

Wilshire



Wilshire Advisors

Monthly Performance Summary

As of October 31, 2022

IMRF Performance Summary

- The Illinois Municipal Retirement Fund (“IMRF”) ended October 2022 with a market value of \$47.3 billion, up for the month by approximately \$1.78 billion. IMRF returned 3.71% during the month, underperforming the Total Fund Benchmark, which returned 3.91%. Growth assets posted positive returns for the month of October as U.S. Equity markets rebounded. Defensive portfolios were negative for the month as yields rose.
- The U.S. Equity markets were up for the month, with both small cap and large cap stocks producing gains. The U.S. Equity Portfolio outperformed the benchmark during the month, returning 9.02% versus 7.86%. In aggregate, investment manager performance in Large Cap Value was the largest contributor to relative outperformance.
- Developed International Equity markets were up for the month, while emerging markets posted a loss. The U.S. dollar weakened against foreign economies during October. The International Equity Portfolio outperformed the benchmark during October, returning 3.78% versus 2.99%. Investment manager performance in Large Cap Growth and Core were the largest contributors to relative outperformance.
- U.S. Treasury yields rose in October as core bonds posted a loss. The Fixed Income Portfolio underperformed the benchmark during the month, returning -0.79% versus -0.66%. Investment manager performance in Bank Loans was the largest detractor from performance.
- As of October 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 through Monday October 31, 2022

Portfolio Allocations	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Global 60/40	3.10	(7.47)	(3.34)	3.10	(5.94)	(18.81)	(18.04)	1.69	3.22
Wilshire Risk Parity (12%)	3.43	(9.21)	(5.97)	3.43	(9.03)	(21.69)	(19.16)	(1.92)	3.12

Strategic Allocation Themes *	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Growth ¹	6.03	(9.57)	(3.68)	6.03	(6.82)	(21.14)	(19.96)	4.85	5.24
Defensive Growth ²	3.79	(6.44)	(0.94)	3.79	(3.54)	(15.25)	(14.59)	4.89	6.56
Diversified Credit ³	1.30	(4.72)	(1.15)	1.30	(2.03)	(16.06)	(15.85)	(2.56)	0.20
Real Assets ⁴	2.70	(11.42)	(3.57)	2.70	(9.14)	(12.11)	(10.59)	4.33	5.01
Defensive ⁵	(1.30)	(4.32)	(2.83)	(1.30)	(4.75)	(15.72)	(15.68)	(3.77)	(0.54)

Major Asset Classes	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	8.21	(9.34)	(3.79)	8.21	(4.45)	(18.20)	(16.02)	10.15	10.11
MSCI ACWI-ex-USA (Net)	2.99	(10.00)	(3.22)	2.99	(9.91)	(24.31)	(24.73)	(1.68)	(0.60)
Bloomberg U.S. Aggregate	(1.30)	(4.32)	(2.83)	(1.30)	(4.75)	(15.72)	(15.68)	(3.77)	(0.54)
Bloomberg U.S. Corporate High Yield	2.60	(3.97)	(2.30)	2.60	(0.65)	(12.53)	(11.76)	0.31	2.01
Wilshire Global Real Estate Securities	3.51	(12.54)	(6.04)	3.51	(11.20)	(26.92)	(22.34)	(3.80)	1.81
Bloomberg Commodity	1.99	(8.11)	0.09	1.99	(4.11)	15.83	11.15	13.44	6.92

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 through Monday October 31, 2022

US Equity	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	8.21	(9.34)	(3.79)	8.21	(4.45)	(18.20)	(16.02)	10.15	10.11
Standard & Poor's 500	8.10	(9.21)	(4.08)	8.10	(4.88)	(17.70)	(14.61)	10.22	10.44
Wilshire 4500 Completion	8.65	(9.68)	(2.19)	8.65	(2.48)	(21.47)	(23.93)	8.73	7.56
Wilshire US Large Cap	7.95	(9.25)	(3.92)	7.95	(4.52)	(18.35)	(15.89)	10.40	10.52
Wilshire US Large-Cap Growth	5.10	(9.77)	(4.98)	5.10	(3.27)	(26.50)	(24.61)	11.33	11.81
Wilshire US Large-Cap Value	10.99	(8.67)	(2.72)	10.99	(5.84)	(7.80)	(4.48)	9.28	9.12
Wilshire US Small Cap	11.00	(10.21)	(2.46)	11.00	(3.54)	(16.33)	(16.87)	7.79	6.25
Wilshire US Small-Cap Growth	10.10	(9.45)	(2.72)	10.10	(2.04)	(20.90)	(22.88)	6.92	6.25
Wilshire US Small-Cap Value	11.82	(10.89)	(2.23)	11.82	(4.86)	(11.73)	(10.64)	8.61	6.20
Non-US Equity	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
MSCI ACWI-ex-USA (Net)	2.99	(10.00)	(3.22)	2.99	(9.91)	(24.31)	(24.73)	(1.68)	(0.60)
MSCI EAFE (Net)	5.38	(9.35)	(4.75)	5.38	(9.36)	(23.17)	(23.00)	(1.27)	(0.09)
MSCI EM (Net)	(3.10)	(11.72)	0.42	(3.10)	(11.57)	(29.42)	(31.03)	(4.42)	(3.09)
MSCI ACWI-ex-US Small cap (Net)	3.25	(11.04)	(2.62)	3.25	(8.37)	(27.08)	(27.75)	0.12	(0.29)
Global Equity	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
MSCI ACWI (Net)	6.03	(9.57)	(3.68)	6.03	(6.82)	(21.14)	(19.96)	4.85	5.24
MSCI ACWI Minimum Volatility (Net)	4.15	(6.75)	(2.18)	4.15	(6.03)	(13.89)	(10.73)	0.88	4.36
Fixed Income	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Bloomberg U.S. Aggregate	(1.30)	(4.32)	(2.83)	(1.30)	(4.75)	(15.72)	(15.68)	(3.77)	(0.54)
Bloomberg Long Term Treasury	(5.55)	(7.90)	(4.43)	(5.55)	(9.63)	(32.78)	(31.98)	(9.98)	(2.72)
Bloomberg U.S. TIPS	1.24	(6.62)	(2.66)	1.24	(5.14)	(12.54)	(11.47)	1.12	2.16
Bloomberg U.S. Corporate High Yield	2.60	(3.97)	(2.30)	2.60	(0.65)	(12.53)	(11.76)	0.31	2.01
Credit Suisse Leveraged Loan	0.85	(2.17)	1.53	0.85	1.19	(2.49)	(2.03)	2.57	3.04
Bloomberg US Convertibles Index	2.59	(5.89)	0.78	2.59	(0.31)	(18.12)	(21.77)	10.67	9.17
JPM EMBI Global Diversified	0.15	(6.36)	(0.94)	0.15	(4.57)	(23.83)	(24.19)	(7.19)	(2.66)
Real Assets	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Wilshire Global Real Estate Securities	3.51	(12.54)	(6.04)	3.51	(11.20)	(26.92)	(22.34)	(3.80)	1.81
FTSE Global Core Infrastructure 50/50	3.39	(11.70)	(1.46)	3.39	(8.87)	(9.28)	(5.79)	1.49	4.49
Alerian Midstream Energy	11.05	(9.86)	(0.14)	11.05	(0.98)	24.53	16.94	11.94	8.14
Bloomberg Commodity	1.99	(8.11)	0.09	1.99	(4.11)	15.83	11.15	13.44	6.92
Gold	(1.63)	(2.95)	(3.11)	(1.63)	(8.12)	(10.70)	(8.40)	2.59	5.14
Bitcoin	5.05	(3.82)	(15.68)	5.05	3.70	(55.96)	(67.30)	30.46	26.19

Source: Bloomberg, All returns are in USD

Factor/Relative Returns

Returns through Monday October 31, 2022

Asset Class Differentials	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Stocks (ACWI) > Bonds (BB US Aggregate)	7.33	(5.25)	(0.86)	7.33	(2.07)	(5.42)	(4.28)	8.62	5.78
Stocks (ACWI) > Mkt Alts (Equity Hedged))	2.14	(5.16)	(1.68)	2.14	(3.30)	(13.81)	(13.34)	1.73	3.27
Mkt Alts (Relative Value) > Bonds (BB US Aggregate)	0.76	1.57	1.95	0.76	2.55	6.11	5.76	2.18	0.18
Equity & Real Assets Differentials	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
US Small > Large	3.05	(0.96)	1.46	3.05	0.98	2.02	(0.99)	(2.62)	(4.27)
US Value > Growth	5.89	1.10	2.26	5.89	(2.57)	18.70	20.13	(2.05)	(2.69)
ACWI-ex-US > US	(5.22)	(0.66)	0.57	(5.22)	(5.46)	(6.10)	(8.71)	(11.83)	(10.71)
EM > EAFE	(8.48)	(2.37)	5.17	(8.48)	(2.21)	(6.25)	(8.03)	(3.14)	(3.00)
ACWI-ex-US Currency Impact	(0.03)	(3.01)	(1.97)	(0.03)	(5.06)	(10.66)	(11.64)	(4.24)	(3.03)
EAFE Currency Impact	0.05	(3.14)	(2.47)	0.05	(5.77)	(13.27)	(14.62)	(4.99)	(3.39)
EM Currency Impact	(0.48)	(2.34)	(0.79)	(0.48)	(3.39)	(6.59)	(6.82)	(3.60)	(2.91)
Global Low Volatility > ACWI	(1.88)	2.82	1.51	(1.88)	0.79	7.25	9.23	(3.97)	(0.88)
Global RE > ACWI	(2.53)	(2.97)	(2.36)	(2.53)	(4.38)	(5.78)	(2.38)	(8.64)	(3.43)
Commodities > Global RE	(1.52)	4.44	6.13	(1.52)	7.09	42.75	33.49	17.24	5.11
Commodities > TIPS	0.75	(1.49)	2.75	0.75	1.04	28.37	22.63	12.32	4.76
Gold > Commodities	(3.62)	5.16	(3.20)	(3.62)	(4.01)	(26.53)	(19.55)	(10.85)	(1.78)
Fixed Income Differentials	MTD	SEP	AUG	QTD	Q3 2022	YTD	1 Year	3 Year	5 Year
Duration (US Core > US Core 1-3 Years)	(1.17)	(3.09)	(2.02)	(1.17)	(3.25)	(11.01)	(10.76)	(3.09)	(1.16)
IG Credit > Treasury	0.36	(1.80)	(0.45)	0.36	(0.71)	(5.25)	(5.48)	(0.60)	0.17
High Yield > IG Credit	3.63	1.28	0.63	3.63	4.41	7.03	7.81	4.49	2.33
High Yield > Loans	1.57	(1.71)	(3.88)	1.57	(2.01)	(10.28)	(9.99)	(2.40)	(1.06)
TIPS > Treasury	2.66	(1.93)	1.17	2.66	0.39	4.38	4.79	5.53	2.79
EMD > Dev Hdg	(1.39)	(3.24)	2.00	(1.39)	(1.85)	(11.73)	(12.26)	(3.07)	(2.48)
EMD > High Yield	(3.48)	(1.55)	1.77	(3.48)	(3.41)	(8.67)	(9.53)	(6.02)	(3.82)
Non-US > US Core	1.15	(1.55)	(2.17)	1.15	(4.10)	(8.27)	(8.90)	(4.34)	(3.37)
Non-US Hdg > US Core	1.80	2.03	0.29	1.80	2.55	6.24	6.66	1.13	1.21
FI Currency Impact	(0.65)	(3.58)	(2.45)	(0.65)	(6.64)	(14.51)	(15.56)	(5.47)	(4.58)

