

STATE OF MICHIGAN INVESTMENT BOARD MEETING

January 8, 2025

State of Michigan Retirement System
Quarterly Investment Review



Rachael Eubanks, State Treasurer
Prepared by Bureau of Investments
Michigan Department of Treasury

STATE OF MICHIGAN INVESTMENT BOARD MEETING

January 8, 2025

Agenda



- 9:30 a.m. Call to Order and Opening Remarks**
- 9:35 a.m. Approval of the 6/12/24 SMIB Meeting Minutes**
Approval of the 10/1/24 SMIB Meeting Minutes
- 9:40 a.m. Executive Summary & Performance for Periods Ending 9/30/24**
- 9:45 a.m. Current Asset Allocation Review**
Markets Review and Outlook
- 10:00 a.m. Asset Liability Analysis/Asset Allocation Discussion and Recommendation**
Guest Speakers:
Phil Kivarkis, Partner – U.S. Director of Investment Policy Services, Aon
John Sullivan, Jr., Associate Partner – Asset-Liability Management, Aon
- 10:45 a.m. Action Item:**
- **Resolution Authorizing Asset Allocation Strategy**
- Review of Investment Reports**
- **Fixed Income – Receive and File**
 - **International Equity – Receive and File**
 - **Domestic Equity – Receive and File**
 - **Absolute Return – Receive and File**
 - **Private Equity – Receive and File**
 - **Real Estate & Infrastructure – Receive and File**
 - **Real Return & Opportunistic – Receive and File**
 - **Defined Contribution – Receive and File**
- 10:55 a.m. Public Comment**
- 11:00 a.m. Closing Remarks ~ Adjournment**



2025 Meeting Schedule

Wednesday, April 2, 2025
Wednesday, June 25, 2025
Wednesday, October 1, 2025
Wednesday, December 17, 2025

All meetings start at 9:30 a.m.

State of Michigan Retirement System

MINUTES

State of Michigan Investment Board Meeting

January 8, 2025



Jon M. Braeutigam
Chief Investment Officer
Bureau of Investments

STATE OF MICHIGAN INVESTMENT BOARD

October 1, 2024 Meeting Minutes

Board Members Present:

Chairman – Treasurer Rachael Eubanks – Present
Ms. Jennifer Flood – Absent
Ms. Dina Richard – Via Teams
Mr. Reginald Sanders – Present
Ms. Denise Ilitch – Via Teams

Members of the Public and Bureau of Investments Staff in Attendance:

Greg Parker	Chuck Knoll	LeAnn Auer
Janet Sudac	Dan Quigley	Chris Lett
Allison Wardlaw	Max Kotary	Andrew Calogerakis
Anthony Estell	Jeannette Brya	Peter Woodford
Jon Braeutigam	Craig Coulter	Guantong Sun
Travis Haney	Krasimir Yankov	Varsha Tallapaka
Maggie Arvedlund	Mitchell Brussel	

Many others attended from the public and via Microsoft Teams.

Opening Remarks:

Chairman, Treasurer Rachael Eubanks, called the meeting to order at 9:30 am.

Approval of Minutes:

Quorum was not met.

AGENDA

Executive Summary

Mr. Jon Braeutigam, Chief Investment Officer of the Bureau of Investments, explained the SMRS 10-year rate of return is 8.9%, which is higher than the peer median returns. This return rate gives approximately \$17.1 billion in excess value compared to median returns over the past ten years. The higher rate of return also adds an estimated \$2 billion to the fiscal year 2026 budget and for every year sooner the Funds become fully funded, a projected \$3.8 billion is added to the budget annually.

The SMRS portfolio is comprised of \$107.6 billion in assets with \$16.5 billion in unfunded commitments. The Fund had \$887 million in new commitments during the June 2024 quarter and \$904 million net of contributions over the past year were paid out by the combined systems.

Mr. Braeutigam further discussed the Funds diversification and plan liquidity and concluded by explaining the quarter's new commitments within Absolute Return, Private Equity, Real Estate and Infrastructure, and Venture Capital.

Asset Allocation Review

Mr. Greg Parker, Director of Asset Allocation and Public Markets, presented a brief markets review, tying it to the capital markets assumption performed by AON focusing on the assumed rate of return of long-term fixed income at 5.0% and short-term at 4.3%.

Mr. Parker discussed U.S. interest rates, stating the yield curve remains about the same which is inverted. The 3-month U.S. T-bill is yielding 5.35% and the yield to maturity on the U.S. Aggregate is 5.0%.

Mr. Parker stated the U.S. credit spreads as of June 30, 2024, are tight. Investment grade credit spreads are roughly 32 bps below 20-year median rates and high yield credit spreads are approximately 120 bps below 20-year median rates.

Real, Opportunistic & Absolute Return Division (ROAD) Report

Mr. Daniel Quigley explained that the ROAD Division is comprised of one team that manages two portfolios with distinct investment objectives. The Absolute Return (AR) portfolio was created in 2008 and consists of allocations to private credit and hedge fund strategies. The Real Return and Opportunistic (RRO) portfolio was established in 2010 and consists of allocations to intangible assets, real assets, and opportunistic investments. The allocations to both portfolios have stabilized after their initial build out.

Mr. Quigley gave a division overview introducing the three staff team and discussed performance. He further broke down and explained RRO and AR portfolio profiles and characteristics.

Guest Speaker: Maggie Arvedlund, CEO, Turning Rock Partners

Ms. Maggie Arvedlund of Turning Rock Partners touched on their relationship with SMRS. She discussed market opportunity and the reality of the markets today, the current state of lending, and the rising demand for structured capital, which plays a vital role in markets.

Ms. Arvedlund gave an overview of the firm discussing their team and senior advisors providing sourcing, industry guidance, and insights. She explained their investment process and strategy in the current investment landscape explaining the company's goals and proactive nature. Discussion ensued from Board members.

Public Comment:

Multiple individuals and representatives from advocacy groups were present who urged the SMRS policy makers to divest from Israel bonds.

Adjournment:

The meeting concluded at 11:34 am. The next meeting is December 17, 2024.

Approved:

Chairman, Treasurer Rachael Eubanks

State of Michigan Retirement System

EXECUTIVE SUMMARY

State of Michigan Investment Board Meeting

January 8, 2025



Jon M. Braeutigam
Chief Investment Officer
Bureau of Investments

EXECUTIVE SUMMARY

September 30, 2024

Performance

Great long-term returns.

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	16.0%	6.4%	10.1%	9.7%	9.1%
Policy Returns	19.7%	7.7%	10.3%	9.7%	9.4%
Peer Median Returns*	16.6%	6.0%	9.1%	8.3%	8.0%

*State Street Universe greater than \$10 billion.

- Across longer time periods, the returns are significantly higher than peer median returns. The peers are defined as the State Street Universe of public pension plans greater than \$10 billion. Notably, the standard deviation of the monthly returns is below average for the longer time horizons.
- Over a very long horizon, since 1979, the annualized rate of return on the plan assets has been approximately 9.5%.
- Compounding at higher than peer returns can add significant value. For example, based on the \$60.2 billion September 2014 market value, a ten-year annualized return of 9.1% compared to the 8.0% peer median return added approximately \$13.9 billion in excess value. This equates to roughly an additional \$1.6 billion to the FY2026 budget.

Asset Allocation

Market and liquidity risk.

- To earn the actuarial rates of return or higher, investment risks (primarily equity risk) must be assumed. The spread between the required rate of return and the risk-free rate is approximately 140 bps which is low by historical standards. At the end of September 2024, the equity (risk) beta was approximately 0.37; lower than peer median of approximately 0.55.
- Liquidity is another fundamental risk assumed and it is managed through asset allocation. The plans have outstanding capital commitments to fund approximately \$16.8 billion in illiquid assets. In the September 2024 quarter, \$975 million of new commitments were made. To meet the strategic asset allocation targets, the pace of new commitments will have to remain subdued for the next several years.
- The combined systems paid out approximately \$1.3 billion net of contributions over the past twelve months ending in September 2024. This compares to \$262 million a year ago and \$1.2 billion two years ago. Over the next several years, it is expected this figure will grow larger both in dollars and % AUM. A few reasons include MPSERS OPEB is now funded and will now require approximately \$700 million less in contributions, and as MPSERS and SERS pensions achieves fully funded status (estimated 50% probability to occur by 2031) an additional \$3.8 billion of contributions will no longer be required.

NEW COMMITMENTS

July 1, 2024 – September 30, 2024

(\$ Millions)

Asset class	Fund Name / (Managed By)	Commitment
Absolute Return		
	Sixth Street Specialty Lending Europe III (USD Feeder), LP (SSSLE III Management, LLC)	\$125
	Blackstone Capital Opportunities Fund V, LP (Blackstone Capital Opportunities Associates V, LP)	100
International Equity		
	Blackstone Capital Opportunities Fund V, LP (Blackstone Capital Opportunities Associates V, LP)	125
Real Estate and Infrastructure		
	KKR Global Infrastructure Investors V, LP (Kohlberg, Kravis, Roberts & Co. LP)	100
	Transwestern Strategic Partners Fund IV, LP (Transwestern Investment Group)	75
Real Return and Opportunistic		
	Castle Credit SMRS Holdings, LLC Series E (Great Mountain Partners)	\$200
	TPG Rise Climate II, LP (TPG)	150
	Castle Credit SMRS Holdings, LLC Series D (Great Mountain Partners)	50
	Dawson (Co-Invest) GP Finance II, LP (Dawson Partners)	50
TOTAL		\$975

State of Michigan Retirement System

PERFORMANCE

State of Michigan Investment Board Meeting

January 8, 2025



Jon M. Braeutigam
Chief Investment Officer
Bureau of Investments

Bureau of Investments

Mission Statement

The Bureau of Investments continually strives to provide quality investment management services, broad professional expertise, and independent advice to the State of Michigan Investment Board as fiduciary of the State of Michigan Retirement System, and independent of the Board, to the State Treasurer for various Michigan trust funds and the State's common cash, for which the State Treasurer is the fiduciary.

SMRS Goals

Maintain sufficient liquidity to pay benefits.

*Meet or exceed the actuarial assumption
over the long term.*

*Perform in the top half of the public plan
universe over the long term.*

Diversify assets to reduce risk.

*Exceed individual asset class benchmarks
over the long term.*

MPSERS PENSION

Time-Weighted Rates of Return

Periods Ending September 30, 2024

	% of Portfolio 9/30/24	Ten Years ¹		Seven Years ¹		Five Years ¹		Three Years ¹		One Year		Current Quarter	
		Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
TOTAL PLAN	100.0	9.1	12	9.7	12	10.1	16	6.4	22	16.0	58	3.3	97
Median - Greater than \$10 Billion ²		8.0		8.3		9.1		6.0		16.6		4.3	
MPSERS Total Plan Policy		9.4		9.7		10.3		7.7		19.7		4.7	
DOMESTIC EQUITIES	21.4	12.8	11	13.9	6	14.9	5	10.8	5	40.6	3	5.6	80
Median ²		10.0		11.3		12.3		7.5		30.4		6.3	
S&P 1500 Index		13.1		14.1		15.6		11.5		35.5		6.0	
PRIVATE EQUITY AND VENTURE CAPITAL	21.2	13.0	7	14.1	11	13.7	15	4.7	79	5.2	74	0.6	71
Median ²		9.3		9.6		10.0		6.7		6.8		1.9	
Private Equity and VC Benchmark ³		16.2		17.7		18.5		13.3		28.2		5.1	
INTERNATIONAL EQUITIES	14.3	6.2	43	6.0	79	8.3	74	3.7	60	26.5	22	6.6	74
Median ²		6.0		6.3		8.6		4.3		25.1		7.3	
MSCI ACWI ex USA Net Index ⁴		5.2		5.4		7.6		4.1		25.4		8.1	
FIXED INCOME	10.2	3.4	21	2.9	18	2.0	27	0.8	18	13.5	11	5.0	44
Median ²		2.5		2.2		1.4		-0.4		12.0		4.9	
Bloomberg US Agg Index		1.8		1.5		0.3		-1.4		11.6		5.2	
ABSOLUTE RETURN	10.0	6.1		7.5		8.6		8.2		12.2		3.6	
1-Month T-Bill + 400 bps		5.6		6.2		6.3		7.6		9.6		5.4	
HFR Benchmark ⁵		3.6		4.4		5.1		3.7		6.6		0.7	
REAL RETURN AND OPPORTUNISTIC	9.4	10.5		11.5		11.1		8.3		8.6		-0.4	
50% (CPI + 4%) + 50% (actuarial rate) ⁶		7.3		7.3		7.4		7.5		6.3		1.4	
REAL ESTATE & INFRASTRUCTURE	8.9	8.5	24	7.8	23	6.9	22	9.5	9	2.2	31	1.8	18
Median ²		7.0		5.0		3.9		2.7		-3.1		0.4	
NCREIF Property Index ⁷		4.5		2.9		1.9		-0.4		-4.7		0.5	
NCREIF Open Fund Index Net		5.2		3.2		2.1		-1.0		-8.0		0.0	
CASH EQUIVALENTS	4.6	2.0		2.5		2.5		3.7		5.7		1.4	
1 Month T-Bill		1.6		2.2		2.3		3.6		5.6		1.4	

¹ Annualized Returns and Percentile Rank.

² Comparison universe is the State Street Universe comprised of Public Funds greater than \$10 billion on the total plan level and greater than \$1 billion for asset classes.

³ SP500 + 300 bps with a 3 month lag.

⁴ History from 10/1/2010 to 6/30/14 reflects MSCI ACWI ex USA (gross).

⁵ FOF Conservative 1 month lagged.

⁶ Current actuarial rate is 6%. History prior to 12/1/18 reflects 50% (CPI + 5%) + 50% (actuarial rate).

⁷ NCREIF Property Index is NPI minus 130 bps.

Source: State Street Analytics; the NCREIF - NPI (Property Index) source is NCREIF.

Cumulative and Consecutive Total Fund Returns

MPSERS

Cumulative For Years Ending 9/30/24

	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year
MPSERS	16.0	12.3	6.4	11.4	10.1	9.4	9.7	10.2	9.9	9.1
Public Plan - Median (> \$10 billion)*	16.6	13.6	6.0	9.9	9.1	8.4	8.3	8.9	9.0	8.0
Rank	58	61	22	6	16	12	12	12	17	12
bp Difference - Median	-61	-130	43	151	106	98	139	127	89	113

Consecutive For Years Ending

	09/24	09/23	09/22	09/21	09/20	09/19	09/18	09/17	09/16	09/15
MPSERS	16.0	8.7	-4.4	27.7	5.3	5.6	11.6	13.8	7.6	2.6
Public Plan - Median (> \$10 billion)*	16.6	9.6	-7.6	22.4	6.1	5.2	8.4	12.7	9.5	0.1
Rank	58	72	12	9	78	42	6	24	90	5
bp Difference - Median	-61	-89	315	537	-84	40	311	106	-192	244

MSERS

Cumulative For Years Ending 9/30/24

	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year
MSERS	16.0	12.3	6.4	11.4	10.2	9.4	9.7	10.2	9.9	9.1
Public Plan - Median (> \$1 billion)*	17.9	14.0	5.5	9.7	9.1	8.1	8.2	8.8	9.0	8.0
Rank	65	71	21	7	14	8	8	8	12	8
bp Difference - Median	-190	-173	96	168	109	124	149	139	93	114

Consecutive For Years Ending

	09/24	09/23	09/22	09/21	09/20	09/19	09/18	09/17	09/16	09/15
MSERS	16.0	8.7	-4.4	27.8	5.3	5.6	11.5	13.8	7.6	2.6
Public Plan - Median (> \$1 billion)*	17.9	10.2	-10.3	22.3	6.8	4.8	8.2	12.7	9.7	0.1
Rank	65	81	8	6	78	33	7	28	89	4
bp Difference - Median	-190	-147	583	548	-155	83	333	112	-208	245

*State Street Public Funds Universe

Cumulative and Consecutive Total Fund Returns

MSPRS

Cumulative For Years Ending 9/30/24

	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year
MSPRS	16.0	12.3	6.4	11.4	10.1	9.4	9.7	10.2	9.9	9.1
Public Plan - Median (> \$1 billion)*	17.9	14.0	5.5	9.7	9.1	8.1	8.2	8.8	9.0	8.0
Rank	65	71	22	8	15	9	9	9	13	9
bp Difference - Median	-190	-172	95	166	108	123	148	138	92	113

Consecutive For Years Ending

	09/24	09/23	09/22	09/21	09/20	09/19	09/18	09/17	09/16	09/15
MSPRS	16.0	8.8	-4.5	27.7	5.3	5.6	11.5	13.8	7.6	2.5
Public Plan - Median (> \$1 billion)*	17.9	10.2	-10.3	22.3	6.8	4.8	8.2	12.7	9.7	0.1
Rank	65	80	8	7	77	34	7	28	89	4
bp Difference - Median	-190	-146	580	540	-152	80	332	112	-209	244

MJRS

Cumulative For Years Ending 9/30/24

	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year
MJRS	16.0	12.3	6.2	11.0	9.8	9.1	9.4	10.0	9.7	9.0
Public Plan - Median (> \$1 billion)*	17.9	14.0	5.5	9.7	9.1	8.1	8.2	8.8	9.0	8.0
Rank	65	72	26	19	24	16	12	12	15	12
bp Difference - Median	-187	-174	78	124	74	95	124	118	74	97

Consecutive For Years Ending

	09/24	09/23	09/22	09/21	09/20	09/19	09/18	09/17	09/16	09/15
MJRS	16.0	8.7	-4.9	26.4	5.3	5.6	11.5	13.9	7.6	2.5
Public Plan - Median (> \$1 billion)*	17.9	10.2	-10.3	22.3	6.8	4.8	8.2	12.7	9.7	0.1
Rank	65	82	12	10	77	34	7	28	89	4
bp Difference - Median	-187	-152	538	409	-151	81	330	120	-208	242

State of Michigan Retirement System

ASSET ALLOCATION REVIEW

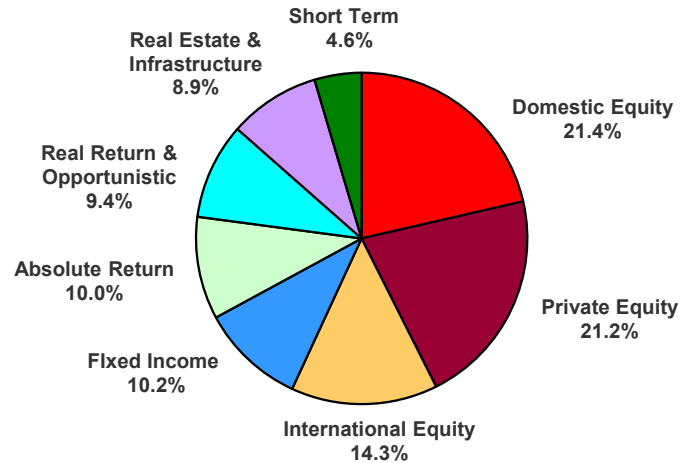
State of Michigan Investment Board Meeting
January 8, 2025



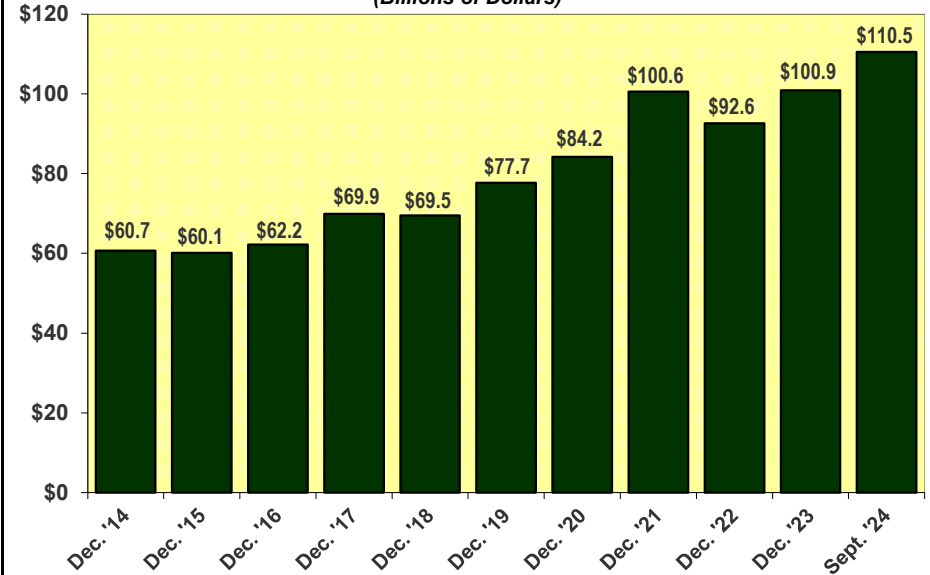
Gregory J. Parker, CFA
Director of Investments – Public Markets
Director of Asset Allocation
Bureau of Investments

STATE OF MICHIGAN RETIREMENT SYSTEM PROFILE - SEPTEMBER 2024

Asset Allocation ~ 9/30/24



Market Value*
(Billions of Dollars)



Asset Allocation By Market Value
(In Millions)

Investment Strategies	9/30/2024		9/30/2023	
Domestic Equity	\$23,605	21.4%	\$18,565	19.2%
Private Equity	23,374	21.2%	22,711	23.5%
International Equity	15,777	14.3%	12,498	12.9%
Fixed Income	11,295	10.2%	8,588	8.9%
Absolute Return	10,994	10.0%	10,028	10.3%
Real Return & Opportunistic	10,401	9.4%	10,329	10.7%
Real Estate & Infrastructure	9,789	8.9%	9,781	10.1%
Short Term	5,220	4.6%	4,313	4.4%
TOTAL	\$110,455	100.0%	\$96,813	100.0%

Market Value By Plan ~ 9/30/24
(in Millions)

	Pension Plan Mkt. Value	OPEB** Mkt. Value	Combined Mkt. Value	%
MPERS	\$72,314	\$14,233	\$86,547	78.3%
MSERS - (closed)	14,555	6,520	21,075	19.1%
MSPRS	2,067	476	2,543	2.3%
MJRS - (closed)	276	14	290	0.3%
TOTAL	\$89,212	\$21,243	\$110,455	100.0%

MSERS includes the Military Pension Fund

Short Term Equivalents (in Billions)

Short Term Strategy	\$5.2	
Short Term in Other Inv. Strategies	1.7	
TOTAL SHORT TERM	\$6.9	6.2% of Total Funds

12th Largest State Public Retirement System in the U.S.

Pensions & Investments survey - February 12, 2024 issue

*The combined net payout for the plans for FY 2022 was \$1.2 billion with \$25.6 billion paid out FY 2010 thru FY 2022 (Pension ACFRs). This represents the amount paid to beneficiaries in excess of employer and employee contributions.

**OPEB - Other Post Employment Benefits

Sources and Uses of Cash

October 2023 ~ September 2024

10/1/23 Short-Term Cash Balance: \$4,302

9/30/24 Short-Term Cash Balance: \$5,220

Net Short-Term Cash Increase: \$918



A negative number in an asset category indicates a use of cash, a positive number indicates a source of cash.

Dollars in millions

Asset Allocation Targets

As of 9/30/24

	MPSERS		MSERS		MSPRS		MJRS		SMRS
<i>Asset Class</i>	<i>9/30/24</i>	<i>Target*</i>	<i>9/30/24</i>	<i>Target*</i>	<i>9/30/24</i>	<i>Target*</i>	<i>9/30/24</i>	<i>Target*</i>	<i>Ranges</i>
Domestic Equity	21.4%	25.0%	21.4%	25.0%	21.4%	25.0%	19.8%	25.0%	17% - 32%
Private Equity	21.2%	16.0%	21.2%	16.0%	21.2%	16.0%	19.6%	16.0%	13% - 27%
International Equity	14.3%	15.0%	14.3%	15.0%	14.3%	15.0%	12.8%	15.0%	12% - 22%
Long Term Fixed Income	10.2%	13.0%	10.2%	13.0%	10.2%	13.0%	19.1%	13.0%	8% - 18%
Absolute Return	10.0%	9.0%	10.0%	9.0%	10.0%	9.0%	8.4%	9.0%	5% - 11%
Real Return & Opportunistic	9.4%	10.0%	9.4%	10.0%	9.4%	10.0%	7.9%	10.0%	8% - 18%
Real Estate & Infrastructure	8.9%	10.0%	8.9%	10.0%	8.9%	10.0%	7.4%	10.0%	8% - 18%
Short Term Fixed Income	4.6%	2.0%	4.6%	2.0%	4.6%	2.0%	5.0%	2.0%	1% - 8%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	

*Complies with basket clause and international restrictions.

State of Michigan Retirement System

MARKETS REVIEW AND OUTLOOK

State of Michigan Investment Board Meeting

January 8, 2025



Gregory J. Parker, CFA

Director of Investments – Public Markets

Director of Asset Allocation

Bureau of Investments

CAPITAL MARKETS

Return and Risk Assumptions, Benchmark and Outlook

A starting point.

MPSERS Plan	Assumed Return* (Arithmetic)	Standard Deviation*	Trailing 10-Year (Benchmark**)
Private Equity	11.7%	20.0%	16.2%
Real Estate	9.7%	21.4%	4.5%
Real Ret / Opportunistic	9.5%	14.4%	7.3%
Domestic Equity	8.6%	19.1%	13.1%
International Equity	8.4%	19.6%	5.2%
Absolute Return	8.0%	11.2%	5.6%
Long-Term Fixed Income	4.6%	5.1%	1.8%
Short-Term	3.8%	1.4%	1.6%

* Aon Investment Consultants 2024 Long-Term Return/Risk Assumptions

** Investment Policy Statement; Annualized Returns

*** Actual investments may differ due to changing conditions and the availability of new information

Overview

A market update.

- Interest rates at both the short and long end are now finally earning more than the year-over-year increase in CPI. The U.S. Fed Funds rate is around 230 basis points above the year-over-year increase in CPI. The last time real yields were this high during an inflationary environment was from September 2006 through September 2007.
- Valuation metrics for the U.S. market are higher relative to historical averages, suggesting the market is priced to deliver marginally lower rates of return. A concern is that the risk of a potential recession is not priced in, and many strategists believe that if a recession were to materialize, valuations will continue to cheapen. Relative to bond yields, the S&P 500 yields are at a two-decade low.
- Based on a price-to-earnings valuation multiple, non-U.S. equities are trading at valuations below average. Relative to the U.S., developed international markets trade at approximately a 28% discount to U.S. counterparts while emerging markets are at a 34% discount.
- Over the one year ending September 2024, the NAREIT index gained 34.5% including dividends, which was approximately 42.5% higher than their private market counterparts. Over the medium to longer-term, publicly traded REITs have earned 0.5% - 1.5% higher return than their private market counterparts but they are about three times more volatile.
- Fed policy is restrictive and while inflation is coming down, it is still high by historical standards. September 2024 reading for year-over-year CPI was 2.4% which was down from 3.0% the quarter prior. For comparison, the 20-year median CPI is 2.2%.

