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THAT DRIVE  
ENTERPRISE  
SUCCESS**



**PERIOD ENDING: September 30, 2024**

Investment Performance Review for

**Illinois Police Officer's Pension Investment Fund**

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# Executive Summary

## Executive Summary

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- Total assets increased by over \$740 million to nearly \$11.3 billion over the quarter, largely drive by strong investment returns across the portfolio.
- Equity markets performed well in the quarter, as small cap and international equities exceeded U.S. large cap stocks for the first time in quite a while. Chinese equities outperformed other emerging markets following the announcement of aggressive economic stimulus measures late in the quarter and the promise of more to come.
- The IPOPIF Investment Portfolio returned 6.1% for the quarter, which modestly underperformed the Policy Index return of 6.3%, as well as the Broad-Based Policy Index of 6.9%, which reflects a higher equity allocation.
- Since inception in April 2022, the IPOPIF Portfolio has returned 6.0% on an average annualized basis through the end of the third quarter, compared to the Policy Index of 6.1% and the Broad-Based Policy Index of 6.0%.
- The IPOPIF Portfolio performed better than its median peer and ranked in the 7<sup>th</sup> percentile for the quarter in a representative universe of Public Pensions with assets greater than \$1 billion.
- The IPOPIF investment team actively monitors current asset allocations vs. policy targets and conducts rebalancing trades as appropriate. As of September 30, 2024, all asset classes were within policy target ranges except Cash, which at 2.1% was slightly above the 2.0% target range high.

Notes:

The broad-Based Policy Index represents a passively invested 70/30 global stock / U.S. bond portfolio.

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# Investment Landscape

# What drove the market in Q3?

Following the central bank rate hikes of 2022, markets have been eagerly waiting for inflation to come down to the Fed's 2% target and for an adequate amount of softening to occur across the economy, to give the Federal Reserve confidence to kick off a series of rate cuts. The cost of shelter has been the greatest obstacle to lower inflation, as residential home prices continue to increase and data lags in official statistics will only slowly reflect more recent flattening of rent prices that has occurred recently. Inflation has cooled to 2.4%, but the fight may not be over.

The Fed indicated that significant progress has been made on the inflation front by delivering a surprisingly aggressive 50 basis point rate cut in September, which brought the Fed Funds target range down to 4.75-5.00%. This followed a series of labor market data and soft inflation prints that suggested conditions are normalizing. It seems that the Fed is now primarily focused on the labor market, which will take center stage in determining future rate decisions.

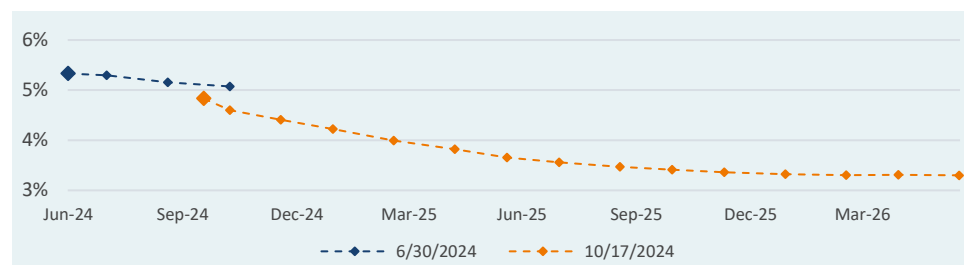
In September, China announced an aggressive economic stimulus program, after three years of ongoing mild support. President Xi pledged both fiscal and monetary support, with specific focus on the ailing real estate market, and stimulus to mitigate the downward trajectory of the stock market. Those moves followed a People's Bank of China rate cut from 2.3% to 2.0%. It is not yet clear whether these developments will be sufficient to help turn around the Chinese economy, which faces serious structural issues such as a declining population, shrinking workforce, and nationwide excess inventory of real estate.

## CONSUMER PRICE INDEX, YEAR-OVER-YEAR CHANGE



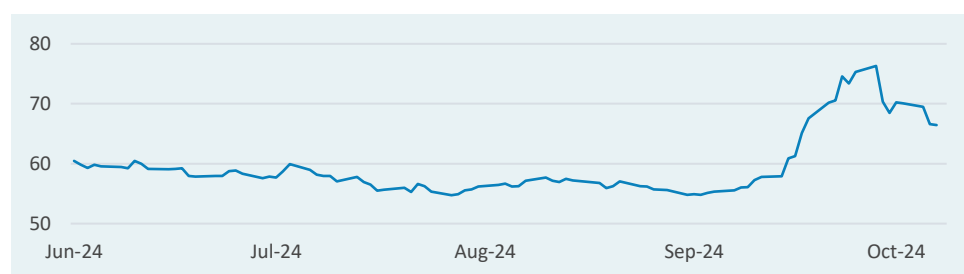
Source: FRED, as of 9/30/24

## U.S. MARKET IMPLIED FUTURE INTEREST RATES



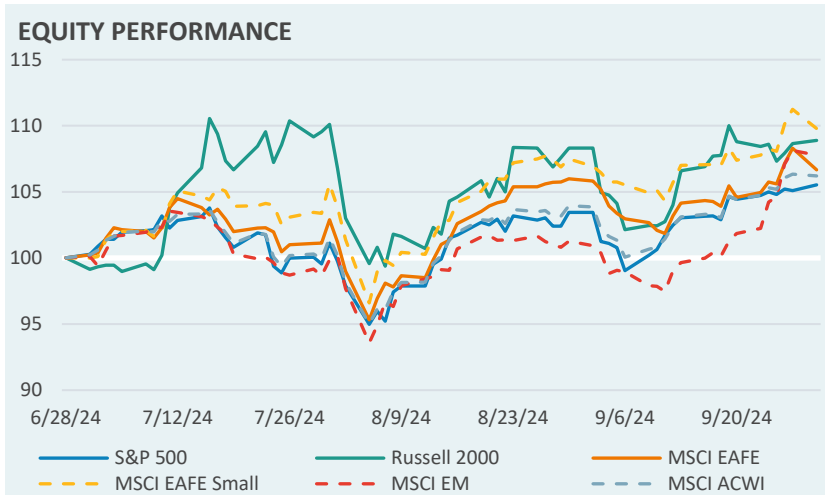
Source: CME Group, as of 10/17/24

## MSCI CHINA INDEX, PRICE

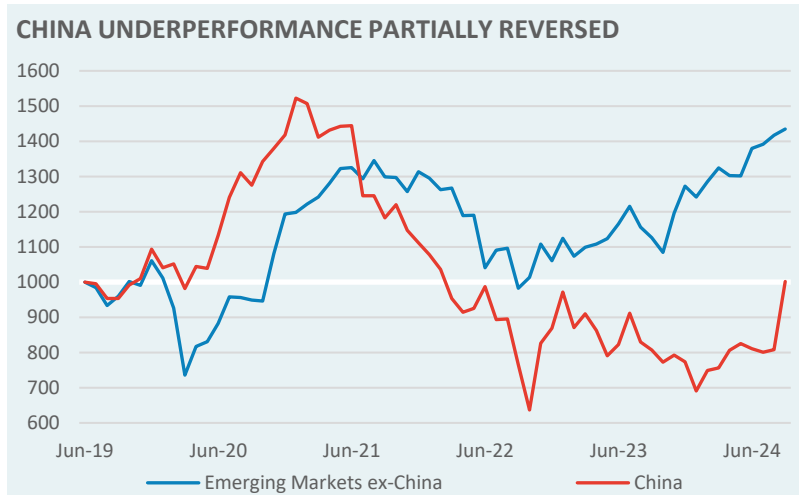


Source: MSCI, as of 10/17/24

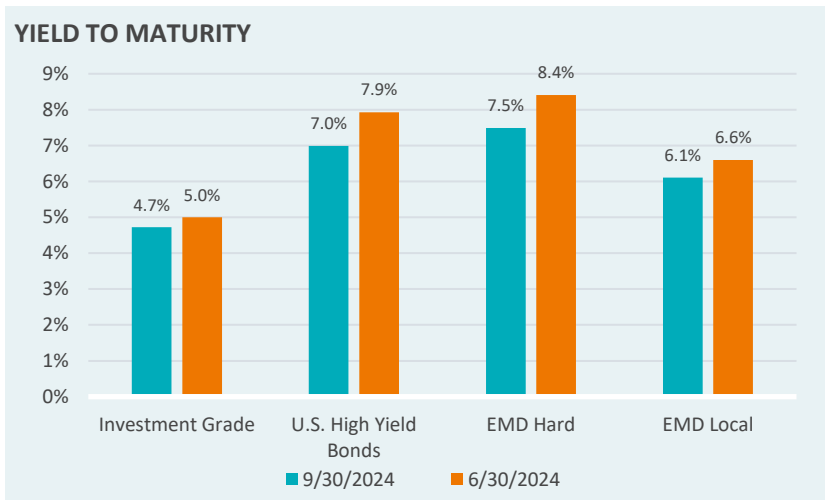
# What happened?



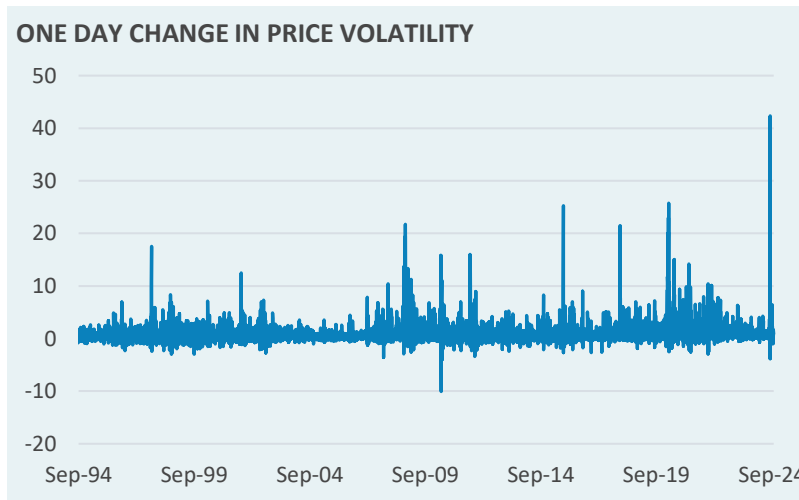
Source: S&P, MSCI, Russell, as of 9/30/24



Source: MSCI, as of 9/30/24



Source: Bloomberg, J.P. Morgan, as of 9/30/24



Source: CBOE, as of 9/30/24

All major equity markets performed well in Q3, despite August's historically large spike in volatility

The beginning of the rate cutting cycle led U.S. yields lower, while China experienced a rally after its stimulus announcements

# GDP growth

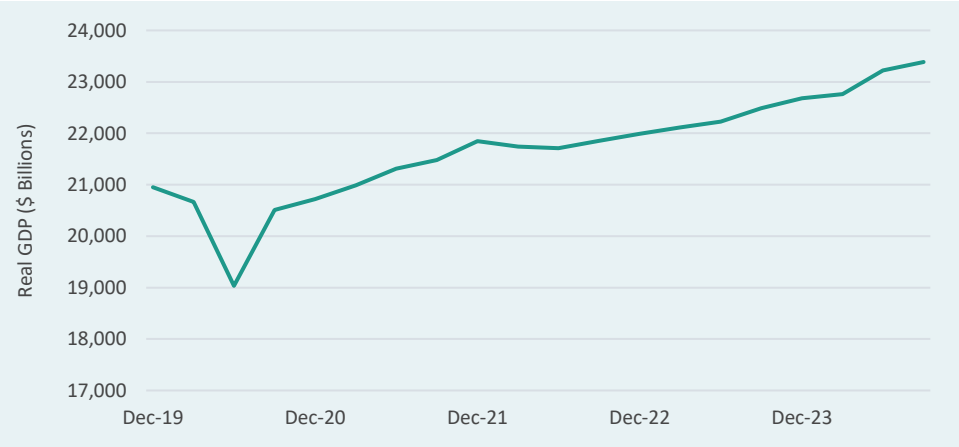
Real GDP growth was robust again during Q3, but slowed slightly from 3.0% to 2.8% quarter-over-quarter, annualized (2.7% year-over-year). Growth continues to be fueled by consumer purchases, which accelerated to a 3.7% annualized pace. Spending was broad based across goods and services. Heightened government defense spending was also a large contributor during the quarter. The moderate deceleration in real GDP growth was mainly caused by less private inventory investment, and a substantial slowing of residential fixed investment.

Although economic conditions remain strong, many economists and investors are wary of the sustainability of consumer

spending growth, given the drawdown of excess savings accumulated during the pandemic, lower personal savings rates, as well as slowing wage growth. The U.S. economy is likely headed towards a more moderate growth phase after many quarters of surprisingly hot growth and spending. Unlike past periods of economic weakening, many trends today could reasonably be summarized as a *return to normalcy*. For example, following the pandemic, the domestic labor market was experiencing a historic mismatch between the number of jobs available and the number of workers available. Resolving that mismatch required a material weakening of the labor market from *extreme tightness* to *relatively strong*, but not a move (yet) towards something that suggests recession.

