.06	0.20	0.94
30 - 10Year Treasury Spread	0.36	0.16	0.19	0.06	0.16	0.10	0.39	0.65	0.52	0.60
30 - 2Year Treasury Spread	0.12	0.22	0.48	0.28	0.22	0.11	1.17	1.71	0.73	1.54
Market Yields										
Bloomberg U.S. Treasury YTW	2.89	3.09	2.80	2.88	3.09	2.42	1.23	0.83	2.00	1.87
Bloomberg U.S. Aggregate YTW	3.42	3.72	3.38	3.48	3.72	2.92	1.75	1.38	2.52	2.51
Bloomberg U.S. Long Treasury YTW	3.19	3.33	3.23	3.10	3.33	2.55	1.89	1.86	2.52	2.81
Bloomberg U.S. Long Govt/Credit YTW	4.06	4.30	4.08	4.04	4.30	3.39	2.58	2.51	3.32	3.65
Credit Spreads										
Bloomberg Investment Grade OAS	1.44	1.55	1.30	1.35	1.55	1.16	0.92	0.85	1.07	1.03
Bloomberg High Yield OAS	4.69	5.69	4.06	3.79	5.69	3.25	2.83	2.98	3.67	3.49
Breakeven Inflation Rates										
1-Year Breakeven Inflation	3.79	4.28	4.65	5.12	4.28	5.63	3.43	3.41	1.23	0.63
2-Year Breakeven Inflation	3.25	3.29	3.86	4.36	3.29	4.41	3.22	2.87	1.46	1.29
5-Year Breakeven Inflation	2.81	2.62	2.96	3.35	2.62	3.43	2.91	2.65	1.58	1.71
10-Year Breakeven Inflation	2.55	2.34	2.65	2.94	2.34	2.83	2.59	2.42	1.77	1.82
5-Year 5-Year Forward Breakeven Inflation	2.40	2.03	2.32	2.49	2.03	2.38	2.27	2.27	2.00	1.90

Source: Bloomberg

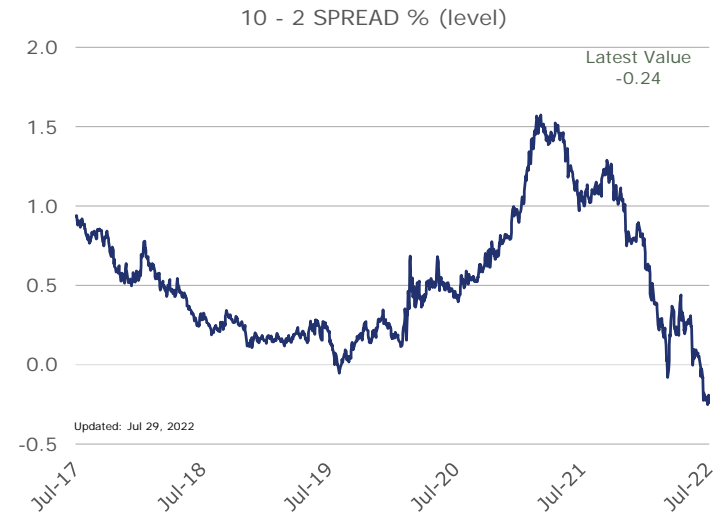
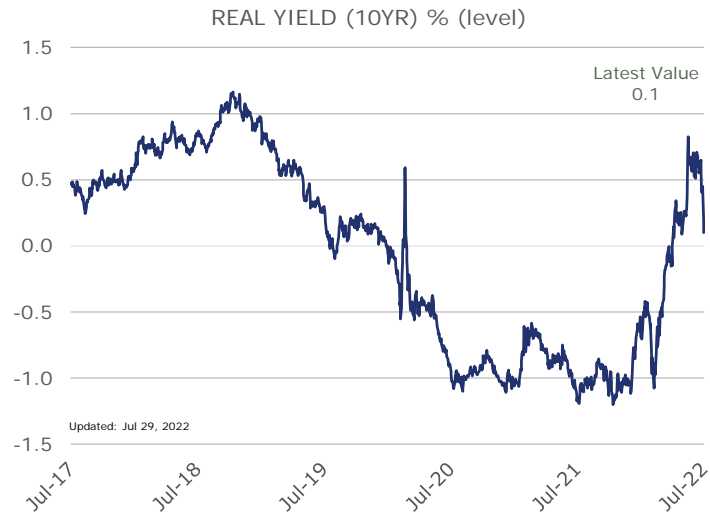
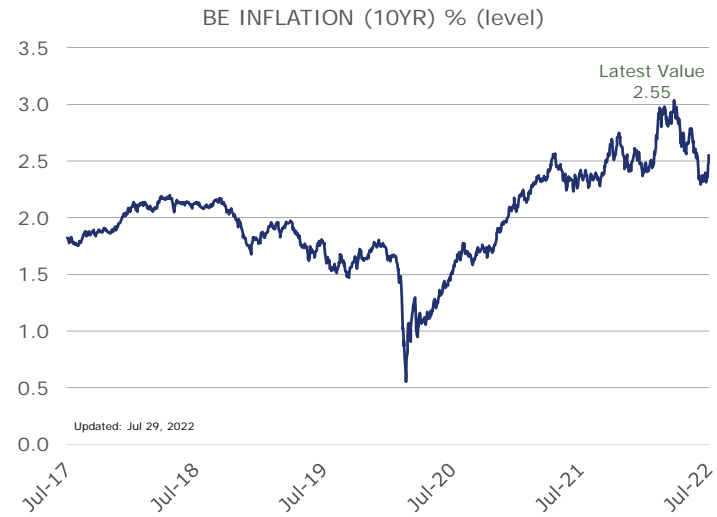
Short Rates



Data Source: Bloomberg

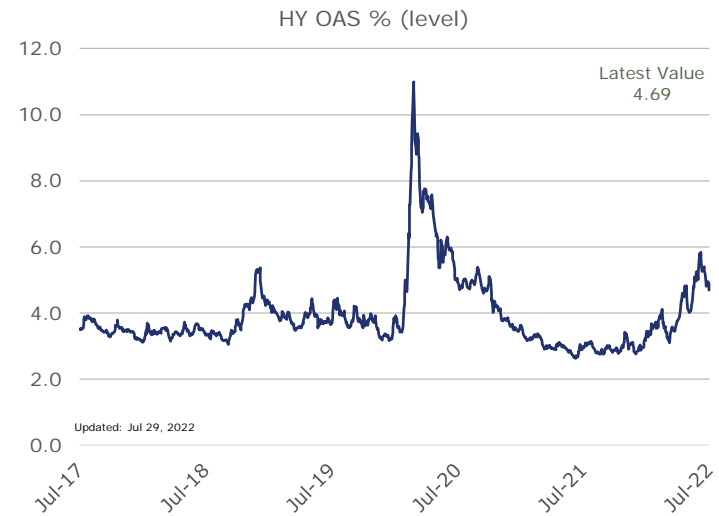
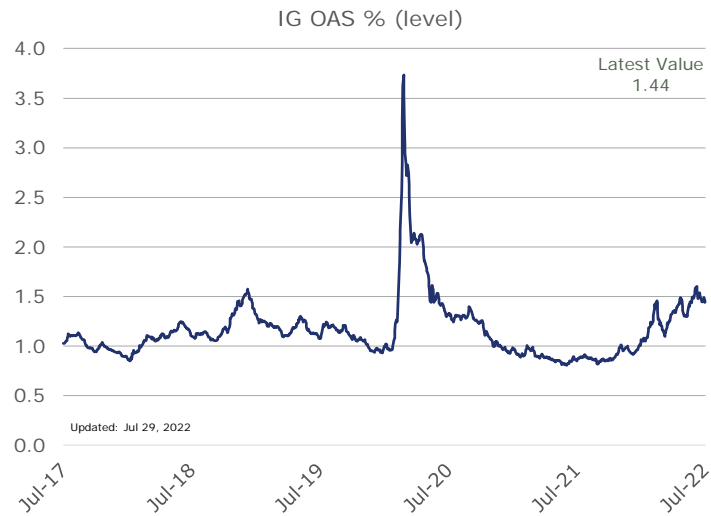
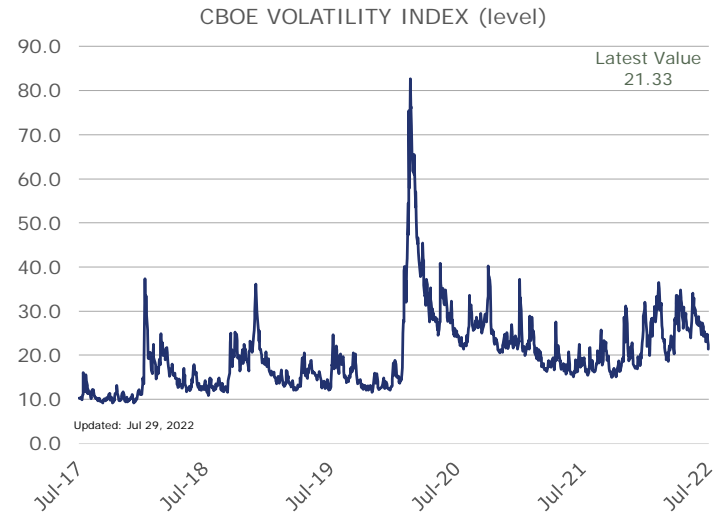
LIBOR: London Inter-bank Offered Rate
 SOFR: Federal Reserve Bank NY Secured Overnight Financing Rate

Treasury Rates



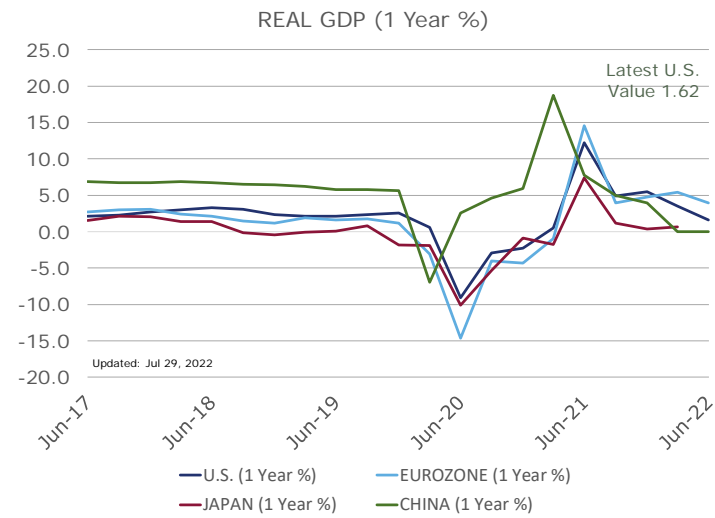
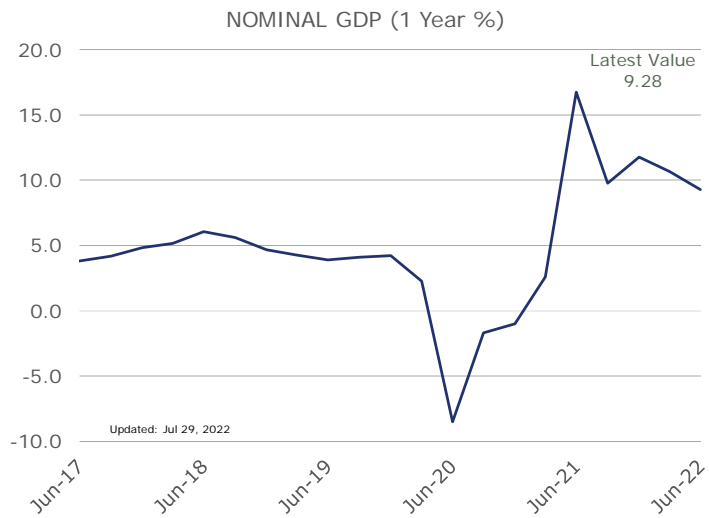
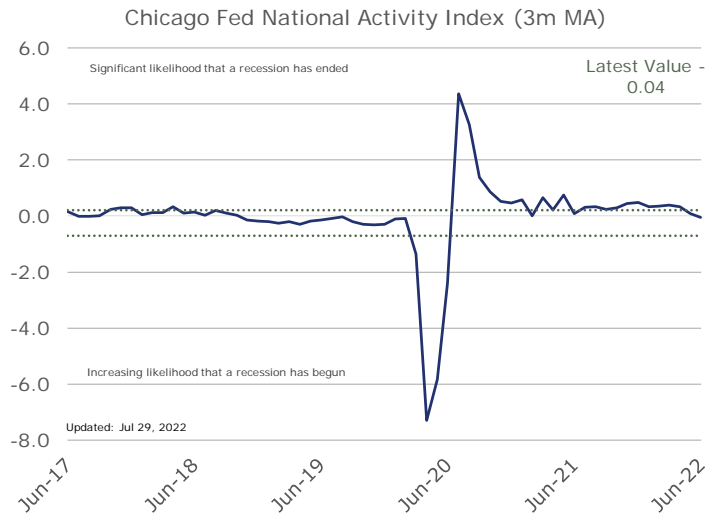
Data Sources: Bloomberg