U.S. Fixed Income

Positive real yields

- At the end of September 2024, the yield to maturity of the U.S. Aggregate index was 4.2%. These yields are above average for the past twenty years and are well above average for the past ten.
- In September 2024 the U.S. Federal Reserve Board policy interest rate was cut by 50 basis points, its first policy change since its last hike in July 2023. By the end of the September 2024 quarter, the market was pricing in almost three 25 basis point rate cuts through the remainder of the year.
- An inverted yield curve is often cited as having U.S. economic recession predictive power. However, at the end of September 2024, credit spreads were not pricing in economic worries. Both investment grade and high yield spreads were well below historical averages.
- Interest rates at both the short and long end are now finally earning more than the year-over-year increase in CPI. The U.S. Fed Funds rate is around 230 basis points above the year-over-year increase in CPI. The last time real yields were this high during an inflationary environment was from September 2006 through September 2007.

International Equity

Good relative valuations.

- The broad non-U.S. stock market return for the one year ending September 2024 was 25.4%, and 5.2% annualized over the past ten years.
- Over the past ten years, international equities have underperformed domestic equities by approximately -7.9% annualized.
- The DXY index is often referred to as a measure of U.S. dollar value relative to other developed nation currencies. At the end of September 2022, the index hit a value of 114, a twenty-year high, but has fallen over -12% since then.
- Based on a price-to-earnings valuation multiple, non-U.S. equities are trading at valuations below average. Relative to the U.S., developed international markets trade at approximately a 28% discount to U.S. counterparts while emerging markets are at a 34% discount.

Domestic Equity

Concentration in the domestic equity index.

- The broad U.S. stock market return for the one year ending September 2024 was 35.5%, and 13.1% annualized over the past ten years. In contrast, U.S. small-cap stocks returned 26.6% for the year and 8.6% for the ten-year period ending September 2024 and are priced just below their all-time highs.
- Valuation metrics for the U.S. market are higher relative to historical averages, suggesting the market is priced to deliver marginally lower rates of return. A concern is that the risk of a potential recession is not priced in, and many strategists believe that if a recession were to materialize, valuations will continue to cheapen. Relative to bond yields, the S&P 500 yields are at a two-decade low.
- Fundamentally, the market's returns on equity continue to be historically higher than average and some of the largest companies in the market today are less cyclical (economically sensitive) than past market leaders. These facts lend support to the argument that higher valuations are justified, and therefore the market could perhaps continue to deliver historical average rates of return in the future.
- The S&P 500 has become very concentrated by weight, but also by returns, making it difficult for active managers to add value in this type of market. By weight, the largest seven companies make up more than 31.4% of the index weight.

Real Estate

Comparing public vs. private real estate.

- Over the one year ending September 2024, the NAREIT index gained 34.5% including dividends, which was approximately 42.5% higher than their private market counterparts. Over the medium to longer-term, publicly traded REITs have earned 0.5% - 1.5% higher return than their private market counterparts but they are about three times more volatile.
- Dividend yields on REITs at the end of September were estimated to be around 3.6%, which is 21 bps lower than the yield of the 10-year U.S. Treasury. This metric is approximately 1.4% below the historical average.

Commodities

Inflation; supply and demand issues.

- Fed policy is restrictive and while inflation is coming down, it is still high by historical standards. September 2024 reading for year-over-year CPI was 2.4% which was down from 3.0% the quarter prior. For comparison, the 20-year median CPI is 2.2%.
- The commodities prices broadly, as measured by the CRB index, are down -1.5% over the 12-month period ending September 2024. The price for crude oil was down -25% year-over-year and ended September 2024 at \$68.17 per barrel.
- An additional complication for assessing the inflation picture is the war between Russia and Ukraine which started on February 24, 2022.

Annual Total Returns of Key Asset Classes 2004 - 2023

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	
Best ↑ ↓ Worst	Int'l Equity	Real Estate	Int'l Equity	Int'l Equity	Gov't Bonds	Int'l Equity	U.S. Equity	Real Estate	Int'l Equity	U.S. Equity	U.S. Equity	Real Estate	U.S. Equity	Int'l Equity	Real Estate	U.S. Equity	U.S. Equity	U.S. Equity	Infla- tion	U.S. Equity	Best
	20.90%	20.06%	26.65%	16.65%	12.38%	41.44%	16.38%	14.26%	16.83%	32.80%	13.08%	13.32%	11.93%	27.19%	6.71%	30.90%	17.92%	28.45%	6.50%	25.47%	
	Real Estate	Int'l Equity	Real Estate	Real Estate	Cash	U.S. Equity	Real Estate	Gov't Bonds	U.S. Equity	Int'l Equity	Real Estate	U.S. Equity	Real Estate	U.S. Equity	Infla- tion	Int'l Equity	Int'l Equity	Real Estate	Real Estate	Int'l Equity	
	14.48%	16.62%	16.59%	15.84%	2.05%	27.24%	13.11%	9.02%	16.17%	15.29%	11.81%	1.01%	7.97%	21.13%	1.91%	22.13%	10.65%	17.70%	5.50%	16.08%	
	U.S. Equity	U.S. Equity	U.S. Equity	Gov't Bonds	Infla- tion	Corp. Bonds	Int'l Equity	Corp. Bonds	Real Estate	Real Estate	Corp. Bonds	Gov't Bonds	Corp. Bonds	Real Estate	Cash	Corp. Bonds	Corp. Bonds	Int'l Equity	Cash	Corp. Bonds	
	11.78%	5.65%	15.34%	8.67%	0.10%	16.05%	11.15%	8.35%	10.54%	10.99%	7.53%	0.86%	5.63%	6.96%	1.88%	14.54%	9.89%	8.29%	1.46%	8.52%	
	Hedge Funds	Hedge Funds	Hedge Funds	Hedge Funds	Corp. Bonds	Hedge Funds	Corp. Bonds	Infla- tion	Corp. Bonds	Hedge Funds	Gov't Bonds	Infla- tion	Int'l Equity	Corp. Bonds	Gov't Bonds	Gov't Bonds	Gov't Bonds	Hedge Funds	Hedge Funds	Cash	
	5.83%	5.13%	9.21%	7.68%	-3.07%	9.65%	8.46%	2.96%	9.37%	7.70%	4.92%	0.66%	4.50%	6.42%	0.88%	6.83%	7.94%	7.56%	0.12%	5.13%	
	Corp. Bonds	Infla- tion	Cash	U.S. Equity	Real Estate	Infla- tion	Gov't Bonds	U.S. Equity	Hedge Funds	Infla- tion	Hedge Funds	Hedge Funds	Infla- tion	Hedge Funds	Hedge Funds	Real Estate	Hedge Funds	Infla- tion	Gov't Bonds	Hedge Funds	
	5.25%	3.42%	4.81%	5.47%	-6.46%	2.72%	5.52%	1.75%	4.22%	1.49%	3.14%	0.37%	2.09%	3.88%	-1.05%	6.42%	4.75%	7.12%	-12.32%	4.50%	
	Gov't Bonds	Cash	Corp. Bonds	Corp. Bonds	Hedge Funds	Cash	Hedge Funds	Cash	Gov't Bonds	Cash	Infla- tion	Cash	Hedge Funds	Gov't Bonds	Corp. Bonds	Hedge Funds	Real Estate	Cash	Int'l Equity	Gov't Bonds	
	3.48%	3.06%	4.27%	5.10%	-19.86%	0.19%	5.07%	0.10%	2.02%	0.07%	0.68%	0.01%	1.89%	2.30%	-2.51%	4.40%	1.60%	0.05%	-15.57%	4.09%	
	Infla- tion	Gov't Bonds	Gov't Bonds	Cash	U.S. Equity	Gov't Bonds	Infla- tion	Hedge Funds	Infla- tion	Corp. Bonds	Cash	Corp. Bonds	Gov't Bonds	Infla- tion	U.S. Equity	Infla- tion	Infla- tion	Corp. Bonds	Corp. Bonds	Infla- tion	
	3.25%	2.65%	3.46%	5.03%	-36.72%	-2.19%	1.50%	-3.55%	1.70%	-2.01%	0.04%	-0.77%	1.05%	2.12%	-4.96%	2.29%	1.40%	-1.04%	-15.76%	3.40%	
	Cash	Corp. Bonds	Infla- tion	Infla- tion	Int'l Equity	Real Estate	Cash	Int'l Equity	Cash	Gov't Bonds	Int'l Equity	Int'l Equity	Cash	Cash	Int'l Equity	Cash	Cash	Gov't Bonds	U.S. Equity	Real Estate	
	1.33%	1.95%	2.55%	4.06%	-45.52%	-16.86%	0.13%	-13.71%	0.11%	-2.60%	-3.87%	-5.67%	0.27%	0.84%	-14.20%	2.28%	0.45%	-2.28%	-17.78%	-7.94%	Worst

	Annualized Returns 2004 - 2023																			
Return Risk		Cash		Inflat.		Gov't.		Hedge		Corp.		Int'l.		R.E.		US Eq.				Return Risk
		1.36%		2.58%		2.70%		3.04%		4.13%		5.92%		7.71%		9.75%				
		0.85%		1.94%		5.04%		5.29%		6.71%		18.85%		5.31%		16.13%				

- Hedge Funds are represented by the HFRI FOF Conservative Index
- Inflation is represented by the U.S. Consumer Price Index (SA)
- International Equity is represented by the MSCI - AC World EX-USA Index
- Cash is represented by 30-day T-Bills
- U.S. Equity is represented by the S&P 1500 Index
- Real Estate is represented by the NCREIF National Property Index
- Corporate Bonds are represented by the BBG Barclays - U.S. Corp. Inv. Gd. Index
- Government Bonds are represented by the BBG Barclays - U.S. Government Index

State of Michigan Retirement System

RESOLUTION

State of Michigan Investment Board Meeting

January 8, 2025



Jon M. Braeutigam
Chief Investment Officer
Bureau of Investments

STATE OF MICHIGAN INVESTMENT BOARD
RESOLUTION AUTHORIZING ASSET ALLOCATION STRATEGY

Resolution 2025-1

WHEREAS, the State of Michigan Investment Board (the “Board”) pursuant to Executive Order 2018-10 (the “Order”) and the Investment Policy Statement approved by the Board, is required to approve asset allocation targets and ranges with respect to the investment of the assets of the State of Michigan’s defined benefit retirement systems (the “DB Plans”);

WHEREAS, the Board previously approved asset allocation targets and ranges at its meeting on September 22, 2022 in Resolution 2022-2 (the “Existing Allocation”);

WHEREAS, the Board has received an asset liability study presentation by consultant Aon, describing the process used to estimate expected returns and anticipated plan liabilities;

WHEREAS, the Board has reviewed adjusted asset allocation targets and ranges submitted to it by the Department of Treasury’s Bureau of Investments (the “BOI”) and attached hereto as Exhibit A (the “Asset Allocation Strategy A”) and Exhibit B (the “Asset Allocation Strategy B”); and

WHEREAS, Asset Allocation Strategy A is intended to supersede and replace, in all respects, the Existing Allocation with respect to the following component units of the State of Michigan Retirement System: the Michigan Public Schools Employees’ Retirement System; the Michigan State Employees’ Retirement System; the Michigan State Police Retirement System; the Military Retirement System; and the Other Post-Employment Benefit (“OPEB”) funds associated with each of the Michigan State Employees’ Retirement System and the Michigan State Police Retirement System; and

WHEREAS, Asset Allocation Strategy B is intended to supersede and replace, in all respects, the Existing Allocation with respect to the following component units of the State of Michigan Retirement System: the OPEB funds associated with each of the Michigan Public Schools Employees’ Retirement System and the Michigan Judges’ Retirement System; and the Michigan Judges’ Retirement System.

NOW, THEREFORE, BE IT RESOLVED, the Board adopts the Asset Allocation Strategy A and Asset Allocation Strategy B and the Proposed Asset Allocation Targets, Ranges and Benchmarks described therein, which fully replace and supersede the Existing Allocation.

Ayes:

Nays:

Recused:

Lansing, Michigan

January 8, 2025

Exhibit A

State of Michigan Investment Board Asset Allocation Strategy A Targets with Ranges^{1, 2} As of 12/31/24

Asset Class	Weights			Current Asset Allocation Ranges	Proposed Asset Allocation Ranges
	As of 9/30/24	Current Target	New Target		
Domestic Equity <i>S&P Composite 1500 Index</i>	21.4%	25.0%	21.0%	17% - 32%	13% - 27%
Private Equity <i>S&P 500 Index + 300 bps</i>	21.2%	16.0%	16.0%	13% - 27%	13% - 27%
International Equity <i>MSCI ACWI ex USA Index</i>	14.3%	15.0%	14.0%	12% - 22%	10% - 20%
Real Return & Opportunistic <i>Custom³</i>	9.4%	10.0%	9.0%	8% - 18%	5% - 15%
Long Term Fixed Income <i>Bloomberg U.S. Aggregate Bond Index</i>	10.2%	13.0%	15.0%	8% - 18%	10% - 20%
Real Estate & Infrastructure <i>Custom⁴</i>	8.9%	10.0%	8.0%	8% - 18%	5% - 15%
Absolute Return <i>HFRI Fund of Funds Conservative Index</i>	10.0%	9.0%	13.0%	5% - 11%	7% - 18%
Short Term Fixed Income <i>30-Day U.S. Treasury Bill</i>	4.6%	2.0%	4.0%	1% - 8%	1% - 8%
TOTAL	100.0%	100.0%	100.0%		

¹ Information in this table is based upon an asset liability study performed by Aon and presented at the State of Michigan Investment Board's January 8, 2025 quarterly meeting.

² Allocation and ranges are applicable to the following component units of the State of Michigan Retirement System: the Michigan Public Schools Employees' Retirement System; the Michigan State Employees' Retirement System; the Michigan State Police Retirement System; the Military Retirement System; and the OPEB funds associated with each of the Michigan State Employees' Retirement System and the Michigan State Police Retirement System.

³ The custom benchmark is composed of 50% (CPI + 4%) and 50% (actuarial rate).

⁴ The custom benchmark consists of NCREIF Property Index less 130 basis points.

Exhibit B

State of Michigan Investment Board Asset Allocation Strategy B Targets with Ranges^{1, 2} As of 12/31/24

Asset Class	Weights			Current Asset Allocation Ranges	Proposed Asset Allocation Ranges
	As of 9/30/24	Current Target	New Target		
Domestic Equity <i>S&P Composite 1500 Index</i>	21.4%	25.0%	16.0%	17% - 32%	10% - 20%
Private Equity <i>S&P 500 Index + 300 bps</i>	21.2%	16.0%	16.0%	13% - 27%	13% - 27%
International Equity <i>MSCI ACWI ex USA Index</i>	14.3%	15.0%	11.0%	12% - 22%	7% - 13%
Real Return & Opportunistic <i>Custom³</i>	9.4%	10.0%	7.0%	8% - 18%	5% - 15%
Long Term Fixed Income <i>Bloomberg U.S. Aggregate Bond Index</i>	10.2%	13.0%	26.0%	8% - 18%	20% - 30%
Real Estate & Infrastructure <i>Custom⁴</i>	8.9%	10.0%	5.0%	8% - 18%	5% - 15%
Absolute Return <i>HFRI Fund of Funds Conservative Index</i>	10.0%	9.0%	15.0%	5% - 11%	10% - 20%
Short Term Fixed Income <i>30-Day U.S. Treasury Bill</i>	4.6%	2.0%	4.0%	1% - 8%	1% - 8%
TOTAL	100.0%	100.0%	100.0%		

¹ Information in this table is based upon an asset liability study performed by Aon and presented at the State of Michigan Investment Board's January 8, 2025 quarterly meeting.

² Allocation and ranges are applicable to the following component units of the State of Michigan Retirement System: the OPEB funds associated with each of the Michigan Public Schools Employees' Retirement System and the Michigan Judges' Retirement System; and the Michigan Judges' Retirement System.

³ The custom benchmark is composed of 50% (CPI + 4%) and 50% (actuarial rate).

⁴ The custom benchmark consists of NCREIF Property Index less 130 basis points.

State of Michigan Retirement System

FIXED INCOME REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



LeAnn L. Auer
Senior Investment Manager
Fixed Income Division

EXECUTIVE SUMMARY

Performance

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	13.5%	0.8%	2.0%	2.9%	3.4%
Bloomberg Barclays U.S. Agg	11.6%	-1.4%	0.3%	1.5%	1.8%
Peer Median Returns	12.0%	-0.4%	1.4%	2.2%	2.5%

- Across all time periods, the fixed income portfolio outperformed its benchmark and peer group. The portfolio also benefited from an overweight to structured credit and high yield bonds during these periods.
- Third quarter Fixed Income performance was strong as the yield curve normalized, the Federal Reserve cut rates by 50 bps, and credit spreads further tightened against increasing market sentiment that the U.S. would likely be able to avoid a recession. However, a softening labor market still weighed on investors. The yield on the 10-year Treasury peaked at 4.3% during July but then gradually decreased to end the quarter at 3.8%. After 27 months of yield curve inversion, the spread between the 10-year Treasury and the 2-year Treasury moved from -35 bps at the end of June 2024 to 12 bps as of September 30, 2024. Risk assets benefited from this steepening. Investment grade and high yield credit spreads tightened 5 bps and 10 bps, respectively, while securitized spreads tightened by 6 bps, primarily driven by Agency MBS and ABS.
- The 12-month Total Return performance of the U.S. Aggregate Bond Index was primarily driven by Investment Grade corporate credit and Agency MBS, as well as longer duration and single A or lower credit quality securities. For the quarter ending September 30, 2024, Total Return performance of the Index was driven by Investment Grade corporate credit and Agency MBS securities.
- High Yield and CMBS were the best performing portfolios for the past year, returning 15.7% and 20.26% respectively. For the quarter ending September 30, 2024, Investment Grade and High Yield corporate credit were the best performing portfolios, returning 5.7% and 5.8% respectively.

Strategy Update

- The objective of the Fixed Income Division portfolio is to meet or exceed the returns of the Bloomberg U.S. Aggregate Bond Index while satisfying the overall characteristics of a core fixed income portfolio. The portfolio has a higher yield-to-maturity (YTM) than the benchmark, 5.3% versus 4.2%. Further, the portfolio exhibits risk characteristics that are in line with the historical volatility of traditional fixed income benchmarks.
- The portfolio characteristics are:
 - **Income:** The return coupon of the portfolio is 4.2% and is approximately 86 bps higher than the benchmark.
 - **Liquidity:** The portfolio has 26.1% invested in U.S. Treasuries, TIPS, government-related securities, and cash. These investments can typically be liquidated within one trading day.
 - **Principal preservation:** The portfolio has a large allocation to U.S. Treasuries (21.6%). The average credit rating of the portfolio is investment grade.
 - **Diversification from equity market risk:** The estimated equity beta of the portfolio is 0.15 and aligned with the U.S. Aggregate benchmark.
- The Fixed Income portfolio “Core-Plus” strategy relied on out-of-benchmark assets to generate returns given the low yield environment of the prior decade. During the years between 2010 through 2021, the yield to maturity of the benchmark U.S. Aggregate index averaged between 2-3%. Although this strategy is still important to overall performance, higher yields within the core fixed income sectors are compelling.
- The Core-Plus strategy implemented to achieve the goals includes:
 - Core: As of September 30, 2024, the portfolio’s allocation to U.S. Treasuries, Investment Grade Corporate Bonds, government-guaranteed U.S. Agency Debentures, Agency MBS, ABS, and CMBS was 63.4%. This includes a 26.1% allocation to U.S. Treasuries, TIPS, government-related securities, and cash.
 - Plus: The portfolio maintains a strategic out-of-benchmark allocation to High-yield corporate bonds, securitized credit, and global fixed income strategies as market opportunities allow. This allocation increases the portfolio yield and total return potential but results in lower liquidity and higher volatility. As of September 30, 2024, the allocation to the Plus portfolio was 36.6%.

Market Environment and Outlook

- The case for traditional fixed income investing is the strongest it has been in two decades. However, as the changing macro-economic landscape shifts, certain risks are present.
 - The yield to maturity of the U.S. Aggregate Index as of September 2024 was 4.2% which ranks in the second decile for yields over the past twenty years.
 - Fixed Income continues to offer a good risk-adjusted rate of return relative to U.S. equities given higher yields. While U.S. equities are still expected to return a higher rate of return over the long term vs. bonds, the difference in return is at or near the lowest spread in over two decades.
 - Among the core fixed income sectors, Agency MBS offers compelling yields and opportunity for carry. The 30-year Mortgage Basis spread to U.S. Treasuries is historically cheap on 5-year and 10-year basis, and performance should be defensive as the Fed cuts interest rates and the yield curve steepens.
 - Interest rate volatility remains elevated as the market evaluates macro-economic data, particularly inflation and employment, and its potential impact on future FOMC policy actions and the forward path of interest rates. Post the U.S. Presidential election, fiscal policy will also weigh on volatility as we enter 2025.
 - Investment grade and high yield credit spreads continued their tightening trend and have reached pre-GFC highs. As of September 30, 2024, investment grade credit spreads were 88 bps, and high yield spreads were 300 bps, -35 bps and -121 bps below their 10-year average OAS, respectively. Credit fundamentals remain strong; however, any potential of an economic slowdown presents spread risk across these sectors as there is little cushion to absorb such scenarios.

Conclusion

- The market for traditional fixed income securities is very attractive on a 20-year historical basis. Relative to U.S. equities, fixed income offers opportunity for good risk-adjusted rates of return. Out-of-benchmark securities continue to add to the return potential of the portfolio, however in-benchmark securities now offer better return potential. Overall, the portfolio is defensively positioned for the risks posed by tight credit spreads and shifting market and macro-economic narratives.

SMRS

Fixed Income Holdings

Portfolio Characteristics

Benchmark: Barclays Aggregate

9/30/24

Characteristic	Portfolio	Benchmark
Average Maturity (Yrs)	9.3	8.3
Duration (Yrs)	6.4	6.1
Spread Duration (Yrs)	5.5	6.0
Coupon (%)	4.2	3.4
Yield to Maturity (%)	5.3	4.2
Credit Rating	A+	AA-
Tracking Error (%)	1.1	N/A
Beta (vs S&P 500)	0.15	0.12

Commentary

Objectives

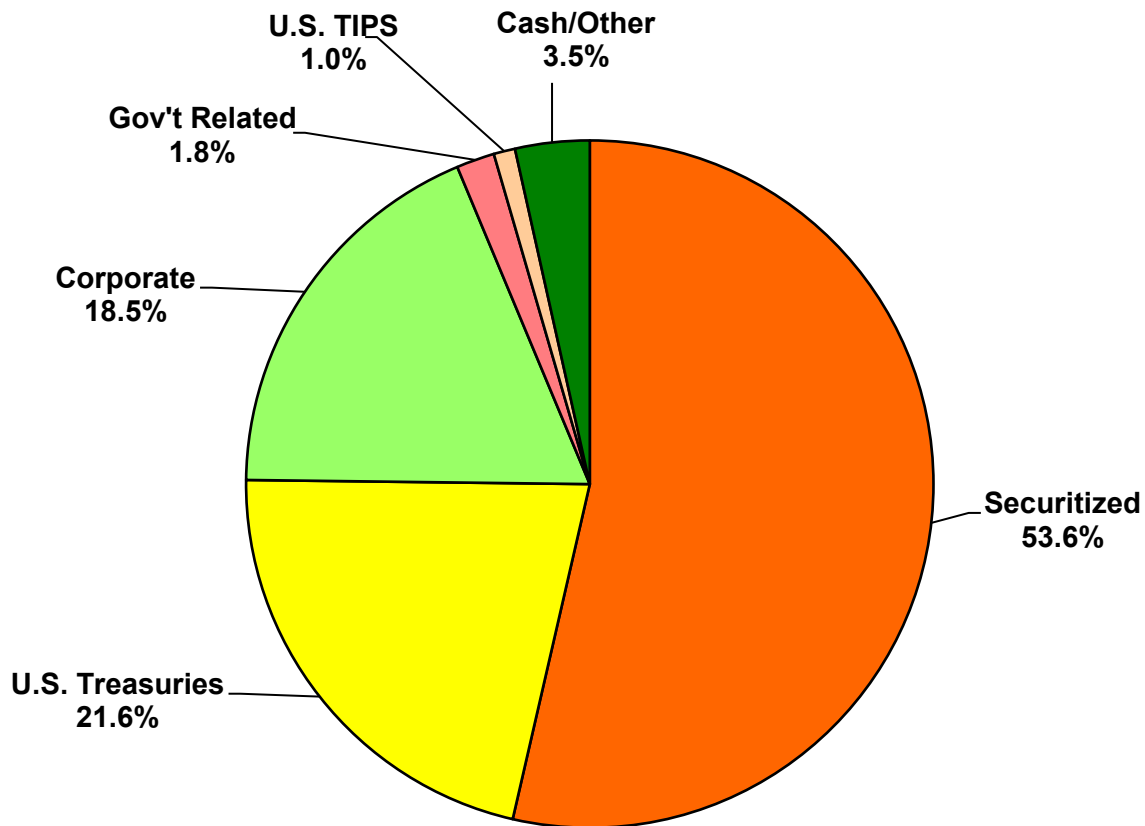
Highlights

Income:	The coupon of the portfolio is approximately 86 bps higher than the benchmark. Coupon interest is an important component of total returns along with price returns.
Liquidity:	26.1% of the portfolio is invested in U.S. Treasuries, TIPS, government guaranteed agency debentures, and cash. These investments can typically be liquidated within one trading day.
Principal Preservation:	The portfolio has a large allocation to U.S. Treasuries (21.6%) and carries an investment grade rating.
Diversification:	The equity beta of the portfolio is approximately 0.15, meaning that the portfolio has a low correlation with Equity market movements.