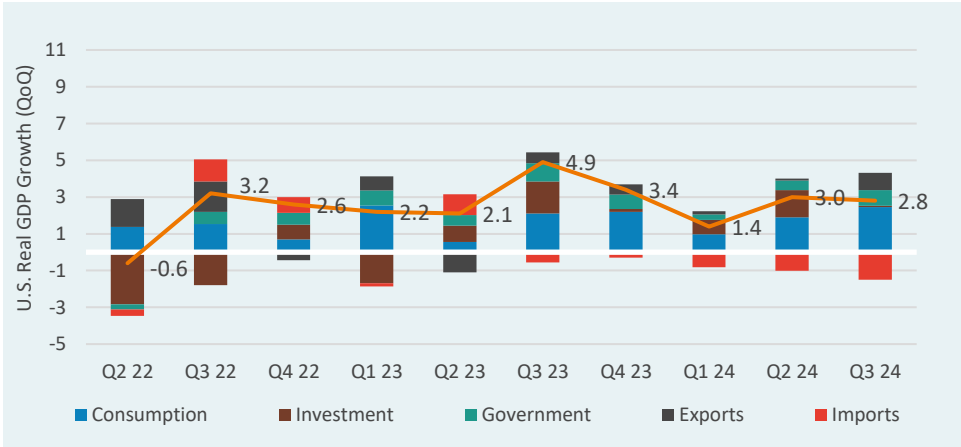
U.S. growth remained robust during Q3, fueled by consumer spending

U.S. REAL GROSS DOMESTIC PRODUCT



Source: FRED, as of 9/30/24

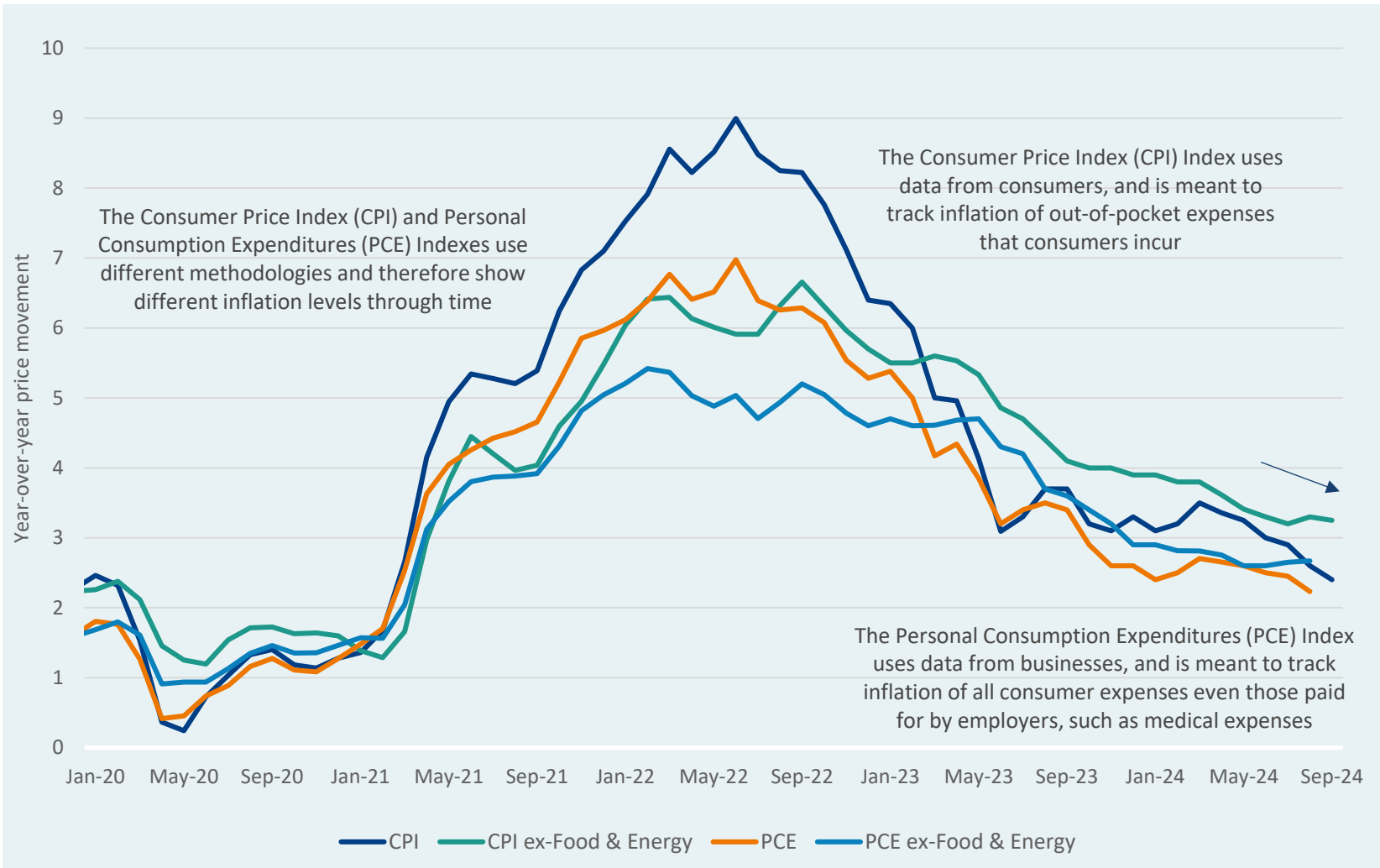
U.S. REAL GDP COMPONENTS (QOQ)



Source: FRED, as of 9/30/24



# Inflation is nearing the Fed's target



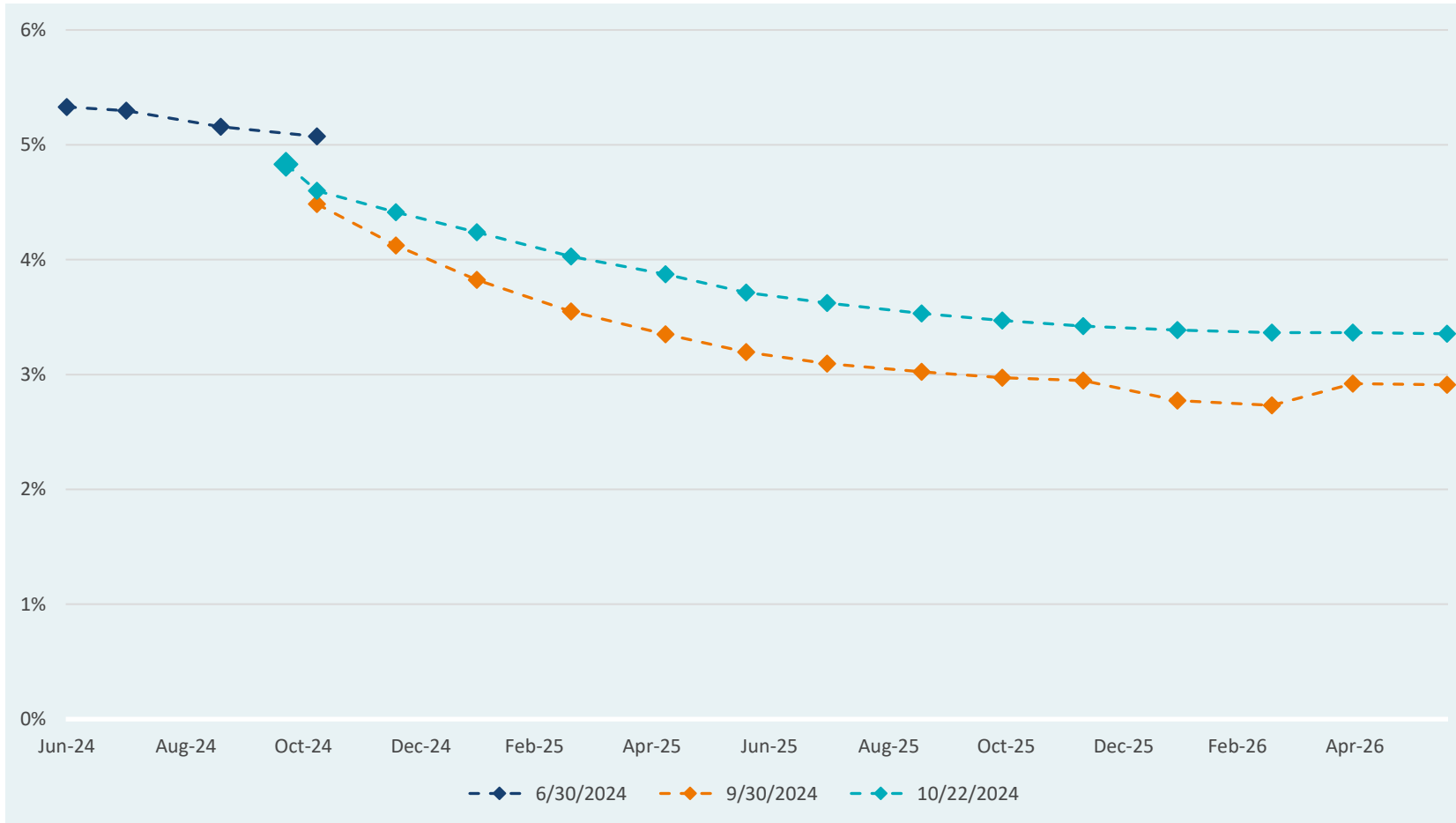
The Fed's preferred measure of inflation, PCE, may soon reach the stated 2% target

...though price pressures still exist in the economy

Source: FRED, Verus, as of 9/30/24 – or most recent release

# A new interest rate regime

*Looking at the upcoming expected path of the Fed Funds rate (short-term rate)*



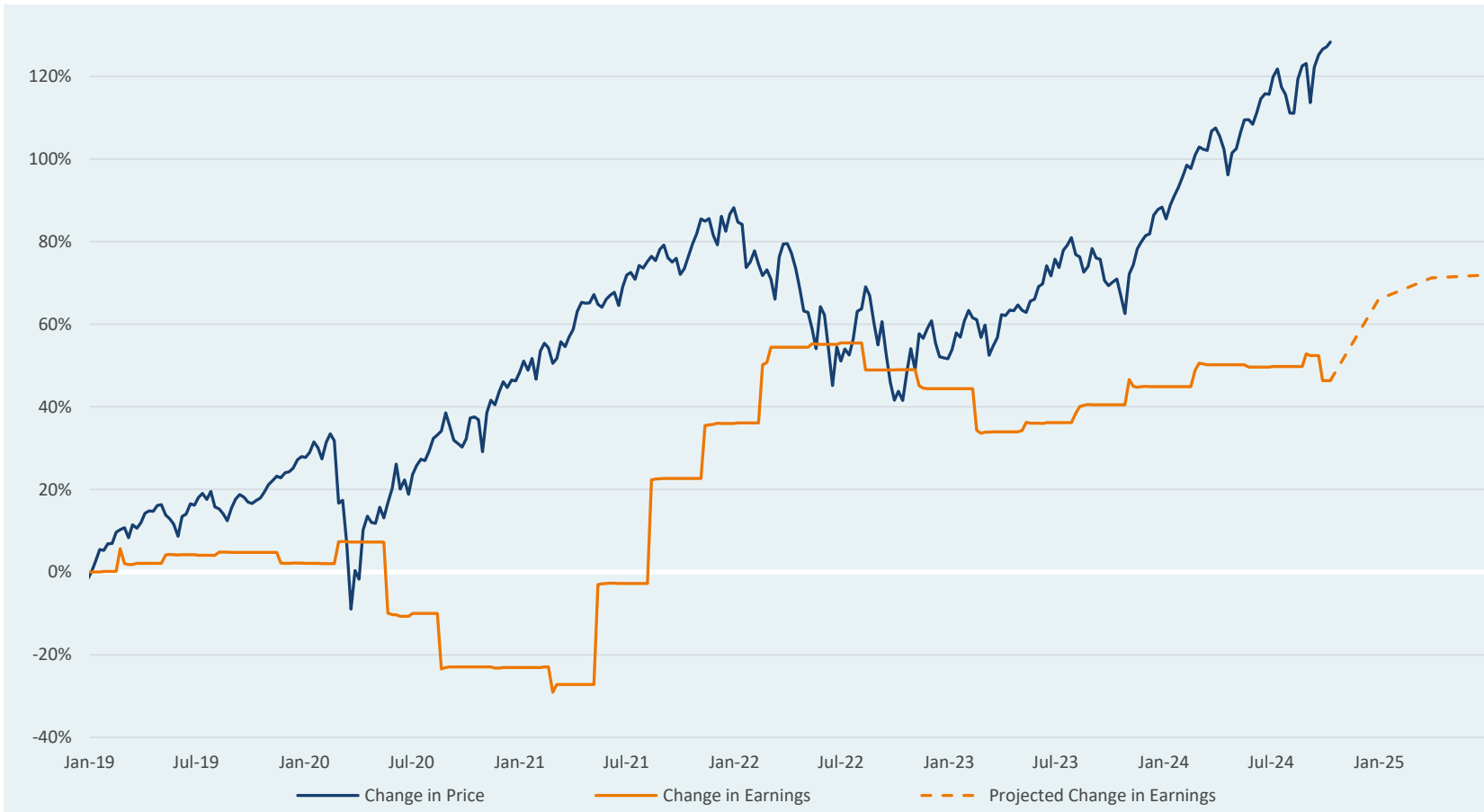
Investors are pricing in considerable near-term rate cuts

Sticky inflation and/or ongoing economic strength could lead to disappointment if the Fed takes a more restrained stance

Source: Verus, as of 10/22/24

# Lofty U.S. equity valuations, but strong earnings are expected

S&P 500 PRICE GROWTH VS. EARNINGS GROWTH (SINCE 2019)



Valuations are in the 94th percentile relative to history, meaning multiples have only been this expensive 6% of the time.

