

# INVESTMENT ADVISORY COMMITTEE MEETING

## June 14, 2018

### State of Michigan Retirement Systems

#### Quarterly Investment Review



Nick A. Khouri, State Treasurer

Prepared by Bureau of Investments  
Michigan Department of Treasury

# INVESTMENT ADVISORY COMMITTEE MEETING

JUNE 14, 2018

## Agenda



- 9:30 a.m. Call to Order and Opening Remarks
- 9:40 a.m. Approval of the 3/8/18 IAC Meeting Minutes
- 9:45 a.m. Executive Summary & Performance for Periods Ending 3/31/18
- 10:00 a.m. Current Asset Allocation Review  
Markets Review and Outlook
- 10:15 a.m. Guest Speaker: John Danhaki, Managing Partner  
- Leonard Green & Partners
- 10:45 a.m. Review of Investment Reports
- Private Equity
  - Absolute and Real Return/Oppportunistic – *Receive and File*
  - Real Estate & Infrastructure – *Receive and File*
  - Domestic Equity – *Receive and File*
  - Fixed Income – *Receive and File*
  - International Equity – *Receive and File*
- Basket Clause – *Receive and File*
- 11:00 a.m. Closing Remarks ~ Adjournment



### 2018 Meeting Schedule

Thursday, September 6, 2018

Tuesday, December 11, 2018

All meetings start at 9:30 a.m.

[www.michigan.gov/treasury](http://www.michigan.gov/treasury)

# State of Michigan Retirement Systems

## MINUTES

Investment Advisory Committee Meeting

June 14, 2018



Jon M. Braeutigam  
Chief Investment Officer  
Bureau of Investments

## INVESTMENT ADVISORY COMMITTEE

The Investment Advisory Committee (IAC) held its quarterly meeting on Thursday, March 8, 2018, at the Bureau of Investments, Great Lakes Conference Room, 2501 Coolidge Road, Suite 400, East Lansing, Michigan.

### Members Present:

James Nicholson, Chairman  
Reginald G. Sanders  
Kerrie Vanden Bosch, ORS  
Allan Pohl, LARA  
John Walsh, DTMB

### In attendance from the Department of Treasury:

Treasurer Nick Khouri  
Gregory Parker  
Jack Behar  
Dan Quigley  
Ann Stange  
Ann Storberg  
Jane Waligorski  
Ryan Marr  
Kelly Moffatt  
Janet Sudac

Jon Braeutigam  
Jim Elkins  
Brian Liikala  
Travis Haney  
Tim Reynolds  
Karen Stout  
Mark Porrell  
Annette Russell  
Jennifer Yeung  
Marge McPhee

Robert Brackenbury  
Peter Woodford  
Patrick Moraniec  
Woody Tyler  
Giles Feldpausch  
Lee Logan  
Barb Becker  
Bob Anderson  
Lori Barrett

### Others in attendance:

Max Kotary  
Molly Jason  
Tom Nastas

Tim McEnery  
Dick Holcomb

Steve Cummings  
Paul Lerg

### **Call to Order**

Chairman James Nicholson called the IAC Meeting to order at 9:30 a.m. on March 8, 2018. He opened the meeting with a quote from Shakespeare stating that Shakespeare once said that a heavy purse makes a light heart. Therefore, since the pension fund numbers are very good we are light-hearted this morning.

### **Approval of the December 12, 2017, Minutes**

- Chairman Nicholson asked for a motion to approve the minutes of the December 12, 2017, IAC meeting. Mr. Allan Pohl so moved, the motion was seconded by Mr. John Walsh, there were no objections – motion carried.

## **Executive Summary Tab** – Performance Review – Mr. Jon Braeutigam

- Mr. Braeutigam stated that it is now nine years since the global financial crisis. It has been a long economic recovery over this time which has been one of the longest ever. This recovery period included low interest rates and boosting asset prices making it an excellent time to be in risk assets and to be fully invested in risk assets.
- Mr. Braeutigam stated that the ten-year return includes the impact of the global financial crises. Over a very long horizon, since 1979, the annualized rate of return on the plan assets has been approximately 9.5%.
- Mr. Braeutigam explained that the past year resulted in great absolute and relative returns, with strong markets across the board. The Plans one-year earnings is 16.2%. Experts expect lower returns during the next seven to ten years.
- Mr. Braeutigam further stated that compounding even slightly higher than peer returns on \$69.9 billion of SMRS' assets, significantly adds up over time. For example, the ten-year annualized return of 6.4% compared to the 5.9% peer median return would add approximately \$6 billion of value to SMRS' assets over a ten-year period.

## **Performance and Asset Allocation Tabs** – Mr. Greg Parker

- Mr. Parker noted that the Plans rate of return required for asset allocation is 7%. In order to meet this goal risks must be taken. The two primary risks are equity market volatility and liquidity.
- Mr. Parker explained the second primary risk, of multiple risks, is illiquidity risk. Over the past quarter, approximately \$3 billion in new commitments were made to illiquid assets. In total there is \$13 billion of outstanding commitments in illiquid assets.
- Mr. Parker discussed capital markets explaining that the two-year Treasury is about 1% higher than it was one year ago. The ten-year Treasury is about 50 basis points (bps) higher than it was a year ago. Therefore, the short end of the curve is rising faster than the long-term.
- Mr. Parker discussed the notable stock market drop of 5% during the first week of February, 2018. He stated that history shows that 3 months after a drop of this level, the stock market is up 55% of the time.
- Mr. Parker noted the global economy is good at this time. The U.S. economy is good. This portrays good for fundamentals. Analysts expect great growth in earnings per share in both U.S. and non-U.S. markets to the tune of over 20% year-over-year growth over the next year.
- Mr. Parker discussed performance stating the necessity to take risks. Peers are allocated higher to domestic equity and private equity and the Plan is slightly overweight versus peers to international equity. Although in general, peers have more equity. Yet the Plans rate of return is higher over the past year.

- Mr. Parker explained that the team works very hard to achieve high rates of return. Thank you to the team.

**Guest Speaker - Mr. Mike Collins, Senior Portfolio Manager, PGIM Fixed Income**

- Mr. Collins spoke on fixed income and its presence in the market today. He spoke of the synchronized re-acceleration in global growth, fiscal policy, monetary policy, and the credit cycle.
- Mr. Collins discussed the global recovery to be synchronized, but lackluster. Global gross domestic product growth through the expansion has been well below the pre-crisis average. However, global growth has also been steady and is accelerating. Mr. Collins stated that it is more necessary to avoid losers than to pick winners.
- Mr. Collins noted that the central bank tailwind is reversing and that the global central bank balance sheet expansions are set to continue, but at a gradually slower pace over time.
- There were discussions on the different topics of his presentation. Several questions were asked and answered during his presentation.

**Review of Investment Reports – Received and Filed**

- The Fixed Income, Real Estate and Infrastructure, Absolute and Real Return/Oppportunistic, Private Equity, Domestic Equity and International Equity, and the Basket Clause were received and filed.

**Closing Remarks**

Chairman Nicholson thanked everyone for attending and thanked staff once again for their hard work.

**Next Meeting Date and Adjournment**

The next IAC Meeting is scheduled for Thursday, June 14, 2018. The meeting was adjourned by Chairman Nicholson at 10:55 a.m.

Approved:

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James B. Nicholson, Chair

State of Michigan Retirement Systems

# EXECUTIVE SUMMARY

Investment Advisory Committee Meeting

June 14, 2018



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

# EXECUTIVE SUMMARY

March 2018

## Performance

*An overview.*

<b>MPSERS Plan (3/31/18)</b>	<b>1-Year</b>	<b>3-Years</b>	<b>5-Years</b>	<b>7-Years</b>	<b>10-Years</b>
Annualized Returns	13.8%	8.7%	10.1%	9.4%	7.1%
Policy Returns	12.8%	8.8%	10.1%	9.5%	7.6%
Peer Median Returns*	11.0%	7.4%	8.3%	8.1%	6.3%

\*State Street Universe greater than \$10 billion.

- Over the past one, three, five, seven, and ten years, the returns are much higher than peer median returns. Compared to the State Street Universe of public pension plans greater than \$10 billion, the returns are mostly within the top decile of returns. Also, over the past three and five years, the plans' returns were the least risky, as measured by standard deviation.
- The ten-year return includes the impact of the global financial crisis. Over a very long horizon, since 1979, the annualized rate of return on the plan assets has been approximately 9.5%.
- Compounding even slightly higher than peer returns on \$70.0 billion of SMRS' assets, significantly adds up over time. For example, the ten-year annualized return of 7.1% compared to the 6.3% peer median return would add approximately \$10 billion of value to SMRS' assets over a ten-year period.
- The returns beat the policy benchmark over the past year by 1.0%. Many of the asset classes posted results in excess of their performance benchmark adding tremendous value, however, a slightly defensive allocation offset some of the positive selectivity.
- For the year ending March 2018, returns exceeded the peer median return by 2.8%. The returns of the individual asset classes were better than median returns over this time period and a higher weighting to real estate also helped to achieve returns higher than peers.

## Asset Allocation

*A low return environment.*

- Given the historically low rates of return available in the capital markets for safe, short-term bonds, and in order for the assets to earn the long-term actuarial rates of returns, additional risks (primarily equity risk) must be assumed.
- Liquidity is another fundamental risk assumed and it is managed through asset allocation. The plans have outstanding capital commitments to fund approximately \$11.3 billion in illiquid assets, primarily in private equity. In the March 2018 quarter, approximately \$535 million of new commitments were made.
- The combined systems paid out approximately \$2.0 billion net of contributions over the past twelve months ending in March 2018.
- Over the past year, real estate had a net inflow of approximately \$690 million, international equity of \$500 million, long-term fixed income of nearly \$226 million, Real Return/Opportunistic received an allocation of approximately \$113 million. Over the past year in round numbers, the allocation to domestic equity was reduced by \$2.4 billion, private equity by \$482 million, absolute return by \$276, and the allocation to short-term cash decreased by approximately \$341 million.



## **Capital Markets**

*Risk assets in focus.*

- Capital market assumptions used for determining strategic asset allocations are being reduced across the board, and especially for safer, publicly traded fixed income securities. This is the general opinion for most consultants, investment banks, and other market participants. The reason for this phenomenon is the low interest rate environment caused by the policies of the Federal Reserve and other central banks, as well as the run-up in prices for most risk assets over the past several years since the depths of the Great Recession.
- Fundamentals supporting equities, both domestic and international are very strong. Analysts currently are estimating 2018 earnings growth around 20% in both market segments.
- Effects to the U.S. economy due to the recent tax cuts should begin to be observed in the near term. However, economic growth is occurring globally, and in many countries growth continues to accelerate.
- In response to higher expectations for growth and inflation, interest rates are increasing or normalizing. Some are concerned that shorter term interest rates are increasing faster than longer term rates, potentially resulting in an inverted yield curve which sometimes is associated with economic recessions. Historically, an inverted yield curve has occurred approximately a year ahead of an actual economic recession in the U.S. To date, the curve maintains a positive, though slightly below average, spread and based on this metric, concerns for a recession are likely premature.

## **Economic Backdrop**

*A pretty good U.S. economy.*

- Economic growth is a global phenomenon. Nearly all countries are experiencing economic growth, and for many countries growth is increasing at an accelerating rate.
- The Federal Reserve Bank of Atlanta tracks wage growth of individuals and the trend in wage growth is moderating. Its three-month median wage growth hit 3.3% in March 2018, 0.1% lower than the reading a year prior. Inflation hawks are looking for an acceleration in labor costs, potentially leading to a compression in corporate profit margins, however; at this time, the fear of such conditions is much greater than actual experiences.
- Housing prices in the U.S. are high. This is good for household balance sheets but may act as a headwind for household formations. According to the U.S. Bureau of the Census, the median sales price of new houses sold in the U.S. is \$337,200, up over 4.8% from the year prior and 5.5% annualized over the past five years. Low interest rates had made housing relatively affordable, however should rates continue to rise, house prices could become vulnerable.

**Investment Update**  
*Highlighting the quarter.*

(\$ Millions)

**NEW COMMITMENTS**

**January 1 – March 31, 2018**

<b><u>Asset class</u></b>	<b><u>Fund Name / (Managed By)</u></b>	<b><u>Commitment</u></b>
<b>Private Equity</b>		
	Khosla Ventures Seed D, L.P. (Khosla Ventures Seed Associates D, LLC)	\$ 10.0
	Axiom Asia V, L.P. (Mission Capital GP V, L.P.)	50.0
	Axiom Asia Co-Investment Fund I, L.P. (Mission Capital Co-Investment GP I, L.P.)	50.0
	Khosla Ventures VI, .LP. (Khosla Ventures Associates VI, LLC)	75.0
	Thoma Bravo Discover Fund II, L.P. (Thoma Bravo Discover Partners II, L.P.)	75.0
	Trilantic Capital Partners VI (North America), L.P. (Trilantic North America)	75.0
<b>Absolute and Real Return &amp; Opportunistic</b>		
	BroadRiver III, L.P. (BroadRiver Asset Management, L.P.)	\$200.0
<hr/> <b>TOTAL</b>		<b>\$535.0</b>

State of Michigan Retirement Systems

# PERFORMANCE

Investment Advisory Committee Meeting

June 14, 2018



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 Treasurer as fiduciary of the State of Michigan Retirement Systems, and various Michigan trust funds and the State's common cash.*

## **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.*

# MPSPERS PENSION

## Time-Weighted Rates of Return Periods Ending March 31, 2018

	% of Portfolio 3/31/18	Ten Years <sup>1</sup>		Seven Years <sup>1</sup>		Five Years <sup>1</sup>		Three Years <sup>1</sup>		One Year		Current Quarter	
		Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
<b>TOTAL PLAN</b>	<b>100.0</b>	<b>7.1</b>	<b>13</b>	<b>9.4</b>	<b>4</b>	<b>10.1</b>	<b>5</b>	<b>8.7</b>	<b>9</b>	<b>13.8</b>	<b>8</b>	<b>1.9</b>	<b>7</b>
Median - Greater than \$10 Billion <sup>2</sup>		6.3		8.1		8.3		7.4		11.0		0.3	
MPSPERS Total Plan Policy		7.6		9.5		10.1		8.8		12.8		1.3	
<b>DOMESTIC EQUITIES</b>	<b>24.3</b>	<b>9.9</b>	<b>39</b>	<b>12.6</b>	<b>23</b>	<b>13.6</b>	<b>24</b>	<b>10.6</b>	<b>32</b>	<b>16.7</b>	<b>21</b>	<b>0.7</b>	<b>20</b>
Median <sup>2</sup>		9.6		11.9		12.5		10.2		14.9		-0.3	
S&P 1500 Index		9.7		12.6		13.2		10.6		13.7		-0.7	
<b>INTERNATIONAL EQUITIES</b>	<b>18.3</b>	<b>3.9</b>	<b>32</b>	<b>5.9</b>	<b>46</b>	<b>7.3</b>	<b>38</b>	<b>7.6</b>	<b>41</b>	<b>18.2</b>	<b>36</b>	<b>-0.4</b>	<b>46</b>
Median <sup>2</sup>		3.5		5.8		7.2		6.9		17.3		-0.5	
International Blended Benchmark <sup>3</sup>		2.9		4.5		6.0		6.2		16.5		-1.2	
<b>PRIVATE EQUITIES</b>	<b>15.5</b>	<b>10.3</b>	<b>8</b>	<b>14.0</b>	<b>5</b>	<b>14.6</b>	<b>10</b>	<b>13.0</b>	<b>9</b>	<b>19.2</b>	<b>14</b>	<b>4.2</b>	<b>18</b>
Median <sup>2</sup>		7.1		9.7		10.1		9.7		13.3		2.5	
Alternative Blended Benchmark <sup>4</sup>		13.9		16.9		19.0		14.7		25.4		7.4	
<b>BONDS</b>	<b>12.2</b>	<b>4.9</b>	<b>17</b>	<b>4.1</b>	<b>27</b>	<b>3.3</b>	<b>14</b>	<b>3.3</b>	<b>13</b>	<b>3.3</b>	<b>9</b>	<b>-0.5</b>	<b>19</b>
Median <sup>2</sup>		4.2		3.6		2.2		1.8		1.9		-1.1	
Barclays Aggregate		3.6		2.9		1.8		1.2		1.2		-1.5	
<b>REAL ESTATE &amp; INFRASTRUCTURE</b>	<b>11.3</b>	<b>4.2</b>	<b>36</b>	<b>11.6</b>	<b>32</b>	<b>12.2</b>	<b>31</b>	<b>10.4</b>	<b>27</b>	<b>11.2</b>	<b>20</b>	<b>4.0</b>	<b>11</b>
Median <sup>2</sup>		3.5		10.8		10.7		9.1		8.8		1.9	
NCREIF - Property Blended Index <sup>5</sup>		4.7		9.2		8.6		7.3		5.8		1.4	
NCREIF Open Fund Index Net		4.2		10.8		10.4		9.0		7.1		2.0	
<b>REAL RETURN AND OPPORTUNISTIC</b>	<b>8.8</b>	<b>10.1</b>	<b>10.6</b>	<b>7.3</b>	<b>7.2</b>	<b>7.2</b>	<b>7.5</b>	<b>7.5</b>	<b>7.7</b>	<b>7.7</b>	<b>7.7</b>	<b>2.2</b>	<b>2.2</b>
50% (CPI +500 bps) + 50% (8% actuarial rate)													
<b>ABSOLUTE RETURN</b>	<b>5.7</b>	<b>1.3</b>	<b>4.6</b>	<b>2.4</b>	<b>3.1</b>	<b>3.1</b>	<b>3.1</b>	<b>3.3</b>	<b>3.3</b>	<b>6.7</b>	<b>6.7</b>	<b>1.6</b>	<b>1.6</b>
HFR1 FOF Cons 1 month lagged		1.1		2.4		3.1		1.9		3.7		1.0	
<b>CASH EQUIVALENTS</b>	<b>3.8</b>	<b>0.8</b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>	<b>0.7</b>	<b>1.0</b>	<b>1.0</b>	<b>1.5</b>	<b>1.5</b>	<b>0.5</b>	<b>0.5</b>
1 Month T-Bill		0.3		0.2		0.3		0.5		1.0		0.4	

<sup>1</sup> Annualized Returns and Percentile Rank.

<sup>2</sup> 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.

<sup>3</sup> International blended benchmark is S&P Developed BMI-EPAC 50/50 prior to 1/1/10. S&P Developed BMI-EPAC 75 USD / 25 Local, 1/1/10 to 9/30/10. MSCI ACWI ex USA Gross 10/1/10 to present.

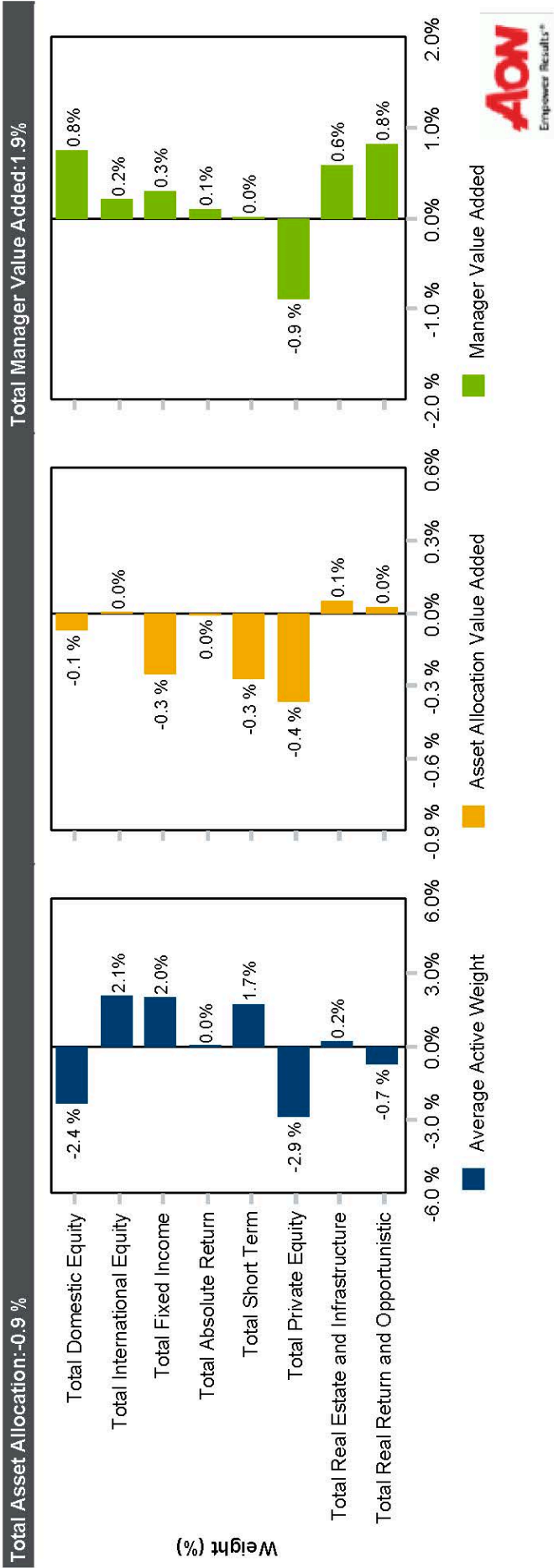
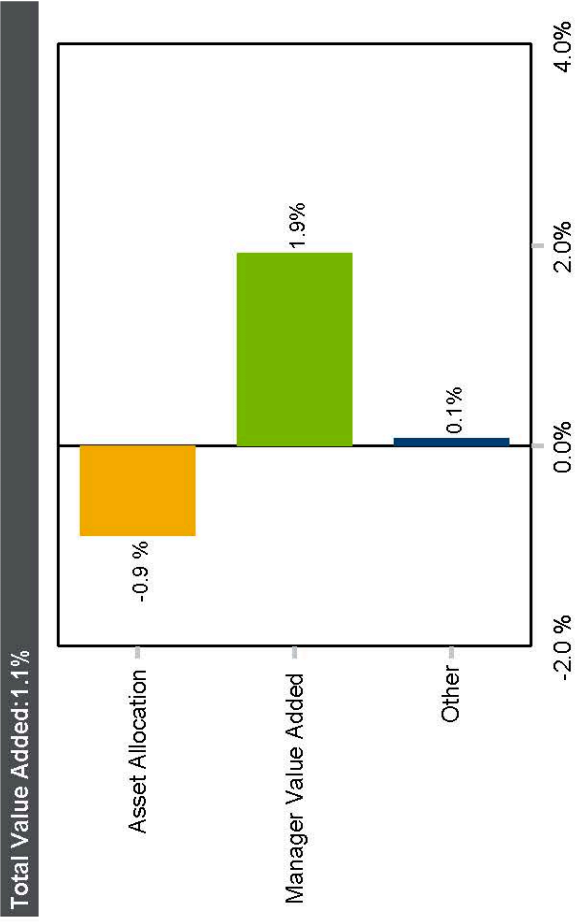
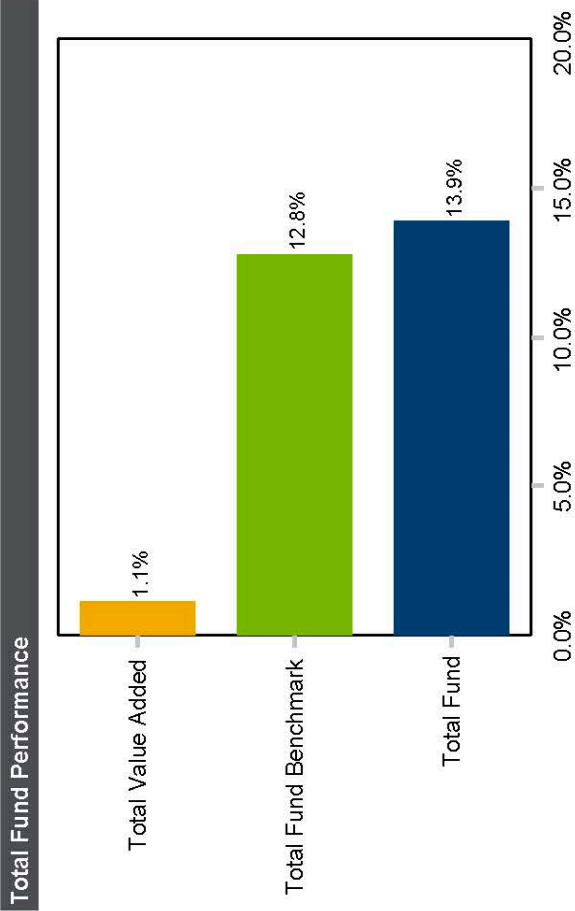
<sup>4</sup> SP 500 + 300 bps thru 12/31/06. Ending market value (EMV) weighted blend of 10 yr yield + 300 bps and SP 500 + 300 bps 12/31/06 to 9/30/09. EMV weighted blend of 10 yr yield + 300 bps and SP 500 + 300 bps 3-month lagged 9/30/09 to present.