SMRS

Fixed Income By Asset Type

9/30/24



Market Value in Millions

9/30/24

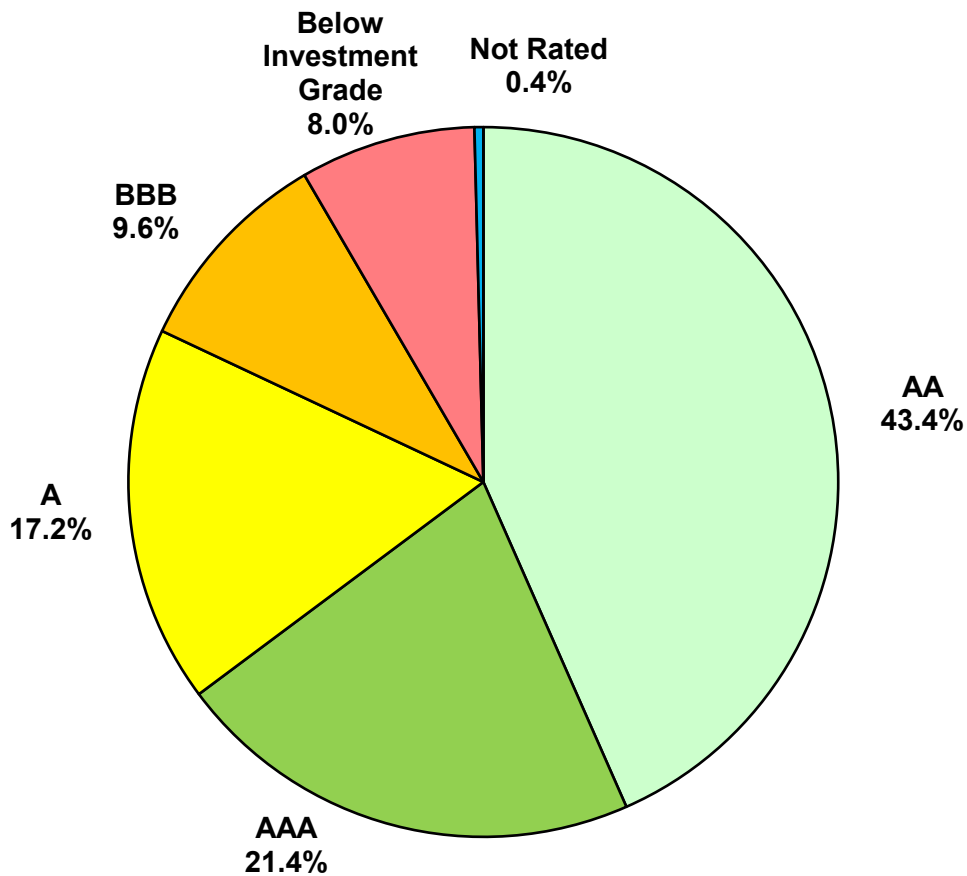
	Assets	Percent	Benchmark	Difference
Securitized	\$6,060	53.6%	27.5%	26.1%
U.S. Treasuries	2,437	21.6%	43.6%	-22.0%
Corporate	2,094	18.5%	24.4%	-5.9%
Government Related	198	1.8%	4.5%	-2.7%
U.S. TIPS	110	1.0%	0.0%	1.0%
Cash/Other	396	3.5%	0.0%	3.5%
Total Investments	\$11,295	100.0%	100.0%	

Benchmark: Barclays US Aggregate

SMRS

Fixed Income By Rating

9/30/24



Market Value in Millions

9/30/24

	Assets	Percent	Benchmark	Difference
AAA	\$2,416	21.4%	3.1%	18.3%
AA	4,897	43.4%	72.2%	-28.8%
A	1,945	17.2%	11.9%	5.3%
BBB	1,086	9.6%	12.8%	-3.2%
* Below Investment Grade	901	8.0%	0.0%	8.0%
Not Rated	50	0.4%	0.0%	0.4%
Total Investments	\$11,295	100.0%	100.0%	

* Comprised of approximately 4% High Yield Credit and 4% High Yield RMBS/ABS

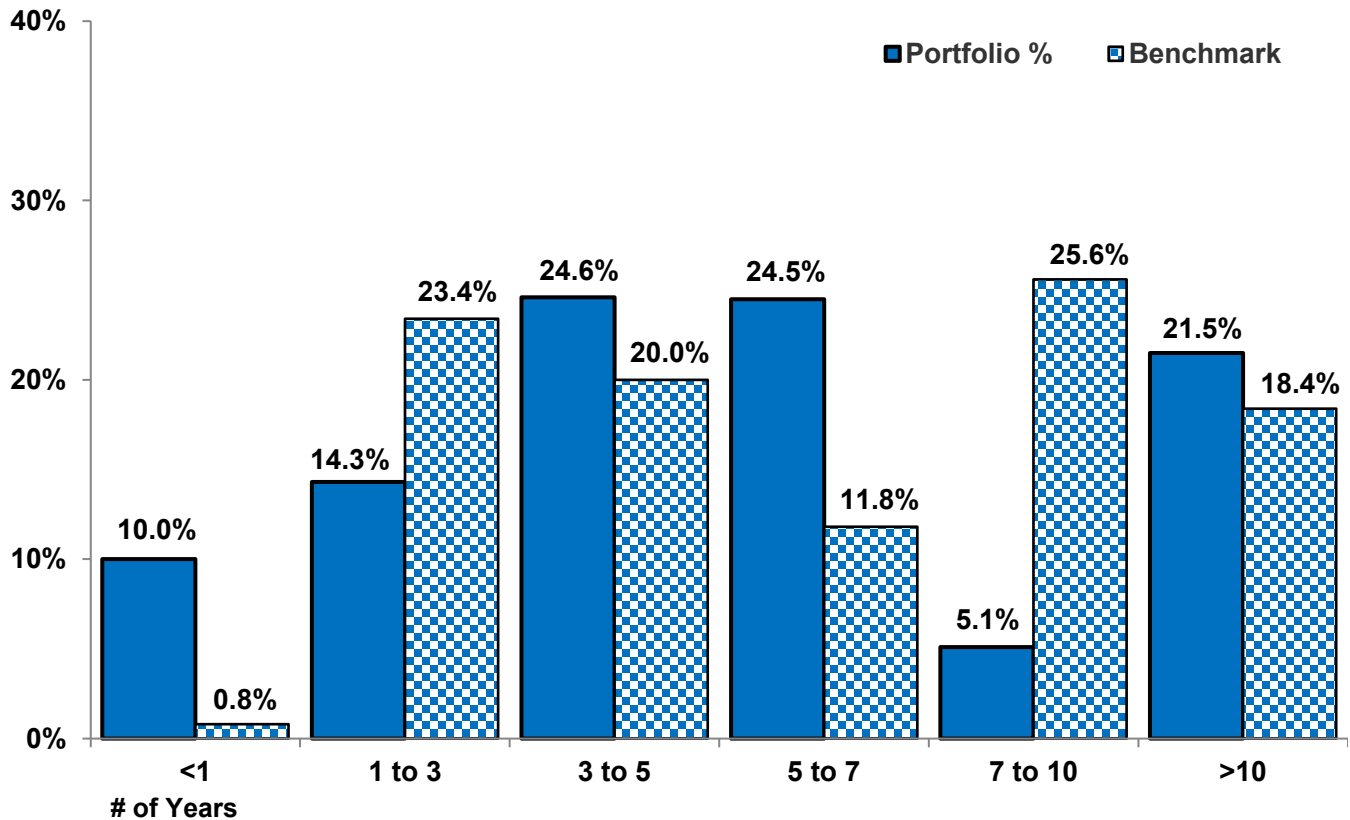
Benchmark: Barclays US Aggregate

SMRS

Duration Distribution

Fixed Income Composite Versus Benchmark

9/30/24



Source: Factset

Market Value in Millions					
Duration	Assets	Portfolio Weight	Benchmark Weight	Portfolio Duration*	Benchmark Duration*
<1	\$1,131	10.0%	0.8%	-0.1	0.9
1 to 3	1,610	14.3%	23.4%	1.8	2.0
3 to 5	2,788	24.6%	20.0%	4.0	3.9
5 to 7	2,763	24.5%	11.8%	6.0	6.0
7 to 10	572	5.1%	25.6%	7.8	7.7
>10	2,431	21.5%	18.4%	16.9	14.7
Total	\$11,295	100.0%	100.0%	6.4	6.1

* Effective Duration

Benchmark: Barclays US Aggregate

Fixed Income Performance - Net of Fees (MPERS)

9/30/24

	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>10-Years</u>
Total Fixed Income	\$11,294,759,300	13.23%	0.61%	1.75%	2.71%	3.17%
<i>Bloomberg Aggregate Bond Index</i>	<i>N/A</i>	<i>11.57%</i>	<i>-1.39%</i>	<i>0.33%</i>	<i>1.47%</i>	<i>1.84%</i>
Internal Core Fixed Income	\$4,804,642,638	12.50%	-0.69%	0.82%	2.13%	2.66%
Externally Managed Fixed Income	\$6,490,116,663	13.70%	1.86%	2.60%	3.23%	3.65%
External Core Fixed Income	\$2,127,292,511	11.01%	-1.64%	-0.17%	0.89%	1.62%
PIMCO Mortgage Fund	2,127,292,511	11.01%	-1.64%	-0.17%		
<i>Bloomberg US MBS Agy Fixed Indx</i>	<i>N/A</i>	<i>12.32%</i>	<i>-1.20%</i>	<i>0.04%</i>		
Investment Grade Credit	\$225,568,192	14.59%	-1.03%	1.65%	2.75%	3.27%
PGIM Investment Grade	225,568,192	14.59%	-1.03%	1.65%	2.75%	3.27%
<i>Bloomberg Credit Index</i>	<i>N/A</i>	<i>13.81%</i>	<i>-1.12%</i>	<i>1.07%</i>	<i>2.33%</i>	<i>2.79%</i>
Tactical Fixed Income	\$1,476,381,255	13.21%	0.32%	2.35%	3.16%	3.36%
Fidelity Tactical Bond Fund	537,137,493	13.11%	0.53%	2.52%	3.44%	3.84%
Guggenheim Core Plus	509,193,304	13.75%				
TCW Core Plus	430,050,458	12.76%				
<i>Bloomberg Aggregate Bond Index</i>	<i>N/A</i>	<i>11.57%</i>	<i>-1.39%</i>	<i>0.33%</i>	<i>1.47%</i>	<i>1.84%</i>
High Yield Fixed Income	\$414,306,292	15.13%	3.28%	4.93%	5.00%	5.42%
PGIM High Yield	393,244,822	15.34%	2.69%	5.06%	5.21%	5.56%
Crescent Direct Lending	21,061,470	11.09%	8.07%	7.23%		
<i>Bloomberg US HY BA/B 1% Cap</i>	<i>N/A</i>	<i>14.62%</i>	<i>2.78%</i>	<i>4.35%</i>	<i>4.57%</i>	<i>4.88%</i>
Structured Fixed Income	\$1,970,790,033	14.50%	3.96%	3.50%	3.94%	
TICP CLO Debt	720,952,815	12.81%	7.12%	7.34%	6.07%	
MetWest Securitized Opportunities	673,499,465	13.11%	2.99%	3.16%	3.55%	3.59%
Principal CMBS	564,409,759	20.16%	0.62%	1.58%	3.05%	3.32%
Napier Park ABS Income	6,668,968	-17.16%	-11.00%	-1.15%	1.57%	
Napier Park Strategic Loan LP	5,259,027	-25.11%	-6.17%	-2.84%	-0.19%	
<i>Bloomberg Aggregate Bond Index</i>	<i>N/A</i>	<i>11.57%</i>	<i>-1.39%</i>	<i>0.33%</i>	<i>1.47%</i>	<i>1.84%</i>
<i>Blended CMBS Benchmark</i>	<i>N/A</i>	<i>12.05%</i>	<i>-0.27%</i>	<i>1.20%</i>	<i>2.26%</i>	<i>2.84%</i>
Global Fixed Income	\$275,778,380	12.48%	1.15%	2.18%	2.73%	
T. Rowe Global Multi-Sector	275,778,380	12.48%	1.15%	2.24%	2.97%	
<i>Custom GMS Benchmark</i>	<i>N/A</i>	<i>12.93%</i>	<i>12.93%</i>	<i>1.79%</i>		

State of Michigan Retirement System

INTERNATIONAL EQUITY REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



Patrick M. Moraniec, CFA
Senior Investment Manager
International Equity Division

EXECUTIVE SUMMARY

Performance

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	26.5%	3.7%	8.3%	6.0%	6.2%
MSCI ACWI ex USA Returns	25.4%	4.1%	7.6%	5.4%	5.2%
Peer Median Returns	25.1%	4.3%	8.6%	6.3%	6.0%

*Source: State Street Universe greater than \$1 billion

- The IED portfolio outperformed the benchmark by 1.2% over the last twelve months.
- The division's outperformance was driven by the Stock Plus strategy which outperformed the MSCI ACWI ex USA index by 2.7% over the last twelve months.
- Stock Plus is a portable alpha strategy. The strategy typically seeks non-equity sources of return and "ports" those returns on to the IED core strategy of quality, value, momentum. Over the last twelve months the collateral portfolio was the primary driver of outperformance.

Asset Class Goals

- Construct a non-U.S. equity-focused portfolio to generate, on a consistent basis, ten-year returns that exceed the MSCI ACWI ex USA by 1.0%.
- Perform in the top half of the public plan peer universe percentile rankings.
- Advance people, processes, and systems to continuously improve investment decisions.

Strategy

- The division allocates capital with the intention of persistent exposure to the quality factor, momentum factor, and value factor.
- Persistent factor exposures create consistent, transparent, low-cost, efficient returns.
 - Current portfolio drivers of risk and return. The tracking error of the portfolio is approximately 2.3%, which is below the division's risk budget of 3.0%.
- Quarterly changes to International Equity Division allocation.
 - Rebalanced \$1.1 billion of equity swaps to match the division's long-term equity factor strategy.

Market Environment and Outlook

Market Environment

- International stock markets were up 25.4% over the last twelve months. Earnings per share (EPS) over the same period were up 6.1%. The differential has cause the multiples on the index to further expand above their historical averages.
- Emerging markets outperformed the MSCI ACWI ex USA by 0.7% over the last year. Developed markets underperformed the broader index by -0.4%.
- The U.S. dollar has lost -5.0% over the last year relative to a basket of developed market currencies.
- The Bloomberg Commodity Index lost -4.3% over the last year. Oil significantly declined last year down nearly -25.0%, gold increased 42.5%, and copper, a barometer for the economic cycle, gained 21.8% over the last twelve months.
- Global government interest rates (index-weighted) remained low by historical standards at 3.0%.

Outlook

- Commodities, based on broad indexes such as the Bloomberg Commodity Index, are trading near the 200-day moving average for the first time since last fall when the narrative that “inflation is subsiding” began.
- Higher commodity prices may nullify the market’s narrative that inflation will return to 2.0%, especially given the fact that the core and super core inflation measures remain above 4.0%. Central banks cannot print or control commodity prices or the housing supply, which are key drivers of inflation. Interest rates are indirect mechanisms the central banks utilize to achieve stable prices.
- Major central banks around the world are cutting monetary policy rates now including the Federal Reserve. This is inconsistent with prior guidance from central banks’ that the core inflation rate should heavily influence monetary policy.
- Over the next year, the IED expects short-term interest around the world to further decrease as central banks cut rates.
- The long end of the rates curve is less influenced by central bank policy. The IED expects the long end of the interest curves to move higher back towards peak rates as inflation remains stubbornly high, well above the neutral rate target. Evidence is already available in markets. Despite 75 basis points of interest rate cuts by the Federal Reserve, interest rates are higher now than before the cuts began. This indicates the markets have doubts about the Federal Reserve’s narratives regarding inflation.
- Commodity inflation appears set to return in 2025. Gold, a general barometer for inflation will continue to make new all-time highs throughout 2025 on its way to a price between \$3,500-\$4,000 over the next three years. The decline in the U.S. dollar will further exacerbate the return of inflation.

- Equity market returns will struggle during these next few years plagued by structurally higher long-term interest rates, higher starting valuation multiples, slowing economic growth, and increased bankruptcies in lower quality companies. These forces will be offset by accommodative central bank policies.
- Europe's sales per share year-over-year were up 3.8%. The earnings per share increased 3.7%. Forward-looking sales per share are expected to be up over the next 12 months, 3.1% and earnings are expected to increase 8.5%.
- Japan's sales per share increase year-over-year by 6.6% while earnings per share increased by 14.6%. Forward-looking sales per share growth is expected to increase by 3.9% and earnings are expected to grow by 10.9% over the next twelve months.
- Analysts' forward-looking one-year estimates for the MSCI ACWI ex USA index sales and earnings per share growth are 4.6% and 10.9% respectively.
- Go-forward returns for the MSCI ACWI ex USA index on an annualized basis are estimated at 8.4%. This rate is based on the current price and actual fundamentals over multiple periods to remove fundamental variability, and better estimate the earnings power of the index.
- A ten-year blended international government yield of 3.0% implies an international equity risk premium of 5.4%. The equity risk decreased by two-tenths of a percent as equity prices rose more than the change in interest rates during the quarter.

Conclusion

International stocks are expected to grow earnings per share by 10.9% in the next twelve months. The market on a forward basis trades at 13.6x price to earnings, which is below its twenty-three-year average of 16.0x but questions remain if earnings will be impacted by higher interest rates and inflation despite the narratives in financial markets. The annualized go-forward return of 8.4% is still a widespread relative to global risk-free rates.

SMRS

International Equity Strategies

9/30/24

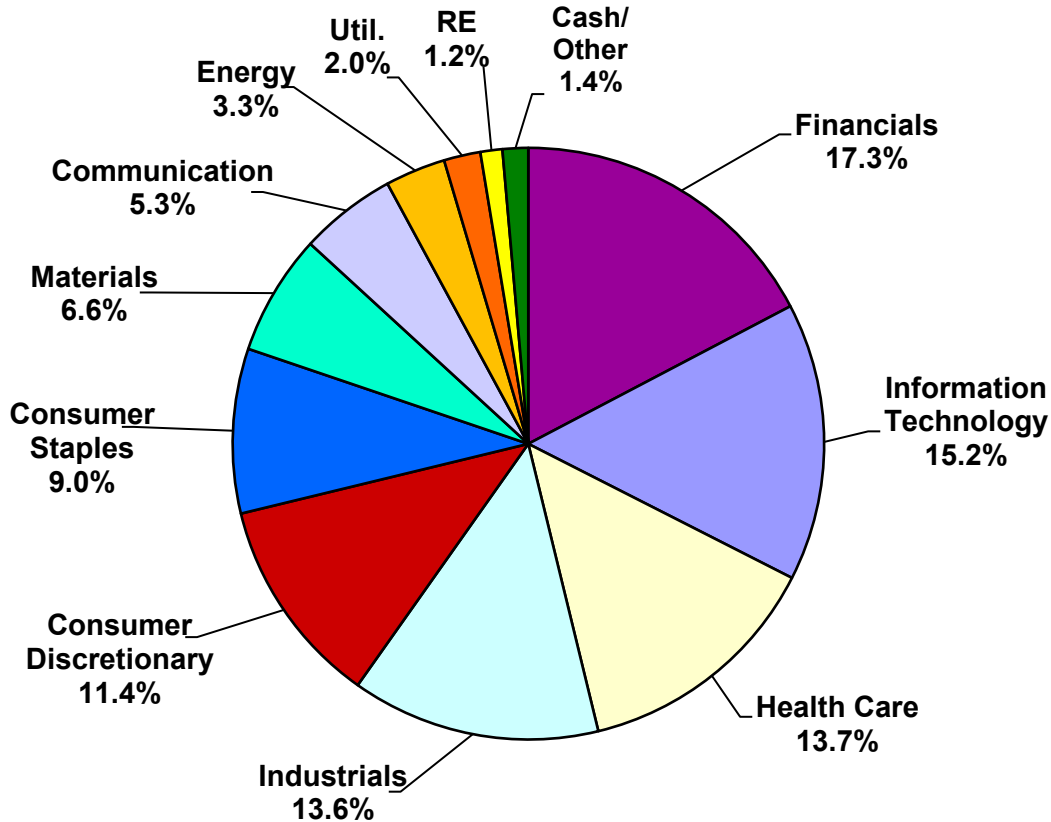
Markets	Amount	Total	% of Total
Active (\$ in Millions)			
BlackRock MSCI	\$2,681		
IED Quality Equity	1,206		
Martin Currie	397		
AQR	281		
Wellington	269		
LSV	215		
WCM	194		
UBS	167		
Brown	142		
Baillie Gifford	131		
Vontobel	123		
Morgan Stanley	110		
Baron	67		
Total Active		\$5,984	37.9%
Stock Plus			
Internal Swaps	\$4,060		
PIMCO	2,574		
Total Stock Plus		\$6,635	42.1%
Indexed			
SSGA	\$1,701		
BlackRock	1,458		
Total Indexed		\$3,159	20.0%
TOTAL		<u>\$15,777</u>	<u>100.0%</u>

*Includes cash balance of \$2.7M

SMRS

International Equity By Sector

9/30/24



Market Value in Millions				
9/30/24				
	Assets	Percent	Benchmark	Difference
Financials	\$2,723	17.3%	22.4%	-5.1%
Information Technology	2,406	15.2%	12.8%	2.4%
Health Care	2,155	13.7%	9.3%	4.4%
Industrials	2,140	13.6%	13.8%	-0.2%
Consumer Discretionary	1,793	11.4%	11.4%	0.0%
Consumer Staples	1,426	9.0%	7.3%	1.7%
Materials	1,046	6.6%	7.1%	-0.5%
Communication Services	839	5.3%	5.7%	-0.4%
Energy	523	3.3%	5.1%	-1.8%
Utilities	322	2.0%	3.2%	-1.2%
Real Estate	183	1.2%	1.9%	-0.7%
Total Investments	\$15,556	98.6%	100.0%	
Cash/Other	221	1.4%	0.0%	1.4%
Total	\$15,777	100.0%	100.0%	

Benchmark: MSCI ACWI ex USA

SMRS

International Equities

9/30/24

Date:	<u>9/30/24</u>	<u>6/30/24</u>	<u>3/30/24</u>	<u>12/31/23</u>
Assets (\$ in Millions):	\$15,777	\$14,805	\$14,555	\$13,708
Number of Securities:	2,495	2,567	2,597	2,630
Active Share:	36%	35%	36%	36%

Benchmark: MSCI ACWI ex USA

Description: The International Equities Composite represents all International Equity Division investments.

Portfolio Characteristics:	SMRS		MSCI ACWI ex USA	
	<u>LTM</u>	<u>Normalized</u>	<u>LTM</u>	<u>Normalized</u>
Return:				
Annualized Total Return	9.3%	9.4%	8.6%	8.4%
Sustainable Growth Rate	5.6%	6.4%	5.3%	5.8%
Dividend Yield	2.6%	2.3%	2.5%	2.2%
Buyback Yield	0.7%	0.4%	0.7%	0.4%
Collateral Yield	0.4%	0.4%	--	--
Risk:				
Beta	1.12	--	1.00	--
Volatility	16.7%	--	15.9%	--
Tracking Error	2.3%	--	0.0%	--
Information Ratio	0.3	0.5	--	--
Fundamental:				
Average Capitalization (\$ in Billions)	119.0	--	110.4	--
Price/Earnings	15.3	17.1	16.7	19.3
Price/Book	1.8	2.0	1.9	2.2
ROE	11.6%	11.5%	11.4%	11.8%

TOP TEN HOLDINGS

(\$ in Billions* - \$ in Millions**)

	<u>Portfolio Weight</u>	<u>Market Capitalization*</u>	<u>FY1 P/E</u>	<u>Market Value**</u>
Taiwan Semiconductor Manufacturing Co., Ltd.	2.5%	\$784.2	22.7	\$398.7
Novo Nordisk A/S Class B	1.7%	399.3	34.3	269.4
ASML Holding NV	1.7%	332.5	39.8	261.4
AstraZeneca PLC.	1.4%	241.0	19.0	227.2
Roche Holding Ltd. Dividend Right Cert.	1.4%	262.0	14.6	218.6
Tencent Holdings Ltd.	1.2%	534.8	18.5	195.8
Novartis AG	1.2%	252.2	15.4	190.8
Nestle S.A.	1.1%	263.9	17.8	170.9
Samsung Electronics Co., Ltd.	1.0%	312.8	11.2	157.3
Sanofi	<u>1.0%</u>	<u>145.7</u>	13.3	<u>153.0</u>
TOTAL	<u>14.2%</u>	<u>\$3,528.3</u>		<u>\$2,243.1</u>

International Equity Performance - Net of Fees

9/30/24

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>Incept.</u>	<u>Incept. Date</u>
Total International Equity	\$15,776,982,426	26.3%	3.5%	8.1%	5.8%	6.1%	1/1/04
MSCI ACWI ex USA		25.4%	4.1%	7.6%	5.4%	6.1%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	5.4%	6.0%	
Excess Return		0.9%	-0.6%	0.5%	0.4%	-0.1%	
Pct Rank vs. Lipper Int'l Multi-Cap Core		23	80	38	36	31	
Total International Active Strategy*	\$5,983,822,639	25.3%	1.6%	7.4%	5.0%	5.3%	5/1/05
MSCI ACWI ex USA		25.4%	4.1%	7.6%	5.4%	5.7%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	5.4%	5.6%	
Excess Return		-0.1%	-2.5%	-0.2%	-0.5%	-0.4%	
Pct Rank vs Lipper Int'l Multi-Cap Core		33	96	64	75	59	
BlackRock MSCI Systematic Return	\$2,680,944,693	24.7%	5.0%	9.6%	--	9.6%	12/1/18
MSCI ACWI ex USA		25.4%	4.1%	7.6%	--	7.6%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	--	7.7%	
Excess Return		-0.7%	0.8%	2.0%	--	2.0%	
Pct Rank vs Lipper Int'l Multi-Cap Core		46	38	8	--	3	
IED Quality Equity	\$1,205,770,144	25.8%	1.5%	--	--	7.9%	2/1/20
MSCI ACWI ex USA		25.4%	4.1%	--	--	6.8%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	--	--	7.0%	
Excess Return		0.4%	-2.7%	--	--	1.1%	
Pct Rank vs Lipper Int'l Multi-Cap Core		25	96	--	--	26	
Martin Currie International Long-Term	\$396,526,831	26.3%	-3.4%	7.6%	6.6%	8.2%	2/1/17
MSCI ACWI ex USA		25.4%	4.1%	7.6%	5.4%	7.1%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	5.4%	7.1%	
Excess Return		0.9%	-7.6%	0.0%	1.2%	1.1%	
Pct Rank vs Lipper Int'l Multi-Cap Core		23	100	61	9	9	
AQR Enhanced Value	\$280,691,840	21.9%	--	--	--	16.1%	N/A
MSCI ACWI ex USA		25.4%	--	--	--	12.7%	
Lipper International Large-Cap Core		24.1%	--	--	--	12.6%	
Excess Return		-3.5%	--	--	--	3.3%	
Pct Rank vs Lipper Int'l Large-Cap Core		79	--	--	--	7	
LSV Int'l Concentrated Value Fund	\$215,256,583	25.2%	--	--	--	19.7%	4/1/23
MSCI ACWI ex USA		25.4%	--	--	--	15.0%	
Lipper Int'l Lg-Cap Core		24.1%	--	--	--	14.7%	
Excess Return		-0.2%	--	--	--	4.7%	
Pct Rank vs Lipper Int'l Lg-Cap Core		34	--	--	--	1	
WCM Focused Growth International	\$193,577,231	28.9%	0.9%	--	--	0.9%	10/1/21
MSCI ACWI ex USA		25.4%	4.1%	--	--	4.1%	
Lipper Int'l Lg-Cap Core		24.1%	24.1%	--	--	4.6%	
Excess Return		3.5%	-3.2%	--	--	-3.2%	
Pct Rank vs Lipper Int'l Lg-Cap Core		6	97	--	--	97	
UBS China A Opportunity Fund	\$166,860,516	15.0%	-5.9%	--	--	1.1%	5/1/20
MSCI ChinaOn shore		13.9%	-7.9%	--	--	3.0%	
Lipper Emerging Markets		23.0%	23.0%	--	--	9.2%	
Excess Return		1.1%	2.0%	--	--	-1.8%	
Pct Rank vs. Lipper Emerging Markets		90	94	--	--	99	
Wellington Select China Equity	\$143,924,190	19.1%	-10.7%	4.0%	--	3.6%	9/1/19
MSCI ChinaOn shore		13.9%	-7.9%	4.0%	--	4.0%	
Lipper Emerging Markets		23.0%	0.1%	5.9%	--	6.2%	
Excess Return		5.2%	-2.9%	0.0%	--	-0.4%	
Pct Rank vs Lipper Emerging Markets		81	99	78	--	85	

