

Wilshire



Wilshire Advisors

Monthly Performance Summary

As of October 31, 2021

IMRF Performance Summary

- The Illinois Municipal Retirement Fund (“IMRF”) ended October 2021 with a market value of \$56.6 billion, up for the month by approximately \$1.7 billion. IMRF returned +3.33% during the month, outperforming the Total Fund Benchmark which returned +3.06%. Total Fund outperformance was primarily driven by an overweight to U.S. Equity and an underweight to Fixed Income, as the U.S. Equity market rebounded during October, returning +6.76% during the month.
 - Year-to-date, IMRF has returned +15.48% versus its benchmark of +11.50%.
- The U.S. Equity Portfolio underperformed the Russell 3000 Index during the month, returning +5.99% versus +6.76%. In aggregate, investment manager relative performance in Large Cap and Small Cap was challenged during the market rally and underperformed their respective benchmarks.
 - Year-to-date; however, the U.S. Equity Portfolio has outperformed the benchmark, returning +23.22% versus +22.77%.
- The Internally Managed Scientific Beta Portfolio underperformed the benchmark during October, returning +5.44% versus +5.68%. Since inception, the strategy has outperformed the benchmark, returning +16.39% versus +15.69%.
- The Internally Managed GSAM-Factor Diversity Portfolio underperformed the benchmark during the month, returning +6.56% versus +6.87%.
- The Public Real Assets Portfolio outperformed its benchmark during the month, returning +4.19% versus +3.84%.
- The International Equity Portfolio underperformed the benchmark during October, returning +1.70% versus +2.39%. In aggregate, investment managers in Large Cap Value and Large Cap Core underperformed the benchmark during the month.
 - Year-to-date, IMRF’s International Equity Portfolio continues to deliver strong relative performance, returning +10.73% versus +8.43% for the benchmark.
- The Fixed Income Portfolio modestly underperformed the benchmark during October, returning -0.10% versus -0.03%. The Portfolio’s dedicated allocation to Emerging Markets and High Yield were among the largest detractors from relative outperformance as those markets underperformed the Bloomberg U.S. Aggregate Index during the month, returning -1.40% and -0.30%, respectively. Year-to-date; however, these dedicated allocations continue to benefit overall relative performance of the Portfolio.
 - IMRF’s Fixed Income Portfolio has returned -0.61% versus -1.58% for the benchmark, year-to-date.
- As of October month-end, all underlying asset class allocations in the Portfolio are within the stated four percent point rebalancing range as outlined by the current Statement of Investment Policy. IMRF has made considerable progress implementing the rebalancing recommendation presented at the August 2021 Board of Trustees Meeting.

Market Dashboard

Returns though Friday October 29, 2021

Portfolio Allocations	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
Global 60/40	3.05	(2.82)	1.43	3.05	(0.59)	9.18	20.16	13.47	10.24
Wilshire Risk Parity (12%)	1.97	(3.46)	(0.04)	1.97	1.12	11.52	25.65	14.06	10.31
Strategic Allocation Themes *	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
Growth ¹	5.10	(4.13)	2.50	5.10	(1.05)	16.79	35.71	18.38	14.72
Defensive Growth ²	2.95	(2.80)	2.04	2.95	(0.14)	10.19	24.08	16.41	13.34
Diversified Credit ³	(0.03)	(0.79)	0.71	(0.03)	0.25	2.00	7.51	6.50	5.16
Real Assets ⁴	4.09	(1.26)	0.60	4.09	2.96	21.52	33.75	12.90	8.33
Defensive ⁵	(0.03)	(0.87)	(0.19)	(0.03)	0.05	(1.58)	(0.55)	5.49	3.11
Major Asset Classes	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	6.73	(4.43)	2.94	6.73	0.14	23.40	42.51	22.87	19.04
MSCI ACWI-ex-USA (Net)	2.39	(3.20)	1.90	2.39	(2.99)	8.43	28.60	12.69	9.78
Bloomberg U.S. Aggregate	(0.03)	(0.87)	(0.19)	(0.03)	0.05	(1.58)	(0.55)	5.49	3.11
Bloomberg U.S. Corporate High Yield	(0.17)	(0.01)	0.51	(0.17)	0.89	4.35	10.47	7.43	6.34
Wilshire Global Real Estate Securities	6.45	(5.02)	1.58	6.45	0.37	26.15	46.26	11.66	8.98
Bloomberg Commodity	2.58	4.98	(0.30)	2.58	6.59	32.46	44.40	8.05	4.93

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 Friday October 29, 2021

US Equity	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
FT Wilshire 5000	6.73	(4.43)	2.94	6.73	0.14	23.40	42.51	22.87	19.04
Standard & Poor's 500	7.01	(4.65)	3.04	7.01	0.58	24.04	41.20	22.55	18.92
Wilshire 4500 Completion	5.02	(3.49)	2.45	5.02	(1.77)	19.77	50.12	23.77	19.07
Wilshire US Large Cap	6.54	(4.71)	2.85	6.54	0.10	21.89	39.29	21.06	17.21
Wilshire US Large-Cap Growth	8.74	(5.30)	3.72	8.74	1.15	25.10	41.61	28.72	23.50
Wilshire US Large-Cap Value	4.60	(3.91)	1.73	4.60	(1.23)	17.84	35.76	13.22	10.67
Wilshire US Small Cap	3.50	(3.24)	2.52	3.50	(3.41)	18.13	49.89	15.96	13.42
Wilshire US Small-Cap Growth	4.35	(3.36)	1.44	4.35	(3.91)	12.46	41.37	19.79	17.49
Wilshire US Small-Cap Value	3.40	(1.97)	2.95	3.40	(2.36)	25.62	58.67	11.80	9.36
Non-US Equity	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
MSCI ACWI-ex-USA (Net)	2.39	(3.20)	1.90	2.39	(2.99)	8.43	28.60	12.69	9.78
MSCI EAFE (Net)	2.46	(2.90)	1.76	2.46	(0.45)	11.01	33.47	12.16	9.80
MSCI EM (Net)	0.99	(3.97)	2.62	0.99	(8.09)	(0.27)	15.22	13.14	9.43
MSCI ACWI-ex-US Small cap (Net)	1.56	(3.04)	2.31	1.56	(0.00)	13.99	38.15	15.53	11.21
Global Equity	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
MSCI ACWI (Net)	5.10	(4.13)	2.50	5.10	(1.05)	16.79	35.71	18.38	14.72
MSCI ACWI Minimum Volatility (Net)	2.53	(3.56)	2.16	2.53	0.08	9.91	19.50	10.75	9.78
Fixed Income	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
Bloomberg U.S. Aggregate	(0.03)	(0.87)	(0.19)	(0.03)	0.05	(1.58)	(0.55)	5.49	3.11
Bloomberg Long Term Treasury	1.86	(2.86)	(0.21)	1.86	0.47	(5.77)	(5.99)	10.57	4.66
Bloomberg U.S. TIPS	1.13	(0.71)	(0.18)	1.13	1.75	4.69	6.87	8.18	4.70
Bloomberg U.S. Corporate High Yield	(0.17)	(0.01)	0.51	(0.17)	0.89	4.35	10.47	7.43	6.34
Credit Suisse Leveraged Loan	0.24	0.65	0.49	0.24	1.13	4.90	8.44	4.13	4.53
ICE BofA US Convertible Index	3.58	(1.67)	1.85	3.58	(0.49)	10.18	30.62	25.00	18.60
JPM EMBI Global Diversified	0.02	(2.07)	0.98	0.02	(0.70)	(1.34)	4.24	6.33	4.14
Real Assets	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
Wilshire Global Real Estate Securities	6.45	(5.02)	1.58	6.45	0.37	26.15	46.26	11.66	8.98
FTSE Global Core Infrastructure 50/50	3.72	(3.59)	2.28	3.72	(0.07)	11.41	21.32	10.67	9.24
Alerian Midstream Energy	6.11	4.14	(1.57)	6.11	(1.26)	47.40	75.57	9.30	4.48
Bloomberg Commodity	2.58	4.98	(0.30)	2.58	6.59	32.46	44.40	8.05	4.93
Gold	1.50	(3.12)	(0.03)	1.50	(0.74)	(6.06)	(4.51)	13.20	6.93
Bitcoin	43.65	(7.60)	15.53	43.65	25.59	115.19	362.65	115.40	146.30

Source: Bloomberg, All returns are in USD

Factor/Relative Returns

Returns though Friday October 29, 2021

Asset Class Differentials	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
Stocks (ACWI) > Bonds (BB US Aggregate)	5.13	(3.26)	2.69	5.13	(1.10)	18.37	36.25	12.90	11.61
Stocks (ACWI) > Mkt Alts (Equity Hedged))	2.52	(2.04)	1.28	2.52	(0.89)	4.77	15.92	11.36	9.69
Mkt Alts (Relative Value) > Bonds (BB US Aggregate)	(0.30)	0.59	0.36	(0.30)	(0.22)	2.34	4.87	(2.28)	(0.79)
Equity & Real Assets Differentials	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
US Small > Large	(3.06)	1.88	(0.62)	(3.06)	(3.42)	(3.77)	10.13	(5.69)	(4.08)
US Value > Growth	(3.97)	1.54	(1.83)	(3.97)	(1.89)	(5.42)	(3.14)	(13.16)	(10.63)
ACWI-ex-US > US	(4.34)	1.23	(1.04)	(4.34)	(3.13)	(14.98)	(13.90)	(10.18)	(9.26)
EM > EAFE	(1.47)	(1.07)	0.85	(1.47)	(7.65)	(11.28)	(18.24)	0.98	(0.36)
ACWI-ex-US Currency Impact	0.37	(1.37)	(0.29)	0.37	(1.69)	(3.89)	0.37	0.70	0.29
EAFE Currency Impact	0.28	(1.60)	(0.48)	0.28	(1.76)	(5.71)	(0.96)	1.03	0.65
EM Currency Impact	0.09	(1.15)	0.36	0.09	(1.40)	(1.90)	0.81	(0.60)	(1.00)
Global Low Volatility > ACWI	(2.58)	0.57	(0.34)	(2.58)	1.14	(6.88)	(16.21)	(7.64)	(4.94)
Global RE > ACWI	1.35	(0.89)	(0.92)	1.35	1.42	9.36	10.56	(6.72)	(5.75)
Commodities > Global RE	(3.87)	9.99	(1.88)	(3.87)	6.22	6.31	(1.86)	(3.61)	(4.05)
Commodities > TIPS	1.45	5.69	(0.12)	1.45	4.84	27.78	37.53	(0.13)	0.23
Gold > Commodities	(1.08)	(8.10)	0.26	(1.08)	(7.33)	(38.52)	(48.91)	5.15	2.01
Fixed Income Differentials	MTD	SEP	AUG	QTD	Q3 2021	YTD	1 Year	3 Year	5 Year
Duration (US Core > US Core 1-3 Years)	0.30	(0.78)	(0.19)	0.30	(0.04)	(1.32)	(0.52)	2.88	1.32
IG Credit > Treasury	0.32	0.03	(0.13)	0.32	(0.09)	1.54	4.57	2.97	2.38
High Yield > IG Credit	(0.42)	1.04	0.82	(0.42)	0.89	5.38	8.43	(0.44)	1.49
High Yield > Loans	(0.42)	(0.65)	0.03	(0.42)	(0.22)	(0.32)	2.07	3.24	1.87
TIPS > Treasury	1.58	0.87	0.22	1.58	1.77	8.51	10.87	2.25	2.06
EMD > Dev Hdg	0.01	(0.65)	1.21	0.01	(0.63)	0.34	4.21	2.53	1.31
EMD > High Yield	(0.25)	(1.65)	0.46	(0.25)	(1.43)	(5.90)	(7.63)	(1.27)	(2.15)
Non-US > US Core	(0.36)	(1.59)	(0.42)	(0.36)	(1.64)	(4.73)	(1.49)	(2.15)	(1.11)
Non-US Hdg > US Core	(0.40)	(0.14)	(0.05)	(0.40)	0.04	(0.31)	(0.83)	(1.86)	(0.23)
FI Currency Impact	0.03	(1.44)	(0.37)	0.03	(1.68)	(4.42)	(0.66)	(0.29)	(0.88)