<sup>5</sup> NCREIF - Property Blended Index is NPI minus 75 bps prior to October 2005, NPI minus 130 bps current.

Source: State Street Analytics; the NCREIF - NPI (Property Index) source is NCREIF; the S&P BMI-EPAC Index source is S&P.

**Total Fund Attribution**

**Total Michigan vs. Total Fund Benchmark**



# Cumulative and Consecutive Total Fund Returns

## MPSERS

Cumulative For Years Ending 3/31/18

	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year
MPSERS	13.8	12.5	8.7	8.8	10.1	10.2	9.4	10.0	11.5	7.1
Public Plan - Median (> \$10 billion)*	11.0	11.5	7.4	7.3	8.3	8.6	8.1	8.8	10.8	6.3
Rank	8	12	9	5	5	4	4	13	26	13
bp Difference - Median	276	102	127	147	183	161	130	123	69	79

Consecutive For Years Ending

	03/18	03/17	03/16	03/15	03/14	03/13	03/12	03/11	03/10	03/09
MPSERS	13.8	11.2	1.4	9.3	15.7	10.4	5.0	14.2	24.3	-25.5
Public Plan - Median (> \$10 billion)*	11.0	11.5	-0.2	7.1	13.0	10.5	4.5	13.8	29.0	-27.7
Rank	8	55	11	10	7	52	32	43	86	27
bp Difference - Median	276	-27	151	219	268	-6	50	45	-462	220

## MSERS

Cumulative For Years Ending 3/31/2018

	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year
MSERS	13.8	12.5	8.7	8.8	10.1	10.2	9.4	10.0	11.5	7.0
Public Plan - Median (> \$1 billion)*	10.5	11.4	7.3	7.2	8.1	8.5	7.9	8.8	10.8	6.3
Rank	9	18	6	3	4	4	6	9	34	27
bp Difference - Median	324	112	133	166	205	170	154	121	63	71

Consecutive For Years Ending

	03/18	03/17	03/16	03/15	03/14	03/13	03/12	03/11	03/10	03/09
MSERS	13.8	11.3	1.3	9.2	15.6	10.4	4.8	14.1	24.1	-25.7
Public Plan - Median (> \$1 billion)*	10.5	11.8	-0.3	6.9	12.5	10.4	4.4	14.0	29.4	-27.9
Rank	9	58	8	8	9	49	35	48	91	31
bp Difference - Median	324	-51	161	236	309	2	41	12	-529	221

\*State Street Public Funds Universe

## Cumulative and Consecutive Total Fund Returns

<b>MSPRS</b>											
Cumulative For Years Ending 3/31/18											
	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	
MSPRS	13.8	12.5	8.7	8.8	10.1	10.2	9.4	10.0	11.4	7.0	
Public Plan - Median (> \$1 billion)*	10.5	11.4	7.3	7.2	8.1	8.5	7.9	8.8	10.8	6.3	
Rank	9	18	6	4	4	5	7	9	34	27	
bp Difference - Median	324	110	132	164	202	167	152	121	59	69	
Consecutive For Years Ending											
	03/18	03/17	03/16	03/15	03/14	03/13	03/12	03/11	03/10	03/09	
MSPRS	13.8	11.2	1.3	9.2	15.5	10.4	4.9	14.3	23.6	-25.5	
Public Plan - Median (> \$1 billion)*	10.5	11.8	-0.3	6.9	12.5	10.4	4.4	14.0	29.4	-27.9	
Rank	9	58	8	8	14	54	34	47	91	27	
bp Difference - Median	324	-55	161	235	299	-2	47	26	-573	236	

<b>MJRS</b>											
Cumulative For Years Ending 3/31/18											
	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year	
MJRS	13.8	12.5	8.7	8.8	10.0	10.0	9.3	9.9	11.1	6.8	
Public Plan - Median (> \$1 billion)*	10.5	11.4	7.3	7.2	8.1	8.5	7.9	8.8	10.8	6.3	
Rank	10	18	6	4	6	8	9	11	39	30	
bp Difference - Median	323	113	134	162	188	152	139	109	28	51	
Consecutive For Years Ending											
	03/18	03/17	03/16	03/15	03/14	03/13	03/12	03/11	03/10	03/09	
MJRS	13.8	11.3	1.3	9.1	14.9	10.2	4.9	14.2	21.7	-24.9	
Public Plan - Median (> \$1 billion)*	10.5	11.8	-0.3	6.9	12.5	10.4	4.4	14.0	29.4	-27.9	
Rank	10	57	8	8	24	60	34	48	93	24	
bp Difference - Median	323	-48	160	221	236	-22	45	20	-770	292	

\*State Street Public Funds Universe



State of Michigan Retirement Systems

# ASSET ALLOCATION REVIEW

Investment Advisory Committee Meeting

June 14, 2018

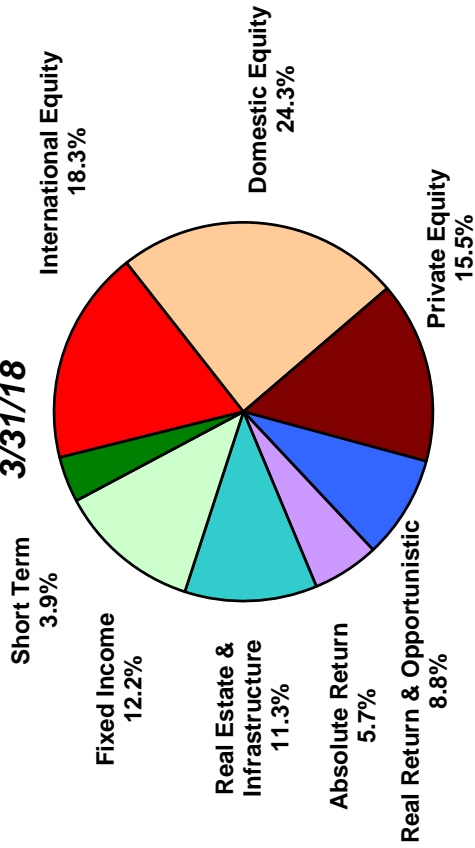


Jon M. Braeutigam  
Chief Investment Officer  
Bureau of Investments

# STATE OF MICHIGAN RETIREMENT SYSTEMS PROFILE - MARCH 2018

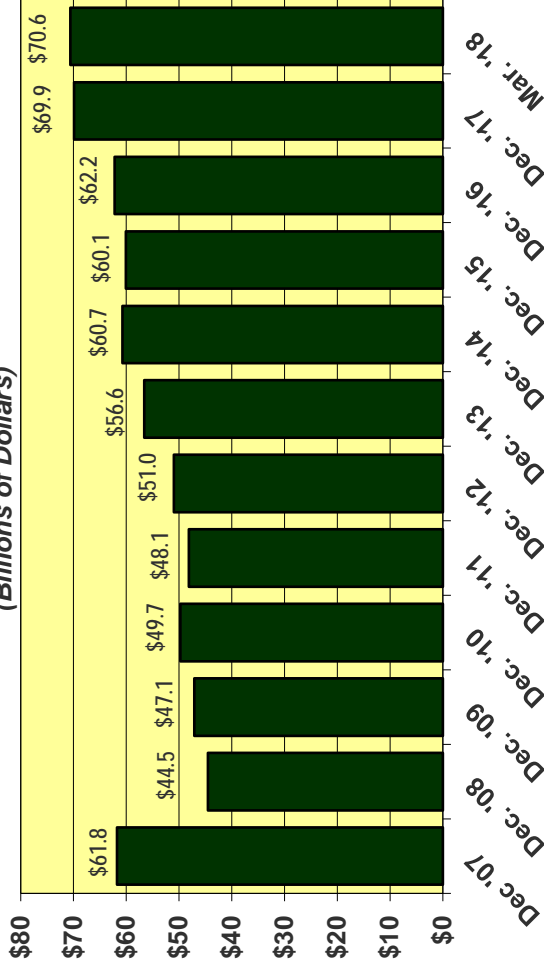
## Asset Allocation

**3/31/18**



## Market Value\*

(Billions of Dollars)



## Asset Allocation By Market Value

(In Millions)

Investment Strategies	3/31/18	3/31/17
Domestic Equity	\$17,136	\$16,905
International Equity	12,901	10,491
Private Equity	10,934	9,707
Fixed Income	8,627	8,090
Real Estate & Infra.	7,987	6,624
Real Return & Opport.	6,239	5,217
Absolute Return	4,055	4,071
Short Term***	2,742	3,088
<b>TOTAL</b>	<b>\$70,621</b>	<b>\$64,193</b>
	<b>100.0%</b>	<b>100.0%</b>

## Short Term Equivalents (in Billions)

Short Term Strategy***	\$2.7
Short Term in Other Inv. Strategies	0.6
<b>TOTAL SHORT TERM</b>	<b>\$3.3</b>
	<b>4.7% of Total Funds</b>

## Market Value By Plan ~ 3/31/18

(in Millions)

	Pension Plan		OPEB**		Combined	
	Mkt. Value	%	Mkt. Value	%	Mkt. Value	%
MPERS	\$48,765	77.0%	\$5,646	20.3%	\$54,411	77.0%
MSERS - (closed)	12,107	20.3%	2,224	2.3%	14,331	20.3%
MSPRS	1,443	2.3%	167	0.4%	1,610	2.3%
MJRS - (closed)	268	0.4%	1	0.0%	269	0.4%
<b>TOTAL</b>	<b>\$62,583</b>	<b>100.0%</b>	<b>\$8,038</b>	<b>100.0%</b>	<b>\$70,621</b>	<b>100.0%</b>

MSERS includes the Military Pension Fund

**18th Largest DB Public Pension Fund in the U.S.  
18th Largest DB Pension Fund in the U.S.**

*Pensions & Investments Survey - February 5, 2018 Issue*

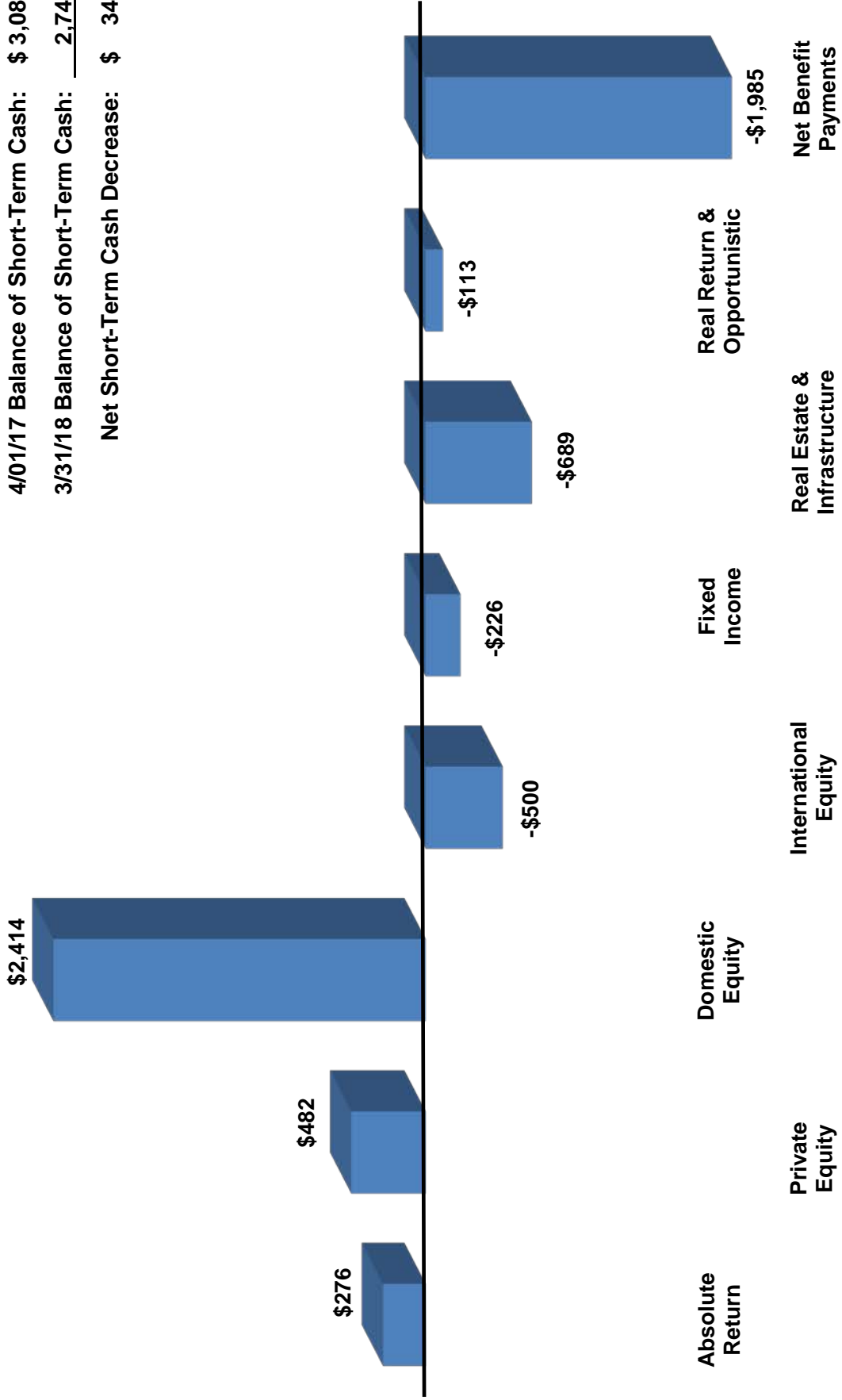
\*The combined net payout for the plans for FY 2017 was \$2.2 billion with \$24.2 billion paid out since FY 2008 thru FY 2017 (SOMCAFR). This represents the amount paid to beneficiaries in excess of employer and employee contributions.

\*\*OPEB - Other Post Employment Benefits

# Sources and Uses of Cash

April 2017 ~ March 2018

4/01/17 Balance of Short-Term Cash: \$ 3,088  
 3/31/18 Balance of Short-Term Cash: 2,747  
 Net Short-Term Cash Decrease: \$ 341



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 3/31/18

Asset Class	MPERS			MSERS			MSPRS			MJRS			SMRS
	Actual 3/31/18	Target 9/30/18	Target* 9/30/19	Actual 3/31/18	Target 9/30/18	Target* 9/30/19	Actual 3/31/18	Target 9/30/18	Target* 9/30/19	Actual 3/31/18	Target 9/30/18	Target* 9/30/19	Ranges
Broad U.S. Equity	24.3%	26.0%	28.0%	24.3%	26.0%	28.0%	24.3%	26.0%	28.0%	24.4%	26.0%	28.0%	20% - 50%
Private Equity	15.5%	16.5%	18.0%	15.5%	16.5%	18.0%	15.5%	16.5%	18.0%	15.6%	16.5%	18.0%	10% - 25%
Broad Int'l Equity	18.3%	17.5%	16.0%	18.3%	17.5%	16.0%	18.3%	17.5%	16.0%	18.4%	17.5%	16.0%	10% - 20%
U.S. Fixed Income Core	12.2%	11.5%	10.5%	12.3%	11.5%	10.5%	12.2%	11.5%	10.5%	12.3%	11.5%	10.5%	8% - 25%
Real Estate / Infrastructure	11.3%	10.0%	10.0%	11.3%	10.0%	10.0%	11.3%	10.0%	10.0%	11.4%	10.0%	10.0%	0% - 15%
Real Return / Opportunistic	8.8%	9.0%	9.5%	8.9%	9.0%	9.5%	8.9%	9.0%	9.5%	8.9%	9.0%	9.5%	0% - 15%
Absolute Return	5.7%	6.0%	6.0%	5.8%	6.0%	6.0%	5.8%	6.0%	6.0%	5.8%	6.0%	6.0%	0% - 12%
Cash	3.8%	3.5%	2.0%	3.6%	3.5%	2.0%	3.6%	3.5%	2.0%	3.4%	3.5%	2.0%	1% - 9%
<b>TOTAL</b>	100.0%	100.0%	100.0%	100.0%	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 Systems

# MARKETS REVIEW AND OUTLOOK

Investment Advisory Committee Meeting

June 14, 2018



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**)	Tactical (Short Term) Expectations***
Private Equity	11.1%	24.0%	13.9%	Hold
International Equity	9.6%	20.0%	2.7%	Add
Domestic Equity	7.9%	17.0%	9.7%	Trim
Real Estate (Core)	6.8%	11.5%	4.7%	Hold
Absolute Return	6.0%	9.0%	-0.7%	Hold
Real Ret/Opportunistic	8.8%	9.5%	6.8%	Add
Long-Term Fixed	3.3%	4.0%	3.6%	Hold
Short-Term	3.0%	1.0%	0.3%	Hold

\* Aon Hewitt Investment Consultants 2018 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.*

- Capital market assumptions used for determining strategic asset allocations are being reduced across the board, and especially for safer, publicly traded fixed income securities. This is the general opinion for most consultants, investment banks, and other market participants. The reason for this phenomenon is the low interest rate environment caused by the policies of the Federal Reserve and other central banks, as well as the run-up in prices for most risk assets over the past several years since the depths of the Great Recession.
- Fundamentals supporting equities, both domestic and international, are very strong. Analysts are estimating year-over-year earnings growth of close to 20% in both market segments.
- Effects to the U.S. economy due to the recent tax cuts should begin to be observed in the near term. However, economic growth is occurring globally, and in many countries, growth continues to accelerate.
- In response to higher expectations for growth and inflation, interest rates are increasing or normalizing. Some are concerned that shorter term interest rates are increasing faster than longer term rates, potentially resulting in an inverted yield curve which sometimes is associated with economic recessions. Historically, an inverted yield curve has occurred approximately a year ahead of an actual economic recession in the U.S. To date, the curve maintains a positive, though slightly below average, spread and based on this metric, concerns for a recession are likely premature.
- Publicly traded REITs are trading below NAV, and historically that has been a good starting valuation tailwind for investors choosing between public and private real estate.

## **International Equity**

*A compelling case.*

- International equities out-returned domestic equities over the year ending March 2018 by 2.8%. However, over the past three, five, seven, and ten years ending March 2018, the international market index, MSCI ACWI ex USA, underperformed the S&P 1500 index by -4.5%, -7.3%, -8.3%, and -7.0% annualized, respectively.
- Based on a price-to-earnings valuation multiple, excluding non-earning companies, both developed international and emerging market equity markets trade at approximately a 30% discount to U.S. counterparts.
- Year-over-year earnings growth for international markets is estimated to be over 16% for the year. Earnings in international markets can grow around 35% just to get back to all-time highs, suggesting that there could be a runway for earnings to grow at a high rate for some time. Trading at a valuation multiple discount, and seemingly with some relative strength, international equity represents a leveraged play on continued global growth.
- Within international equities, emerging markets have outperformed developed markets over the past one and three years by 11.0%, and 3.5% annualized, respectively. Over the past five and seven years, developed has outperformed emerging by 1.1% and 2.3%. The plan is overweight emerging markets, with a weight of 31.0% compared to the benchmark weight of 25.4%.
- International equity small-cap stocks outperformed the broader MSCI ACWI ex USA index over the past one, three, five, seven, and ten years by 4.1%, 4.2%, 2.7%, 1.9% and 2.8%, respectively. The plan is overweight international equity small caps by approximately 4.9%. However, this weight is being reduced as valuations within these securities look stretched.
- The plan is underweight international equity against a global benchmark (approximately 43% versus 48% of total public equity) though at a higher allocation than the peer median allocation; 18.3% versus peer median of 17.7%.

## **Domestic Equity**

*High earnings growth.*

- The broad U.S. stock market return for the one year ending March 2018 was 13.7%. Small cap stocks have lagged the overall market by -2.2%, -2.4%, -1.8% and -2.3% annualized over the past one, three, five, and seven years, respectively. Growth stocks continue their dominance over value stocks having outperformed by 11.6%, 4.0%, 4.2%, 3.2% and 3.7% annualized over the past one, three, five, seven and ten years, respectively.
- The effects of the recent tax cuts are still being digested by market participants. Year-over-year growth in analyst estimated earnings for the next year are close to 25%. Actual earnings growth may end up materially different, however, it is likely that gains in the U.S. equity market in 2018 will not rely significantly on an expanding multiple.
- Valuation metrics are very much above average and the absolute returns over the next cycle will not likely be as strong as the historical average of 11 – 12% year-over-year total returns.

## **Interest Rates**

*Rising rates.*

- At its March 2018 meeting, the Federal Reserve Board voted to raise its key interest rate. The market is currently pricing in a possibility for three more rate increases in 2018. The Fed has now raised rates six times since 2015, but the policy rate is still 90 bps below inflation, a rate which has been historically an extremely accommodative policy and in actuality, one that is more accommodative than when it started tightening rates in 2015.
- Short term rates are higher today than a year ago. U.S. 3-month LIBOR is nearly 125 basis points higher. The 2-year U.S. Treasury rate is also roughly 125 basis points higher than a year ago, the last time it was at this level was in November 2008.
- The 10-year U.S. Treasury ended March 2018 at 2.7%, about 35 basis points higher than the year prior. The curve is below average in terms of steepness; it is at its flattest since September 2007.
- Spreads on investment-grade fixed income are about at its normal level, just a few basis points below its average of 1.1%. Spreads on riskier high yield assets are much tighter at 120 basis points below average.

## **Real Estate**

*REIT market adjustment.*

- By March 2018, the REIT market as measured by the NAREIT index, has lost nearly 10% of its value since last year's peak in November. REITs are yielding close to 4.2%, about 1.2% more than the U.S. 10-year Treasury Rate, which is its long-term average spread above the risk-free rate.
- Publicly traded REITs are trading below NAV, and historically that has been a good starting valuation tailwind for investors choosing between public and private real estate.

## **Commodities**

*Weakening dollar.*

- Commodities prices broadly are higher over the year ending March 2018, as measured by the Thomson Reuters CRB Commodity Index, up about 5.6%. The price for crude oil is up 30% year-over-year to near \$65 per barrel. That is its highest price since 2014.
- As measured by the DXY index, the dollar lost more than 10% of its value since March 2017 versus a basket of foreign currencies.
- The price to hedge the dollar is rising. Although many short-term interest rates globally are lower than the rates in the U.S., once the value of hedging is included, many non-U.S. short-term investments are actually more attractive for global investors.



# ECONOMIC OUTLOOK

## Select Historic Economic Growth with Forecasts

*More growth ahead.*

Real GDP % Growth Actual/Forecasts	2016	2017	2018	2019	2020
World	3.2	3.8	3.8	3.7	3.3
U.S.	1.5	2.3	2.8	2.5	1.9
Developed (G8)	1.4	2.1	2.3	2.0	1.6
Asia	4.9	5.2	4.9	4.9	4.9
EMEA	1.6	3.5	3.1	2.9	2.6
Europe	1.8	2.4	2.3	2.0	1.7
Latin America	-1.1	1.9	2.5	2.9	2.9
China	6.7	6.9	6.5	6.3	6.2

\*Source: Bloomberg

## Economic Overview

*A very healthy jobs market.*

- The most recent reading of the annualized U.S. GDP growth was 2.3%, ahead of the consensus estimate of 2.0%. Current estimates for 2018 GDP growth for the U.S. is around 3.8%. Coincidental economic indicators such as the Institute for Supply Management's Manufacturing and Non-Manufacturing PMI Indexes are well above 50, indicating that the U.S. economy is likely to continue to grow.
- Economic growth is a global phenomenon. Nearly all countries are experiencing economic growth, and for many countries growth is increasing at an accelerating rate.
- The jobs market is very healthy. The national unemployment rate is 4.1% and the three-month average figure for initial jobless claims is at its lowest level since January 1970. In March 2018, there were 6.6 million job openings in the U.S. according to the Labor Department, about a million more than the year prior, and at an all-time record high.
- The Federal Reserve Bank of Atlanta tracks wage growth of individuals and the trend in wage growth is moderating. Its three-month median wage growth hit 3.3% in March 2018, 0.1% lower than the reading a year prior. Inflation hawks are looking for an acceleration in labor costs, potentially leading to a compression in corporate profit margins, however; at this time, the fear of such conditions is much greater than actual experiences.
- Housing prices in the U.S. are high. This is good for household balance sheets but may act as a headwind for household formations. According to the U.S. Bureau of the Census, the median sales price of new houses sold in the U.S. is \$337,200, up over 4.8% from the year prior and 5.5% annualized over the past five years. Low interest rates had made housing relatively affordable, however should rates continue to rise, house prices could become vulnerable.