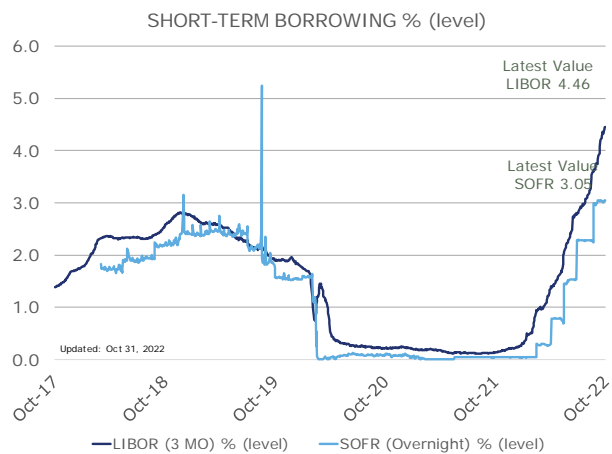
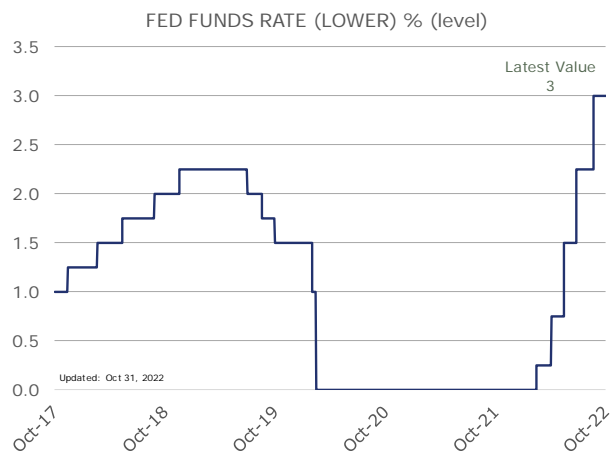
Source: Bloomberg, All returns are in USD

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
	10/31/22	09/30/22	08/31/22	07/29/22	09/30/22	06/30/22	12/31/21	10/29/21	10/31/19	10/31/17
Govt/Treasury Yields										
Fed Funds Target Rate (Upper)	3.25	3.25	2.50	2.50	3.25	1.75	0.25	0.25	1.75	1.25
2-Year Treasury	4.49	4.28	3.50	2.89	4.28	2.96	0.73	0.50	1.53	1.60
5-Year Treasury	4.23	4.09	3.35	2.68	4.09	3.04	1.26	1.19	1.52	2.02
10-Year Treasury	4.05	3.83	3.20	2.65	3.83	3.02	1.51	1.56	1.69	2.38
30-Year Treasury	4.17	3.78	3.29	3.01	3.78	3.19	1.90	1.93	2.18	2.88
10-Year Real Treasury	1.54	1.68	0.71	0.10	1.68	0.67	(1.10)	(1.03)	0.14	0.50
Term Spreads										
5 - 2 Year Treasury Spread	(0.26)	(0.19)	(0.14)	(0.21)	(0.19)	0.08	0.53	0.68	(0.01)	0.41
10 - 5 Year Treasury Spread	(0.18)	(0.26)	(0.16)	(0.03)	(0.26)	(0.03)	0.25	0.37	0.17	0.36
10 - 2 Year Treasury Spread	(0.44)	(0.45)	(0.30)	(0.24)	(0.45)	0.05	0.77	1.05	0.16	0.78
30 - 10Year Treasury Spread	0.11	(0.06)	0.09	0.36	(0.06)	0.16	0.39	0.38	0.49	0.50
30 - 2Year Treasury Spread	(0.32)	(0.51)	(0.20)	0.12	(0.51)	0.22	1.17	1.43	0.65	1.28
Market Yields										
Bloomberg U.S. Treasury YTW	4.39	4.13	3.42	2.89	4.13	3.09	1.23	1.14	1.67	2.03
Bloomberg U.S. Aggregate YTW	5.01	4.75	3.96	3.42	4.75	3.72	1.75	1.66	2.23	2.60
Bloomberg U.S. Long Treasury YTW	4.37	4.00	3.48	3.19	4.00	3.33	1.89	1.94	2.13	2.80
Bloomberg U.S. Long Govt/Credit YTW	5.33	5.03	4.40	4.06	5.03	4.30	2.58	2.60	2.97	3.61
Credit Spreads										
Bloomberg Investment Grade OAS	1.58	1.59	1.40	1.44	1.59	1.55	0.92	0.87	1.10	0.95
Bloomberg High Yield OAS	4.64	5.52	4.84	4.69	5.52	5.69	2.83	2.87	3.92	3.38
Breakeven Inflation Rates										
1-Year Breakeven Inflation	2.73	1.72	2.12	3.79	1.72	4.28	3.43	3.23	1.01	1.21
2-Year Breakeven Inflation	2.86	1.98	2.39	3.25	1.98	3.29	3.22	3.07	1.12	1.60
5-Year Breakeven Inflation	2.66	2.16	2.64	2.81	2.16	2.62	2.91	2.93	1.45	1.82
10-Year Breakeven Inflation	2.51	2.15	2.48	2.55	2.15	2.34	2.59	2.59	1.55	1.88
5-Year 5-Year Forward Breakeven Inflation	2.32	2.12	2.33	2.40	2.12	2.03	2.27	2.19	1.65	1.96

Source: Bloomberg

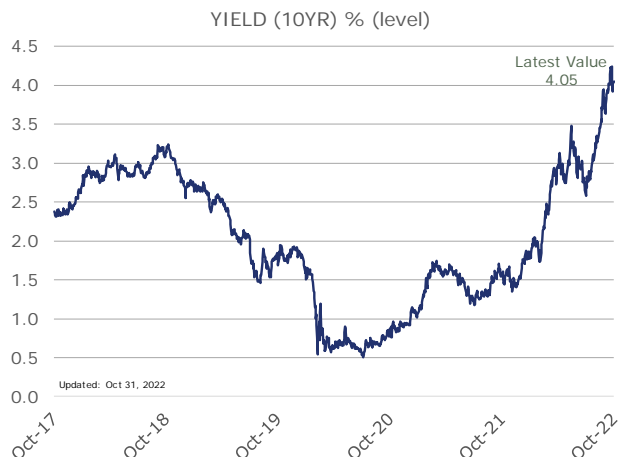
Short Rates



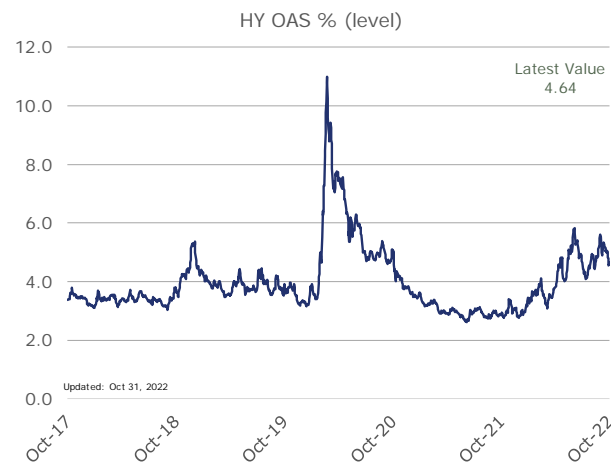
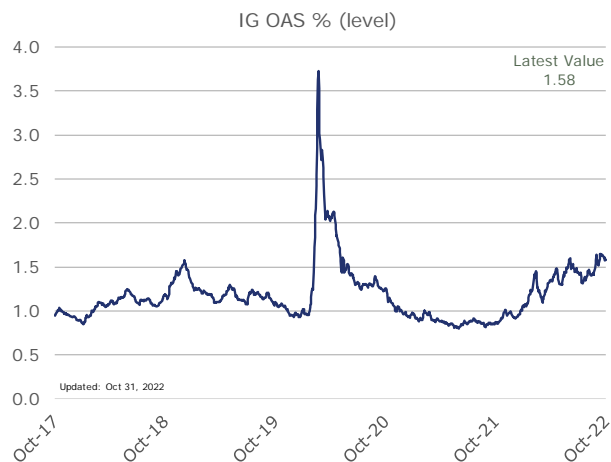
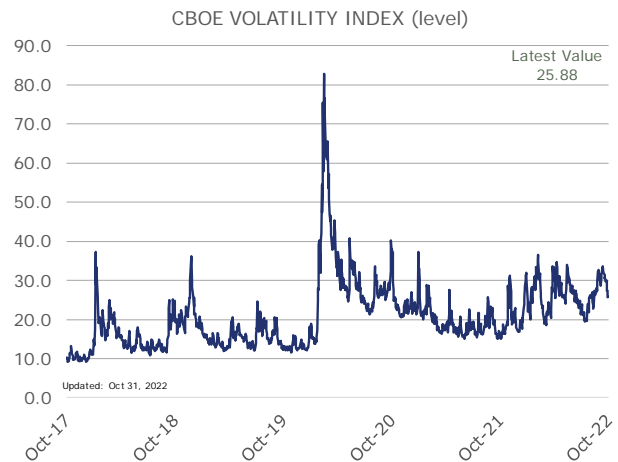
Data Source: Bloomberg

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

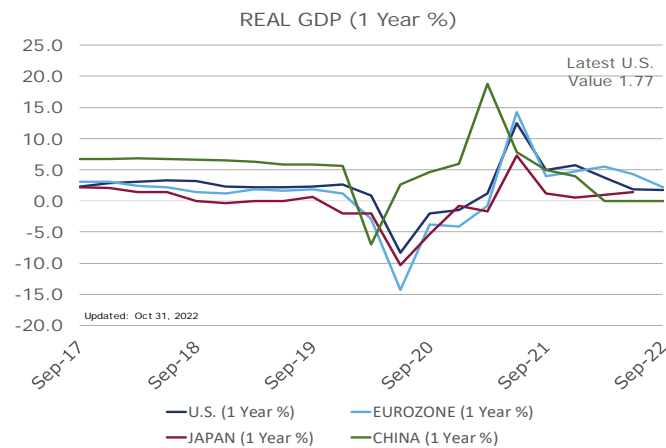
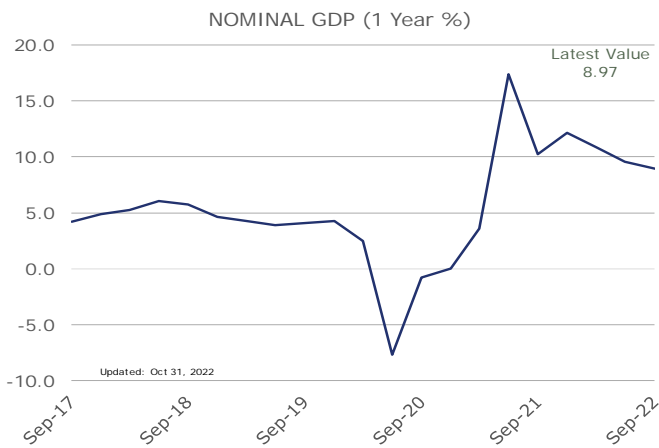
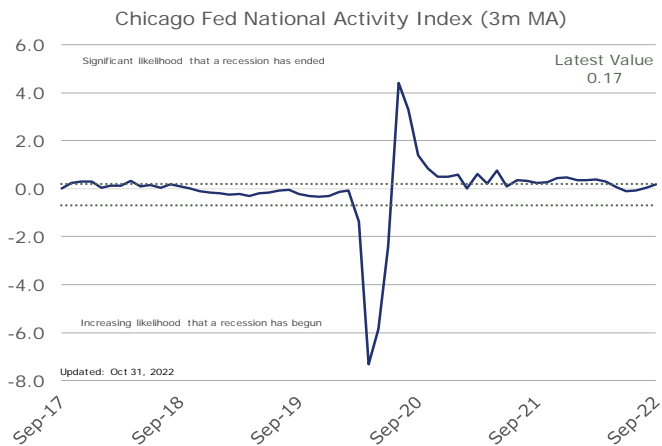
Treasury Rates