Source: Bloomberg, All returns are in USD

Market Yields & Breakeven Inflation

Market Yields

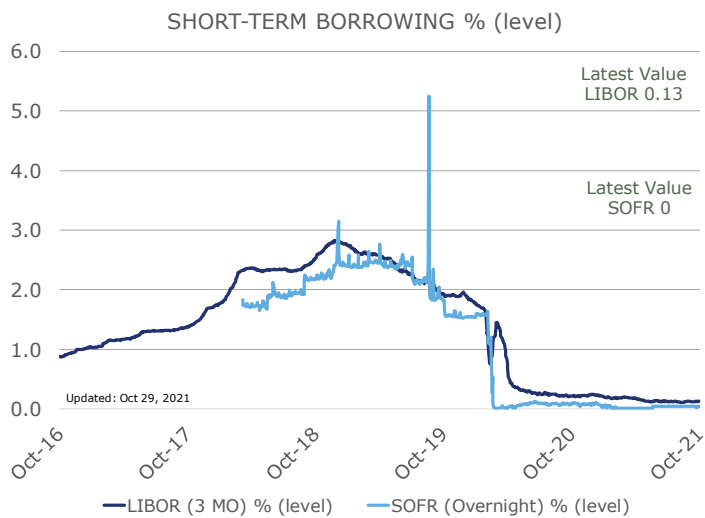
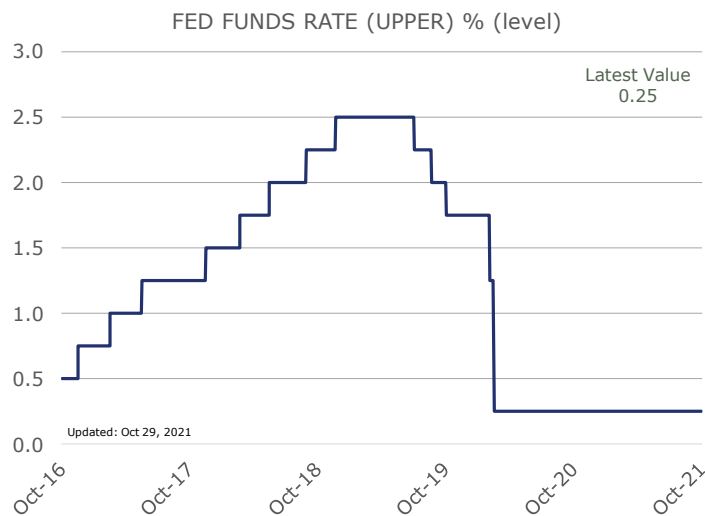
Govt/Treasury Yields	Previous 3 Month-ends				Previous 2 Quarter-ends		EOY Prior	1 Yr Ago	3 Yrs Ago	5 Yrs Ago
	10/29/21	09/30/21	08/31/21	07/30/21	09/30/21	06/30/21	12/31/20	10/29/20	10/29/18	10/28/16
Fed Funds Target Rate (Upper)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	2.25	0.50
2-Year Treasury	0.50	0.28	0.21	0.19	0.28	0.25	0.12	0.15	2.82	0.86
5-Year Treasury	1.19	0.97	0.78	0.69	0.97	0.89	0.36	0.37	2.92	1.33
10-Year Treasury	1.56	1.49	1.31	1.22	1.49	1.47	0.92	0.82	3.09	1.85
30-Year Treasury	1.93	2.05	1.93	1.89	2.05	2.09	1.65	1.60	3.33	2.62
10-Year Real Treasury	(1.03)	(0.89)	(1.03)	(1.18)	(0.89)	(0.88)	(1.09)	(0.88)	1.02	0.11
Term Spreads	10/29/21	09/30/21	08/31/21	07/30/21	09/30/21	06/30/21	12/31/20	10/29/20	10/29/18	10/28/16
5 - 2 Year Treasury Spread	0.68	0.69	0.57	0.50	0.69	0.64	0.24	0.22	0.10	0.47
10 - 5 Year Treasury Spread	0.37	0.52	0.53	0.53	0.52	0.58	0.55	0.45	0.16	0.52
10 - 2 Year Treasury Spread	1.05	1.21	1.10	1.03	1.21	1.22	0.79	0.67	0.26	0.99
30 - 10Year Treasury Spread	0.38	0.56	0.62	0.67	0.56	0.62	0.73	0.78	0.24	0.77
30 - 2Year Treasury Spread	1.43	1.77	1.72	1.70	1.77	1.84	1.52	1.45	0.51	1.76

Market Yields	10/29/21	09/30/21	08/31/21	07/30/21	09/30/21	06/30/21	12/31/20	10/29/20	10/29/18	10/28/16
Bloomberg U.S. Treasury YTW	1.14	1.01	0.86	0.81	1.01	0.95	0.57	0.57	2.96	1.42
Bloomberg U.S. Aggregate YTW	1.66	1.56	1.42	1.36	1.56	1.50	1.12	1.23	3.53	2.13
Bloomberg U.S. Long Treasury YTW	1.94	2.03	1.86	1.84	2.03	2.03	1.51	1.48	3.31	2.49
Bloomberg U.S. Long Govt/Credit YTW	2.60	2.68	2.52	2.48	2.68	2.66	2.28	2.44	4.23	3.55
Credit Spreads	10/29/21	09/30/21	08/31/21	07/30/21	09/30/21	06/30/21	12/31/20	10/29/20	10/29/18	10/28/16
Bloomberg Investment Grade OAS	0.87	0.84	0.87	0.86	0.84	0.80	0.96	1.25	1.17	1.32
Bloomberg High Yield OAS	2.87	2.89	2.88	2.94	2.89	2.68	3.60	5.07	3.77	4.67

Breakeven Inflation Rates	10/29/21	09/30/21	08/31/21	07/30/21	09/30/21	06/30/21	12/31/20	10/29/20	10/29/18	10/28/16
1-Year Breakeven Inflation	3.23	2.54	2.62	3.29	2.54	3.17	2.02	0.88	0.54	1.00
2-Year Breakeven Inflation	3.07	2.53	2.54	2.83	2.53	2.72	2.01	1.27	1.57	1.39
5-Year Breakeven Inflation	2.93	2.53	2.51	2.62	2.53	2.50	1.97	1.59	1.92	1.63
10-Year Breakeven Inflation	2.59	2.38	2.34	2.40	2.38	2.34	1.99	1.70	2.06	1.74
5-Year 5-Year Forward Breakeven Inflation	2.19	2.24	2.19	2.27	2.24	2.18	1.97	1.81	2.17	1.89

Source: Bloomberg

Short Rates



Data Source: Bloomberg

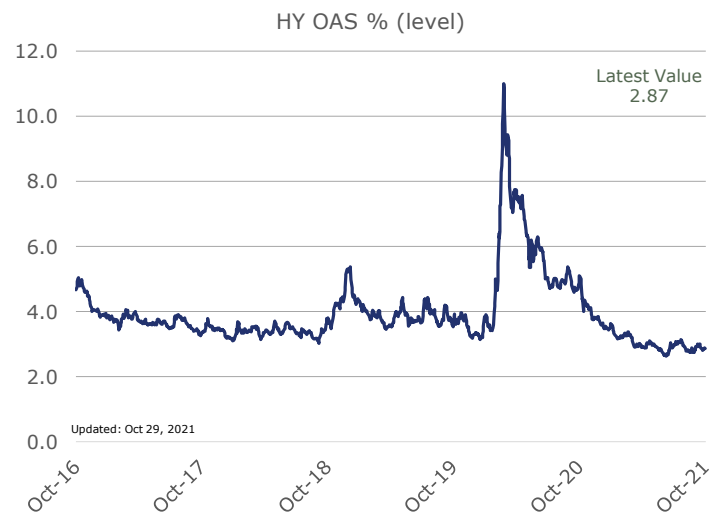
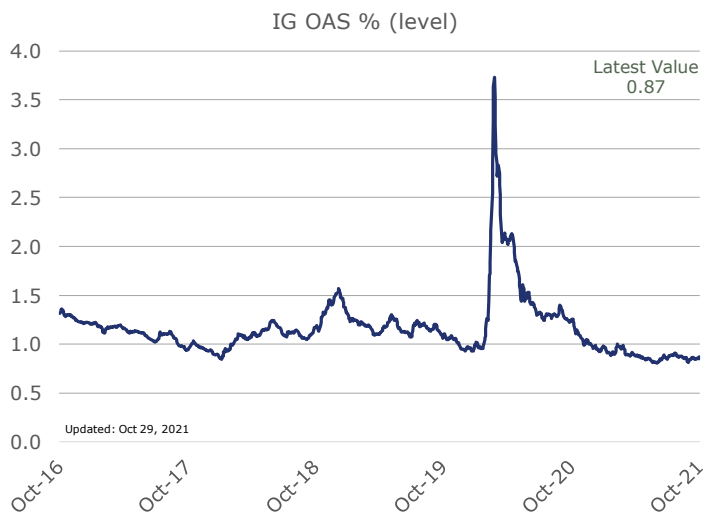
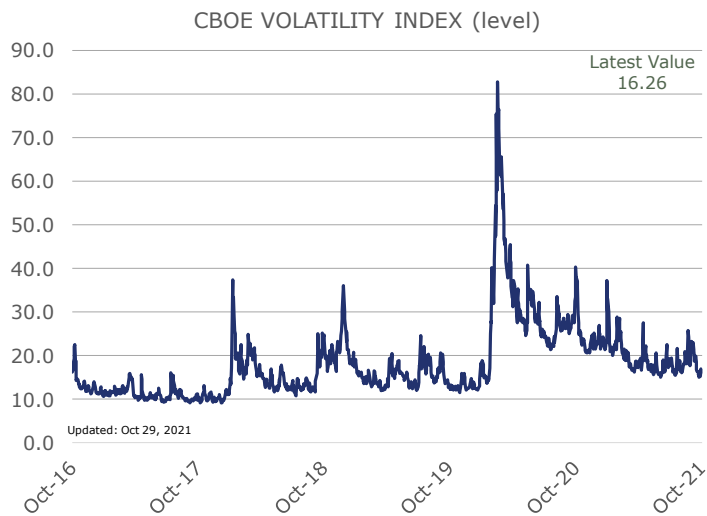
LIBOR: London Inter-bank Offered Rate
SOFR: Federal Reserve Bank NY Secured Overnight Financing Rate

Treasury Rates



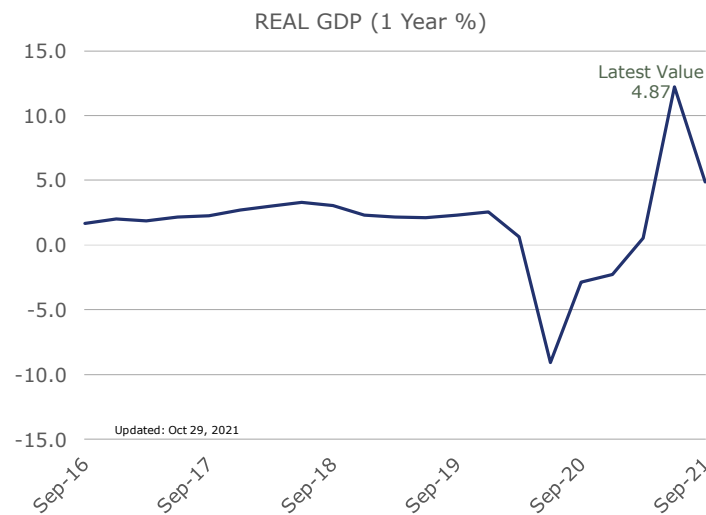
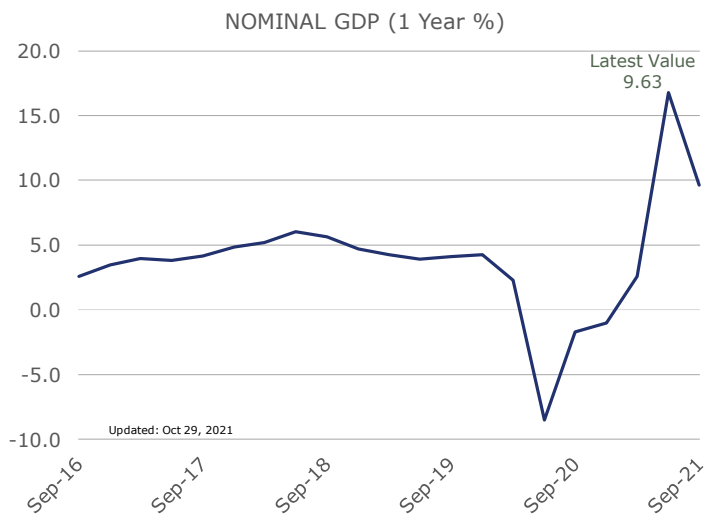
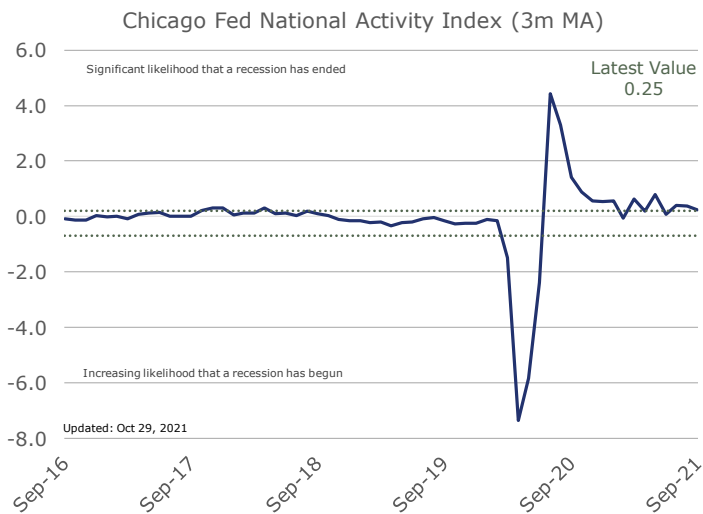
Data Sources: Bloomberg