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>Incept.</u>	<u>Incept. Date</u>
Brown Capital Int'l Small Company Fund	\$142,108,581	32.7%	--	--	--	5.6%	3/1/22
MSCI ACWI ex USD		25.4%	--	--	--	6.4%	
Lipper Int'l Lg-Cap Core		24.1%	--	--	--	7.0%	
Excess Return		7.4%	--	--	--	-0.8%	
Pct Rank vs. Lipper Int'l Lg-Cap Core		2	--	--	--	82	
Baillie Gifford Int'l Concentrated Growth	\$131,053,147	41.0%	--	--	--	-6.8%	11/1/21
S&P 1500 Value		25.4%	--	--	--	5.2%	
Style & Risk Adj Benchmark		24.1%	--	--	--	5.6%	
Excess Return		15.6%	--	--	--	-12.0%	
Pct. Rank vs Lipper Multi-Cap Value		1	--	--	--	100	
Wellington Int'l Contrarian Value Fund	\$124,583,800	23.3%	--	--	--	21.2%	5/1/23
MSCI ACWI ex USA		25.4%	--	--	--	19.0%	
Lipper Int'l Lg-Cap Core		24.1%	--	--	--	18.0%	
Excess Return		-2.1%	--	--	--	2.2%	
Pct Rank vs Lipper Int'l Lg-Cap Core		67	--	--	--	7	
Vontobel Int'l Quality Growth Fund	\$123,480,960	24.2%	--	--	--	10.1%	5/1/2022
S&P 1500 Growth		25.4%	--	--	--	9.7%	
Style & Risk Adj Benchmark		24.1%	--	--	--	10.5%	
Lipper Multi-Cap Growth		-1.2%	--	--	--	0.4%	
Pct. Rank vs Lipper Multi-Cap Growth		55	--	--	--	57	
Morgan Stanley Int'l Opportunity Fund	\$109,602,979	37.2%	--	--	--	-0.8%	2/1/22
MSCI ACWI ex USA		25.4%	--	--	--	5.4%	
Lipper International Large-Cap Core		24.1%	--	--	--	5.6%	
Excess Return		11.9%	--	--	--	-6.2%	
Pct Rank vs Lipper Int'l Lg-Cap Core		1	--	--	--	99	
Baron Global Advantage	\$67,232,245	30.8%	--	--	--	-9.3%	1/1/22
MSCI ACWI ex USA		25.4%	--	--	--	3.8%	
Lipper Int'l Lg-Cap Core		24.1%	--	--	--	4.1%	
Excess Return		5.5%	--	--	--	-13.2%	
Pct Rank vs Lipper Int'l Lg-Cap Core		3	--	--	--	100	
Total Int'l Stock Plus Strategy	\$6,634,648,425	27.7%	4.9%	8.9%	6.7%	7.7%	1/1/09
MSCI ACWI ex USA		25.4%	4.1%	7.6%	5.4%	7.3%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	5.4%	7.5%	
Excess Return		2.4%	0.8%	1.3%	1.3%	0.4%	
Pct Rank vs Lipper Int'l Multi-Cap Core		10	38	17	7	38	
Internal Stock Plus	\$4,060,424,450	28.1%	5.3%	8.4%	6.7%	6.6%	9/1/11
MSCI ACWI ex USA		25.4%	4.1%	7.6%	5.4%	5.7%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	5.4%	6.4%	
Excess Return		2.8%	1.1%	0.8%	1.3%	0.9%	
Pct Rank vs Lipper Int'l Multi-Cap Core		9	31	27	7	48	
PIMCO StocksPLUS	\$2,574,223,975	26.9%	4.3%	9.5%	--	8.8%	4/1/19
MSCI ACWI ex USA		25.4%	4.1%	7.6%	--	7.1%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	--	7.3%	
Excess Return		1.5%	0.2%	1.9%	--	1.7%	
Pct Rank vs Lipper Int'l Multi-Cap Core		15	51	8	--	10	
Total Int'l Index Strategy	\$3,158,511,362	25.2%	4.3%	7.8%	6.0%	7.5%	7/1/09
MSCI ACWI ex USA		25.4%	4.1%	7.6%	5.4%	6.6%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	5.4%	7.2%	
Excess Return		-0.1%	0.2%	0.2%	0.5%	0.9%	
Pct Rank vs Lipper Int'l Multi-Cap Core		34	52	46	28	29	
SSGA MSCI ACWI ex USA Index	\$1,700,936,951	25.2%	4.2%	7.8%	--	5.4%	11/1/17
MSCI ACWI ex USA		25.4%	4.1%	7.6%	--	5.2%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	--	5.3%	
Excess Return		-0.1%	0.1%	0.3%	--	0.2%	
Pct Rank vs Lipper Int'l Multi-Cap Core		34	54	45	--	46	

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>Incept.</u>	<u>Incept. Date</u>
Blackrock ACWI ex USA Index	\$1,457,574,410	25.3%	4.3%	7.8%	--	5.2%	3/1/18
MSCI ACWI ex USA		25.4%	4.1%	7.6%	--	5.2%	
Lipper Int'l Multi-Cap Core		24.1%	4.6%	7.7%	--	5.1%	
<i>Excess Return</i>		-0.1%	0.2%	0.2%	--	-0.1%	
<i>Pct Rank vs Lipper Int'l Multi-Cap Core</i>		33	51	46	--	51	

* The total includes the cash balance of closed funds, a total of \$2.2 million

State of Michigan Retirement System

DOMESTIC EQUITY REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



Jack A. Behar, CFA
Senior Investment Manager
Domestic Equity Division

EXECUTIVE SUMMARY

Performance

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	40.6%	10.8%	14.9%	13.9%	12.8%
S&P 1500	35.5%	11.5%	15.6%	14.1%	13.1%
Peer Median Return	30.4%	7.5%	12.3%	11.3%	10.0%

*State Street Universe greater than \$1 billion

- For the year ended September 30, 2024, the Domestic Equity Division (DED) outperformed its peer group over all time periods, including by 1020 bps over the past twelve months. This performance beat the median larger sized pension fund equity portfolio by nearly a cumulative 32%, or 280 bps annualized, over the past decade.
- DED also outperformed the S&P 1500 by 510 bps over the past year while underperforming the market over other time periods.
- The division continued to benefit from its investments in technology related communication services companies, as well as from investments in the likes of United Health Group, Nvidia, American Express and Apollo Global Management.
- Performance was especially strong across our internal manager lineup, with all of our six portfolio managers outperforming the S&P 1500. As of September 30, 2024, our internal management group is outperforming the S&P 1500 over one, three, five and seven years.
- On the external manager side:
 - LA Capital had a strong year, continuing its run of outstanding performance, beating both the S&P 1500 and its S&P Growth benchmark. Over the past decade LA Capital has compounded returns at 14.5%, net of fees, with an approach that is both different and diversifying to the division.
 - Bivium Capital, one of our emerging manager of managers, beat the S&P 1500 by 300 bps.
 - Patient Capital beat its value benchmark and small cap benchmarks by nearly 7% while also outperforming the S&P 1500 by nearly 200 bps despite its investing style being out of favor.
 - Michigan based Ancora Small Cap beat its benchmark by close to 500 bps.
 - Other managers in our lineup underperformed, primarily due to investments in younger, smaller companies, defensive positioning (including holds high levels of cash) and company specific events.

Asset Class Goal

To provide the SMRS with long-term domestic equity market returns or better, by investing in a diversified and attractively valued portfolio of companies at an index fund-like cost.

Strategy Update

- The Domestic Equity Division's portfolio trades at a slight discount to the S&P 1500 on this year's earnings, while being more profitable and growing faster than the market. This means that it has the capacity to pay more dividends than the market, while also growing those payouts faster.
- While it's possible that the Fed's aggressive rate hikes over the past few years could send the economy into recession, we believe the market is nevertheless poised to return greater than 8% over the next decade from current levels.
- DED is overweight technology related communication services companies, healthcare and financials.
- The beta of the division remains roughly 1.10. This will provide a tailwind to returns in an up market, and a headwind in the event of recession. Over time and most often the market appreciates alongside economic growth.

Market Environment and Outlook

- At ~23x forward earnings, equity markets trade at an earnings yield (earnings/price) of 4.3%, roughly in line with 10-year treasury bonds.
- Historically, stocks have traded at earnings yield approximately 125 bps higher than bonds, suggesting that stocks are expensive relative to bonds.
 - One could also argue that the market deserves to trade at a higher multiple than it has historically given the benchmark's larger concentration of dominant and fast-growing technology companies relative to the past.
- Over time we calculate the market's go forward return at roughly 8.2% - below its historical average of 10% - driven by a dividend yield of 1.3% and dividend per share growth of 6.9%.
 - Dividends per share driven by capital reinvestment rate of 5.0% and further 1.9% growth via share buybacks.

SMRS

Domestic Equity Strategies

9/30/24

Markets	Amount	Total	% of Total
Internal Indexed (\$ in Millions)			
Indexed Portfolios	\$15,396		
Total Indexed		\$15,396	65.2%
Internal Active			
Active Portfolios	\$5,884		
Total Internal Active		\$5,884	24.9%
External Active			
Martin Currie US LT Unconstrained	\$472		
Los Angeles Capital	318		
ARK Investments	265		
Bivium Capital	214		
Clarkston Capital Partners	208		
Seizert Capital Partners	202		
Patient Capital	200		
Attucks Asset Management	187		
Ancora	136		
Managed Asset Portfolios	123		
Total External Active		\$2,325	9.9%

Total Domestic Equity

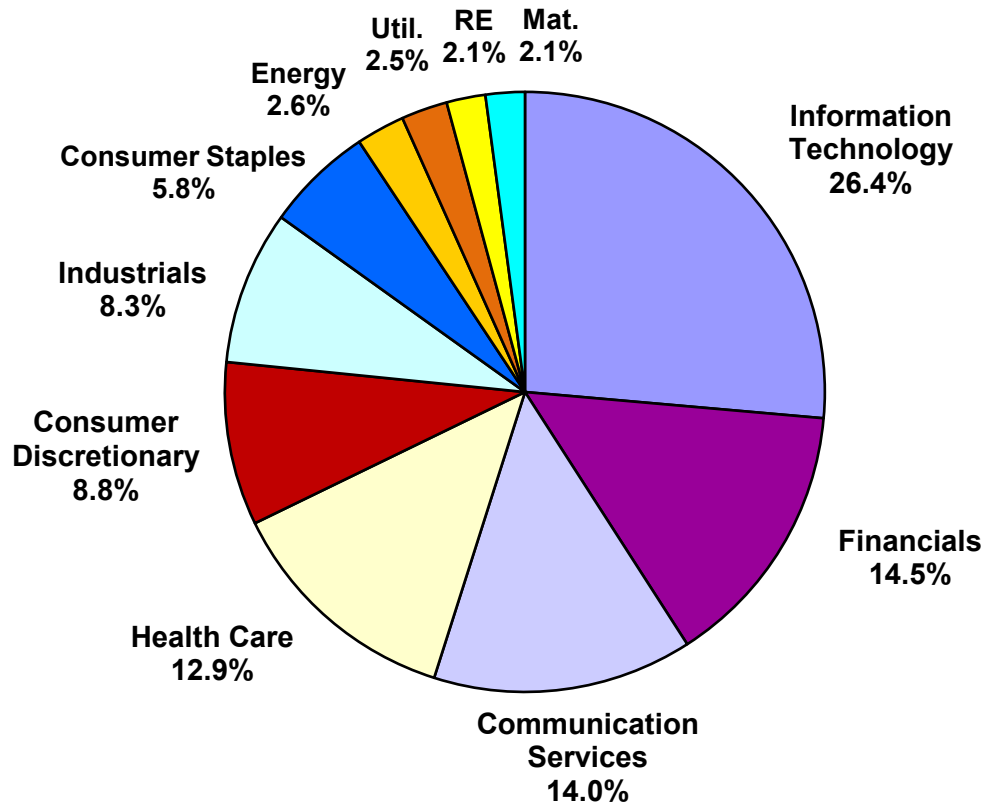
\$23,605

100.0%

SMRS

Domestic Equity By Sector

9/30/24



Market Value in Millions

9/30/24

	Assets	Percent	Benchmark	Difference
Information Technology	\$6,226	26.4%	30.0%	-3.6%
Financials	3,423	14.5%	13.3%	1.2%
Communication Services	3,296	14.0%	8.3%	5.7%
Health Care	3,057	12.9%	11.5%	1.4%
Consumer Discretionary	2,078	8.8%	10.5%	-1.7%
Industrials	1,949	8.3%	9.5%	-1.2%
Consumer Staples	1,380	5.8%	5.7%	0.1%
Energy	613	2.6%	3.4%	-0.8%
Utilities	601	2.5%	2.5%	0.0%
Real Estate	495	2.1%	2.8%	-0.7%
Materials	487	2.1%	2.5%	-0.4%
Total	\$23,605	100.0%	100.0%	

Benchmark: S&P 1500

SMRS

Domestic Equities Composite

9/30/24

	<u>9/30/24</u>	<u>6/30/24</u>	<u>3/31/24</u>	<u>12/31/23</u>
Assets (\$ in Millions):	\$23,605	\$22,357	\$22,527	\$19,730
Number of Securities:	1,918	1,959	2,043	1,696
Active Share:	30%	31%	35%	27%

Description: The Domestic Equities Composite seeks to deliver excess returns through a blend of index investing and active management with value-added, but diverse strategies. While the goal is for most managers to outperform in the long run, the composite is designed such that they do so during differing parts of the business cycle.

	<u>SMRS</u>	<u>S&P 1500</u>
Characteristics:		
Market Cap. (\$ in Billions)	\$993.3	\$920.6
FY1 P/E	22.5	23.1
P/E upside to S&P 1500	3.0%	0.0
Return on Equity	28.1%	19.9%
Risk Metrics		
Beta	1.10	1.00
Tracking Error	2.8%	0.0%
Projected Returns		
Dividend Yield	1.5%	1.3%
Buyback Yield	2.1%	2.0%
Reinvestment Rate	<u>5.6%</u>	<u>4.9%</u>
Projected Investment Return	9.2%	8.2%

TOP TEN EXPOSURES - Domestic Equities vs S&P 1500

<u>Domestic Equity Portfolio</u>		<u>S&P 1500</u>	
<u>Company Name</u>	<u>Portfolio Weight</u>	<u>Company Name</u>	<u>Market Weight</u>
Meta Platforms Inc. Class A	6.5%	Apple Inc.	6.7%
NVIDIA Corporation	6.3%	Microsoft Corporation	6.0%
Apple Inc.	5.3%	NVIDIA Corporation	5.6%
Microsoft Corporation	5.3%	Amazon.com Inc.	3.3%
Cash and Equivalents	4.6%	Meta Platforms Inc. Class A	2.4%
Alphabet Inc. Class A	3.1%	Alphabet Inc. Class A	1.8%
Amazon.com Inc.	2.9%	Berkshire Hathaway Inc. Cl. B	1.6%
UnitedHealth Group Incorporated	2.7%	Alphabet Inc. Class C	1.5%
AT&T Inc.	2.0%	Broadcom Inc.	1.5%
American Express Company	<u>1.9%</u>	Tesla, Inc.	<u>1.4%</u>
TOTAL	<u>40.5%</u>	TOTAL	<u>31.9%</u>

Domestic Equity Performance - Net of Fees

9/30/24

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>Incept.</u>	<u>Incept. Date</u>
SMRS S&P 500 Index	\$14,581,993,256	36.3%	11.9%	15.9%	14.5%	--	N/A
S&P 500		36.4%	11.9%	16.0%	14.5%	--	
Style & Risk Adj Benchmark		36.4%	11.9%	16.0%	14.5%	--	
Lipper Lg-Cap Core		34.4%	10.6%	14.9%	13.5%	--	
Excess Return		0.0%	0.0%	0.0%	0.0%	--	
Alpha		-0.1%	0.0%	0.0%	0.0%	--	
Pct. Rank vs Lipper Lg-Cap Core		35	30	33	28	--	
SMRS Large-Cap Core	\$2,285,443,633	92.5%	34.0%	30.3%	24.7%	14.4%	8/31/07
S&P 500		36.4%	11.9%	16.0%	14.5%	10.5%	
Style & Risk Adj Benchmark		32.2%	13.6%	21.1%	19.0%	12.4%	
Lipper Large-Cap Core		34.4%	10.6%	14.9%	13.5%	9.9%	
Excess Return		56.1%	22.1%	14.4%	10.2%	3.9%	
Alpha		60.3%	20.4%	9.2%	5.7%	2.0%	
Pct Rank vs Lipper Lg-Cap Core		1	1	1	1	1	
SMRS All-Cap Garp	\$1,006,149,857	41.8%	6.3%	9.0%	8.7%	11.2%	4/30/11
S&P 1500 Super Composite		35.5%	11.5%	15.6%	14.1%	13.4%	
Style & Risk Adj Benchmark		47.9%	13.5%	16.9%	15.3%	14.2%	
Lipper Multi-Cap Core		31.0%	8.3%	13.1%	11.6%	11.4%	
Excess Return		6.2%	-5.2%	-6.6%	-5.4%	-2.2%	
Alpha		-6.1%	-7.2%	-7.9%	-6.6%	-2.9%	
Pct. Rank vs Lipper Multi-Cap Core		3	78	91	89	62	
SMRS Mid-Cap Index	\$814,041,604	27.0%	7.6%	11.8%	10.1%	0.0%	N/A
S&P 400		26.8%	7.5%	11.8%	10.0%	0.0%	
Style & Risk Adj Benchmark		26.7%	7.5%	11.7%	9.9%	0.0%	
Lipper Mid-Cap Core		27.1%	7.3%	11.1%	9.5%	0.0%	
Excess Return		0.2%	0.1%	0.0%	0.1%	0.0%	
Alpha		0.3%	0.1%	0.1%	0.1%	0.0%	
Pct. Rank vs Lipper Mid-Cap Core		56	48	32	38	0	
Value, Quality, Momentum Composite	\$795,150,700	35.7%	8.3%	--	--	13.3%	10/1/20
S&P 1500		35.5%	11.5%	--	--	16.1%	
Style & Risk Adj Benchmark		37.5%	11.4%	--	--	16.1%	
Lipper Multi-Cap Core		31.0%	8.3%	--	--	13.7%	
Excess Return		0.1%	-3.1%	--	--	-2.8%	
Alpha		-1.8%	-3.0%	--	--	-2.8%	
Pct. Rank vs Lipper Multi-Cap Core		20	59	--	--	64	
SMRS Large-Cap Growth	\$776,382,578	38.9%	8.8%	17.4%	16.5%	11.9%	5/31/05
S&P 500 Growth		41.1%	10.1%	17.6%	16.4%	12.1%	
Style & Risk Adj Benchmark		44.4%	9.6%	16.5%	15.9%	12.0%	
Lipper Large-Cap Growth		40.7%	8.8%	17.2%	16.0%	11.7%	
Excess Return		-2.2%	-1.3%	-0.1%	0.1%	-0.3%	
Alpha		-5.5%	-0.8%	0.9%	0.6%	-0.1%	
Pct Rank vs Lipper Lg-Cap Growth		68	59	47	36	39	
Large-Cap Consistent Growth	\$746,468,886	49.8%	5.6%	13.2%	15.1%	13.3%	3/1/15
S&P 500		36.4%	11.9%	16.0%	14.5%	13.1%	
Style & Risk Adj Benchmark		63.0%	10.9%	19.4%	17.4%	15.5%	
Lipper Large-Cap Core		34.4%	10.6%	14.9%	13.5%	12.1%	
Excess Return		13.4%	-6.3%	-2.8%	0.6%	0.2%	
Alpha		-13.2%	-5.3%	-6.2%	-2.3%	-2.2%	
Pct. Rank vs Lipper Lg-Cap Core		1	98	80	14	14	

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>Incept.</u>	<u>Incept. Date</u>
Martin Currie	\$472,203,451	31.4%	1.4%	--	--	7.5%	11/1/20
S&P 1500 Growth		39.9%	9.7%	--	--	15.5%	
Style & Risk Adj Benchmark		45.8%	10.8%	--	--	17.7%	
Lipper Multi-Cap Growth		36.2%	2.3%	--	--	8.9%	
Excess Return		-8.5%	-8.3%	--	--	-8.0%	
Alpha		-14.4%	-9.4%	--	--	-10.2%	
Pct. Rank vs Lipper Multi-Cap Growth		73	66	--	--	69	
LA Capital All-Cap Growth	\$318,149,632	40.2%	11.8%	15.4%	15.1%	12.9%	5/31/05
S&P 1500 Growth		39.9%	9.7%	17.1%	15.9%	12.0%	
Style & Risk Adj Benchmark		38.0%	9.3%	16.2%	15.0%	12.1%	
Lipper Multi-Cap Growth		36.2%	2.3%	13.8%	13.3%	10.8%	
Excess Return		0.3%	2.1%	-1.6%	-0.8%	0.9%	
Alpha		2.2%	2.5%	-0.8%	0.2%	0.8%	
Pct. Rank vs Lipper Multi-Cap Growth		32	4	35	32	9	
Ark Investments	\$265,103,500	22.3%	-26.7%	-2.6%	1.7%	8.7%	3/1/16
S&P 1500 Growth		39.9%	9.7%	17.1%	15.9%	16.9%	
Style & Risk Adj Benchmark		105.6%	18.5%	14.1%	12.0%	26.0%	
Lipper Multi-Cap Growth		36.2%	2.3%	13.8%	13.3%	14.8%	
Excess Return		-17.6%	-36.4%	-19.7%	-14.1%	-8.2%	
Alpha		-83.3%	-45.2%	-16.7%	-10.2%	-17.4%	
Pct. Rank vs Lipper Multi-Cap Growth		96	100	100	100	96	
Bivium Capital Partners	\$214,279,801	33.5%	8.5%	10.2%	9.0%	7.4%	11/30/07
S&P 1500 Value		30.5%	12.6%	13.0%	11.4%	8.1%	
Style & Risk Adj Benchmark		38.0%	11.2%	15.2%	14.0%	10.3%	
Lipper Multi-Cap Value		26.6%	9.2%	11.3%	9.5%	7.1%	
Excess Return		3.0%	-4.1%	-2.8%	-2.4%	-0.7%	
Alpha		-4.5%	-2.7%	-5.0%	-5.0%	-2.9%	
Pct. Rank vs Lipper Multi-Cap Value		5	71	73	65	41	
Clarkston Capital Small/Mid-Cap	\$208,008,955	18.0%	6.4%	10.2%	9.4%	10.5%	1/1/14
S&P 400		26.6%	6.4%	11.3%	9.5%	9.6%	
Style & Risk Adj Benchmark		30.6%	7.3%	9.1%	7.3%	7.2%	
Lipper Mid-Cap Core		27.1%	7.3%	11.1%	9.5%	8.7%	
Excess Return		-8.6%	-0.1%	-1.2%	-0.1%	0.9%	
Alpha		-12.6%	-0.9%	1.1%	2.1%	3.3%	
Pct. Rank vs Lipper Mid-Cap Core		97	67	74	58	6	
Seizert Capital Partners	\$201,964,168	27.7%	9.3%	14.4%	11.8%	13.3%	11/30/09
S&P 1500 Value		30.5%	12.6%	13.0%	11.4%	12.5%	
Style & Risk Adj Benchmark		21.6%	7.5%	9.7%	11.3%	12.5%	
Lipper Multi-Cap Value		26.6%	9.2%	11.3%	9.5%	10.9%	
Excess Return		-2.8%	-3.3%	1.4%	0.4%	0.9%	
Alpha		6.2%	1.8%	4.7%	0.5%	0.8%	
Pct. Rank vs Lipper Multi-Cap Value		26	48	9	10	4	
Patient Capital	\$200,261,631	37.3%	-0.8%	--	--	-0.8%	10/1/21
S&P 1500 Value		30.5%	12.6%	--	--	12.6%	
Style & Risk Adjusted Benchmark		29.2%	8.2%	--	--	8.2%	
Lipper Multi-Cap Value		26.6%	9.2%	--	--	9.2%	
Excess Return		6.8%	-13.4%	--	--	-13.4%	
Alpha		8.1%	-9.0%	--	--	-9.0%	
Pct. Rank vs Lipper Multi-Cap Value		1	100	--	--	100	
Attucks Asset Management	\$186,776,835	29.4%	10.4%	11.2%	10.3%	7.9%	11/30/07
S&P 1500		35.5%	11.5%	15.6%	14.1%	10.2%	
Style & Risk Adj Benchmark		28.3%	12.5%	12.7%	11.0%	7.6%	
Lipper Multi-Cap Core		31.0%	8.3%	13.1%	11.6%	8.5%	
Excess Return		-6.2%	-1.1%	-4.4%	-3.8%	-2.2%	
Alpha		1.1%	-2.1%	-1.6%	-0.7%	0.3%	
Pct. Rank vs Lipper Multi-Cap Core		64	28	77	78	73	

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>Incept.</u>	<u>Incept. Date</u>
Disruptive Innovation Momentum	\$173,986,550	49.7%	-18.3%	--	--	-3.4%	9/1/20
MSCI Momentum Index		46.0%	6.3%	--	--	8.3%	
Style & Risk Adj Benchmark		73.1%	12.5%	--	--	15.6%	
Lipper Multi-Cap Growth		36.2%	2.3%	--	--	7.4%	
<i>Excess Return</i>		3.7%	-24.6%	--	--	-11.6%	
<i>Alpha</i>		-23.4%	-30.8%	--	--	-19.0%	
<i>Pct. Rank vs Lipper Multi-Cap Growth</i>		5	100	--	--	93	
Ancora	\$136,447,257	31.3%	8.6%	12.8%	9.8%	9.8%	10/1/17
S&P 1000		26.6%	6.4%	11.3%	9.5%	9.5%	
Style & Risk Adj. Benchmark		25.1%	6.4%	10.8%	8.8%	8.8%	
Lipper Mid-Cap Core		27.1%	7.3%	11.1%	9.5%	9.5%	
<i>Excess Return</i>		4.7%	2.2%	1.5%	0.3%	0.3%	
<i>Alpha</i>		6.1%	2.3%	2.1%	0.9%	0.9%	
<i>Pct. Rank vs Lipper Mid-Cap Core</i>		14	34	14	46	46	
Managed Asset Portfolios	\$123,172,146	23.1%	7.6%	9.9%	9.8%	11.5%	2/29/16
S&P 1500 Value		30.5%	12.6%	13.0%	11.4%	12.9%	
Style & Risk Adj. Benchmark		22.3%	11.4%	10.9%	9.2%	10.5%	
Lipper Multi-Cap Value		26.6%	9.2%	11.3%	9.5%	11.2%	
<i>Excess Return</i>		-7.4%	-5.0%	-3.1%	-1.5%	-1.4%	
<i>Alpha</i>		0.8%	-3.8%	-1.0%	0.6%	1.1%	
<i>Pct. Rank vs Lipper Multi-Cap Value</i>		82	78	78	44	44	
All-Cap Core	\$69,929,692	40.5%	--	--	--	20.6%	5/1/22
S&P 1500		35.5%	--	--	--	16.1%	
Style & Risk Adj. Benchmark		46.7%	--	--	--	19.2%	
Lipper Multi-Cap Core		31.0%	--	--	--	13.1%	
<i>Excess Return</i>		5.0%	--	--	--	4.5%	
<i>Alpha</i>		-6.2%	--	--	--	1.4%	
<i>Pct. Rank vs Lipper Multi-Cap Core</i>		4	--	--	--	1	

State of Michigan Retirement System

ABSOLUTE RETURN REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



Daniel J. Quigley
Senior Investment Manager
Real, Opportunistic, and Absolute Return Division

EXECUTIVE SUMMARY

Performance

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Absolute Return	12.2%	8.2%	8.6%	7.5%	6.1%
HFRI FOF Conservative	6.6%	3.7%	5.1%	4.4%	3.6%

- The value of the Absolute Return portfolio is \$11.0 billion with a one-year return of 12.2%. The portfolio's performance was positive for both Private Credit and Hedge Funds.
- A contributor to Private Credit's positive performance this year has been the floating rate nature of the underlying investments, which allowed them to avoid price declines that were driven by rising interest rates during the Federal Reserve tightening cycle. Senior corporate credit, mortgage credit, and housing related exposures were all positive drivers of performance.
- In the Hedge Fund portfolio, core managers in the Credit and Multi-Strategy sleeves of the portfolio were the primary drivers of positive returns. Macro and Quant strategies exhibited outperformance versus our benchmark. Equity strategies were positive but underperformed.
- Hedge Fund Credit strategies focused on Special Situations and Mortgage Credit investments outperformed as managers were able to take advantage of market dislocations. This credit outperformance was primarily driven by mortgage servicing and specialty finance strategies.
- In total, Hedge Fund and Private Credit strategies have taken advantage of higher market volatility and higher interest rates to generate strong risk adjusted returns.