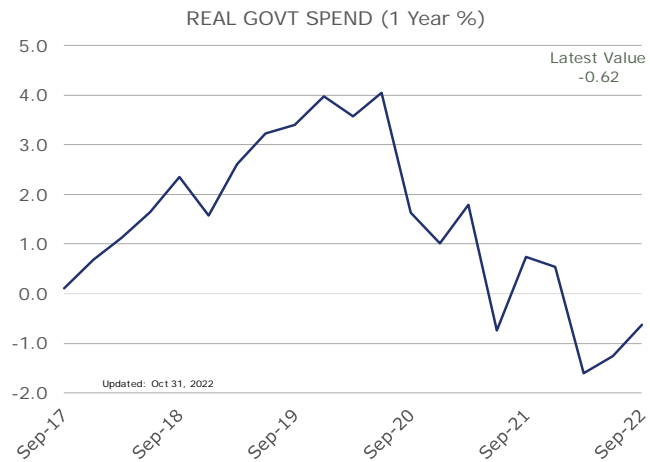
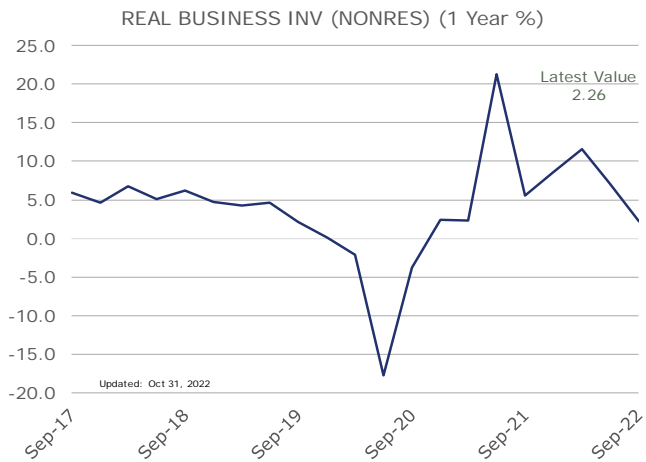
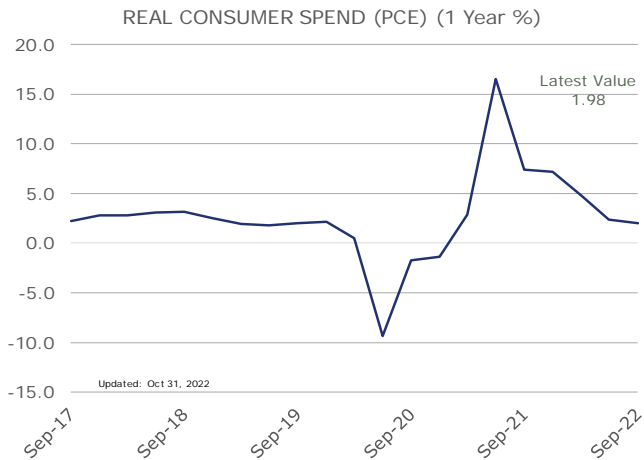
Volatility & Credit Risk



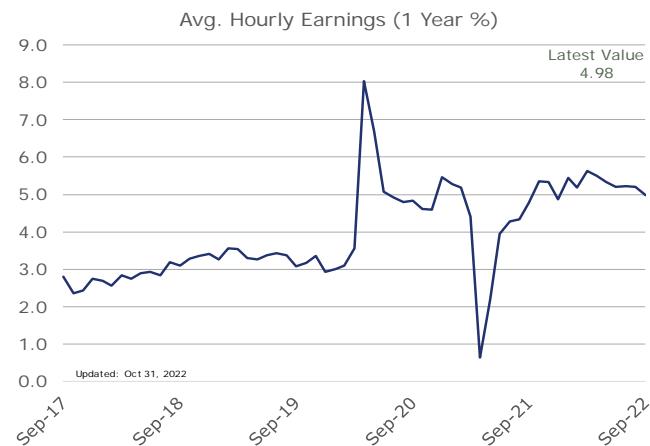
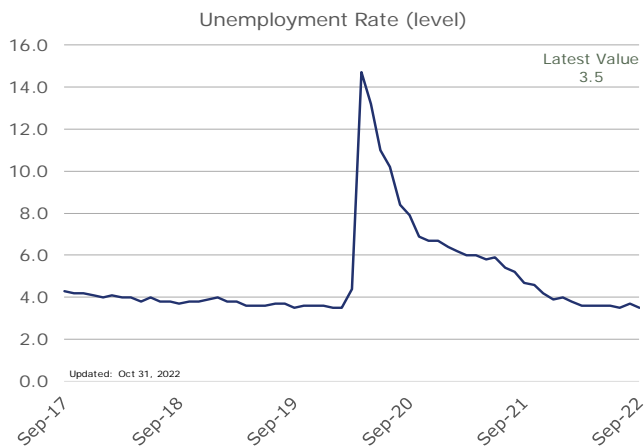
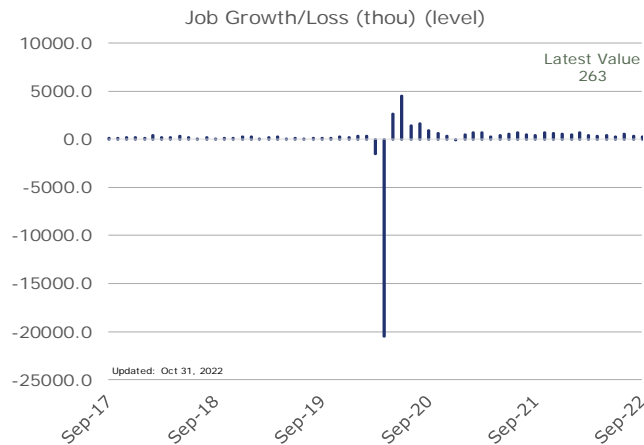
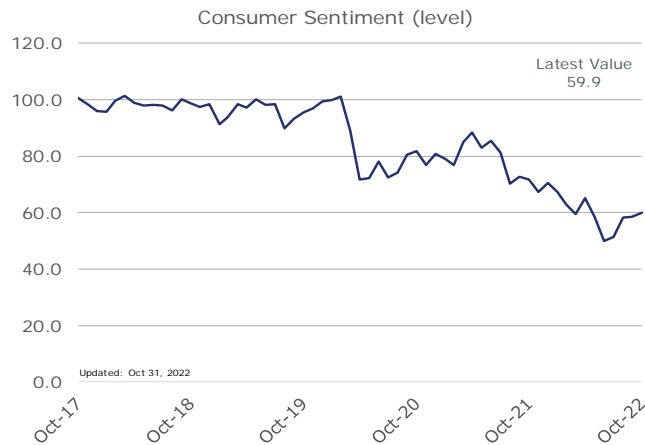
Economic Growth



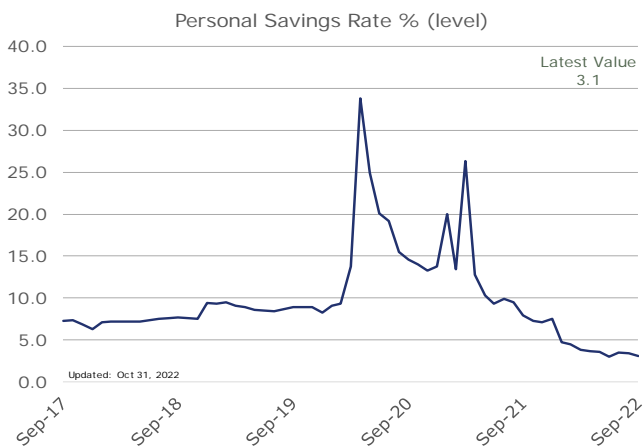
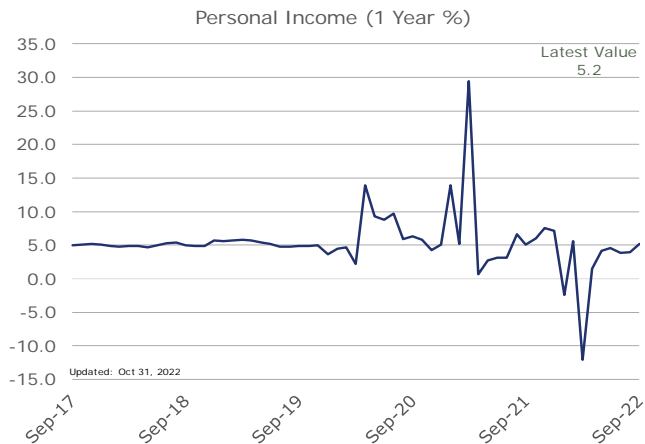
Economic Growth



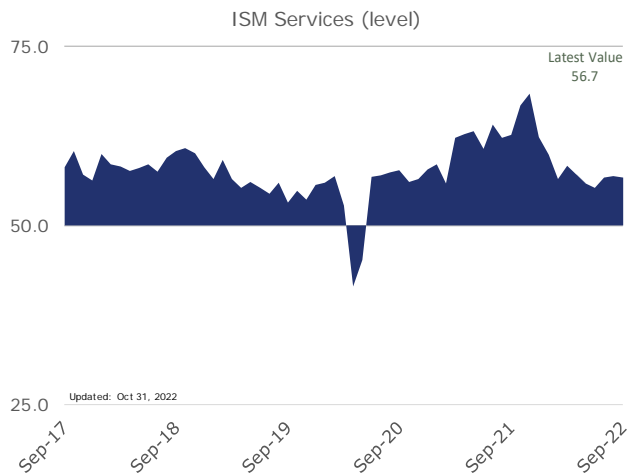
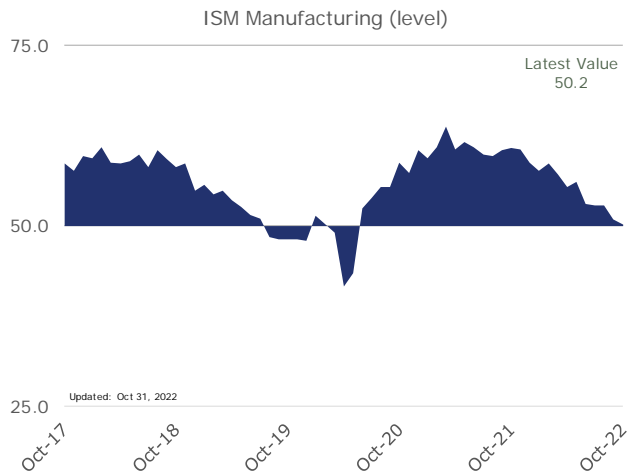
Consumers & Employment



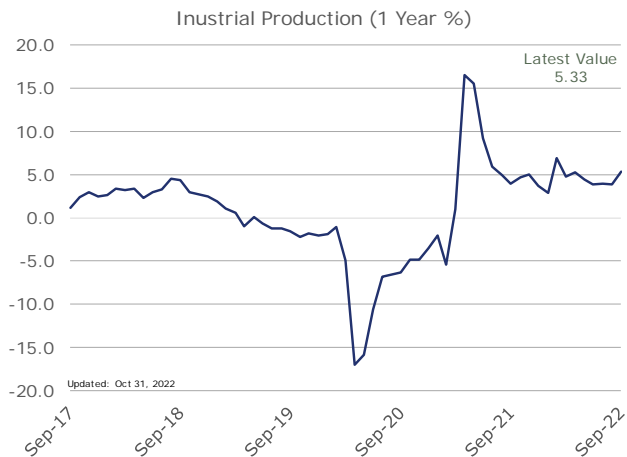
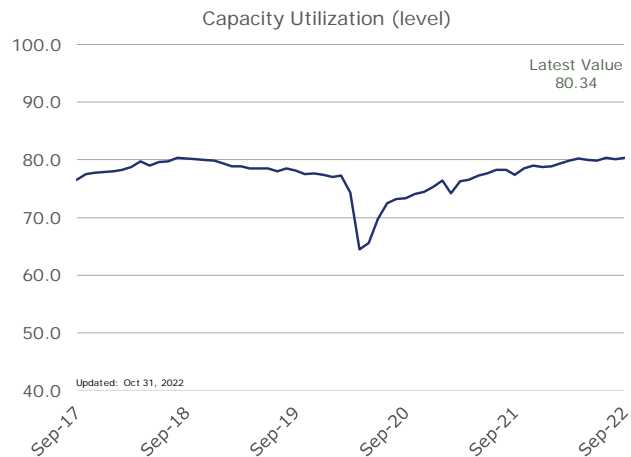
Income & Spending