Volatility & Credit Risk



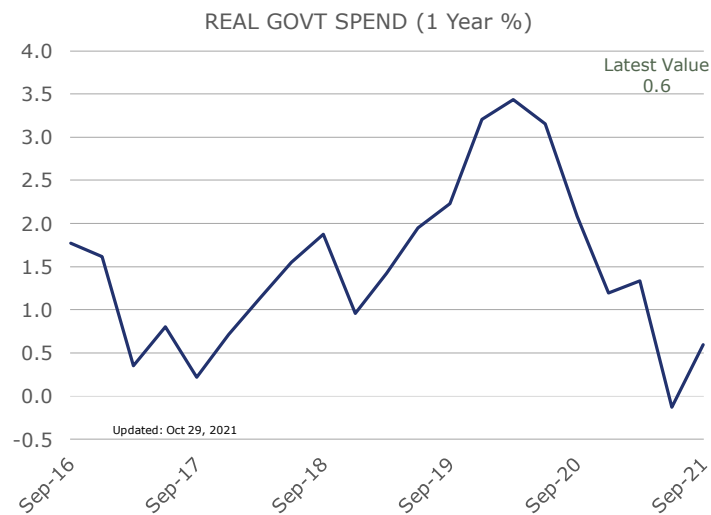
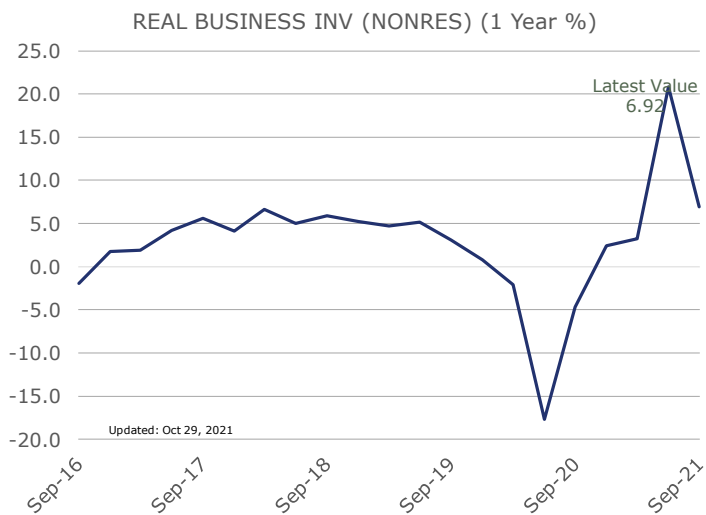
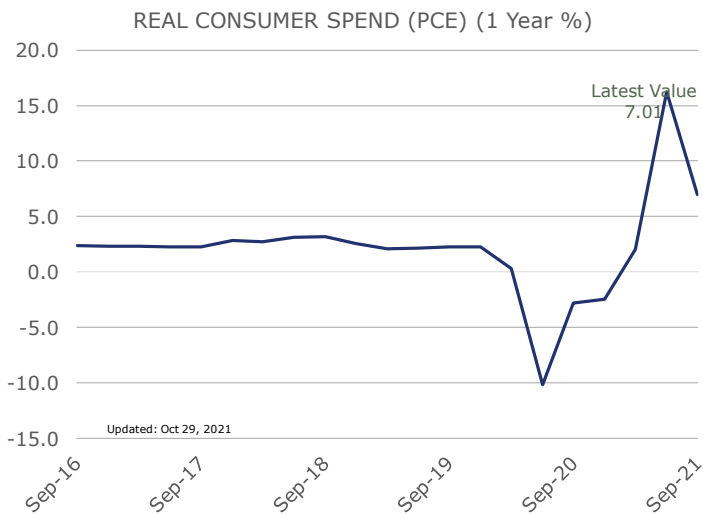
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Economic Growth



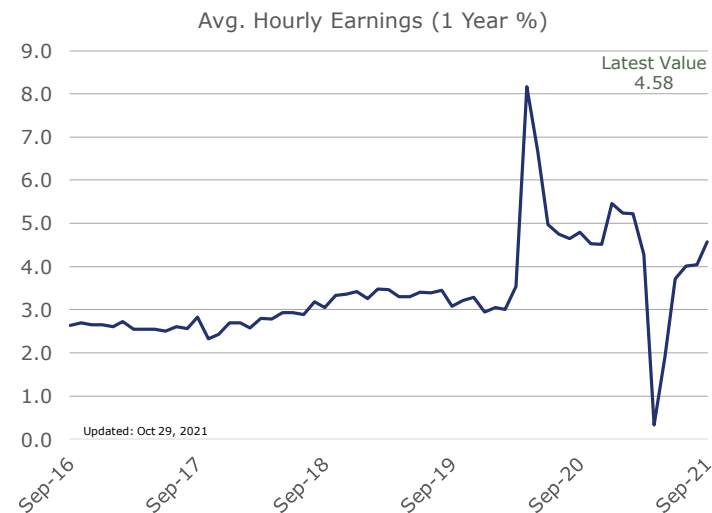
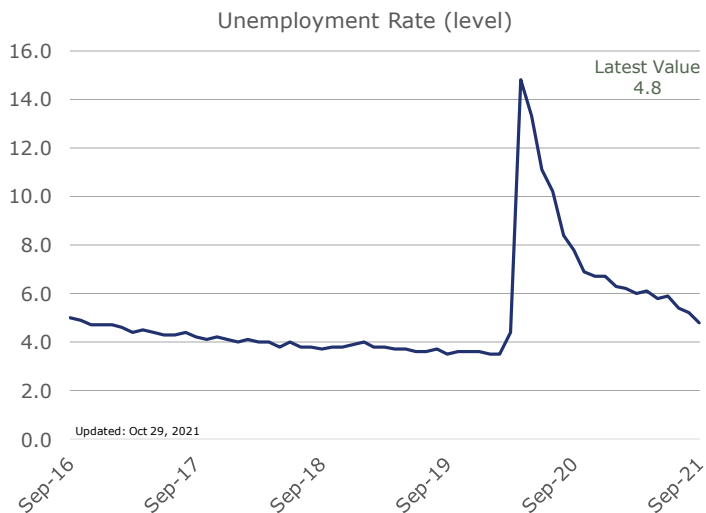
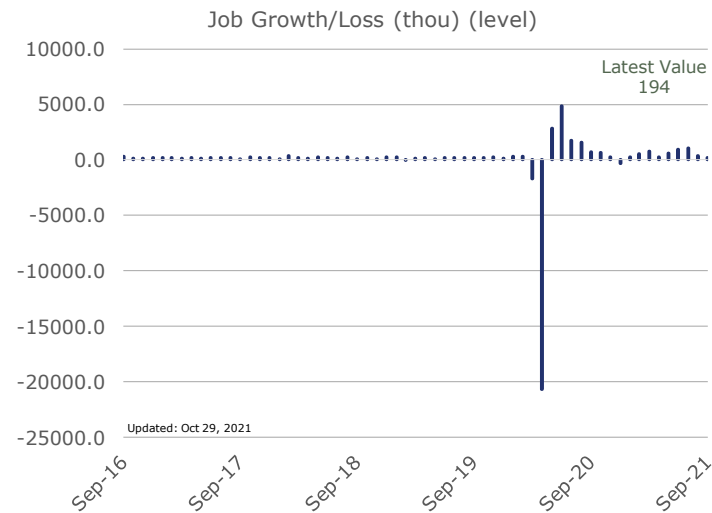
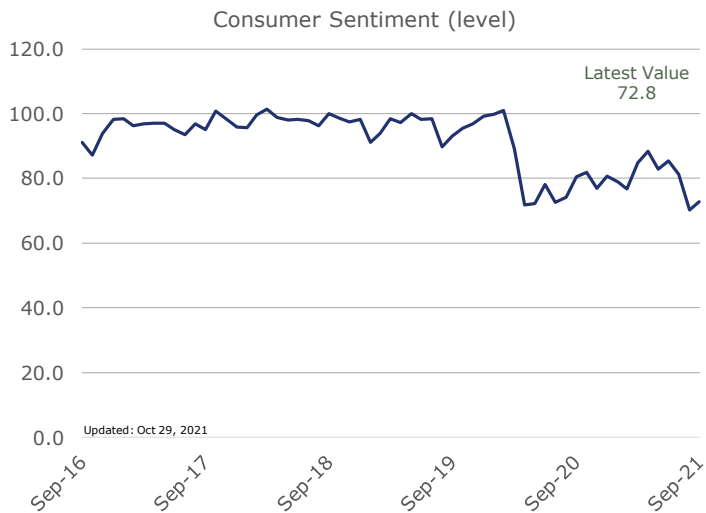
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Economic Growth



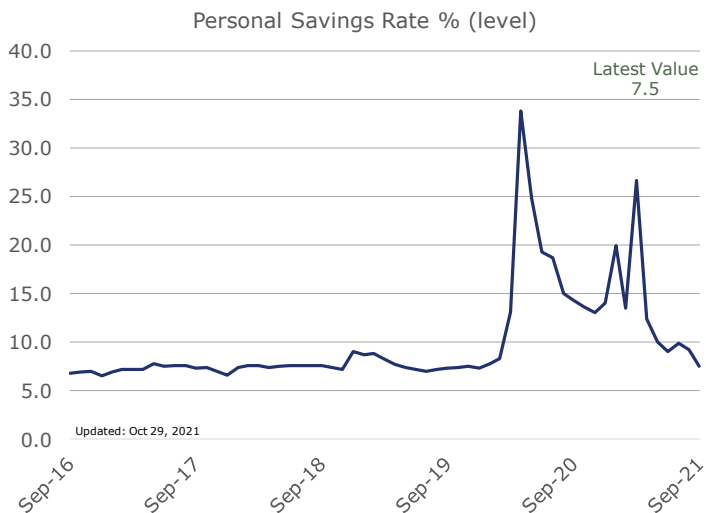
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Consumers & Employment



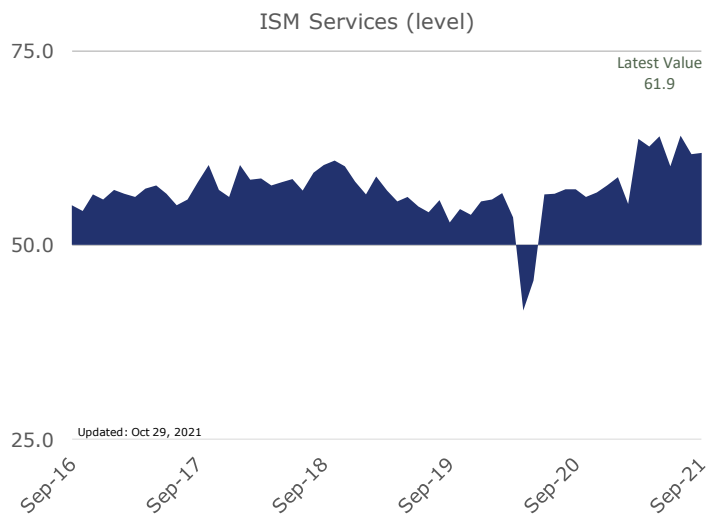
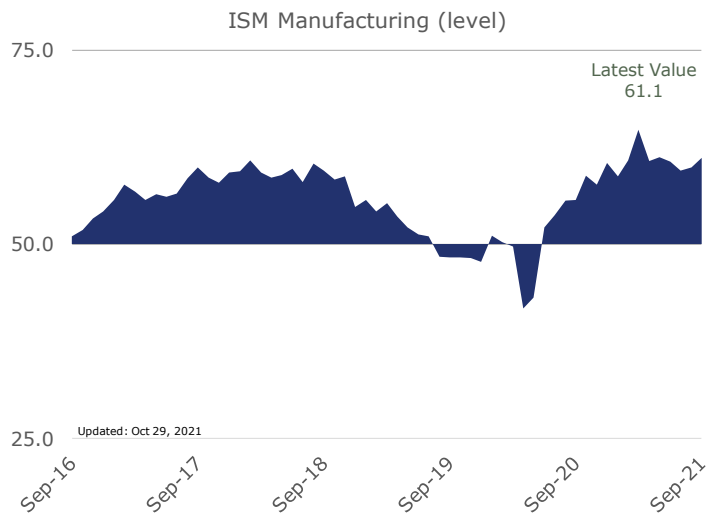
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Income & Spending

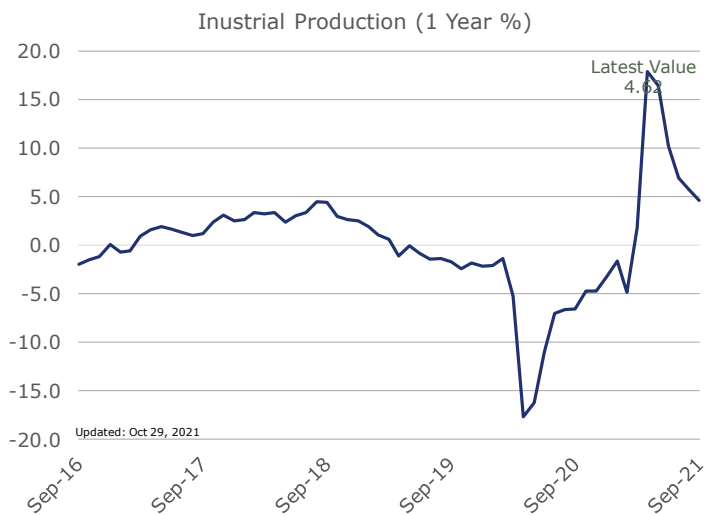
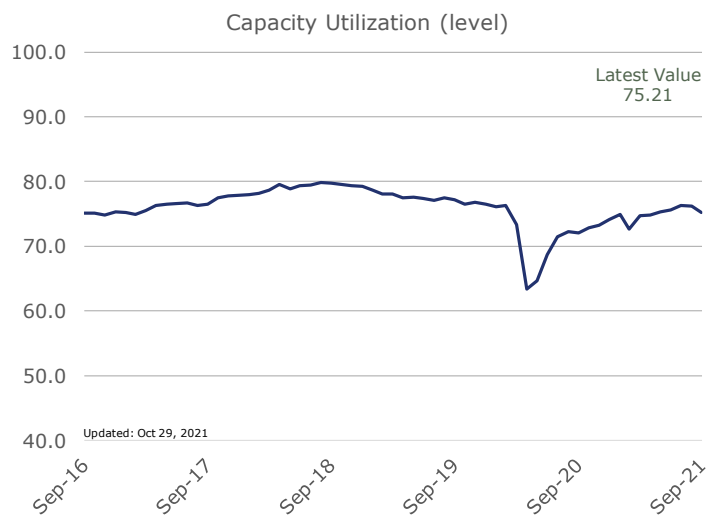