Strategy Update

- The objective of the Absolute Return portfolio is to diversify the total plans' holdings, targeting returns above investment-grade fixed income with lower volatility than the equity portfolio. The portfolio utilizes a diverse mix of managers that invest both long and short to target specific exposures and seek to hedge out unwanted risk.
- Commitments closed during the quarter include:
 - \$125 million in Sixth Street Specialty Lending Europe III (USD Feeder), LP, a drawdown investment partnership managed by SSSLE III Management, LLC. The fund will focus on directly originating European middle-market credit opportunities with a thematic approach across sectors and countries.
 - \$100 million in Blackstone Capital Opportunities Fund V, LP, a closed-end investment vehicle managed by Blackstone Capital Opportunities Associates V,

LP. The fund will focus on providing private credit solutions on an opportunistic basis across a wide array of investment structures and collateral types.

- In terms of allocation priorities, we expect to maintain the current allocation to hedge funds and will review investments on a relative value basis. We will also review credit strategies on an opportunistic basis.

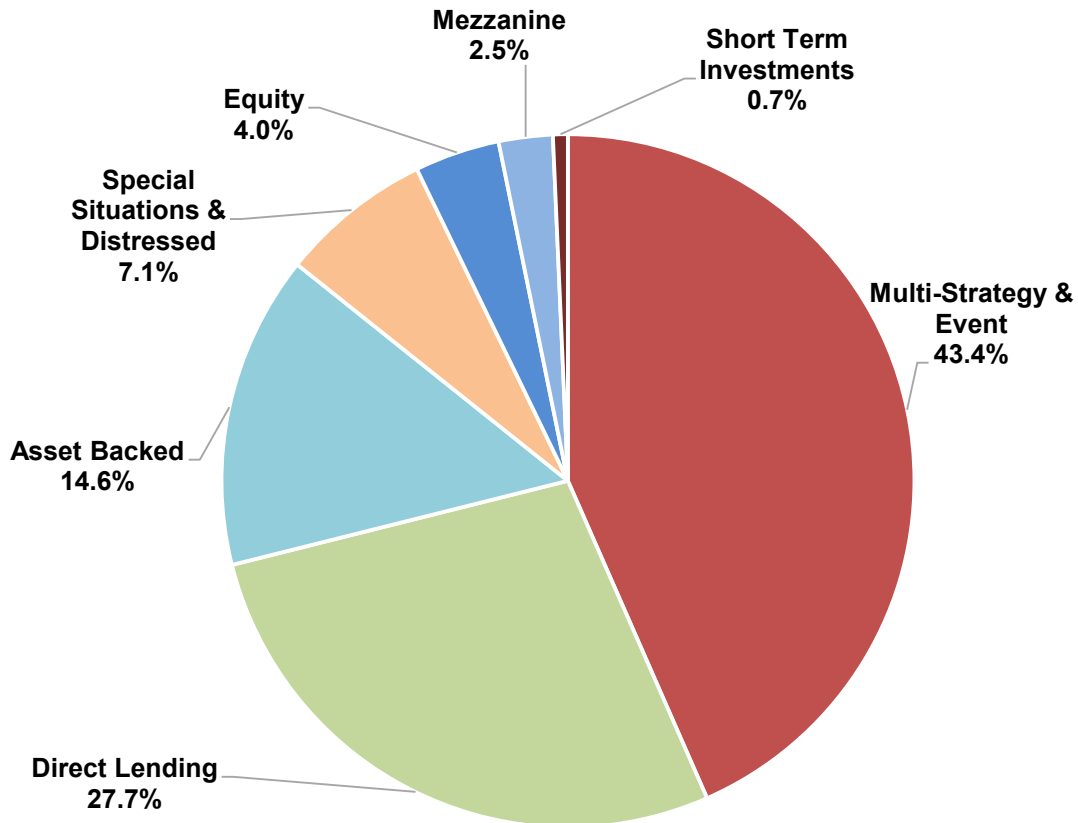
Overall, we will continue to focus on opportunities that seek to provide diversification, protect the downside, and deliver absolute return.

SMRS

Absolute Return

9/30/24

Investments By Strategy



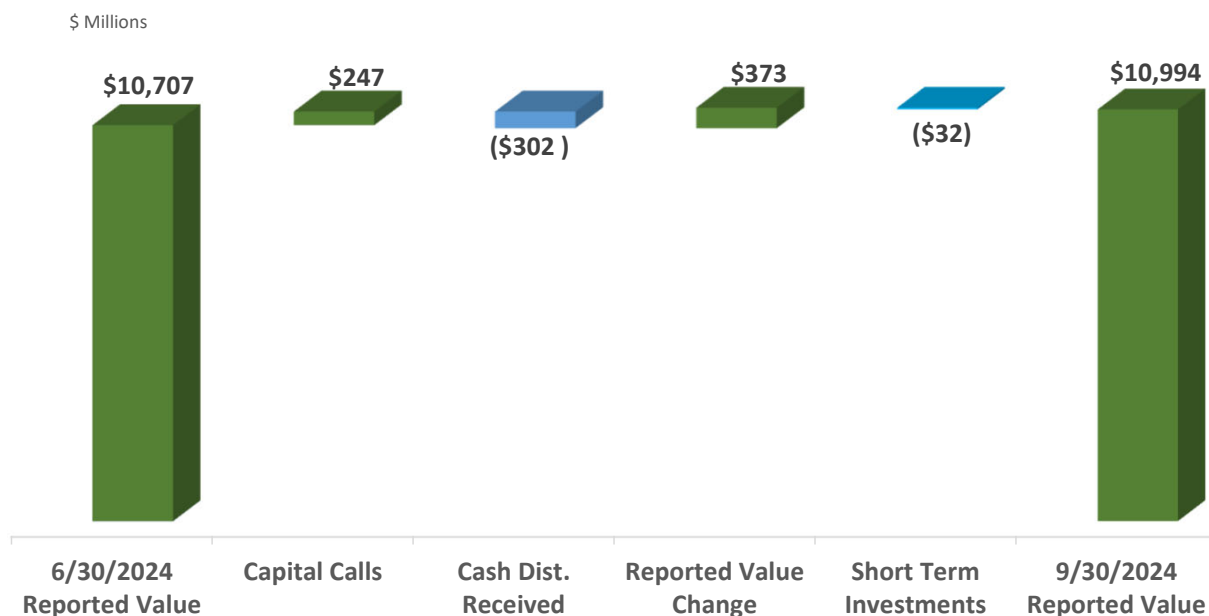
Market Value in Millions

	9/30/24
Multi-Strategy & Event	\$ 4,774
Direct Lending	3,042
Asset Backed	1,610
Special Situations & Distressed	778
Equity	437
Mezzanine	277
Short Term Investments	76
Total Investments	\$ 10,994

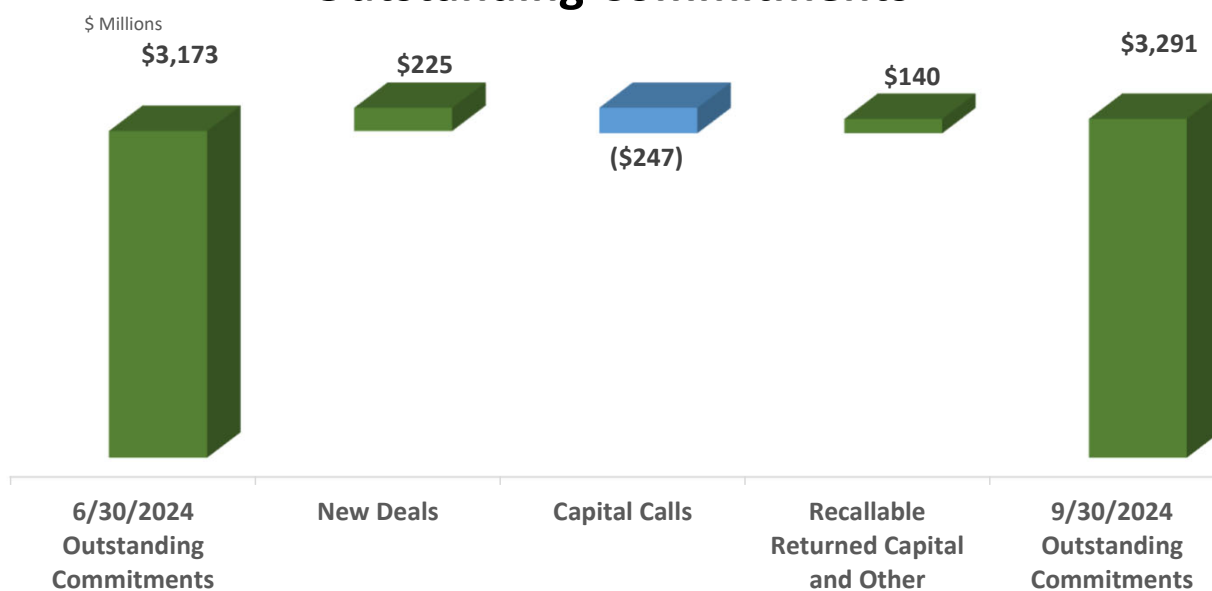
SMRS Absolute Return

9/30/24

Invested Commitments



Outstanding Commitments



SMRS

Absolute Return

9/30/24

Net Market Value by Entity

	Net Market Value	Unfunded Commitment
Acacia Co-Invest, LP	\$ 333,665,337	\$ 0
AG Essential Housing, LP	3,982,683	58,000,000
AMG Comvest Senior Lending Feeder Fund II, LP	18,483,982	132,000,000
Angelo Gordon Credit Solutions Fund II, LP	77,349,614	21,458,905
Angelo Gordon Credit Solutions Fund, LP	42,608,769	4,325,340
Apollo Accord+ II Fund, LP	0	300,000,000
Apollo Accord+, LP	291,381,203	57,995,601
Apollo MidCap FinCo Holdings, LTD	365,182,726	0
Apollo SCRF IV, LP	246,178	147,742,521
Blackstone Capital Opportunities Fund IV Co-Invest, LP	28,450,887	4,870,955
Blackstone Capital Opportunities Fund IV, LP	90,040,144	70,025,259
** Blackstone Capital Opportunities Fund V, LP	0	100,000,000
Blue Range Holdings, LLC	650,053,131	210,977,529
Castle Credit SMRS Holdings, LLC Series A	149,238,891	71,382,271
Castle Credit SMRS Holdings, LLC Series C	101,739,146	6,127,256
Cerberus Manitou Residential Loan Fund, LP	309,229,219	96,214,615
Cerberus SMRS Partners, LP	8,708,881	23,304,657
EnTrust White Pine Partners, LP	1,161,016	0
Farallon Special Situations Fund II, LP	78,177,022	26,383,440
Fortress FCO MA MI, LP	104,538,309	24,123,189
Fortress MSR Opportunities Fund I A, LP	0	15,662,214
GSO Capital Opportunities Fund III, LP	19,842,519	26,504,941
GSO COF III Co-Investment Fund, LP	2,624,326	13,471,376
HarbourVest Credit Opportunities Fund II, LP	71,656,443	2,250,000
HarbourVest Credit Opportunities Fund III, LP	0	75,000,000
Harbourvest Direct Lending Fund, LP	91,552,697	12,500,000
HarbourVest Direct Lending II, LP	12,000,000	48,000,000
HarbourVest Partners Mezzanine Income Fund, LP	22,530,585	16,310,000
HPS Mezzanine Partners 2019, LP	42,289,034	9,311,568
HPS Red Cedar Fund, LP	314,810,720	122,435,575
Irradiant CLO Partners Fund II, LP (fka Kayne CLO Partners FD II)	53,933,431	21,183,140
Irradiant CLO Partners III, LP	76,640,161	34,686,318
Irradiant Solutions Fund II, LP	234,892,749	169,273,582
Irradiant Solutions Fund, LP (fka Kayne)	108,047,723	131,994,862
Jana Strategic Investment Fund IV, LP	103,270,605	381,103
Kayne Anderson BDC, LLC (KABDC)	109,688,158	0
Lone Star Residential Mortgage Fund III, LP	46,554,774	50,909,555
Marathon CLO Equity Fund, LP	7,862,968	0
Monument Park, LLC	84,699,450	0
MP Securitized Credit Fund, LP	466,767	0
Nuveen SMRS, LLC	0	100,000,000

	Net Market Value	Unfunded Commitment
Oaktree Opportunities Fund VIII, LP	117,734	0
Owl Rock Technology Finance Corp II (ORTF II), LLC	104,898,836	96,287,421
Owl Rock Technology Holdings II (ORTH II)	1,310,294	22,967,390
PIMCO Aviation Co-Invest Vehicle Onshore Feeder, LP	17,889,817	34,647,702
PIMCO Private Income Fund Onshore Feeder, LLC	94,516,887	0
Redding Ridge Holdings, LP	138,476,214	17,163,814
Sixth Street CLO Equity Fund IV, LP	25,056,947	76,155,418
Sixth Street Lending Partners, LP	232,664,515	314,412,053
Sixth Street Opportunities Partners IV (A), LP	72,882,305	13,573,956
Sixth Street Opportunities Partners V (A), LP	95,491,039	35,367,827
Sixth Street Specialty Lending Europe II (USD Feeder), LP	73,082,366	72,219,347
** Sixth Street Specialty Lending Europe III (USD Feeder), LP	0	125,000,000
SJC DLF IV 10 YEAR-J, LLC	12,067,558	5,000,000
SJC Onshore Direct Lending Fund IV-SMRS, LP	323,541,446	119,405,949
SMRS-HVDL, LLC	98,466,389	12,700,000
Suttons Bay Fund, LP	546,191,504	66,501,862
* Tahquamenon Fund, LP	4,772,389,475	0
TCW/Crescent Mezzanine Partners V, LP	27,891	12,395,466
TICP CLO Partners II, LP	25,335,128	402,872
TICP CLO Partners III, LP	68,176,380	4,411,277
Turning Rock Fund I, LP	31,778,485	16,319,293
Turning Rock Fund II, LP	69,403,481	6,932,538
Turning Rock Fund III, LP	56,741,086	33,847,680
* Visium Balanced Fund, LP	2	0
Total Absolute Return Strategies	\$ 10,918,106,027	\$ 3,290,517,638
Short-Term Investments & Other	76,119,068	0
Grand Total	\$ 10,994,225,095	\$ 3,290,517,638

* Fund of Funds

** New Commitments made during quarter reported

State of Michigan Retirement System

PRIVATE EQUITY REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



Peter A. Woodford
Senior Investment Manager
Private Equity Division

EXECUTIVE SUMMARY

Performance

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	5.2%	4.7%	13.7%	14.1%	13.0%
PE Benchmark Returns	28.2%	13.3%	18.5%	17.7%	16.2%
Peer Median Returns	6.8%	6.7%	10.0%	9.6%	9.3%

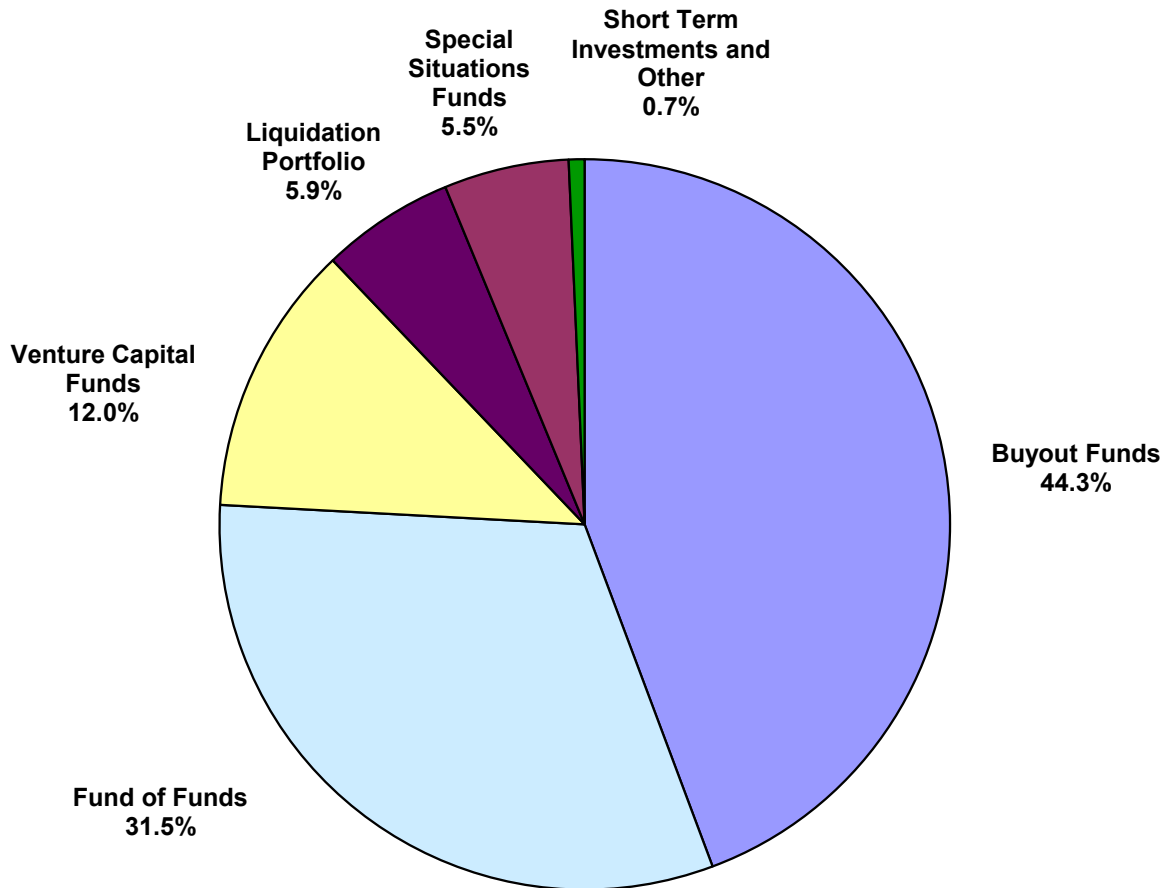
- It is not unusual for private equity returns to lag the public benchmark returns during periods of expansion and lead the public benchmark during periods of contraction. Over the last 10 years, the Private Equity Division underperformed the S&P by 0.4% (ten-year S&P 500 return 13.4%) and underperformed the benchmark by 3.2%.
- Private equity returns have been strong relative to peer median returns, ranking in the top 7.0% of peers over the past ten years. Outperformance to peers is attributable to strategy as well as fund and co-investment selectivity.
- There were no new commitments closed during the quarter.

Strategy Update

The strategy for the next twelve months will focus on existing sponsors raising successor funds. This may be a combination of buyout, venture capital, secondary, and growth equity funds seeking new commitments. Co-investments continue to play an important role in both averaging down costs and targeting specific investments with attractive risk/return characteristics.

SMRS Private Equity

9/30/24



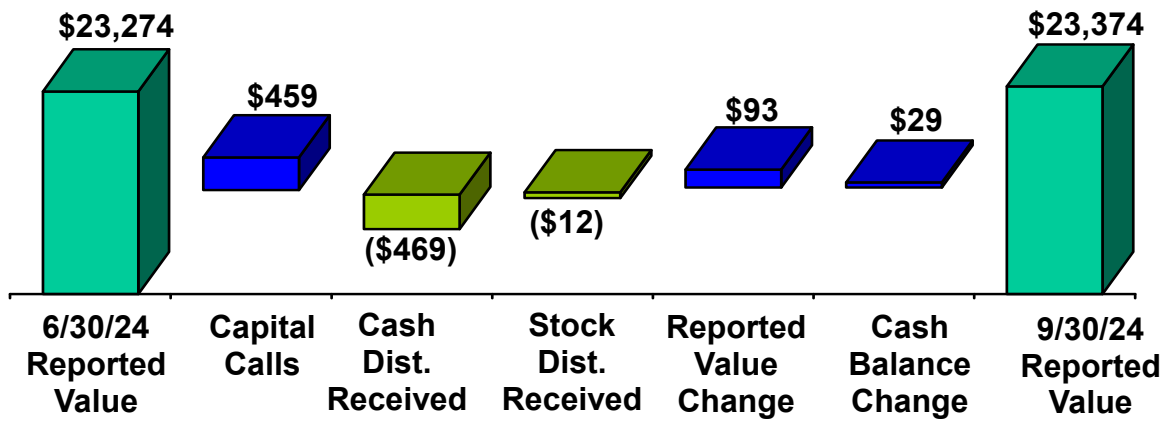
Market Value in Millions

	9/30/24		9/30/23	
Buyout Funds	\$10,357	44.3%	\$10,242	45.1%
Fund of Funds	\$7,374	31.5%	6,695	29.5%
Venture Capital Funds	\$2,809	12.0%	2,760	12.2%
Liquidation Portfolio	\$1,377	5.9%	1,575	6.9%
Special Situations Funds	\$1,294	5.5%	1,328	5.8%
Short Term Investments and Other	\$163	0.7%	111	0.5%
Total	<u>\$23,374</u>	<u>100.0%</u>	<u>\$22,711</u>	<u>100.0%</u>