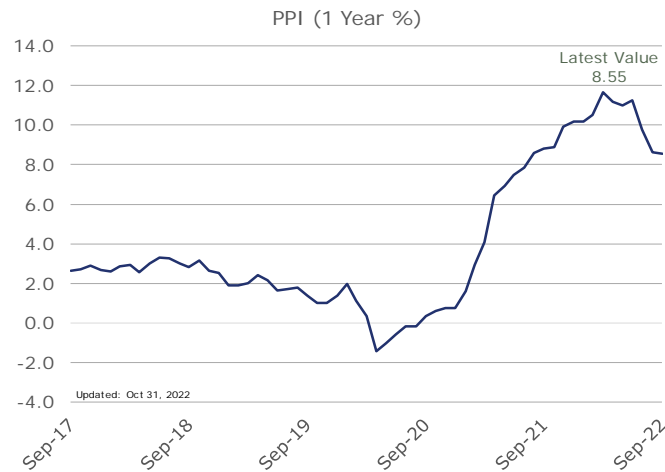
ISM Surveys



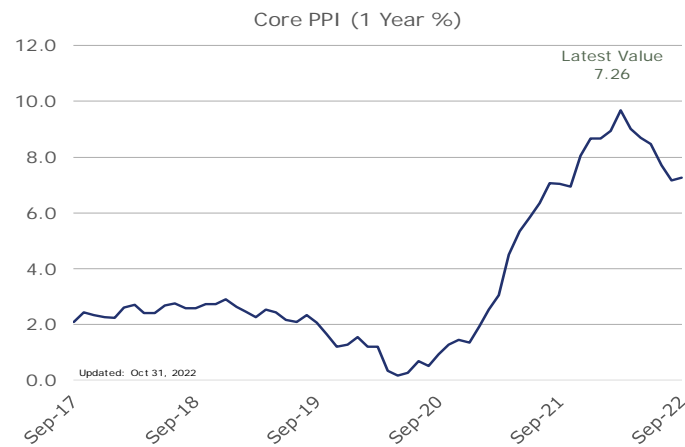
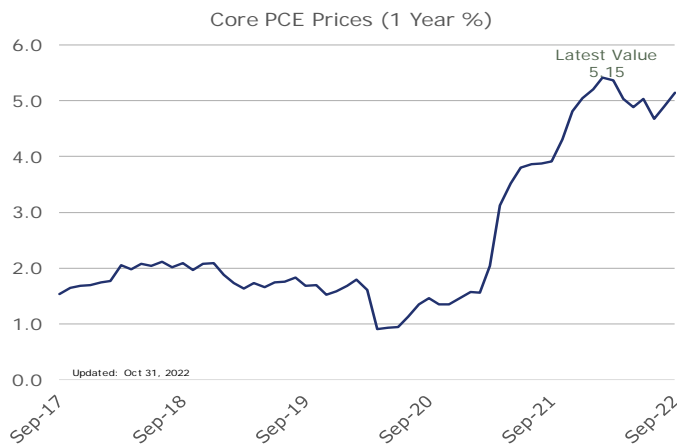
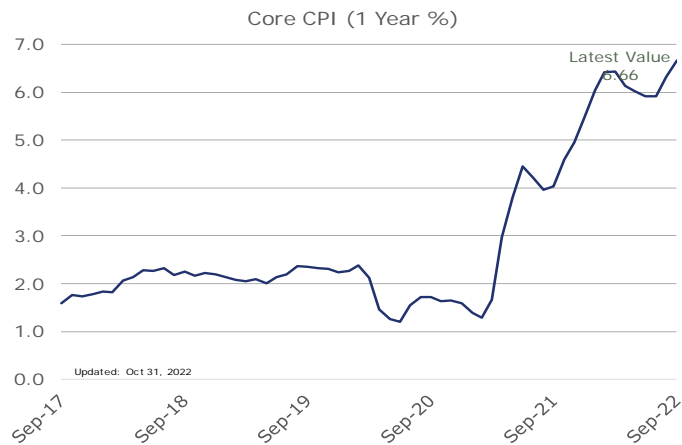
Manufacturing Activity



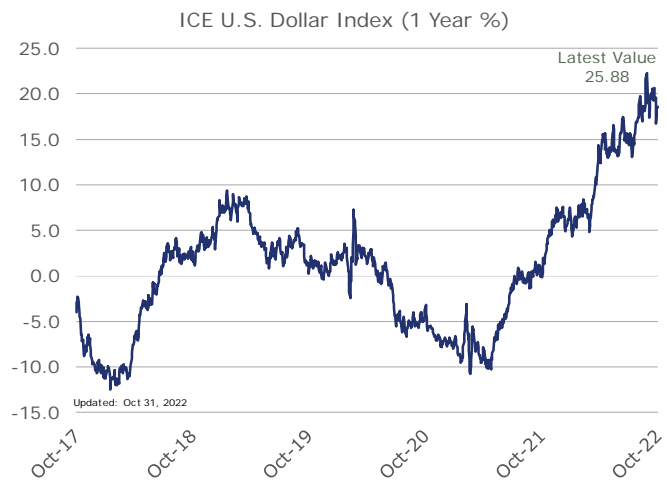
Price Indexes



Core Price Indexes



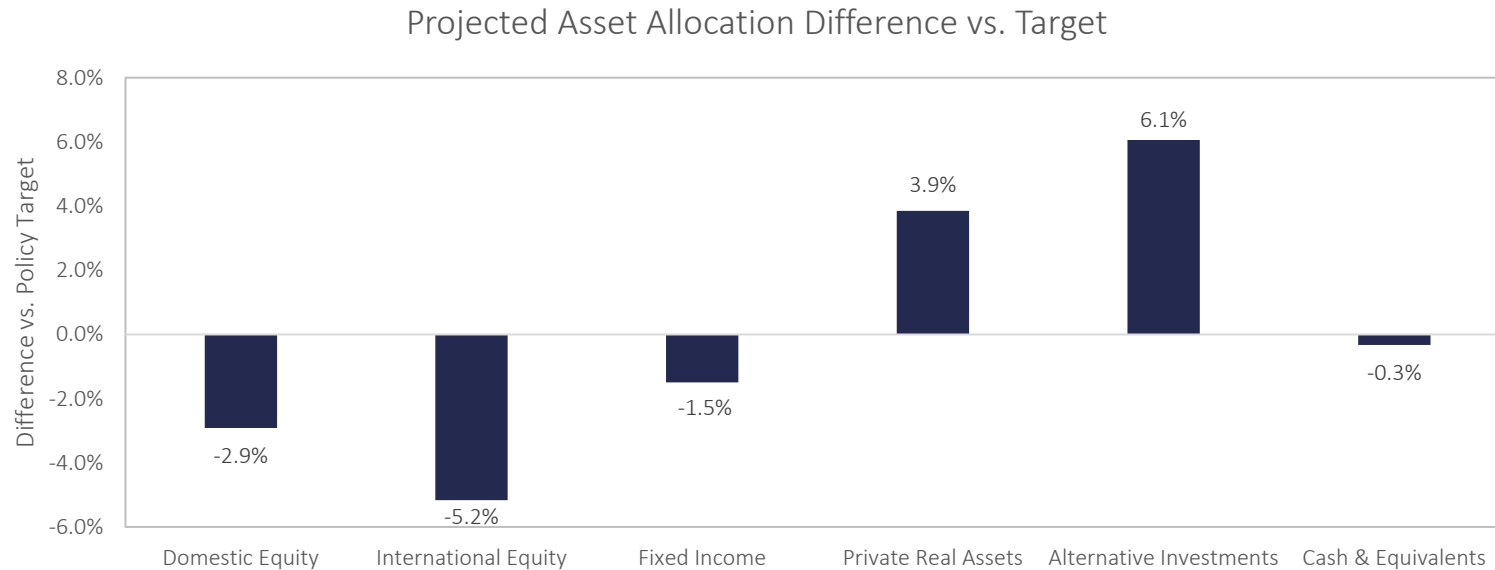
U.S. Dollar



IMRF Performance

Projected Deviations from the Benchmark

As of October 31, 2022



- Includes committed, but unfunded amounts for Real Assets (\$1.92 billion) and Alternatives (\$2.35 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

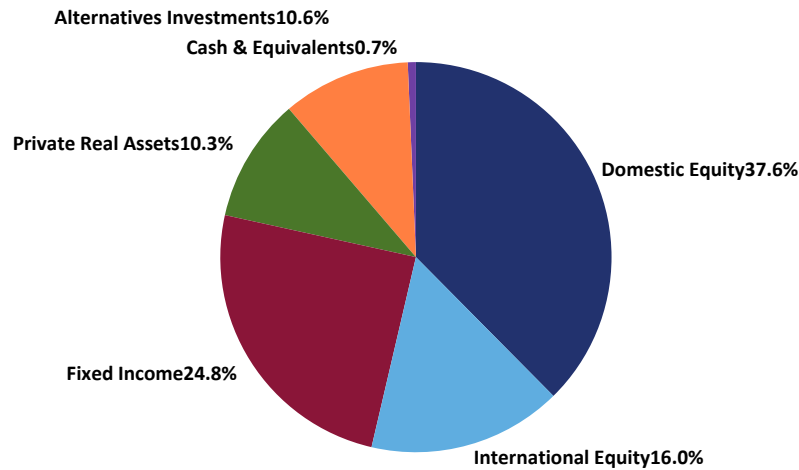
Real Assets Proxy: 50% Domestic Equity, 30% International Equity, 20% Fixed Income

Asset Allocation

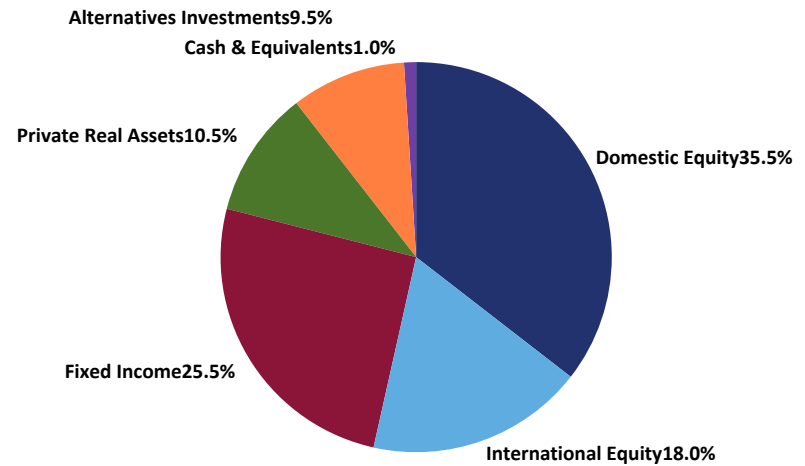
Total Fund

Periods Ended As of October 31, 2022

Actual Allocation



Target Allocation



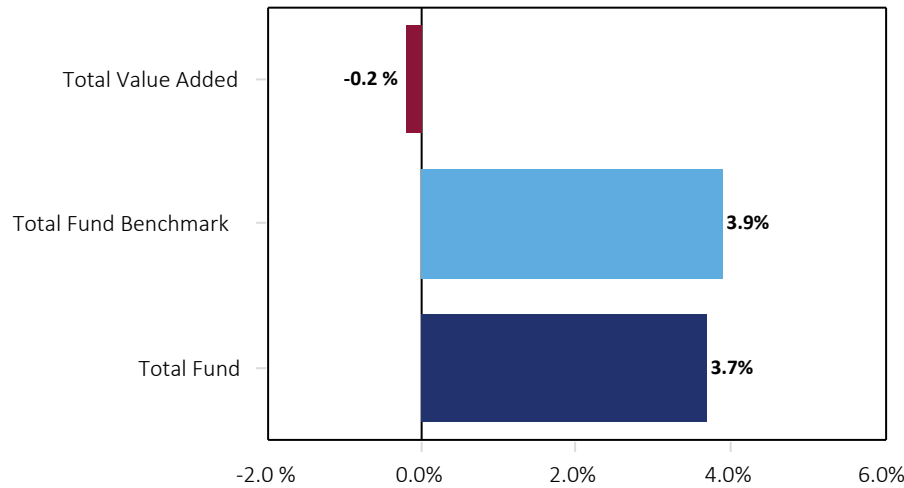
	Actual Allocation \$Millions	Actual Allocation %	Target Allocation %	Differences %	Differences \$Millions
Total Fund	47,288	100.0	100.0	0.0	
Domestic Equity	17,781	37.6	35.5	2.1	994
International Equity	7,587	16.0	18.0	-2.0	-925
Fixed Income	11,736	24.8	25.5	-0.7	-322
Private Real Assets	4,862	10.3	10.5	-0.2	-103
Alternatives Investments	5,004	10.6	9.5	1.1	512
Cash & Equivalents	318	0.7	1.0	-0.3	-155