But higher valuations may be partly justified by strong earnings forecasts

Source: Standard & Poor's, Verus, as of 10/10/24

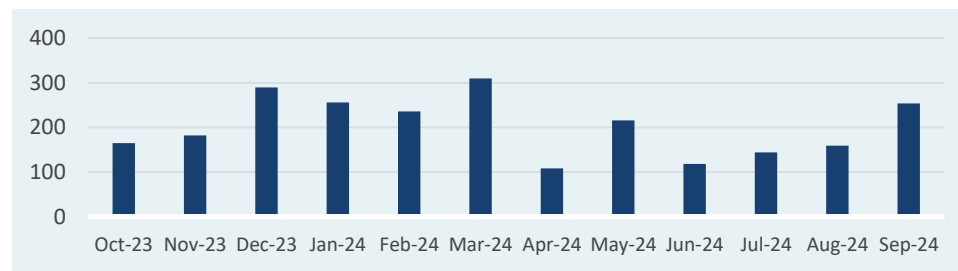
# What to watch for in Q4

The Fed has signaled that their primary focus has shifted from inflation to the labor market, and labor market data has become increasingly difficult to interpret due to large immigration trends. It will be important to monitor the data to gain a comprehensive understanding of the job market, which could have a significant bearing on future Fed moves.

Following the Fed's 50 basis point rate cut, medium- and longer-term interest rates have risen notably. While competing theories exist, it appears that recent strong labor market data has contributed to expectations for a slower rate cutting cycle, as a stronger job market suggests better economic growth and less need for cuts. Inflation expectations have also crept higher. Some investors have attributed these yield changes to shifting U.S. presidential election odds. Either way, the move higher in yields has made borrowing more expensive for items such as mortgages and auto loans.

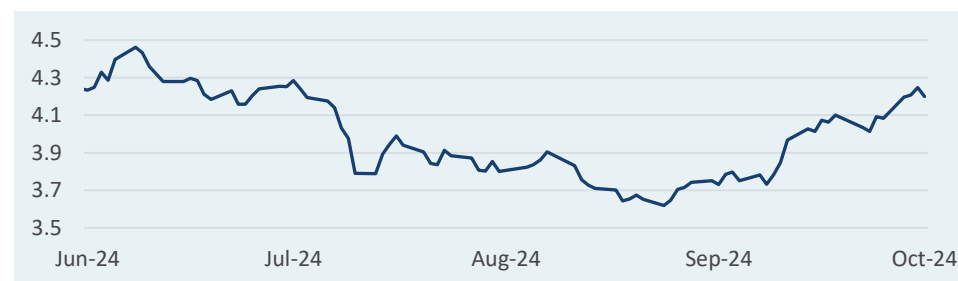
The U.S. equity market remains very richly valued relative to history, in the top decile based on forward price-to-earnings. With strong future earnings already baked into the price, U.S. equities will need to continue to deliver positive earnings surprise, and likely also a clear path to profitability for artificial intelligence that many large companies have made significant investments into.

## CHANGE IN NONFARM PAYROLLS



Source: Bureau of Labor Statistics, as of 9/30/24

## 10 YEAR TREASURY YIELD



Source: Department of the Treasury, as of 10/24/24

## S&P 500 FORWARD P/E RATIO



Source: S&P, as of 9/30/24

# Notices & disclosures

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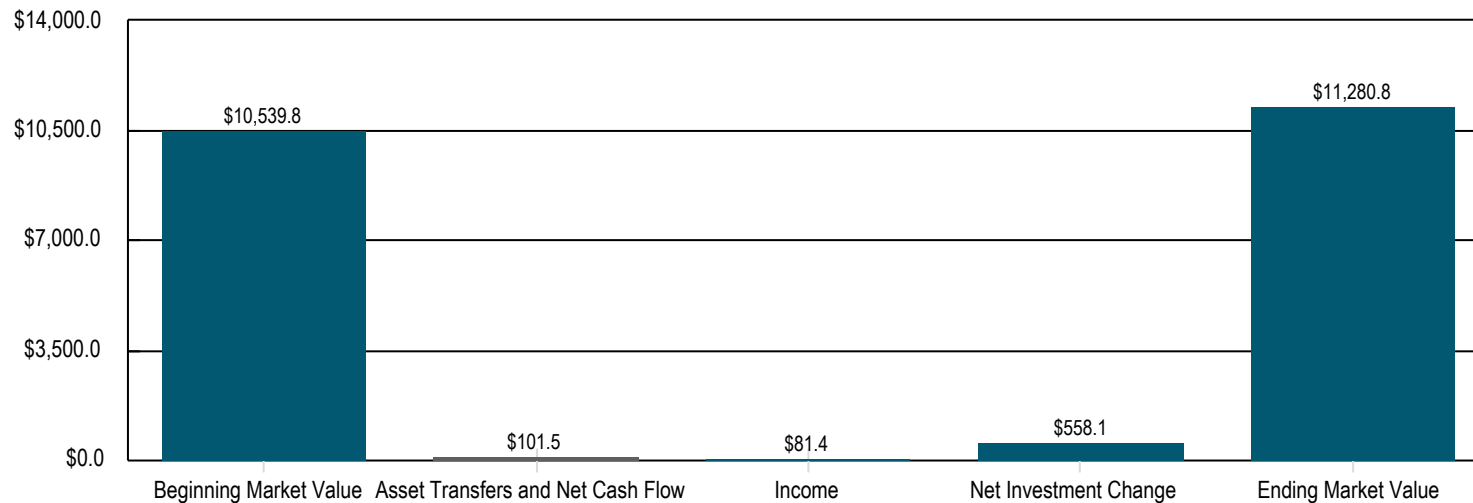
Verus – also known as Verus Advisory™.

# Performance Review

Portfolio Reconciliation

	Quarter-To-Date	Fiscal Year-To-Date
Beginning Market Value	\$10,539,769,594	\$10,539,769,594
Asset Transfers and Net Cash	\$101,525,028	\$101,525,028
Income	\$81,404,022	\$81,404,022
Net Investment Change	\$558,125,920	\$558,125,920
<b>Ending Market Value</b>	<b>\$11,280,824,565</b>	<b>\$11,280,824,565</b>

Change in Market Value  
Last Three Months

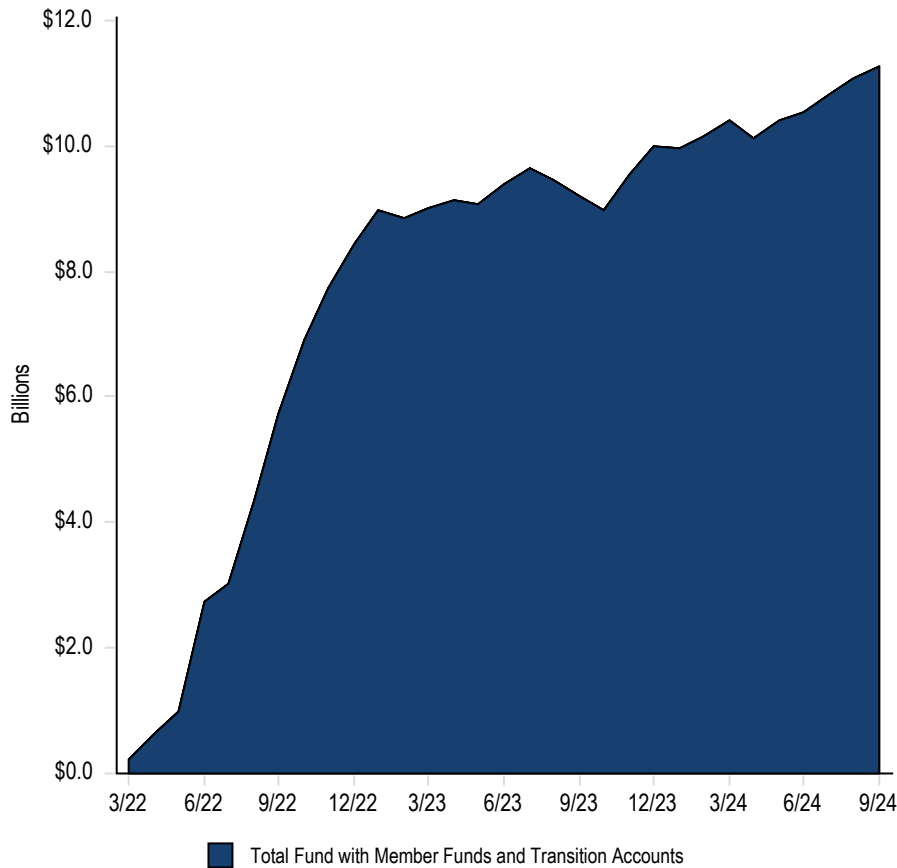


The portfolio reconciliation includes the Member Funds and Transition Account. Income excludes Member Funds and Transition Account. Income is calculated using the actual dividend and income received from separate accounts and estimated income and dividends for commingled funds. The income and dividends for RhumbLine Russell 1000 Index, RhumbLine Russell 2000 Index, SSgA US TIPS Index and Cash are sourced from State Street custodial reports. The income and dividends for the SSGA commingled funds, Acadian and Ares are an estimate based on the current yield for bond funds and the dividend yield for equity funds. SSGA can use dividend and income to cover fund expenses, so the actual income that flows to the IPOPIF may be different than reported. Income for the Principal RE fund is based on a monthly income spreadsheet received from Principal via email. Income for Aristotle, LSV and WCM are sourced monthly from manager statements.