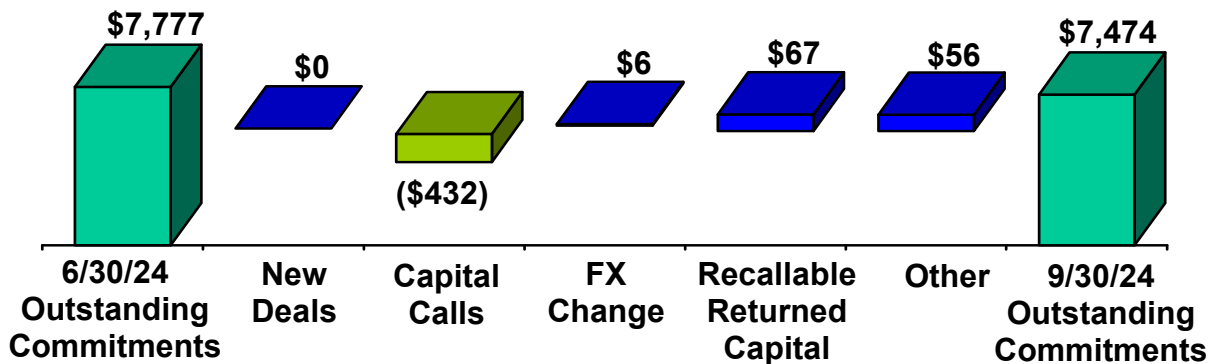
SMRS Private Equity

9/30/24

Invested Commitments



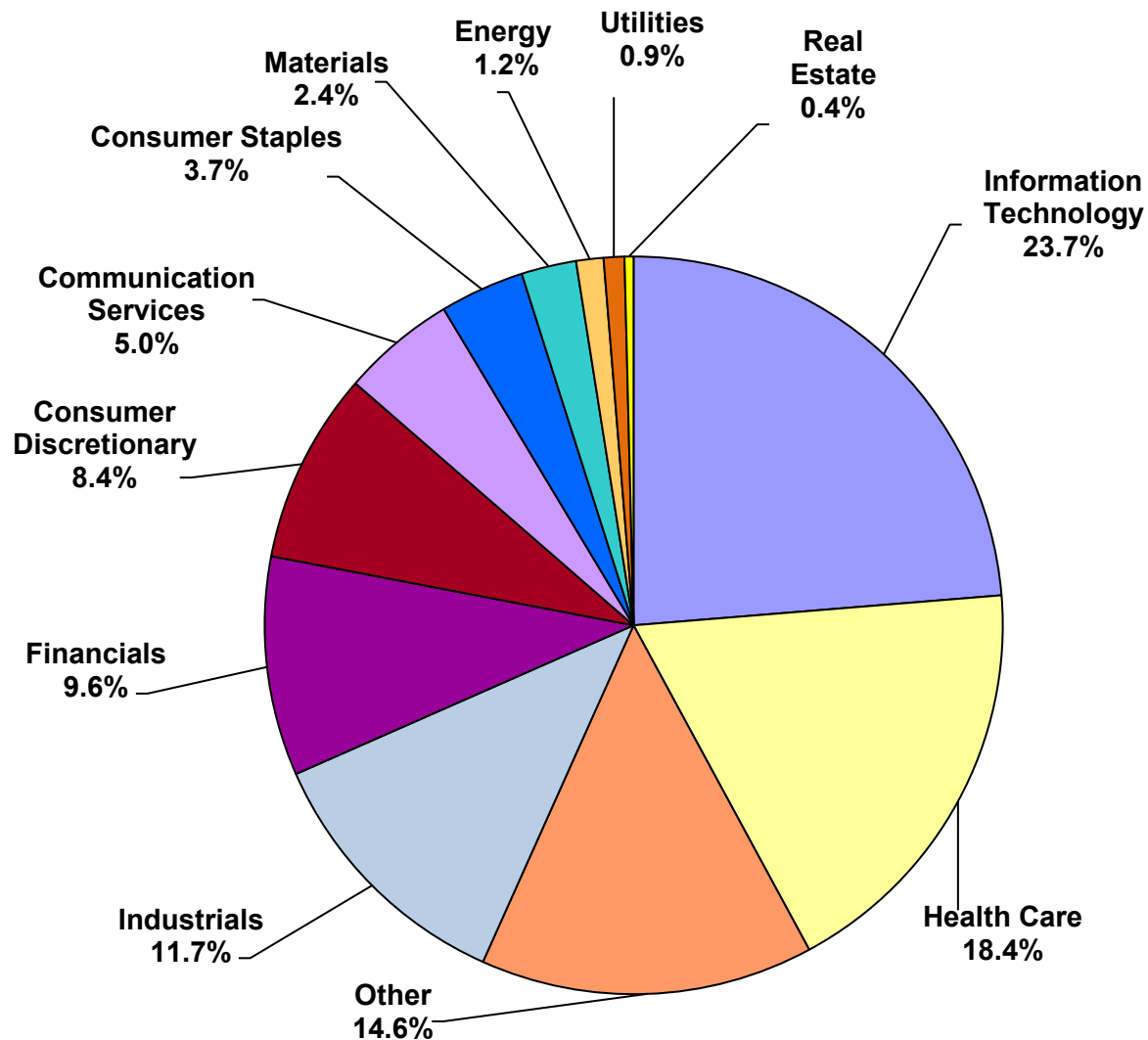
Outstanding Commitments



SMRS Private Equity

9/30/24

Investments by Industry

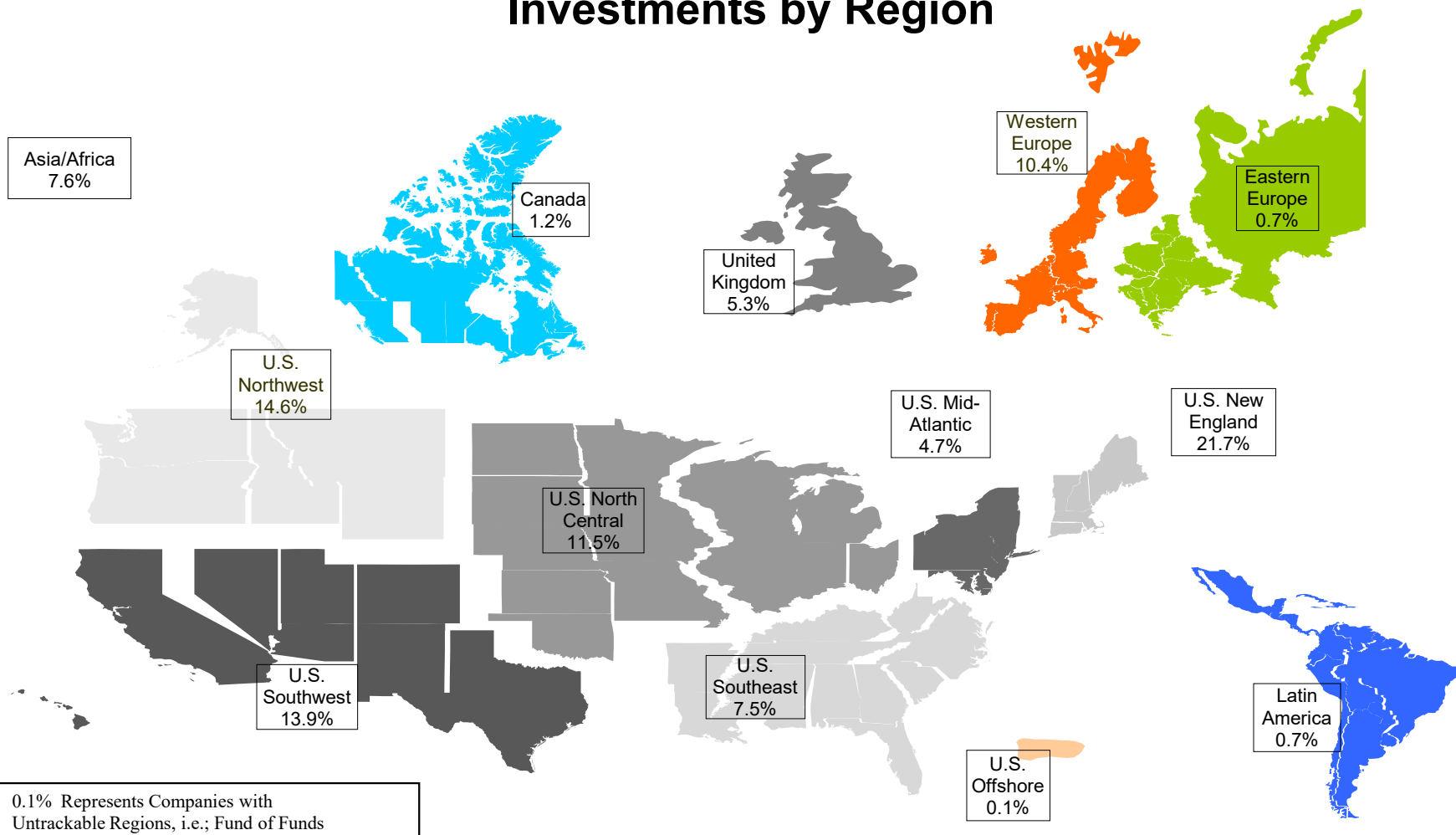


These numbers are based on the most recent available General Partner Data; primarily 6/30/2024 and are subject to change.

SMRS Private Equity

9/30/24

Investments by Region



Geographic Report: North America 75.2%, Europe 16.4%, Asia 7.6%, Other 0.1%, Latin America 0.7%

SMRS Private Equity

9/30/24

Portfolio by Vintage Year

(\$ in Millions)

Asset Vintage	Reported Value	Outstanding Commitment	Total Exposure
1986-2005	\$ 120	\$ 57	\$ 177
2006*	59	70	129
2007	43	40	83
2008	128	57	185
2009	3	0	3
2010	43	3	46
2011	262	40	302
2012	414	27	441
2013	140	32	172
2014	633	53	686
2015	7,833	911	8,744
2016	1,676	173	1,849
2017	1,911	189	2,100
2018	3,791	1,009	4,800
2019	2,229	295	2,524
2020	1,026	284	1,310
2021	1,887	1,172	3,059
2022	924	1,747	2,671
2023	63	724	787
2024	26	591	617
Income Accruals	0	0	0
Short Term Investments and Other	163	0	163
Total	\$ 23,374	\$ 7,474	\$ 30,848

*Liquidation portfolio is 2006 vintage

FX Exposure

(\$ in Millions)

	Reported Value	Outstanding Commitment	Total Exposure	Total (USD)
Euro (\$1.12/ €)	€ 497	€ 257	€ 754	\$841

SMRS Private Equity

9/30/24

Net Market Value by Entity

	Adjusted Reported Value	Unfunded Commitment
5AM Opportunities I, LP	\$ 11,483,914	\$ 0
5AM Opportunities II, LP	19,642,256	1,250,000
5AM Ventures VI, LP	19,422,781	0
5AM Ventures VII, LP	13,316,664	13,000,000
Accel Europe I, LP	1,088,222	1
Accel Europe II, LP	29,975,204	3,300,000
Accel Growth Fund II, LP	10,668,432	0
Accel Growth Fund III, LP	10,832,637	280,000
Accel Growth Fund IV, LP	22,855,668	0
Accel Growth Fund V, LP	37,256,810	0
Accel Growth Fund VI, LP	17,889,355	5,562,500
Accel India VII, LP	4,463,366	4,925,000
Accel IX, LP	609,133	3,000,000
Accel Leaders 4, LP	24,471,195	26,000,000
Accel Leaders Fund 3, LP	31,859,440	4,000,000
Accel Leaders Fund II, LP	10,012,052	0
Accel Leaders Fund, LP	19,518,469	0
Accel London V, LP	28,886,524	840,000
Accel London VI, LP	14,861,664	1,625,000
Accel London VII, LP	7,250,568	4,000,000
Accel London VIII, LP	500,000	9,500,000
Accel VI-S	317,222	652,611
Accel VI, LP	470,616	0
Accel X, LP	2,745,690	0
Accel XI, LP	6,263,540	1,440,000
Accel XII, LP	25,532,518	980,000
Accel XIII, LP	17,297,670	1,000,000
Accel XIV, LP	11,102,507	1,150,000
Accel XV, LP	5,790,970	3,550,000
Accel XVI, LP	0	10,000,000
Accel-KKR Growth Capital Fund IV, LP	18,788,806	21,144,115
Acorn Bioventures 2, LP	39,429,416	55,000,000
Acorn Bioventures, LP	69,430,523	10,000,000
Advent Global Private Equity V, LP	3,402,901	8,700,000
Advent International GPE IX, LP	299,505,014	16,234,015
Advent International GPE VI-A, LP	15,607,084	0
Advent International GPE VII-B, LP	21,048,268	8,000,000
Advent International GPE VIII-B, LP	194,960,275	0

	Adjusted Reported Value	Unfunded Commitment
Advent International GPE X, LP	178,674,492	186,335,288
Advent International LAPEF VII, LP	43,291,255	22,200,000
Advent Latin American Private Equity Fund VI, LP	26,419,079	2,450,000
Affinity Asia Pacific Fund III, LP	10,488,811	8,520,204
Affinity Asia Pacific Fund IV, LP	81,688,519	10,143,475
Affinity Asia Pacific Fund V, LP	124,286,587	60,307,258
Apax Digital II, LP	25,823,222	73,201,006
Apax Digital, LP	63,797,260	4,948,526
Apax Europe Fund VI, LP	4,770,404	2,360,220
Apax Europe VII, LP	1,518,848	1,662,223
Apax IX, LP	104,567,758	16,039,252
Apax US VII, LP	2,725,129	417,509
Apax VIII - B, LP	9,455,839	3,983,093
Apax X USD, LP	163,733,211	24,188,814
Apax XI USD, LP	14,853,923	135,657,279
Apollo Investment Fund IX, LP	94,326,512	25,293,606
Apollo Investment Fund VIII, LP	29,231,698	10,209,667
Arboretum Ventures II, LP	0	0
Arboretum Ventures III, LP	2,646,565	0
Arboretum Ventures IV, LP	8,530,559	4,620,001
Arboretum Ventures V, LP	24,311,717	6,860,000
Arboretum Ventures VI, LP	6,889,920	26,704,993
Ares Corporate Opportunities Fund III, LP	26,892	1,424,582
Ares Corporate Opportunities Fund IV, LP	16,906,340	1,624,990
ASF VIII B, LP	116,537,124	45,155,548
AXA ASF Miller Co-Investment, LP	125,901	0
Axiom Asia 6, LP	32,061,159	19,500,000
Axiom Asia Co-Investment Fund I, LP	48,268,814	4,831,107
Axiom Asia Co-Investment Fund II, LP	27,917,619	26,434,673
Axiom Asia IV, LP	50,388,400	5,747,811
Axiom Asia Private Capital Fund III, LP	31,484,507	5,250,002
Axiom Asia V, LP	50,428,881	9,500,000
BC European Capital VII, LP	615,647	0
Berkshire Fund IX Coinvestment Fund, LP	57,527,353	6,834,940
Berkshire Fund IX, LP	198,694,002	16,732,056
Berkshire Fund VI, LP	7,525,219	8,800,318
Berkshire Fund VII, LP	6,651,570	2,441,522
Berkshire Fund VIII, LP	34,563,619	11,832,732
Berkshire Fund X, LP	90,950,154	66,017,207
Blackstone Capital Partners IV, LP	146,202	4,413,477
Blackstone Capital Partners V, LP	1,094,893	13,069,138
Blackstone Capital Partners V-S	0	712,476
Blackstone Capital Partners VI, LP	70,089,824	32,926,549
Blackstone Capital Partners VII, LP	231,558,112	19,328,680
Blackstone Capital Partners VIII, LP	179,626,274	57,790,992
Blackstone Growth II, LP	0	100,000,000
Carlyle Europe Partners V, SCSp	115,438,620	36,583,792
Carlyle Partners Growth, L.P.	14,931,176	33,566,375

	Adjusted Reported Value	Unfunded Commitment
Carlyle Partners V LP	13,994,777	10,645,569
Carlyle Partners VI, LP	43,409,308	9,288,430
Carlyle Partners VII, LP	299,248,187	10,438,900
Carlyle Partners VIII, LP	108,407,998	100,789,743
Charlesbank Equity Fund IX, LP	106,763,456	17,290,723
Charlesbank Equity Fund X, LP	86,607,126	29,331,714
Charlesbank Equity Overage Fund X, LP	64,699,637	9,331,353
Charlesbank Fund IX Overage Allocation Program	39,990,418	11,038,842
Clearlake Capital Partners VII, LP	128,753,391	84,616,922
Clearlake Capital Partners VIII, LP	0	100,000,000
Collier International Partners VI, LP	7,081,007	5,000,000
Collier International Partners VII, LP	57,431,610	45,871,272
CVC Capital Partners Fund IX (A), LP	0	166,105,762
CVC Capital Partners VII, LP	194,143,439	9,334,564
CVC Capital Partners VIII, LP	100,585,086	19,371,704
Dover Street IX, LP	57,397,305	9,000,000
Dover Street X, LP	134,355,369	31,500,000
Dover Street XI, LP	24,394,109	81,000,000
FirstMark Capital I, LP	27,306,476	196,596
FirstMark Capital IV, LP	66,129,537	0
FirstMark Capital OF I, LP	8,485,009	0
FirstMark Capital OF II, LP	57,668,203	0
FirstMark Capital OF III, LP	29,400,087	0
FirstMark Capital OF IV, LP	3,432,166	30,800,000
FirstMark Capital V, LP	39,478,368	2,800,000
FirstMark Capital VI, LP	6,669,684	27,825,000
Flagship Pioneering Fund VII, LP	103,100,789	115,000,000
Flagship Pioneering Fund VIII, LP	12,877,544	186,000,000
Flagship Pioneering Special Opportunities Fund II, LP	90,333,665	5,000,000
Flagship Pioneering VI, LP	328,675,125	0
Flagship Ventures Fund 2004, LP	23,044	0
Flagship Ventures Fund 2007, LP	1,038,226	0
Flagship Ventures Fund IV, LP	26,995,472	0
Flagship Ventures Fund V, LP	50,127,988	0
Flagship Ventures Opportunities Fund I, LP	29,264,312	0
GCM Grosvenor Fund Investment Program I, LP	2,855,349	1,050,800
GCM Grosvenor Fund Investment Program II, LP	12,952,829	12,840,574
GCM Grosvenor Fund Investment Program III - 2004	20,245,049	3,996,786
GCM Grosvenor Fund Investment Program III - 2006	25,475,483	6,468,850
GCM Grosvenor Fund Investment Program V, LP	24,336,126	9,276,702
GCM Grosvenor Fund Investment Program VI, LP	15,946,101	925,267
GCM Grosvenor Fund Investment Program VIII, LP	98,777,354	8,609,934
GCM Grosvenor SeasPriFIP, LP (PIS06-10)	16,321,594	9,194,343
GCM Grosvenor SeasPriFIP, LP (PIS14)	169,373,222	20,424,262
GCM Grosvenor SeasPriFIP, LP (Seed)	4,611,040	16,979,668
Genstar Capital Partners IX, LP	101,019,338	10,479,404
Genstar Capital Partners VIII, LP	87,114,790	4,133,696
Genstar Capital Partners X, LP	99,118,636	5,263,419

	Adjusted Reported Value	Unfunded Commitment
Genstar Capital Partners XI, LP	3,785,049	121,942,231
Genstar IX Opportunities Fund I, LP	63,804,063	7,560,732
Genstar VIII Opportunities Fund I, LP	60,708,439	3,306,863
Genstar X Opportunities Fund I, LP	24,716,933	2,847,473
Genstar XI Opportunities Fund I, LP (Priority Co-Investment Vehicle)	8,134,546	17,345,229
Golden Bell Azalea, LLC	98,958	0
Green Equity Investors IX, LP	95,121,706	196,046,612
Green Equity Investors V, LP	1,714,111	14,745,120
Green Equity Investors VI, LP	125,107,920	2,578,335
Green Equity Investors VII, LP	139,844,325	28,729,242
Green Equity Investors VIII, LP	297,038,345	32,846,847
Greenspring Master G, LP	665,039,066	430,500,000
Greenspring Micro II, LP	37,154,055	2,250,000
GTCR Fund XIII, LP	40,752,963	13,287,247
GTCR Fund XIV, LP	(114,049)	150,000,000
GTCR Strategic Growth Fund, LP	16,553,243	25,568,000
HarbourVest Co-Investment Fund VII Combined, LP	1,260,590	100,000,000
HarbourVest Dover Street VIII, LP	3,930,630	5,400,000
HarbourVest Int'l III Partnership, LP	134,777	1,200,000
Harbourvest Partners Co-Investment Fund IV, LP	77,571,272	19,107,835
HarbourVest Partners Co-Investment Fund V, LP	222,457,272	45,000,000
Harbourvest Partners Co-Investment Fund VI, LP	189,871,100	30,000,000
HarbourVest V Partnership, LP	94,981	300,000
HarbourVest VI - Direct Fund, LP	1,026,874	750,000
HarbourVest VI Partnership, LP	376	2,000,000
Harvest Partners IX, LP	29,622,571	67,347,584
Harvest Partners VII, LP	93,823,528	7,734,486
Harvest Partners VIII, LP	102,157,966	9,663,106
Hellman & Friedman Capital Partners X, LP	85,046,680	27,843,007
Hg Saturn 3 A, LP	58,524,349	45,867,353
Insight Partners Fund X Follow-On Fund, LP	39,180,158	5,850,000
Insight Partners XI, LP	149,799,763	2,992,458
Insight Partners XII, LP	123,797,193	19,650,000
Insight Partners XIII, LP	3,774,067	146,250,000
Insight Venture Partners GBCF, LP	100,719,101	4,856,050
Insight Venture Partners IX, LP	240,947,030	830,984
Insight Venture Partners X, LP	199,803,378	11,505,694
Jade Equity Investors II, LP	1,426,297	148,573,703
Jade Equity Investors, LP	128,355,323	14,399,012
Kelso Investment Associates IX, LP	56,014,327	10,258,532
Kelso Investment Associates VII, LP	138,621	0
Kelso Investment Associates VIII, LP	523,408	7,693,622
Kelso Investment Associates X, LP	145,414,862	12,568,457
Khosla Ventures III, LP	2,527,042	0
Khosla Ventures IV, LP	65,133,823	950,000
Khosla Ventures Opportunity I, LP	28,374,062	1,375,000
Khosla Ventures Opportunity II, LP	3,564,787	8,937,500
Khosla Ventures Seed D, LP	23,870,221	940,000

	Adjusted Reported Value	Unfunded Commitment
Khosla Ventures Seed E, LP	6,040,754	500,000
Khosla Ventures Seed F, LP	5,659,099	7,437,500
Khosla Ventures V, LP	70,141,778	1,750,000
Khosla Ventures VI, LP	155,231,961	3,750,000
Khosla Ventures VII, LP	46,316,682	10,600,000
Khosla Ventures VIII, LP	19,320,237	30,750,000
KKR 2006 Fund, LP	0	4,951,985
KKR Americas Fund XII, LP	238,522,460	21,362,557
KKR Asian, LP	22,514	0
KKR Asian Fund II, LP	19,819,418	0
KKR Asian Fund III, LP	119,268,309	14,566,150
KKR China Growth Fund, LP	2,043,048	3,306,040
KKR European Fund III, LP	1,476,723	4,394,157
KKR European Fund IV, LP	83,771,423	378,138
KKR European Fund V (USD) SCSp	134,057,793	13,797,976
KKR Millennium Fund, LP	0	0
KKR North America Fund XI, LP	45,854,471	225,237
KKR North America Fund XIII SCSp	96,057,810	41,228,084
Lead Edge Capital IV, LP	29,160,381	9,521,879
Lead Edge Capital V, LP	32,620,127	4,180,330
Lead Edge Capital VI, LP	19,209,509	23,750,774
Lightspeed India Fund IV, LLC	2,605,560	4,612,500
Lightspeed Opportunity Fund II, LP	22,178,128	4,500,000
Lightspeed Opportunity Fund, LP	22,369,601	250,000
Lightspeed Venture Partners Select IV, LP	28,688,343	1,250,000
Lightspeed Venture Partners Select V, LP	15,961,771	8,000,000
Lightspeed Venture Partners VII, LP	4,497,235	0
Lightspeed Venture Partners XIII, LP	12,146,754	800,000
Lightspeed Venture Partners XIV-A, LP	8,991,230	2,925,000
Lightspeed Venture Partners XIV-B, LP	11,730,992	5,362,500
Menlo Special Opportunities Fund II, LP	43,444,750	900,000
Menlo Special Opportunities Fund III, LP	9,325,799	14,750,000
Menlo Ventures IX, LP	0	0
Menlo Ventures X, LP	1,165,487	0
Menlo Ventures XI, LP	12,299,109	0
Menlo Ventures XIV, LP	15,077,378	0
Menlo Ventures XV, LP	25,247,990	1,250,000
Menlo Ventures XVI, LP	4,932,731	9,750,000
Meritech Capital Partners Franchise Fund, LP	7,827,979	7,425,000
Meritech Capital Partners IV, LP	1,746,274	0
Meritech Capital Partners V, LP	13,062,488	400,000
Meritech Capital Partners VI, LP	42,611,519	1,275,000
Meritech Capital Partners VII, LP	38,375,598	6,906,250
Meritech Capital Partners VIII, LP	0	48,000,000
Meritech Capital Sidecar III, LP	0	12,000,000
Michigan Growth Capital Partners II, LP	94,530,231	2
Michigan Growth Capital Partners III, LP	103,030,205	10,317,949
Michigan Growth Capital Partners IV, LP	46,569,197	47,994,064

	Adjusted Reported Value	Unfunded Commitment
Michigan Growth Capital Partners, LP	13,061,663	4,748,066
Michigan SEMF Barings	100,222,957	98,921,525
Michigan SEMF Grosvenor	98,832,408	98,596,685
New Leaf Biopharma Opportunities II, LP	111,918,068	0
New Leaf Growth Fund I, LP	412,612	0
New Leaf Ventures II, LP	0	0
New Leaf Ventures III, LP	22,943,857	0
New Leaf Ventures IV, LP	58,529,059	2,250,000
Oak Investments Partners IX, LP	7,594	246,728
Ocqueoc Holdings, LLC	1,552,172	119,060
Odyssey Investment Partners Fund VI, LP	100,747,056	25,292,856
Permira Growth Opportunities I, LP1	44,922,590	7,944,666
Permira Growth Opportunities II SCSp	13,089,099	33,356,595
Permira VII, LP 1	94,551,806	8,801,076
Permira VIII, LP 2	42,729,223	42,776,732
Public Pension Capital, LLC	88,526,305	10,167,701
Renaissance Venture Capital Fund IV, LP	12,438,685	12,000,000
Renaissance Venture Capital Fund V, LP	721,541	19,000,000
Riverside Capital Appreciation Fund VI, LP	25,519,872	6,262,007
Riverside Capital Appreciation Fund VII, LP	83,929,447	15,378,043
Riverside Micro Cap Fund I, LP	749,806	2,541,921
Riverside Micro-Cap Fund II, LP	0	2,735,834
Riverside Micro-Cap Fund III, LP	42,783,798	4,823,424
Riverside Micro-Cap Fund IV, LP	71,878,655	6,709,650
Riverside Micro-Cap Fund IV B, LP	26,028,806	576,806
Riverside Micro-Cap Fund V, LP	142,398,647	0
Riverside Micro-Cap Fund VI, LP	49,577,082	72,097,726
Science Ventures Fund II, LP	48,935,143	1,000,000
Science Ventures Fund III, LP	19,647,967	6,250,000
Silver Lake Partners III, LP	6,010,542	11,910,583
Silver Lake Partners IV, LP	76,576,241	1,440,657
Silver Lake Partners V, LP	70,884,829	8,780,735
Silver Lake Partners VI, LP	86,502,800	3,704,727
Silver Lake SL SPV-2	57,007,872	0
SK Capital Partners V, LP	52,813,874	8,927,632
SKCP Catalyst Fund I-A, LP	38,769,716	7,708,565
SMRS - TOPE LLC	5,382,716,414	411,551,571
SMRS-CAPP LLC	465,707,449	218,831,651
SMRS-NCRP LLC	1,186,450,054	361,158,994
Summit Partners Growth Equity Fund X, LP	115,088,634	26,666,367
Summit Partners Growth Equity Fund XI-A, LP	36,672,958	66,999,941
The Veritas Capital Fund VIII, LP	192,767,901	72,655,772
The Veritas Capital Vantage Fund, LP	33,871,012	33,393,146
Thoma Bravo Discover Fund II, LP	114,236,339	20,853,678
Thoma Bravo Discover Fund IV, LP	68,349,304	42,819,839
Thoma Bravo Discover Fund V, LP	0	100,000,000
Thoma Bravo Explore II, LP	0	100,000,000
Thoma Bravo Fund XII, LP	191,239,792	36,904,285

	Adjusted Reported Value	Unfunded Commitment
Thoma Bravo Fund XIII, LP	181,251,437	10,504,042
Thoma Bravo Fund XV, LP	89,425,886	28,696,927
Thoma Bravo Fund XVI, LP	0	50,000,000
Thoma Bravo XIV, LP	133,526,196	18,100,601
TI Platform BOV, LP	16,499,658	2,751,206
TI Platform Fund II, LP	16,436,846	991,928
TI Platform Fund III, LP	13,926,807	13,705,247
TI Platform SMRS SMA, LP	121,668,003	60,503,890
TPG Healthcare Partners II, LP	11,637,692	27,272,837
TPG Healthcare Partners, LP	25,109,127	3,399,393
TPG IV (Texas Pacific Group IV)	62,416	211,725
TPG Partners IX, LP	48,034,057	68,472,780
TPG Partners VI, LP	3,389,645	4,219,844
TPG Partners VIII, LP	149,214,297	15,902,712
TPG Partners, VII, LP	49,706,060	15,179,517
TPG V (Texas Pacific Group V)	305,351	1,947,170
TSG6, LP	760,546	11,725,177
TSG7 A, LP	80,079,116	17,917,930
TSG8, LP	120,024,256	11,458,051
TSG9, LP	46,367,150	123,475,920
Veritas Capital Fund IX, LP	0	150,000,000
Veritas Capital Fund V, LP	45,973,518	1,508,273
Veritas Capital Fund VI, LP	67,124,153	12,939,669
Veritas Capital Fund VII, LP	132,721,585	4,427,813
Veritas V Co-Investors, LP	537,810	0
Warburg Pincus Global Growth, LP	179,326,366	8,700,000
Warburg Pincus Private Equity IX, LP	239,246	0
Warburg Pincus Private Equity X, LP	6,938,985	0
Warburg Pincus Private Equity XI, LP	48,770,086	0
Warburg Pincus Private Equity XII Secondary, LP	19,624,324	0
Warburg Pincus Private Equity XII, LP	137,386,036	0
Total	\$ 23,210,307,065	\$ 7,474,410,704
Short Term Investments and Other	163,254,205	0
Income Accruals	(3)	0
Grand Total	\$ 23,373,561,267	\$ 7,474,410,704

Total Private Equity amounts do not include Cash and Active Small Cap
No New Commitments made during quarter reported

State of Michigan Retirement System

REAL ESTATE AND INFRASTRUCTURE REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



Todd A. Warstler
Senior Investment Manager
Real Estate and Infrastructure Division

EXECUTIVE SUMMARY

Performance

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	2.2%	9.5%	6.9%	7.8%	8.5%
NCREIF NPI	-4.7%	-0.4%	1.9%	2.9%	4.5%
Peer Median Returns	-3.1%	2.7%	3.9%	5.0%	7.0%

*State Street Universe greater than \$1 billion

- Outperformance relative to the one-year benchmark resulted primarily from the Real Estate and Infrastructure Division's (REID) strategy of being overweight in hospitality, underweight to office, and exposure to infrastructure and REIT sectors. Over the ten-year timeframe the REID is outperforming the benchmark by 400 basis points.