Total Fund Attribution

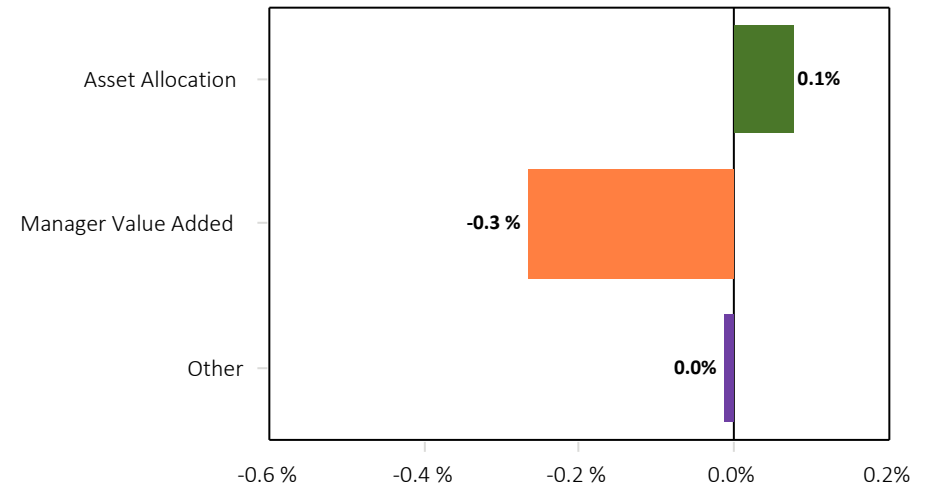
Total Fund

1 Month Ending October 31, 2022

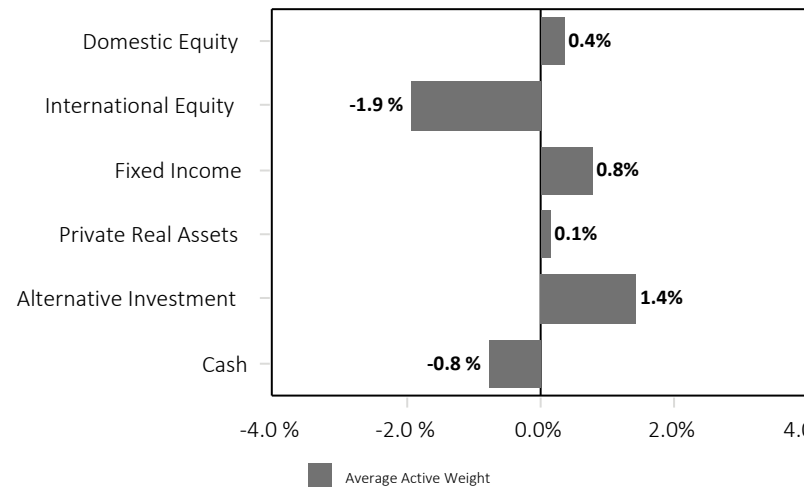
Total Fund Performance



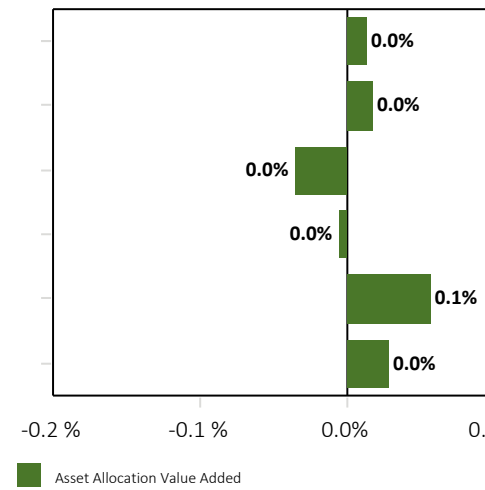
Total Value Added:-0.2 %



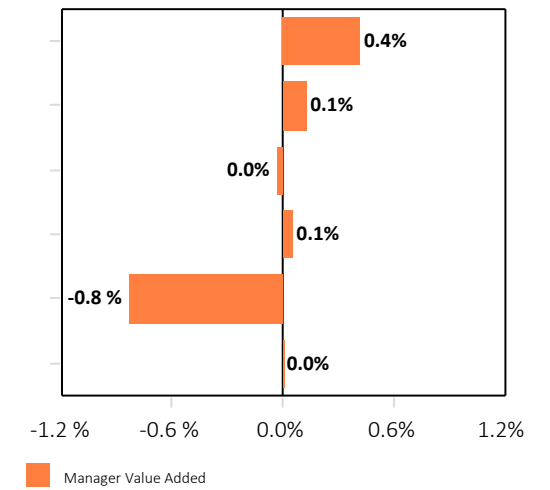
Asset Class Under or Overweighting



Asset Allocation Value Added:0.1%



Total Manager Value Added:-0.3 %



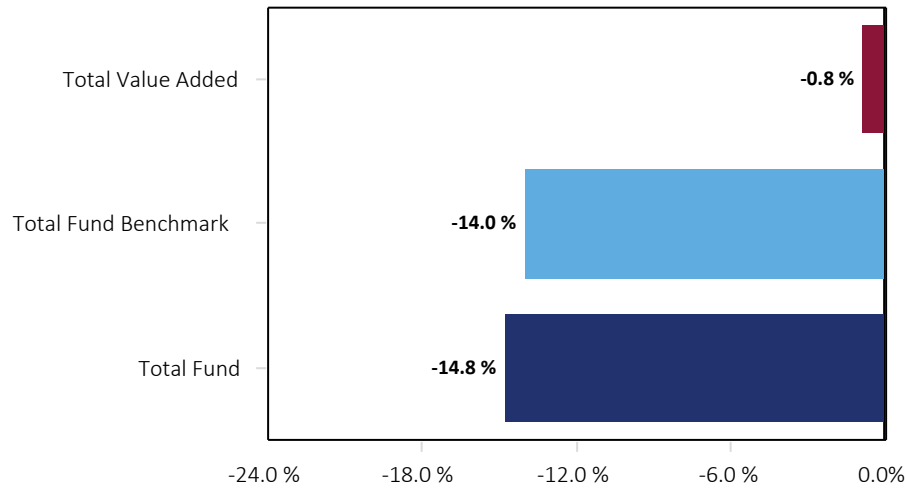
Total Fund Benchmark = 35.5% Domestic Equity Custom Benchmark, 25.5% Fixed Income Custom Benchmark, 18.0% MSCI AC World ex USA (Net), 10.5% Private Real Assets Custom Benchmark, 9.5% Alternatives Custom Benchmark, 1% 90 Day US Treasury Bill.