Data Sources: Bloomberg

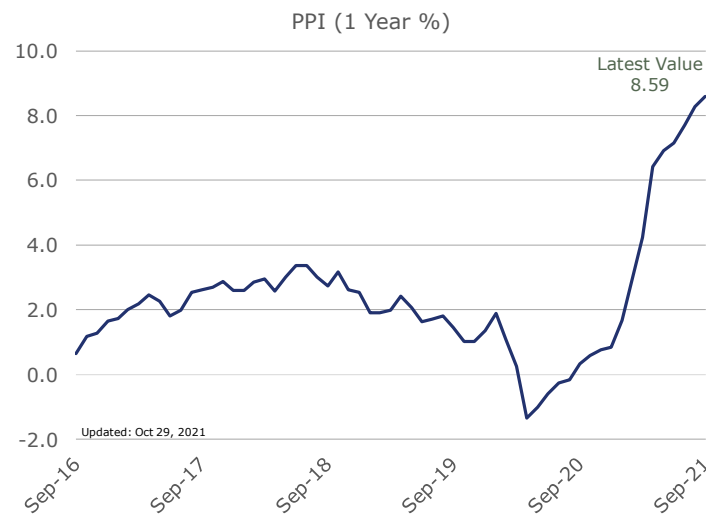
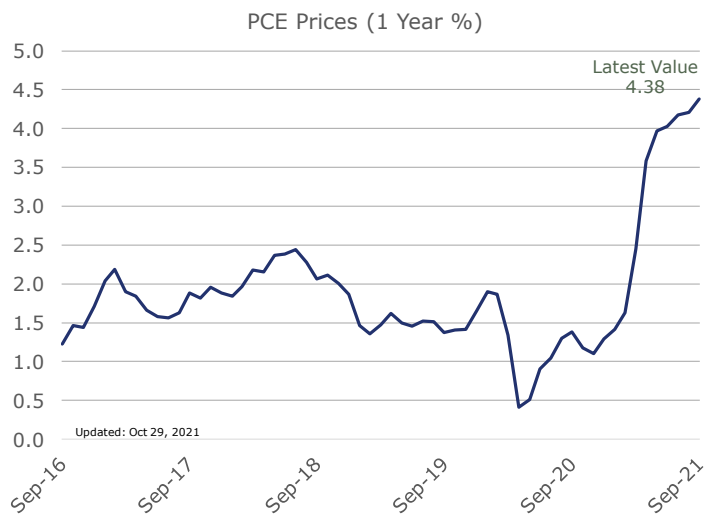
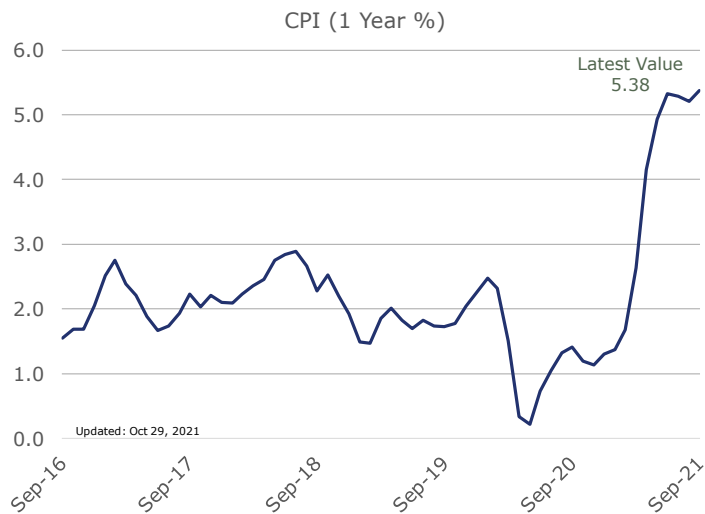
ISM Surveys



Manufacturing Activity

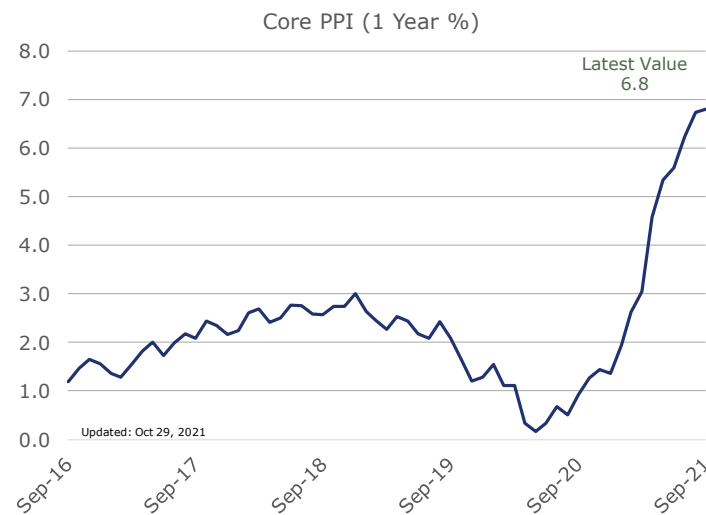
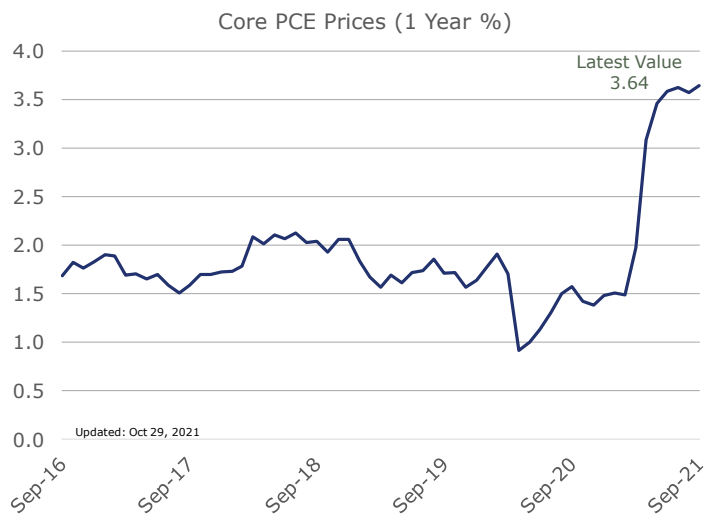
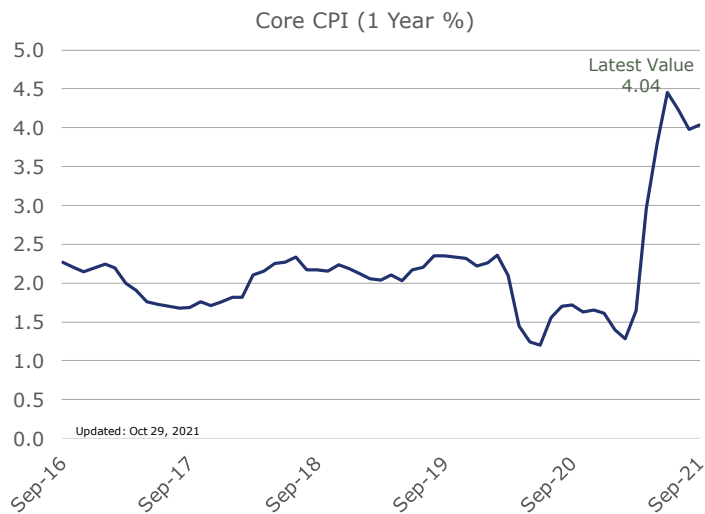