# Annual Total Returns of Key Asset Classes 1998 - 2017

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
U.S. Equity	26.33%	26.97%	13.23%	10.40%	11.50%	40.82%	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%
Int'l Equity	19.97%	20.27%	12.24%	7.28%	10.52%	29.58%	14.48%	16.62%	16.59%	15.84%	2.05%	27.24%	13.11%	9.02%	16.17%	15.29%	11.81%	7.97%	Real Estate	21.13%
Real Estate	16.24%	18.93%	9.40%	7.24%	6.74%	9.01%	11.78%	5.65%	15.34%	8.67%	0.10%	16.05%	11.15%	8.35%	10.54%	10.99%	7.53%	5.63%	Corp. Bonds	6.96%
Gov't Bonds	9.85%	11.36%	6.16%	4.43%	3.57%	8.99%	5.83%	5.13%	9.21%	7.68%	-3.07%	9.65%	8.46%	2.96%	9.37%	7.70%	4.92%	0.66%	6.42%	3.88%
Corp. Bonds	8.59%	Cash	Hedge Funds	Hedge Funds	Inflation	Corp. Bonds	Corp. Bonds	Inflation	Cash	U.S. Equity	Real Estate	Inflation	Gov't Bonds	U.S. Equity	Hedge Funds	Inflation	Hedge Funds	Inflation	Int'l Equity	4.50%
Cash	5.24%	2.68%	3.39%	1.55%	1.79%	2.36%	3.48%	3.06%	4.27%	5.10%	-19.86%	0.19%	5.07%	0.10%	2.02%	1.49%	3.14%	2.09%	2.30%	3.88%
Inflation	1.60%	-1.94%	-6.98%	-10.64%	-14.95%	1.88%	3.25%	2.65%	3.46%	5.03%	-36.72%	-2.19%	1.50%	Hedge Funds	1.70%	-2.01%	0.04%	1.05%	Cash	0.84%
Hedge Funds	-1.61%	Gov't Bonds	Int'l Equity	Int'l Equity	U.S. Equity	Cash	Cash	Corp. Bonds	Inflation	Inflation	Int'l Equity	Real Estate	Cash	Cash	Cash	Gov't Bonds	Int'l Equity	Int'l Equity	Cash	0.27%
		-2.25%	-15.31%	-19.74%	-21.30%	1.16%	1.33%	1.95%	2.55%	4.06%	-45.52%	-16.86%	0.13%	-13.71%	0.11%	-2.60%	-3.87%	-5.67%	2.12%	0.84%

		Annualized Returns 1998 - 2017			
Return		Cash	1.97%	Gov't	4.57%
Risk		Cash	0.59%	Gov't	4.01%
		Hedge	3.69%	Hedge	5.81%
		Hedge	3.86%	Corp.	5.29%
				Int'l	6.13%
				Int'l	17.13%
				US Eq.	7.51%
				R.E.	9.78%
					8.33%

- Hedge Funds are represented by the HFRI FOF Conservative Index  
 - Inflation is represented by the U.S. Consumer Price Index  
 - International Equity is represented by the MSCI EAFE Index  
 2000 Forward - Int'l Equity is represented MSCI - AC World EX-USA Index  
 - Cash is represented by 30-day T-Bills  
 - U.S. Equity is represented by the S&P 1500  
 - Real Estate is represented by the NPI  
 - Corporate Bonds are represented by the Barclays Capital - Credit Index  
 - Government Bonds are represented by the Barclays Capital U.S. Government

State of Michigan Retirement Systems

# PRIVATE EQUITY REVIEW

Investment Advisory Committee Meeting

June 14, 2018



Peter A. Woodford  
Senior Investment Manager  
Private Equity Division

# EXECUTIVE SUMMARY

## Performance

<b>MPSERS Plan (3/31/18)</b>	<b>1-Year</b>	<b>3-Years</b>	<b>5-Years</b>	<b>7-Years</b>	<b>10-Years</b>
Annualized Returns	19.2%	13.0%	14.6%	14.0%	10.3%
PE Benchmark Returns	25.4%	14.7%	19.0%	16.9%	13.9%
Peer Median Returns	13.3%	9.7%	10.1%	9.7%	7.1%
Percentile Rank vs. Peers*	14	9	10	5	8

\*State Street Universe greater than \$1 billion

- Private Equity returns have been strong relative to peer median returns, ranking in the top 8% of peers over the past ten years. Outperformance to peers is likely attributable to fund selectivity and strategy.
- It is not unusual for private equity returns to lag the public market benchmark return in up markets and lead the public market benchmark in down markets. The past nine years have been no exception due to the second longest expansion in U.S. history. Over the past ten years, a full market cycle, the Private Equity Division has delivered 77 basis points of annualized excess returns over the S&P 500 (ten-year S&P 500 return 9.5%) but underperformed the benchmark by 3.6%.
- For the twelve months ending March 31, 2018, the Private Equity Division returned approximately \$482 million, net of contributions, to the pension fund. Although the pace of distributions continues to slow, distribution activity should remain healthy as long as the economic expansion continues. General Partners are incentivized to exit investments at current valuations.
- Commitments closed during the quarter include:
  - \$10 million to Khosla Ventures Seed D, LP, a venture capital fund
  - \$50 million to Axiom Asia V, LP, a fund of funds
  - \$50 million to Axiom Asia Co-Investment Fund I, LP, a co-investment fund
  - \$75 million to Khosla Ventures VI, LP, a venture capital fund
  - \$75 million to Thoma Bravo Discover Fund II, LP, a growth fund
  - \$75 million to Trilantic Capital Partners VI (North America) LP, a buyout fund

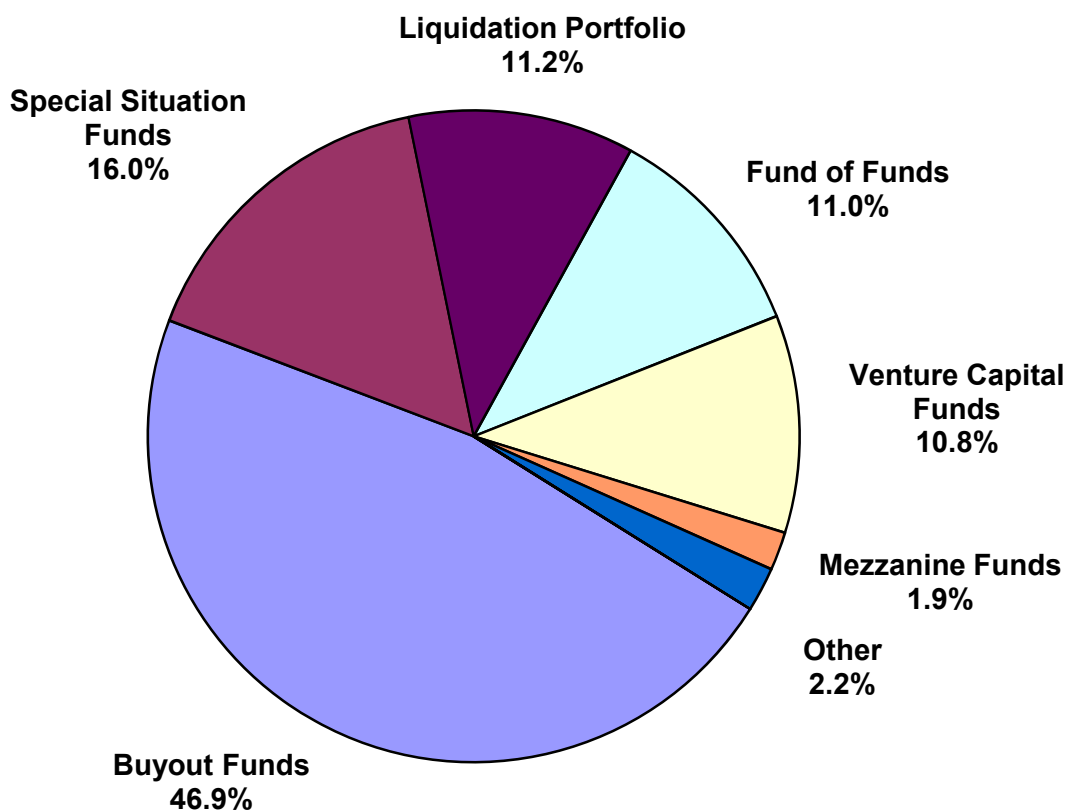
## Strategy Update

The strategy for the next twelve months will focus primarily on existing sponsors raising successor funds. This will be a combination of buyout funds, venture capital funds and growth equity funds seeking new commitments. The Private Equity Division continues to tilt slightly toward the middle market in an attempt to lessen its exposure to mega funds. Co-investments will play an increasingly important role in both averaging down costs and targeting specific investments with attractive risk/return characteristics.

# SMRS

## Private Equity

### 3/31/18



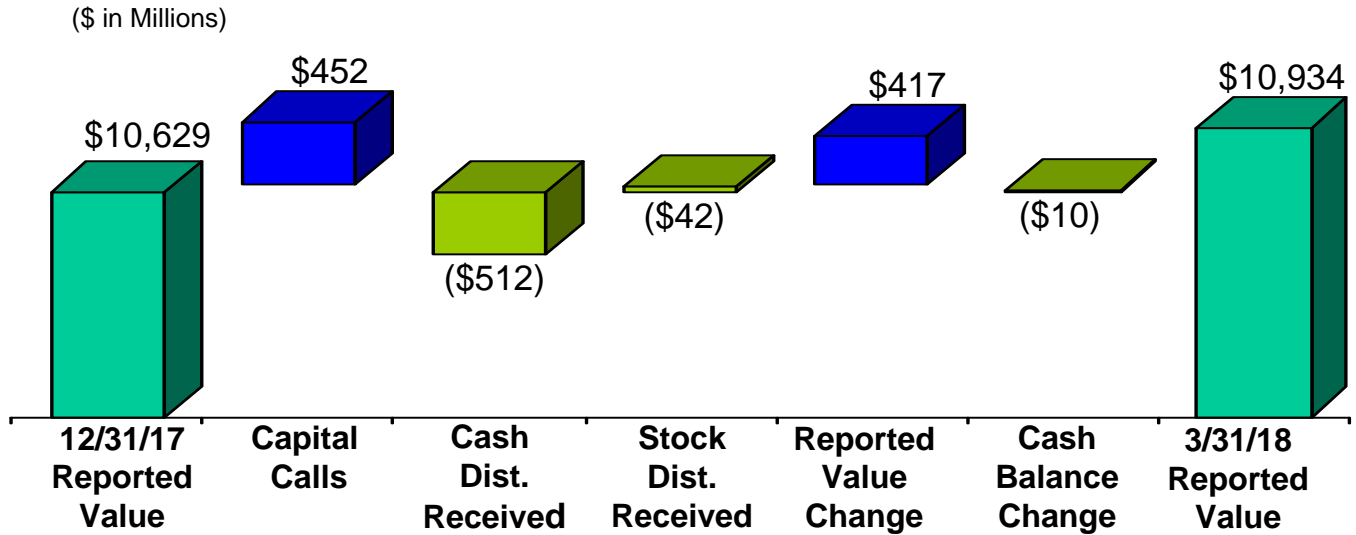
<b>Market Value in Millions</b>					
	<u>3/31/18</u>		<u>3/31/17</u>		
Buyout Funds	\$5,129	46.9%	\$4,375	45.1%	
Special Situation Funds	1,753	16.0%	1,645	16.9%	
Liquidation Portfolio	1,222	11.2%	1,397	14.4%	
Fund of Funds	1,207	11.0%	769	7.9%	
Venture Capital Funds	1,178	10.8%	1,059	10.9%	
Mezzanine Funds	205	1.9%	157	1.6%	
Other	240	2.2%	305	3.2%	
<b>Total</b>	<b><u>\$10,934</u></b>	<b><u>100.0%</u></b>	<b><u>\$9,707</u></b>	<b><u>100.0%</u></b>	

# SMRS

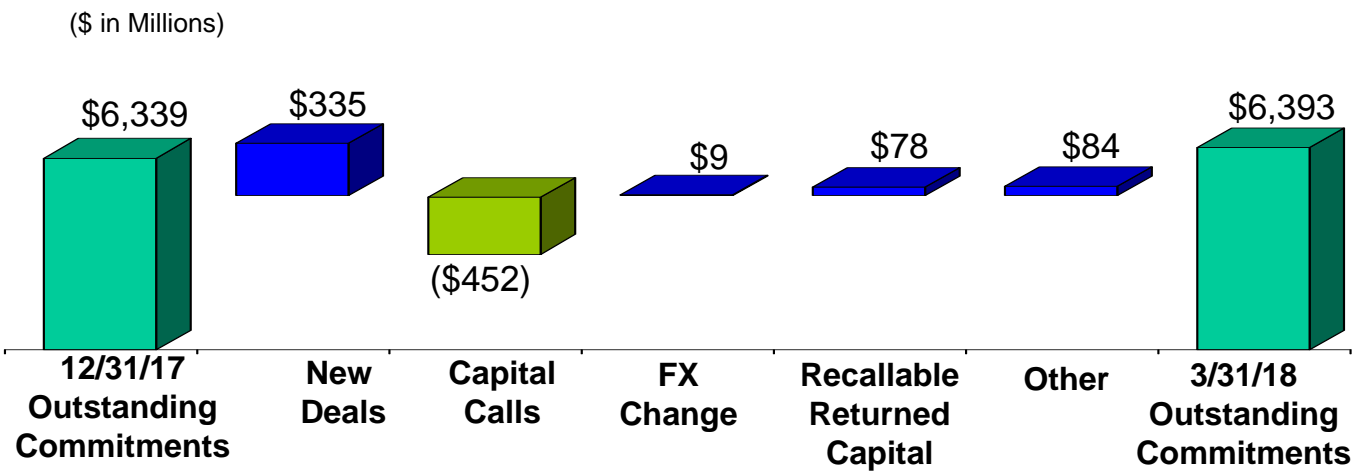
## Private Equity

### 3/31/18

#### Invested Commitments



#### Outstanding Commitments

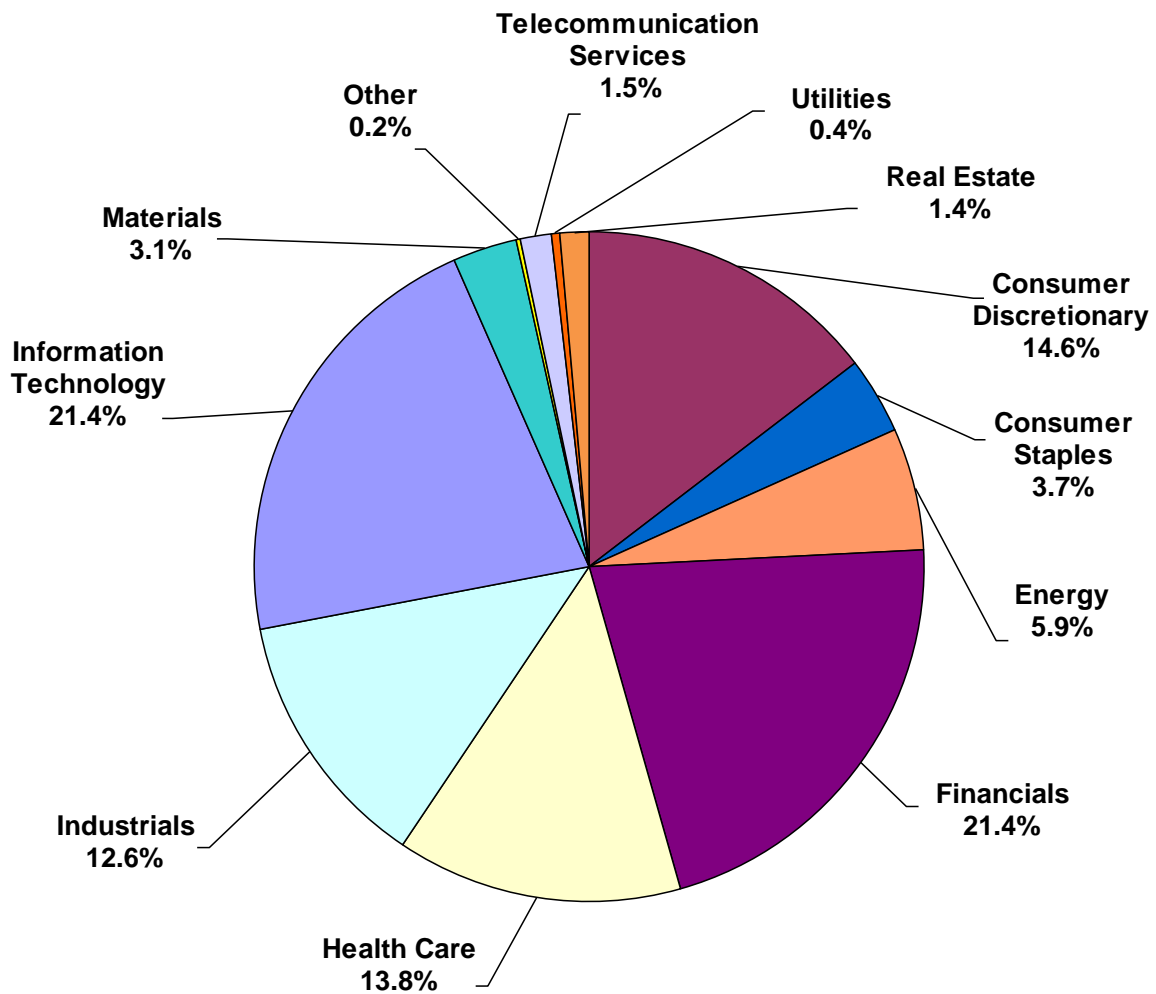


# SMRS

## Private Equity

3/31/18

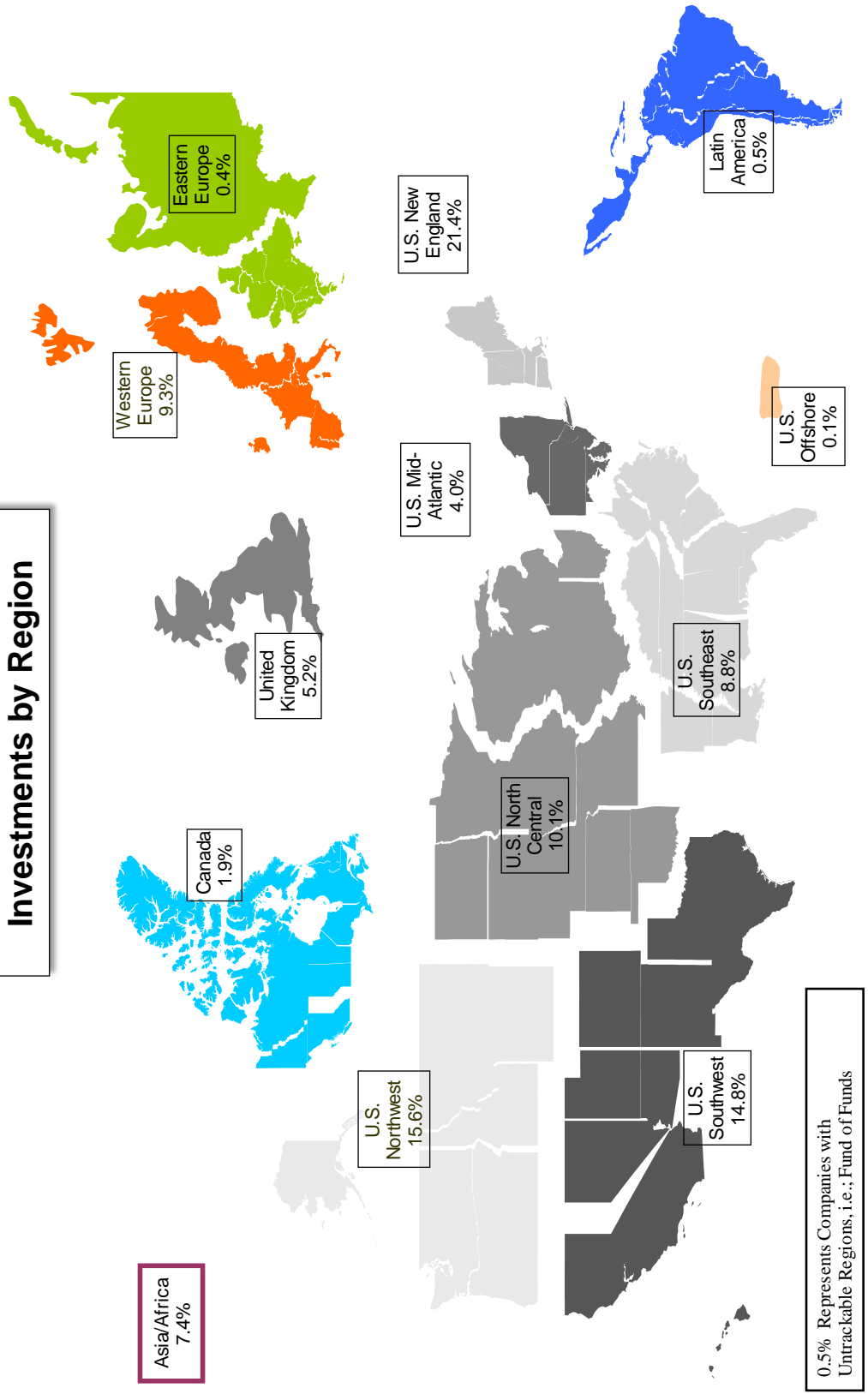
### Investments by Industry



These numbers are based on the most recent available General Partner Data; primarily 12/31/17 and are subject to change.

# SMRS Private Equity 3/31/18

## Investments by Region



0.5% Represents Companies with Untrackable Regions, i.e.; Fund of Funds

Geographic Report: North America 74%, Europe 15%, Asia 7%, Other 4%



# SMRS

## Private Equity

### 3/31/18

#### Portfolio by Vintage Year

(\$ in Millions)

<u>Asset Vintage</u>	<u>Reported Value</u>	<u>Outstanding Commitment</u>	<u>Total Exposure</u>
1986-98	\$ 5	\$ 3	\$ 8
1999	9	10	19
2000	65	26	91
2001	130	60	190
2002	47	9	56
2003	11	19	30
2004	99	35	134
2005	289	25	314
2006*	619	212	831
2007	644	140	784
2008	862	130	992
2009	34	1	35
2010	287	15	302
2011	742	108	850
2012	1,368	139	1,507
2013	482	188	670
2014	1,211	454	1,665
2015	2,938	1,443	4,381
2016	783	1,444	2,227
2017	68	1,597	1,665
2018	0	335	335
Income Accruals	1	0	1
Cash	230	0	230
Act. Small Cap - Stock Dist	10	0	10
<b>Total</b>	<b><u>\$ 10,934</u></b>	<b><u>\$ 6,393</u></b>	<b><u>\$ 17,327</u></b>

\*Liquidation portfolio is 2006 vintage

#### FX Exposure

(\$ in Millions)

	<u>Reported Value</u>	<u>Outstanding Commitment</u>	<u>Total Exposure</u>	<u>Total (USD)</u>
Euro (\$1.23/ €)	€ 360	€ 292	€ 652	\$802

# SMRS

## Private Equity

12/31/17

### Top 10 Sponsors

(\$ in Millions)

<u>Asset Type</u>	<u>Reported Value</u>	<u>Outstanding Commitment</u>	<u>Total</u>
HarbourVest Partners	\$ 1,956	\$ 346	\$ 2,302
KKR	524	389	913
Grosvenor Capital Management	420	414	834
Blackstone Capital Partners	593	203	796
Warburg Pincus Capital	523	236	759
Advent International	330	405	735
Leonard Green & Partners	455	165	620
The Carlyle Group	351	187	538
TPG	287	138	425
Berkshire Partners	218	197	415
<b>Top 10 Total Value</b>	<b><u><u>\$ 5,627</u></u></b>	<b><u><u>\$ 2,680</u></u></b>	<b><u><u>\$ 8,337</u></u></b>

### Cash Weighted Rates of Return\*

<u>(Net IRR)</u>	<u>Current Qtr.</u>	<u>1-Year</u>	<u>3-Year</u>	<u>5-Year</u>	<u>10-Year</u>
Buyout	4.4%	19.9%	14.0%	15.9%	10.2%
Fund of Funds	6.3%	16.6%	12.4%	13.0%	8.2%
Mezzanine	3.7%	14.2%	6.6%	10.4%	7.9%
Special Situations	3.4%	15.1%	8.8%	10.8%	8.5%
Venture Capital	6.5%	14.0%	12.2%	16.1%	16.1%

\*These numbers are based on most recent available General Partner reported data; primarily 12/31/17 and are subject to change.