Total Fund Attribution

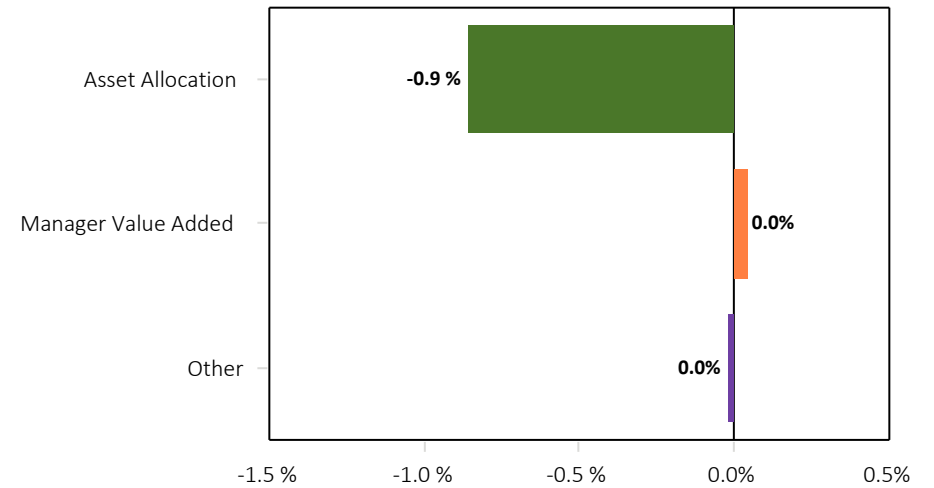
Total Fund

Year To Date Ending October 31, 2022

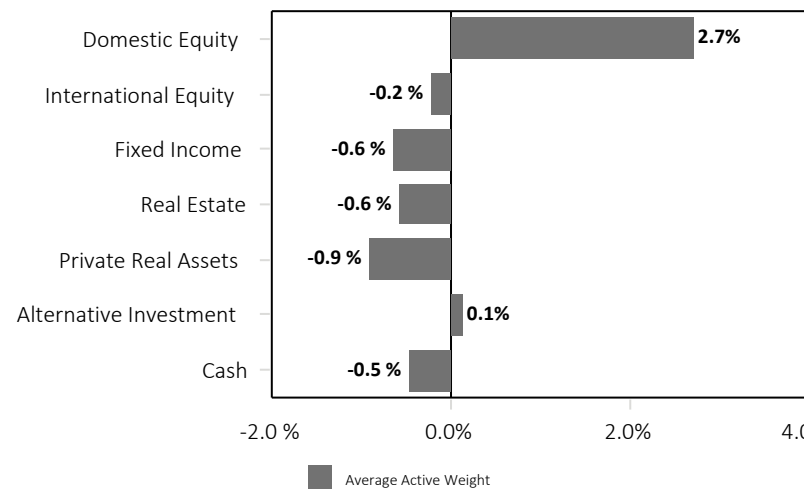
Total Fund Performance



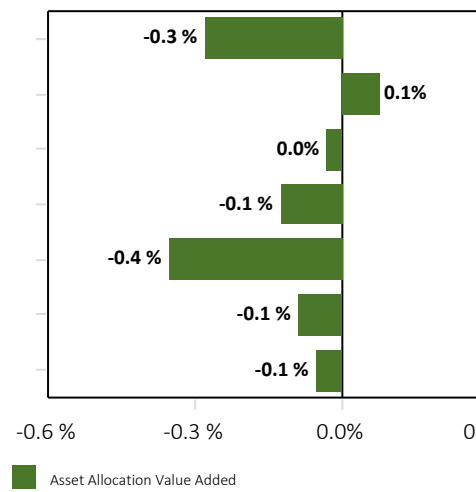
Total Value Added: -0.8 %



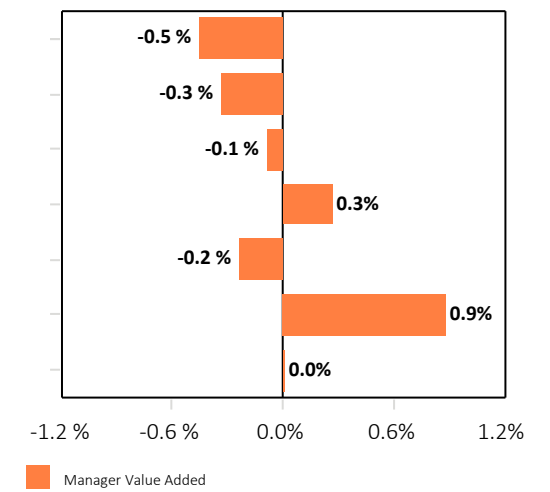
Asset Class Under or Overweighting



Asset Allocation Value Added: -0.9 %



Total Manager Value Added: 0.0 %



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 October 31, 2022

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Total Fund	3.72	-14.68	-13.81	6.03	6.15	8.05	8.14	8.18	9.55	1/1/1982
Total Fund - Net	3.71	-14.79	-13.94	5.86	5.98	7.84				
Total Fund Benchmark	3.91	-13.96	-12.43	4.60	5.39	7.26	7.49			
Domestic Equity	9.03	-19.04	-18.05	9.65	9.20	12.18	10.13	10.10	11.39	1/1/1982
Domestic Equity - Net	9.02	-19.15	-18.19	9.47	9.01	11.95				
Custom Benchmark (U.S. Equity)	7.86	-18.12	-16.20	9.93	9.95	12.49	10.09	9.85		
U.S. Equity IMRF Custom Benchmark	8.58	-18.03	-15.90	9.00	8.80					
International Equity	3.80	-25.71	-26.54	-0.73	0.27	4.66	7.29	6.96	7.00	9/1/1986
International Equity - Net	3.78	-25.91	-26.82	-1.08	-0.07	4.31				
MSCI AC World ex USA (Net)	2.99	-24.31	-24.73	-1.68	-0.60	3.27	6.25			
International Equity IMRF Custom Benchmark	2.31	-25.06	-25.65	-1.93	-0.83					
Fixed Income	-0.79	-14.33	-14.26	-2.66	0.20	1.60	4.08	5.12	7.39	1/1/1982
Fixed Income - Net	-0.79	-14.39	-14.33	-2.75	0.09	1.47				
Custom Benchmark (Fixed Income)	-0.66	-14.03	-13.99	-3.13	-0.15	0.94	3.14	4.56	6.87	
Fixed Income IMRF Custom Benchmark	-0.64	-14.41	-14.32	-3.03	-0.07					
Private Real Assets	0.57								8.50	3/1/2022
Private Real Assets - Net	0.56								8.45	
Custom Benchmark (Private Real Assets)	0.04								12.13	
Real Estate	0.54	13.92	18.89	13.74	12.02	11.48	8.44	7.15	6.17	5/1/1985
Real Estate - Net	0.53	13.85	18.82	13.68	11.97	11.45				
Blended Benchmark (Real Estate)	0.00	12.35	20.96	11.38	9.13	9.89	8.00	7.81	7.98	
Agriculture	0.00	1.24	5.98	2.85	0.51	7.33	7.22		6.51	10/1/1997
NCREIF Farmland Index	0.00	6.18	10.21	6.50	6.33	9.47	12.54		11.14	
Timberland	6.40	7.65	9.19	2.97	1.85	3.07	3.26	6.96	6.94	10/1/1992
NCREIF Timberland Index	0.00	7.64	12.54	5.80	4.69	5.90	6.76	8.41	8.38	

Benchmark definitions on next page.

Asset Class Returns

Periods Ended October 31, 2022

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Unlisted Infrastructure	-0.14	6.65	8.52	12.40					11.35	4/1/2018
Blended Benchmark (Unlisted Infrastructure)	0.73	9.38	10.96	9.65					9.43	
Alternatives Investments	0.29	4.33	9.05	20.31	17.85	13.47	10.55	12.87	11.61	2/1/1986
Alternatives Investments - Net	0.29	4.32	9.04	20.29	17.78	13.27				
Custom Benchmark (Alternative Investments)	7.89	-6.98	-5.64	3.88	5.90	7.44	9.42	11.25	11.93	
Private Equity	0.31	5.29	10.13	23.60	21.21	16.22	13.00	15.59	13.92	2/1/1986
Blended Benchmark (Private Equity)	8.21	-7.43	-6.09	3.72	5.80	7.39	9.40			
Cash	0.33	2.54	2.90	2.87	2.80	1.63	1.38	3.00	3.73	7/1/1986
90 Day US Treasury Bill	0.16	0.77	0.78	0.58	1.16	0.69	1.21	2.33	3.07	

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 October 31, 2022

	Sep-2022		Oct-2022	
	\$	%	\$	%
Domestic Equity	16,315,650,461	35.85	17,780,840,991	37.60
Large Cap Growth	2,888,613,741	6.35	3,068,511,936	6.49
Sands Capital	1,182,736,987	2.60	1,262,923,398	2.67
Xponance Russell 1000 G	1,705,876,754	3.75	1,805,588,537	3.82
Large Cap Value	4,097,277,619	9.00	4,573,865,824	9.67
Dodge & Cox	1,535,830,131	3.38	1,708,407,247	3.61
LSV Asset	1,246,140,802	2.74	1,402,033,173	2.96
NTGI S&P 500 Value	1,315,306,686	2.89	1,463,425,404	3.09
Large Cap Pass. Core	2,093,071,894	4.60	2,264,196,159	4.79
NTGI MarketCap Idx.	2,093,071,894	4.60	2,264,196,159	4.79
Factor Diversity Strategies	2,147,600,430	4.72	2,326,379,557	4.92
U.S. Large Cap FDP-GSAM	2,147,600,430	4.72	2,326,379,557	4.92
Quantitative Factor Strategies	1,934,901,790	4.25	2,116,571,306	4.48
Quantitative US Equity - SciBeta	1,934,901,790	4.25	2,116,571,306	4.48
Small Cap Growth	638,701,529	1.40	695,363,575	1.47
Frontier Capital	638,701,529	1.40	695,363,575	1.47
Small Cap Value	1,255,131,472	2.76	1,426,925,587	3.02
Channing	265,686,926	0.58	298,072,717	0.63
DFA Small Cap Val.	464,803,082	1.02	534,328,774	1.13
William Blair Small Cap Value	524,641,464	1.15	594,524,096	1.26
Public Real Assets	1,260,351,986	2.77	1,309,027,048	2.77
Brookfield	353,567,055	0.78	370,293,270	0.78
Cohen & Steers	906,784,931	1.99	938,733,778	1.99

Investment Manager Asset Allocation

Periods Ended October 31, 2022

	Sep-2022		Oct-2022	
	\$	%	\$	%
International Equity	7,309,519,862	16.06	7,586,708,647	16.04
Intl Large Cap Growth	1,229,245,744	2.70	1,309,844,761	2.77
EARNEST Part. Intl	496,145,739	1.09	530,340,605	1.12
William Blair	733,100,004	1.61	779,504,155	1.65
Intl Large Cap Value	1,074,693,959	2.36	1,130,977,078	2.39
Brandes Investment	473,217,973	1.04	509,150,944	1.08
Mondrian	493,323,935	1.08	509,680,731	1.08
Lazard	108,152,051	0.24	112,145,403	0.24
Intl Large Cap Core	3,524,619,326	7.75	3,685,191,615	7.79
Arrowstreet Capital	863,327,062	1.90	906,346,411	1.92
Brown Capital	417,000,087	0.92	441,685,342	0.93
GlobeFlex Capital	690,534,889	1.52	727,115,012	1.54
Xponance Intl EQ	76,323,694	0.17	79,657,074	0.17
Progress Intl Equity	556,193	0.00	544,150	0.00
Transition Account	187,888	0.00	188,069	0.00
NTGI ACWI ex US Index Fund	1,476,689,513	3.25	1,529,655,557	3.23
Intl All Cap Developed	125,967,378	0.28	133,799,825	0.28
Ativo International	125,967,378	0.28	133,799,825	0.28
International Small Cap	438,760,355	0.96	461,168,865	0.98
Franklin Templeton	173,675,228	0.38	180,392,392	0.38
William Blair IntSC	265,085,127	0.58	280,776,473	0.59

Investment Manager Asset Allocation

Periods Ended October 31, 2022

	Sep-2022		Oct-2022	
	\$	%	\$	%
Emerging Mkt Equity	916,233,100	2.01	865,726,503	1.83
Genesis Investment Management, LLP.	916,233,100	2.01	865,726,503	1.83

Investment Manager Asset Allocation

Periods Ended October 31, 2022

	Sep-2022		Oct-2022	
	\$	%	\$	%
Fixed Income	11,956,987,031	26.28	11,735,937,974	24.82
Domestic Fixed Core	3,708,036,365	8.15	3,641,409,157	7.70
Attucks Fixed Income	84,906,040	0.19	83,605,924	0.18
Brandes FI Core	328,443,611	0.72	326,008,800	0.69
EARNEST Partners	884,446,982	1.94	868,476,167	1.84
Garcia Hamilton	941,005,194	2.07	920,633,152	1.95
Ramirez Asset Management	514,073,825	1.13	504,784,551	1.07
Xponance Yield Advantage Agg.	955,160,714	2.10	937,900,563	1.98
Domestic Fixed Passive Core	2,727,981,673	5.99	2,618,485,050	5.54
NTGI Blmbg Agg.	1,155,912,468	2.54	1,066,627,195	2.26
BlackRock US Debt I	1,572,069,206	3.45	1,551,857,855	3.28
Domestic Fixed Core Plus	2,867,955,733	6.30	2,829,793,945	5.98
LM Capital Group FI	824,418,556	1.81	814,854,201	1.72
Progress Inv. FI	978	0.00	1,012	0.00
Loop Capital Management	557,579,547	1.23	551,011,952	1.17
Western Asset	927,123,840	2.04	914,741,787	1.93
Longfellow Core Plus	558,832,812	1.23	549,184,993	1.16
Bank Loans	1,612,323,391	3.54	1,587,889,154	3.36
Barings Global Loan Fund	1,612,323,391	3.54	1,587,889,154	3.36
Emerging Markets Debt	2,452,746	0.01	424,730	0.00
Standish-Mellon EMD	2,452,746	0.01	424,730	0.00
High Yield	1,038,237,123	2.28	1,057,935,938	2.24
MacKay Shields	1,038,237,123	2.28	1,057,935,938	2.24

Investment Manager Asset Allocation

Periods Ended October 31, 2022

	Sep-2022		Oct-2022	
	\$	%	\$	%
Private Real Assets	4,842,223,932	10.64	4,862,214,118	10.28
Real Estate	4,426,977,194	9.73	4,445,715,752	9.40
Real Estate Core Cmp	2,428,952,037	5.34	2,450,129,239	5.18
TA Assoc. Buckhead	990,254,880	2.18	990,254,880	2.09
Barings Euro Core Property	131,454,529	0.29	132,621,940	0.28
Blackstone Property Euro	165,351,985	0.36	166,820,429	0.35
INVESCO Core Real Estate	261,713,524	0.58	263,729,304	0.56
INVESCO European real estate	54,542,157	0.12	55,111,454	0.12
AEW Core Property Tr	303,751,085	0.67	305,726,614	0.65
CBRE Core Partners	328,560,056	0.72	333,822,479	0.71
JPM Strategic Property Fund	193,323,821	0.42	202,042,139	0.43
RE Non-Core Cmp	1,998,025,157	4.39	1,995,586,512	4.22
Artemis MWBE Spruce	316,990,821	0.70	314,549,102	0.67
Franklin T. EMREFF	3,953,769	0.01	3,953,769	0.01
Security Capital	89,946,438	0.20	93,867,301	0.20
Dune II	8,031,504	0.02	8,031,504	0.02
Non-Core Real Estate Funds	1,354,225,599	2.98	1,348,910,910	2.85
Non-Core Intl Real Estate	224,795,201	0.49	226,192,102	0.48
Almanac ARS V	81,825	0.00	81,825	0.00
Agriculture	241,046,869	0.53	241,046,653	0.51
Premiere Partners IV	241,046,869	0.53	241,046,653	0.51
Timberland	57,865,591	0.13	60,922,439	0.13
Forest Investment	57,865,591	0.13	60,922,439	0.13
Unlisted Infrastructure	116,334,278	0.26	114,529,274	0.24
Unlisted Infrastructure Funds	116,334,278	0.26	114,529,274	0.24