Price Indexes



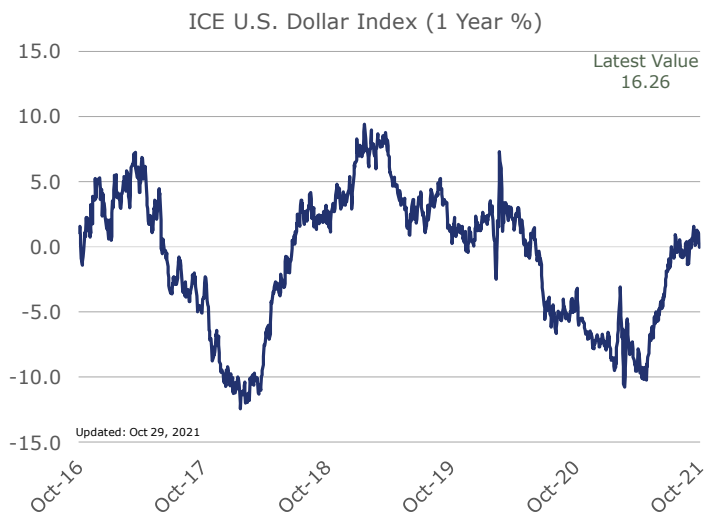
Data Sources: Bloomberg

Core Price Indexes



Data Sources: Bloomberg

U.S. Dollar



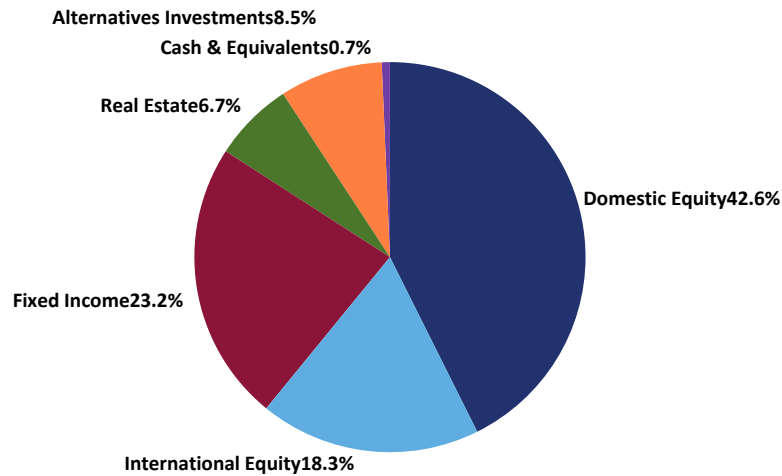
IMRF Performance

Asset Allocation

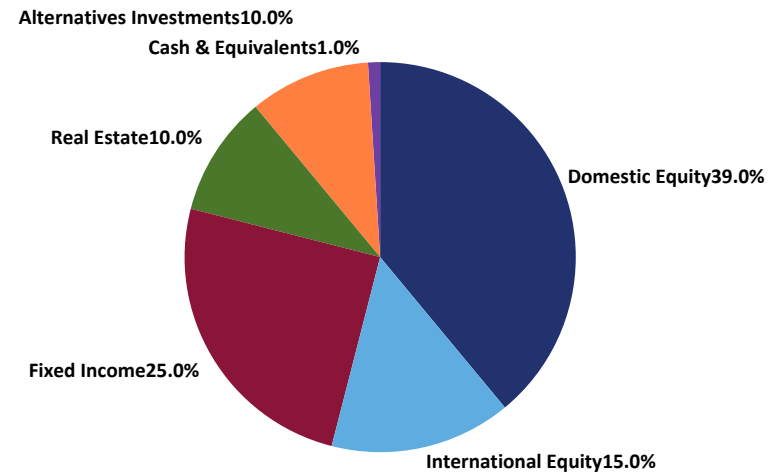
Total Fund

Periods Ended As of October 31, 2021

Actual Allocation



Target Allocation

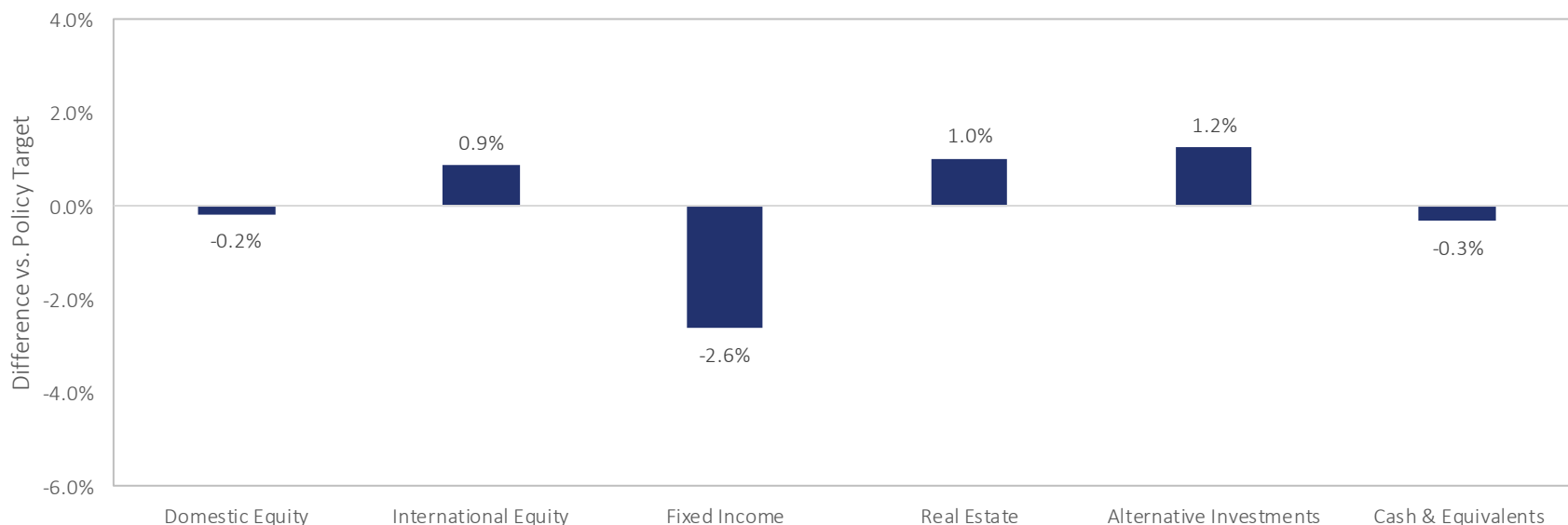


	Actual Allocation \$Millions	Actual Allocation %	Target Allocation %	Differences %	Differences \$Millions
Total Fund	56,595	100.0	100.0	0.0	
Domestic Equity	24,129	42.6	39.0	3.6	2,057
International Equity	10,331	18.3	15.0	3.3	1,841
Fixed Income	13,157	23.2	25.0	-1.8	-992
Real Estate	3,766	6.7	10.0	-3.3	-1,894
Alternatives Investments	4,829	8.5	10.0	-1.5	-830
Cash & Equivalents	383	0.7	1.0	-0.3	-183

Projected Deviations from the Benchmark

As of October 31, 2021

Projected Asset Allocation Difference vs. Target



- Includes committed, but unfunded amounts for real estate (\$1.54 billion) and alternatives (\$2.47 billion). Assumes real estate 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

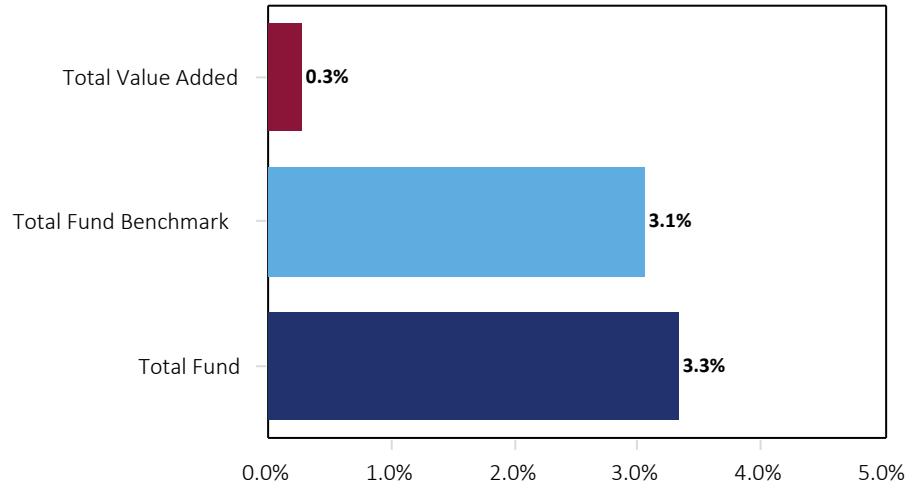
Private Equity Proxy: 60% Domestic Equity, 40% International Equity
 Real Estate Proxy: 50% Domestic Equity, 30% International Equity, 20% Fixed Income

Total Fund Attribution

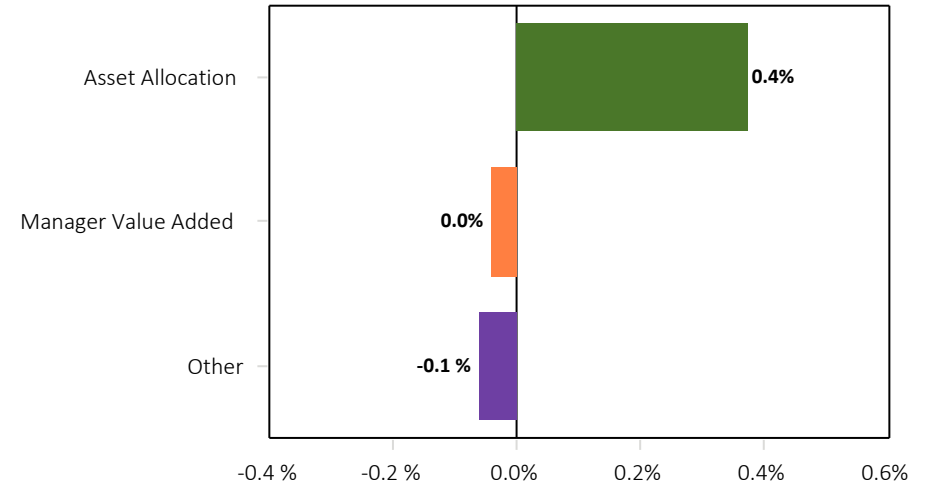
Total Fund

1 Month Ending October 31, 2021

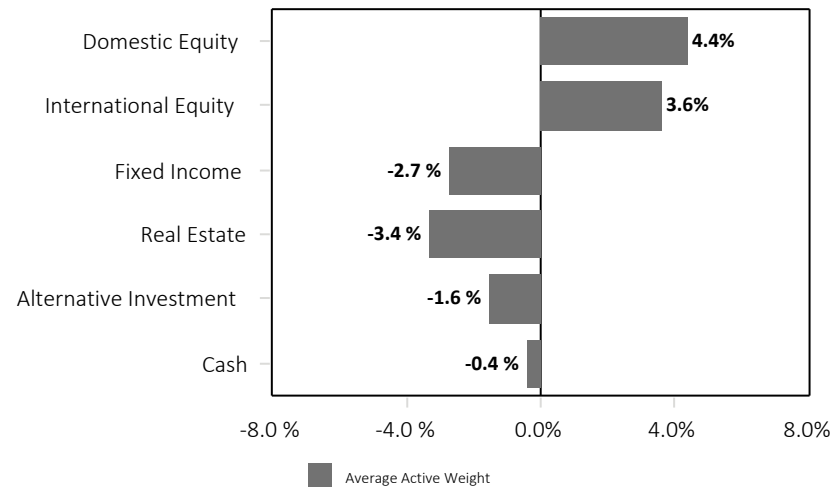
Total Fund Performance



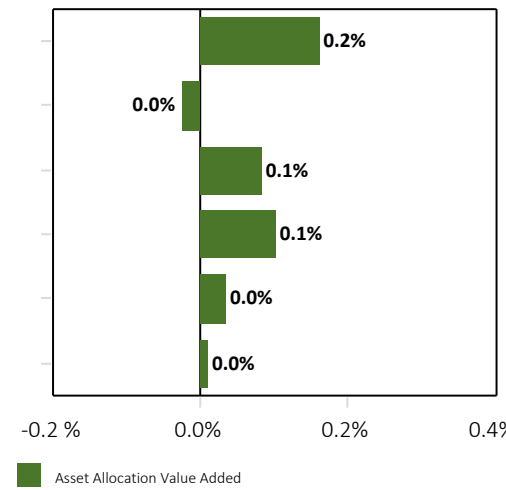
Total Value Added:0.3%



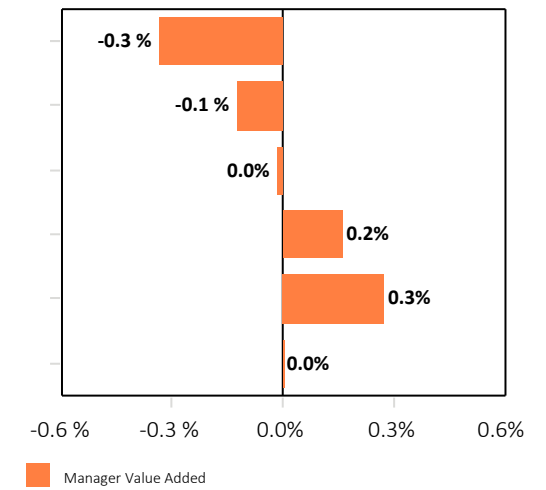
Asset Class Under or Overweighting



Asset Allocation Value Added:0.4%



Total Manager Value Added:0.0%



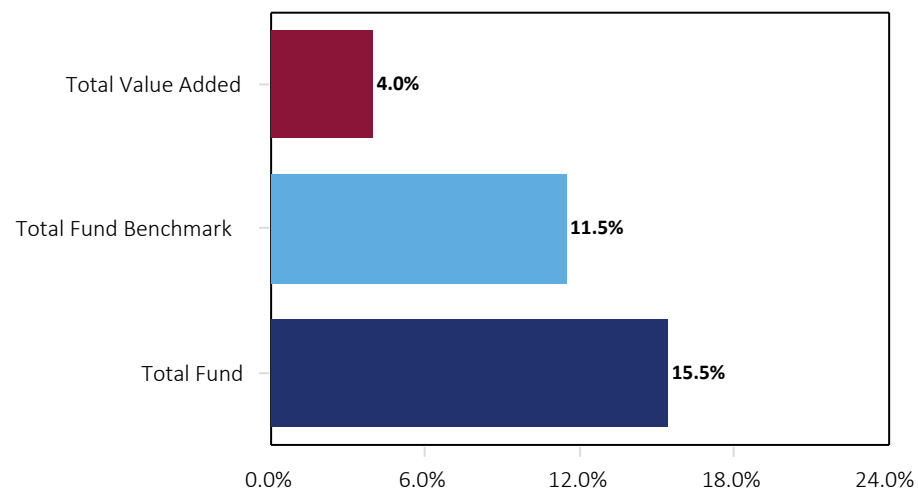
Total Fund Benchmark = 39.0% Russell 3000 Index, 25.0% Blmbg Aggregate, 15.0% MSCI ACWI ex US, 10.0% NCREIF NFI-ODCE Val Wt Nt, 10.0% 9% Annually and 1.0% 3-month Treasury Bill.