# SMRS

## Private Equity

### 3/31/18

#### Net Market Values by Ownership Entity

	<u>Adjusted Reported Value</u>	<u>Unfunded Commitment</u>
Accel Europe I, L.P.	\$ 3,529,869	\$ 1
Accel Europe II	16,957,117	3,300,000
Accel Growth Fund II, L.P.	12,862,993	240,000
Accel Growth Fund III, L.P.	13,040,913	1,120,000
Accel Growth Fund IV L.P.	12,598,565	8,910,000
Accel IX, L.P.	5,042,628	3,000,000
Accel Leaders Fund L.P.	3,787,306	1,705,000
Accel London V L.P.	3,824,128	8,220,000
Accel VI-S	2,229,408	652,611
Accel VI, L.P.	1,005,838	0
Accel VII, L.P.	0	5,000,000
Accel VIII, L.P.	4,503,633	4,782,499
Accel X, L.P.	15,597,819	400,000
Accel XI, L.P.	6,636,179	1,680,000
Accel XII, L.P.	6,543,322	1,680,000
Accel XIII, L.P.	3,403,037	6,300,000
Advent Global Private Equity V	8,310,147	8,700,000
Advent International GPE VI-A LP	95,138,205	0
Advent International GPE VII-B, L.P.	226,277,249	12,000,000
Advent International GPE VIII-B, L.P.	118,063,143	114,412,500
Advent Latin American Private Equity Fund VI, L.P.	18,121,781	16,240,000
Affinity Asia Pacific Fund II, L.P.	0	5,288,237
Affinity Asia Pacific Fund III, L.P.	57,121,529	11,325,595
Affinity Asia Pacific Fund IV, L.P.	117,325,944	42,198,507
Affinity Asia Pacific Fund V L.P.	0	175,000,000
Apax Digital, L.P.	0	50,000,000
Apax Europe Fund VI	22,472,421	2,600,884
Apax Europe V, L.P.	0	0
Apax Europe VII, L.P.	33,365,973	1,831,715
Apax IX, L.P.	69,391,312	84,329,497
Apax US VII	10,011,187	417,509
Apax VIII - B, L.P.	111,299,494	9,245,326
Apollo Investment Fund IX, L.P.	0	100,000,000
Apollo Investment Fund VIII L.P.	88,337,980	27,714,625
Arboretum Ventures II	2,187,812	0
Arboretum Ventures III, L.P.	12,940,622	765,000
Arboretum Ventures IV, L.P.	13,216,764	17,490,000
Ares Corporate Opportunities Fund II	8,252,500	11,423,773
Ares Corporate Opportunities Fund III, LP	102,981,591	8,831,350

	<b>Adjusted Reported Value</b>	<b>Unfunded Commitment</b>
Ares Corporate Opportunities Fund IV, L.P.	90,640,437	20,939,294
AXA ASF Miller Co-Investment	2,023,178	23,121,187
** <b>Axiom Asia Co-Investment Fund I, L.P.</b>	0	50,000,000
Axiom Asia IV, L.P.	21,212,815	30,347,811
Axiom Asia Private Capital Fund III, L.P.	34,629,101	10,814,264
** <b>Axiom Asia V, L.P.</b>	0	50,000,000
BC European Capital IX	84,864,224	3,139,343
BC European Capital VII, L.P.	603,955	0
BC European Capital VIII, L.P.	13,869,291	9,617,426
Berkshire Fund IX Coinvestment Fund, L.P.	0	50,000,000
Berkshire Fund IX, L.P.	59,183,869	114,230,100
Berkshire Fund VI, L.P.	49,340,016	7,554,903
Berkshire Fund VII, L.P.	32,208,975	2,449,845
Berkshire Fund VIII, L.P.	91,993,901	4,659,428
Blackstone Capital Partners IV	17,824,964	4,792,430
Blackstone Capital Partners V	25,610,548	13,128,043
Blackstone Capital Partners V-S	2,699,276	712,476
Blackstone Capital Partners VI, LP	284,770,735	43,235,826
Blackstone Capital Partners VII, L.P.	69,039,097	208,472,627
Bridgepoint Europe IV	40,625,910	6,566,529
Carlyle Europe Partners II	1,001,446	4,510,624
Carlyle Europe Partners III	11,975,465	6,539,154
Carlyle Europe Partners IV, L.P.	77,462,390	54,452,863
Carlyle Partners IV, L.P.	3,877,281	16,009,296
Carlyle Partners V L.P.	56,924,957	54,261,025
Carlyle Partners VI, L.P.	173,021,967	20,500,854
Carlyle Partners VII, L.P.	0	250,000,000
Castle Harlan Partners IV	6,926,152	5,261,200
Castle Harlan Partners V	44,685,046	8,401,112
CCMP Capital Investors II	2,058,283	10,346,490
CCMP Capital Investors III, L.P.	43,843,625	11,193,384
Centerbridge Capital Partners III, LP	41,035,604	41,465,661
Cerberus SMRS Partners, L.P.	60,491,582	23,304,657
Charlesbank Equity Fund IX, L.P.	0	100,000,000
Charlesbank Fund IX Overage Allocation Program	0	50,000,000
CM Liquidity Fund, L.P.	0	25,000,000
Coller International Partners V, L.P.	24,635,352	43,600,000
Coller International Partners VI, L.P.	41,024,921	29,723,267
Coller International Partners VII, L.P.	57,536,992	103,173,288
Crescent Mezzanine Partners VI, L.P.	39,999,876	9,010,645
Crescent Mezzanine Partners VII	11,663,197	139,584,567
CVC Capital Partners VII, L.P.	0	184,477,490
DLJ Investment Partners III	1,380,360	4,737,035
Dover Street IX, L.P.	25,401,067	74,000,000
EDF Ventures III	1,135,827	0
EnCap Energy Capital Fund X, L.P.	31,227,949	14,644,331
Entertainment IP Fund, L.P.	4,737,159	44,335,725
FIMI Opportunity 6, L.P.	11,576,091	39,909,092

	<u>Adjusted Reported Value</u>	<u>Unfunded Commitment</u>
FirstMark Capital I, L.P.	83,320,062	196,596
FirstMark Capital IV, L.P.	6,228,819	28,175,000
FirstMark Capital OF I, L.P.	22,396,317	0
FirstMark Capital OF II, L.P.	3,150,000	31,850,000
FirstMark Capital P2, L.P.	168,082,451	0
Flagship Pioneering VI	6,204,431	68,250,000
Flagship Ventures Fund 2004	7,994,509	0
Flagship Ventures Fund 2007, L.P.	16,685,308	0
Flagship Ventures Fund IV, L.P.	95,419,437	0
Flagship Ventures Fund V	49,363,545	5,425,000
Flagship Ventures Opportunities Fund I, L.P.	17,773,026	32,000,000
Fox Paine Capital Fund II, LP	32,945,398	15,382,699
FS Equity Partners VII, L.P.	68,536,343	36,980,234
G-IV Acquisition Holdings, LLC	17,921,776	0
GCM Grosvenor Fund Investment Program I, L.P.	10,450,473	1,362,883
GCM Grosvenor Fund Investment Program II, L.P.	35,093,295	14,516,317
GCM Grosvenor Fund Investment Program III - 2004	48,404,007	4,859,925
GCM Grosvenor Fund Investment Program III - 2006	55,187,318	7,317,292
GCM Grosvenor Fund Investment Program V, L.P.	76,054,762	11,012,506
GCM Grosvenor Fund Investment Program VI, L.P.	24,370,931	10,796,063
GCM Grosvenor Fund Investment Program VIII, L.P.	43,329,468	59,305,057
GCM Grosvenor SeasPriFIP LP (PIS06-10)	72,541,548	21,700,467
GCM Grosvenor SeasPriFIP LP (PIS14)	197,775,197	37,745,462
GCM Grosvenor SeasPriFIP LP (Seed)	41,027,933	13,769,012
Genstar Capital Partners VIII, L.P.	5,921,670	44,780,727
Genstar VIII Opportunities Fund I, L.P.	13,792,452	37,073,445
Green Equity Investors IV	6,106,665	1,136,036
Green Equity Investors V	174,198,765	25,966,435
Green Equity Investors VI, L.P.	125,507,865	13,557,869
Green Equity Investors VII, L.P.	57,681,242	138,828,522
GSO Capital Opportunities Fund II, L.P.	19,476,587	11,479,647
GSO Capital Opportunities Fund III, L.P.	25,910,356	73,016,806
GSO COF III Co-Investment Fund, L.P.	4,609,395	45,338,568
HarbourVest Dover Street VIII, L.P.	28,732,832	8,437,500
HarbourVest Int'l III Direct	0	1,000,000
HarbourVest Int'l III Partnership	320,478	1,200,000
Harbourvest Partners Co-Investment Fund IV L.P	63,082,189	42,500,000
HarbourVest Partners Mezzanine Income Fund	42,243,975	60,810,000
HarbourVest V Partnership	212,884	300,000
HarbourVest VI - Direct Fund LP	3,493,046	750,000
HarbourVest VI Partnership	1,681,252	2,000,000
Harvest Partners VII, L.P.	23,498,258	51,336,402
HPS Mezzanine Partners III, L.P.	22,980,155	26,872,342
Insight Venture Partners Growth-Buyout Coinvestment Fund, L.P.	54,202,112	11,195,089
Insight Venture Partners IX, L.P.	110,601,621	9,500,000
Insight Venture Partners X, L.P.	0	100,000,000
Kelso Investment Associates IX, L.P.	85,825,819	38,515,972
Kelso Investment Associates VII	2,579,593	4,970,176

	<b>Adjusted Reported Value</b>	<b>Unfunded Commitment</b>
Kelso Investment Associates VIII	75,456,947	22,315,125
Khosla Ventures III, L.P.	28,538,724	1,250,000
Khosla Ventures IV, L.P.	73,773,109	950,000
** <b>Khosla Ventures Seed D, L.P.</b>	0	10,000,000
Khosla Ventures V, L.P.	40,764,575	15,100,000
** <b>Khosla Ventures VI, L.P.</b>	0	75,000,000
KKR 2006 Fund, L.P.	84,392,770	5,040,754
KKR Americas Fund XII, L.P.	21,274,404	176,999,428
KKR Asian	10,538,657	0
KKR Asian Fund II, L.P.	55,662,346	7,149,199
KKR Asian Fund III	7,021,357	92,978,643
KKR China Growth Fund	36,868,090	1,090,535
KKR E2 Investors (Annex) Fund	134,274	0
KKR European Fund II	1,378,724	0
KKR European Fund III	43,711,391	22,854,187
KKR European Fund IV L.P.	102,960,551	44,661,264
KKR Millennium Fund	31,452,217	0
KKR North America Fund XI, L.P.	159,978,274	11,764,192
Lightspeed Venture Partners VI	442,539	0
Lightspeed Venture Partners VII, L.P.	27,492,991	0
Lion Capital Fund II	9,507,011	5,126,958
Lion Capital Fund III, L.P.	67,278,483	12,116,030
MatlinPatterson Global Opportunities Partners II	2,161,488	0
MatlinPatterson Global Opportunities Partners III	43,006,370	2,413,714
Menlo Ventures IX, L.P.	3,127,940	0
Menlo Ventures X, L.P.	40,434,399	0
Menlo Ventures XI, L.P.	52,059,716	1,000,000
Menlo Ventures XIV, L.P.	1,014,975	5,950,000
MeriTech Capital Partners II, L.P.	3,755,489	1,850,000
Meritech Capital Partners III, L.P.	8,356,843	0
Meritech Capital Partners IV, L.P.	15,099,839	900,000
Meritech Capital Partners V, L.P.	17,235,630	3,550,000
Michigan Growth Capital Partners II, L.P.	181,684,833	15,478,079
Michigan Growth Capital Partners III, L.P.	15,852,090	84,000,084
Michigan Growth Capital Partners, LP	73,590,704	13,679,140
Midtown Fund III, L.P.	0	0
Midtown II Liquidating Trust	2,369,574	0
New Leaf Growth Fund I, L.P.	188,267,542	0
New Leaf Ventures II, L.P.	14,257,890	0
New Leaf Ventures III, L.P.	22,439,276	16,875,000
Nordic Capital VI, L.P.	3,091,766	0
Nordic Capital VII	44,467,585	3,385,950
Nordic Capital VIII, L.P. (Alpha)	53,022,070	2,348,101
Oak Investment Partners X, L.P.	7,297,129	0
Oak Investments Partners IX, L.P.	663,421	0
Oaktree Opportunities Fund X, L.P.	22,054,556	12,000,000
Oaktree Opportunities Fund Xb, L.P.	0	70,000,000
OCM Opportunities Fund IX, L.P.	58,306,978	0

	<b>Adjusted Reported Value</b>	<b>Unfunded Commitment</b>
OCM Opportunities Fund VII (B), L.P.	3,539,977	5,000,000
OCM Opportunities Fund VII, L.P.	4,525,271	0
OCM Opportunities Fund VIII B, L.P.	20,079,129	0
OCM Opportunities Fund VIII, L.P.	4,910,158	0
OCM Principal Opportunities Fund IV	2,892,285	4,999,936
Ocqueoc Holdings, LLC	15,083,290	49,971,662
One Liberty Fund IV	1,230,633	0
One Liberty Ventures 2000	4,981,731	0
Parthenon Investors II	802,980	3,179,849
Parthenon Investors III	37,729,945	2,732,182
Parthenon Investors IV, L.P.	40,895,936	4,725,818
Peninsula Capital Fund IV	6,612,747	2,201,026
Peninsula Fund VI, L.P.	25,546,029	19,064,105
Public Pension Capital, LLC	45,853,068	63,165,014
Rhone Partners V, L.P.	46,519,878	74,805,280
Riverside Capital Appreciation Fund VI, LP	73,378,299	14,091,799
Riverside Micro Cap Fund I, LP	25,421,023	5,969,867
Riverside Micro-Cap Fund II, L.P.	60,398,031	2,735,834
Riverside Micro-Cap Fund III, L.P.	62,594,288	2,835,839
Riverside Micro-Cap Fund IV	27,113,708	27,272,631
Science Ventures Fund II, L.P.	6,979,886	13,000,000
Shamrock Growth Capital Fund IV, L.P.	10,572,101	37,771,469
Silver Lake Partners II	2,949,188	3,531,586
Silver Lake Partners III	57,652,349	13,199,137
Silver Lake Partners IV, L.P.	54,860,500	7,873,120
Silver Lake Partners V, L.P.	0	67,500,000
SM/TCP L.P.	31,195,779	7,139,418
SMRS - TOPE LLC	848,988,650	60,265,065
SMRS-NCRP LLC	910,696,745	139,930,389
Sycamore Partners III, L.P.	0	100,000,000
TCW Shared Op Fund III	69,224	0
TCW/Crescent Mezzanine Partners III Secondary	261,621	0
TCW/Crescent Mezzanine Partners III, L.P.	2,367,220	29,733,856
TCW/Crescent Mezzanine Partners IV, L.P.	992,728	13,660,773
TCW/Crescent Mezzanine Partners IVB Secondary	590,696	0
TCW/Crescent Mezzanine Partners V, LLC	20,017,580	15,382,013
TCW/Crescent Mezzanine Partners VC Secondary	5,900,609	0
The Huron Fund III, L.P.	9,250,367	4,542,756
The Huron Fund IV, L.P.	27,874,557	4,544,456
The Huron Fund V, L.P.	0	35,000,000
The Shansby Group 4	38,001	521,018
The Shansby Group 5 (TSG5)	1,788,706	4,261,291
** Thoma Bravo Discover Fund II, L.P.	0	75,000,000
Thoma Bravo Fund XII, L.P.	101,432,273	55,417,395
TPG IV (Texas Pacific Group IV)	4,195,492	211,725
TPG Partners III, LP	880,402	2,087,002
TPG Partners VI, L.P.	126,106,531	12,671,693
TPG Partners, VII, L.P.	83,768,659	82,613,972

	<b>Adjusted Reported Value</b>	<b>Unfunded Commitment</b>
TPG V (Texas Pacific Group V)	71,776,270	26,611,195
Trilantic Capital Partners V (North America) Fund A, L.P.	39,647,559	7,918,444
** <b>Trilantic Capital Partners VI (North America) L.P.</b>	0	75,000,000
TSG6, L.P.	101,618,307	29,481,205
TSG7 A L.P.	53,712,920	73,010,101
Turnbridge Capital Partners I , LP	50,968,981	39,683,894
Veritas Capital Fund V, L.P.	97,474,859	3,364,130
Veritas Capital Fund VI, L.P.	4,416,461	94,549,095
Veritas V Co-Investors, L.P.	21,510,843	15,000,000
Vista Equity Endeavor Fund I, L.P.	13,339,700	35,628,215
Vista Equity Partners Fund V, L.P.	57,046,703	10,503,928
Vista Equity Partners Fund VI, L.P.	56,951,901	20,414,077
Vista Foundation Fund III, L.P.	7,320,652	17,254,869
Warburg Pincus China, L.P.	17,272,401	28,665,000
Warburg Pincus Energy MCIP, L.P.	0	10,396,887
Warburg Pincus Energy, L.P.	58,791,578	37,000,000
Warburg Pincus Equity Partners, L.P.	1,844,851	0
Warburg Pincus Financial Sector, L.P.	7,155,000	37,845,000
Warburg Pincus International Partners	5,360,902	0
Warburg Pincus Private Equity IX	21,687,107	0
Warburg Pincus Private Equity VIII, L.P.	8,104,659	0
Warburg Pincus Private Equity X, L.P.	142,518,253	0
Warburg Pincus Private Equity XI, L.P.	174,174,594	5,800,000
Warburg Pincus Private Equity XII Secondary, L.P.	13,699,435	11,687,500
Warburg Pincus Private Equity XII, L.P.	96,037,169	81,812,500
WestAm COREplus Private Equity QP	2,062,001	2,086,719
WestAm Special Private Equity Partners	1,468,855	2,283,449
<b>Total Private Equity</b>	<b>\$ 10,691,802,623</b>	<b>\$ 6,392,669,536</b>
Cash	215,090,923	-
Active Small Cap Cash	15,079,481	-
Active Small Cap	10,186,245	-
Income Accruals	1,486,522	-
<b>Grand Total</b>	<b>\$ 10,933,645,793</b>	<b>\$ 6,392,669,536</b>

\* Total Private Equity amounts do not include Cash and Active Small Cap

\*\* New Commitments made during quarter reported



State of Michigan Retirement Systems

# ABSOLUTE AND REAL RETURN REVIEW

Investment Advisory Committee Meeting

June 14, 2018



James L. Elkins  
Director, Private Markets  
Short-Term, Absolute and Real Return Division

# EXECUTIVE SUMMARY

## Performance

<b>MPSERS Plan (3/31/18)</b>	<b>1-Year</b>	<b>3-Years</b>	<b>5-Years</b>	<b>7-Years</b>	<b>10-Years</b>
Absolute Returns	6.7%	3.3%	5.0%	4.6%	N/A
HFRI FOF Conservative*	3.7%	1.9%	3.1%	2.4%	1.1%

\*One month lag on the index. Information as of February 28, 2018.

- The Absolute Return portfolio outperformed the benchmark by 3% for the year. The outperformance was driven by overweight exposure to credit and multi-strategy/event strategies.
- Credit was the largest overall contributor to performance. Within credit, residential mortgage managers consistently drove strong performance due to the development of the securitization market for re-performing loan pools and gains in whole loans and mortgage servicing rights.
- Multi-strategy/event was the second largest contributor to performance. Special situations managers performed strongly due to exposure to mortgage servicing rights, trust preferred securities of financial institutions and sovereign emerging markets. Performance was broad based for multi-strategy managers, but quantitative equity and macro exposures drove notable gains.

## 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.
- There were no new commitments for the quarter.
- We remain cautious on directional risks and have continued to shift towards diversifying strategies. As we position the portfolio moving forward we look to:
  - Continue increasing allocations to special situations and co-investments, which have more idiosyncratic risk and are implemented on a market neutral basis.
  - Target allocations to opportunities in macro and quant equity strategies that could be well positioned to take advantage of a rising interest rates and higher volatility environment.
  - Focus on opportunities that seek to provide diversification, protect the downside and deliver absolute return.

## **Performance**

<b>MPSERS Plan (3/31/18)</b>	<b>1-Year</b>	<b>3-Years</b>	<b>5-Years</b>	<b>7-Years</b>	<b>10-Years</b>
Real Return and Opport.	17.1%	10.6%	12.6%	10.1%	N/A
Custom Benchmark	7.7%	7.5%	7.2%	7.3%	N/A

- Total Real Return and Opportunistic portfolio value was \$6.2 billion with a total one-year return of 17.1%. Performance for the year was driven by strong income from private credit, natural resource strategies, and media and entertainment holdings, as well as solid returns from asset sales in natural resource, telecom, and transportation funds.

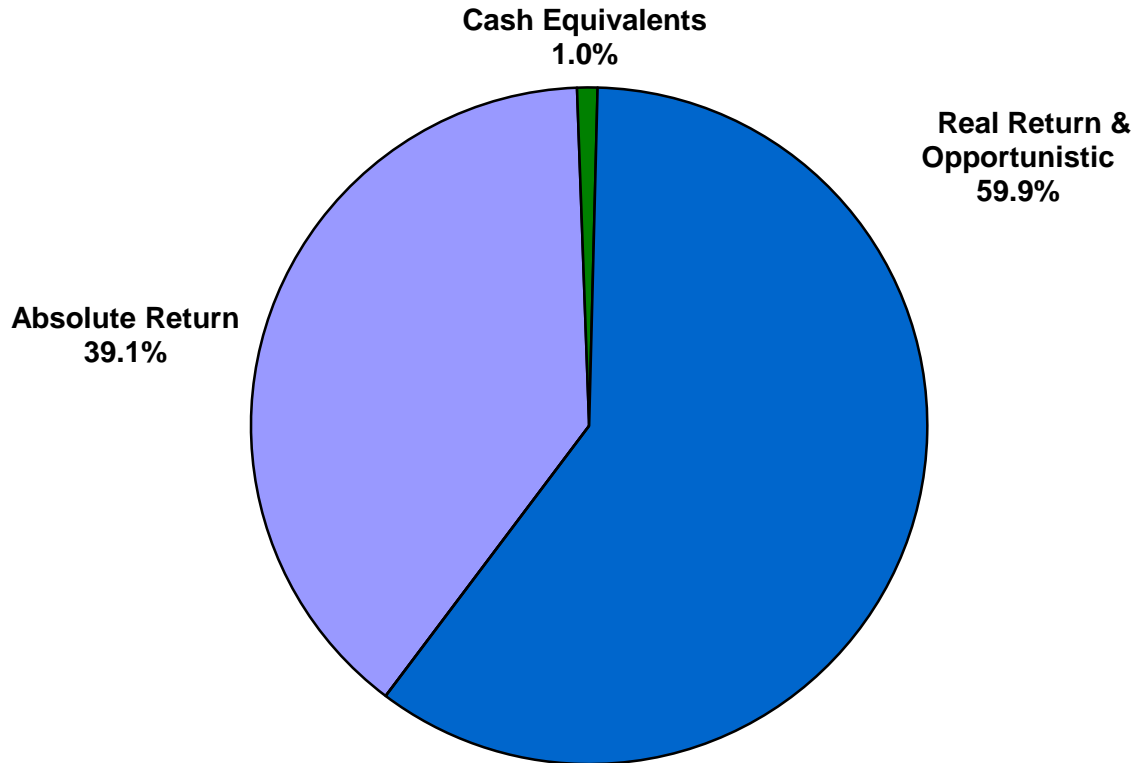
## **Strategy Update**

- The objective of the Real Return & Opportunistic portfolio is to provide an inflation hedge and/or to gain exposure to attractive opportunities that may not fit in another plan portfolio.
- The Real Return & Opportunistic portfolio has approximately \$3.7 billion of unfunded commitments. New commitments closed during the quarter include:
  - \$200 million to BroadRiver III, L.P., a commingled fund that focuses on insurance linked securities in both the secondary and tertiary markets.
- The ROAD is focused on finding differentiated strategies that are additive to the current portfolio mix. The pipeline remains full though many opportunities are priced for perfection.
  - We continue to like insurance-related opportunities, niche strategies with some scalability, and contractual cash flow.
  - The ROAD is reviewing several opportunities in the private energy space. This opportunity has grown as many of publicly-traded oil and gas companies have focused on de-levering their balance sheets, operating within cash flows, and look to improve their return metrics. As a result, public companies are selling non-core assets to focus operations on key strategic areas. This has benefited private investors as a strong pipeline of high quality assets are coming to market.