Investment Manager Asset Allocation

Periods Ended October 31, 2022

	Sep-2022		Oct-2022	
	\$	%	\$	%
Alternatives Investments	4,972,045,500	10.93	5,004,465,699	10.58
Absolute Return	114,351	0.00	109,329	0.00
Aurora Investment	114,351	0.00	109,329	0.00
Private Equity	4,807,584,066	10.56	4,835,971,572	10.23
Abbott S/A Comp.	522,190,715	1.15	518,722,718	1.10
Muller Monroe MPEFF	1	0.00	1	0.00
Pantheon S/A Comp.	439,912,751	0.97	439,918,309	0.93
Private Equity Fund - Domestic	3,177,221,389	6.98	3,194,159,236	6.75
Private Equity Fund - International	465,331,972	1.02	476,446,619	1.01
Oakbrook Opportunities Fund	202,927,238	0.45	206,724,689	0.44
Private Credit	164,347,083	0.36	168,384,798	0.36
Private Credit Fund - Domestic	164,347,083	0.36	168,384,798	0.36
Cash & Equivalents	109,259,037	0.24	317,654,568	0.67
Total Fund	45,505,685,823	100.00	47,287,821,997	100.00

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Total Fund	47,287,821,997	3.72	-14.68	-13.81	6.03	6.15	8.05	9.55	1/1/1982
Total Fund - Net		3.71	-14.79	-13.94	5.86	5.98	7.84		
Total Fund Benchmark		3.91	-13.96	-12.43	4.60	5.39	7.26		
Domestic Equity	17,780,840,991	9.03	-19.04	-18.05	9.65	9.20	12.18	11.39	1/1/1982
Domestic Equity - Net		9.02	-19.15	-18.19	9.47	9.01	11.95		
Custom Benchmark (U.S. Equity)		7.86	-18.12	-16.20	9.93	9.95	12.49		
Russell 3000 Index		8.20	-18.44	-16.52	9.79	9.87	12.46	11.33	
U.S. Equity IMRF Custom Benchmark		8.58	-18.03	-15.90	9.00	8.80			
Large Cap Equity	12,232,953,476	9.04	-21.19	-20.50	9.56	9.53	12.48	11.08	1/1/1982
Large Cap Equity - Net		9.04	-21.25	-20.57	9.47	9.43	12.36		
Russell 1000 Index		8.02	-18.54	-16.38	9.99	10.19	12.66	11.47	
Large Cap Growth	3,068,511,936	6.23	-31.85	-32.47	9.92	11.65	13.67	11.75	1/1/1982
Large Cap Growth - Net		6.23	-31.90	-32.53	9.82	11.54	13.53		
LCG Blended Benchmark		5.84	-26.61	-24.60	11.75	12.59	14.69		
Russell 1000 Growth Index		5.84	-26.61	-24.60	11.75	12.59	14.69	11.21	
Xponance Russell 1000 G	1,805,588,537	5.85	-26.59	-24.58	11.74			10.21	10/1/2018
Xponance Russell 1000 G - Net		5.85	-26.60	-24.60	11.72			10.19	
Russell 1000 Growth Index		5.84	-26.61	-24.60	11.75			10.22	
Sands Capital	1,262,923,398	6.78	-46.31	-52.47	1.57	6.82	11.56	10.31	11/1/2003
Sands Capital - Net		6.78	-46.42	-52.60	1.34	6.58	11.32		
LCG Blended Benchmark		5.84	-26.61	-24.60	11.75	12.59	14.69	10.26	
Russell 1000 Growth Index		5.84	-26.61	-24.60	11.75	12.59	14.69	10.30	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							Inception Date
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Large Cap Value	4,573,865,824	11.85	-7.50	-5.11	9.27	8.04	11.71	10.21	10/1/1982
Large Cap Value - Net		11.83	-7.62	-5.26	9.11	7.87	11.53		
LCV Blended Benchmark		10.25	-9.32	-7.00	7.31	7.21	10.30		
Russell 1000 Value Index		10.25	-9.32	-7.00	7.31	7.21	10.30	11.47	
Dodge & Cox	1,708,407,247	11.45	-8.30	-6.97	11.70	9.56	12.80	9.76	9/1/2003
Dodge & Cox - Net		11.45	-8.45	-7.17	11.49	9.33	12.57		
LCV Blended Benchmark		10.25	-9.32	-7.00	7.31	7.21	10.30	8.19	
Russell 1000 Value Index		10.25	-9.32	-7.00	7.31	7.21	10.30	8.32	
LSV Asset	1,402,033,173	12.75	-6.94	-4.16	7.87	6.96	11.68	10.43	2/1/2003
LSV Asset - Net		12.68	-7.16	-4.39	7.61	6.69	11.42		
LCV Blended Benchmark		10.25	-9.32	-7.00	7.31	7.21	10.30	8.96	
Russell 1000 Value Index		10.25	-9.32	-7.00	7.31	7.21	10.30	8.97	
NTGI S&P 500 Value	1,463,425,404	11.47	-7.09	-3.78	8.09	8.30	10.98	6.30	8/1/1999
NTGI S&P 500 Value - Net		11.47	-7.09	-3.79	8.08	8.29	10.98		
S&P 500 Value		11.50	-6.97	-3.66	8.05	8.26	10.91	6.27	
Large Cap Pass. Core	2,264,196,159	8.18	-18.75	-16.87	9.61	9.76	12.43	11.02	1/1/1985
Large Cap Pass. Core - Net		8.18	-18.76	-16.88	9.60	9.75	12.42		
Dow Jones US Total Stock Market Index		8.16	-18.79	-16.94	9.59	9.72	12.36		
NTGI MarketCap Idx.	2,264,196,159	8.18	-18.75	-16.87	9.61	9.76	12.43	10.81	2/1/1985
NTGI MarketCap Idx. - Net		8.18	-18.76	-16.88	9.60	9.75	12.42		
Dow Jones US Total Stock Market Index		8.16	-18.79	-16.94	9.59	9.72	12.36		
Factor Diversity Strategies	2,326,379,557	8.32	-18.17	-15.56				7.24	8/18/2020

Performance

Periods Ended October 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	2,326,379,557	8.32	-18.17	-15.56				7.24	8/18/2020
U.S. Large Cap FDP-GSAM - Net		8.32	-18.20	-15.59				7.18	
Solactive GBS U.S. 1000 Index		8.01	-18.86	-16.85				6.92	
GSAM Active Beta US. Large Cap FDC Index		8.36	-18.14	-15.53				7.22	
Quantitative Factor Strategies	2,116,571,306	9.39	-12.64	-9.31	7.96			7.74	9/17/2019
Quantitative US Equity - SciBeta	2,116,571,306	9.39	-12.64	-9.31	7.96			7.74	9/17/2019
Quantitative US Equity - SciBeta - Net		9.39	-12.68	-9.36	7.76			7.55	
SciBeta US Hi-Fctr-Intst Div Multi-Beta Multi-Strat Index		9.53	-13.57	-10.31	7.05			6.76	
Small Cap	2,122,289,161	12.06	-11.28	-10.48	11.37	8.44	11.53	11.91	7/1/1988
Small Cap Composite - Net		12.02	-11.85	-11.16	10.65	7.81	10.91		
Russell 2000 Index		11.01	-16.86	-18.54	7.05	5.56	9.93	9.10	
Small Cap Growth	695,363,575	8.87	-19.16	-21.42	11.60	10.72	12.73	12.73	7/1/1988
Small Cap Growth - Net		8.74	-20.15	-22.43	10.49	9.83	12.00		
Russell 2000 Growth Index		9.49	-22.57	-26.02	5.11	5.17	10.15	7.77	
Frontier Capital	695,363,575	8.87	-19.16	-21.42	12.56	13.03	13.67	13.09	8/1/1988
Frontier Capital - Net		8.74	-20.15	-22.37	11.37	12.03	12.86		
Russell 2000 Growth Index		9.49	-22.57	-26.02	5.11	5.17	10.15	7.85	
Small Cap Value	1,426,925,587	13.69	-6.86	-4.07	11.47	7.15	11.19	11.57	9/1/1989
Small Cap Value - Net		13.69	-7.18	-4.53	10.96	6.64	10.65		
Russell 2000 Value Index		12.59	-11.19	-10.73	8.08	5.31	9.37	9.72	
Channing	298,072,717	12.19	-13.06	-12.30	9.53	5.54	10.50	9.65	7/1/2011
Channing - Net		12.19	-13.40	-12.75	9.05	5.05	9.97	9.08	
Russell 2000 Value Index		12.59	-11.19	-10.73	8.08	5.31	9.37	8.49	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
DFA Small Cap Val.	534,328,774	14.96	-1.26	1.44	15.44	8.24	11.68	12.00	2/1/1996
DFA Small Cap Val. - Net		14.96	-1.51	1.04	14.94	7.75	11.15		
Russell 2000 Value Index		12.59	-11.19	-10.73	8.08	5.31	9.37	9.21	
William Blair Small Cap Value	594,524,096	13.32	-8.25	-4.25	9.36	7.08	11.68	11.14	5/1/1999
Inv. Couns. Maryland - Net		13.32	-8.62	-4.76	8.83	6.55	11.14		
Russell 2000 Value Index		12.59	-11.19	-10.73	8.08	5.31	9.37	8.76	
Public Real Assets	1,309,027,048	3.86	-8.04	-4.76	2.54	5.45		5.32	8/1/2017
Public Real Assets - Net		3.86	-8.25	-5.05	2.16	5.02		4.92	
Public Real Assets Benchmark		3.94	-9.39	-6.41	0.86	3.50		3.44	
Brookfield	370,293,270	4.73	-3.83	-1.62	3.08	4.85		4.29	8/1/2017
Brookfield - Net		4.73	-4.12	-2.04	2.57	4.32		3.79	
Dow Jones Brookfield Global Infrastructure Composite Index		5.11	-8.62	-6.35	1.02	3.07		2.64	
Cohen & Steers	938,733,778	3.52	-9.06	-5.54	2.64	5.95		6.02	8/1/2017
Cohen & Steers - Net		3.52	-9.25	-5.80	2.29	5.56		5.65	
FTSE Global Core Infrastructure 50/50 Index (Net)		3.36	-9.80	-6.47	0.75	3.69		3.81	

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							Inception Date
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
International Equity	7,586,708,647	3.80	-25.71	-26.54	-0.73	0.27	4.66	7.00	9/1/1986
International Equity - Net		3.78	-25.91	-26.82	-1.08	-0.07	4.31		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27		
International Equity IMRF Custom Benchmark		2.31	-25.06	-25.65	-1.93	-0.83			
Intl LargeCap Equity	6,126,013,454	5.10	-23.05	-23.36	0.80	1.14	5.21	7.13	9/1/1986
Intl LargeCap Equity - Net		5.10	-23.21	-23.62	0.51	0.86	4.93		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27		
Intl Large Cap Grwth	1,309,844,761	6.55	-26.24	-27.34	2.94	2.21	5.46	7.47	9/1/2002
Intl Large Cap Grwth - Net		6.53	-26.42	-27.61	2.61	1.93	5.15		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	5.88	
MSCI AC World ex USA Growth (Net)		1.96	-30.50	-30.99	-1.91	0.09	4.14	6.08	
EARNEST Part. Intl	530,340,605	6.89	-16.24	-16.27	3.77	1.97	4.86	7.97	10/1/2004
EARNEST Part. Intl - Net		6.84	-16.41	-16.44	3.55	1.77	4.62		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	4.58	
MSCI AC World ex USA Growth (Net)		1.96	-30.50	-30.99	-1.91	0.09	4.14	5.14	
William Blair	779,504,155	6.33	-31.78	-33.34	2.35	2.51	6.05	8.48	10/1/2002
William Blair - Net		6.33	-31.97	-33.65	1.97	2.15	5.67		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	6.50	
MSCI AC World ex USA Growth (Net)		1.96	-30.50	-30.99	-1.91	0.09	4.14	6.59	
Intl Large Cap Val.	1,130,977,078	5.24	-18.69	-19.11	-1.54	-0.30	3.99	7.42	10/1/1995
Intl Large Cap Val. - Net		5.24	-18.88	-19.34	-1.82	-0.61	3.62		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	4.42	
MSCI AC World ex USA Value		4.07	-17.29	-17.58	-1.31	-0.99	2.81		