Volatility & Credit Risk



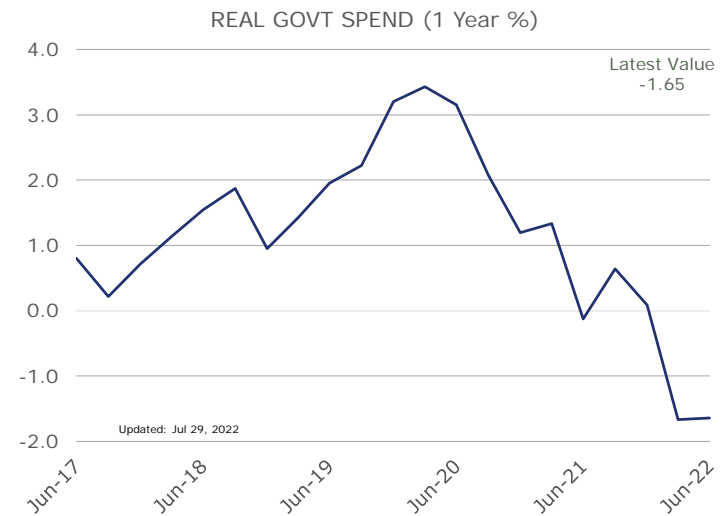
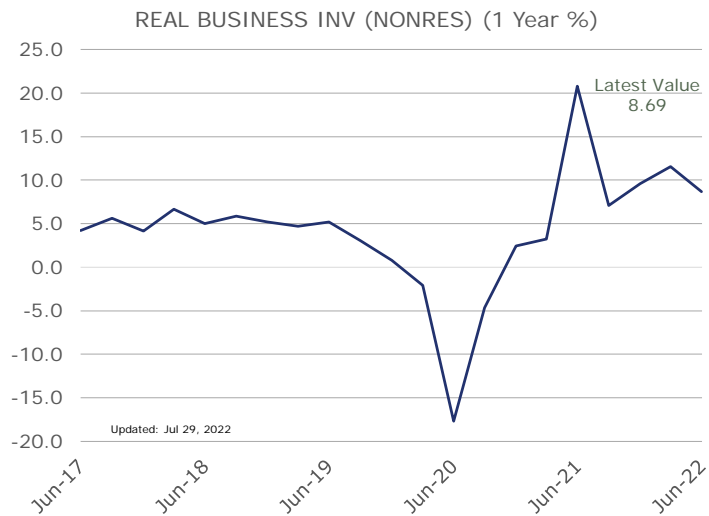
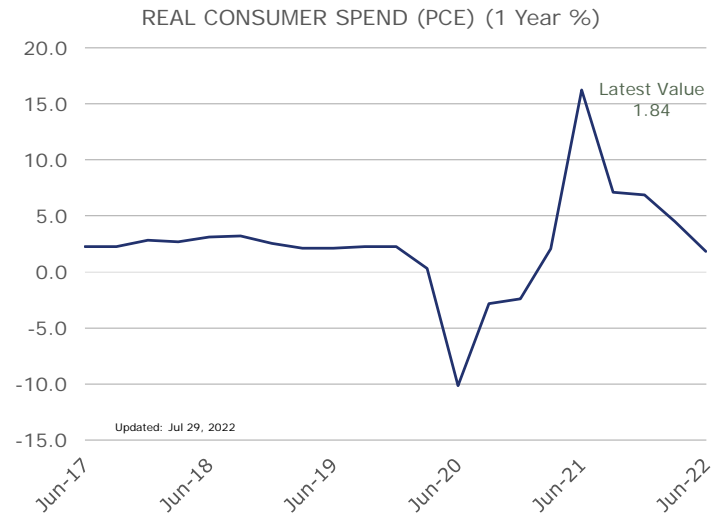
Data Sources: Bloomberg

Economic Growth

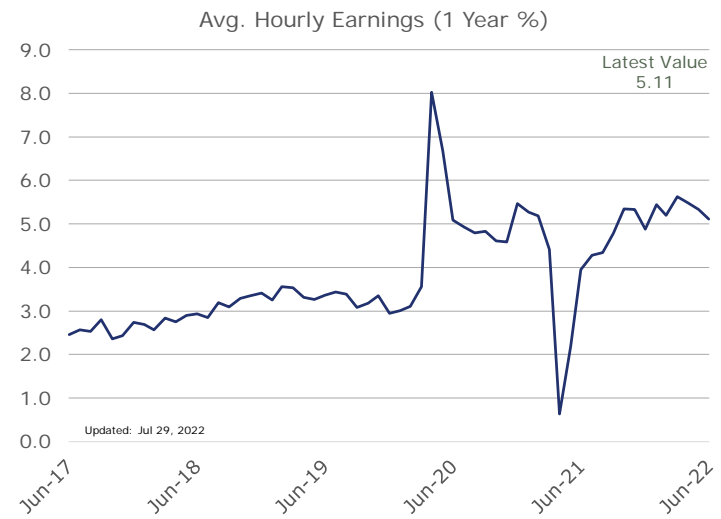
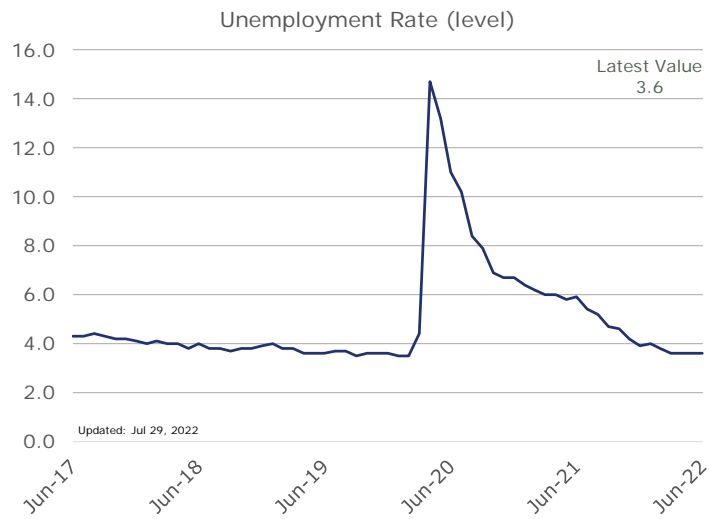
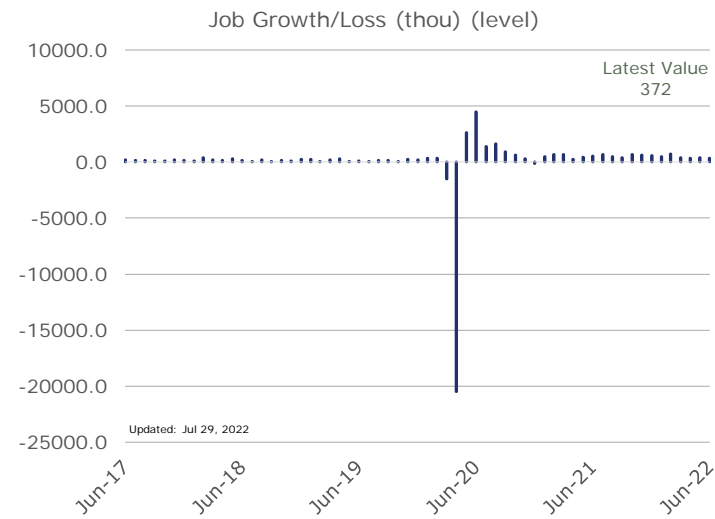
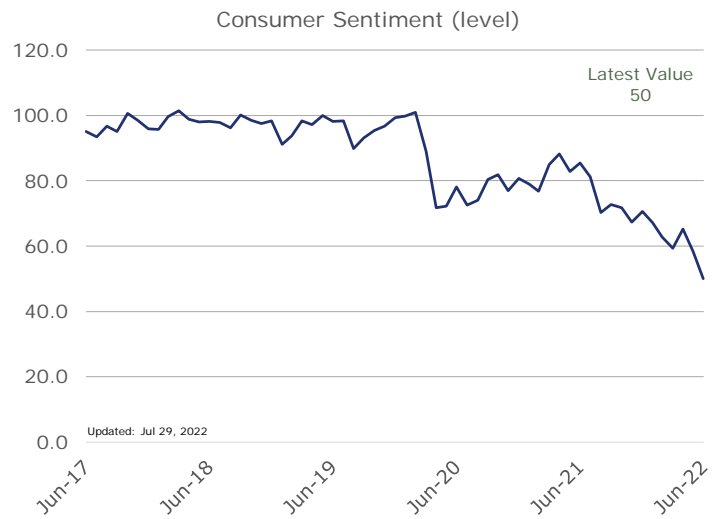


Data Sources: Bloomberg

Economic Growth

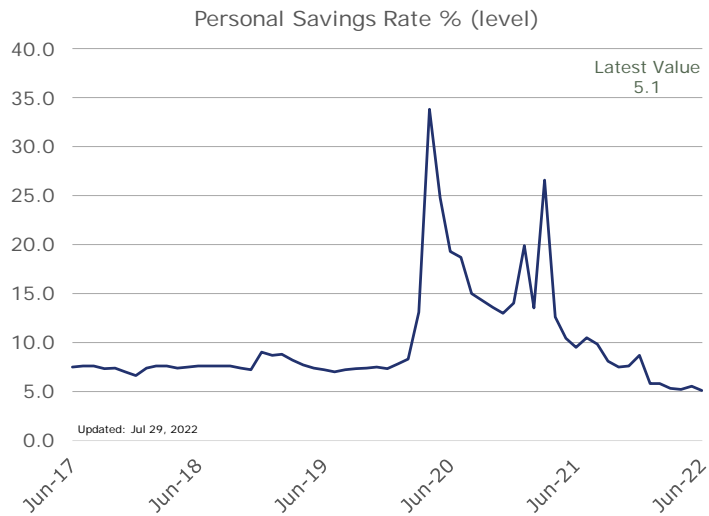


Consumers & Employment



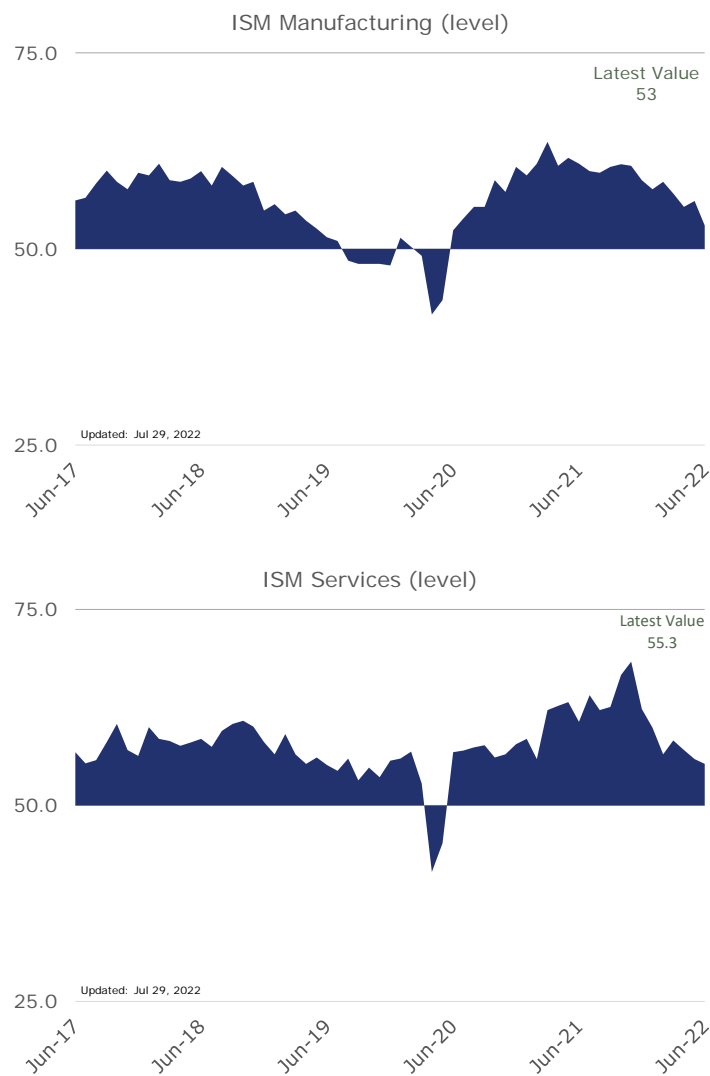
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Income & Spending