# SMRS

## Absolute, Real Return and Opportunistic

### 3/31/18



<b>Market Value in Millions</b>				
	<u>3/31/18</u>		<u>3/31/17</u>	
Absolute Return	\$4,030	39.1%	\$4,061	43.7%
Real Return and Opportunistic	6,164	59.9%	5,142	55.4%
Cash Equivalents	100	1.0%	85	0.9%
<b>Total Investments</b>	<b><u>\$10,294</u></b>	<b><u>100.0%</u></b>	<b><u>\$9,288</u></b>	<b><u>100.0%</u></b>

# SMRS

## Absolute Return

### 3/31/18

#### Net Market Values by Entity

	<b>Net Market Value</b>
Apollo Offshore Credit Strategies Fund Ltd.	\$ 7,996,821
Drawbridge Opportunities Fund	227,812,651
* EnTrust White Pine Partners, LP	40,067,887
JM IV, LP	88,309,737
MP Securitized Credit Master Fund, LP	76,296,772
Riverside Credit Solutions Fund I, LP	-
SJC Direct Lending Revolver Fund III, LP	-
* Tahquamenon Fund, LP	3,587,065,199
Visium Balanced Fund, LP	2,389,559
<b>Total Absolute Return</b>	<b>\$ 4,029,938,626</b>
Short-Term Investments & Other	25,072,410
<b>Grand Total</b>	<b>\$ 4,055,011,036</b>

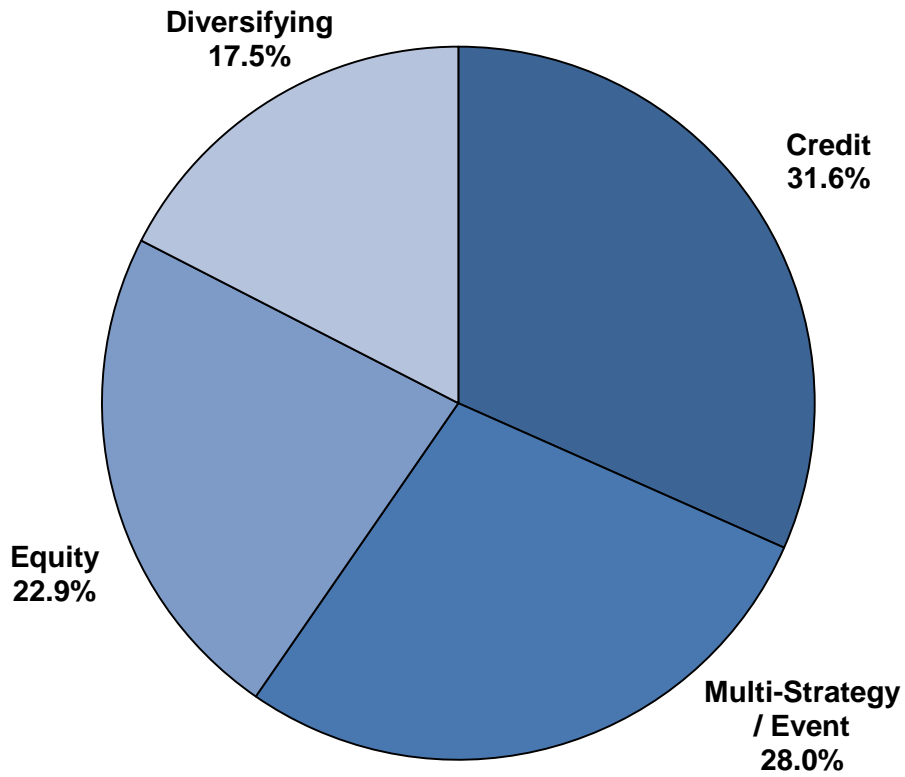
\* Fund of Funds

# SMRS

## Absolute Return

### 3/31/18

### Investments By Strategy



<b>Strategy Breakdown</b>			
Underlying Funds:	82	Median Position Size:	0.5%
Strategies:	4	Average Position Size:	1.2%
Relationships:	7	Largest Position Size:	6.6%

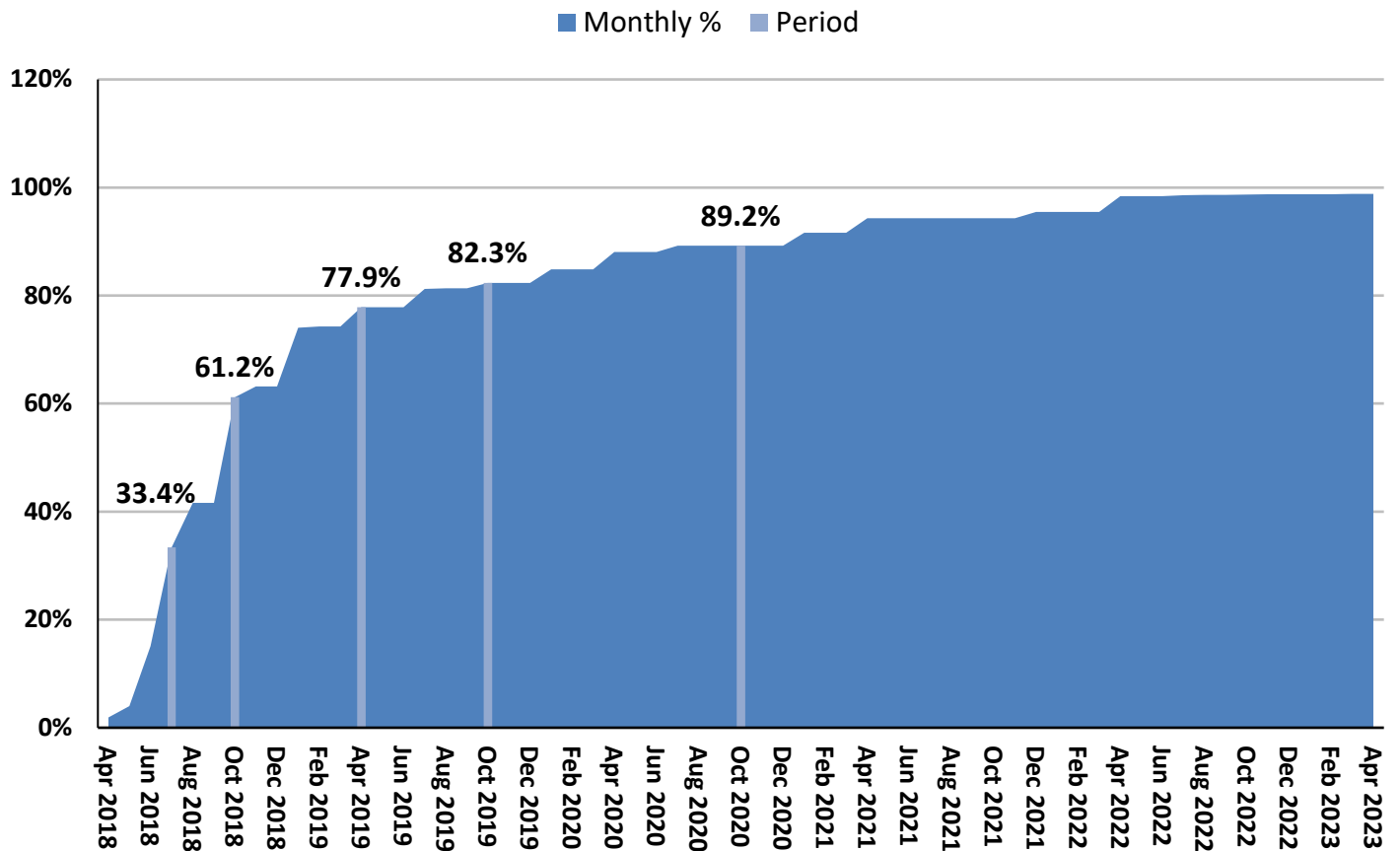
# SMRS

## Absolute Return

### 3/31/18

### Liquidity Analysis

Redeemable	Marginal Allocation (% each period)	Aggregate Allocation (% since Analysis Date)
By 7/1/18	33.4%	33.4%
By 10/1/18	27.8%	61.2%
By 4/1/19	16.7%	77.9%
By 10/1/19	4.4%	82.3%
By 10/1/20	6.9%	89.2%
After 10/1/20	9.6%	98.8%
Illiquid	1.2%	100.0%
<b>Total</b>	<b>100.0%</b>	<b>N/A</b>



# SMRS

## Real Return and Opportunistic

### 3/31/18

#### Net Market Value by Entity

	<u>Net Market Value</u>	<u>Unfunded Commitment</u>
* Abernathy Fund I, LLC	\$ 217,852,409	\$ 86,494,235
Apollo Credit Opportunities Fund III, LP	55,254,647	24,712,491
Apollo European Principal Finance Fund II	35,815,177	9,447,247
Apollo Financial Credit Investments Fund II	298,219,073	196,512,311
Apollo Financial Credit Investments Fund III	169,371,512	172,482,100
Apollo HK TMS Investments Holdings, LP	8,637,961	-
Apollo Offshore Credit Fund Ltd	276,019,266	-
Apollo Offshore Structured Credit Recovery Fund III	0	118,580,334
Apollo Structured Credit Recovery Fund IV	78,088,233	146,250,000
Barings Asset-Based Income Fund, LP	-	300,000,000
Blackstone Strategic Capital Holdings, LP	36,704,136	88,614,133
** <b>BroadRiver III, LP</b>	<b>3,128,911</b>	<b>195,831,722</b>
BSCH Parallel (MLG) I, LP	40,000,001	79,410,807
Blue Peninsula Fund, LP	136,313,819	84,175,973
Carlyle Intl Energy Partners, LP	26,264,707	33,369,668
Carlyle Energy Mezzanine Opportunity Fund	16,047,526	37,829,260
Centerbridge SCP III, LP	16,916,088	13,499,956
* Content Holdings, LLC	456,282,625	58,142,982
Elegantree Fund SPC	17,578,384	4,735,264
Energy Recapitalization and Restructuring Fund, LP	28,152,293	14,830,185
ERR Michigan Holdings, LP	4,820,334	2,269,933
* Fairfield Settlement Partners, LLC	65,518,451	14,495,584
FCO MA MI, LP	100,829,326	105,329,919
Fortress MSR Opportunities Fund I A, LP	90,077,259	-
Fortress Transportation & Infrastructure	60,241,922	-
GSO Credit Alpha Fund, LP	72,055,747	38,581,825
Highbridge Principal Strategies - Specialty Loan Fund III	64,067,228	8,304,516
Hopen Life Sciences Fund II	3,868,020	1,775,000
HPS Red Cedar Fund	65,669,840	249,544,419
JP Morgan Global Maritime Investment Fund, LP	80,466,619	2,914,854
KANG Fund, LP	642,037	-
Kayne Anderson Energy Fund VII, LP	67,621,607	23,932,319
Kayne P.E. Income Fund	106,178,098	50,709,805
Kayne Solutions Fund, LP	74,135,064	174,377,429
KKR EI&G Fund	58,042,502	9,619,794
KKR Lending Partners I, LP	28,652,524	11,930,723
KKR Lending Partners II, LP	83,819,314	11,886,954
Lakewater, LLC, Series 1	132,259,557	1,283,349
Lakewater, LLC, Series 2	247,162,858	13,055,859
Lakewater, LLC, Series 3	551,657,649	-
Lakewater, LLC, Series 4	40,166,596	15,182,177
Lakewater, LLC, Series 5	227,790,291	50,203,025



	<u>Net Market Value</u>	<u>Unfunded Commitment</u>
Marathon CLO Equity Fund, LP	10,489,480	15,596,152
Merit Energy Partners, LP	24,362,641	8,583,196
MidCap FinCo Holdings LTD	298,104,145	-
Napier Park Aircraft Leasing Vehicle I, LLC	38,688,318	16,856,511
Napier Park Aircraft Leasing Rollover Fund I, LLC	6,051,004	71,046,255
Nash Co-Investment	14,933,174	-
New Fortress Energy HLDGS	503,936,000	-
Orion Coinvest III, LP	1,655	2,236,552
Orion Mine Finance Fund 1A, LP	69,992,291	6,210,140
Orion Mine Finance Fund I, LP	130,284,762	7,376,051
Orion Mine Finance II, LP	47,020,110	53,542,881
Orion Mine Finance Co-Fund II, LP	10,243,808	39,971,791
Redding Ridge Holdings, LP	45,731,480	56,342,201
* Renaissance Venture Cap Fund II, LP	17,567,358	9,215,455
* Renaissance Venture Cap Fund III, LP	1,610,117	23,250,000
REOG Fund II Coinvest, LP	22,018,777	9,475,056
Ridgewood Energy Oil & Gas II	93,400,774	29,077,479
Ridgewood Energy Oil & Gas III	33,768,668	189,477,172
RPEP Energy Opp Inst Partner	16,878,186	25,324,704
RPEP SMRS Holdings, LLC	1	1,876,850
SJC Direct Lending Fund I, LP	893,673	15,088,120
SJC Direct Lending Fund IA, LP	271,791	3,764,486
SJC Direct Lending Fund II, LP	144,374,217	38,261,315
SJC Direct Lending Fund III, LP	53,542,056	180,543,147
* Social Network Holdings, LLC	93,112,557	24,429,952
Specialty Equity Strategy, LP	267,077	19,647,000
Sprott PRL (M), LP	19,286,736	8,492,385
Sprott PRL (M-Co-Invest)	9,883,286	15,000,000
Sprott Private Resource Lending Fund (US), LP	35,159,387	74,118,868
Terra Co-Investment, LLC	36,104,945	14,000,000
TICP CLO Partners II, LP	24,489,567	24,720,505
TSSP Adjacent Opp Partners, LP	67,197,048	209,832,203
Varo Coinvestment, LP	16,226,536	898,755
Vida Insurance Credit Opportunity Fund II, LP	55,852,154	45,313,524
Warwick Energy Partners III	49,892,167	11,470,665
Warwick (SMRS) Co-Invest, LP	30,181,025	2,732,720
<b>Total Real Return and Opportunistic</b>	<b>\$ 6,164,206,582</b>	<b>\$ 3,704,088,245</b>
Short-Term Investments & Other	75,033,738	-
<b>Grand Total</b>	<b>\$ 6,239,240,321</b>	<b>\$ 3,704,088,245</b>

\* Fund of Funds

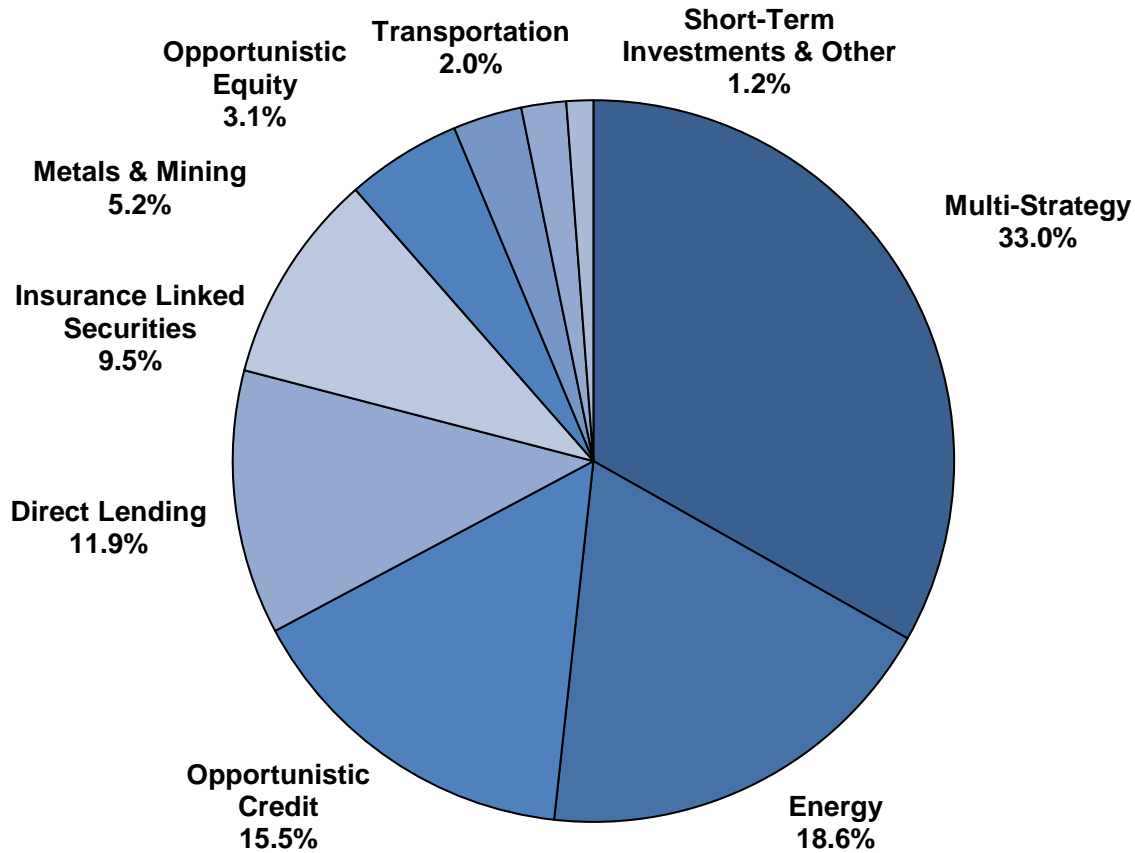
\*\* New Commitment

# SMRS

## Real Return and Opportunistic

### 3/31/18

### Investments By Strategy



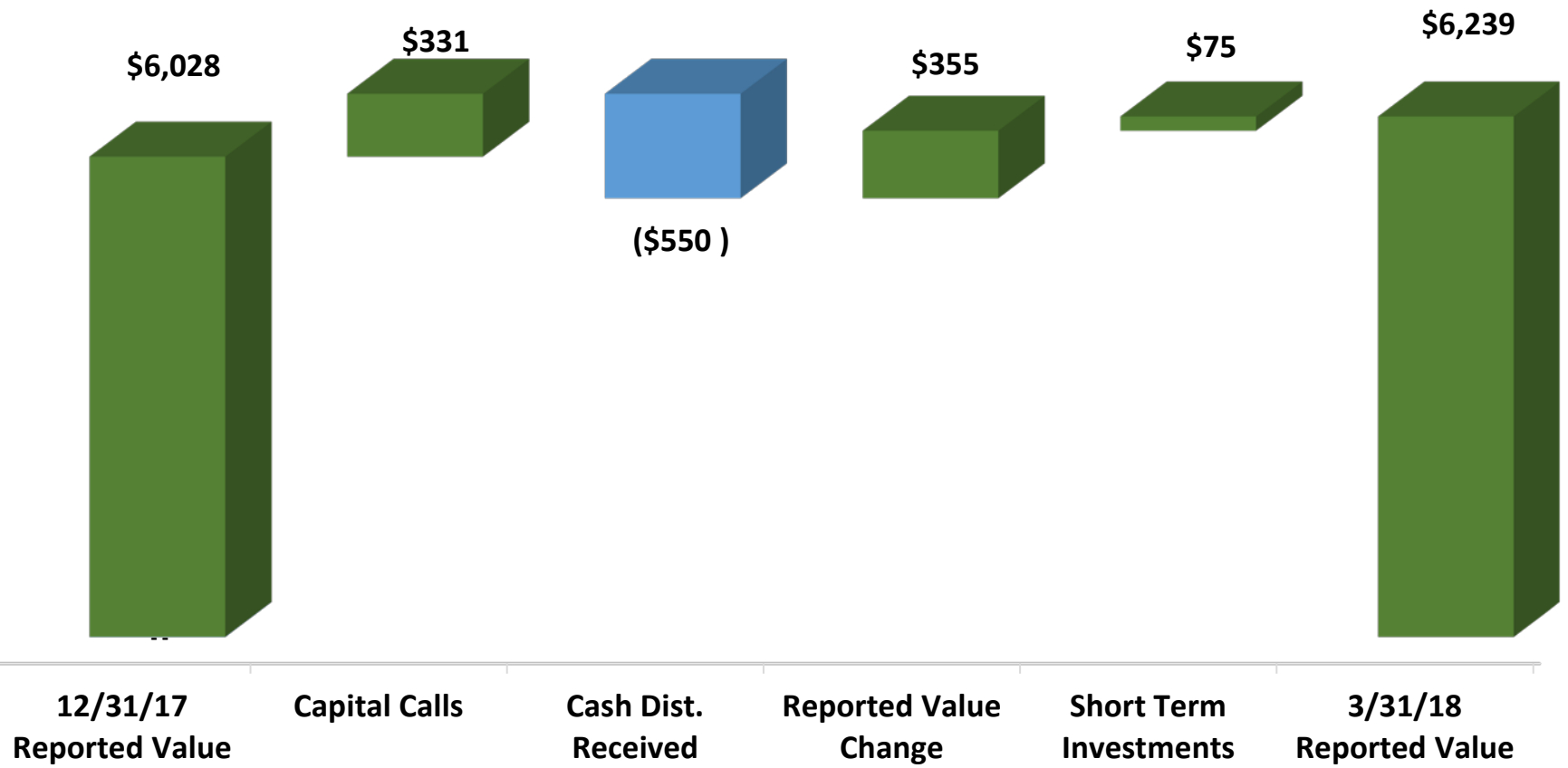
<b>Investment Strategy</b>	
Multi-Strategy	\$ 2,069,994,804
Energy	1,158,109,959
Opportunistic Credit	964,676,767
Direct Lending	739,394,787
Insurance Linked Securities	592,090,101
Metals & Mining	321,872,035
Opportunistic Equity	192,862,189
Transportation	125,205,941
Short-Term Investments & Other	75,033,738
<b>Total Market Value</b>	<b>\$ 6,239,240,321</b>