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							Inception Date
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Brandes Investment	509,150,944	7.59	-16.09	-16.32	-0.09	0.41	4.72	7.68	1/1/1996
Brandes Investment - Net		7.59	-16.22	-16.45	-0.29	0.21	4.48		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	4.33	
MSCI AC World ex USA Value		4.07	-17.29	-17.58	-1.31	-0.99	2.81		
Mondrian	509,680,731	3.32	-20.59	-21.04	-2.76	-0.89	3.36	3.15	4/1/2012
Mondrian - Net		3.32	-20.76	-21.29	-3.09	-1.31	2.90	2.69	
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	3.05	
MSCI AC World ex USA Value		4.07	-17.29	-17.58	-1.31	-0.99	2.81	2.69	
Lazard	112,145,403	3.69	-21.24	-22.25	-1.62	0.00	3.97	4.03	4/1/2012
Lazard - Net		3.69	-21.34	-22.40	-1.82	-0.23	3.51	3.59	
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	3.05	
MSCI AC World ex USA Value		4.07	-17.29	-17.58	-1.31	-0.99	2.81	2.69	
Intl Large Cap Active Core	2,155,536,058	5.25	-22.47	-22.07	2.86	2.37	6.77	4.44	2/1/2008
Intl Large Cap Active Core - Net		5.25	-22.71	-22.51	2.32	1.86	6.23		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	1.53	
Arrowstreet Capital	906,346,411	4.98	-18.67	-17.06	8.07	5.66	8.77	5.68	3/1/2008
Arrowstreet Capital - Net		4.98	-18.97	-17.45	7.57	5.18	8.27	5.19	
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	1.34	
Brown Capital	441,685,342	5.92	-33.85	-35.55	-1.71	0.35	5.96	6.17	10/1/2004
Brown Capital - Net		5.92	-33.98	-36.17	-2.40	-0.28	5.14		
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	4.58	
GlobeFlex Capital	727,115,012	5.30	-18.13	-17.12	2.11	0.69	5.68	4.32	3/1/2006
GlobeFlex Capital - Net		5.30	-18.34	-17.40	1.73	0.30	5.28	3.89	
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73	-1.68	-0.60	3.27	2.73	

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Xponance Intl EQ	79,657,074	4.37	-26.89	-27.12				-10.10	2/1/2021
Xponance Intl EQ - Net		4.20	-27.37	-27.71				-10.67	
MSCI EAFE Index (Net)		5.38	-23.17	-23.00				-8.01	
Progress Intl Equity	544,150								
Intl Large Cap Passive Core	1,529,655,557	3.58	-24.05	-24.53	-1.55	-0.10	4.32	3.14	2/1/2000
Intl Large Cap Passive Core - Net		3.58	-24.05	-24.54	-1.56	-0.11	4.32		
International Large Cap Passive Core Benchmark		2.99	-24.31	-24.73	-2.04	-0.56	3.88	2.73	
NTGI ACWI ex US Index	1,529,655,557	3.58	-24.05	-24.54				-20.81	10/1/2021
NTGI ACWI ex US Index - Net		3.58	-24.05	-24.55				-20.82	
MSCI AC World ex USA (Net)		2.99	-24.31	-24.73				-21.37	
Intl All Cap Developed	133,799,825	6.21	-25.15	-23.42	-2.03			0.98	2/1/2019
Intl All Cap Developed - Net		6.08	-25.54	-23.82	-2.52			0.48	
MSCI EAFE + Canada (Net)		5.51	-22.16	-22.04	-0.49			2.03	
Ativo International	133,799,825	6.22	-25.16	-23.42	-2.03			0.97	2/1/2019
Ativo International - Net		6.08	-25.54	-23.82	-2.52			0.48	
MSCI EAFE + Canada (Net)		5.51	-22.16	-22.04	-0.49			2.03	
Intl Small Cap Eqty	461,168,865	5.11	-36.05	-37.41	-1.37	-1.08	5.04	3.62	12/1/2005
Intl Small Cap Eqty - Net		5.11	-36.45	-37.88	-2.11	-1.80	4.27		
MSCI AC World ex USA Small Cap (Net)		3.25	-27.08	-27.75	0.12	-0.29	4.77	4.86	
Custom Benchmark (Intl Small Cap)		3.25	-27.08	-27.75	0.12	-0.29	4.77	4.27	
Franklin Templeton	180,392,392	3.87	-29.83	-30.23	-2.38	-1.69	4.67	3.76	8/1/2011
Franklin Templeton - Net		3.87	-30.23	-30.63	-3.08	-2.40	3.93	3.02	
MSCI AC World ex USA Small Cap (Net)		3.25	-27.08	-27.75	0.12	-0.29	4.77	3.33	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
William Blair IntSC	280,776,473	5.92	-39.50	-41.30	-0.70	-0.68	5.30	6.48	9/1/2010
William Blair IntSC - Net		5.92	-39.89	-41.79	-1.46	-1.40	4.51	5.68	
MSCI AC World ex USA Small Cap (Net)		3.25	-27.08	-27.75	0.12	-0.29	4.77	5.08	
Custom Benchmark (Intl Small Cap)		3.25	-27.08	-27.75	0.12	-0.29	4.77	5.32	
Emerging Mkt Equity	865,726,503	-5.47	-35.93	-39.08	-8.94	-3.85	0.68	7.16	2/1/1992
Emerging Mkt Equity - Net		-5.51	-36.23	-39.42	-9.45	-4.40	0.10		
MSCI Emerging Markets Index		-3.09	-29.15	-30.73	-4.07	-2.73	1.16	5.84	
Genesis Investment Management, LLP.	865,726,503	-5.47	-35.94	-39.09	-8.94	-3.85	0.68	7.62	5/1/2004
Genesis Investment Management, LLP. - Net		-5.51	-36.23	-39.42	-9.45	-4.40	0.10		
MSCI Emerging Markets Index		-3.09	-29.15	-30.73	-4.07	-2.73	1.16	6.48	

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Fixed Income	11,735,937,974	-0.79	-14.33	-14.26	-2.66	0.20	1.60	7.39	1/1/1982
Fixed Income - Net		-0.79	-14.39	-14.33	-2.75	0.09	1.47		
Custom Benchmark (Fixed Income)		-0.66	-14.03	-13.99	-3.13	-0.15	0.94	6.87	
Fixed Income IMRF Custom Benchmark		-0.64	-14.41	-14.32	-3.03	-0.07			
Active Fixed Core	3,641,409,157	-1.50	-15.06	-14.98	-3.17	-0.12	1.19	3.52	4/1/2001
ActiveCore Fixed Inc - Net		-1.51	-15.14	-15.07	-3.27	-0.21	1.06		
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	3.43	
Attucks Fixed Income	83,605,924	-1.53	-16.20	-16.24				-9.69	2/1/2021
Attucks Fixed Income - Net		-1.53	-16.41	-16.52				-9.94	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68				-9.74	
Brandes FI Core	326,008,800	-0.65	-12.84	-12.61	-2.62	-0.06		0.44	3/1/2016
Brandes FI Core - Net		-0.66	-12.86	-12.64	-2.64	-0.07		0.43	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54		0.15	
EARNEST Partners	868,476,167	-1.47	-14.89	-14.89	-3.22	-0.05	1.25	3.29	5/1/2005
EARNEST Partners - Net		-1.50	-15.01	-15.01	-3.34	-0.18	1.08	3.10	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	2.82	
Garcia Hamilton	920,633,152	-1.76	-15.05	-14.93	-3.49	-0.24		0.70	6/1/2015
Garcia Hamilton - Net		-1.78	-15.11	-15.00	-3.57	-0.32		0.61	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54		0.35	
Ramirez Asset Management	504,784,551	-1.47	-15.65	-15.72				-4.36	5/1/2020
Ramirez Asset Management - Net		-1.47	-15.74	-15.80				-4.48	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68				-6.30	
Xponance Yield Advantage Agg.	937,900,563	-1.56	-15.53	-15.39	-2.95	-0.10	1.21	3.13	6/1/2005
Xponance Yield Advantage Agg. - Net		-1.56	-15.62	-15.51	-3.08	-0.23	1.06	2.96	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	2.77	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Pass. Core Fixed Inc	2,618,485,050	-1.28	-15.58	-15.58	-3.70	-0.47	0.79	5.04	1/1/1990
Pass. Core Fixed Inc - Net		-1.28	-15.58	-15.58	-3.70	-0.48	0.79		
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	5.02	
BlackRock US Debt I	1,551,857,855	-1.29	-15.57	-15.58	-3.67	-0.45		1.14	10/1/2013
BlackRock US Debt I - Net		-1.29	-15.57	-15.59	-3.68	-0.46		1.14	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54		1.02	
NTGI Blmbg Agg.	1,066,627,195	-1.28	-15.59	-15.57	-3.72	-0.49	0.77	5.09	2/1/1990
NTGI Blmbg Agg. - Net		-1.28	-15.59	-15.57	-3.72	-0.50	0.76		
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	5.07	
Core Plus Fixed Income	2,829,793,945	-1.00	-16.66	-16.59	-3.17	-0.09	1.45	7.22	1/1/1982
Core Plus Fixed Inc. - Net		-1.01	-16.76	-16.71	-3.32	-0.26	1.28		
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	6.82	
LM Capital Group FI	814,854,201	-0.70	-14.64	-14.63	-2.32	0.21	1.47	3.65	5/1/2005
LM Capital Group FI - Net		-0.74	-14.78	-14.77	-2.48	0.05	1.31	3.48	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	2.82	
Progress Inv. FI	1,012								
Loop Capital Management	551,011,952	-0.87	-16.50	-16.50	-3.24	-0.23	1.53	3.60	5/1/2005
Loop Capital Management - Net		-0.87	-16.58	-16.61	-3.36	-0.36	1.40	3.47	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	2.82	
Western Asset	914,741,787	-1.08	-18.89	-18.79	-4.08	-0.40	1.58	4.15	11/1/2001
Western Asset - Net		-1.08	-18.98	-18.90	-4.21	-0.52	1.45		
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68	-3.77	-0.54	0.74	3.17	
Longfellow Core Plus	549,184,993	-1.42	-15.93	-15.74				-4.47	5/1/2020
Longfellow Core Plus - Net		-1.42	-16.02	-15.84				-4.60	
Blmbg. U.S. Aggregate		-1.30	-15.72	-15.68				-6.30	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2022

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Bank Loans	1,587,889,154	-0.13	-5.41	-4.75	1.78	2.48		3.40	8/1/2014
Bank Loans - Net		-0.09	-5.34	-4.67	1.82	2.34		3.08	
Custom Benchmark		0.85	-2.83	-2.29	2.50	3.12		3.45	
Barings Global Loan Fund	1,587,889,154	-0.13	-5.41	-4.75	1.78	2.48		3.40	8/1/2014
Barings Global Loan Fund - Net		-0.09	-5.34	-4.67	1.82	2.34		3.08	
Custom Benchmark		0.85	-2.83	-2.29	2.50	3.12		3.45	
Emerging Markets Debt	424,730								
Standish-Mellon EMD	424,730								
High Yield	1,057,935,938	2.51	-8.75	-8.05	2.07	3.50	5.09	8.90	4/1/1986
High Yield - Net		2.51	-8.95	-8.33	1.74	3.17	4.74		
ICE BofAML US High Yield, Cash Pay Index		2.88	-12.15	-11.38	0.18	1.89	4.05	7.60	
MacKay Shields	1,057,935,938	2.51	-8.74	-8.05	2.07	3.50	5.13	7.88	11/1/2000
MacKay Shields - Net		2.51	-8.93	-8.32	1.75	3.17	4.78		
ICE BofAML US High Yield, Cash Pay Index		2.88	-12.15	-11.38	0.18	1.89	4.05	6.51	

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.