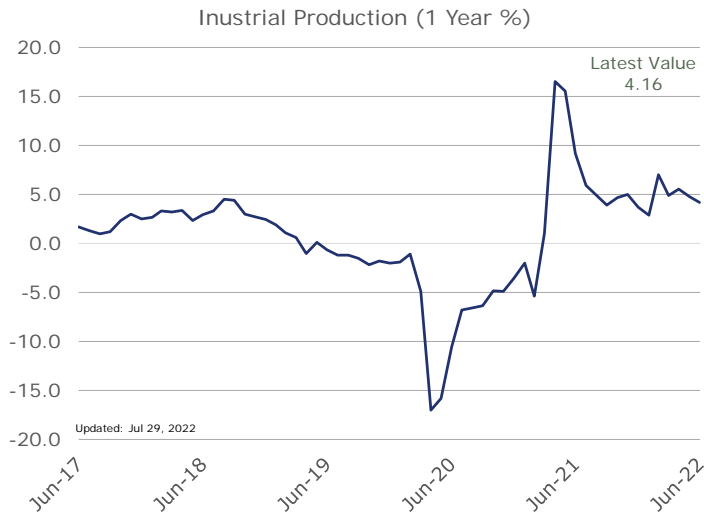
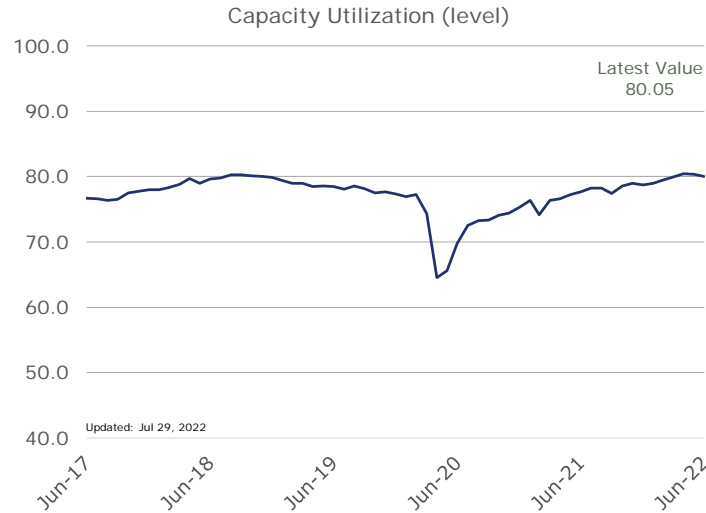
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ISM Surveys

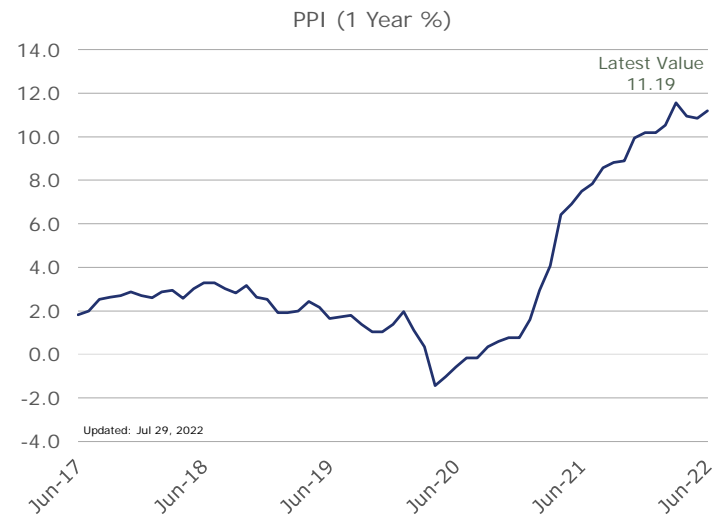
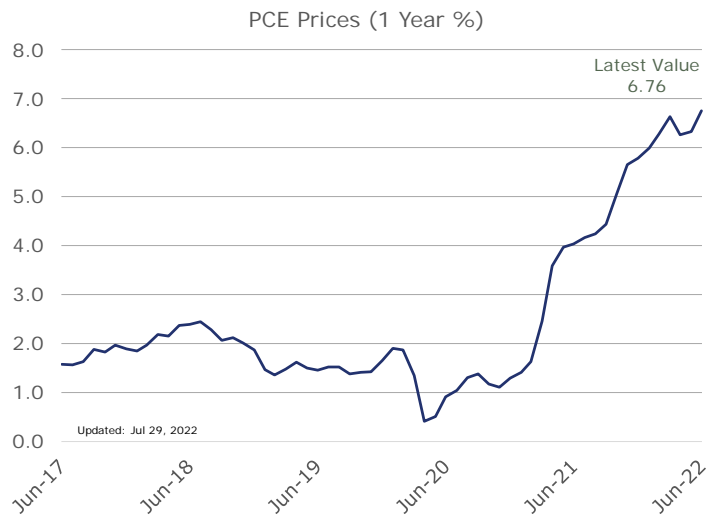
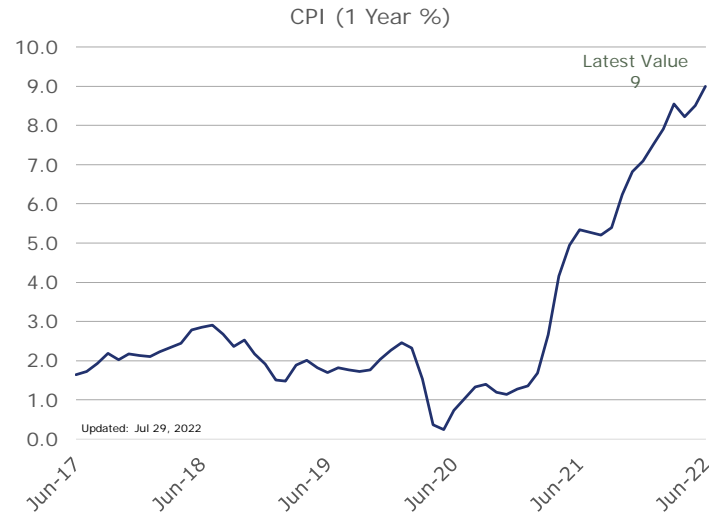


Data Source: Bloomberg

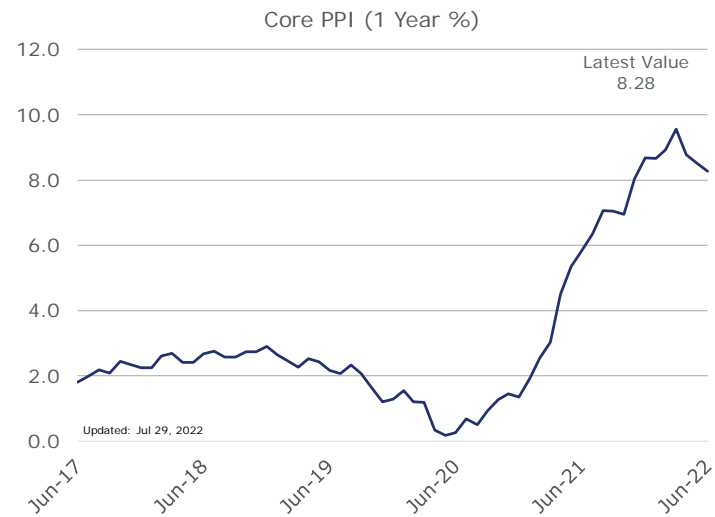
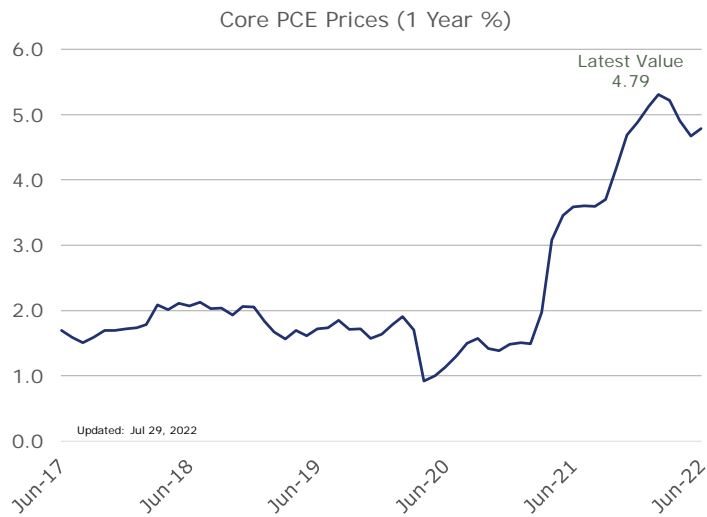
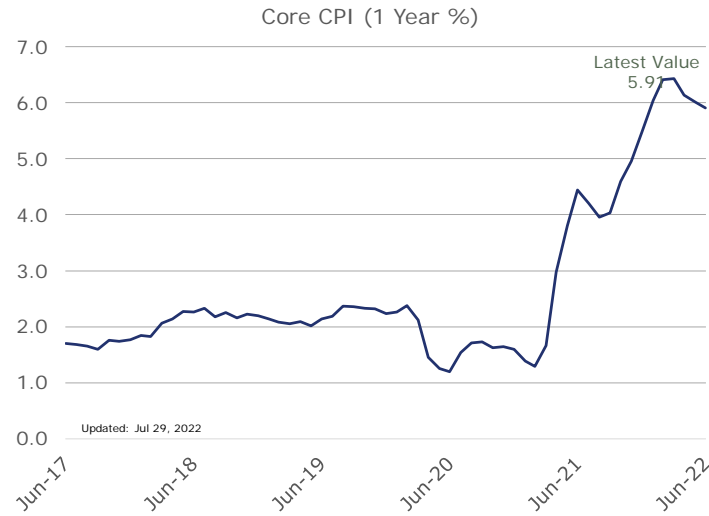
Manufacturing Activity