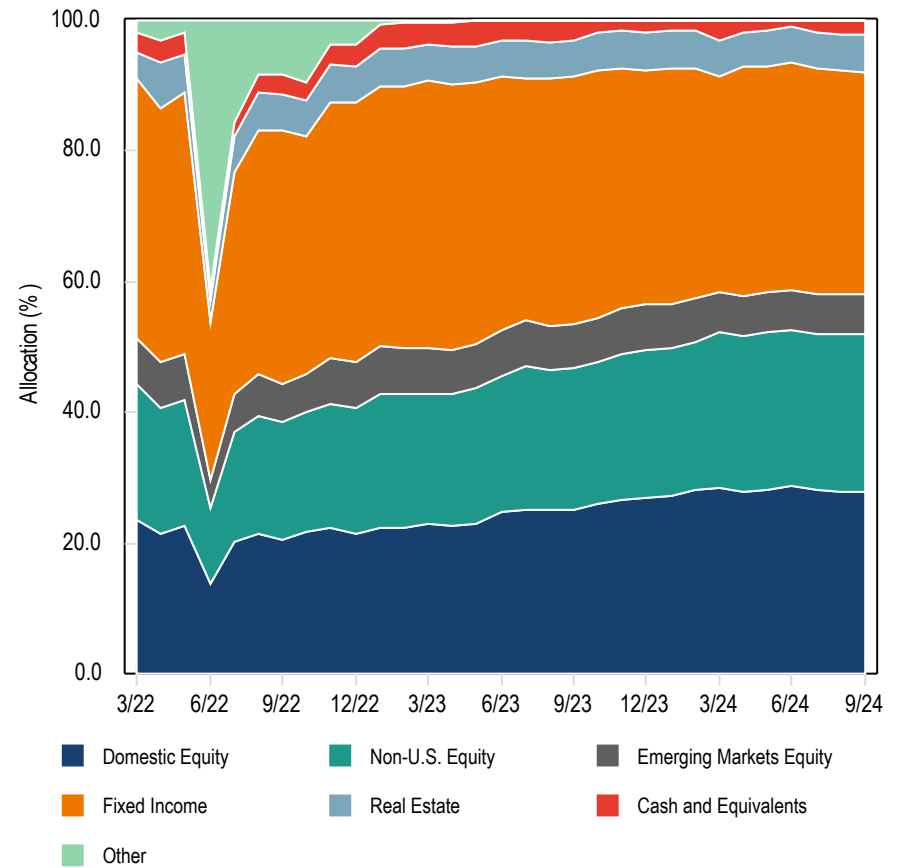
Total Fund  
Asset Allocation History

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

Market Value History



Asset Allocation History

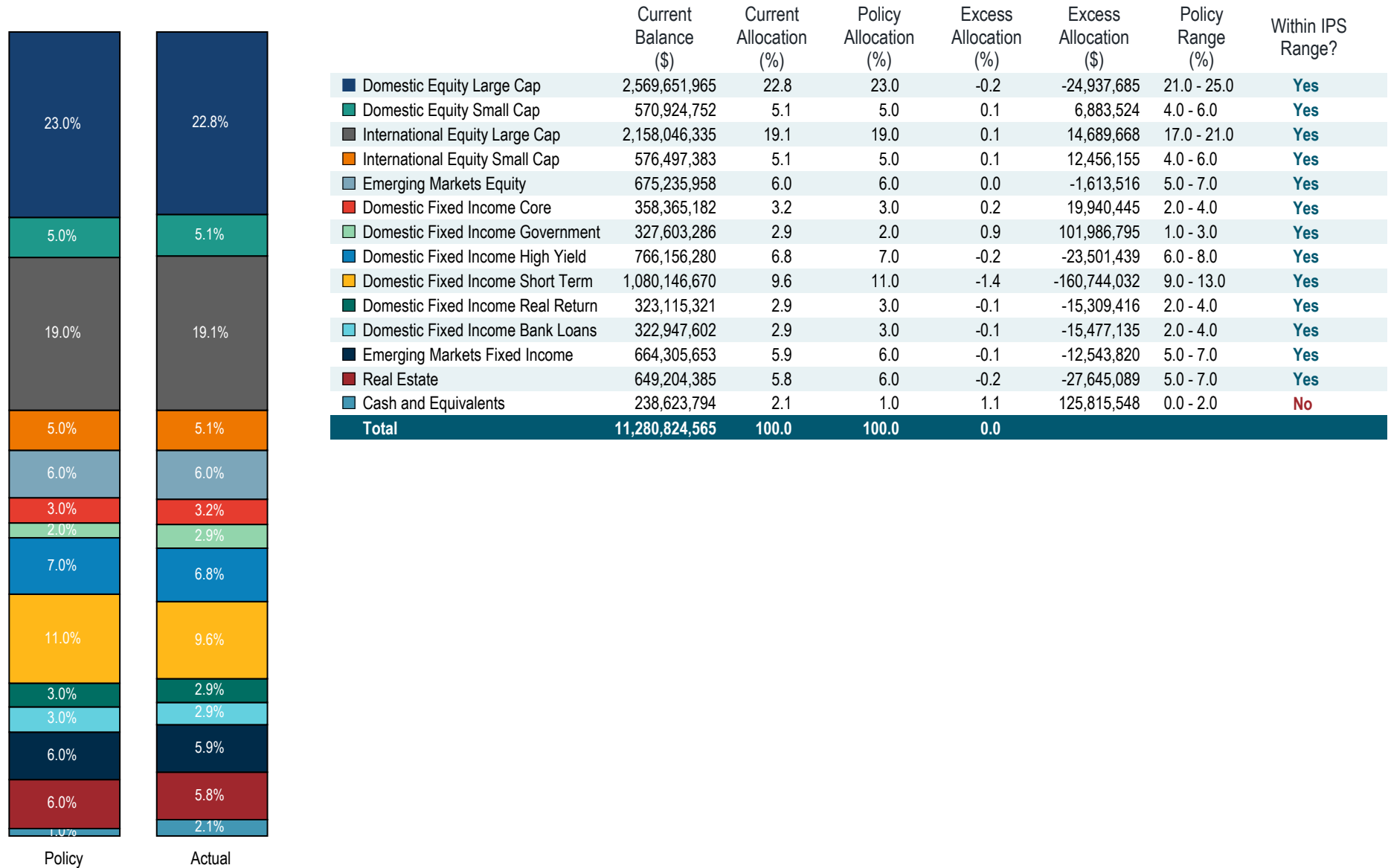


\*Market value and asset class history includes Transition Accounts and Member Funds as represented by the Other category in the asset allocation history chart. The large allocation to the Other Category for 6/22 reflects assets in transition associated with the 6/24/22 Transfer Date.



IPOPIF Investment Portfolio  
Asset Allocation vs. Policy

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024



Asset Allocation reflects interim policy targets and excludes the Transition Account and Member Funds.

Total Fund  
Executive Summary (Net of Fees)

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	Since Inception	Inception Date
<b>Total Fund with Member and Transition Accounts</b>	<b>11,280,824,565</b>	<b>100.0</b>	<b>6.1</b>	<b>11.8</b>	<b>6.1</b>	<b>21.6</b>	<b>6.1</b>	<b>03/01/22</b>
<i>Policy Index</i>			6.3	12.0	6.3	22.0	6.1	
<i>Policy Index- Broad Based</i>			6.9	13.5	6.9	25.1	6.1	
<b>IPOPIF Investment Portfolio</b>	<b>11,280,824,565</b>	<b>100.0</b>	<b>6.1</b>	<b>11.8</b>	<b>6.1</b>	<b>21.6</b>	<b>6.0</b>	<b>04/01/22</b>
<i>Policy Index</i>			6.3	12.0	6.3	22.0	6.1	
<i>Policy Index- Broad Based</i>			6.9	13.5	6.9	25.1	6.0	
<b>Growth</b>	<b>6,550,356,393</b>	<b>58.1</b>	<b>6.8</b>	<b>15.8</b>	<b>6.8</b>	<b>28.5</b>	<b>7.7</b>	<b>04/01/22</b>
<i>Growth Benchmark</i>			7.2	16.1	7.2	29.0	7.7	
<b>Income</b>	<b>1,753,409,535</b>	<b>15.5</b>	<b>5.1</b>	<b>7.9</b>	<b>5.1</b>	<b>16.5</b>	<b>4.1</b>	<b>04/01/22</b>
<i>Income Benchmark</i>			5.0	7.7	5.0	16.3	5.0	
<b>Real Assets</b>	<b>649,204,385</b>	<b>5.8</b>	<b>11.3</b>	<b>10.0</b>	<b>11.3</b>	<b>21.6</b>	<b>1.6</b>	<b>04/01/22</b>
<i>Real Assets Benchmark</i>			10.2	8.7	10.2	18.6	-1.8	
<b>Risk Mitigation</b>	<b>2,327,750,000</b>	<b>20.6</b>	<b>3.3</b>	<b>4.7</b>	<b>3.3</b>	<b>8.2</b>	<b>2.8</b>	<b>04/01/22</b>
<i>Risk Mitigation Benchmark</i>			3.3	4.7	3.3	8.1	2.7	
<b>IPOPIF Pool Fixed Income Transition</b>	<b>104,252</b>	<b>0.0</b>						
Member Accounts	-	0.0						

The composition of blended benchmarks are located on the Data Sources and Methodology page.

Total Fund  
Executive Summary (Net of Fees)

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	2023	Since Inception	Inception Date
<b>Total Fund with Member and Transition Accounts</b>	<b>11,280,824,565</b>	<b>100.0</b>	<b>6.1</b>	<b>11.8</b>	<b>6.1</b>	<b>21.6</b>	<b>13.7</b>	<b>6.1</b>	<b>03/01/22</b>
<i>Policy Index</i>			6.3	12.0	6.3	22.0	14.2	6.1	
<i>Policy Index- Broad Based</i>			6.9	13.5	6.9	25.1	16.8	6.1	
<i>All Public Plans &gt; \$1B-Total Fund Rank</i>			7	17	7	11	12	26	
<b>IPOPIF Investment Portfolio</b>	<b>11,280,824,565</b>	<b>100.0</b>	<b>6.1</b>	<b>11.8</b>	<b>6.1</b>	<b>21.6</b>	<b>13.7</b>	<b>6.0</b>	<b>04/01/22</b>
<i>Policy Index</i>			6.3	12.0	6.3	22.0	14.2	6.1	
<i>Policy Index- Broad Based</i>			6.9	13.5	6.9	25.1	16.8	6.0	
<i>All Public Plans &gt; \$1B-Total Fund Rank</i>			7	17	7	11	11	22	
<b>Growth</b>	<b>6,550,356,393</b>	<b>58.1</b>	<b>6.8</b>	<b>15.8</b>	<b>6.8</b>	<b>28.5</b>	<b>19.4</b>	<b>7.7</b>	<b>04/01/22</b>
<i>Growth Benchmark</i>			7.2	16.1	7.2	29.0	19.5	7.7	
RhumbLine Russell 1000 Index	2,569,651,965	22.8	6.1	21.1	6.1	35.6	26.5	14.7	03/15/22
<i>Russell 1000 Index</i>			6.1	21.2	6.1	35.7	26.5	14.8	
<i>eV US Large Cap Core Equity Rank</i>			41	43	41	39	25		
RhumbLine Russell 2000 Index	570,924,752	5.1	9.2	11.2	9.2	26.6	16.8	6.9	03/15/22
<i>Russell 2000 Index</i>			9.3	11.2	9.3	26.8	16.9	7.2	
<i>eV US Small Cap Core Equity Rank</i>			39	55	39	37	56		
SSgA Non-US Developed Index	2,158,046,335	19.1	7.8	13.4	7.8	25.4	18.3	10.4	03/10/22
<i>MSCI World ex U.S. (Net)</i>			7.8	13.1	7.8	25.0	17.9	10.0	
<i>eV EAFE Core Equity Rank</i>			48	41	48	36	36		
<b>International Developed Small Cap Equity</b>	<b>576,497,383</b>	<b>5.1</b>	<b>7.4</b>	<b>10.7</b>	<b>7.4</b>	<b>22.4</b>	<b>12.9</b>	<b>2.9</b>	<b>04/01/22</b>
<i>MSCI World ex U.S. Small Cap Index (Net)</i>			10.4	11.5	10.4	23.4	12.6	2.9	
Acadian ACWI ex US Small-Cap Fund	289,188,093	2.6	8.0	-	8.0	-	-	16.9	01/30/24
<i>MSCI AC World ex USA Small Cap (Net)</i>			8.9	-	8.9	-	-	14.7	
<i>eV ACWI ex-US Small Cap Equity Rank</i>			41	-	41	-	-		
WCM International Small Cap Growth Fund	150,132,217	1.3	5.6	-	5.6	-	-	4.3	03/01/24
<i>MSCI AC World ex USA Small Cap (Net)</i>			8.9	-	8.9	-	-	12.8	
<i>eV ACWI ex-US Small Cap Equity Rank</i>			80	-	80	-	-	96	
LSV International Small Cap Value Equity Fund	137,177,073	1.2	8.0	-	8.0	-	-	11.5	03/01/24
<i>S&amp;P Developed Ex-U.S. SmallCap (Net)</i>			8.6	-	8.6	-	-	12.0	
<i>eV EAFE Small Cap Value Rank</i>			80	-	80	-	-	71	

The composition of blended benchmarks are located on the Data Sources and Methodology page. Principal USPA does not show a Since 4/1/2022 return because the fund was inception on 4/6/2022.