# SMRS

## Real Return and Opportunistic 3/31/18

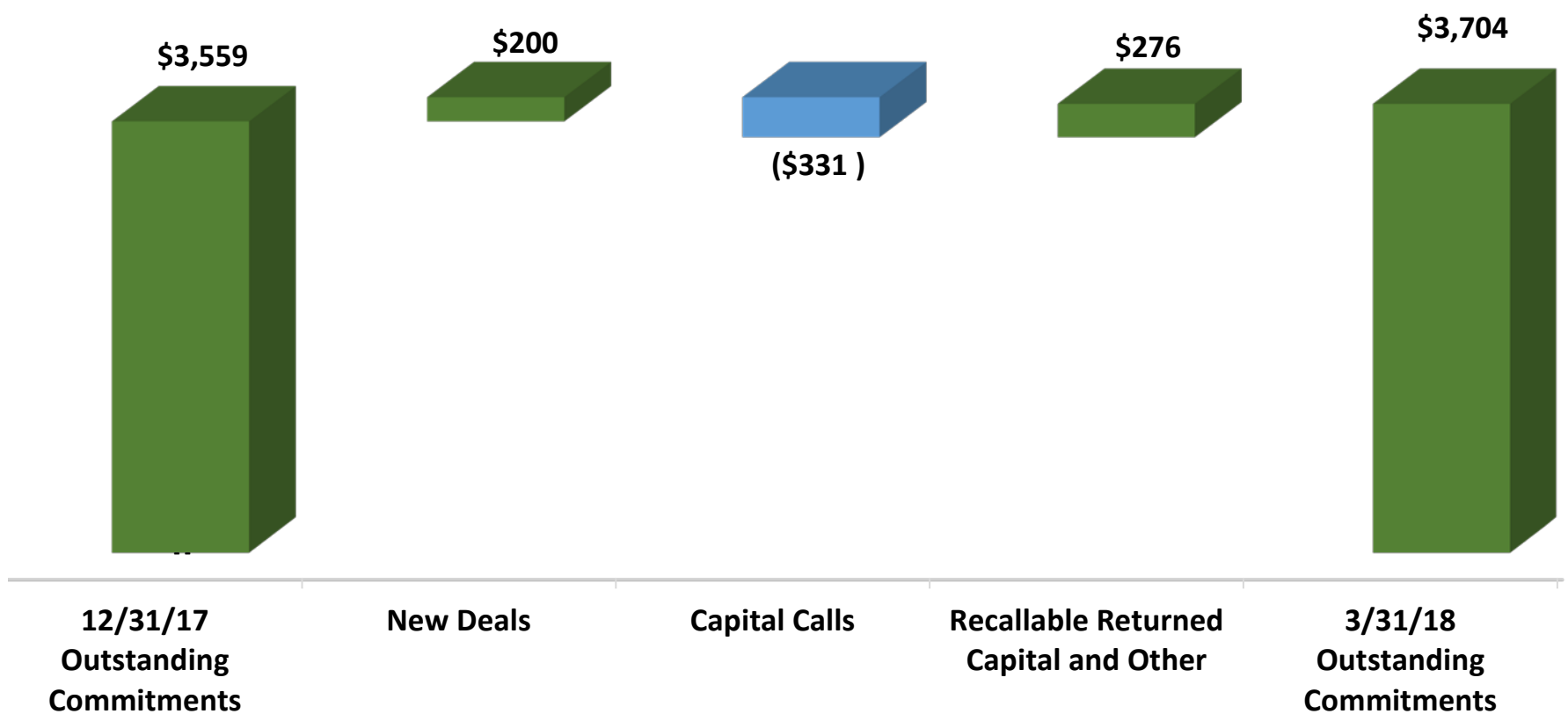
\$ In Millions

### Invested Commitments



\$ In Millions

### Outstanding Commitments



# SMRS

## Real Return and Opportunistic

### 3/31/18

### Top Ten Advisors or Entities

<b>Advisor or Entity</b>	<b>Market Value</b>
Apollo Global Management	\$ 1,265,241,495
Barings Alternative Investments	1,199,036,952
Domain Capital Advisors	832,766,042
Fortress Investment Group	694,842,585
Kayne Anderson Capital Advisors	284,681,751
Orion Resource Partners	257,542,626
Czech Asset Management	199,081,737
KKR Asset Management	170,514,339
Ridgewood Energy	166,066,406
BlackRock, Inc.	136,313,819
<b>Total Market Value</b>	<b>\$ 5,206,087,752</b>

State of Michigan Retirement Systems

# REAL ESTATE AND INFRASTRUCTURE REVIEW

Investment Advisory Committee Meeting

June 14, 2018



Brian C. Liikala  
Senior Investment Manager  
Real Estate and Infrastructure Division

## EXECUTIVE SUMMARY

### Performance

MPSERS Plan (3/31/18)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	11.2%	10.4%	12.2%	11.6%	4.2%
NCREIF NPI	5.8%	7.3%	8.6%	9.2%	4.7%
Peer Median Returns	8.8%	9.1%	10.7%	10.8%	3.5%
Percentile Rank vs. Peers*	20	27	31	32	36

\*State Street Universe greater than \$1 billion

- Outperformance relative to the one-year benchmark resulted from the Real Estate and Infrastructure Division's (REID) strategy of being underweight in retail and office, overweight in apartments and hotels, the realized gain from the sale of a medical office portfolio, and appreciation in European infrastructure investments.

### Strategy Update

- The REID is focusing on sourcing off-market opportunities through its extensive network and reducing risk in the portfolio through early income-generating investments that are higher in the capital stack with a shorter projected hold period. The REID has selectively acquired properties where it can add value through management and leasing and has developed properties at attractive risk-adjusted returns. The REID will continue its strategy of assembling portfolios in non-traditional real estate sectors that REID believes will become institutional property types, enabling above market appreciation and returns.
- The REID has been actively managing the portfolio with dispositions resulting in capital returned in excess of \$1.4 billion, and funding new investments of nearly \$2.5 billion over the past 12 months. The REID is also working with its advisors in executing the disposition of properties in secondary markets where illiquidity occurs in periods of slower economic growth, and realizing gains from the sale of assets at historically low capitalization rates.
- The REID has approximately \$1.2 billion in unfunded commitments. There were no new commitments during the quarter.

### Market Environment

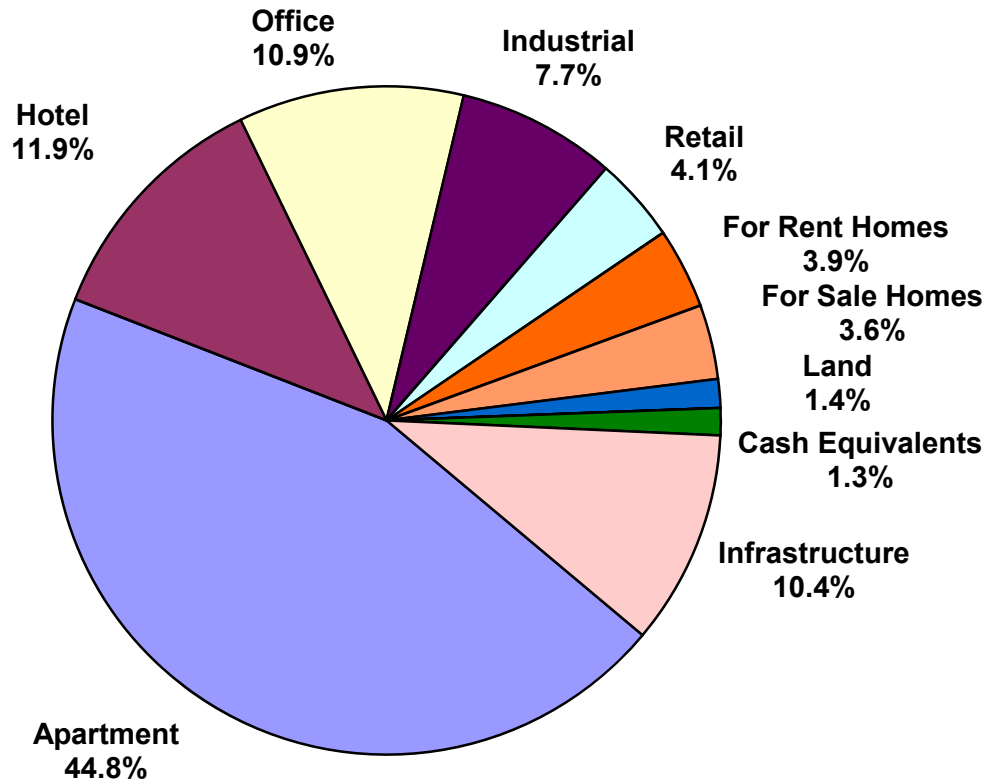
- Investor demand disparities within property types and within real estate markets are appearing. Supply of new buildings in all property types has increased and is beginning to raise concern from investors. However, a strong economy has kept demand for space high enough to absorb new supply. Retail properties are less attractive to investors as e-commerce continues to grow. Senior housing, student housing and medical office are attracting more investor attention. Lenders have become more selective in quality and location of the collateral and have been disciplined in their underwriting standards for construction lending. The cost of new construction in land, labor and materials has steadily increased, making it more difficult for developers to meet return thresholds.

- The passage of the U.S. tax reform bill is generally viewed as favorable to the real estate industry. Economic growth from companies increasing investment in their U.S. business operations would increase demand for office labor and industrial space. Real estate developers will benefit from a lower pass-through tax rate. The increase in the standard deduction could further delay apartment renters from purchasing a home.
- Fund flows to the infrastructure sector continue to remain strong, as investor interest in the asset class continues to grow. Opportunities include North American energy, power generation, European transportation, and emerging market fundamental infrastructure projects. The industry has gained attention from the new Federal Administration's intent on rebuilding U.S. infrastructure; however, details on legal and financial framework of Public Private Partnerships (P3) are limited and will take time to develop. A tight labor market for construction workers could inhibit timing of completions.
- In the commercial mortgage-backed securities (CMBS) market, spreads over the swap rate for 10-year AAA-rated securities increased 6 bps from the prior quarter and stand at 82 bps, remaining historically low. The lower-rated security spreads remain appropriate for the risk in comparison to debt metrics in the bond market. Commercial Mortgage Alert reported that CMBS issuance for the quarter ending March 31, 2018 was \$21 billion up \$6 billion as compared to the same period in 2017. A wave of refinancing for 2007 ten-year vintage loans (in excess of \$100 billion) are finding enough lenders to complete their refinancing and therefore may not pose a problem. Large banks continue to be the low risk A note lender (<40% LTV), allowing private non-bank lenders to fill the funding gap, where the REID's credit strategy has focused its attention.

# SMRS

## Real Estate and Infrastructure

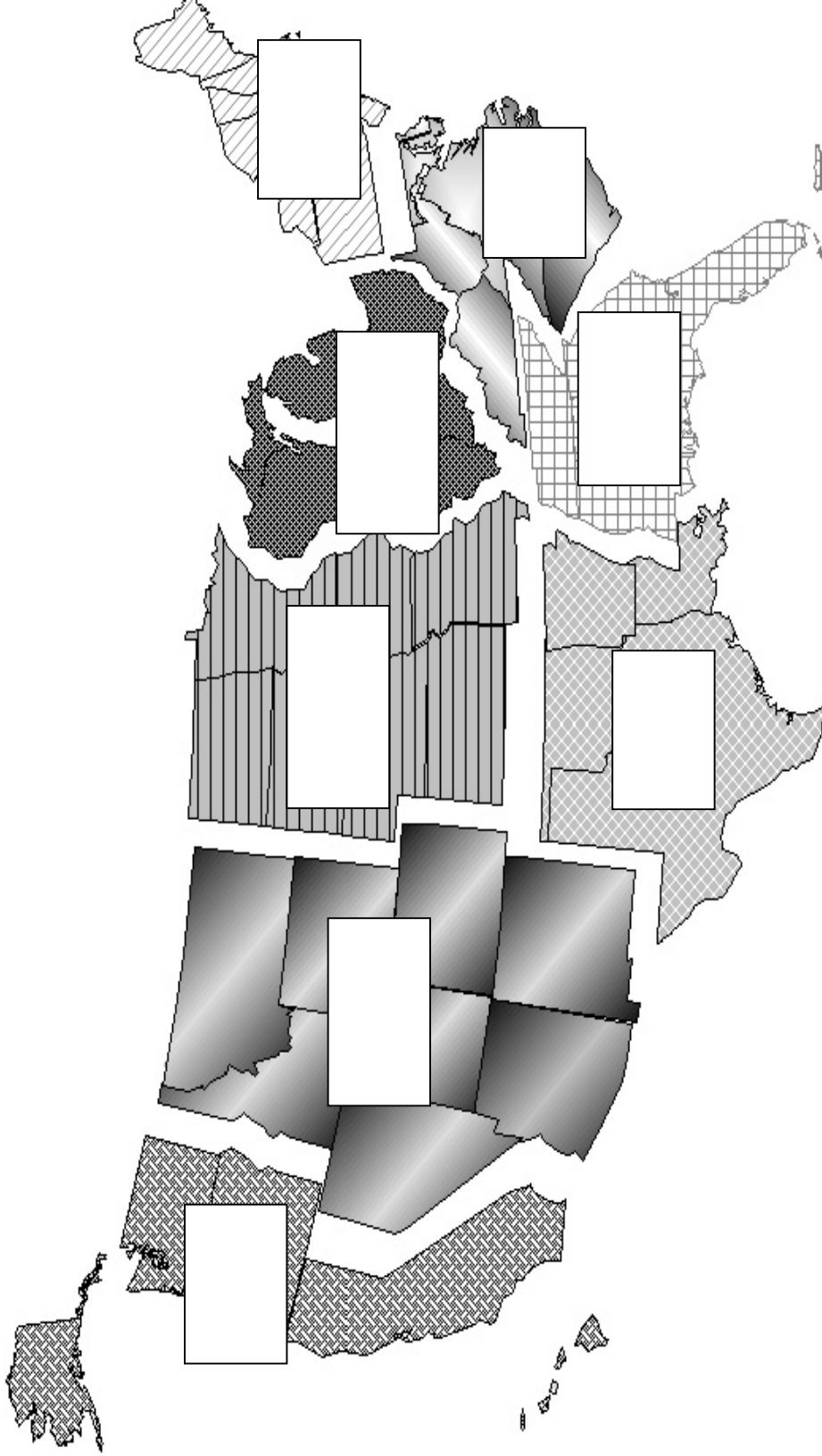
### 3/31/18



<b>Market Value in Millions</b>				
	<u>3/31/18</u>		<u>3/31/17</u>	
Apartment	\$3,576	44.8%	\$2,307	34.8%
Hotel	953	11.9%	871	13.1%
Office	875	10.9%	997	15.0%
Infrastructure	831	10.4%	716	10.8%
Industrial	612	7.7%	481	7.3%
Retail	329	4.1%	358	5.4%
For Rent Homes	309	3.9%	435	6.6%
For Sale Homes	291	3.6%	283	4.3%
Land	109	1.4%	118	1.8%
	<u>\$7,885</u>	<u>98.7%</u>	<u>\$6,566</u>	<u>99.1%</u>
Cash Equivalents	<u>102</u>	<u>1.3%</u>	<u>58</u>	<u>0.9%</u>
<b>Total Investments</b>	<b><u>\$7,987</u></b>	<b><u>100.0%</u></b>	<b><u>\$6,624</u></b>	<b><u>100.0%</u></b>



# SMRS Real Estate by Region



International comprises 7.7%

Geographic regions defined by CREIF, whose composition is: Pacific 2.1%, Mountain 6.4%, West 1.4%, Southeast 10.6%, East 7.3%, South 9.3%, Northeast 21.2%, Midwest 11.7%

**SMRS**  
**Real Estate and Infrastructure**  
**3/31/18**

**Top Ten  
Advisors or Entity**

<u>Advisor or Entity</u>	<u>Market Value</u>
MWT Holdings LLC	\$ 2,822,752,101
Clarion Partners	656,098,438
Blackstone Group	490,245,767
Five Star Realty Partners LLC	357,908,910
Rialto Capital Management LLC	347,895,634
Domain Capital Advisors Inc	285,072,284
Principal Real Estate Investors	277,968,196
Heitman Capital Management	249,832,075
CIM Investment Advisors LLC	232,221,442
Transwestern Investment Management	228,492,136
	<u>\$ 5,948,486,983</u>

**Occupancy  
by Property Type**

	Apartment	Office	Industrial	Retail	Hotel
SMRS Portfolio	95.1%	89.0%	91.6%	91.3%	70.8%
National Average	93.1%	86.9%	92.6%	95.4%	61.7%

**SMRS**  
**Market Values by Ownership Entity**  
**3/31/18**

**REAL ESTATE**

	<u>Market Value</u>	<u>Unfunded Commitment</u>
801 Grand Avenue Capital, LLC	\$ 70,991,295	\$ 0
AEW Senior Housing III	1,958,090	2,625,984
Apollo Asia Real Estate Fund	19,398,821	54,885,200
Asana Partners Fund I	10,791,900	21,187,840
Avanath Affordable Housing I, LLC	23,926,203	1,467,911
Avanath Affordable Housing II, LLC	29,677,039	0
Avanath II SMRS Co-Investment Fund LLC	17,550,326	0
Avanath Affordable Housing III	16,179,133	33,820,867
Beacon Capital Strategic Ptnrs. IV, LP	166,211	0
Beacon Capital Strategic Ptnrs. V, LP	384,775	0
Blackstone R/E IH3 Co-Inv Partners	308,520,637	0
Blackstone R/E Partners V, LP	13,855,185	0
Blackstone R/E Partners VI, LP	12,322,352	3,860,930
Blackstone R/E Partners VIII, LP	41,757,444	41,768,972
Capri Select Income II	59,741	0
Capri Urban Investors, LLC	8,670,377	0
CIM Fund III, LP	38,486,439	0
CIM Fund VIII, L.P.	83,441,336	33,406,364
CIM Urban REIT, LLC	42,254,657	0
CIM VI (Urban REIT), LLC	30,277,344	0
Clarion Gables Multifamily Trust, LP	29,969,720	0
Columbus Circle Holdings, LLC	151,791,921	139,272,720
Crown Small Cap Real Estate	13,603,252	10,375,000
Domain GVA-1, LLC	65,674,180	3,681,132
Domain Hotel Properties, LLC	427,935,878	0
Gateway Capital Real Estate Fund II, LP	40,478,595	0
Great Lakes Property Group Trust	60,013,867	10,000,000
Heitman Credit	6,350,686	0
IMRF II CoInvest Spiga LP	8,754,558	3,062,796
Invesco Mortgage Recovery Feeder Fund	5,498,689	0
Invesco Mortgage Recovery Fund II, L.P.	30,079,163	17,543,582
IPF II Co-Invest Cayman LP	30,795,611	3,957,258
JBC Funds North LaSalle LLC	16,176,269	0
JBC Opportunity Fund III, LP	495,673	0
JP Morgan India Property Fund II, LLC	38,503,703	2,710,897
KBS/SM Fund III, LP	44,497,805	0
KBS/SM Fund IV	55,644,622	0
L-A Saturn Acquisition	28,824,132	0
Landmark Real Estate Partners V, LP	11,028,027	0
LaSalle Asia Opportunity Fund II, LP	277,260	0
LaSalle Asia Opportunity Fund III, LP	2,009,503	0
Lion Industrial Trust	191,401,873	0
Lion Mexico Fund, LP	6,790,967	0

	<b>Market Value</b>	<b>Unfunded Commitment</b>
Lombard GVA0016 (former AGL Annuity)	362,160,574	0
Lone Star Fund X LP	44,707,753	185,248,434
Lubert-Adler Real Estate Fund VII, LP	76,450,827	7,500,000
M1 Westgate CoInvest LLC	16,420,470	1,280,667
M301W CoInvest LLC	21,341,196	0
MERS Acquisitions Ltd.	162,425,161	27,000,000
MG Alliance, LLC	18,674,651	0
MIP Holdco LLC	123,086,348	38,280,317
MSREF V - International	2,634,758	0
MSREF VI - International	7,295,165	0
MSRESS Fund III Institutional LP	20,360,491	0
MWT Holdings, LLC	2,822,752,101	0
Northpark Land Associates	31,948,598	63,927,786
Orange Investors LLC	180,231,983	0
Paladin Realty Brazil Investors III (USA), LP	22,936,994	0
Paladin Realty Latin America Investors IV-CI, LP	40,310,432	13,385,000
Paladin Realty TB COINV V LP	12,115,201	0
Penmain Office LLC	35,657,584	0
Principal Separate Account	206,976,901	0
Proprium RE Spec. Situations Fund, LP	46,083,493	0
Rialto Absolute Partnership I	75,268,895	0
Rialto Credit Partshp LP	140,922,680	59,077,320
Rialto Real Estate Fund, LP	21,479,508	0
Rialto Real Estate Fund II, LP	40,792,411	0
Rialto Real Estate Fund III-Debt, LP	24,213,254	26,063,270
Rialto Real Estate Fund III-Property, LP	11,920,535	41,786,822
Rialto Mezzanine Partners Fund	33,298,351	0
SM Brell II LP	28,784,372	0
Stockbridge RE Fund II-C, LP	25,884,170	0
Strategic LP	14,865,726	43,600,000
TPG RE Finance Trust Inc. (TRTX)	95,954,173	2,367,810
TPG Real Estate Partners II	25,999,084	15,272,662
TSP Fund II, LP	34,272,412	15,000,000
TSP Spartan C-I LLC	9,541,616	0
TSP Spartan C-II LLC	18,576,474	0
TSP Value and Income Fund LP	43,015,286	4,600,000
True North High Yield Invest. Fund II, LLC	9,790,829	0
True North Real Estate Fund III, LLC	39,524,940	14,126,598
Venture Center, LLC	44,574,755	0
Western National Realty Fund II, LP	20,428,604	0
	<u>\$ 7,050,944,014</u>	<u>\$ 942,144,139</u>
Short-Term Investments and Other	91,647,235	0
<b>Total Real Estate Investments</b>	<b><u>\$ 7,142,591,249</u></b>	<b><u>\$ 942,144,139</u></b>

**SMRS**  
**Market Values by Ownership Entity**  
**3/31/18**

**INFRASTRUCTURE**

	<b>Market Value</b>	<b>Unfunded Commitment</b>
Arclight Energy Partners VI, LP	\$ 41,368,785	\$ 12,559,861
ASF VI Infrastructure B LP	22,088,872	14,864,229
ASF VII Infrastructure Fund B L.P.	1,618,249	27,892,271
ASF Como Co-Investment LP	37,408,787	15,617,476
Basalt Infrastructure Partners, LP (Balfour Beatty)	54,389,233	1,200,000
Blackstone Energy Partners, LP	48,683,081	4,702,610
Blackstone Energy Partners II, LP	42,126,705	47,905,839
Brookfield Infrastructure Fund II-B, L.P.	52,762,505	4,976,583
Customized Infrastructure Strategies, LP	59,608,306	5,661,912
Dalmore Capital Fund	64,892,083	0
GCM Grosvenor Infrastructure Investment Program, L.P. (CSG)	60,877,703	0
GCM Grosvenor Customized Infrastructure Strategies II, L.P.	40,988,728	27,224,725
Global E&P Infrastructure Fund II L.P. (formerly First Reserve)	34,977,919	33,045,081
GSO Energy Select Opportunities Fund LP	22,980,363	33,739,799
JPMorgan AIRRO India SideCar Fund US, LLC	66,196,750	3,187,421
JPMorgan Asian Infra. & Rel. Res. Opp Fund II	11,910,556	7,440,094
KKR Eagle CoInvest L.P.	34,743,608	1,853,268
KKR Global Infrastructure Investors, LP	53,924,289	4,182,224
RPEP SMRS Infra II, LLC	12,496,548	500,000
StonePeak Infrastructure Fund LP	67,251,962	14,352,642
	<u>\$ 831,295,032</u>	<u>\$ 260,906,035</u>
Short-Term Investments and Other	12,699,027	0
<b>Total Infrastructure Investments</b>	<b><u>\$ 843,994,059</u></b>	<b><u>\$ 260,906,035</u></b>
 <b>TOTAL INVESTMENTS</b>	 <b><u>\$ 7,986,585,308</u></b>	 <b><u>\$ 1,203,050,174</u></b>

State of Michigan Retirement Systems

# DOMESTIC EQUITY REVIEW

Investment Advisory Committee Meeting

June 14, 2018



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

## EXECUTIVE SUMMARY

### Performance

<b>MPSERS Plan (3/31/18)</b>	<b>1-Year</b>	<b>3-Years</b>	<b>5-Years</b>	<b>7-Years</b>	<b>10-Years</b>
Annualized Returns	16.7%	10.6%	13.6%	12.6%	9.9%
S&P 1500	13.7%	10.6%	13.2%	12.6%	9.7%
Peer Median Return	14.9%	10.2%	12.5%	11.9%	9.6%
Percent Rank vs. Peers *	21	32	24	23	39

\*State Street Universe greater than \$1 billion

- Total Domestic Equity outperformed its peer group over all time periods.
- Total Domestic Equity outperformed the S&P 1500 by 300 basis points (bps) over the past year, outperformed the S&P 1500 over the past five and ten years, and roughly matched the index over three and seven years.
  - Division highlights include the following:
    - Outperformance of SMRS' internally managed portfolios by 600 bps during the past year.
    - Internal Growth Funds beat the S&P 500 by ~900 and ~1200 bps respectively, as well as the S&P 500 Growth index by ~300 and ~600 bps.
    - Success driven by investments in Square, Twitter, Apple and Exelon among others.
- Outperformance of SMRS' externally managed portfolios by 240 bps during the past year and by 30 bps over the past three years. Due to our strategic partnership strategy, total cost of these top tier external managers is only slightly higher than that of an index fund.
  - Ark Investments has returned 46% annualized since inception two years ago, outperforming the S&P 1500 Growth Index by ~2500 bps per year.
  - Fisher Investments beat the S&P 1500 by 130 bps annualized over the past five years, putting them in the top 1% of the peer group.
  - LA Capital All-Cap Growth beat the S&P 1500 Growth Index by 50 bps annualized over the past five years, putting them in top 20% of the peer group.
  - Clarkston Capital Small-Cap in top 5% of the peer group since inception four years ago.