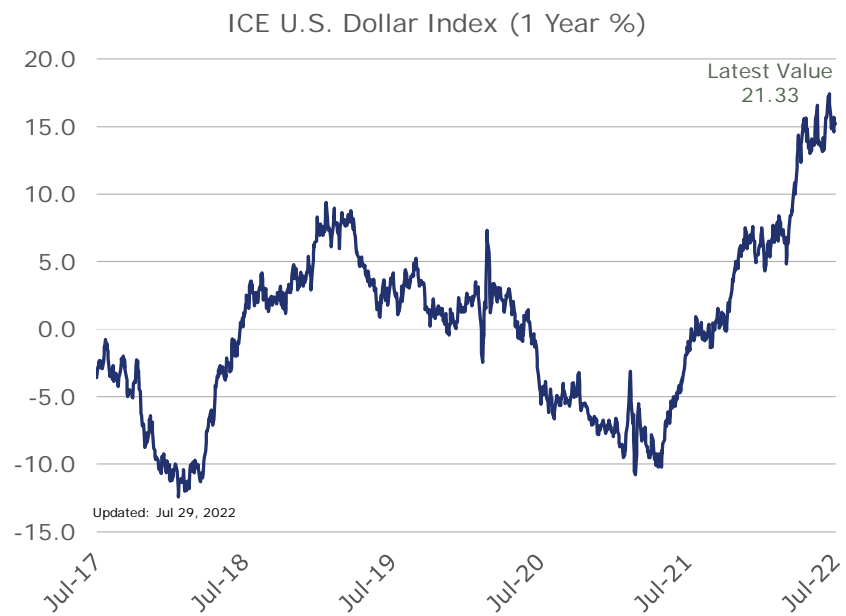
Price Indexes



Core Price Indexes



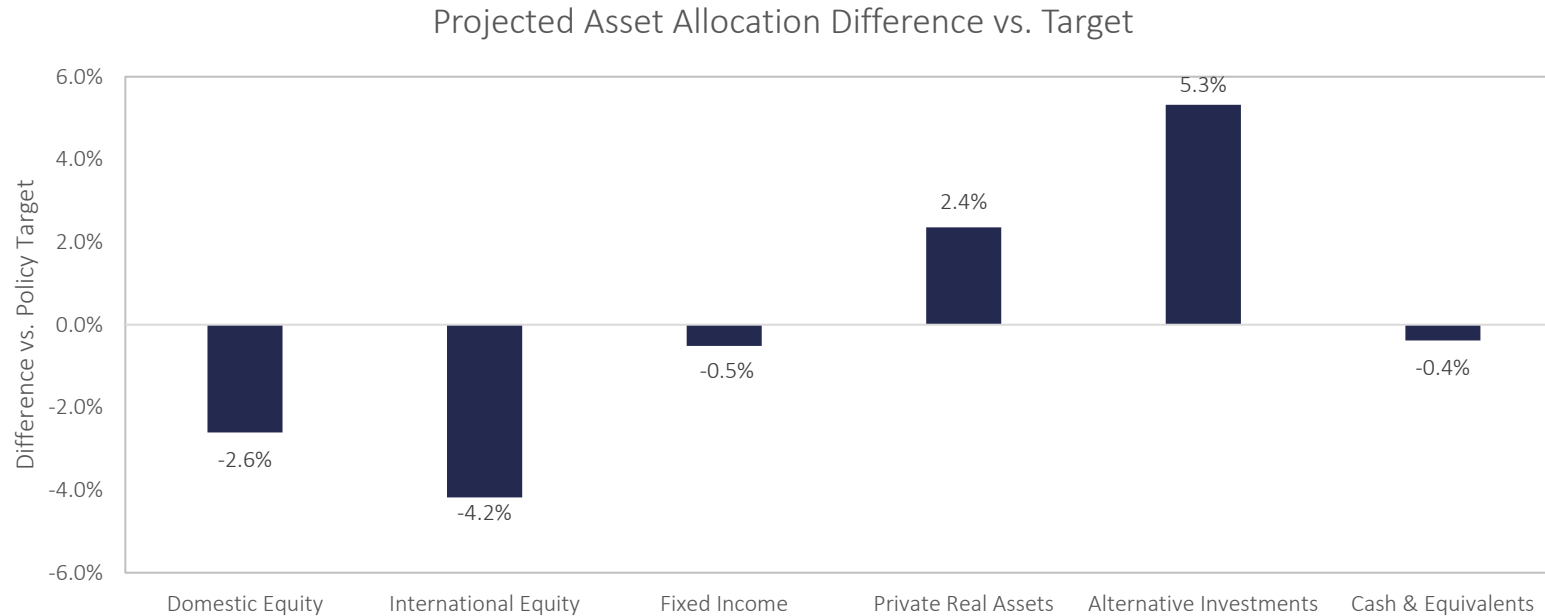
U.S. Dollar



IMRF Performance

Projected Deviations from the Benchmark

As of July 31, 2022



- Includes committed, but unfunded amounts for Real Assets (\$1.77 billion) and Alternatives (\$2.33 billion). Assumes Real Assets and Alternatives allocations are fully funded as of month-end.
- Assumes that outstanding commitments are funded from a basket of public markets asset classes (Domestic Equity, International Equity and/or Fixed Income) that best reflects the expectations of risk, yield and regional allocations of the asset class.

Alternatives Proxy: 60% Domestic Equity, 40% International Equity

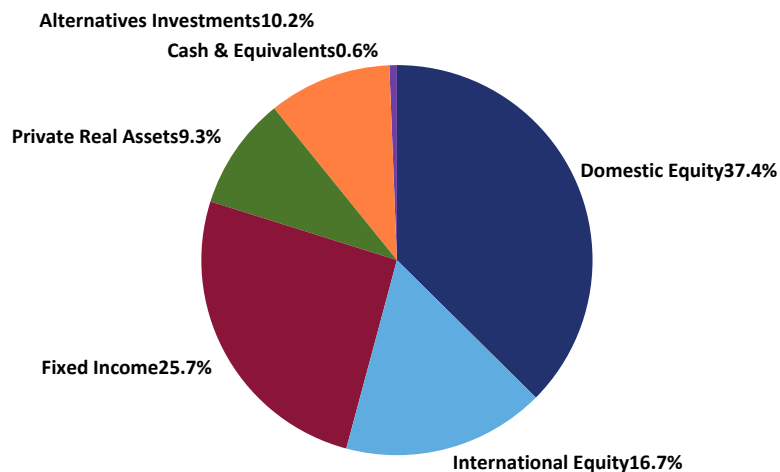
Real Assets Proxy: 50% Domestic Equity, 30% International Equity, 20% Fixed Income

Asset Allocation

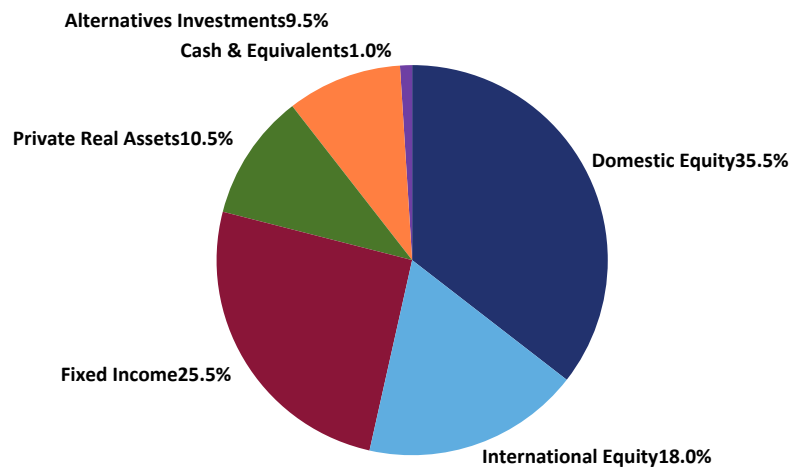
Total Fund

Periods Ended As of July 31, 2022

Actual Allocation



Target Allocation



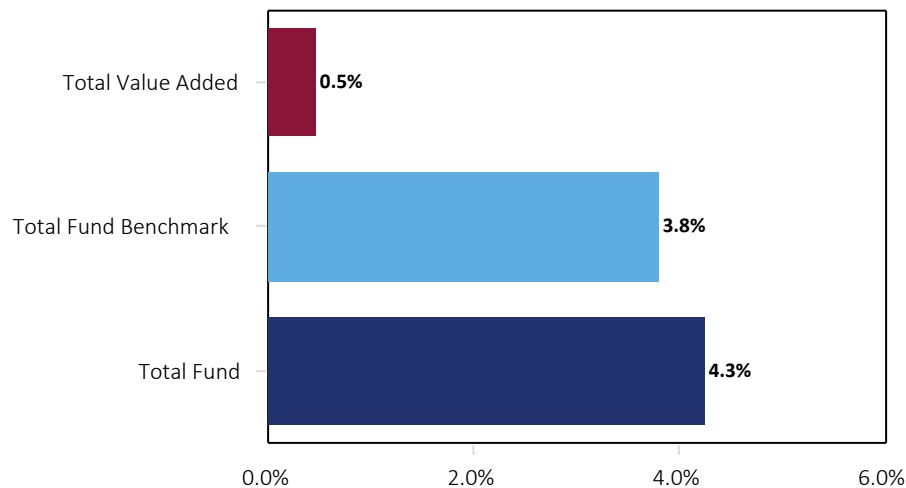
	Actual Allocation \$Millions	Actual Allocation %	Target Allocation %	Differences %	Differences \$Millions
Total Fund	50,259	100.0	100.0	0.0	
Domestic Equity	18,816	37.4	35.5	1.9	974
International Equity	8,411	16.7	18.0	-1.3	-635
Fixed Income	12,912	25.7	25.5	0.2	96
Private Real Assets	4,691	9.3	10.5	-1.2	-586
Alternatives Investments	5,116	10.2	9.5	0.7	342
Cash & Equivalents	312	0.6	1.0	-0.4	-190