Total Fund  
Executive Summary (Net of Fees)

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	2023	Since Inception	Inception Date
<b>Emerging Market Equities</b>	<b>675,235,958</b>	<b>6.0</b>	<b>4.1</b>	<b>12.0</b>	<b>4.1</b>	<b>20.8</b>	<b>9.7</b>	<b>2.6</b>	<b>04/01/22</b>
<i>Emerging Markets Equity Benchmark</i>			5.0	13.5	5.0	22.4	9.8	2.8	
SSgA Emerging Markets Equity Index	88,693,335	0.8	8.1	15.8	8.1	24.8	9.6	4.7	03/10/22
<i>MSCI Emerging Markets (Net)</i>			8.7	16.9	8.7	26.1	9.8	5.8	
<i>eV Emg Mkts Equity Rank</i>			35	41	35	43	65	40	
SSgA Emerging Markets ex China Equity	586,542,623	5.2	3.0	-	3.0	-	-	8.8	05/01/24
<i>MSCI Emerging Markets ex China (Net)</i>			4.0	-	4.0	-	-	10.1	
<i>eV Emg Mkts Equity Rank</i>			92	-	92	-	-	81	
<b>Income</b>	<b>1,753,409,535</b>	<b>15.5</b>	<b>5.1</b>	<b>7.9</b>	<b>5.1</b>	<b>16.5</b>	<b>12.8</b>	<b>4.1</b>	<b>04/01/22</b>
<i>Income Benchmark</i>			5.0	7.7	5.0	16.3	12.6	5.0	
SSgA High Yield Corporate Credit	766,156,280	6.8	5.3	8.2	5.3	16.0	13.8	5.4	03/18/22
<i>Spliced SSgA U.S. High Yield Index</i>			5.3	8.0	5.3	15.7	13.5	5.3	
<i>eV US High Yield Fixed Inc Rank</i>			9	22	9	9	12	21	
SSgA EMD Hard Index Fund	664,305,653	5.9	6.3	8.8	6.3	18.8	11.2	4.3	03/14/22
<i>Spliced SSgA EMD Hard Index</i>			6.2	8.6	6.2	18.6	11.1	4.4	
<i>Emerging Markets Bond Rank</i>			49	33	49	42	51	41	
<b>Bank Loans</b>	<b>322,947,602</b>	<b>2.9</b>	<b>2.0</b>	<b>-</b>	<b>2.0</b>	<b>-</b>	<b>-</b>	<b>4.8</b>	<b>03/01/24</b>
<i>Credit Suisse Leveraged Loan Index</i>			2.0	-	2.0	-	-	4.8	
Ares Institutional Loan Fund	104,689,809	0.9	2.2	-	2.2	-	-	5.2	03/01/24
<i>Credit Suisse Leveraged Loan Index</i>			2.0	-	2.0	-	-	4.8	
<i>eV US Float-Rate Bank Loan Fixed Inc Rank</i>			29	-	29	-	-	21	
Aristotle Institutional Loan Fund	218,257,793	1.9	1.9	-	1.9	-	-	4.7	03/01/24
<i>Credit Suisse Leveraged Loan Index</i>			2.0	-	2.0	-	-	4.8	
<i>eV US Float-Rate Bank Loan Fixed Inc Rank</i>			58	-	58	-	-	54	
<b>Real Assets</b>	<b>649,204,385</b>	<b>5.8</b>	<b>11.3</b>	<b>10.0</b>	<b>11.3</b>	<b>21.6</b>	<b>5.6</b>	<b>1.6</b>	<b>04/01/22</b>
<i>Real Assets Benchmark</i>			10.2	8.7	10.2	18.6	4.7	-1.8	
SSgA REITs Index	491,584,996	4.4	15.5	14.9	15.5	33.7	13.9	2.2	03/16/22
<i>Dow Jones U.S. Select REIT Total Return Index</i>			15.6	14.9	15.6	33.7	14.0	2.3	
<i>eV US REIT Rank</i>			75	52	75	49	36	62	
Principal USPA	157,619,390	1.4	-0.2	-3.0	-0.2	-5.2	-10.7	-6.8	04/06/22
<i>NFI-ODCE Equal-Weighted Index</i>			-0.1	-3.3	-0.1	-8.4	-13.3	-6.9	

The composition of blended benchmarks are located on the Data Sources and Methodology page. Principal USPA does not show a Since 4/1/2022 return because the fund was inception on 4/6/2022.

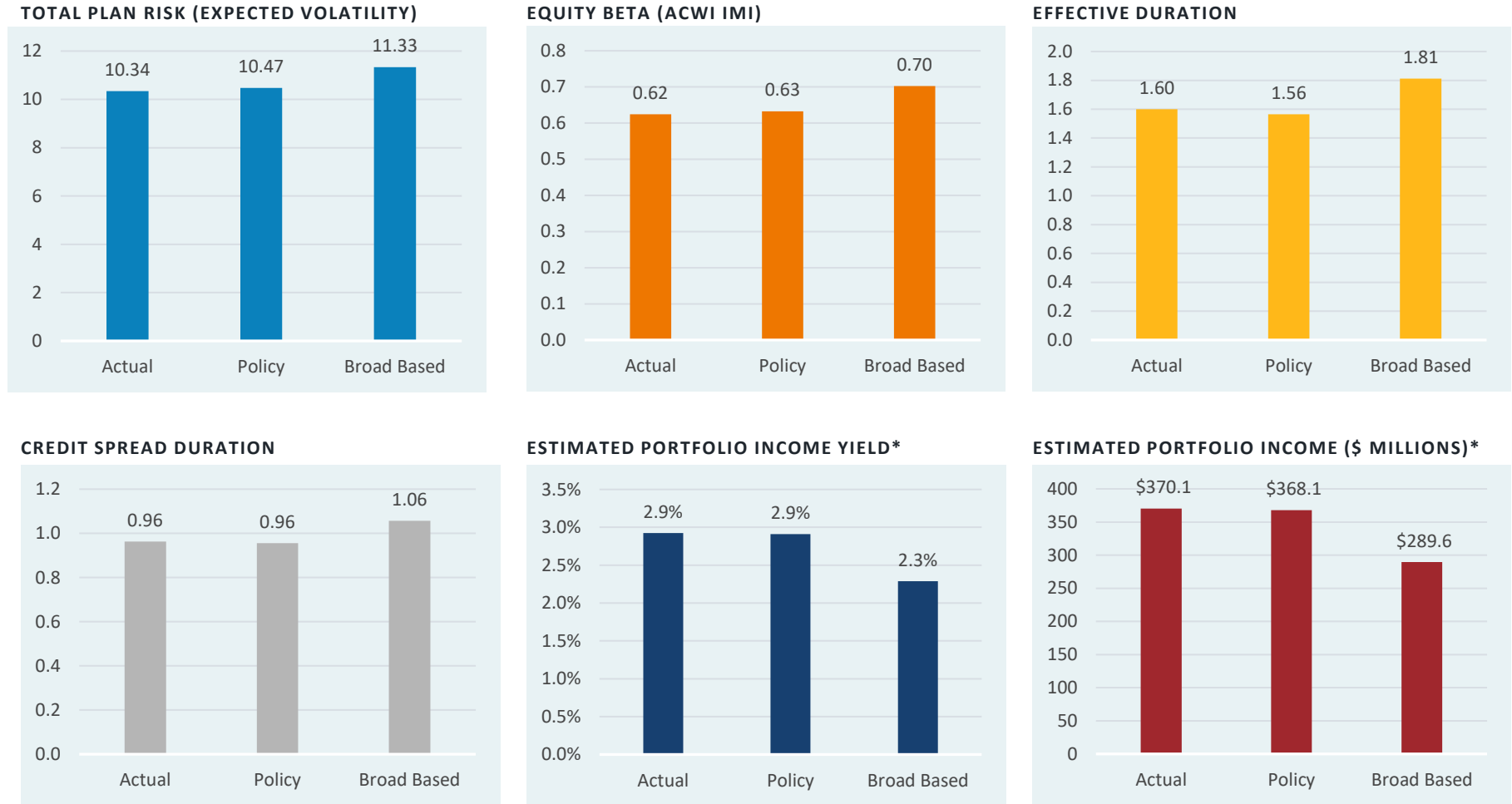
Total Fund  
Executive Summary (Net of Fees)

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

	Market Value	% of Portfolio	3 Mo	YTD	Fiscal YTD	1 Yr	2023	Since Inception	Inception Date
<b>Risk Mitigation</b>	<b>2,327,750,000</b>	<b>20.6</b>	<b>3.3</b>	<b>4.7</b>	<b>3.3</b>	<b>8.2</b>	<b>5.0</b>	<b>2.8</b>	<b>04/01/22</b>
<i>Risk Mitigation Benchmark</i>			3.3	4.7	3.3	8.1	4.9	2.7	
SSgA US Treasury Index	327,603,286	2.9	4.7	-	4.7	-	-	7.4	05/01/24
<i>Blmbg. U.S. Treasury Index</i>			4.7	-	4.7	-	-	7.3	
<i>eV US Government Fixed Inc Rank</i>			61	-	61	-	-	61	
SSgA Core Fixed Income Index	358,365,182	3.2	5.2	4.6	5.2	11.6	5.6	0.6	03/17/22
<i>Blmbg. U.S. Aggregate Index</i>			5.2	4.4	5.2	11.6	5.5	0.5	
<i>eV US Core Fixed Inc Rank</i>			40	76	40	70	64		
SSgA Short-Term Gov't/Credit Index	1,080,042,418	9.6	3.0	4.4	3.0	7.2	4.6	2.8	03/17/22
<i>Bloomberg U.S. Gov/Credit 1-3 Year Index</i>			3.0	4.4	3.0	7.2	4.6	2.8	
<i>eV US Short Duration Fixed Inc Rank</i>			49	73	49	77	81		
SSgA US TIPS Index	323,115,321	2.9	2.5	4.8	2.5	7.5	4.6	2.0	03/17/22
<i>Blmbg. U.S. TIPS 0-5 Year</i>			2.5	4.8	2.5	7.5	4.6	2.1	
<i>eV US TIPS / Inflation Fixed Inc Rank</i>			94	75	94	94	21		
Cash	238,623,794	2.1	1.3	3.9	1.3	5.2	5.0	3.8	03/22/22
<i>90 Day U.S. Treasury Bill</i>			1.4	4.0	1.4	5.5	5.0	4.1	
<b>IPOPIF Pool Fixed Income Transition</b>	<b>104,252</b>	<b>0.0</b>							
Member Accounts	-	0.0							

The composition of blended benchmarks are located on the Data Sources and Methodology page. Principal USPA does not show a Since 4/1/2022 return because the fund was inception on 4/6/2022.

Portfolio Characteristics



\*Income Yield and Income are estimated based on dividend yields and coupon rates applied to benchmark weights and does not include factors such as dividend re-investment rates.  
 Source: Barra One using index holdings as representative proxies

IPOPIF Investment Portfolio  
Investment Fund Fee Analysis

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

Name	Asset Class	Vehicle Type	Market Value	% of Portfolio	Estimated Fee Value	Expense Fee (%)
RhumbLine Russell 1000 Index	Domestic Equity	Separate Account	\$2,569,651,965	22.7789	\$128,483	0.005
RhumbLine Russell 2000 Index	Domestic Equity	Separate Account	\$570,924,752	5.0610	\$28,546	0.005
SSgA Non-US Developed Index	Non-U.S. Equity	Commingled Fund	\$2,158,046,335	19.1302	\$194,224	0.009
Acadian ACWI ex US Small-Cap Fund	Non-U.S. Equity	Commingled Fund	\$289,188,093	2.5635	\$1,740,535	0.602
WCM International Small Cap Growth Fund	Non-U.S. Equity	Commingled Fund	\$150,132,217	1.3309	\$750,661	0.500
LSV International Small Cap Value Equity Fund	Non-U.S. Equity	Commingled Fund	\$137,177,073	1.2160	\$1,172,417	0.855
SSgA Emerging Markets Equity Index	Emerging Markets Equity	Commingled Fund	\$88,693,335	0.7862	\$31,043	0.035
SSgA Emerging Markets ex China Equity	Emerging Markets Equity	Commingled Fund	\$586,542,623	5.1995	\$205,290	0.035
SSgA High Yield Corporate Credit	Fixed Income	Commingled Fund	\$766,156,280	6.7917	\$268,155	0.035
SSgA EMD Hard Index Fund	Fixed Income	Commingled Fund	\$664,305,653	5.8888	\$232,507	0.035
Ares Institutional Loan Fund	Fixed Income	Commingled Fund	\$104,689,809	0.9280	\$261,725	0.250
Aristotle Institutional Loan Fund	Fixed Income	Commingled Fund	\$218,257,793	1.9348	\$833,902	0.382
SSgA REITs Index	Real Estate	Commingled Fund	\$491,584,996	4.3577	\$44,243	0.009
Principal USPA	Real Estate	Commingled Fund	\$157,619,390	1.3972	\$1,260,955	0.800
SSgA US Treasury Index	Fixed Income	Commingled Fund	\$327,603,286	2.9041	\$29,484	0.009
SSgA Core Fixed Income Index	Fixed Income	Commingled Fund	\$358,365,182	3.1768	\$32,253	0.009
SSgA Short-Term Gov't/Credit Index	Fixed Income	Commingled Fund	\$1,080,042,418	9.5741	\$97,204	0.009
SSgA US TIPS Index	Fixed Income	Separate Account	\$323,115,321	2.8643	\$29,080	0.009
Cash	Cash and Equivalents	Commingled Fund	\$238,623,794	2.1153		
<b>IPOPIF Investment Portfolio</b>			<b>\$11,280,824,565</b>	<b>100.0000</b>	<b>\$7,340,705</b>	<b>0.065</b>