Total Fund Attribution

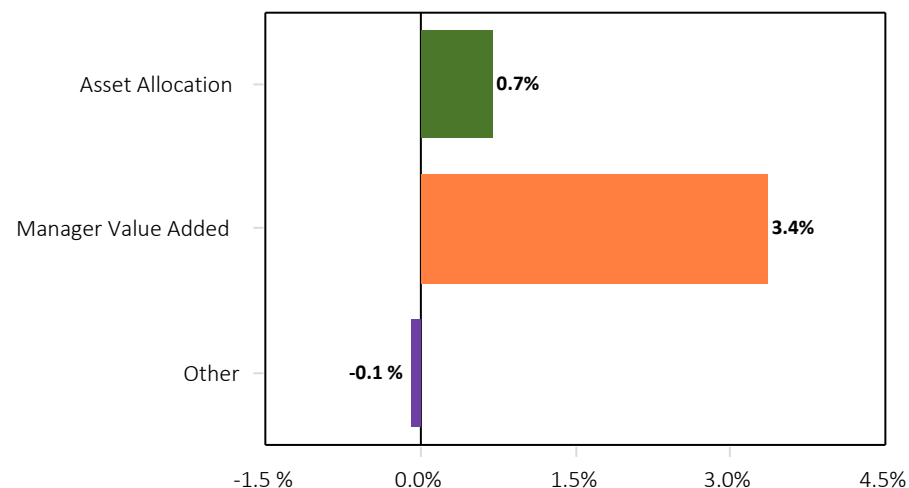
Total Fund

Year To Date Ending October 31, 2021

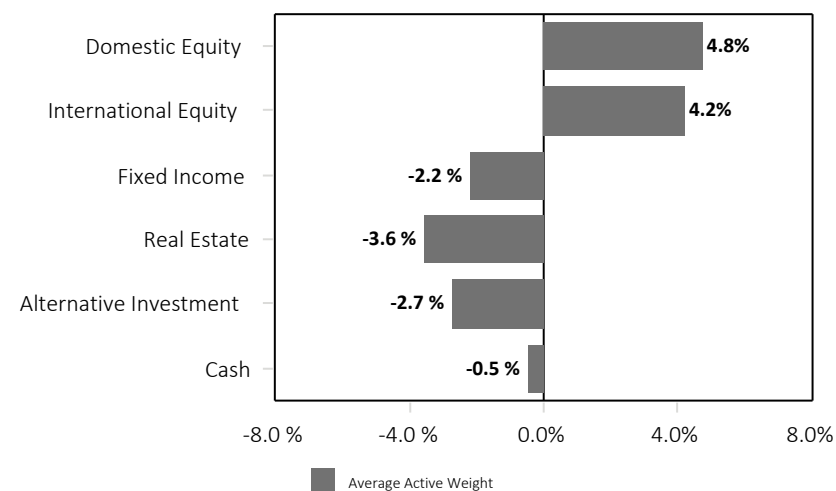
Total Fund Performance



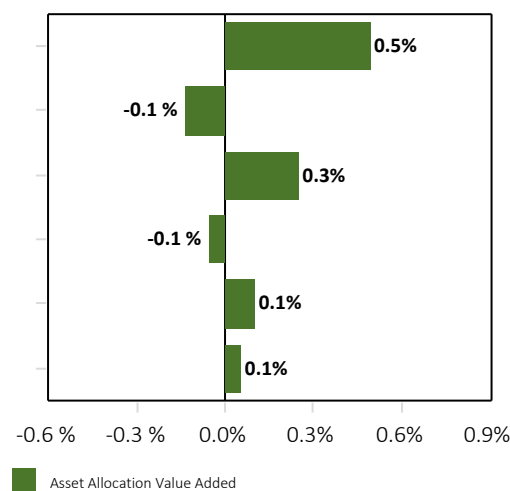
Total Value Added: 4.0%



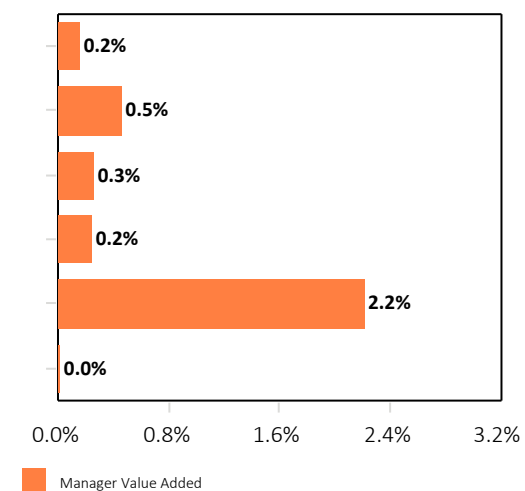
Asset Class Under or Overweighting



Asset Allocation Value Added: 0.7%



Total Manager Value Added: 3.4%



Total Fund Benchmark = 39.0% Russell 3000 Index, 25.0% Blmbg Aggregate, 15.0% MSCI ACWI ex US, 10.0% NCREIF NFI-ODCE Val Wt Nt, 10.0% 9% Annually and 1.0% 3-month Treasury Bill.

Asset Class Returns

Periods Ended October 31, 2021

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Total Fund	3.34	15.63	30.14	15.51	12.76	10.72	8.64	8.93	10.21	1/1/1982
Total Fund - Net	3.33	15.48	29.92	15.31	12.56	10.50				
Total Fund Benchmark	3.06	11.50	22.96	13.44	11.12	9.67				
Domestic Equity	6.00	23.39	46.34	21.59	18.81	15.94	10.49	11.21	12.25	1/1/1982
Domestic Equity - Net	5.99	23.22	46.11	21.38	18.59	15.69				
Blended Benchmark (U.S. Equity)	6.76	22.77	43.90	21.62	18.91	16.08	10.27	10.84		
U.S. Equity IMRF Custom Benchmark	6.64	22.49	43.95	20.02	17.48					
International Equity	1.72	11.02	34.50	14.22	11.35	8.61	8.26	7.79	8.15	9/1/1986
International Equity - Net	1.70	10.73	34.02	13.84	10.98	8.25				
MSCI AC World ex USA (Net)	2.39	8.43	29.66	12.00	9.77	6.66	7.13			
International Equity IMRF Custom Benchmark	2.15	8.16	29.45	12.08	9.84					
Fixed Income	-0.09	-0.53	1.58	6.08	3.86	3.97	5.12	6.08	7.99	1/1/1982
Fixed Income - Net	-0.10	-0.61	1.47	5.96	3.73	3.82				
Blmbg. U.S. Aggregate	-0.03	-1.58	-0.48	5.62	3.09	3.00	4.22	5.42	7.46	
Fixed Income IMRF Custom Benchmark	-0.04	-0.96	0.68	5.69	3.40					
Real Estate	2.42	16.84	19.50	10.81	10.20	10.89	7.85	5.68	5.84	5/1/1985
Real Estate - Net	2.41	16.78	19.43	10.75	10.17	10.87				
Blended Benchmark (Real Estate)	0.00	12.41	13.64	5.95	6.42	9.03	7.34	7.40	7.65	
Alternatives Investments	3.99	40.13	49.50	22.08	18.40	12.88	9.49	13.07	11.69	2/1/1986
Alternatives Investments - Net	3.99	40.11	49.47	22.03	18.29	12.65				
Alternatives Custom Benchmark	0.72	7.45	9.00	9.00	9.00	9.00	10.51	11.99	12.46	
Private Equity	4.54	47.37	58.28	26.10	22.20	15.21	11.39	15.88	14.03	2/1/1986
Alternatives Custom Benchmark	0.72	7.45	9.00	9.00	9.00	9.00	10.51	11.99	12.46	
Agriculture	0.00	-1.90	-1.29	0.08	-1.43	8.02	6.96		6.53	10/1/1997
NCREIF Farmland Index	0.00	3.89	5.54	4.90	5.53	10.19	12.17		11.18	

Benchmark definitions on next page.

Asset Class Returns

Periods Ended October 31, 2021

	Performance (%)									
	1 Month	YTD	1 Year	3 Years	5 Years	10 Years	20 Years	30 Years	Since Inception	Inception Date
Timberland	1.86	-4.09	-4.77	0.21	0.92	1.88	3.26		6.87	10/1/1992
NCREIF Timberland Index	0.00	4.41	5.01	2.42	2.90	4.89	5.84		8.24	
Unlisted Infrastructure	0.04	9.75	19.00	12.14					12.15	4/1/2018
Alternatives Custom Benchmark	0.72	7.45	9.00	9.00					9.00	
Cash	0.29	2.09	2.31	2.89	2.49	1.37	1.46	3.05	3.75	7/1/1986
90 Day US Treasury Bill	0.00	0.03	0.05	1.12	1.15	0.61	1.27	2.45	3.14	

Benchmark Definitions

Account Name	From Date	To Date	Benchmark
Domestic Equity Blended	1/1/2015	Present	100% Russell 3000 Index
Benchmark	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)** 100%
Benchmark	1/1/2007	12/31/2012	100% NPI + 1%
	1/1/2005	12/31/2016	100% Consumer Price Index + 5%
Alternatives Custom	7/1/2010	Present	100% Annualized rate of 9.0%
Benchmark	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
Total Fund Benchmark	1/1/2021	Present	The total fund benchmark is a blend of the asset class benchmark returns weighted by the target allocation for each asset class: 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, 2021

	Sep-2021		Oct-2021	
	\$	%	\$	%
Domestic Equity	23,823,936,761	43.42	24,129,161,575	42.63
Domestic Equity Transition		0.00	261,276,031	0.46
Large Cap Growth	9,097,310,568	16.58	9,049,443,986	15.99
NTGI S&P 500 Growth	3,759,065,046	6.85	3,997,994,792	7.06
Sands Capital	3,134,975,842	5.71	2,657,365,424	4.70
Xponance Russell 1000 G	2,203,269,679	4.02	2,394,083,769	4.23
Large Cap Value	4,741,665,170	8.64	4,936,409,141	8.72
Dodge & Cox	1,797,754,542	3.28	1,875,963,833	3.31
LSV Asset	1,457,680,469	2.66	1,505,544,587	2.66
NTGI S&P 500 Value	1,486,230,159	2.71	1,554,900,721	2.75
Large Cap Pass. Core	3,125,171,219	5.70	3,334,977,319	5.89
NTGI MarketCap Idx.	3,125,171,219	5.70	3,334,977,319	5.89
Factor Diversity Strategies	1,255,128,306	2.29	1,337,585,382	2.36
U.S. Large Cap FDP-GSAM	1,255,128,306	2.29	1,337,585,382	2.36
Quantitative Factor Strategies	1,470,400,831	2.68	1,825,701,877	3.23
Quantitative US Equity - SciBeta	1,470,400,831	2.68	1,825,701,877	3.23
Small Cap Growth	1,039,742,351	1.89	884,919,146	1.56
Frontier Capital	838,557,020	1.53	884,919,146	1.56
FIAM Small Cap	201,185,331	0.37		0.00
Small Cap Value	2,075,333,670	3.78	1,487,569,437	2.63
Channing	326,073,284	0.59	339,898,239	0.60

Investment Manager Asset Allocation

Periods Ended October 31, 2021

	Sep-2021		Oct-2021	
	\$	%	\$	%
DFA Small Cap Val.	822,130,374	1.50	526,762,705	0.93
Inv. Couns. Maryland	927,130,011	1.69	620,908,493	1.10
Micro Cap	70,013,054	0.13	22,321,219	0.04
DFA Micro Cap (9-10)	70,013,054	0.13	22,321,219	0.04
Public Real Assets	949,171,592	1.73	988,958,039	1.75
Brookfield	181,361,077	0.33	189,482,741	0.33
Cohen & Steers	767,810,515	1.40	799,475,298	1.41
International Equity	10,206,160,855	18.60	10,330,552,495	18.25
Intl Large Cap Growth	1,806,557,256	3.29	1,802,770,885	3.19
EARNEST Part. Intl	626,468,256	1.14	633,459,846	1.12
William Blair	1,180,088,999	2.15	1,169,311,039	2.07
Intl Large Cap Value	1,383,392,712	2.52	1,398,453,322	2.47
Brandes Investment	606,476,291	1.11	608,463,177	1.08
Mondrian	634,645,890	1.16	645,707,638	1.14
Lazard	142,270,532	0.26	144,282,507	0.25
Intl Large Cap Core	4,702,338,776	8.57	4,788,091,941	8.46
Arrowstreet Capital	1,092,980,252	1.99	1,086,978,065	1.92
Brown Capital	659,844,686	1.20	685,308,100	1.21
GlobeFlex Capital	872,450,610	1.59	878,578,844	1.55
Xponance Intl EQ	106,599,287	0.19	109,233,411	0.19
Progress Intl Equity	740,326	0.00	735,949	0.00
Transition Account	119,717	0.00	119,870	0.00

Investment Manager Asset Allocation

Periods Ended October 31, 2021

	Sep-2021		Oct-2021	
	\$	%	\$	%
NTGI ACWI ex US Index Fund	1,969,603,898	3.59	2,027,137,702	3.58
Intl All Cap Developed	169,525,470	0.31	174,726,325	0.31
Ativo International	169,525,470	0.31	174,726,325	0.31
International Small Cap	721,812,535	1.32	737,435,113	1.30
Franklin Templeton	255,537,841	0.47	258,569,406	0.46
William Blair IntSC	466,274,694	0.85	478,865,707	0.85
Emerging Mkt Equity	1,422,534,105	2.59	1,429,074,908	2.53
Genesis Asset Mngrs.	1,422,534,105	2.59	1,429,074,908	2.53

Investment Manager Asset Allocation

Periods Ended October 31, 2021

	Sep-2021		Oct-2021	
	\$	%	\$	%
Fixed Income	12,226,422,984	22.28	13,156,768,509	23.25
Global Bonds Transition		0.00	481,131,546	0.85
Domestic Fixed Core	3,829,440,865	6.98	4,296,195,754	7.59
Attucks Fixed Income	99,754,469	0.18	99,821,347	0.18
Brandes FI Core	374,691,783	0.68	373,409,192	0.66
EARNEST Partners	1,024,056,560	1.87	1,023,970,328	1.81
Garcia Hamilton	1,086,780,228	1.98	1,086,691,683	1.92
Ramirez Asset Management	133,079,345	0.24	600,943,453	1.06
Xponance Yield Advantage Agg.	1,111,078,480	2.02	1,111,359,751	1.96
Domestic Fixed Passive Core	3,656,423,449	6.66	3,654,857,271	6.46
NTGI Blmbg Agg.	1,817,507,000	3.31	1,816,508,515	3.21
BlackRock US Debt I	1,838,916,449	3.35	1,838,348,757	3.25
Domestic Fixed Core Plus	2,940,543,448	5.36	2,936,885,957	5.19
LM Capital Group FI	960,213,087	1.75	958,929,005	1.69
Progress Inv. FI	1,668	0.00	1,664	0.00
BMO - TCH	662,419,279	1.21	661,954,144	1.17
Western Asset	1,131,457,873	2.06	1,129,370,691	2.00
Longfellow Core Plus	186,451,541	0.34	186,630,453	0.33
Bank Loans	735,502,538	1.34	728,946,952	1.29
Barings Global Loan Fund	735,502,538	1.34	728,946,952	1.29
Emerging Markets Debt	228,557,725	0.42	225,281,548	0.40
Standish-Mellon EMD	228,557,725	0.42	225,281,548	0.40

Investment Manager Asset Allocation

Periods Ended October 31, 2021

	Sep-2021		Oct-2021	
	\$	%	\$	%
High Yield	835,954,960	1.52	833,469,481	1.47
MacKay Shields	835,939,057	1.52	833,453,578	1.47
FIAM High Yield	15,903	0.00	15,903	0.00