Total Fund Attribution

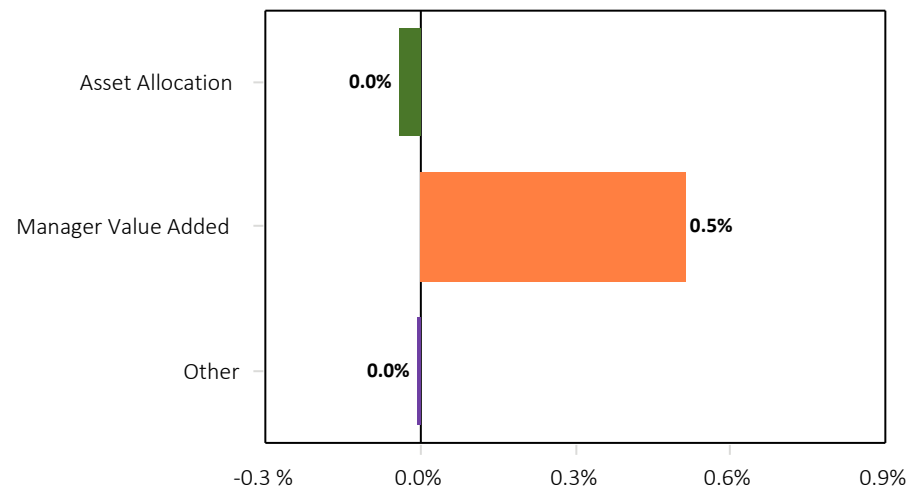
Total Fund

1 Month Ending July 31, 2022

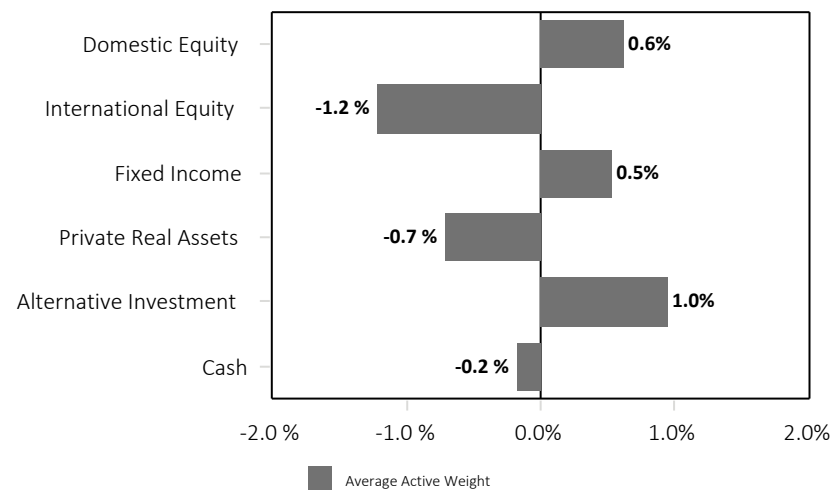
Total Fund Performance



Total Value Added:0.5%



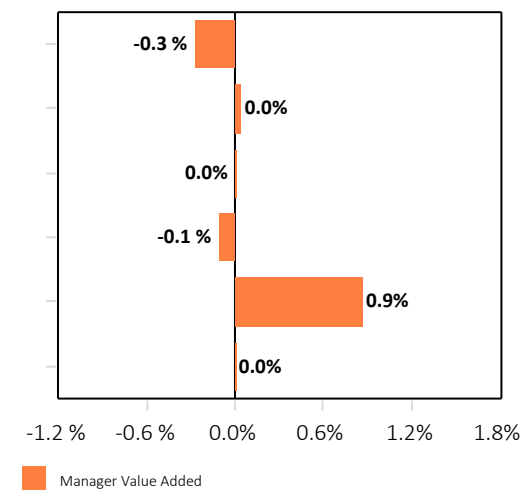
Asset Class Under or Overweighting



Asset Allocation Value Added:0.0%



Total Manager Value Added:0.5%



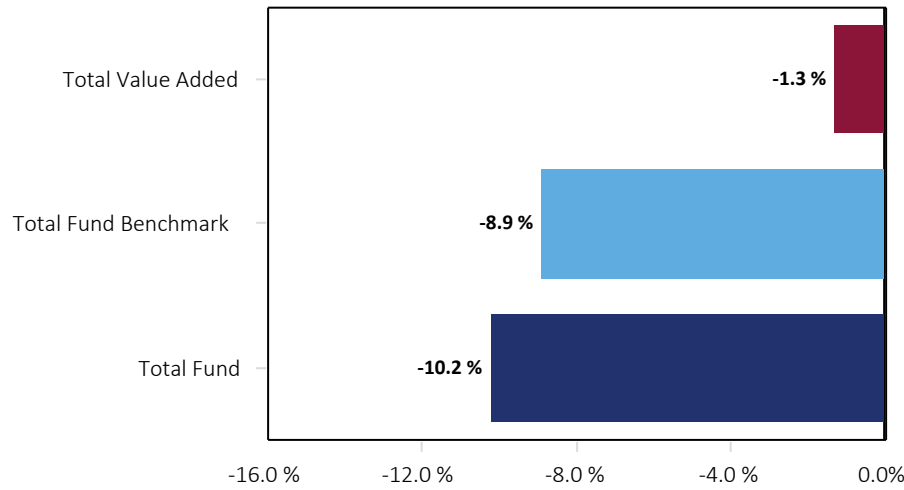
Total Fund Benchmark = 35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18.0% MSCI AC World ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.

Total Fund Attribution

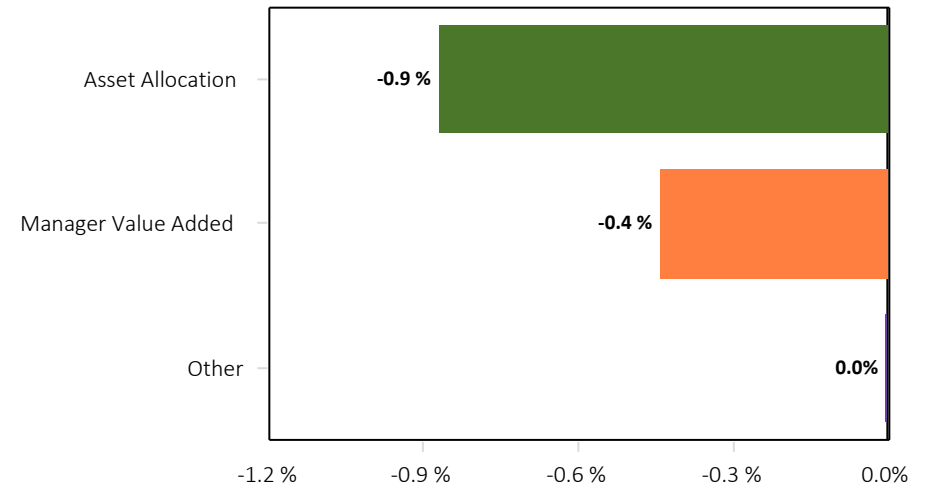
Total Fund

Year To Date Ending July 31, 2022

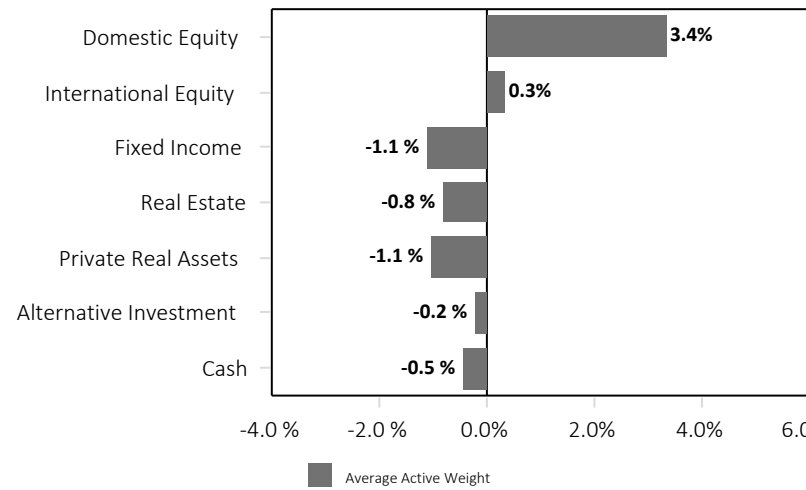
Total Fund Performance



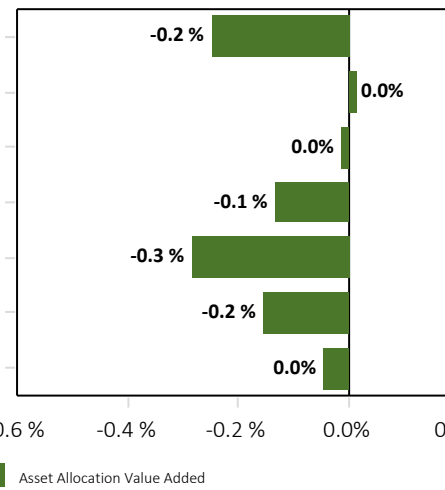
Total Value Added: -1.3 %



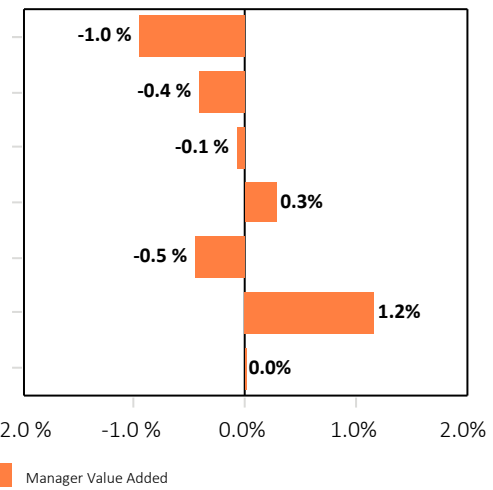
Asset Class Under or Overweighting



Asset Allocation Value Added: -0.9 %



Total Manager Value Added: -0.4 %



Total Fund Benchmark = 35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18.0% MSCI AC World ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.

Asset Class Returns

Periods Ended July 31, 2022

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Total Fund	4.26	-10.14	-6.04	8.61	7.97	8.98	8.37	8.37	9.75	1/1/1982
Total Fund - Net	4.26	-10.21	-6.19	8.43	7.78	8.77				
Total Fund Benchmark	3.80	-8.90	-4.76	7.37	7.23	8.19	7.77			
Domestic Equity	8.29	-15.28	-10.01	11.70	11.26	13.10	10.24	10.33	11.59	1/1/1982
Domestic Equity - Net	8.29	-15.35	-10.14	11.51	11.06	12.86				
Custom Benchmark (U.S. Equity)	9.05	-13.06	-6.67	12.82	12.34	13.53	10.28	10.08		
U.S. Equity IMRF Custom Benchmark	8.56	-13.75	-7.19	11.52	10.88					
International Equity	3.65	-17.65	-18.07	3.90	3.22	6.44	7.50	7.20	7.36	9/1/1986
International Equity - Net	3.64	-17.80	-18.37	3.53	2.87	6.09				
MSCI AC World ex USA (Net)	3.42	-15.63	-15.26	2.91	2.45	5.04	6.51			
International Equity IMRF Custom Benchmark	3.14	-16.06	-16.03	2.83	2.32					
Fixed Income	2.66	-8.11	-8.88	0.34	1.76	2.46	4.59	5.42	7.62	1/1/1982
Fixed Income - Net	2.66	-8.15	-8.95	0.24	1.64	2.33				
Custom Benchmark (Fixed Income)	2.67	-7.83	-8.79	-0.09	1.35	1.68	3.65	4.84	7.10	
Fixed Income IMRF Custom Benchmark	2.68	-8.19	-8.92	-0.03	1.45					
Private Real Assets	-1.07								5.72	3/1/2022
Private Real Assets - Net	-1.09								5.68	
Custom Benchmark (Private Real Assets)	0.02								11.71	
Real Estate	-1.22	10.74	24.49	13.63	11.89	11.51	8.31	6.67	6.13	5/1/1985
Real Estate - Net	-1.24	10.69	24.41	13.57	11.84	11.48				
Blended Benchmark (Real Estate)	0.00	12.00	28.31	11.53	9.43	10.14	8.09	7.87	8.03	
Agriculture	0.00	1.24	5.98	1.65	-0.27	7.41	7.25		6.58	10/1/1997
NCREIF Farmland Index	0.00	4.11	9.71	6.14	6.13	9.47	12.48		11.17	
Timberland	3.29	1.61	6.86	1.19	0.88	2.50	2.94		6.80	10/1/1992
NCREIF Timberland Index	0.00	5.13	12.01	5.03	4.32	5.73	6.66		8.37	

Benchmark definitions on next page.

Asset Class Returns

Periods Ended July 31, 2022

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Unlisted Infrastructure	0.00	8.89	14.02	14.59					12.58	4/1/2018
Blended Benchmark (Unlisted Infrastructure)	0.32	7.68	11.62	9.87					9.60	
Alternatives Investments	0.73	7.23	26.37	23.04	19.05	13.86	10.55	13.17	11.78	2/1/1986
Alternatives Investments - Net	0.73	7.22	26.36	23.02	18.97	13.65				
Custom Benchmark (Alternative Investments)	-7.51	-6.48	-3.06	4.82	6.47	7.73	9.64	11.40	12.03	
Private Equity	0.76	7.91	29.11	26.74	22.65	16.49	12.84	15.93	14.10	2/1/1986
Blended Benchmark (Private Equity)	-8.08	-6.86	-3.46	4.68	6.39	7.68	9.62			
Cash	0.19	1.79	2.96	2.84	2.71	1.56	1.37	3.01	3.74	7/1/1986
90 Day US Treasury Bill	0.05	0.20	0.22	0.58	1.10	0.63	1.21	2.34	3.08	

Benchmark definitions on next page.

Private Equity and Blended Benchmark (Private Equity) returns are 1 quarter lagged.

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Domestic Equity Custom	3/1/2022	Present	93% Russell 3000 Index, 7% FTSE Global Core Infrastructure 50/50 Index (Net)
Benchmark	1/1/2015	2/28/2022	100% Russell 3000 Index
	1/1/1982	12/31/2014	100% Dow Jones US Total Stock Market Index
Real Estate Blended	1/1/2013	Present	100% NCREIF Fund Index-ODCE (VW) (Net)**
Benchmark	1/1/2007	12/31/2012	100% NPI + 1%
	1/1/2005	12/31/2016	100% Consumer Price Index + 5%
Alternatives Custom	3/1/2022	Present	95% MSCI World World Index (Net) 1 Qtr Lagged +3%, 5% S&P LSTA Leveraged Loan 100 Index +2%
Benchmark	7/1/2010	2/28/2022	100% Annualized rate of 9.0%
	1/1/2004	6/30/2010	100% Annualized rate of 12.0%
	1/1/2003	12/31/2003	100% Annualized rate of 13.0%
	2/1/1986	12/31/2002	100% Annualized rate of 15.0%
U.S. Equity IMRF Custom Benchmark			Blend of the U.S. Equity Style benchmarks returns, dollar weighted by the actual allocation at pervious month end.
International Equity IMRF Custom Benchmark			Blend of the the International Equity Style benchmarks returns, dollar weighted by the actual allocation at previous month end.
Fixed Income IMRF Custom Benchmark			Blend of the the Fixed Income Style benchmarks returns, dollar weighted by the actual allocation at previous month end.