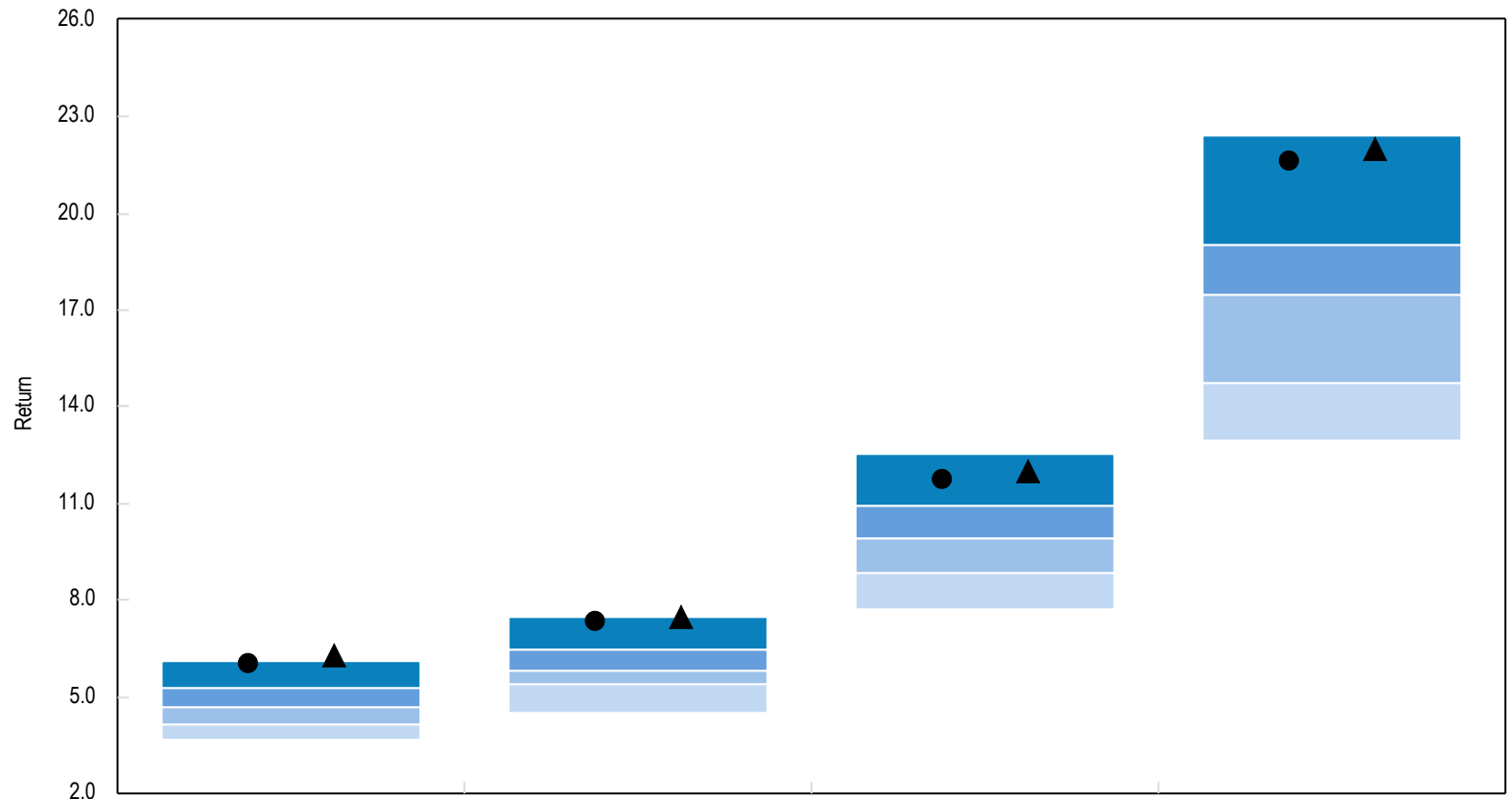
Total Fund  
Cash Flow by Manager - Last Three Months

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

Name	Beginning Market Value	Contributions	Distributions	Net Cash Flows	Income	Fees	Net Investment Change	Ending Market Value
RhumbLine Russell 1000 Index	\$2,496,600,162	\$30,090	-\$74,000,000	-\$73,969,910	\$8,151,621	-\$30,090	\$138,900,182	\$2,569,651,965
RhumbLine Russell 2000 Index	\$522,664,461	\$6,470	-	\$6,470	\$1,916,977	-\$6,470	\$46,343,315	\$570,924,752
SSgA Non-US Developed Index	\$2,002,332,057	-	-	-	\$15,089,579	-	\$140,624,699	\$2,158,046,335
SSgA Non-US Developed SC Index	-	-	-	-	-	-	-	-
Acadian ACWI ex US Small-Cap Fund	\$267,368,105	\$395,673	-	\$395,673	\$2,187,720	-\$395,673	\$19,632,268	\$289,188,093
WCM International Small Cap Growth Fund	\$123,182,340	\$20,000,000	-	\$20,000,000	\$284,431	-\$221,402	\$6,886,848	\$150,132,217
LSV International Small Cap Value Equity Fund	\$126,733,121	\$272,587	-	\$272,587	\$1,315,281	-\$272,587	\$9,128,671	\$137,177,073
SSgA Emerging Markets Equity Index	\$340,140,081	-	-\$264,000,000	-\$264,000,000	\$1,596,252	-	\$10,957,001	\$88,693,335
SSgA Emerging Markets ex China Equity	\$310,595,881	\$264,000,000	-	\$264,000,000	\$2,713,777	-	\$9,232,966	\$586,542,623
SSgA High Yield Corporate Credit	\$727,292,077	-	-	-	\$12,463,268	-	\$26,400,935	\$766,156,280
SSgA EMD Hard Index Fund	\$625,225,679	-	-	-	\$9,335,689	-	\$29,744,285	\$664,305,653
Ares Institutional Loan Fund	\$102,476,499	-	-	-	\$188,918	-\$65,471	\$2,089,863	\$104,689,809
Aristotle Institutional Loan Fund	\$204,310,952	\$10,000,000	-	\$10,000,000	\$4,108,200	-\$161,359	-	\$218,257,793
SSgA REITs Index	\$425,437,445	-	-	-	\$2,828,917	-	\$63,318,634	\$491,584,996
Principal USPA	\$157,860,163	-	-	-	\$1,756,968	-\$319,119	-\$1,678,623	\$157,619,390
SSgA US Treasury Index	\$312,777,339	-	-	-	\$2,543,814	-	\$12,282,133	\$327,603,286
SSgA Core Fixed Income Index	\$340,632,002	-	-	-	\$3,231,397	-	\$14,501,783	\$358,365,182
SSgA Short-Term Gov't/Credit Index	\$1,048,922,103	-	-	-	\$8,486,877	-	\$22,633,437	\$1,080,042,418
SSgA US TIPS Index	\$315,325,968	-	-	-	\$664,012	-	\$7,125,341	\$323,115,321
Cash	\$89,793,255	\$314,110,010	-\$167,817,631	\$146,292,379	\$2,537,969	-	\$191	\$238,623,794
IPOPIF Pool Fixed Income Transition	\$99,906	-	-	-	\$131	-	\$4,215	\$104,252
Member Accounts	-	-	-	-	\$2,223	-	-\$2,223	-
<b>Total Fund with Member Funds and Transition Accounts</b>	<b>\$10,539,769,594</b>	<b>\$608,814,830</b>	<b>-\$505,817,631</b>	<b>\$102,997,199</b>	<b>\$81,404,022</b>	<b>-\$1,472,171</b>	<b>\$558,125,920</b>	<b>\$11,280,824,565</b>



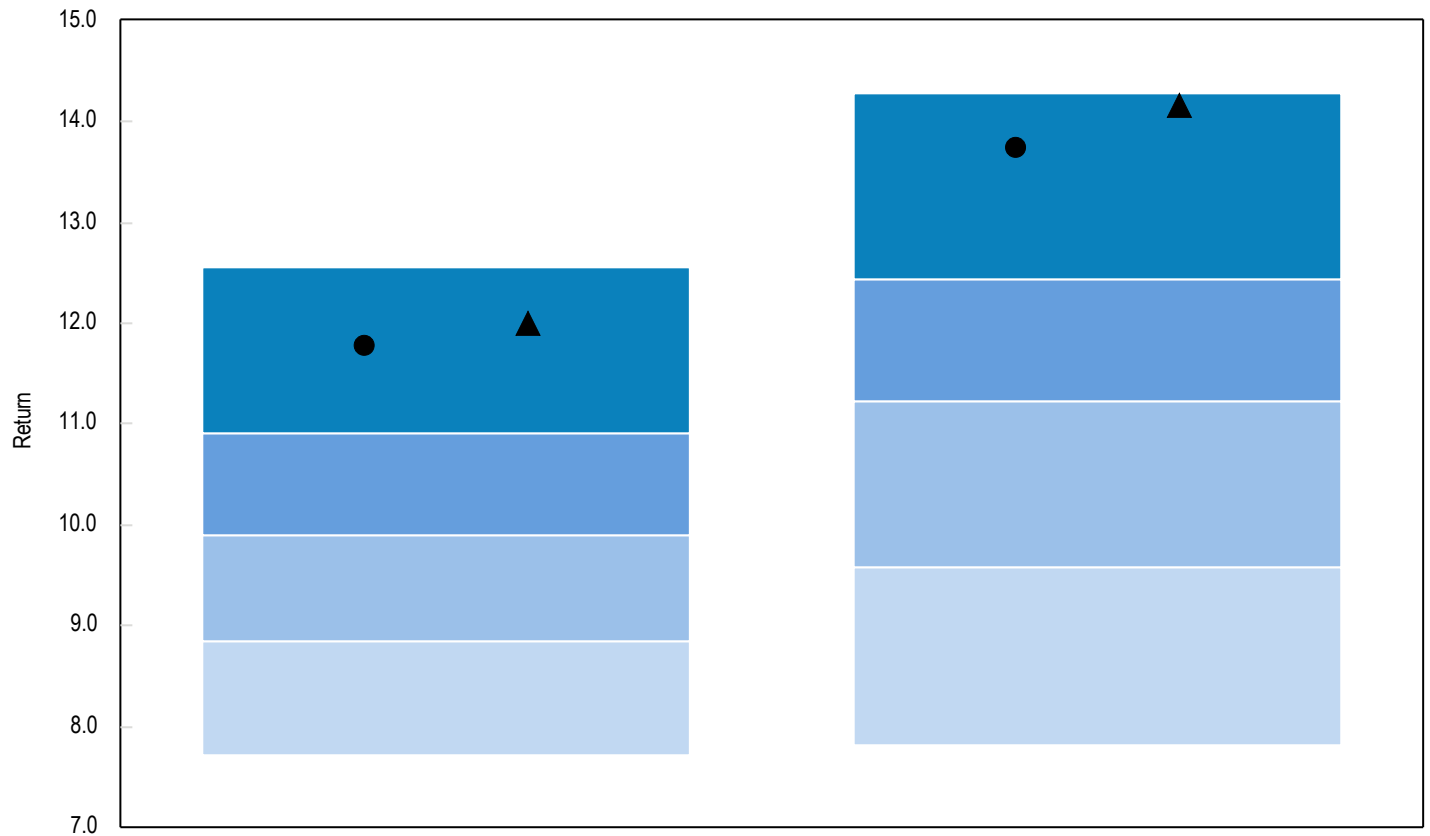
IPOPIF Investment Portfolio vs. All Public Plans > \$1B-Total Fund



	Quarter	2 Quarters	3 Quarters	1 Year
● IPOPIF Investment Portfolio	6.1 (7)	7.4 (8)	11.8 (17)	21.6 (11)
▲ Policy Index	6.3 (3)	7.5 (4)	12.0 (12)	22.0 (10)
5th Percentile	6.1	7.5	12.6	22.4
1st Quartile	5.3	6.4	10.9	19.0
Median	4.7	5.8	9.9	17.5
3rd Quartile	4.1	5.4	8.8	14.7
95th Percentile	3.7	4.5	7.7	13.0
Population	105	105	105	105