## **Asset Class Goal**

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

## **Strategy Update**

- The Domestic Equity Portfolio remains overweight to the financial sector, defensive stocks and technology companies, and underweighted to the consumer discretionary, industrials, and energy sectors. Portfolio beta is 1.08, so a significant market correction would present a modest headwind to performance.
  - Attractively priced financial and defensive stocks offset each other from an interest rate risk standpoint, paving the way for potential outperformance in any rate environment. Energy, consumer discretionary, and industrials are cyclical sectors that trade at a premium to the market multiple, and are therefore susceptible to underperformance in a market correction.
  - Active technology exposure is driven by positions in Apple, Facebook, Square, and Twitter. Gilead Sciences and CVS Health are also important potential drivers of future returns for Domestic Equity, as they trade at nearly 10x earnings with strong competitive advantages and good returns on capital.
  - Total Domestic Equity's portfolio would outperform the S&P 1500 by ~7% were it to appreciate to the market multiple of 16.8x from where it stands now at 15.7x.

## **Market Environment and Outlook**

- At ~17x forward earnings, equity markets remain rich relative to history, but are reasonably priced for an environment where bond yields are 4% or lower.
- Assuming 5% long-term expected earnings growth, and a market return on equity of 15.5%, the S&P 1500 is expected to pay out 70% of its normalized earnings.
  - This equates to a 3.5% total shareholder yield, or 1.7% in share count reductions via buybacks on top of the current 1.8% S&P 1500 dividend yield.
  - The market is thus poised to return an estimated 8.5% (3.5% shareholder yield plus 5% earnings growth) in an environment where multiples do not change.
- This compares favorably to the 30-year U.S. Treasury at 3.1%, and unfavorably to the historical compound annual return for the S&P 500 from 1928 – 2016 of 9.5%.



# SMRS

## Domestic Equity Strategies

3/31/18

Markets	Amount	Total	% of Total
<b>Internal Indexed</b> (\$ in Millions)			
Indexed Portfolios	\$7,706		
<b>Total Indexed</b>		<b>\$7,706</b>	<b>45.0%</b>
<b>Internal Active</b>			
Active Portfolios	\$5,111		
<b>Total Internal Active</b>		<b>\$5,111</b>	<b>29.8%</b>
<b>External Active</b>			
Los Angeles Capital	\$1,189		
Fisher Investments	661		
Seizert Capital Partners	557		
Mellon Capital	509		
Clarkston Capital Partners	503		
ARK Investments	430		
Bivium Capital	159		
Attucks Asset Management	150		
Ancora	105		
Munder Capital Management	30		
Northpointe Capital	26		
<b>Total External Active</b>		<b>\$4,319</b>	<b>25.2%</b>

**Total Domestic Equity**

**\$17,136**

**100.0%**

# SMRS

## Domestic Equities Composite

### 3/31/18

Date:	<u>3/31/18</u>	<u>12/31/17</u>	<u>9/30/17</u>	<u>6/30/17</u>
Assets (\$ in Millions):	\$17,136	\$17,051	\$16,751	\$17,392
Number of Securities:	1,318	1,304	1,271	1,278
Active Share:	37%	39%	41%	44%

Description: The Domestic Equities Composite combines both the SMRS' Actively Managed Composite and its index funds.

<b>Characteristics</b>	<b>SMRS</b>	<b>S&amp;P 1500</b>	<b>S&amp;P 1500 Value</b>
Weighted Average Capitalization (\$ in Billions)	\$198.1	\$177.9	\$114.6
P/E FY1	15.7x	16.8x	14.5x
P/E upside to S&P 1500	7.0%	0.0	15.9%
Price/Book	2.8x	3.0x	2.0x
Dividend Yield	2.2%	1.9%	2.1%
Return on Equity	17.4%	17.4%	13.7%
<b>Risk Metrics</b>			
Beta	1.08	1.00	0.98
Tracking Error	1.7%	0.0%	3.2%
<b>Projected Returns</b>			
Normalized ROE	15.5%	15.5%	12.3%
Normalized PE Ratio	17.6	19.2	16.4
Projected Dividend Yield	2.0%	1.8%	1.8%
Projected Buyback Yield	1.9%	1.7%	1.9%
Projected Reinvestment Rate	<u>4.8%</u>	<u>5.0%</u>	<u>4.9%</u>
<b>Projected Investment Return</b>	<b><u>8.7%</u></b>	<b><u>8.5%</u></b>	<b><u>8.6%</u></b>

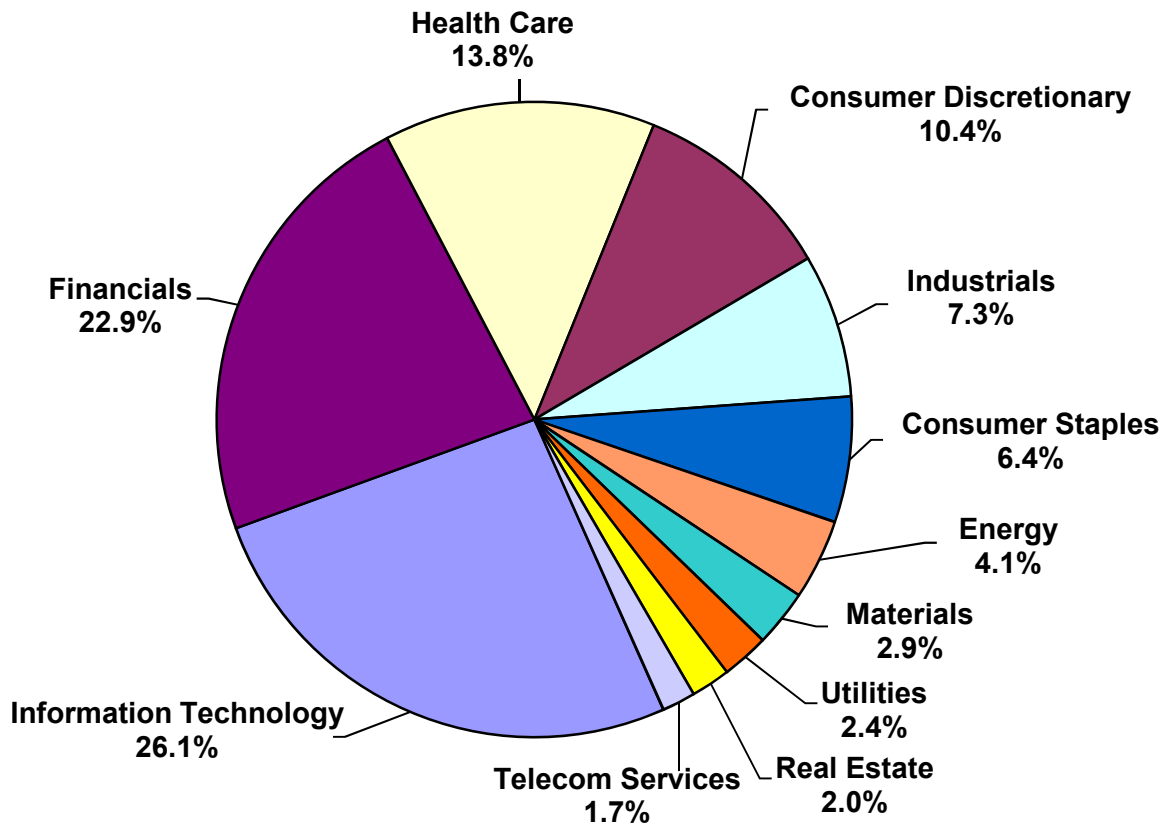
### TOP TEN EXPOSURES – Domestic Equities vs S&P 1500 3/31/18

<u>Domestic Equity Portfolio</u>			<u>S&amp;P 1500</u>		
<u>Company Name</u>	<u>Portfolio Weight</u>	<u>FY1 P/E</u>	<u>Company Name</u>	<u>Market Weight</u>	<u>FY1 P/E</u>
SPDR S&P 500 ETF Trust	6.4%	16.7	Apple, Inc.	3.4%	14.7
Apple, Inc.	4.5%	14.7	Microsoft Corporation	2.8%	25.1
Berkshire Hathaway, Inc. B	3.2%	13.6	Alphabet, Inc.	2.5%	24.9
Facebook, Inc. Class A	2.6%	22.0	Amazon.com, Inc.	2.3%	172.1
Microsoft Corporation	2.0%	25.1	Berkshire Hathaway, Inc. B	1.5%	13.6
Gilead Sciences, Inc.	2.0%	11.7	Facebook, Inc. Class A	1.5%	22.0
Amazon.com, Inc.	1.8%	172.1	JPMorgan Chase & Co.	1.5%	12.4
Aflac, Inc.	1.7%	11.4	Johnson & Johnson	1.4%	15.8
JPMorgan Chase & Co.	1.7%	12.4	Exxon Mobil Corp.	1.3%	16.1
AGNC Investment Corp.	<u>1.6%</u>	<u>8.0</u>	Bank of America Co.	<u>1.1%</u>	<u>11.7</u>
<b>TOTAL</b>	<b><u>27.5%</u></b>	<b><u>15.3</u></b>	<b>TOTAL</b>	<b><u>19.3%</u></b>	<b><u>18.9</u></b>

# SMRS

## Domestic Equity By Sector

### 3/31/18



<b>Market Value in Millions</b>				
<b>3/31/18</b>				
	<u>Assets</u>	<u>Percent</u>	<u>Benchmark</u>	<u>Difference</u>
Information Technology	\$4,478	26.1%	24.1%	2.0%
Financials	3,921	22.9%	15.0%	7.9%
Health Care	2,368	13.8%	13.3%	0.5%
Consumer Discretionary	1,790	10.4%	12.7%	-2.3%
Industrials	1,251	7.3%	10.8%	-3.5%
Consumer Staples	1,099	6.4%	7.2%	-0.8%
Energy	710	4.1%	5.6%	-1.5%
Materials	488	2.9%	3.2%	-0.3%
Utilities	410	2.4%	3.0%	-0.6%
Real Estate	335	2.0%	3.3%	-1.3%
Telecom Services	286	1.7%	1.8%	-0.1%
<b>Total</b>	<b><u>\$17,136</u></b>	<b><u>100.0%</u></b>	<b><u>100.0%</u></b>	

Benchmark: S&P 1500

# SMRS

## Actively Managed Composite

### 3/31/18

Date:	<u>3/31/18</u>	<u>12/31/17</u>	<u>9/30/17</u>	<u>6/30/17</u>
Assets (\$ in Millions):	\$9,431	\$9,261	\$9,126	\$9,455
Number of Securities:	1,106	999	950	977
Active Share:	65%	71%	75%	78%

Description: The Actively Managed Composite is designed to add consistent alpha by investing in managers with value-added, but diverse strategies. While the expectation is that most will outperform over time, the composite is designed such that they do so during differing parts of the business cycle.

<b>Characteristics</b>	<b><u>SMRS</u></b>	<b><u>S&amp;P 1500</u></b>	<b><u>S&amp;P 1500 Value</u></b>
Weighted Average Capitalization (\$ in Billions)	\$198.2	\$177.9	\$114.6
P/E FY1	14.6x	16.8x	14.5x
P/E upside to S&P 1500	15.1%	0.0	15.9%
Price/Book	2.6x	3.0x	2.0x
Dividend Yield	2.5%	1.9%	2.1%
Return on Equity	17.1%	17.4%	13.7%
<b>Risk Metrics</b>			
Beta	1.13	1.00	0.98
Tracking Error	3.1%	0.0%	3.2%
<b>Projected Returns</b>			
Normalized ROE	15.3%	15.5%	12.3%
Normalized PE Ratio	16.3	19.2	16.4
Projected Dividend Yield	2.1%	1.8%	1.8%
Projected Buyback Yield	2.1%	1.7%	1.9%
Projected Reinvestment Rate	<u>4.7%</u>	<u>5.0%</u>	<u>4.9%</u>
<b>Projected Investment Return</b>	<b><u>8.9%</u></b>	<b><u>8.5%</u></b>	<b><u>8.6%</u></b>

### TOP TEN EXPOSURES – Actively Managed Equities vs S&P 1500

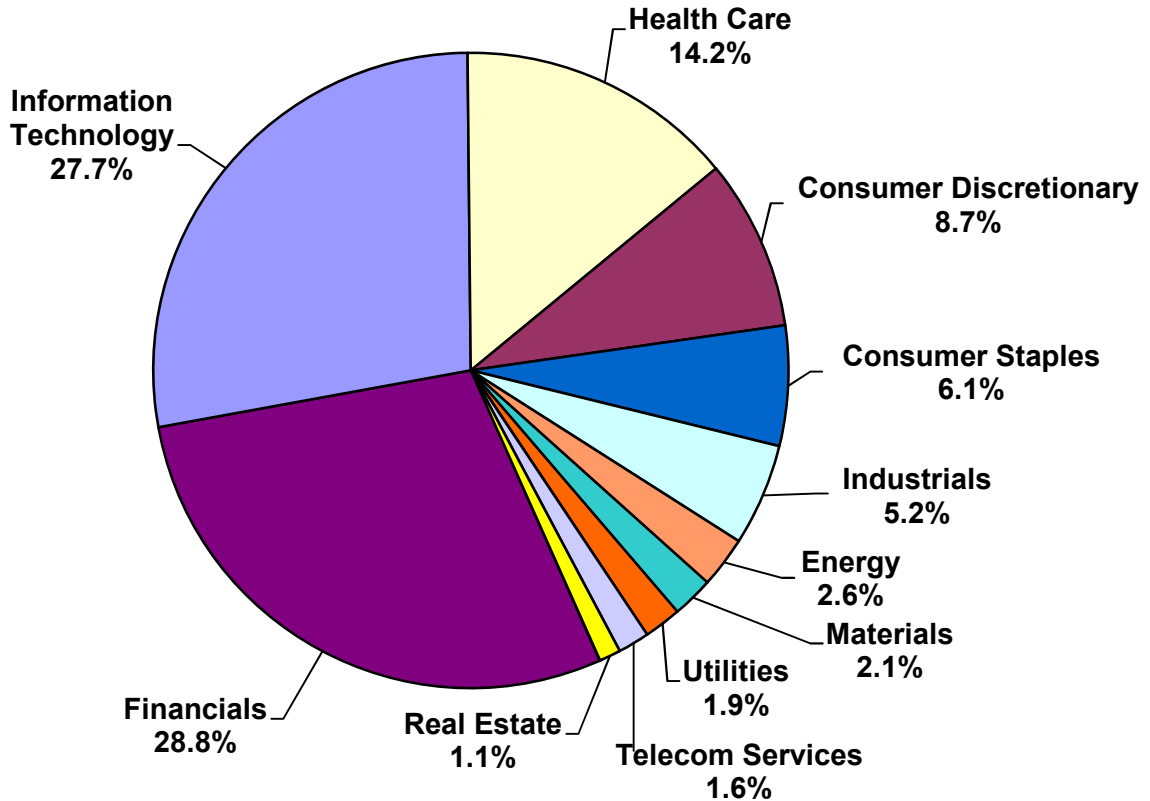
#### 3/31/18

<b><u>Actively Managed Equity Portfolio</u></b>			<b><u>S&amp;P 1500</u></b>		
<b><u>Company Name</u></b>	<b><u>Portfolio Weight</u></b>	<b><u>FY1 P/E</u></b>	<b><u>Company Name</u></b>	<b><u>Market Weight</u></b>	<b><u>FY1 P/E</u></b>
SPDR S&P 500 ETF Trust	7.2%	16.7	Apple, Inc.	3.4%	14.7
Apple, Inc.	5.5%	14.7	Microsoft Corporation	2.8%	25.1
Berkshire Hathaway, Inc. B	5.0%	13.6	Alphabet, Inc.	2.5%	24.9
Facebook, Inc. Class A	3.5%	22.0	Amazon.com, Inc.	2.3%	172.1
Gilead Sciences, Inc.	3.4%	11.7	Berkshire Hathaway, Inc. B	1.5%	13.6
Aflac, Inc.	3.0%	11.4	Facebook, Inc. Class A	1.5%	22.0
AGNC Investment Corp.	2.8%	8.0	JPMorgan Chase & Co.	1.5%	12.4
CVS Health Corporation	2.4%	9.7	Johnson & Johnson	1.4%	15.8
American Express	2.3%	13.1	Exxon Mobil Corp.	1.3%	16.1
JPMorgan Chase & Co.	<u>1.9%</u>	<u>12.4</u>	Bank of America Co.	<u>1.1%</u>	<u>11.7</u>
<b>TOTAL</b>	<b><u>37.0%</u></b>	<b><u>13.0</u></b>	<b>TOTAL</b>	<b><u>19.3%</u></b>	<b><u>18.9</u></b>

# SMRS

## Active Equity By Sector

3/31/18



<b>Market Value in Millions</b>				
<b>3/31/18</b>				
	<u>Assets</u>	<u>Percent</u>	<u>Benchmark</u>	<u>Difference</u>
Financials	\$2,716	28.8%	15.0%	13.8%
Information Technology	2,614	27.7%	24.1%	3.6%
Health Care	1,340	14.2%	13.3%	0.9%
Consumer Discretionary	818	8.7%	12.7%	-4.0%
Consumer Staples	575	6.1%	7.2%	-1.1%
Industrials	496	5.2%	10.8%	-5.6%
Energy	243	2.6%	5.6%	-3.0%
Materials	200	2.1%	3.2%	-1.1%
Utilities	179	1.9%	3.0%	-1.1%
Telecom Services	150	1.6%	1.8%	-0.2%
Real Estate	100	1.1%	3.3%	-2.2%
<b>Total</b>	<b><u>\$9,431</u></b>	<b><u>100.0%</u></b>	<b><u>100.0%</u></b>	

Benchmark: S&P 1500

## Manager Performance - Net of Fees

3/31/18

<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>Inception</u>	<u>Inception Date</u>
<b>SMRS S&amp;P 500 Index</b>	<b>\$7,011,309,782</b>	<b>14.0%</b>	<b>11.0%</b>	<b>13.5%</b>	<b>13.0%</b>	<b>--</b>	<b>N/A</b>
S&P 500		14.0%	10.8%	13.3%	12.7%	--	
Style & Risk Adjusted Benchmark		N/M	10.7%	13.3%	12.7%	--	
Lipper Large-Cap Core		13.3%	9.2%	12.0%	11.4%	--	
<i>Excess Return</i>		<i>0.0%</i>	<i>0.2%</i>	<i>0.2%</i>	<i>0.3%</i>	<i>--</i>	
<i>Alpha</i>		<i>N/M</i>	<i>0.2%</i>	<i>0.2%</i>	<i>0.4%</i>	<i>--</i>	
<i>Pct. Rank vs. Lipper Large-Cap Core</i>		<i>43</i>	<i>16</i>	<i>13</i>	<i>9</i>	<i>--</i>	
<b>SMRS Large-Cap Core</b>	<b>2,267,324,198</b>	<b>21.5%</b>	<b>9.4%</b>	<b>14.2%</b>	<b>13.3%</b>	<b>8.5%</b>	<b>8/31/07</b>
S&P 500		14.0%	10.8%	13.3%	12.7%	8.0%	
Style & Risk Adjusted Benchmark		N/M	10.0%	12.7%	12.5%	8.5%	
Lipper Large-Cap Core		13.3%	9.2%	12.0%	11.4%	7.2%	
<i>Excess Return</i>		<i>7.5%</i>	<i>-1.4%</i>	<i>0.9%</i>	<i>0.6%</i>	<i>0.4%</i>	
<i>Alpha</i>		<i>N/M</i>	<i>-0.6%</i>	<i>1.5%</i>	<i>0.8%</i>	<i>0.0%</i>	
<i>Pct Rank vs Lipper Large-Cap Core</i>		<i>2</i>	<i>52</i>	<i>5</i>	<i>7</i>	<i>10</i>	
<b>SMRS Large-Cap Growth</b>	<b>1,670,322,749</b>	<b>22.8%</b>	<b>10.1%</b>	<b>14.9%</b>	<b>13.6%</b>	<b>9.7%</b>	<b>5/31/05</b>
S&P 500 Growth Index		19.7%	12.7%	15.4%	14.3%	10.1%	
Style & Risk Adjusted Benchmark		N/M	13.2%	16.2%	15.0%	10.2%	
Lipper Large Growth		22.1%	11.7%	14.8%	13.0%	9.8%	
<i>Excess Return</i>		<i>3.1%</i>	<i>-2.5%</i>	<i>-0.5%</i>	<i>-0.7%</i>	<i>-0.4%</i>	
<i>Alpha</i>		<i>N/M</i>	<i>-3.1%</i>	<i>-1.4%</i>	<i>-1.4%</i>	<i>-0.5%</i>	
<i>Pct Rank vs Lipper Large-Cap Growth</i>		<i>39</i>	<i>80</i>	<i>50</i>	<i>40</i>	<i>46</i>	
<b>SMRS All-Cap Garp</b>	<b>1,118,164,662</b>	<b>13.4%</b>	<b>9.1%</b>	<b>12.9%</b>	<b>14.0%</b>	<b>14.0%</b>	<b>4/30/11</b>
S&P 1500 Super Composite		13.7%	10.6%	13.2%	12.6%	12.6%	
Style & Risk Adjusted Benchmark		N/M	10.5%	13.2%	12.5%	12.5%	
Lipper Multi Core		12.4%	7.9%	11.3%	10.7%	10.7%	
<i>Excess Return</i>		<i>-0.4%</i>	<i>-1.5%</i>	<i>-0.3%</i>	<i>1.4%</i>	<i>1.4%</i>	
<i>Alpha</i>		<i>N/M</i>	<i>-1.4%</i>	<i>-0.3%</i>	<i>1.5%</i>	<i>1.5%</i>	
<i>Pct. Rank vs. Lipper Multi Core</i>		<i>45</i>	<i>41</i>	<i>27</i>	<i>2</i>	<i>2</i>	
<b>LA Capital Deep Value</b>	<b>723,004,214</b>	<b>9.8%</b>	<b>8.1%</b>	<b>--</b>	<b>--</b>	<b>8.1%</b>	<b>4/1/15</b>
S&P 1500 Value		7.7%	8.4%	--	--	8.4%	
Style & Risk Adjusted Benchmark		N/M	8.3%	--	--	8.3%	
Lipper Multi-Cap Value		9.0%	7.1%	--	--	7.1%	
<i>Excess Return</i>		<i>2.1%</i>	<i>-0.3%</i>	<i>--</i>	<i>--</i>	<i>-0.3%</i>	
<i>Alpha</i>		<i>N/M</i>	<i>-0.2%</i>	<i>--</i>	<i>--</i>	<i>-0.2%</i>	
<i>Pct. Rank vs. Lipper Multi-Cap Value</i>		<i>34</i>	<i>29</i>	<i>--</i>	<i>--</i>	<i>29</i>	
<b>SMRS Mid-Cap Index</b>	<b>694,462,589</b>	<b>11.6%</b>	<b>9.8%</b>	<b>12.6%</b>	<b>12.1%</b>	<b>--</b>	<b>N/A</b>
S&P 400		11.0%	9.0%	12.0%	11.3%	--	
Style & Risk Adjusted Benchmark		N/M	8.9%	11.9%	11.2%	--	
Lipper Large-Cap Core		10.4%	6.9%	10.7%	9.9%	--	
<i>Excess Return</i>		<i>0.6%</i>	<i>0.8%</i>	<i>0.7%</i>	<i>0.9%</i>	<i>--</i>	
<i>Alpha</i>		<i>N/M</i>	<i>0.9%</i>	<i>0.7%</i>	<i>0.9%</i>	<i>--</i>	
<i>Pct. Rank vs. Lipper Mid-Cap Core</i>		<i>36</i>	<i>11</i>	<i>10</i>	<i>5</i>	<i>--</i>	
<b>Fisher All-Cap</b>	<b>660,718,608</b>	<b>18.3%</b>	<b>13.1%</b>	<b>14.5%</b>	<b>10.7%</b>	<b>10.9%</b>	<b>10/31/04</b>
S&P 1500/S&P 600 Value Blend		13.7%	10.6%	13.2%	11.9%	9.4%	
Style & Risk Adjusted Benchmark		N/M	12.3%	14.7%	15.7%	11.1%	
Lipper Multi Core		12.4%	7.9%	11.3%	10.7%	8.1%	
<i>Excess Return</i>		<i>4.6%</i>	<i>2.5%</i>	<i>1.3%</i>	<i>-1.2%</i>	<i>1.5%</i>	
<i>Alpha</i>		<i>N/M</i>	<i>0.8%</i>	<i>-0.2%</i>	<i>-5.0%</i>	<i>-0.1%</i>	
<i>Pct. Rank vs. Lipper Multi Core</i>		<i>4</i>	<i>1</i>	<i>1</i>	<i>60</i>	<i>1</i>	