Investment Manager Asset Allocation

Periods Ended October 31, 2021

	Sep-2021		Oct-2021	
	\$	%	\$	%
Real Estate	3,645,191,985	6.64	3,765,796,776	6.65
Real Estate Core Cmp	1,961,523,098	3.57	2,016,868,385	3.56
TA Assoc. Buckhead	743,116,202	1.35	745,125,050	1.32
Barings Euro Core Property	145,789,868	0.27	145,576,004	0.26
Blackstone Property Euro	161,281,845	0.29	161,045,256	0.28
INVESCO Core Real Estate	212,036,109	0.39	226,419,016	0.40
INVESCO European real estate	57,943,196	0.11	59,152,064	0.10
AEW Core Property Tr	243,116,484	0.44	254,920,150	0.45
CBRE Core Partners	229,724,994	0.42	256,116,454	0.45
JPM Strategic Property Fund	168,514,400	0.31	168,514,391	0.30
RE Non-Core Cmp	1,683,668,887	3.07	1,748,928,390	3.09
Artemis MWBE Spruce	295,920,495	0.54	295,967,370	0.52
Franklin T. EMREFF	6,865,209	0.01	4,776,924	0.01
Security Capital	70,192,975	0.13	71,132,555	0.13
Dune II	10,567,951	0.02	10,567,951	0.02
Non-Core Real Estate Funds	1,072,091,930	1.95	1,137,309,648	2.01
Non-Core Intl Real Estate	227,943,279	0.42	229,086,895	0.40
Almanac ARS V	87,048	0.00	87,048	0.00
Alternatives Investments	4,636,171,451	8.45	4,829,366,633	8.53
Absolute Return	117,832	0.00	113,571	0.00
Aurora Investment	117,832	0.00	113,571	0.00
Private Equity	4,061,245,044	7.40	4,240,765,492	7.49

Investment Manager Asset Allocation

Periods Ended October 31, 2021

	Sep-2021		Oct-2021	
	\$	%	\$	%
Abbott S/A Comp.	521,595,639	0.95	518,161,303	0.92
Muller Monroe MPEFF	522,930	0.00	520,309	0.00
Pantheon S/A Comp.	396,576,222	0.72	401,082,257	0.71
Private Equity Fund - Domestic	2,507,130,404	4.57	2,666,344,270	4.71
Private Equity Fund - International	544,426,113	0.99	557,259,968	0.98
Oakbrook Opportunities Fund	90,993,736	0.17	97,397,385	0.17
Private Credit	190,976,623	0.35	200,541,062	0.35
Private Credit Fund - Domestic	190,976,623	0.35	200,541,062	0.35
Agriculture	218,013,625	0.40	218,013,625	0.39
Premiere Partners IV	218,013,625	0.40	218,013,625	0.39
Timberland	67,577,675	0.12	68,831,610	0.12
Forest Investment	67,577,675	0.12	68,831,610	0.12
Unlisted Infrastructure	98,240,652	0.18	101,101,273	0.18
Unlisted Infrastructure Funds	98,240,652	0.18	101,101,273	0.18
Cash & Equivalents	336,529,831	0.61	383,413,103	0.68
Total Fund	54,874,413,867	100.00	56,595,059,091	100.00

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Total Fund	56,595,059,091	3.34	15.63	30.14	15.51	12.76	10.72	10.21	1/1/1982
Total Fund - Net		3.33	15.48	29.92	15.31	12.56	10.50		
Total Fund Benchmark		3.06	11.50	22.96	13.44	11.12	9.67		
Domestic Equity	24,129,161,575	6.00	23.39	46.34	21.59	18.81	15.94	12.25	1/1/1982
Domestic Equity - Net		5.99	23.22	46.11	21.38	18.59	15.69		
Blended Benchmark		6.76	22.77	43.90	21.62	18.91	16.08		
Russell 3000 Index		6.76	22.77	43.90	21.62	18.91	16.10	12.13	
U.S. Equity IMRF Custom Benchmark		6.64	22.49	43.95	20.02	17.48			
Large Cap Equity	18,658,415,827	6.51	23.54	45.30	23.02	19.88	16.65	12.02	1/1/1982
Large Cap Equity - Net		6.51	23.45	45.18	22.91	19.76	16.51		
Russell 1000 Index		6.94	23.18	43.51	22.01	19.16	16.30	12.28	
Large Cap Growth	9,049,443,986	7.64	23.23	43.81	31.67	26.64	19.55	13.17	1/1/1982
Large Cap Growth - Net		7.64	23.15	43.69	31.55	26.51	19.39		
LCG Blended Benchmark		8.66	24.20	43.21	29.41	25.49	19.42		
Russell 1000 Growth Index		8.66	24.20	43.21	29.41	25.49	19.42	12.30	
NTGI S&P 500 Growth	3,997,994,792	9.07	26.99	45.01	27.26	23.76	18.79	10.31	8/1/2001
NTGI S&P 500 Growth - Net		9.07	26.99	45.00	27.25	23.75	18.78		
S&P 500 Growth		9.08	27.02	45.03	27.29	23.80	18.79	10.30	
Xponance Russell 1000 G	2,394,083,769	8.66	24.18	43.18	29.39			24.64	10/1/2018
Xponance Russell 1000 G - Net		8.66	24.17	43.16	29.36			24.62	
Russell 1000 Growth Index		8.66	24.20	43.21	29.41			24.66	
Sands Capital	2,657,365,424	5.04	18.84	42.19	37.37	30.44	21.97	15.59	11/1/2003
Sands Capital - Net		5.04	18.66	41.91	37.08	30.17	21.72		
LCG Blended Benchmark		8.66	24.20	43.21	29.41	25.49	19.42	12.61	
Russell 1000 Growth Index		8.66	24.20	43.21	29.41	25.49	19.42	12.66	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Large Cap Value	4,936,409,141	4.27	25.68	50.08	14.54	13.93	14.09	10.63	10/1/1982
Large Cap Value - Net		4.25	25.52	49.88	14.37	13.76	13.90		
LCV Blended Benchmark		5.08	22.03	43.76	13.90	12.39	12.85		
Russell 1000 Value Index		5.08	22.03	43.76	13.90	12.39	12.85	11.99	
Dodge & Cox	1,875,963,833	4.56	30.30	59.32	16.80	16.26	15.62	10.76	9/1/2003
Dodge & Cox - Net		4.56	30.12	59.09	16.55	16.01	15.38		
LCV Blended Benchmark		5.08	22.03	43.76	13.90	12.39	12.85	9.09	
Russell 1000 Value Index		5.08	22.03	43.76	13.90	12.39	12.85	9.24	
LSV Asset	1,505,544,587	3.55	25.23	50.48	12.75	12.86	13.94	11.26	2/1/2003
LSV Asset - Net		3.49	24.94	50.14	12.48	12.59	13.66		
LCV Blended Benchmark		5.08	22.03	43.76	13.90	12.39	12.85	9.89	
Russell 1000 Value Index		5.08	22.03	43.76	13.90	12.39	12.85	9.89	
NTGI S&P 500 Value	1,554,900,721	4.62	20.61	40.88	14.53	13.13	13.15	6.78	8/1/1999
NTGI S&P 500 Value - Net		4.62	20.61	40.87	14.52	13.13	13.14		
S&P 500 Value		4.59	20.61	40.90	14.43	13.05	13.06	6.74	
Large Cap Pass. Core	3,334,977,319	6.71	22.87	44.05	21.60	18.91	16.11	11.89	1/1/1985
Large Cap Pass. Core - Net		6.71	22.87	44.04	21.59	18.91	16.11		
Dow Jones US Total Stock Market Index		6.72	22.87	44.07	21.57	18.87	16.04		
NTGI MarketCap Idx.	3,334,977,319	6.71	22.87	44.05	21.60	18.91	16.11	11.68	2/1/1985
NTGI MarketCap Idx. - Net		6.71	22.87	44.04	21.59	18.91	16.11		
Dow Jones US Total Stock Market Index		6.72	22.87	44.07	21.57	18.87	16.04		
Factor Diversity Strategies	1,337,585,382	6.57	21.81	42.27				29.83	8/18/2020

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
U.S. Large Cap FDP-GSAM	1,337,585,382	6.57	21.81	42.27				29.83	8/18/2020
U.S. Large Cap FDP-GSAM - Net		6.56	21.75	42.19				29.75	
Solactive GBS U.S. 1000 Index		6.87	23.15	43.57				30.74	
GSAM Active Beta US. Large Cap FDC Index		6.57	21.88	42.14				29.77	
Quantitative Factor Strategies	1,825,701,877	5.45	21.43	37.94				16.66	9/17/2019
Quantitative US Equity - SciBeta	1,825,701,877	5.45	21.43	37.94				16.66	9/17/2019
Quantitative US Equity - SciBeta - Net		5.44	21.36	37.81				16.39	
SciBeta US Hi-Fctr-Inst Div Multi-Beta Multi-Strat Index		5.68	20.26	36.90				15.69	
Small Cap	2,394,809,801	4.01	25.58	60.49	18.12	16.04	14.13	12.66	7/1/1988
Small Cap Composite - Net		3.97	24.97	59.59	17.46	15.42	13.51		
Russell 2000 Index		4.25	17.19	50.80	16.47	15.52	13.50	10.06	
Small Cap Growth	884,919,146	5.62	20.50	55.05	25.99	21.14	16.61	13.96	7/1/1988
Small Cap Growth - Net		5.49	19.49	53.75	25.05	20.37	15.92		
Russell 2000 Growth Index		4.68	7.64	38.45	18.64	17.90	14.57	8.99	
Frontier Capital	884,919,146	5.53	19.49	54.45	26.96	25.05	17.23	14.33	8/1/1988
Frontier Capital - Net		5.39	18.44	53.09	25.81	24.13	16.46		
Russell 2000 Growth Index		4.68	7.64	38.45	18.64	17.90	14.57	9.07	
Small Cap Value	1,487,569,437	3.24	28.41	63.49	14.65	13.55	13.13	12.10	9/1/1989
Small Cap Value - Net		3.24	28.04	62.85	14.12	13.00	12.58		
Russell 2000 Value Index		3.81	27.60	64.30	13.44	12.61	12.12	10.43	
Channing	339,898,239	4.24	19.48	55.35	16.48	13.38	13.59	12.05	7/1/2011
Channing - Net		4.24	19.08	54.66	15.97	12.85	13.01	11.46	
Russell 2000 Value Index		3.81	27.60	64.30	13.44	12.61	12.12	10.56	

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
DFA Small Cap Val.	526,762,705	3.84	36.86	75.82	14.12	13.00	13.20	12.43	2/1/1996
DFA Small Cap Val. - Net		3.84	36.45	75.10	13.59	12.44	12.66		
Russell 2000 Value Index		3.81	27.60	64.30	13.44	12.61	12.12	10.06	
Inv. Couns. Maryland	620,908,493	2.29	24.73	56.43	14.48	14.19	13.47	11.88	5/1/1999
Inv. Couns. Maryland - Net		2.29	24.40	55.87	13.93	13.62	12.94		
Russell 2000 Value Index		3.81	27.60	64.30	13.44	12.61	12.12	9.72	
Micro Cap	22,321,219	3.96	29.18	64.45	14.81	13.79	12.55	11.90	7/1/1984
Micro Cap - Net		3.96	28.55	63.42	14.19	13.17	11.86		
Russell Microcap Index		2.22	25.31	62.54	17.49	16.33	14.23		
DFA Micro Cap (9-10)	22,321,219	3.96	29.18	64.45	15.13	15.18	14.30	11.61	8/1/1987
DFA Micro Cap (9-10) - Net		3.96	28.55	63.42	14.51	14.58	13.72		
Russell 2000 Index		4.25	17.19	50.80	16.47	15.52	13.50	9.48	
Public Real Assets	988,958,039	4.19	14.19	24.23	10.75			7.84	8/1/2017
Public Real Assets - Net		4.19	13.86	23.74	10.28			7.41	
Public Real Assets Benchmark		3.84	12.94	23.61	9.43			5.90	
Brookfield	189,482,741	4.48	18.34	32.02	9.32			5.73	8/1/2017
Brookfield - Net		4.48	17.90	31.34	8.75			5.21	
Dow Jones Brookfield Global Infrastructure Composite Index		4.11	17.32	28.89	8.83			4.88	
Cohen & Steers	799,475,298	4.12	12.95	21.95	11.55			8.95	8/1/2017
Cohen & Steers - Net		4.12	12.65	21.52	11.12			8.55	
FTSE Global Core Infrastructure 50/50 Index (Net)		3.71	10.79	21.01	9.69			6.39	