**ODCE returns are updated quarterly.

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Fixed Income Custom Benchmark	3/1/2022	Present	78% Bloomberg U.S. Aggregate, 14% Custom Barings Global Loan Benchmark, 8% ICE BofAML U.S. High Yield Cash Pay Index
	1/1/1976	2/28/2022	100% Bloomberg U.S. Aggregate
Private Real Assets Custom Benchmark	3/1/2022	Present	95% NCREIF Fund Index-ODCE (VW) (Net)**, 5% Consumer Price Index +4%
Unlisted Infrastructure Blended Benchmark	3/1/2022	Present	100% Consumer Price Index +4%
	4/1/2018	2/28/2022	100% Alternatives Custom Benchmark
Private Equity Blended Benchmark	3/1/2022	Present	100% MSCI World World Index (Net) 1 Qtr Lagged +3%
	2/1/1996	2/28/2022	100% Alternatives Custom Benchmark

**ODCE returns are updated quarterly.

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Total Fund Benchmark			The total fund benchmark is a blend of the asset class benchmark returns weighted by the target allocation for each asset class:
	3/1/2022	Present	35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18% MSCI AC World ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.
	1/1/2021	2/28/2022	39% Russell 3000 Index, 25% Blmbg. Barc. U.S. Aggregate, 15% MSCI AC World ex USA (Net), 10% NCREIF Fund Index-ODCE (VW) (Net), 10% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.
	3/1/2018	12/31/2020	37% Russell 3000 Index, 28% Blmbg. Barc. U.S. Aggregate, 18% MSCI AC World ex USA (Net), 9% NCREIF Fund Index-ODCE (VW) (Net), 7% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.

Investment Manager Asset Allocation

Periods Ended July 31, 2022

	Jun-2022		Jul-2022	
	\$	%	\$	%
Domestic Equity	17,478,524,266	36.13	18,815,896,083	37.44
Large Cap Growth	2,986,752,178	6.17	3,342,018,206	6.65
NTGI S&P 500 Growth	24	0.00		0.00
Sands Capital	1,217,313,205	2.52	1,360,361,500	2.71
Xponance Russell 1000 G	1,769,438,949	3.66	1,981,656,706	3.94
Large Cap Value	4,410,505,368	9.12	4,645,378,678	9.24
Dodge & Cox	1,661,399,212	3.43	1,743,729,238	3.47
LSV Asset	1,343,852,447	2.78	1,415,914,727	2.82
NTGI S&P 500 Value	1,405,253,710	2.90	1,485,734,712	2.96
Large Cap Pass. Core	2,449,927,491	5.06	2,577,146,195	5.13
NTGI MarketCap Idx.	2,449,927,491	5.06	2,577,146,195	5.13
Factor Diversity Strategies	2,248,069,124	4.65	2,454,393,415	4.88
U.S. Large Cap FDP-GSAM	2,248,069,124	4.65	2,454,393,415	4.88
Quantitative Factor Strategies	2,038,744,701	4.21	2,182,620,009	4.34
Quantitative US Equity - SciBeta	2,038,744,701	4.21	2,182,620,009	4.34
Small Cap Growth	655,839,282	1.36	725,035,432	1.44
Frontier Capital	655,839,282	1.36	725,035,432	1.44
Small Cap Value	1,319,100,426	2.73	1,443,473,951	2.87
Channing	286,506,929	0.59	305,112,499	0.61
DFA Small Cap Val.	480,376,940	0.99	526,605,132	1.05
William Blair Small Cap Value	552,216,557	1.14	611,756,320	1.22
Public Real Assets	1,369,585,697	2.83	1,445,830,197	2.88
Brookfield	377,827,136	0.78	403,045,527	0.80

Investment Manager Asset Allocation

Periods Ended July 31, 2022

	Jun-2022		Jul-2022	
	\$	%	\$	%
Cohen & Steers	991,758,561	2.05	1,042,784,669	2.07
International Equity	8,115,909,029	16.78	8,411,127,314	16.74
Intl Large Cap Growth	1,330,080,566	2.75	1,425,664,989	2.84
EARNEST Part. Intl	539,979,699	1.12	566,930,622	1.13
William Blair	790,100,866	1.63	858,734,367	1.71
Intl Large Cap Value	1,233,039,325	2.55	1,245,317,906	2.48
Brandes Investment	543,601,392	1.12	546,826,303	1.09
Mondrian	569,367,070	1.18	574,360,159	1.14
Lazard	120,070,863	0.25	124,131,444	0.25
Intl Large Cap Core	3,887,729,559	8.04	4,033,098,956	8.02
Arrowstreet Capital	940,008,487	1.94	956,016,145	1.90
Brown Capital	457,201,092	0.95	492,204,362	0.98
GlobeFlex Capital	754,194,029	1.56	783,384,204	1.56
Xponance Intl EQ	83,708,989	0.17	87,850,076	0.17
Progress Intl Equity	612,099	0.00	603,031	0.00
Transition Account	185,688	0.00	187,615	0.00
NTGI ACWI ex US Index Fund	1,651,819,175	3.41	1,712,853,523	3.41
Intl All Cap Developed	139,527,682	0.29	147,923,337	0.29
Ativo International	139,527,682	0.29	147,923,337	0.29
International Small Cap	478,840,480	0.99	518,024,323	1.03
Franklin Templeton	195,292,848	0.40	204,952,457	0.41
William Blair IntSC	283,547,632	0.59	313,071,866	0.62

Investment Manager Asset Allocation

Periods Ended July 31, 2022

	Jun-2022		Jul-2022	
	\$	%	\$	%
Emerging Mkt Equity	1,046,691,417	2.16	1,041,097,804	2.07
Genesis Asset Mngrs.	1,046,691,417	2.16	1,041,097,804	2.07

Investment Manager Asset Allocation

Periods Ended July 31, 2022

	Jun-2022		Jul-2022	
	\$	%	\$	%
Fixed Income	12,595,053,298	26.04	12,911,894,964	25.69
Global Bonds Transition	282,523	0.00	79,515	0.00
Domestic Fixed Core	3,879,734,948	8.02	3,974,716,410	7.91
Attucks Fixed Income	88,901,719	0.18	91,050,215	0.18
Brandes FI Core	340,436,090	0.70	350,874,448	0.70
EARNEST Partners	922,163,170	1.91	944,877,343	1.88
Garcia Hamilton	992,828,121	2.05	1,021,162,246	2.03
Ramirez Asset Management	538,104,493	1.11	549,507,588	1.09
Xponance Yield Advantage Agg.	997,301,354	2.06	1,017,244,570	2.02
Domestic Fixed Passive Core	3,047,806,463	6.30	3,121,989,937	6.21
NTGI Blmbg Agg.	1,397,657,603	2.89	1,431,577,297	2.85
BlackRock US Debt I	1,650,148,860	3.41	1,690,412,640	3.36
Domestic Fixed Core Plus	2,999,398,798	6.20	3,083,471,746	6.14
LM Capital Group FI	863,978,557	1.79	884,354,388	1.76
Progress Inv. FI	1,074	0.00	1,042	0.00
Loop Capital Management	581,034,022	1.20	598,229,728	1.19
Western Asset	970,642,799	2.01	1,003,975,961	2.00
Longfellow Core Plus	583,742,346	1.21	596,910,626	1.19
Bank Loans	1,624,457,781	3.36	1,633,201,600	3.25
Barings Global Loan Fund	1,624,457,781	3.36	1,633,201,600	3.25
Emerging Markets Debt	2,490,747	0.01	2,436,493	0.00
Standish-Mellon EMD	2,490,747	0.01	2,436,493	0.00

Investment Manager Asset Allocation

Periods Ended July 31, 2022

	Jun-2022		Jul-2022	
	\$	%	\$	%
High Yield	1,040,882,038	2.15	1,095,999,264	2.18
MacKay Shields	1,040,882,038	2.15	1,095,999,264	2.18

Investment Manager Asset Allocation

Periods Ended July 31, 2022

	Jun-2022		Jul-2022	
	\$	%	\$	%
Private Real Assets	4,732,017,175	9.78	4,691,471,140	9.33
Real Estate	4,318,598,041	8.93	4,278,368,635	8.51
Real Estate Core Cmp	2,310,739,338	4.78	2,336,984,565	4.65
TA Assoc. Buckhead	890,447,166	1.84	890,447,166	1.77
Barings Euro Core Property	140,031,894	0.29	136,576,133	0.27
Blackstone Property Euro	169,481,160	0.35	165,298,638	0.33
INVESCO Core Real Estate	251,394,301	0.52	263,692,402	0.52
INVESCO European real estate	56,988,468	0.12	56,776,227	0.11
AEW Core Property Tr	295,441,657	0.61	302,310,122	0.60
CBRE Core Partners	313,630,690	0.65	328,560,056	0.65
JPM Strategic Property Fund	193,324,002	0.40	193,323,821	0.38
RE Non-Core Cmp	2,007,858,703	4.15	1,941,384,070	3.86
Artemis MWBE Spruce	311,478,164	0.64	305,020,189	0.61
Franklin T. EMREFF	4,439,375	0.01	4,439,375	0.01
Security Capital	49,230,813	0.10	53,833,425	0.11
Dune II	7,378,667	0.02	7,378,667	0.01
Non-Core Real Estate Funds	1,407,127,015	2.91	1,343,135,639	2.67
Non-Core Intl Real Estate	228,121,679	0.47	227,493,785	0.45
Almanac ARS V	82,990	0.00	82,990	0.00
Agriculture	231,046,869	0.48	235,046,869	0.47
Premiere Partners IV	231,046,869	0.48	235,046,869	0.47
Timberland	62,951,641	0.13	58,672,512	0.12
Forest Investment	62,951,641	0.13	58,672,512	0.12
Unlisted Infrastructure	119,420,624	0.25	119,383,124	0.24
Unlisted Infrastructure Funds	119,420,624	0.25	119,383,124	0.24

Investment Manager Asset Allocation

Periods Ended July 31, 2022

	Jun-2022		Jul-2022	
	\$	%	\$	%
Alternatives Investments	5,055,633,051	10.45	5,116,109,722	10.18
Absolute Return	82,440	0.00	89,260	0.00
Aurora Investment	82,440	0.00	89,260	0.00
Private Equity	4,866,475,640	10.06	4,928,103,753	9.81
Abbott S/A Comp.	543,658,783	1.12	554,814,880	1.10
Muller Monroe MPEFF	552,890	0.00	552,890	0.00
Pantheon S/A Comp.	426,436,147	0.88	446,617,785	0.89
Private Equity Fund - Domestic	3,167,078,982	6.55	3,216,854,491	6.40
Private Equity Fund - International	536,172,977	1.11	516,687,846	1.03
Oakbrook Opportunities Fund	192,575,861	0.40	192,575,861	0.38
Private Credit	189,074,971	0.39	187,916,709	0.37
Private Credit Fund - Domestic	189,074,971	0.39	187,916,709	0.37
Cash & Equivalents	397,316,070	0.82	312,423,332	0.62
Total Fund	48,374,452,889	100.00	50,258,922,556	100.00