Strategy Update

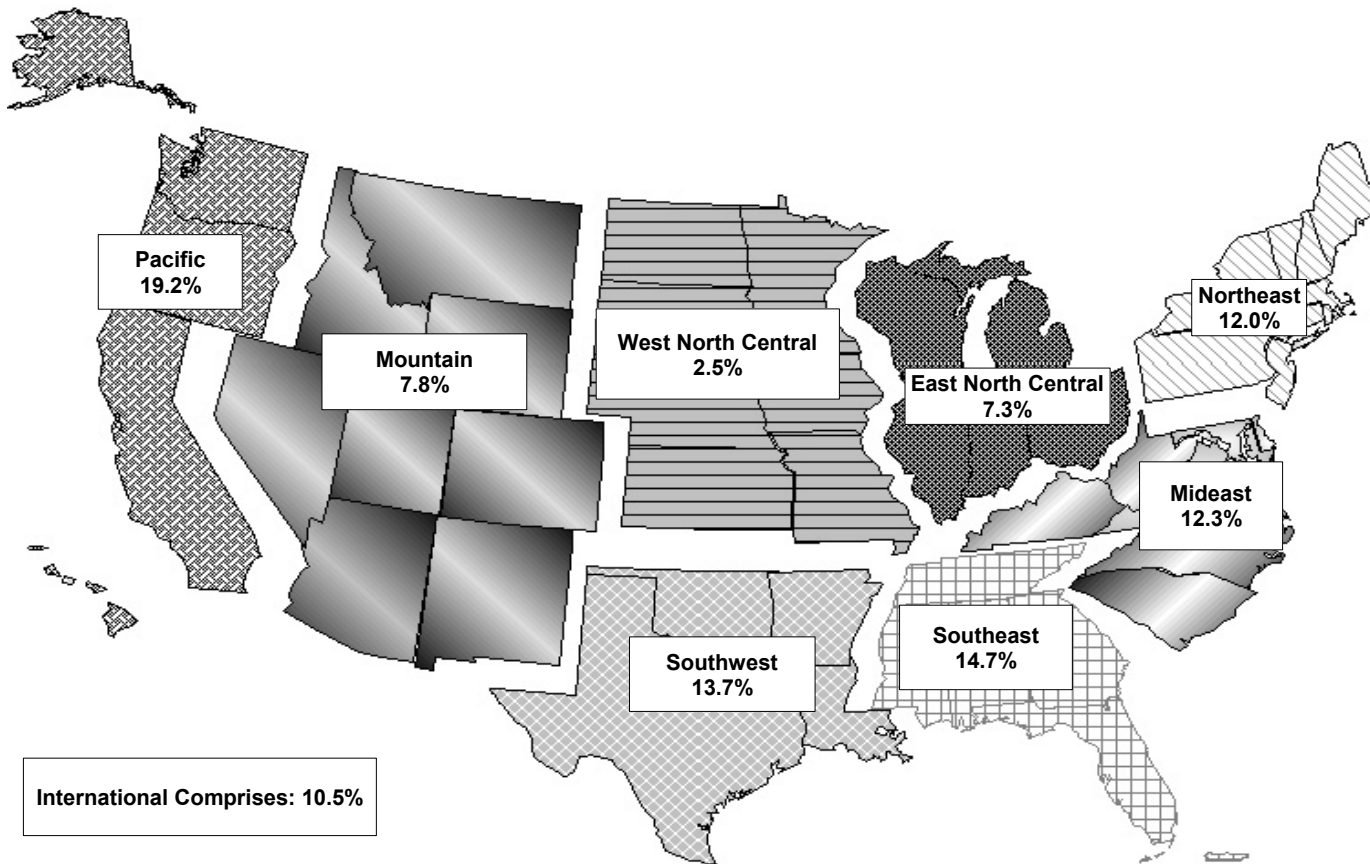
- Impacts to commercial markets from the global pandemic were uneven across the real estate and infrastructure sectors. There was a mix of negative and positive impacts with some transitory and others that continue to shape the market and will for years to come. New threats to markets have emerged and continued through the third quarter of 2024 including escalating geopolitical tensions, elevated levels of inflation and sharply higher interest rates. We continue to monitor, assess, and shift strategies, as necessary.
- In the real estate space, we are focused on sourcing off-market opportunities through our extensive network and where available reducing risk in the portfolio through early income-generating investments. We have selectively acquired properties where we can add value through management and leasing and have continued to develop properties at attractive risk-adjusted returns. The team continues to assemble portfolios in both traditional and non-traditional real estate sectors that we believe will become institutional property types, providing the potential for above market appreciation and total returns. In the infrastructure space, we continue to focus on diversified strategies and select sector strategies and to identify those managers with top performing track records and best in class investment teams, who are pursuing opportunities in those sectors we have identified for allocation.
- We have been actively managing the portfolio with capital returned of approximately \$1.0 billion, and funding for new or existing investments of approximately \$1.2 billion over the past 12 months.
- The REID has approximately \$2.8 billion in unfunded commitments. Two new commitments were made during the quarter.
 - \$100 million in KKR Global Infrastructure Investors V, LP, a closed-end global fund investing in diverse segments of the infrastructure market including renewables and digital infrastructure, managed by Kohlberg, Kravis, Roberts & Co. LP.
 - \$75 million in Transwestern Strategic Partners Fund IV, LP, a closed-end comingled fund investing in multi-strategy US real estate sector, managed by Transwestern Investment Group.

SMRS Real Estate

9/30/24

Investments by Region

(excludes public REITS & cash equivalents)



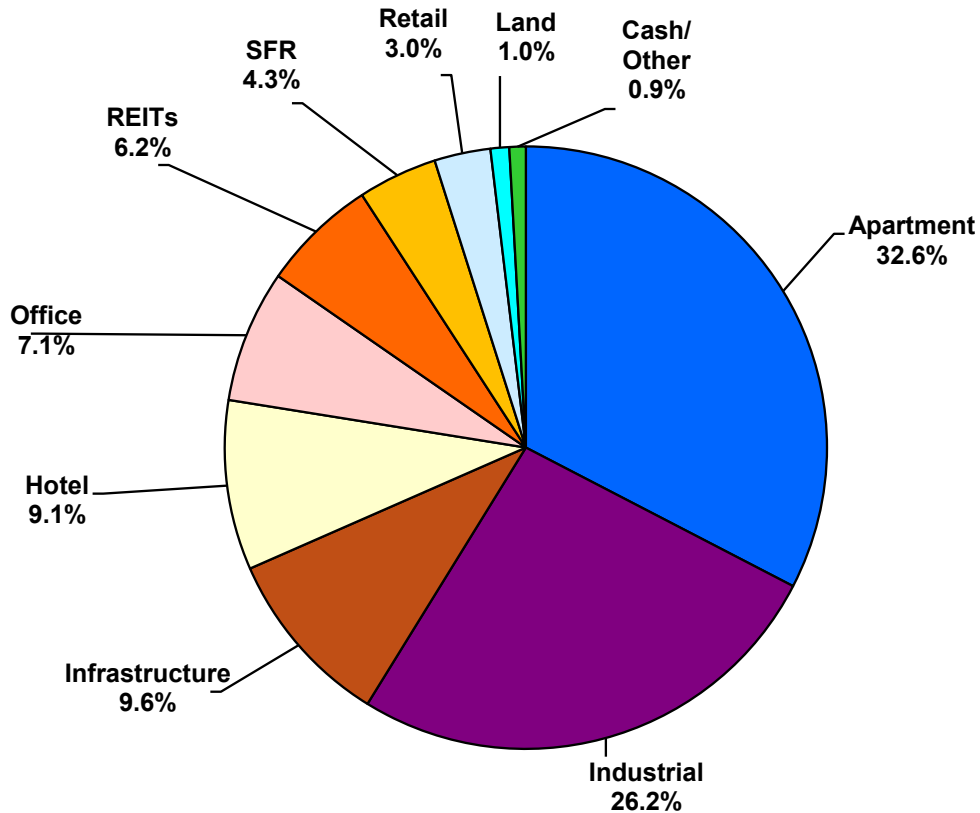
Geographic regions defined by NCREIF, whose property index composition is:

Pacific	Southeast	Southwest	Northeast	Mideast	East North Central	Mountain	West North Central
26.2%	17.4%	13.7%	12.7%	10.0%	9.0%	8.7%	2.3%

SMRS

Real Estate and Infrastructure

9/30/24



Market Value in Millions				
	9/30/24		9/30/23	
Apartment	\$3,192	32.6%	\$3,361	34.4%
Industrial	2,564	26.2%	2,846	29.1%
Infrastructure	942	9.6%	880	9.0%
Hotel	893	9.1%	828	8.5%
Office	695	7.1%	808	8.3%
REITs	608	6.2%	282	2.9%
SFR	417	4.3%	325	3.3%
Retail	297	3.0%	313	3.2%
Land	98	1.0%	54	0.6%
	<u>\$9,704</u>	<u>99.1%</u>	<u>\$9,698</u>	<u>99.1%</u>
Cash/Other	85	0.9%	83	0.9%
Total Investments	<u>\$9,789</u>	<u>100.0%</u>	<u>\$9,781</u>	<u>100.0%</u>

SMRS
Real Estate
9/30/24
Market Values by Entity

	Market Value	Unfunded Commitment
801 Grand Avenue Capital, LLC	\$ 20,519,375	\$ 0
AEW Senior Housing Investors III, LP	3,405,219	258,896
AEW Senior Housing Investors IV, LP	35,420,679	6,524,469
Albertsons Companies, Inc.	43,619,434	0
Apollo Asia Real Estate Fund, LP	42,861,015	11,673,757
Asana Partners Fund I, LP	33,789,263	2,449,559
Asana Partners Fund II, LP	49,146,778	5,592,905
Asana Partners Fund III, LP	44,398,554	51,333,333
Avanath Affordable Housing III, LLC	58,505,727	990,001
Avanath Affordable Housing IV, LLC	29,480,535	52,292
Avanath Affordable Housing Renaissance Fund, LP	44,917,954	0
BentallGreenOak Asia (USD) IV, LP	0	100,000,000
BentallGreenOak Europe IV, LP	44,065,564	68,840,646
BentallGreenOak US Cold Storage, LP	30,222,456	43,693,309
BGO Europe III Co-Investment, LP	22,955,731	8,967,345
BGO Europe IV King II/ King III Co-Investment, LP	27,348,544	1,492,216
BlackRock MiREIT Fund	241,744,603	0
Blackstone Real Estate Partners IX, LP	219,966,144	30,997,583
Blackstone Real Estate Partners V.TE.2, LP	59,626	208,703
Blackstone Real Estate Partners VI, LP	53,886	552,139
Blackstone Real Estate Partners VIII, LP	49,279,196	9,593,278
Blackstone Real Estate Partners X, LP	50,134,705	153,743,504
Carlyle Realty Partners IX, LP	37,220,230	61,405,752
CIM Fund III, LP	20,159,013	0
CIM Fund VIII, LP	33,666,640	0
CIM VI (Urban REIT), LLC	10,132,028	0
Clarion Gables Multifamily Trust, LP	35,299,164	0
Columbus Circle Holdings, LLC	280,305,068	164,203,680
Crown Small Cap Real Estate Fund II-T, LP	6,823,911	3,280,000
DM2501, LLC	7,674,064	26,569,481
Domain GVA-1, LLC	7,638,904	0
Domain Hotel Properties, LLC	438,316,583	4,938,106
Eastport Properties, LLC	86,609,596	516,359
GreenOak Europe III, LP	56,672,761	21,295,498
Heitman Core Real Estate Debt Income Trust, LP	39,783,303	0
Heitman Global Real Estate Fund II, LP	69,431,560	27,574,732
Heitman MiREIT Fund	243,421,314	0
IDR Core Property Index Fund, LLC	104,665,851	0
India Property Fund II, LLC	2,947,186	5,897,418
Invesco Mortgage Recovery Feeder Fund, LP	0	2,152,585
Invesco Mortgage Recovery Fund II, LP	4,609,360	18,116,596
Invesco Strategic Opportunities III, LP	17,966,389	82,461,385
IPF II Co-Invest, LP	2,539,749	2,168,655
ISO III SMRS Sidecar, LP	8,749,705	51,086,951
KBS/SM Fund III, LP	166,215	0
KBS/SM Fund IV, LP	97,761,752	0
L&B Spartan Holdings, LP	183,778,394	81,458,467

	Market Value	Unfunded Commitment
Landmark Real Estate Partners V, LP	82,394	0
LaSalle Asia Opportunity Fund III, LP	386,267	1,732,325
Lion Industrial Trust	418,791,914	0
Lion Mexico Fund, LP	2,344,712	0
Lombard International Life Assurance Company GVA0016	347,023,798	1,907,506
Lone Star Fund X (U.S.), LP	104,155,601	21,734,113
Lone Star Fund XI, LP	158,481,745	16,142,433
Lone Star Fund XII, LP	34,127,651	264,447,517
Lubert-Adler Real Estate Fund VII, LP	27,351,140	1,875,000
M1-Westgate Co-Investor, LLC	33,315	0
M-301W Co-Investor, LLC	344,037	0
MERS Acquisitions, Ltd	1,054,424	0
MIP Holdco, LLC	229,856,860	1,593,119
Morgan Stanley Real Estate Special Situations Fund III Institutional, LP	798,082	0
MWT Holdings, LLC	2,312,069,898	0
Northpark Land Associates, LLLP	36,722,377	4,665,441
Paladin Realty Brazil Investors III (US-A), LP	691,566	0
Paladin Realty Latin America Investors IV-CI, LP	25,864,571	0
Paladin Realty TB Co-Investment, LP	11,747,713	0
Penmain Office, LLC	31,333	0
Principal Data Center Growth & Income Fund, LP	692,503,812	350,000,000
Principal Life Insurance Company GA4-43579	215,050,219	38,740,357
Principal MiREIT	122,494,691	0
Proprium Real Estate Special Situations Fund Institutional, LP	125,048,265	0
Rialto Credit Partnership, LP	2,266,316	0
Rialto Real Estate Fund III-Debt, LP	39,548,146	0
Rialto Real Estate Fund III-Property, LP	17,093,078	0
Rialto Real Estate Fund IV - Debt, LP	75,220,590	9,531,172
Rialto Real Estate Fund V-Debt, LP	16,913,651	82,500,000
SFR CM, LP	103,719,870	4,950,495
SM Brell II, LP	117,676	0
SMP Data Center, LLC	105,456,160	0
Stockbridge Real Estate Fund II-C, LP	888,000	0
Strategic II, LLC	411,073,617	39,817,076
TPG RE Finance Trust Inc.	33,608,200	0
TPG Real Estate Partners II, LP	251,536	3,028,540
TPG Real Estate Partners III, LP	28,148,166	14,615,602
TPG Real Estate Partners IV, LP	33,271,928	110,695,693
Transwestern Strategic Partners Fund III, LP	67,830,224	8,139,827
* Transwestern Strategic Partners Fund IV, LP	0	75,000,000
True North Real Estate Fund III, LLC	15,146,656	5,000,000
TSP Value and Income Fund II, LP	52,876	6,790,952
Warwick UK Real Estate Fund I	56,631,510	0
	\$ 8,762,528,313	\$ 2,112,996,770
Short-Term Investments and Other	43,919,612	0
Total Real Estate Investments	\$ 8,806,447,925	\$ 2,112,996,770

* New or additional commitment made during the quarter reported

SMRS
Infrastructure
9/30/24
Market Values by Entity

	Market Value	Unfunded Commitment
ArcLight Energy Partners Fund VI, LP	\$ 15,966,757	\$ 7,004,763
ArcLight Energy Partners VII, LP	49,875,815	9,743,405
ASF Como Co-Investment, LP	752,054	1,553,593
ASF VI Infrastructure B, LP	9,370,959	4,919,972
ASF VII Infrastructure Fund B, LP	25,953,365	6,416,421
ASF VIII Infrastructure B, LP	34,811,058	68,277,220
Basalt Infrastructure Partners, LP	5,510,990	2,219,045
Blackstone Energy Partners II, LP	62,201,335	12,752,989
Blackstone Energy Partners, LP	9,332,456	4,728,291
Blackstone Energy Transition Partners IV, LP	0	100,000,000
Blackstone Green Private Credit Fund III, LP	14,680,399	85,484,272
Brookfield Infrastructure Fund II-B, LP	38,359,102	2,825,603
Customized Infrastructure Strategies, LP	8,713,548	4,368,181
Dalmore Capital Fund, LP	57,553,333	0
GCM Grosvenor Customized Infrastructure Strategies II, LP	25,517,675	6,104,018
GCM Grosvenor Customized Infrastructure Strategies III, LP	49,119,166	56,741,461
GCM Grosvenor Infrastructure Investment Program, LP	105,034,906	5,154,905
Global Energy & Power Infrastructure Fund II, LP	18,600,816	2,237,661
GSO Energy Select Opportunities Fund II, LP	4,865,285	34,502,735
GSO Energy Select Opportunities Fund, LP	2,832,389	22,445,028
Irradiant Renewable Opportunities Partners (TE), LP	72,783,762	28,461,405
KKR Eagle Co-Invest, LP	42,985,532	1,917,282
KKR Global Infrastructure Investors IV (USD) SCSp	78,790,268	32,325,123
KKR Global Infrastructure Investors, LP	18,514	2,943,773
* KKR Global Infrastructure Investors V, LP	0	100,000,000
Ridgewood Water & Infrastructure Fund, LP	49,899,145	6,037,933
Ridgewood Water & Strategic Infrastructure Fund II, LP	30,115,157	44,353,159
RPEP SMRS Holdings, LLC	13,647,226	0
StonePeak Infrastructure Fund, LP	17,214,266	7,420,096
TRG AIRRO Fund II, LLC	17,018,935	6,480,150
TRG AIRRO India SideCar Fund US, LLC	80,045,218	0
	\$ 941,569,429	\$ 667,418,484
Short-Term Investments and Other	40,957,476	
Total Infrastructure Investments	\$ 982,526,905	\$ 667,418,484
Total Real Estate & Infrastructure Investments	\$ 9,788,974,831	\$ 2,780,415,254

* New or additional commitment made during the quarter reported

State of Michigan Retirement System

REAL RETURN & OPPORTUNISTIC REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



Daniel J. Quigley
Senior Investment Manager
Real, Opportunistic, and Absolute Return Division

EXECUTIVE SUMMARY

Performance

MPSERS Plan (9/30/24)	1-Year	3-Years	5-Years	7-Years	10-Years
Real & Opportunistic	8.6%	8.3%	11.1%	11.5%	10.5%
Custom Benchmark	6.3%	7.5%	7.4%	7.3%	7.3%

- The portfolio value is \$10.4 billion with a return of 8.6% for the past twelve-month period.
- Performance for the year has been positive for both the Real Asset and Opportunistic strategies. The portfolio outperformed the benchmark, and this was primarily driven by income distributions and asset appreciation within the entertainment royalties and real assets strategies.

Strategy Update

- The objective of the Real Return & Opportunistic portfolio is to provide an inflation hedge and to gain exposure to attractive opportunities that may not fit in another plan portfolio.
- During the quarter, the Real Return & Opportunistic portfolio continued to benefit from exposure to assets with low equity beta and diversity of strategy, industry, and geography.
- The Real Return & Opportunistic portfolio has approximately \$3.2 billion of unfunded commitments. The following are new commitments closed during the quarter.
 - \$200 million to Castle Credit SMRS Holdings, LLC, Series E, a commingled fund managed by Great Mountain Partners focused on opportunistic credit opportunities globally.
 - \$150 million to TPG Rise Climate II, LP, a commingled fund managed by TPG focused on energy transition opportunities globally.
 - \$50 million to Castle Credit SMRS Holdings, LLC, Series D, a co-investment fund managed by Great Mountain Partners focused on opportunistic credit opportunities globally.
 - \$50 million to Dawson (Co-Invest) GP Finance Fund II, LP, a co-investment fund managed by Dawson Partners focused on non-control opportunities globally.
- In addition to monitoring opportunities in the private capital markets along with macroeconomic developments, staff remains focused on finding differentiated

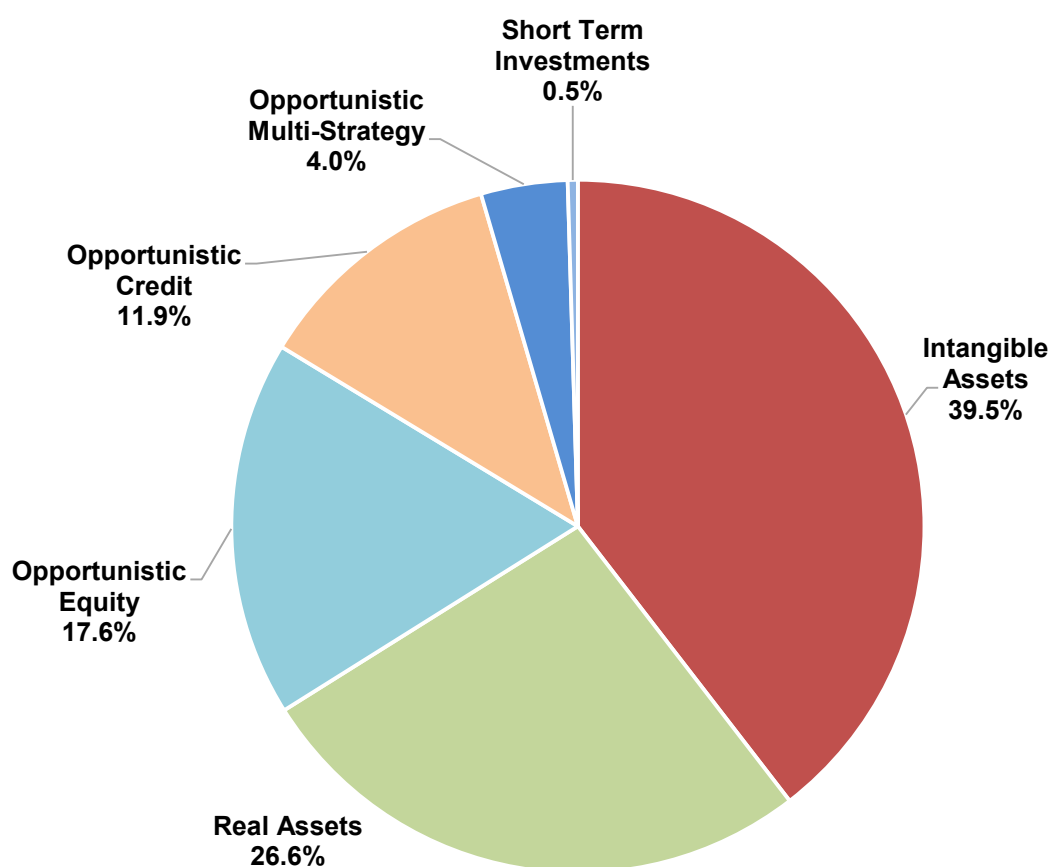
strategies that are additive to the current portfolio mix and continues to favor niche private markets strategies with some scalability. Staff prefers opportunities that have defensible, contractual cash flows and offer structural downside protection and has a preference for opportunities with experienced investment teams and proven track records.