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
International Equity	10,330,552,495	1.72	11.02	34.50	14.22	11.35	8.61	8.15	9/1/1986
International Equity - Net		1.70	10.73	34.02	13.84	10.98	8.25		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66		
International Equity IMRF Custom Benchmark		2.15	8.16	29.45	12.08	9.84			
Intl Large Cap Equity	7,989,316,148	1.87	13.06	37.67	13.88	11.34	8.68	8.16	9/1/1986
Intl Large Cap Equity - Net		1.87	12.86	37.28	13.58	11.04	8.39		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66		
Intl Large Cap Grwth	1,802,770,885	2.63	13.33	38.33	19.13	14.18	9.78	9.69	9/1/2002
Intl Large Cap Grwth - Net		2.61	13.07	37.93	18.79	13.90	9.44		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	7.78	
MSCI AC World ex USA Growth (Net)		3.10	5.84	22.73	16.85	12.67	8.50	8.49	
EARNEST Part. Intl	633,459,846	1.12	14.58	50.00	13.00	10.96	7.35	9.59	10/1/2004
EARNEST Part. Intl - Net		1.07	14.36	49.65	12.78	10.75	7.05		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	6.61	
MSCI AC World ex USA Growth (Net)		3.10	5.84	22.73	16.85	12.67	8.50	7.76	
William Blair	1,169,311,039	3.47	12.74	33.17	23.32	16.30	11.67	11.28	10/1/2002
William Blair - Net		3.47	12.47	32.74	22.90	15.93	11.27		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	8.45	
MSCI AC World ex USA Growth (Net)		3.10	5.84	22.73	16.85	12.67	8.50	9.05	
Intl Large Cap Val.	1,398,453,322	1.09	11.20	37.52	8.07	7.50	6.44	8.60	10/1/1995
Intl Large Cap Val. - Net		1.07	10.93	37.11	7.75	7.15	6.06		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	5.74	
MSCI AC World ex USA Value		1.69	11.52	37.92	7.53	7.30	5.29		

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Brandes Investment	608,463,177	0.33	14.64	44.94	6.85	7.05	6.64	8.73	1/1/1996
Brandes Investment - Net		0.27	14.40	44.63	6.62	6.80	6.38		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	5.66	
MSCI AC World ex USA Value		1.69	11.52	37.92	7.53	7.30	5.29		
Mondrian	645,707,638	1.74	9.26	32.72	9.04	7.79		6.07	4/1/2012
Mondrian - Net		1.74	8.95	32.20	8.62	7.30		5.58	
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77		6.48	
MSCI AC World ex USA Value		1.69	11.52	37.92	7.53	7.30		5.07	
Lazard	144,282,507	1.41	6.21	28.61	11.20	9.29		7.24	4/1/2012
Lazard - Net		1.41	6.02	28.30	10.92	9.03		6.76	
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77		6.48	
MSCI AC World ex USA Value		1.69	11.52	37.92	7.53	7.30		5.07	
Intl Large Cap Active Core	2,760,954,239	1.03	14.90	39.16	15.54	12.72	10.33	6.69	2/1/2008
Intl Large Cap Active Core - Net		1.03	14.60	38.43	14.98	12.15	9.78		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	3.76	
Arrowstreet Capital	1,086,978,065	-0.55	15.93	47.45	18.89	15.04	11.42	7.57	3/1/2008
Arrowstreet Capital - Net		-0.55	15.56	46.81	18.35	14.51	10.90	7.08	
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	3.57	
Brown Capital	685,308,100	3.86	11.78	28.29	17.55	13.83	11.69	9.32	10/1/2004
Brown Capital - Net		3.86	11.58	27.20	17.01	13.05	10.85		
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	6.61	
GlobeFlex Capital	878,578,844	0.70	16.95	39.63	11.63	10.00	8.77	5.87	3/1/2006
GlobeFlex Capital - Net		0.70	16.65	39.15	11.18	9.58	8.33	5.42	
MSCI AC World ex USA (Net)		2.39	8.43	29.66	12.00	9.77	6.66	4.78	

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Xponance Intl EQ	109,233,411	2.47						13.88	2/1/2021
Xponance Intl EQ - Net		2.47						13.56	
MSCI EAFE Index (Net)		2.46						12.21	
Progress Intl Equity	735,949								
Intl Large Cap Passive Core	2,027,137,702	2.92	11.91	35.02	12.16	10.32	7.84	4.63	2/1/2000
Intl Large Cap Passive Core - Net		2.92	11.90	35.02	12.15	10.31	7.83		
International Large Cap Passive Core Benchmark		2.39	10.93	34.09	11.51	9.78	7.36	4.21	
NTGI ACWI ex US Index	2,027,137,702	2.92						2.92	10/1/2021
NTGI ACWI ex US Index - Net		2.92						2.92	
MSCI AC World ex USA (Net)		2.39						2.39	
Intl All Cap Developed	174,726,325	3.07	13.70	31.47				11.66	2/1/2019
Intl All Cap Developed - Net		2.94	13.15	30.84				11.13	
MSCI EAFE + Canada (Net)		2.98	12.44	35.59				12.52	
Ativo International	174,726,325	3.07	13.70	31.47				11.66	2/1/2019
Ativo International - Net		2.94	13.15	30.84				11.13	
MSCI EAFE + Canada (Net)		2.98	12.44	35.59				12.52	
Intl Small Cap Eqty	737,435,113	2.16	15.45	38.03	20.18	13.98	11.26	6.95	12/1/2005
Intl Small Cap Eqty - Net		2.10	14.78	37.08	19.27	13.18	10.44		
MSCI AC World ex USA Small Cap (Net)		1.56	13.99	38.83	14.75	11.21	8.72	7.35	
Custom Benchmark (Intl Small Cap)		1.56	13.99	38.83	14.75	11.21	8.72	6.70	
Franklin Templeton	258,569,406	1.19	13.38	33.01	13.79	11.32	9.88	7.86	8/1/2011
Franklin Templeton - Net		1.01	12.62	32.11	12.91	10.53	9.08	7.08	
MSCI AC World ex USA Small Cap (Net)		1.56	13.99	38.83	14.75	11.21	8.72	7.00	

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
William Blair IntSC	478,865,707	2.70	16.60	40.91	24.32	15.51	12.07	12.31	9/1/2010
William Blair IntSC - Net		2.70	15.99	39.92	23.39	14.69	11.21	11.47	
MSCI AC World ex USA Small Cap (Net)		1.56	13.99	38.83	14.75	11.21	8.72	8.67	
Custom Benchmark (Intl Small Cap)		1.56	13.99	38.83	14.75	11.21	8.72	8.93	
Emerging Mkt Equity	1,429,074,908	0.51	-1.51	17.57	15.35	10.75	6.65	9.21	2/1/1992
Emerging Mkt Equity - Net		0.46	-1.96	16.92	14.70	10.11	6.03		
MSCI Emerging Markets Index		1.00	0.00	17.33	12.69	9.79	5.25	7.35	
Genesis Asset Mngrs.	1,429,074,908	0.51	-1.51	17.57	15.35	10.75	6.65	11.17	5/1/2004
Genesis Asset Mngrs. - Net		0.46	-1.96	16.92	14.70	10.11	6.03		
MSCI Emerging Markets Index		1.00	0.00	17.33	12.69	9.79	5.25	9.12	

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Fixed Income	13,156,768,509	-0.09	-0.53	1.58	6.08	3.86	3.97	7.99	1/1/1982
Fixed Income - Net		-0.10	-0.61	1.47	5.96	3.73	3.82		
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	7.46	
Fixed Income IMRF Custom Benchmark		-0.04	-0.96	0.68	5.69	3.40			
Active Fixed Core	4,296,195,754	-0.04	-1.00	0.40	5.77	3.48	3.58	4.51	4/1/2001
ActiveCore Fixed Inc - Net		-0.05	-1.09	0.30	5.67	3.38	3.43		
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	4.46	
Attucks Fixed Income	99,821,347	0.07						-0.12	2/1/2021
Attucks Fixed Income - Net		0.07						-0.28	
Blmbg. U.S. Aggregate		-0.03						-0.87	
Brandes FI Core	373,409,192	-0.34	-1.53	-0.82	5.07	2.89		2.94	3/1/2016
Brandes FI Core - Net		-0.36	-1.55	-0.83	5.07	2.89		2.93	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09		3.23	
EARNEST Partners	1,023,970,328	-0.01	-0.51	0.73	5.94	3.48	3.60	4.51	5/1/2005
EARNEST Partners - Net		-0.04	-0.64	0.60	5.80	3.34	3.43	4.32	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	4.07	
Garcia Hamilton	1,086,691,683	-0.01	-2.14	-1.12	5.19	3.31		3.38	6/1/2015
Garcia Hamilton - Net		-0.03	-2.22	-1.22	5.11	3.22		3.29	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09		3.11	
Ramirez Asset Management	600,943,453	-0.18	-0.08	1.91				4.05	5/1/2020
Ramirez Asset Management - Net		-0.18	-0.22	1.77				3.90	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48				0.52	
Xponance Yield Advantage Agg.	1,111,359,751	0.03	-0.30	1.80	6.25	3.68	3.66	4.38	6/1/2005
Xponance Yield Advantage Agg. - Net		0.03	-0.40	1.70	6.13	3.55	3.51	4.21	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	4.02	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							Inception Date
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	
Pass. Core Fixed Inc	3,654,857,271	-0.04	-1.58	-0.45	5.68	3.15	3.05	5.77	1/1/1990
Pass. Core Fixed Inc - Net		-0.04	-1.59	-0.46	5.68	3.14	3.04		
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	5.75	
BlackRock US Debt I	1,838,348,757	-0.03	-1.55	-0.43	5.72	3.19	3.05	3.43	10/1/2013
BlackRock US Debt I - Net		-0.03	-1.56	-0.44	5.71	3.18		3.42	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09		3.31	
NTGI Blmbg Agg.	1,816,508,515	-0.05	-1.61	-0.48	5.65	3.11	3.03	5.81	2/1/1990
NTGI Blmbg Agg. - Net		-0.05	-1.62	-0.48	5.64	3.10	3.02		
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	5.80	
Core Plus Fixed Income	2,936,885,957	-0.12	-1.11	1.51	6.83	4.13	4.14	7.89	1/1/1982
Core Plus Fixed Inc. - Net		-0.14	-1.23	1.36	6.65	3.95	3.96		
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	7.46	
LM Capital Group FI	958,929,005	-0.13	-1.51	0.71	6.66	3.86	3.87	4.88	5/1/2005
LM Capital Group FI - Net		-0.17	-1.67	0.55	6.49	3.70	3.71	4.71	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	4.07	
Progress Inv. FI	1,664								
BMO - TCH	661,954,144	-0.07	-0.42	1.65	6.27	4.13	4.36	4.96	5/1/2005
BMO - TCH - Net		-0.07	-0.51	1.51	6.13	4.00	4.22	4.83	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	4.07	
Western Asset	1,129,370,691	-0.18	-1.38	1.98	7.54	4.54	4.61	5.45	11/1/2001
Western Asset - Net		-0.18	-1.48	1.85	7.42	4.41	4.47		
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48	5.62	3.09	3.00	4.22	
Longfellow Core Plus	186,630,453	0.10	0.24	2.32				3.88	5/1/2020
Longfellow Core Plus - Net		0.10	0.09	2.12				3.71	
Blmbg. U.S. Aggregate		-0.03	-1.58	-0.48				0.52	

Benchmark definitions in glossary.

Performance

Periods Ended October 31, 2021

	Market Value \$	Performance (%)							
		1 Month	YTD	1 Year	3 Years	5 Years	10 Years	Since Inception	Inception Date
Bank Loans	728,946,952	0.09	5.88	10.36	4.28	4.81		4.58	8/1/2014
Bank Loans - Net		0.07	5.86	10.34	4.18	4.52		4.19	
Custom Benchmark		0.23	4.86	8.50	4.36	4.69		4.27	
Barings Global Loan Fund	728,946,952	0.09	5.88	10.36	4.28	4.81		4.58	8/1/2014
Barings Global Loan Fund - Net		0.07	5.86	10.34	4.18	4.52		4.19	
Custom Benchmark		0.23	4.86	8.50	4.36	4.69		4.27	
Emerging Markets Debt	225,281,548	-1.40	-5.18	3.52	5.48	3.50		2.62	8/1/2014
Emerging Markets Debt - Net		-1.40	-5.42	3.17	5.12	3.15		2.28	
Custom Benchmark		-0.92	-4.82	2.15	5.25	3.21		2.12	
Standish-Mellon EMD	225,281,548	-1.40	-5.18	3.52	5.48	3.50		2.62	8/1/2014
Standish EM MRK - Net		-1.40	-5.42	3.17	5.12	3.15		2.28	
Custom Benchmark		-0.92	-4.82	2.15	5.25	3.21		2.12	
High Yield	833,469,481	-0.30	5.71	10.73	8.21	6.99	7.24	9.42	4/1/1986
High Yield - Net		-0.30	5.46	10.38	7.87	6.63	6.87		
ICE BofAML US High Yield, Cash Pay Index		-0.18	4.36	10.58	7.12	6.23	6.63	8.19	
MacKay Shields	833,453,578	-0.30	5.71	10.73	8.22	7.01	7.32	8.70	11/1/2000
MacKay Shields - Net		-0.30	5.46	10.38	7.87	6.66	6.95		
ICE BofAML US High Yield, Cash Pay Index		-0.18	4.36	10.58	7.12	6.23	6.63	7.45	

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:
	1/1/2021	Present	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	1/1/2015	Present	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 Composi, 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.
Standish-Mellon EMD	4/1/2020	Present	50% JPM GBI-EM Global Diversified ex-CNY, 25% JPM EMBI Global (USD), 25% JPM CEMBI Broad Index
	8/1/2014	3/31/2020	50% JPM GBI-EM Global Diversified, 25% JPM EMBI Global (USD), 25% JPM CEMBI Broad Index