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Total Fund	50,258,922,556	4.26	-10.14	-6.04	8.61	7.97	8.98	9.75	1/1/1982
Total Fund - Net		4.26	-10.21	-6.19	8.43	7.78	8.77		
Total Fund Benchmark		3.80	-8.90	-4.76	7.37	7.23	8.19		
Domestic Equity	18,815,896,083	8.29	-15.28	-10.01	11.70	11.26	13.10	11.59	1/1/1982
Domestic Equity - Net		8.29	-15.35	-10.14	11.51	11.06	12.86		
Custom Benchmark (U.S. Equity)		9.05	-13.06	-6.67	12.82	12.34	13.53		
Russell 3000 Index		9.38	-13.70	-7.35	12.55	12.18	13.48	11.56	
U.S. Equity IMRF Custom Benchmark		8.56	-13.75	-7.19	11.52	10.88			
Large Cap Equity	13,018,936,494	8.56	-17.46	-12.24	11.67	11.59	13.37	11.28	1/1/1982
Large Cap Equity - Net		8.56	-17.50	-12.31	11.58	11.49	13.24		
Russell 1000 Index		9.31	-13.58	-6.87	12.91	12.55	13.69	11.71	
Large Cap Growth	3,342,018,206	11.89	-25.77	-21.28	12.86	14.66	14.80	12.06	1/1/1982
Large Cap Growth - Net		11.89	-25.81	-21.34	12.76	14.55	14.65		
LCG Blended Benchmark		12.00	-19.44	-11.93	16.05	16.30	15.95		
Russell 1000 Growth Index		12.00	-19.44	-11.93	16.05	16.30	15.95	11.53	
Xponance Russell 1000 G	1,981,656,706	11.99	-19.43	-11.92	16.04			13.64	10/1/2018
Xponance Russell 1000 G - Net		11.99	-19.44	-11.94	16.02			13.62	
Russell 1000 Growth Index		12.00	-19.44	-11.93	16.05			13.65	
Sands Capital	1,360,361,500	11.75	-42.17	-45.07	2.62	9.46	12.57	10.89	11/1/2003
Sands Capital - Net		11.75	-42.25	-45.22	2.39	9.22	12.32		
LCG Blended Benchmark		12.00	-19.44	-11.93	16.05	16.30	15.95	10.96	
Russell 1000 Growth Index		12.00	-19.44	-11.93	16.05	16.30	15.95	11.00	

Benchmark definitions in glossary.

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Large Cap Value	4,645,378,678	5.56	-6.64	-1.32	10.47	9.22	12.40	10.30	10/1/1982
Large Cap Value - Net		5.56	-6.71	-1.43	10.32	9.06	12.21		
LCV Blended Benchmark		6.63	-7.08	-1.43	8.88	8.26	11.10		
Russell 1000 Value Index		6.63	-7.08	-1.43	8.88	8.26	11.10	11.61	
Dodge & Cox	1,743,729,238	5.21	-6.88	-1.86	12.51	10.70	13.57	9.99	9/1/2003
Dodge & Cox - Net		5.21	-6.98	-2.01	12.28	10.47	13.34		
LCV Blended Benchmark		6.63	-7.08	-1.43	8.88	8.26	11.10	8.44	
Russell 1000 Value Index		6.63	-7.08	-1.43	8.88	8.26	11.10	8.58	
LSV Asset	1,415,914,727	5.61	-6.73	-1.91	9.34	8.24	12.39	10.58	2/1/2003
LSV Asset - Net		5.61	-6.84	-2.08	9.10	8.00	12.12		
LCV Blended Benchmark		6.63	-7.08	-1.43	8.88	8.26	11.10	9.22	
Russell 1000 Value Index		6.63	-7.08	-1.43	8.88	8.26	11.10	9.23	
NTGI S&P 500 Value	1,485,734,712	5.94	-6.26	-0.09	9.74	9.19	11.59	6.41	8/1/1999
NTGI S&P 500 Value - Net		5.94	-6.26	-0.09	9.73	9.18	11.58		
S&P 500 Value		5.91	-6.18	-0.03	9.68	9.14	11.51	6.38	
Large Cap Pass. Core	2,577,146,195	9.38	-13.93	-7.72	12.41	12.09	13.45	11.26	1/1/1985
Large Cap Pass. Core - Net		9.38	-13.93	-7.73	12.40	12.09	13.44		
Dow Jones US Total Stock Market Index		9.38	-13.95	-7.78	12.39	12.06	13.37		
NTGI MarketCap Idx.	2,577,146,195	9.38	-13.93	-7.72	12.41	12.09	13.45	11.05	2/1/1985
NTGI MarketCap Idx. - Net		9.38	-13.93	-7.73	12.40	12.09	13.44		
Dow Jones US Total Stock Market Index		9.38	-13.95	-7.78	12.39	12.06	13.37		
Factor Diversity Strategies	2,454,393,415	9.18	-13.67	-7.18				11.12	8/18/2020

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							Inception Date
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
U.S. Large Cap FDP-GSAM	2,454,393,415	9.18	-13.67	-7.18				11.12	8/18/2020
U.S. Large Cap FDP-GSAM - Net		9.18	-13.69	-7.22				11.06	
Solactive GBS U.S. 1000 Index		9.40	-13.94	-7.43				11.03	
GSAM Active Beta US. Large Cap FDC Index		9.19	-13.62	-7.08				11.11	
Quantitative Factor Strategies	2,182,620,009	7.06	-9.91	-3.59				9.58	9/17/2019
Quantitative US Equity - SciBeta	2,182,620,009	7.06	-9.91	-3.59				9.58	9/17/2019
Quantitative US Equity - SciBeta - Net		7.06	-9.93	-3.64				9.38	
SciBeta US Hi-Fctr-Intst Div Multi-Beta Multi-Strat Index		7.07	-10.59	-4.39				8.61	
Small Cap	2,168,509,383	9.80	-9.35	-4.89	12.28	10.14	12.30	12.07	7/1/1988
Small Cap Composite - Net		9.80	-9.78	-5.57	11.56	9.51	11.69		
Russell 2000 Index		10.44	-15.43	-14.29	7.51	7.12	10.60	9.22	
Small Cap Growth	725,035,432	10.55	-15.71	-13.88	13.31	12.51	13.71	12.97	7/1/1988
Small Cap Growth - Net		10.55	-16.53	-14.91	12.22	11.66	12.99		
Russell 2000 Growth Index		11.20	-21.55	-23.18	4.71	6.87	10.66	7.87	
Frontier Capital	725,035,432	10.55	-15.71	-14.55	14.57	15.28	14.70	13.33	8/1/1988
Frontier Capital - Net		10.55	-16.53	-15.50	13.41	14.29	13.89		
Russell 2000 Growth Index		11.20	-21.55	-23.18	4.71	6.87	10.66	7.95	
Small Cap Value	1,443,473,951	9.43	-5.78	0.38	12.03	8.93	11.94	11.71	9/1/1989
Small Cap Value - Net		9.43	-5.97	-0.06	11.50	8.39	11.41		
Russell 2000 Value Index		9.68	-9.30	-4.77	9.44	6.71	10.18	9.87	
Channing	305,112,499	6.49	-11.01	-8.21	9.71	7.24	12.09	10.11	7/1/2011
Channing - Net		6.49	-11.24	-8.68	9.18	6.74	11.54	9.53	
Russell 2000 Value Index		9.68	-9.30	-4.77	9.44	6.71	10.18	8.90	

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
DFA Small Cap Val.	526,605,132	9.62	-2.69	5.50	14.83	9.32	12.27	12.06	2/1/1996
DFA Small Cap Val. - Net		9.62	-2.87	5.06	14.31	8.80	11.74		
Russell 2000 Value Index		9.68	-9.30	-4.77	9.44	6.71	10.18	9.38	
William Blair Small Cap Value	611,756,320	10.78	-5.59	0.49	10.96	9.47	12.50	11.41	5/1/1999
Inv. Couns. Maryland - Net		10.78	-5.78	0.05	10.41	8.92	11.97		
Russell 2000 Value Index		9.68	-9.30	-4.77	9.44	6.71	10.18	8.96	
Public Real Assets	1,445,830,197	5.57	1.57	8.08	7.00	7.71		7.71	8/1/2017
Public Real Assets - Net		5.57	1.41	7.73	6.59	7.30		7.30	
Public Real Assets Benchmark		5.09	1.13	6.65	5.65	5.92		5.92	
Brookfield	403,045,527	6.67	4.68	11.45	6.44	6.29		6.29	8/1/2017
Brookfield - Net		6.67	4.46	10.94	5.90	5.78		5.78	
Dow Jones Brookfield Global Infrastructure Composite Index		5.88	2.53	7.25	5.59	5.17		5.17	
Cohen & Steers	1,042,784,669	5.15	1.02	7.39	7.59	8.59		8.59	8/1/2017
Cohen & Steers - Net		5.15	0.87	7.07	7.21	8.21		8.21	
FTSE Global Core Infrastructure 50/50 Index (Net)		4.69	0.43	6.34	5.64	6.26		6.26	

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
International Equity	8,411,127,314	3.65	-17.65	-18.07	3.90	3.22	6.44	7.36	9/1/1986
International Equity - Net		3.64	-17.80	-18.37	3.53	2.87	6.09		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04		
International Equity IMRF Custom Benchmark		3.14	-16.06	-16.03	2.83	2.32			
Intl LargeCap Equity	6,704,081,850	3.93	-15.79	-15.52	5.13	3.82	6.86	7.45	9/1/1986
Intl LargeCap Equity - Net		3.93	-15.90	-15.78	4.82	3.53	6.57		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04		
Intl Large Cap Grwth	1,425,664,989	7.19	-19.71	-19.68	6.84	4.90	7.19	8.03	9/1/2002
Intl Large Cap Grwth - Net		7.19	-19.84	-19.95	6.51	4.61	6.87		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	6.53	
MSCI AC World ex USA Growth (Net)		5.50	-20.65	-20.51	3.52	3.83	6.08	6.87	
EARNEST Part. Intl	566,930,622	4.99	-10.46	-9.69	6.86	3.99	6.58	8.49	10/1/2004
EARNEST Part. Intl - Net		4.99	-10.56	-9.82	6.64	3.79	6.34		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	5.28	
MSCI AC World ex USA Growth (Net)		5.50	-20.65	-20.51	3.52	3.83	6.08	6.00	
William Blair	858,734,367	8.69	-24.84	-25.14	6.83	5.73	7.75	9.12	10/1/2002
William Blair - Net		8.69	-24.98	-25.48	6.43	5.34	7.35		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	7.17	
MSCI AC World ex USA Growth (Net)		5.50	-20.65	-20.51	3.52	3.83	6.08	7.40	
Intl Large Cap Val.	1,245,317,906	1.00	-10.47	-10.37	2.99	2.16	5.59	7.88	10/1/1995
Intl Large Cap Val. - Net		1.00	-10.61	-10.59	2.68	1.84	5.21		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	4.89	
MSCI AC World ex USA Value		1.39	-10.17	-9.35	2.41	1.35	4.40		

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							Inception Date
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Brandes Investment	546,826,303	0.59	-9.88	-9.72	3.61	2.15	6.00	8.04	1/1/1996
Brandes Investment - Net		0.59	-9.97	-9.86	3.40	1.95	5.77		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	4.80	
MSCI AC World ex USA Value		1.39	-10.17	-9.35	2.41	1.35	4.40		
Mondrian	574,360,159	0.88	-10.51	-10.24	2.70	2.24	5.25	4.43	4/1/2012
Mondrian - Net		0.88	-10.61	-10.43	2.32	1.81	4.77	3.96	
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	4.21	
MSCI AC World ex USA Value		1.39	-10.17	-9.35	2.41	1.35	4.40	3.58	
Lazard	124,131,444	3.38	-12.82	-13.73	2.28	2.71	5.59	5.15	4/1/2012
Lazard - Net		3.38	-12.88	-13.89	2.05	2.47	5.13	4.71	
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	4.21	
MSCI AC World ex USA Value		1.39	-10.17	-9.35	2.41	1.35	4.40	3.58	
Intl Large Cap Active Core	2,320,245,432	3.78	-16.55	-16.59	6.49	4.89	8.22	5.05	2/1/2008
Intl Large Cap Active Core - Net		3.78	-16.72	-17.05	5.92	4.37	7.67		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	2.32	
Arrowstreet Capital	956,016,145	1.70	-14.22	-14.46	11.05	7.93	9.98	6.17	3/1/2008
Arrowstreet Capital - Net		1.70	-14.43	-14.86	10.54	7.44	9.47	5.69	
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	2.13	
Brown Capital	492,204,362	7.66	-26.28	-26.73	2.35	3.30	7.82	6.91	10/1/2004
Brown Capital - Net		7.66	-26.39	-27.43	1.64	2.65	6.96		
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	5.28	
GlobeFlex Capital	783,384,204	3.89	-11.80	-11.28	6.00	3.21	7.16	4.86	3/1/2006
GlobeFlex Capital - Net		3.89	-11.94	-11.57	5.60	2.82	6.74	4.43	
MSCI AC World ex USA (Net)		3.42	-15.63	-15.26	2.91	2.45	5.04	3.45	