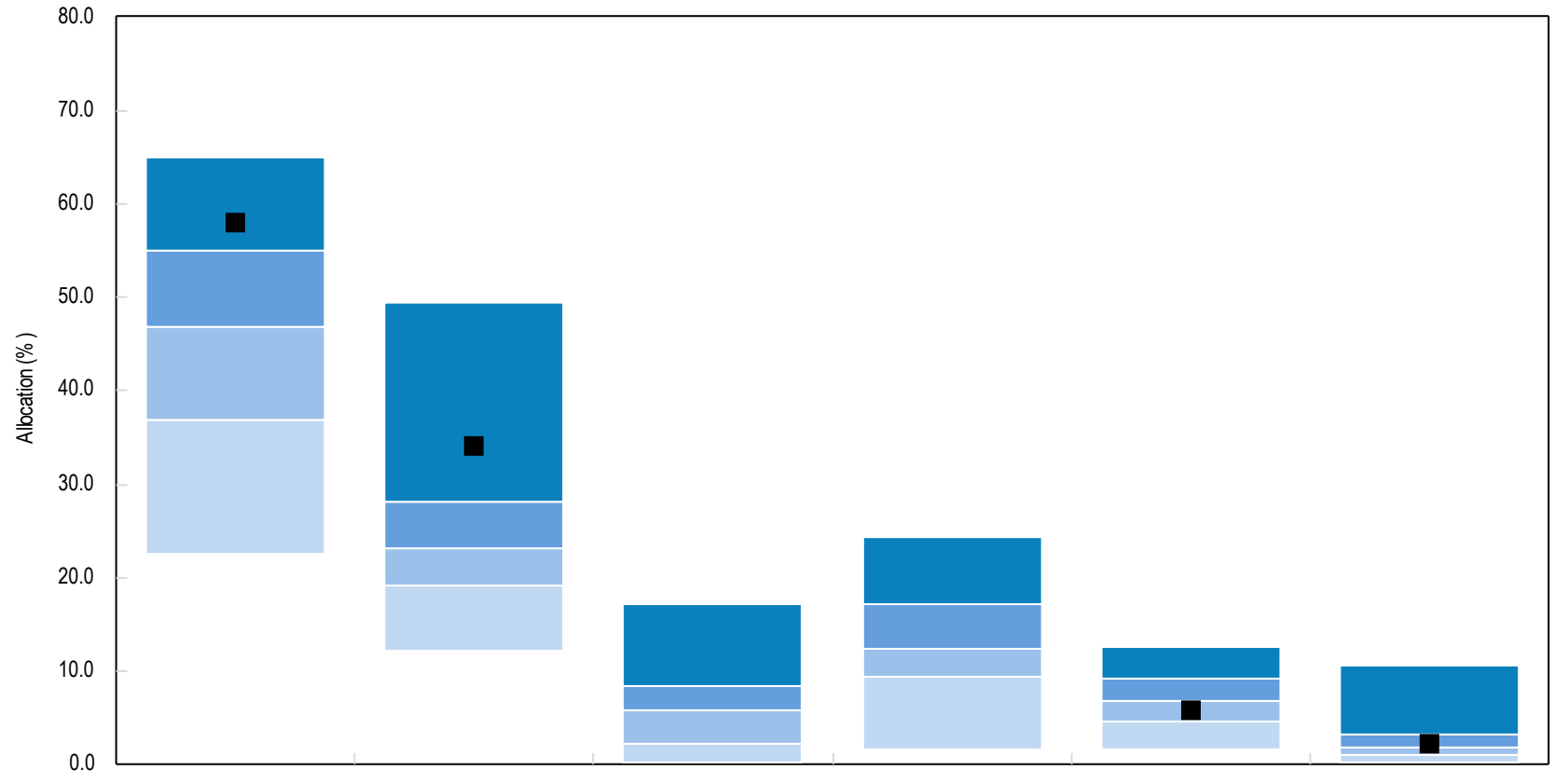
Parentheses contain percentile rankings. Performance shown for IPOPIF Investment Fund which excludes the Transition Account and Member Funds.

IPOPIF Investment Portfolio vs. All Public Plans > \$1B-Total Fund



	YTD	2023
● IPOPIF Investment Portfolio	11.8 (17)	13.7 (11)
▲ Policy Index	12.0 (12)	14.2 (7)
5th Percentile	12.6	14.3
1st Quartile	10.9	12.4
Median	9.9	11.2
3rd Quartile	8.8	9.6
95th Percentile	7.7	7.8
Population	105	181

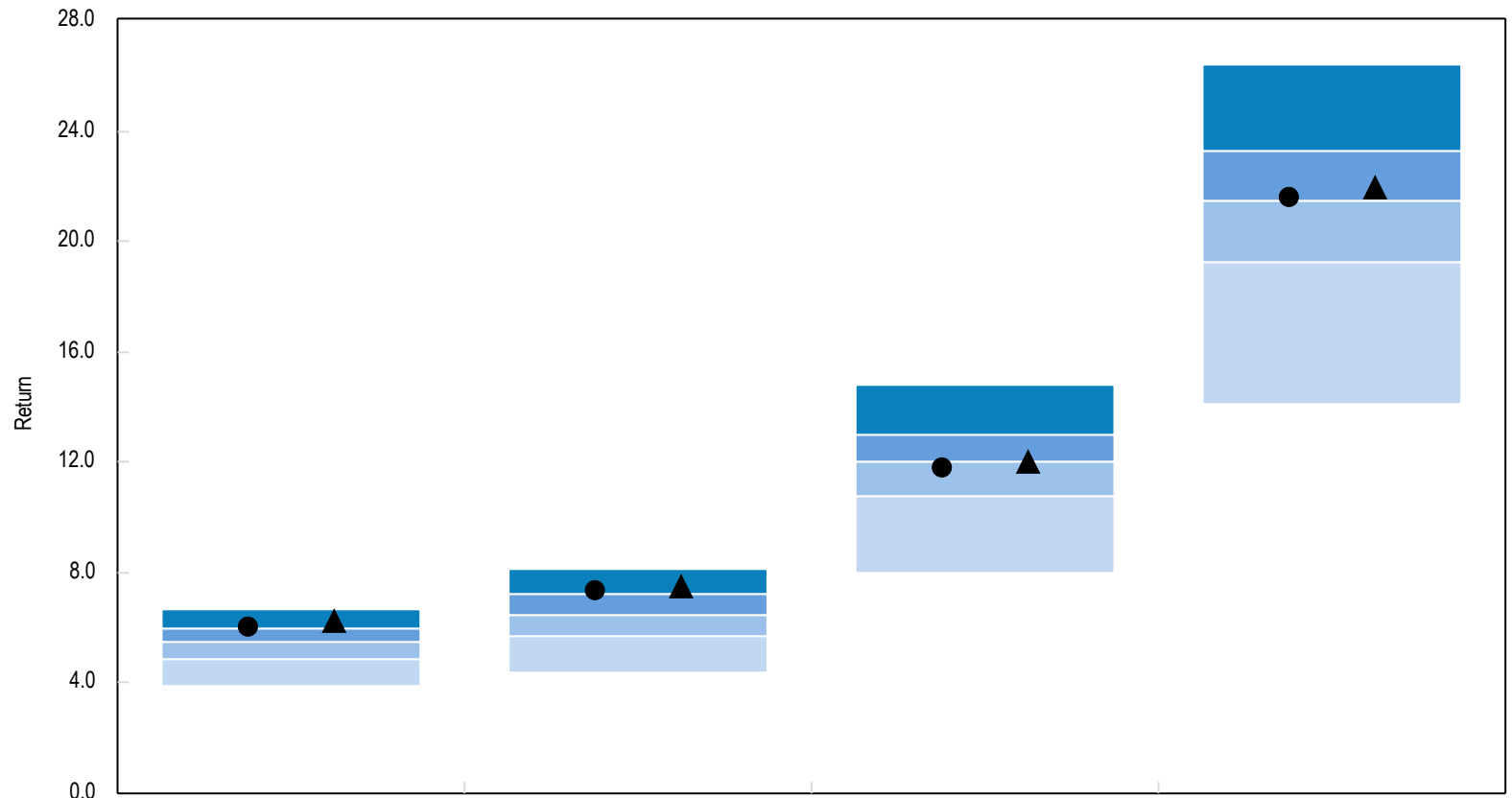
Total Plan Allocation vs. All Public Plans > \$1B-Total Fund  
As of September 30, 2024



	Total Equity 58.1 (15)	Total Fixed Income 34.1 (12)	Hedge Funds -	Private Equity -	Total Real Estate 5.8 (65)	Cash & Equivalents 2.1 (42)
■ IPOPIF Investment Portfolio						
5th Percentile	65.1	49.5	17.1	24.4	12.6	10.5
1st Quartile	55.0	28.2	8.4	17.2	9.2	3.2
Median	46.8	23.2	5.8	12.4	6.8	1.9
3rd Quartile	36.9	19.1	2.2	9.4	4.5	0.9
95th Percentile	22.6	12.2	0.1	1.6	1.6	0.2
Population	148	155	50	96	132	131

Parenteses contain percentile rankings. Excludes Transition Account and Member Funds. Real Assets contains Core Real Estate and REITs.

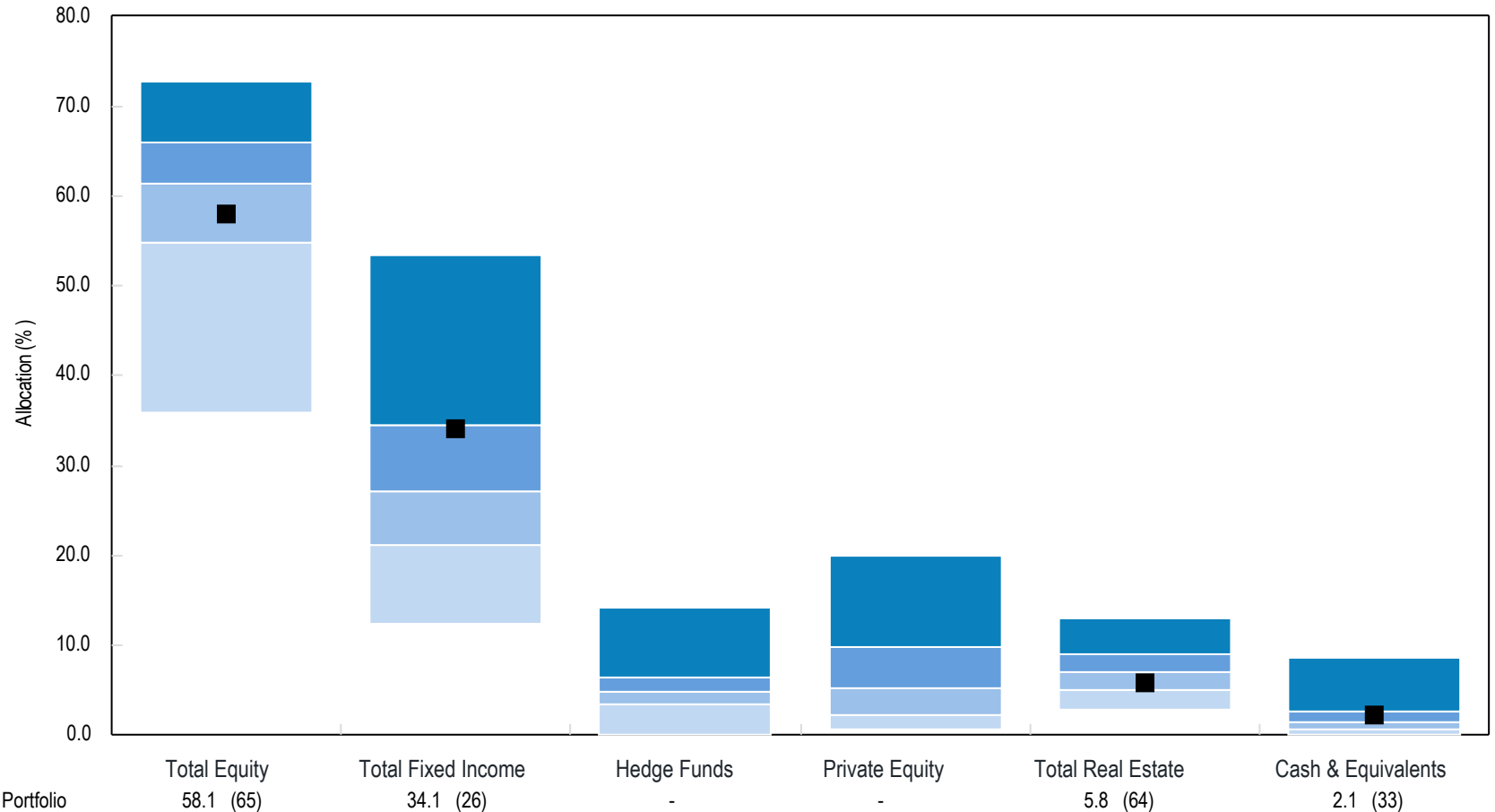
IPOPIF Investment Portfolio vs. All Public Plans < \$1B-Total Fund



	Quarter	2 Quarters	3 Quarters	1 Year
● IPOPIF Investment Portfolio	6.1 (21)	7.4 (20)	11.8 (55)	21.6 (48)
▲ Policy Index	6.3 (13)	7.5 (18)	12.0 (51)	22.0 (43)
5th Percentile	6.7	8.1	14.8	26.4
1st Quartile	5.9	7.2	13.0	23.3
Median	5.5	6.5	12.0	21.5
3rd Quartile	4.9	5.7	10.8	19.2
95th Percentile	3.9	4.4	8.0	14.1
Population	633	623	623	618

Parentheses contain percentile rankings. Performance shown for IPOPIF Investment Fund which excludes the Transition Account and Member Funds.

Total Plan Allocation vs. All Public Plans < \$1B-Total Fund  
As of September 30, 2024



	Total Equity 58.1 (65)	Total Fixed Income 34.1 (26)	Hedge Funds -	Private Equity -	Total Real Estate 5.8 (64)	Cash & Equivalents 2.1 (33)
■ IPOPIF Investment Portfolio						
5th Percentile	72.8	53.4	14.1	20.0	12.9	8.5
1st Quartile	66.1	34.4	6.3	9.8	8.9	2.5
Median	61.4	27.1	4.8	5.1	7.0	1.3
3rd Quartile	54.8	21.1	3.4	2.2	5.0	0.7
95th Percentile	35.9	12.5	0.0	0.6	2.9	0.1
Population	631	653	74	179	434	596

Parenteses contain percentile rankings. Excludes Transition Account and Member Funds. Real Assets contains Core Real Estate and REITs.