SMRS

Real Return and Opportunistic

9/30/24

Investments By Strategy



Market Value in Millions

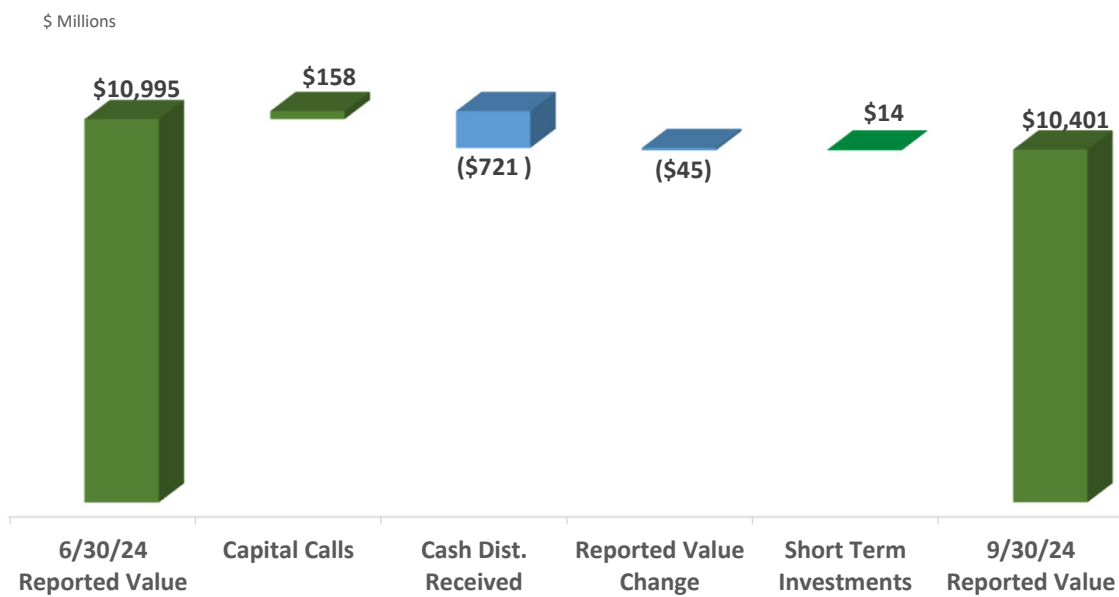
	<u>9/30/24</u>
Intangible Assets	\$4,113
Real Assets	\$2,762
Opportunistic Equity	\$1,827
Opportunistic Credit	\$1,229
Opportunistic Multi-Strategy	\$421
Short Term Investments	<u>\$49</u>
Total Investments	<u>\$10,401</u>

SMRS

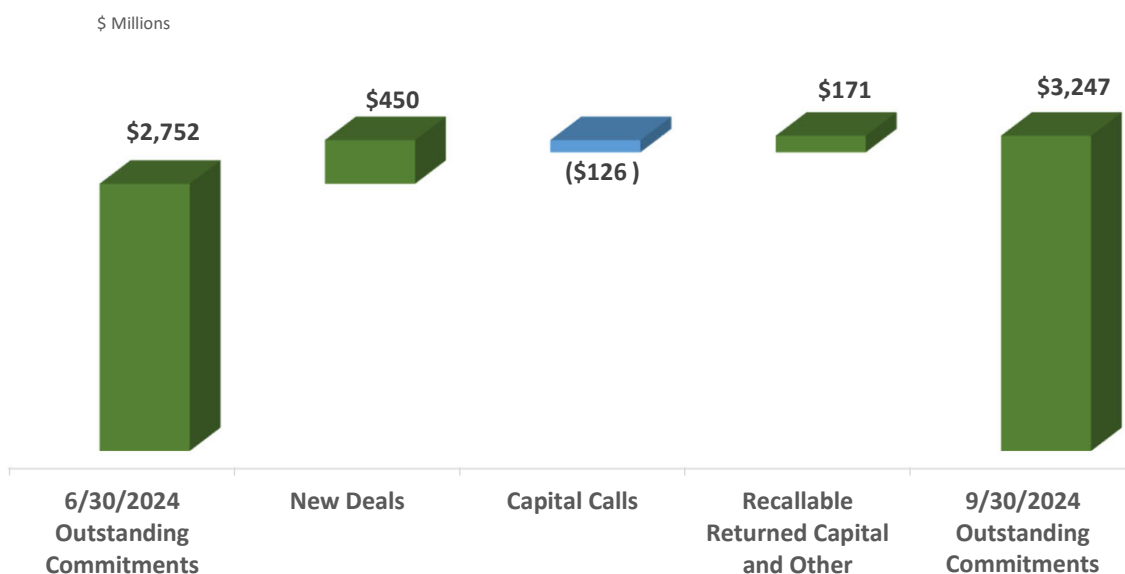
Real Return and Opportunistic

9/30/24

Invested Commitments



Outstanding Commitments



SMRS

Real Return and Opportunistic

9/30/24

Net Market Value by Entity

	Net Market Value	Unfunded Commitment
* Abernathy Fund I, LLC	\$ 215,730,344	\$ 4,948,243
* Abernathy Fund II, LLC	30,011,601	23,697,268
American Industrial Partners Capital Fund VIII, LP	29,419,319	70,017,004
American Industrial Partners VII, LP	102,882,888	16,463,129
Apollo Financial Credit Investments Fund II, LP	231,443,241	291,663,453
Apollo Financial Credit Investments Fund III, LP	172,342,325	259,937,607
Axton Holdings, LLC	3,851,784,060	0
Blackstone Strategic Capital Holdings (Side Car), LP	117,809,523	0
Blackstone Strategic Capital Holdings II, LP	154,377,221	95,734,038
Blackstone Strategic Capital Holdings, LP	124,678,265	16,256,609
Blue Peninsula Fund, LP	117,843,368	9,988,856
BroadRiver III, LP	147,146,996	59,487,103
BSCH Parallel (MLG) I, LP	330,595,832	0
** Castle Credit SMRS Holdings, LLC Series D	19,727,557	30,422,443
** Castle Credit SMRS Holdings, LLC Series E	32,000,000	168,000,000
Centerbridge Capital Partners III, LP	62,116,204	5,424,730
CircleUp Credit Fund I, LP	2,477,393	900,364
Clearlake Capital Partners VI, LP	117,974,219	3,718,307
Clearlake Opportunities Partners II, LP	47,303,541	28,259,580
Clearlake Opportunities Partners III, LP	24,009,650	77,006,311
Content Holdings, LLC	11,268,293	0
** Dawson (Co-Invest) GP Finance 2, LP	3,430,794	46,569,206
Dawson Partners GP Finance 2, LP	5,930,043	146,038,873
Energy Transition Holdings LLC	561,515,432	0
Green Range Holdings LLC	2,106,829,766	968,569,897
Hopen Life Sciences Fund II, LP	1,976,700	135,000
Nyanza I, LLC	0	2,222
Nyanza II, LLC	215,263,411	85,447,867
Origami Opportunities Fund V, LP	36,152,684	67,447,717
Origami Opportunities Overflow Fund V, LP	21,119,411	80,668,412
* Renaissance Venture Cap Fund II, LP	19,775,174	0
* Renaissance Venture Cap Fund III, LP	29,475,364	1,500,000
Shamrock Capital Content Fund I, LP	35,093,557	34,978,517
Sixth Street Agriculture Partners I, LP	92,805,023	15,607,356
Sixth Street Growth Partners (A), LP	189,016,838	61,728,798
Sixth Street Growth Partners II (A), LP	82,370,123	123,568,725
Sixth Street TAO Partners (B), LP	260,907,347	95,782,734
* Social Network Holdings, LLC	411,904,685	0
Sycamore Partners III, LP	114,512,806	37,302,140
TPG Rise Climate, LP	138,672,514	132,141,538
** TPG Rise Climate II, LP	0	150,000,000
Vida Insurance Credit Opportunity Fund II, LP	82,138,425	37,944,695
Total Real Return and Opportunistic Strategies	\$ 10,351,831,938	\$ 3,247,358,743
Short-Term Investments & Other	49,146,166	0
Grand Total	\$ 10,400,978,103	\$ 3,247,358,743

* Fund of Funds

** New Commitments made during quarter reported

State of Michigan Retirement System

DEFINED CONTRIBUTION REVIEW

State of Michigan Investment Board Meeting
January 8, 2025



Lan Hue Chen, CFA, CAIA
Senior Investment Manager
Defined Contribution, Trusts & Agencies Division

EXECUTIVE SUMMARY

Market Environment and Outlook

U.S. stocks advanced during the third quarter following the Fed implementing a larger-than-expected 50 basis points interest rate cut. The S&P 500 Index rose by 5.9% and the Nasdaq Composite grew by 2.6% during the quarter. The utilities and real estate sectors led, while information technology and communications services lagged. Small cap stocks outperformed large caps and value significantly beat growth.

U.S. bonds logged their first positive quarterly performance of 2024 in the past three months. The Bloomberg U.S. Aggregate Bond Index rose by 5.2%. The 10-year U.S. Treasury yield fell from 4.5% at the beginning of July to 3.8% by quarter end (declines in the 10-year yield generally signal investor pessimism).

The stickiness of the “last mile” of inflation suggests the United States may be facing structural inflation pressures, driven by supply chain constraints and a tight labor market (despite disappointing job growth numbers, layoffs have not increased and unemployment remains at only 4.2%). Inflation that persists above 2.0% may prevent the Fed from cutting rates as aggressively as the market hopes. The anticipated rate cuts resemble past recession scenarios, but today’s economic landscape differs significantly—the current economy does not seem to be on the brink of collapse. In fact, in Fed Chair Powell’s words, “the U.S. economy is basically fine.” The temporary boost to the workforce from immigration and shift in consumer spending back to services have also helped dampen inflation.

Regulatory Update

The IRS updated employee benefit limits for 2025. On November 1st, 2024, the Internal Revenue Service (IRS) released Notice 2024-80, containing technical guidance regarding all cost-of-living adjustments affecting dollar limitations for pension plans and other retirement-related items for tax year 2025. Highlights included:

- The maximum salary deferral for 401(k)/403(b) plans and most 457 plans will increase from \$23,000 to \$23,500.
- The maximum age 50 catch-up contribution for 401(k) plans, 403(b) plans, and 457(b) governmental plans will stay at \$7,500.
- The limit on annual contributions to an IRA will stay at \$7,000.

The IRS finalized the 10-year rule for the distribution of inherited retirement accounts. According to the “10-year rule,” some retirement account beneficiaries must take annual required minimum distributions (RMDs) throughout the 10 years following the death of an original account holder, with the account fully depleted by the end of the tenth year. The requirement applies to accounts inherited after 2019.

The rule divides beneficiaries who inherit retirement accounts into “eligible” and “ineligible” categories. An “eligible” beneficiary is generally defined as a participant’s spouse, someone disabled or chronically ill, or another not more than ten years younger than the decedent, such as a sibling. Other beneficiaries are generally “ineligible” beneficiaries.

Beginning in 2025, “ineligible” beneficiaries will be subject to the “10-year rule”. The rule states that, generally, funds must be distributed from inherited retirement accounts within 10 years, with the following qualifications:

- If the decedent had not taken an RMD (or if RMDs were otherwise not required, as in Roth plans), then the ineligible beneficiary does not need to take annual distributions and can choose to simply withdraw the entire balance at the end of 10 years.
- If the decedent had begun taking RMDs, the beneficiary must draw down the account at least as rapidly as the decedent would have (e.g., take the decedent's RMD amount annually, at least). If there are any remaining assets after ten years, the balance would be forcibly distributed.

Eligible beneficiaries are exempt from the 10-year rule.

SMRS

Defined Contribution Strategies

9/30/24

Markets	Amount		% of Total	Fee per \$1,000
QDIA (\$ in Millions)				
	<u>9/30/24</u>	<u>9/30/23</u>		
Total Target Date Fund	\$5,736	\$4,048	35.6%	\$0.55
Tier I Index Funds				
State Street S&P 500 Index Fund	\$2,484	\$1,845		\$0.08
State Street Bond Market Index Fund	1,301	1,068		0.15
State Street Global All Cap Equity ex-U.S. Index Fund	1,136	841		0.40
State Street S&P Mid Cap Index Fund	902	731		0.15
BlackRock Government Short-Term Investment CL F	310	279		0.55
BlackRock S&P Small Cap 600 Equity Index CL F	185	159		0.23
BlackRock Emerging Markets Index CL F	123	103		0.70
Total Tier I Index	\$6,440	\$5,026	40.0%	\$0.16
Tier II Active Funds				
Stable Value Fund	\$1,101	\$1,184		\$2.17
Dodge & Cox Stock Fund	760	645		4.10
Jennison Large Cap Growth Fund	665	481		2.75
American Funds EuroPacific Growth R6	264	236		4.70
T. Rowe Price Mid-Cap Value Fund	189	146		5.11
Voya Small Cap Growth Equity Fund	169	126		3.33
Artisan Mid Cap Fund	134	128		6.85
PIMCO Total Return I Fund	113	97		5.10
Virtus Ceredex Small-Cap Value Eq I	79	70		4.90
Prudential High Yield Fund	49	42		3.60
Total Tier II Active	\$3,521	\$3,153	21.8%	\$3.03
Tier III				
Total Self Directed Brokerage Account	\$417	\$272	2.6%	NA
Total Defined Contribution Assets	\$16,114	\$12,500	100.0%	\$0.86

*Loan Fund \$191M as of 9/30/24

NOTE: Totals may not be exact due to rounding.

Defined Contribution Performance by Fund

9/30/24

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>10-Years</u>	<u>Since Inc</u>
State Street Target Retirement Income Fund	\$ 116,751,989	16.1	2.9	5.4	4.7	N/A
State Street Income Custom Index		16.0	2.8	5.4	4.7	N/A
Morningstar Target-Date Retirement		16.5	2.1	4.3	4.2	N/A
Variance State Street Income Custom Index		0.1	0.1	0.0	0.0	N/A
Variance Morningstar Target-Date Retirement		(0.4)	0.8	1.1	0.5	N/A
State Street Target Retirement 2020 Fund	\$134,938,005	16.7	2.9	6.1	5.7	N/A
State Street 2020 Custom Index		16.6	2.9	6.1	5.7	N/A
Morningstar Target-Date 2020		18.9	2.7	5.8	5.7	N/A
Variance State Street 2020 Custom Index		0.1	0.0	0.0	0.0	N/A
Variance Morningstar Target-Date 2020		(2.2)	0.2	0.3	0.0	N/A
State Street Target Retirement 2025 Fund	\$319,302,347	19.9	3.4	7.4	6.8	N/A
State Street 2025 Custom Index		19.9	3.4	7.4	6.7	N/A
Morningstar Target-Date 2025		20.1	3.0	6.4	6.1	N/A
Variance State Street 2025 Custom Index		0.0	0.0	0.0	0.1	N/A
Variance Morningstar Target-Date 2025		(0.2)	0.4	1.0	0.7	N/A
State Street Target Retirement 2030 Fund	\$477,905,169	23.7	4.1	8.5	7.5	N/A
State Street 2030 Custom Index		23.7	4.1	8.5	7.4	N/A
Morningstar Target-Date 2030		22.2	3.8	7.6	6.9	N/A
Variance State Street 2030 Custom Index		0.0	0.0	0.0	0.1	N/A
Variance Morningstar Target-Date 2030		1.5	0.3	0.9	0.6	N/A
State Street Target Retirement 2035 Fund	\$614,754,806	25.5	4.5	9.1	7.9	N/A
State Street 2035 Custom Index		25.5	4.4	9.1	7.9	N/A
Morningstar Target-Date 2035		24.5	4.7	8.8	7.7	N/A
Variance State Street 2035 Custom Index		0.0	0.1	0.0	0.0	N/A
Variance Morningstar Target-Date 2035		1.0	(0.2)	0.3	0.2	N/A
State Street Target Retirement 2040 Fund	\$651,747,748	26.7	4.9	9.7	8.3	N/A
State Street 2040 Custom Index		26.8	4.8	9.6	8.2	N/A
Morningstar Target-Date 2040		26.5	5.5	9.8	8.3	N/A
Variance State Street 2040 Custom Index		(0.1)	0.1	0.1	0.1	N/A
Variance Morningstar Target-Date 2040		0.2	(0.6)	(0.1)	0.0	N/A
State Street Target Retirement 2045 Fund	\$729,034,043	27.7	5.2	10.2	8.6	N/A
State Street 2045 Custom Index		27.7	5.1	10.1	8.5	N/A
Morningstar Target-Date 2045		28.1	6.1	10.4	8.6	N/A
Variance State Street 2045 Custom Index		0.0	0.1	0.1	0.1	N/A
Variance Morningstar Target-Date 2045		(0.4)	(0.9)	(0.2)	0.0	N/A
State Street Target Retirement 2050 Fund	\$962,418,547	28.5	5.4	10.5	8.7	N/A
State Street 2050 Custom Index		28.6	5.3	10.5	8.7	N/A
Morningstar Target-Date 2050		28.9	6.4	10.7	8.8	N/A
Variance State Street 2050 Custom Index		(0.1)	0.1	0.0	0.0	N/A
Variance Morningstar Target-Date 2050		(0.4)	(1.0)	(0.2)	(0.1)	N/A
State Street Target Retirement 2055 Fund	\$1,034,738,715	28.7	5.5	10.5	8.7	N/A
State Street 2055 Custom Index		28.7	5.4	10.5	8.7	N/A
Morningstar Target-Date 2055		29.2	6.5	10.8	8.8	N/A
Variance State Street 2055 Custom Index		0.0	0.1	0.0	0.0	N/A
Variance Morningstar Target-Date 2055		(0.5)	(1.0)	(0.3)	(0.1)	N/A
State Street Target Retirement 2060 Fund	\$569,167,074	28.7	5.5	10.5	N/A	8.6
State Street 2060 Custom Index		28.7	5.4	10.5	N/A	8.6
Morningstar Target-Date 2060		29.3	6.6	10.9	N/A	8.7
Variance State Street 2060 Custom Index		0.0	0.1	0.0	N/A	0.0
Variance Morningstar Target-Date 2060		(0.6)	(1.1)	(0.4)	N/A	(0.1)

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>10-Years</u>	<u>Since Inc</u>
State Street Target Retirement 2065 Fund	\$124,902,978	28.7	5.5	N/A	N/A	9.4
<i>State Street 2065 Custom Index</i>		28.7	5.4	N/A	N/A	9.4
<i>Morningstar Target-Date 2065+</i>		29.5	6.7	N/A	N/A	9.6
<i>Variance State Street 2065 Custom Index</i>		0.0	0.1	N/A	N/A	0.0
<i>Variance Morningstar Target-Date 2065+</i>		(0.8)	(1.2)	N/A	N/A	(0.2)
TIER 1						
State Street S&P 500 Index Fund	\$2,483,830,126	36.3	11.9	16.0	13.4	N/A
<i>S&P 500 Index</i>		36.4	11.9	16.0	13.4	N/A
<i>Morningstar Large Blend</i>		32.8	10.1	14.3	11.8	N/A
<i>Variance S&P 500 Index</i>		(0.1)	0.0	0.0	0.0	N/A
<i>Variance Morningstar Large Blend</i>		3.5	1.8	1.7	1.6	N/A
State Street US Bond Index Fund	\$1,300,501,554	11.6	(1.4)	0.3	1.8	N/A
<i>Bloomberg U.S. Aggregate Bond Index</i>		11.6	(1.4)	0.3	1.8	N/A
<i>Morningstar Intermediate Core Bond</i>		11.6	(1.4)	0.4	1.8	N/A
<i>Variance Bloomberg U.S. Aggregate Bond Index</i>		0.0	0.0	0.0	0.0	N/A
<i>Variance Morningstar Intermediate Core Bond</i>		0.0	0.0	(0.1)	0.0	N/A
State Street Global All Cap Equity ex-U.S. Index Fund	\$1,136,239,307	25.0	4.1	7.9	5.5	N/A
<i>MSCI ACWI ex USA IMI (Net)</i>		25.1	3.7	7.7	5.3	N/A
<i>Morningstar Foreign Large Blend</i>		24.2	4.3	7.7	5.4	N/A
<i>Variance MSCI ACWI ex USA IMI (Net)</i>		(0.1)	0.4	0.2	0.2	N/A
<i>Variance Morningstar Foreign Large Blend</i>		0.8	(0.2)	0.2	0.1	N/A
State Street S&P Mid Cap Index Fund	\$901,972,580	26.8	7.5	11.8	10.3	N/A
<i>S&P 400 Index</i>		26.8	7.5	11.8	10.3	N/A
<i>Morningstar Mid-Cap Blend</i>		27.6	6.7	11.2	9.4	N/A
<i>Variance S&P 400 Index</i>		0.0	0.0	0.0	0.0	N/A
<i>Variance Morningstar Mid-Cap Blend</i>		(0.8)	0.8	0.6	0.9	N/A
BlackRock Government Short-Term Investment Fund	\$309,546,735	5.4	3.6	2.3	1.6	N/A
<i>FTSE Treasury Bill 1 Mon USD</i>		5.6	3.6	2.3	1.6	N/A
<i>Variance FTSE Treasury Bill 1 Mon USD</i>		(0.2)	0.0	0.0	0.0	N/A
BlackRock S&P Small Cap 600 Equity Index Fund	\$185,109,057	26.1	4.2	10.3	N/A	N/A
<i>S&P SmallCap 600 Index</i>		25.9	4.0	10.2	N/A	N/A
<i>Morningstar Small Blend</i>		25.0	4.4	10.2	N/A	N/A
<i>Variance S&P SmallCap 600 Index</i>		0.2	0.2	0.1	N/A	N/A
<i>Variance Morningstar Small Blend</i>		1.1	(0.2)	0.1	N/A	N/A
BlackRock Emerging Markets Index Fund	\$122,791,981	24.7	(0.2)	5.3	3.8	N/A
<i>MSCI Emerging Market (Net)</i>		26.1	0.4	5.7	4.0	N/A
<i>Morningstar Diversified Emerging Mkts</i>		23.0	(0.1)	5.8	3.7	N/A
<i>Variance MSCI Emerging Market (Net)</i>		(1.4)	(0.6)	(0.4)	(0.2)	N/A
<i>Variance Morningstar Diversified Emerging Mkts</i>		1.7	(0.1)	(0.5)	0.1	N/A
TIER 2						
Stable Value Fund	\$1,101,461,578	2.4	2.1	2.1	2.2	N/A
<i>BofA Merrill Lynch US 3-Month Treasury Bill Index</i>		5.5	3.5	2.3	1.6	N/A
<i>Hueler Universe</i>		3.0	2.5	2.3	2.2	N/A
<i>Variance BofA Merrill Lynch US 3-Month Treasury Bill Index</i>		(3.1)	(1.4)	(0.2)	0.6	N/A
<i>Variance Hueler Universe</i>		(0.6)	(0.4)	(0.2)	0.0	N/A
Dodge & Cox Stock Fund	\$759,572,407	27.9	10.5	14.4	11.2	N/A
<i>Russell 1000 Value Index</i>		27.8	9.0	10.7	9.2	N/A
<i>Morningstar Large Value</i>		27.1	9.6	11.2	9.3	N/A
<i>Variance Russell 1000 Value Index</i>		0.1	1.5	3.7	2.0	N/A
<i>Variance Morningstar Large Value</i>		0.8	0.9	3.2	1.9	N/A
Jennison Large Cap Growth Equity Fund	\$664,531,855	42.1	6.3	18.4	15.9	15.7
<i>Russell 1000 Growth Index</i>		42.2	12.0	19.7	16.5	16.6
<i>Morningstar Large Growth</i>		38.8	7.4	16.1	13.7	13.1
<i>Variance Russell 1000 Growth Index</i>		(0.1)	(5.7)	(1.3)	(0.6)	(0.8)
<i>Variance Morningstar Large Growth</i>		3.3	(1.1)	2.3	2.2	2.6

<u>Fund Name</u>	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>10-Years</u>	<u>Since Inc</u>
American Funds EuroPacific Growth R6 Fund	\$263,655,373	24.7	0.1	7.5	6.3	N/A
MSCI ACWI Ex USA NR USD		25.4	4.1	7.6	5.2	N/A
Morningstar Foreign Large Growth		26.7	0.2	7.7	6.6	N/A
Variance MSCI ACWI Ex USA NR USD		(0.7)	(4.0)	(0.1)	1.1	N/A
Variance Morningstar Foreign Large Growth		(2.0)	(0.1)	(0.2)	(0.3)	N/A
T. Rowe Price Mid-Cap Value Fund	\$189,453,470	32.6	12.6	14.5	10.6	N/A
Russell Midcap Value Index		29.0	7.4	10.3	8.9	N/A
Morningstar Mid-Cap Value		25.8	8.5	11.0	8.6	N/A
Variance Russell Midcap Value Index		3.6	5.2	4.2	1.7	N/A
Variance Morningstar Mid-Cap Value		6.8	4.1	3.5	2.0	N/A
Voya Small Cap Growth Equity Fund	\$168,773,112	35.1	4.3	10.1	8.6	N/A
Russell 2000 Growth Index		27.7	(0.4)	8.8	8.9	N/A
Morningstar Small Growth		25.7	(1.4)	10.0	9.9	N/A
Variance Russell 2000 Growth Index		7.4	4.7	1.3	(0.3)	N/A
Variance Morningstar Small Growth		9.4	5.7	0.1	(1.3)	N/A
Artisan Mid Cap Fund	\$133,501,314	16.8	(5.4)	9.7	10.0	N/A
Russell Midcap Growth Index		29.3	2.3	11.5	11.3	N/A
Morningstar Mid-Cap Growth		26.4	0.0	10.5	10.4	N/A
Variance Russell Midcap Growth Index		(12.5)	(7.7)	(1.8)	(1.3)	N/A
Variance Morningstar Mid-Cap Growth		(9.6)	(5.4)	(0.8)	(0.4)	N/A
PIMCO Total Return I Fund	\$113,128,777	13.0	(1.2)	0.8	2.2	N/A
Bloomberg U.S. Aggregate Bond Index		11.6	(1.4)	0.3	1.8	N/A
Morningstar Intermediate Core-Plus Bond		12.4	(1.2)	0.8	2.0	N/A
Variance Bloomberg U.S. Aggregate Bond Index		1.4	0.2	0.5	0.4	N/A
Variance Morningstar Intermediate Core-Plus Bond		0.6	0.0	0.0	0.2	N/A
Virtus Ceredex Small-Cap Value Eq I Fund	\$78,672,017	23.8	7.8	9.2	9.0	N/A
Russell 2000 Value Index		25.9	3.8	9.3	8.2	N/A
Morningstar Small Blend		25.0	4.4	10.2	8.6	N/A
Variance Russell 2000 Value Index		(2.1)	4.0	(0.1)	0.8	N/A
Variance Morningstar Small Blend		(1.2)	3.4	(1.0)	0.4	N/A
Prudential High Yield Fund	\$48,536,555	15.6	2.4	4.5	5.3	5.1
Bloomberg U.S. Corp. HY 1% Issuer Cap Index		15.7	3.1	4.6	5.0	4.7
Morningstar High Yield Bond		14.0	2.9	4.2	4.2	3.7
Variance Bloomberg U.S. Corp. HY 1% Issuer Cap Index		(0.1)	(0.7)	(0.1)	0.3	0.3
Variance Morningstar High Yield Bond		1.6	(0.5)	0.3	1.1	1.4

TIER 3

Self Directed	\$417,062,661
TOTAL	\$16,114,001,882
Loan Fund:	\$191,090,281

Disclaimer



This presentation was given solely for the purpose of explaining the structure, investment process, and returns for the State of Michigan Retirement System. It should not be interpreted in any way as financial advice.