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Xponance Intl EQ	87,850,076	4.95	-19.37	-18.65				-5.72	2/1/2021
Xponance Intl EQ - Net		4.95	-19.64	-19.18				-6.21	
MSCI EAFE Index (Net)		4.98	-15.56	-14.32				-3.39	
Progress Intl Equity	603,031								
Intl Large Cap Passive Core	1,712,853,523	3.70	-14.95	-13.93	3.83	3.00	6.20	3.70	2/1/2000
Intl Large Cap Passive Core - Net		3.70	-14.95	-13.94	3.82	2.99	6.19		
International Large Cap Passive Core Benchmark		3.42	-15.63	-15.12	2.84	2.42	5.69	3.26	
NTGI ACWI ex US Index	1,712,853,523	3.70	-14.95					-13.04	10/1/2021
NTGI ACWI ex US Index - Net		3.70	-14.95					-13.04	
MSCI AC World ex USA (Net)		3.42	-15.63					-14.09	
Intl All Cap Developed	147,923,337	6.02	-17.25	-14.76	2.12			3.98	2/1/2019
Intl All Cap Developed - Net		6.02	-17.47	-15.08	1.62			3.52	
MSCI EAFE + Canada (Net)		4.97	-14.72	-13.20	3.78			4.88	
Ativo International	147,923,337	6.02	-17.25	-14.76	2.12			3.98	2/1/2019
Ativo International - Net		6.02	-17.47	-15.08	1.62			3.52	
MSCI EAFE + Canada (Net)		4.97	-14.72	-13.20	3.78			4.88	
Intl Small Cap Eqty	518,024,323	8.18	-28.18	-28.50	3.59	2.36	7.07	4.40	12/1/2005
Intl Small Cap Eqty - Net		8.18	-28.48	-29.01	2.82	1.60	6.27		
MSCI AC World ex USA Small Cap (Net)		5.78	-18.47	-18.62	5.12	2.99	6.76	5.64	
Custom Benchmark (Intl Small Cap)		5.78	-18.47	-18.62	5.12	2.99	6.76	5.03	
Franklin Templeton	204,952,457	4.95	-20.28	-21.58	2.58	1.95	6.86	5.06	8/1/2011
Franklin Templeton - Net		4.95	-20.58	-22.02	1.84	1.21	6.11	4.31	
MSCI AC World ex USA Small Cap (Net)		5.78	-18.47	-18.62	5.12	2.99	6.76	4.46	

Benchmark definitions in glossary.

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
William Blair IntSC	313,071,866	10.41	-32.56	-32.41	4.28	2.64	7.20	7.60	9/1/2010
William Blair IntSC - Net		10.41	-32.86	-32.95	3.48	1.86	6.38	6.78	
MSCI AC World ex USA Small Cap (Net)		5.78	-18.47	-18.62	5.12	2.99	6.76	6.18	
Custom Benchmark (Intl Small Cap)		5.78	-18.47	-18.62	5.12	2.99	6.76	6.43	
Emerging Mkt Equity	1,041,097,804	-0.49	-23.06	-27.29	-2.47	0.67	3.30	7.87	2/1/1992
Emerging Mkt Equity - Net		-0.53	-23.31	-27.69	-3.02	0.10	2.70		
MSCI Emerging Markets Index		-0.16	-17.61	-19.77	1.25	1.32	3.21	6.41	
Genesis Asset Mngrs.	1,041,097,804	-0.49	-23.06	-27.29	-2.47	0.67	3.30	8.81	5/1/2004
Genesis Asset Mngrs. - Net		-0.53	-23.31	-27.69	-3.02	0.10	2.70		
MSCI Emerging Markets Index		-0.16	-17.61	-19.77	1.25	1.32	3.21	7.45	

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Fixed Income	12,911,894,964	2.66	-8.11	-8.88	0.34	1.76	2.46	7.62	1/1/1982
Fixed Income - Net		2.66	-8.15	-8.95	0.24	1.64	2.33		
Custom Benchmark (Fixed Income)		2.67	-7.83	-8.79	-0.09	1.35	1.68	7.10	
Fixed Income IMRF Custom Benchmark		2.68	-8.19	-8.92	-0.03	1.45			
Active Fixed Core	3,974,716,410	2.45	-7.56	-8.53	0.34	1.72	2.18	3.97	4/1/2001
ActiveCore Fixed Inc - Net		2.45	-7.62	-8.61	0.23	1.62	2.04		
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	3.89	
Attucks Fixed Income	91,050,215	2.42	-8.74	-9.74				-6.02	2/1/2021
Attucks Fixed Income - Net		2.42	-8.90	-10.04				-6.27	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12				-6.04	
Brandes FI Core	350,874,448	3.07	-6.28	-7.15	0.45	1.48		1.60	3/1/2016
Brandes FI Core - Net		3.07	-6.29	-7.18	0.44	1.47		1.59	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28		1.50	
EARNEST Partners	944,877,343	2.46	-7.73	-8.99	0.16	1.69	2.18	3.82	5/1/2005
EARNEST Partners - Net		2.46	-7.79	-9.08	0.03	1.56	2.02	3.64	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	3.38	
Garcia Hamilton	1,021,162,246	2.85	-6.15	-7.08	0.54	1.91		2.13	6/1/2015
Garcia Hamilton - Net		2.85	-6.19	-7.14	0.47	1.84		2.05	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28		1.57	
Ramirez Asset Management	549,507,588	2.12	-8.49	-9.62				-1.32	5/1/2020
Ramirez Asset Management - Net		2.12	-8.55	-9.73				-1.45	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12				-3.36	
Xponance Yield Advantage Agg.	1,017,244,570	2.00	-8.62	-9.30	0.37	1.62	2.14	3.65	6/1/2005
Xponance Yield Advantage Agg. - Net		2.00	-8.68	-9.39	0.24	1.48	2.00	3.48	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	3.33	

Benchmark definitions in glossary.

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Pass. Core Fixed Inc	3,121,989,937	2.43	-8.07	-9.06	-0.16	1.33	1.70	5.36	1/1/1990
Pass. Core Fixed Inc - Net		2.43	-8.07	-9.06	-0.16	1.33	1.69		
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	5.34	
BlackRock US Debt I	1,690,412,640	2.44	-8.03	-9.03	-0.12	1.37		2.16	10/1/2013
BlackRock US Debt I - Net		2.44	-8.03	-9.03	-0.12	1.36		2.15	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28		2.04	
NTGI Blmbg Agg.	1,431,577,297	2.43	-8.12	-9.09	-0.20	1.30	1.67	5.40	2/1/1990
NTGI Blmbg Agg. - Net		2.43	-8.12	-9.09	-0.21	1.30	1.67		
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	5.39	
Core Plus Fixed Income	3,083,471,746	2.80	-9.50	-10.48	0.28	1.72	2.45	7.48	1/1/1982
Core Plus Fixed Inc. - Net		2.80	-9.57	-10.60	0.13	1.55	2.28		
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	7.09	
LM Capital Group FI	884,354,388	2.36	-7.79	-9.10	0.91	1.91	2.43	4.17	5/1/2005
LM Capital Group FI - Net		2.36	-7.86	-9.21	0.77	1.75	2.27	4.01	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	3.38	
Progress Inv. FI	1,042								
Loop Capital Management	598,229,728	2.96	-9.63	-10.40	-0.07	1.56	2.60	4.13	5/1/2005
Loop Capital Management - Net		2.96	-9.69	-10.52	-0.20	1.44	2.47	4.00	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	3.38	
Western Asset	1,003,975,961	3.44	-11.24	-12.18	-0.19	1.53	2.65	4.66	11/1/2001
Western Asset - Net		3.44	-11.30	-12.30	-0.32	1.41	2.52		
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12	-0.21	1.28	1.65	3.64	
Longfellow Core Plus	596,910,626	2.26	-8.91	-9.25				-1.50	5/1/2020
Longfellow Core Plus - Net		2.26	-8.97	-9.38				-1.64	
Blmbg. U.S. Aggregate		2.44	-8.16	-9.12				-3.36	

Benchmark definitions in glossary.

Performance

Periods Ended July 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Bank Loans	1,633,201,600	2.16	-3.66	-1.80	2.26	3.11		3.74	8/1/2014
Bank Loans - Net		2.01	-3.79	-1.91	2.22	2.89		3.38	
Custom Benchmark		2.01	-2.92	-1.07	2.45	3.30		3.55	
Barings Global Loan Fund	1,633,201,600	2.16	-3.66	-1.80	2.26	3.11		3.74	8/1/2014
Barings Global Loan Fund - Net		2.01	-3.79	-1.91	2.22	2.89		3.38	
Custom Benchmark		2.01	-2.92	-1.07	2.45	3.30		3.55	
Emerging Markets Debt	2,436,493								
Standish-Mellon EMD	2,436,493								
High Yield	1,095,999,264	5.30	-6.04	-4.69	3.67	4.42	5.73	9.05	4/1/1986
High Yield - Net		5.30	-6.17	-4.99	3.34	4.08	5.37		
ICE BofAML US High Yield, Cash Pay Index		6.02	-8.83	-7.68	1.74	2.91	4.79	7.76	
MacKay Shields	1,095,999,264	5.30	-6.01	-4.69	3.68	4.41	5.79	8.12	11/1/2000
MacKay Shields - Net		5.30	-6.15	-4.98	3.35	4.07	5.42		
ICE BofAML US High Yield, Cash Pay Index		6.02	-8.83	-7.68	1.74	2.91	4.79	6.77	

Benchmark History

Account Name	From Date	To Date	Benchmark
Total Fund			The total fund benchmark is a blend of the asset class benchmark returns weighted by the target allocation for each asset classes:
	3/1/2022	Present	35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18% MSCI AC World ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.
	1/1/2021	2/28/2022	39% Russell 3000 Index, 25% Blmbg. Barc. U.S. Aggregate, 15% MSCI AC World ex USA (Net), 10% NCREIF Fund Index-ODCE (VW) (Net), 10% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill
	3/1/2018	12/31/2020	37% Russell 3000 Index, 28% Blmbg. Barc. U.S. Aggregate, 18% MSCI AC World ex USA (Net), 9% NCREIF Fund Index-ODCE (VW) (Net), 7% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill
Domestic Equity	3/1/2022	Present	93% Russell 3000 Index, 7% FTSE Global Core Infrastructure 50/50 Index (Net)
	1/1/2015	2/28/2022	100% Russell 3000 Index
	1/1/1982	12/31/2014	100% Dow Jones US Total Stock Market Index
Large Cap Growth	1/1/2006	Present	100% Russell 1000 Growth Index
	11/1/2003	12/13/2005	100% S&P 500 Growth
Large Cap Value	1/1/2006	Present	100% Russell 1000 Value Index
	2/1/2001	12/31/2005	100% S&P 500 Value
Public Real Assets	8/1/2017	Present	33.3% Dow Jones Brookfield Global Infrastructure Composite, 66.7% FTSE GLOBAL CORE INFRASTRUCTURE 50/50 INDEX (Net)

Benchmark History

Account Name	From Date	To Date	Benchmark
Intl Small Cap Eqty	6/1/2011	Present	100% MSCI AC World ex USA Small Cap (Net)
	12/1/2005	5/31/2011	100% S&P Developed Ex-U.S. SmallCap (Net)
Barings Global Loan Fund	8/1/2014	Present	Comprised of the Credit Suisse US Leveraged Loan Index and the Credit Suisse Western European Leveraged Loan Index, weighted by the portfolio's market value to each sector.