# Total Fund

## Data Sources and Methodology Page

# Illinois Police Officers' Pension Investment Fund

## Period Ending: September 30, 2024

### Performance Return Calculations

Performance is calculated using Time Weighted Rates of Return (TWRR) methodologies. Monthly returns are geometrically linked and annualized for periods longer than one year.

### Data Source

Verus is an independent third party consulting firm and calculates returns from best source book of record data. Returns calculated by Verus may deviate from those shown by the manager in part, but not limited to, differences in prices and market values reported by the custodian and manager, as well as significant cash flows into or out of an account. It is the responsibility of the manager and custodian to provide insight into the pricing methodologies and any difference in valuation.

### Manager Line Up

<u>Manager</u>	<u>Inception Date</u>	<u>Data Source</u>	<u>Manager</u>	<u>Inception Date</u>	<u>Data Source</u>
RhumbLine Russell 1000 Index Fund	3/15/2022	State Street	SSgA EMD Hard Index Fund	3/14/2022	State Street
RhumbLine Russell 2000 Index Fund	3/15/2022	State Street	Ares Institutional Loan Fund	3/1/2024	Ares
SSgA Non-US Developed Index Fund	3/10/2022	State Street	Aristotle Institutional Loan Fund	3/1/2024	Aristotle
SSgA Non-US Developed SC Index Fund	3/10/2022	State Street	Principal USPA	4/6/2022	State Street
Acadian ACWI ex US Small-Cap Fund	1/30/2024	State Street	SSgA REITs Index Fund	3/10/2022	State Street
WCM International Small Cap Growth Fund	3/1/2024	WCM	SSgA US Treasury Index Fund	5/1/2024	State Street
LSV International Small Cap Value Equity Fund	3/1/2024	LSV	SSgA Core Fixed Income Index Fund	3/17/2022	State Street
SSgA Emerging Markets Equity Index Fund	3/1/2022	State Street	SSgA Short-Term Gov't/Credit Index Fund	3/17/2022	State Street
SSGA Emerging Markets ex China Equity Index Fund	5/1/2024	State Street	SSgA US TIPS Index Fund	3/17/2022	State Street
SSgA High Yield Corporate Credit	3/18/2022	State Street	Cash	3/22/2022	State Street

### Custom Benchmark Composition

<u>Benchmark</u>	<u>Time period</u>	<u>Composition</u>
Policy Index -Broad Benchmark	4/1/2022 - Present	70% MSCI ACWI IMI (Net) and 30% Bloomberg Global Multiverse.
Spliced SSgA EMD Hard Benchmark	7/1/2023 - Present	100% JPM EMBI Global Diversified Index
Spliced SSgA EMD Hard Benchmark	3/14/2022 - 6/30/2022	100% JPM EMBI Global Core Index
Spliced SSgA U.S. High Yield Index	12/1/2022 - Present	100% ICE BofA US High yield Master II Constrained
Spliced SSgA U.S. High Yield Index	4/1/2022 - 11/30/2022	100% Bloomberg U.S. High Yield Very Liquid Index

Total Fund  
Data Sources and Methodology Page

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

**Policy Index Composition**

As of 9/1/2024	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	19%	32.8%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	1.5%	2.6%			
MSCI Emerging Markets ex China	4.5%	7.8%			
Bloomberg US Corporate High Yield Index	7%		43.8%		
JPM EMBI Global Diversified Index	6%		37.5%		
Credit Suisse Leveraged Loan Index	3%		18.8%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg US Treasury Index	2%				10.0%
Bloomberg 1-3 Year Gov/Credit Index	11%				55.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

As of 7/1/2024	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	19%	32.8%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	3%	5.2%			
MSCI Emerging Markets ex China	3%	5.2%			
Bloomberg US Corporate High Yield Index	7%		43.8%		
JPM EMBI Global Diversified Index	6%		37.5%		
Credit Suisse Leveraged Loan Index	3%		18.8%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg US Treasury Index	1%				5.0%
Bloomberg 1-3 Year Gov/Credit Index	12%				60.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

As of 5/1/2024	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	19%	32.8%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	5%	8.6%			
MSCI Emerging Markets ex China	1%	1.7%			
Bloomberg US Corporate High Yield Index	7%		43.8%		
JPM EMBI Global Diversified Index	6%		37.5%		
Credit Suisse Leveraged Loan Index	3%		18.8%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg US Treasury Index	1%				5.0%
Bloomberg 1-3 Year Gov/Credit Index	12%				60.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

As of 8/1/2024	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	19%	32.8%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	2%	3.4%			
MSCI Emerging Markets ex China	4%	6.9%			
Bloomberg US Corporate High Yield Index	7%		43.8%		
JPM EMBI Global Diversified Index	6%		37.5%		
Credit Suisse Leveraged Loan Index	3%		18.8%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg US Treasury Index	2%				10.0%
Bloomberg 1-3 Year Gov/Credit Index	11%				55.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

As of 6/1/2024	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	19%	32.8%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	4%	6.9%			
MSCI Emerging Markets ex China	2%	3.4%			
Bloomberg US Corporate High Yield Index	7%		43.8%		
JPM EMBI Global Diversified Index	6%		37.5%		
Credit Suisse Leveraged Loan Index	3%		18.8%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg US Treasury Index	2%				10.0%
Bloomberg 1-3 Year Gov/Credit Index	11%				55.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

As of 4/1/2024	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	19%	32.8%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	6%	10.3%			
Bloomberg US Corporate High Yield Index	7%		43.8%		
JPM EMBI Global Diversified Index	6%		37.5%		
Credit Suisse Leveraged Loan Index	3%		18.8%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg 1-3 Year Gov/Credit Index	13%				65.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

Total Fund  
Data Sources and Methodology Page

Illinois Police Officers' Pension Investment Fund  
Period Ending: September 30, 2024

Policy Index Composition					
As of 3/1/2024	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	18%	31.0%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	7%	12.1%			
Bloomberg US Corporate High Yield Index	8.5%		53.1%		
JPM EMBI Global Diversified Index	6%		37.5%		
Credit Suisse Leveraged Loan Index	1.5%		9.4%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg 1-3 Year Gov/Credit Index	13%				65.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

As of 1/1/2023	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	18%	36.0%			
Russell 2000	5%	10.0%			
MSCI World ex U.S.	15%	30.0%			
MSCI World ex U.S. Small Cap	5%	10.0%			
MSCI Emerging Markets	7%	14.0%			
Bloomberg US Corporate High Yield Index	10%		62.5%		
JPM EMBI Global Diversified Index	6%		37.5%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	7%				25.0%
Bloomberg 1-3 Year Gov/Credit Index	15%				53.6%
Bloomberg US TIPS 0-5 Year	3%				10.7%
90 Day US Treasury Bill Index	3%				10.7%

Policy Index Composition					
As of 5/1/2023	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 1000	23%	39.7%			
Russell 2000	5%	8.6%			
MSCI World ex U.S.	18%	31.0%			
MSCI World ex U.S. Small Cap	5%	8.6%			
MSCI Emerging Markets	7%	12.1%			
Bloomberg US Corporate High Yield Index	10%		62.5%		
JPM EMBI Global Diversified Index	6%		37.5%		
NFI-ODCE Equal-Weighted Index	2%			33.3%	
Dow Jones US Select REIT Index	4%			66.7%	
Bloomberg US Aggregate Index	3%				15.0%
Bloomberg 1-3 Year Gov/Credit Index	13%				65.0%
Bloomberg US TIPS 0-5 Year	3%				15.0%
90 Day US Treasury Bill Index	1%				5.0%

As of 3/31/2022	Policy Index	Growth	Income	Real Assets	Risk Mitigation
Russell 3000	23%	46.0%			
MSCI ACWI ex USA IMI	20%	40.0%			
MSCI Emerging Markets IMI	7%	14.0%			
Bloomberg US Corporate High Yield Index	10%		62.5%		
50% JPM EMBI GD/50% JPM GBI EM GD	6%		37.5%		
NCREIF Property Index	2%			66.7%	
Dow Jones US Select REIT Index	4%			33.3%	
Bloomberg US Aggregate Index	7%				25.0%
Bloomberg 1-3 Year Gov/Credit Index	15%				53.6%
Bloomberg US TIPS 0-5 Year	3%				10.7%
90 Day US Treasury Bill Index	3%				10.7%



# Glossary

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**Allocation Effect:** An attribution effect that describes the amount attributable to the managers' asset allocation decisions, relative to the benchmark.

**Alpha:** The excess return of a portfolio after adjusting for market risk. This excess return is attributable to the selection skill of the portfolio manager. Alpha is calculated as:  $\text{Portfolio Return} - [\text{Risk free Rate} + \text{Portfolio Beta} \times (\text{Market Return} - \text{Risk free Rate})]$ .

**Benchmark R squared:** Measures how well the Benchmark return series fits the manager's return series. The higher the Benchmark R squared, the more appropriate the benchmark is for the manager.

**Beta:** A measure of systematic, or market risk; the part of risk in a portfolio or security that is attributable to general market movements. Beta is calculated by dividing the covariance of a security by the variance of the market.

**Book to Market:** The ratio of book value per share to market price per share. Growth managers typically have low book to market ratios while value managers typically have high book to market ratios.

**Capture Ratio:** A statistical measure of an investment manager's overall performance in up or down markets. The capture ratio is used to evaluate how well an investment manager performed relative to an index during periods when that index has risen (up market) or fallen (down market). The capture ratio is calculated by dividing the manager's returns by the returns of the index during the up/down market, and multiplying that factor by 100.

**Correlation:** A measure of the relative movement of returns of one security or asset class relative to another over time. A correlation of 1 means the returns of two securities move in lock step, a correlation of -1 means the returns of two securities move in the exact opposite direction over time. Correlation is used as a measure to help maximize the benefits of diversification when constructing an investment portfolio.

**Excess Return:** A measure of the difference in appreciation or depreciation in the price of an investment compared to its benchmark, over a given time period. This is usually expressed as a percentage and may be annualized over a number of years or represent a single period.

**Information Ratio:** A measure of a manager's ability to earn excess return without incurring additional risk. Information ratio is calculated as: excess return divided by tracking error.

**Interaction Effect:** An attribution effect that describes the portion of active management that is contributable to the cross interaction between the allocation and selection effect. This can also be explained as an effect that cannot be easily traced to a source.

**Portfolio Turnover:** The percentage of a portfolio that is sold and replaced (turned over) during a given time period. Low portfolio turnover is indicative of a buy and hold strategy while high portfolio turnover implies a more active form of management.

**Price to Earnings Ratio (P/E):** Also called the earnings multiplier, it is calculated by dividing the price of a company's stock into earnings per share. Growth managers typically hold stocks with high price to earnings ratios whereas value managers hold stocks with low price to earnings ratios.

**R Squared:** Also called the coefficient of determination, it measures the amount of variation in one variable explained by variations in another, i.e., the goodness of fit to a benchmark. In the case of investments, the term is used to explain the amount of variation in a security or portfolio explained by movements in the market or the portfolio's benchmark.

**Selection Effect:** An attribution effect that describes the amount attributable to the managers' stock selection decisions, relative to the benchmark.

**Sharpe Ratio:** A measure of portfolio efficiency. The Sharpe Ratio indicates excess portfolio return for each unit of risk associated with achieving the excess return. The higher the Sharpe Ratio, the more efficient the portfolio. Sharpe ratio is calculated as:  $\text{Portfolio Excess Return} / \text{Portfolio Standard Deviation}$ .

**Sortino Ratio:** Measures the risk adjusted return of an investment, portfolio, or strategy. It is a modification of the Sharpe Ratio, but penalizes only those returns falling below a specified benchmark. The Sortino Ratio uses downside deviation in the denominator rather than standard deviation, like the Sharpe Ratio.

**Standard Deviation:** A measure of volatility, or risk, inherent in a security or portfolio. The standard deviation of a series is a measure of the extent to which observations in the series differ from the arithmetic mean of the series. For example, if a security has an average annual rate of return of 10% and a standard deviation of 5%, then two thirds of the time, one would expect to receive an annual rate of return between 5% and 15%.

**Style Analysis:** A return based analysis designed to identify combinations of passive investments to closely replicate the performance of funds

**Style Map:** A specialized form or scatter plot chart typically used to show where a Manager lies in relation to a set of style indices on a two dimensional plane. This is simply a way of viewing the asset loadings in a different context. The coordinates are calculated by rescaling the asset loadings to range from -1 to 1 on each axis and are dependent on the Style Indices comprising the Map.

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