<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>Inception</u>	<u>Inception Date</u>
<b>Seizert Capital Partners</b>	<b>556,939,766</b>	<b>10.6%</b>	<b>9.4%</b>	<b>11.6%</b>	<b>11.8%</b>	<b>14.3%</b>	<b>11/30/09</b>
S&P 1500/S&P 400 Value Blend		13.7%	10.6%	13.2%	12.5%	16.0%	
Style & Risk Adjusted Benchmark		N/M	8.7%	11.0%	11.9%	15.1%	
Lipper Multi Core		12.4%	7.9%	11.3%	10.7%	12.7%	
<i>Excess Return</i>		-3.1%	-1.3%	-1.6%	-0.7%	-1.7%	
<i>Alpha</i>		N/M	0.7%	0.7%	-0.1%	-0.8%	
<i>Pct. Rank vs. Lipper Multi Core</i>		73	34	53	37	13	
<b>LA Capital All-Cap Growth</b>	<b>\$466,086,857</b>	<b>14.5%</b>	<b>11.7%</b>	<b>15.6%</b>	<b>13.3%</b>	<b>11.8%</b>	<b>5/31/05</b>
S&P 1500 Growth		19.3%	12.4%	15.1%	14.1%	10.1%	
Style & Risk Adjusted Benchmark		N/M	9.0%	13.0%	12.4%	10.4%	
Lipper Multi-Cap Growth		20.3%	9.9%	13.4%	11.8%	9.7%	
<i>Excess Return</i>		-4.8%	-0.7%	0.5%	-0.8%	1.7%	
<i>Alpha</i>		N/M	2.8%	2.6%	0.9%	1.4%	
<i>Pct. Rank vs. Lipper Multi-Cap Growth</i>		88	29	19	26	10	
<b>Ark Investments</b>	<b>430,104,640</b>	<b>65.6%</b>	--	--	--	<b>46.1%</b>	<b>3/1/16</b>
S&P 1500 Growth		19.3%	--	--	--	20.5%	
Style & Risk Adjusted Benchmark		N/M	--	--	--	29.5%	
Lipper All-Cap Growth		20.3%	--	--	--	20.5%	
<i>Excess Return</i>		46.4%	--	--	--	25.6%	
<i>Alpha</i>		N/M	--	--	--	16.6%	
<i>Pct. Rank vs. Lipper All-Cap Growth</i>		1	--	--	--	1	
<b>Clarkston Capital Large-Cap</b>	<b>273,921,244</b>	<b>6.8%</b>	<b>9.2%</b>	--	--	<b>9.2%</b>	<b>4/1/15</b>
S&P 500		14.0%	10.8%	--	--	10.8%	
Style & Risk Adjusted Benchmark		N/M	7.9%	--	--	7.9%	
Lipper Large-Cap Core		13.3%	9.2%	--	--	9.2%	
<i>Excess Return</i>		-7.2%	-1.6%	--	--	-1.6%	
<i>Alpha</i>		N/M	1.3%	--	--	1.3%	
<i>Pct. Rank vs. Lipper Large-Cap Core</i>		96	56	--	--	56	
<b>Clarkston Capital Small-Cap</b>	<b>229,549,090</b>	<b>10.5%</b>	<b>10.0%</b>	--	--	<b>12.4%</b>	<b>1/1/14</b>
S&P 600		11.5%	9.5%	--	--	9.9%	
Style & Risk Adjusted Benchmark		N/M	7.6%	--	--	8.0%	
Lipper Small-Cap Core		13.0%	7.5%	--	--	8.3%	
<i>Excess Return</i>		-1.0%	0.5%	--	--	2.5%	
<i>Alpha</i>		N/M	2.5%	--	--	4.4%	
<i>Pct. Rank vs. Lipper Small-Cap Core</i>		61	17	--	--	5	
<b>Bivium Capital Partners</b>	<b>158,930,835</b>	<b>9.9%</b>	<b>6.9%</b>	<b>10.2%</b>	<b>9.9%</b>	<b>6.2%</b>	<b>11/30/07</b>
S&P 1500 Value		7.7%	8.4%	10.9%	10.9%	5.8%	
Style & Risk Adjusted Benchmark		N/M	8.9%	14.1%	13.8%	8.0%	
Lipper Multi Cap Value		9.0%	7.1%	10.1%	9.7%	5.9%	
<i>Excess Return</i>		2.2%	-1.5%	-0.7%	-1.0%	0.4%	
<i>Alpha</i>		N/M	-2.0%	-3.9%	-3.9%	-1.7%	
<i>Pct. Rank vs. Lipper Multi Cap Value</i>		34	64	56	58	32	
<b>Attucks Asset Management</b>	<b>150,498,938</b>	<b>10.8%</b>	<b>7.7%</b>	<b>10.6%</b>	<b>10.1%</b>	<b>6.6%</b>	<b>11/30/07</b>
S&P 1500 Super Composite		13.7%	10.6%	13.2%	12.6%	7.7%	
Style & Risk Adjusted Benchmark		N/M	10.8%	13.5%	13.2%	7.8%	
Lipper Multi Core		12.4%	7.9%	11.3%	10.7%	6.4%	
<i>Excess Return</i>		-2.9%	-3.0%	-2.7%	-2.5%	-1.2%	
<i>Alpha</i>		N/M	-3.2%	-2.9%	-3.1%	-1.2%	
<i>Pct. Rank vs. Lipper Multi Core</i>		72	64	68	67	54	

<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>Inception</u>	<u>Inception Date</u>
<b>Ancora</b>	<b>104,842,831</b>	--	--	--	--	4.8%	<b>10/1/17</b>
S&P 1000 SMID-Cap		--	--	--	--	5.2%	
Style & Risk Adjusted Benchmark		--	--	--	--	2.1%	
Lipper Mid-Cap Equity		--	--	--	--	5.9%	
<i>Excess Return</i>		--	--	--	--	-0.3%	
<i>Alpha</i>		--	--	--	--	N/M	
<i>Pct. Rank vs. Lipper Mid-Cap</i>		--	--	--	--	60	
<b>Large-Cap Consistent Growth</b>	<b>31,215,764</b>	<b>25.9%</b>	<b>11.6%</b>	--	--	12.1%	<b>3/1/15</b>
S&P 500		14.0%	10.8%	--	--	9.9%	
Style & Risk Adjusted Benchmark		N/M	10.7%	--	--	9.6%	
Lipper Large-Cap Core		13.3%	9.2%	--	--	8.4%	
<i>Excess Return</i>		11.9%	0.9%	--	--	2.1%	
<i>Alpha</i>		N/M	1.0%	--	--	2.5%	
<i>Pct. Rank vs. Lipper Large-Cap Core</i>		1	7	--	--	2	
<b>Munder Concentrated SMID Cap</b>	<b>30,099,956</b>	<b>11.7%</b>	<b>2.7%</b>	<b>9.4%</b>	<b>9.4%</b>	<b>15.4%</b>	<b>4/30/09</b>
S&P 400 Mid-Cap Growth		15.7%	9.8%	12.6%	11.6%	18.4%	
Style & Risk Adjusted Benchmark		N/M	11.6%	13.1%	11.6%	16.8%	
Lipper Mid-Cap Growth		19.3%	8.7%	12.4%	10.9%	16.7%	
<i>Excess Return</i>		-3.9%	-7.0%	-3.3%	-2.1%	-3.0%	
<i>Alpha</i>		N/M	-8.9%	-3.8%	-2.2%	-1.4%	
<i>Pct. Rank vs. Lipper Mid-Cap Core</i>		91	98	93	77	84	
<b>NorthPointe All-Cap Core</b>	<b>25,863,090</b>	<b>9.2%</b>	<b>6.6%</b>	<b>10.3%</b>	<b>8.1%</b>	<b>7.3%</b>	<b>10/31/04</b>
NorthPointe Blended Benchmark		7.7%	8.4%	10.9%	10.9%	8.0%	
Style & Risk Adjusted Benchmark		N/M	8.1%	10.9%	12.2%	10.9%	
Lipper Multi Core		9.0%	7.1%	10.1%	9.7%	7.6%	
<i>Excess Return</i>		1.6%	-1.8%	-0.6%	-2.8%	-0.7%	
<i>Alpha</i>		N/M	-1.5%	-0.6%	-4.1%	-3.7%	
<i>Pct. Rank vs. Lipper Multi Core</i>		40	68	55	80	58	



State of Michigan Retirement Systems

# FIXED INCOME REVIEW

Investment Advisory Committee Meeting

June 14, 2018



Daniel J. Quigley  
Senior Investment Manager  
Long-Term Fixed Income Division

# EXECUTIVE SUMMARY

## Performance

MPSERS Plan (3/31/18)	1-Year	3-Years	5-Years	7-Years	10-Years
Annualized Returns	3.3%	3.3%	3.3%	4.1%	4.9%
Bloomberg Barclays US Agg	1.2%	1.2%	1.8%	2.9%	3.6%
Peer Median Returns	1.9%	1.8%	2.2%	3.6%	4.2%
Percentile Rank vs. Peers*	9	13	14	27	17

\*State Street Universe greater than \$1 billion

- The fixed income portfolio outperformed its benchmark and peer group across all time periods. This year-over-year (YOY) outperformance was due to several key allocation decisions. Overweight allocations to securitized assets, emerging market debt, and corporate credit boosted performance. The portfolio also benefited from an underweight to Treasuries and Agency Residential Mortgage Backed Securities (RMBS).
- The duration positioning of the portfolio helped performance due to an overweight to floating-rate securities in a rising rate environment. An underweight to long duration securities offset this positive contribution slightly as bonds with a maturity of 20 years or greater outperformed.
- Externally managed strategies such as High Yield Credit and Structured Fixed Income experienced strong returns in 2017. Structured Fixed Income returned 6.0% on a YOY basis while High Yield Credit returned 3.6%. Overall, the externally managed portfolio returned 4.6% YOY, accounting for roughly three-quarters of the one-year outperformance.

## Strategy Update

The goal of the Long-Term Fixed Income Division portfolio is to meet or exceed the returns of the Bloomberg Barclays U.S. Aggregate Bond Index while satisfying the overall characteristics of a core fixed income portfolio. These characteristics are: income, liquidity, principal preservation, and diversification from equity market risk. The portfolio has a higher yield than the benchmark without meaningfully having more risk than the U.S. Aggregate Index. The yield-to-maturity of the portfolio is currently 3.8% versus a benchmark yield of 3.1%. In addition to this, the portfolio has an equity beta of 0.0, in line with the U.S. Aggregate equity beta of -0.1.

- The Core-plus strategy implemented to achieve this goal includes:
  - Core: As of March 31, 2018, the allocation to U.S. Treasuries, investment-grade corporate bonds, government-guaranteed U.S. Agency Debentures, RMBS, and Commercial Mortgage Backed Securities (CMBS) was 70.5%. This includes a 21.3% allocation to U.S. Treasuries, TIPS, and cash.
  - Plus: The portfolio maintains a strategic, out-of-benchmark allocation to high-yield corporate debt, securitized credit, and global fixed income strategies as market opportunities allow. This allocation increases the portfolio yield and total return potential but will result in lower liquidity and higher volatility. The allocation to the Plus portfolio was 29.5% as of March 31, 2018.

## **Tactical Update**

- The allocation to high-yield strategies was 5.3% at the end of the quarter, down from a peak of 14.0% in 2016.
- The allocation to securitized credit, primarily in CMBS, non-agency RMBS, and CLO securities, has increased to 20.4% of the portfolio. The combination of high income (often floating rate) and low duration in these investments is desirable at this point in the interest rate cycle.
- The portfolio has an increased allocation to floating rate securities, including AAA CLO investments and investment-grade floating rate corporate bonds. This allocation accounts for approximately 15% of portfolio assets and should position the portfolio to outperform in a rising interest rate environment.
- The allocation to U.S. TIPS decreased during the quarter to 4.2% of the fixed income portfolio. The TIPS allocation has outperformed nominal U.S. Treasuries on a YOY basis. This allocation should continue to outperform nominal U.S. Treasuries in a rising rate environment if increases in interest rates are driven partially by increased inflation expectations.

## **Market Environment and Outlook**

- The yield curve for U.S. Treasury securities flattened for the year with short-term interest rates increasing by more than long-term rates. The yield on the 30-year Treasury was essentially flat on a YOY basis while two-year Treasury yields increased from 1.3% to 2.3%. Short-term rate increases were driven by tightening from the Federal Reserve. The FOMC has increased the Fed Funds rate by 150 bps since December of 2015, including a 25 bps rate hike during their March meeting to take the Fed Funds rate to 1.75%. Markets expect an additional two to three rate increases during the remainder of the calendar year.
- Inflation expectations increased during the quarter with ten-year breakeven inflation expectations ending the quarter at 2.1%. This is in line with the 2% median inflation target from the Federal Reserve. The portfolio has reduced its allocation to U.S. TIPS but still believes that owning these securities offers value should inflation indices continue recent increases.
- Credit markets were flat for the quarter but have outperformed for the past two years. High-yield spreads ended the quarter at 354 bps, 10 bp wider for the quarter but almost 500 bps tighter over the previous two years. Investment-grade spreads also widened during the quarter, increasing by 16 bp to 109 bps. The portfolio has reduced its allocation to corporate credit by roughly 2.5% YTD as spread levels have moved below their historical averages.
- Global markets were comparatively strong performers YOY with returns on the dollar denominated Emerging Markets Index (EMD) of 3.2% and the Global High Yield Index of 6.7%. The spread on the EMD Index ended the year at 240 bps, roughly 80 bps below its five-year average.
- Securitized assets such as CMBS, ABS, and CLO bonds have also experienced strong tightening recently but still look relatively attractive when compared with long-term averages. Spreads on BBB CMBS securities ended the quarter at 305 bps, down 85 bps YOY.

## **Conclusion**

The portfolio remains defensively positioned for rising interest rates. The duration remains short of the benchmark and the portfolio maintains an underweight to long-term debt. This position is offset through a larger allocation to structured and corporate debt securities which increase the income of the portfolio. The portfolio will continue to look for attractive risk-adjusted opportunities within the fixed income opportunity set.

**SMRS**  
**Long-Term Fixed Income by Strategy**  
**3/31/18**

	Amount	Total	% of Total
<b>Core</b> (\$ in Millions)			
LTFID Internal	\$4,563		
Dodge & Cox	240		
PGIM Investment Grade Credit	229		
Domestic Fixed Income Swaps	277		
PIMCO Mortgage Fund	247		
<b>Total Core</b>		<b>\$5,555</b>	<b>64.4%</b>
<b>Tactical</b>			
Pyramis	\$298		
Loomis Core Plus	225		
<b>Total Tactical</b>		<b>\$523</b>	<b>6.1%</b>
<b>Securitized Debt</b>			
Met West Securitized Ops	\$605		
Principal CMBS	526		
Napier Park ABS Income	159		
Napier Park Strategic Loan	57		
Napier Park CLO Debt	208		
TICP CLO Debt	205		
<b>Total Securitized Debt</b>		<b>\$1,760</b>	<b>20.4%</b>
<b>High Yield</b>			
Columbia Management	\$247		
PGIM High Yield	212		
<b>Total High Yield</b>		<b>\$459</b>	<b>5.3%</b>
<b>Global</b>			
T. Rowe Global Multi-Sector	\$230		
PGIM Global Liquid Relative Value	\$100		
<b>Total Global</b>		<b>\$330</b>	<b>3.8%</b>

**TOTAL**

**\$8,627**

**100.0%**

NOTE: Totals may not be exact because of rounding.

# SMRS

## Fixed Income Holdings Portfolio Characteristics

Benchmark: Barclays Aggregate

3/31/18

<u>Characteristic</u>	<u>Portfolio</u>	<u>Benchmark</u>
Average Maturity (Yrs)	7.1	8.2
Duration (Yrs)	4.6	6.0
Spread Duration (Yrs)	5.5	6.1
Coupon (%)	3.3	3.1
Yield to Maturity (%)	3.8	3.1
Credit Rating	A	AA
VaR (%)	3.9	4.4
Tracking Error	128 bps	n/a
Beta (vs S&P 500)	-0.02	-0.06

### Commentary

#### Objectives

Income:

Liquidity:

Principal Preservation:

Diversification:

#### Highlights

The coupon of the portfolio is approximately 25 bps higher than the benchmark. Roughly 15% of the portfolio is invested in floating-rate securities, allowing coupon income to increase relative to the benchmark if the yield curve continues to flatten.

21.3% of the portfolio is invested in cash, U.S. Treasuries, and TIPS. These investments can be liquidated via same-day trading.

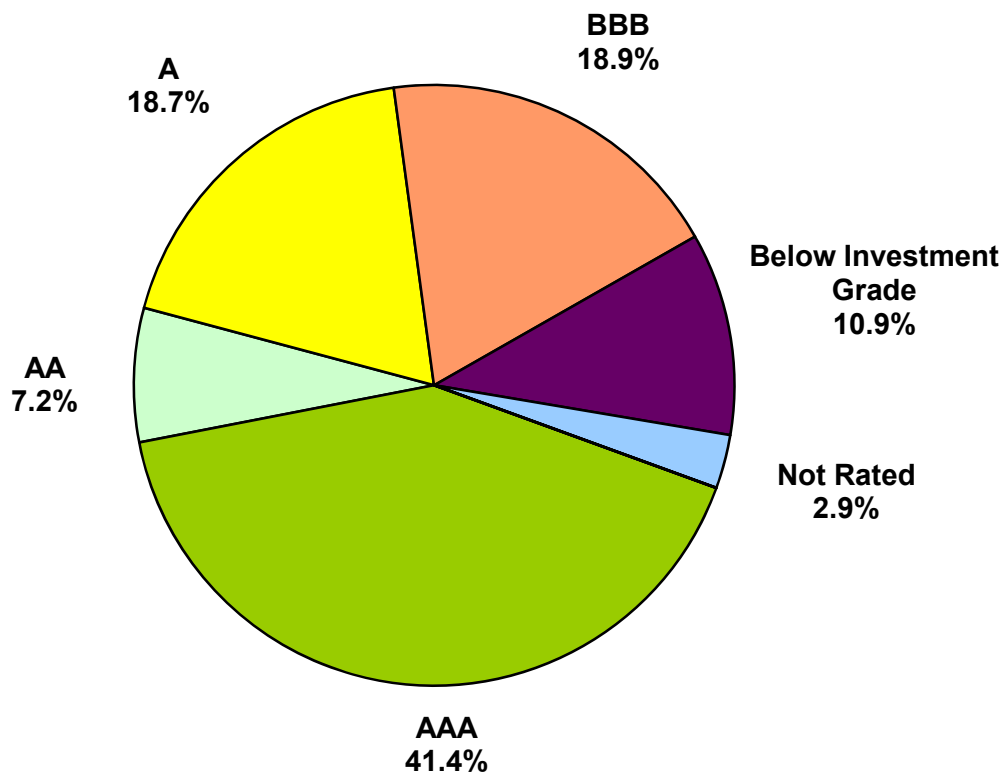
The portfolio has a large allocation to U.S. Treasuries and carries an investment-grade credit rating.

The equity beta of the portfolio is uncorrelated with equity market movements, in line with the bond index.

# SMRS

## Fixed Income By Rating

### Total U.S. Long-Term Fixed Income 3/31/18



<b>Market Value in Millions</b>				
<b>3/31/18</b>				
	<u>Assets</u>	<u>Percent</u>	<u>Benchmark</u>	<u>Difference</u>
AAA	\$3,570	41.4%	71.0%	-29.6%
AA	620	7.2%	4.5%	2.7%
A	1,617	18.7%	11.3%	7.4%
BBB	1,629	18.9%	11.9%	7.0%
Not Rated	247	2.9%	1.3%	1.6%
* Below Investment Grade	944	10.9%	0.0%	10.9%
<b>Total Investments</b>	<b><u>\$8,627</u></b>	<b><u>100.0%</u></b>	<b><u>100.0%</u></b>	

\* Comprised of approximately 7.6% High Yield Credit and 3.3% High Yield RMBS/ABS

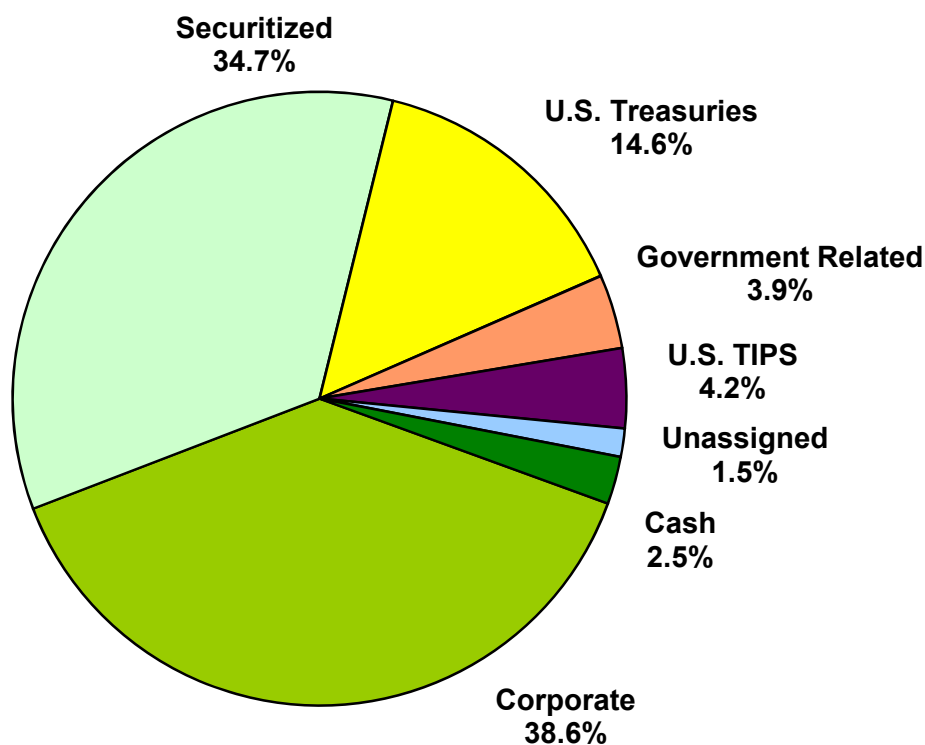
Benchmark: Barclays US Aggregate

# SMRS

## Fixed Income By Asset Type

### Total U.S. Long-Term Fixed Income

#### 3/31/18



<b>Market Value in Millions</b>				
<b>3/31/18</b>				
	<b>Assets</b>	<b>Percent</b>	<b>Benchmark</b>	<b>Difference</b>
Corporate	\$3,333	38.6%	25.3%	13.3%
Securitized	2,994	34.7%	30.6%	4.1%
U.S. Treasuries	1,260	14.6%	37.3%	-22.7%
Government Related	334	3.9%	6.8%	-2.9%
U.S. TIPS	364	4.2%	0.0%	4.2%
Unassigned	125	1.5%	0.0%	1.5%
Cash	217	2.5%	0.0%	2.5%
<b>Total Investments</b>	<b>\$8,627</b>	<b>100.0%</b>	<b>100.0%</b>	

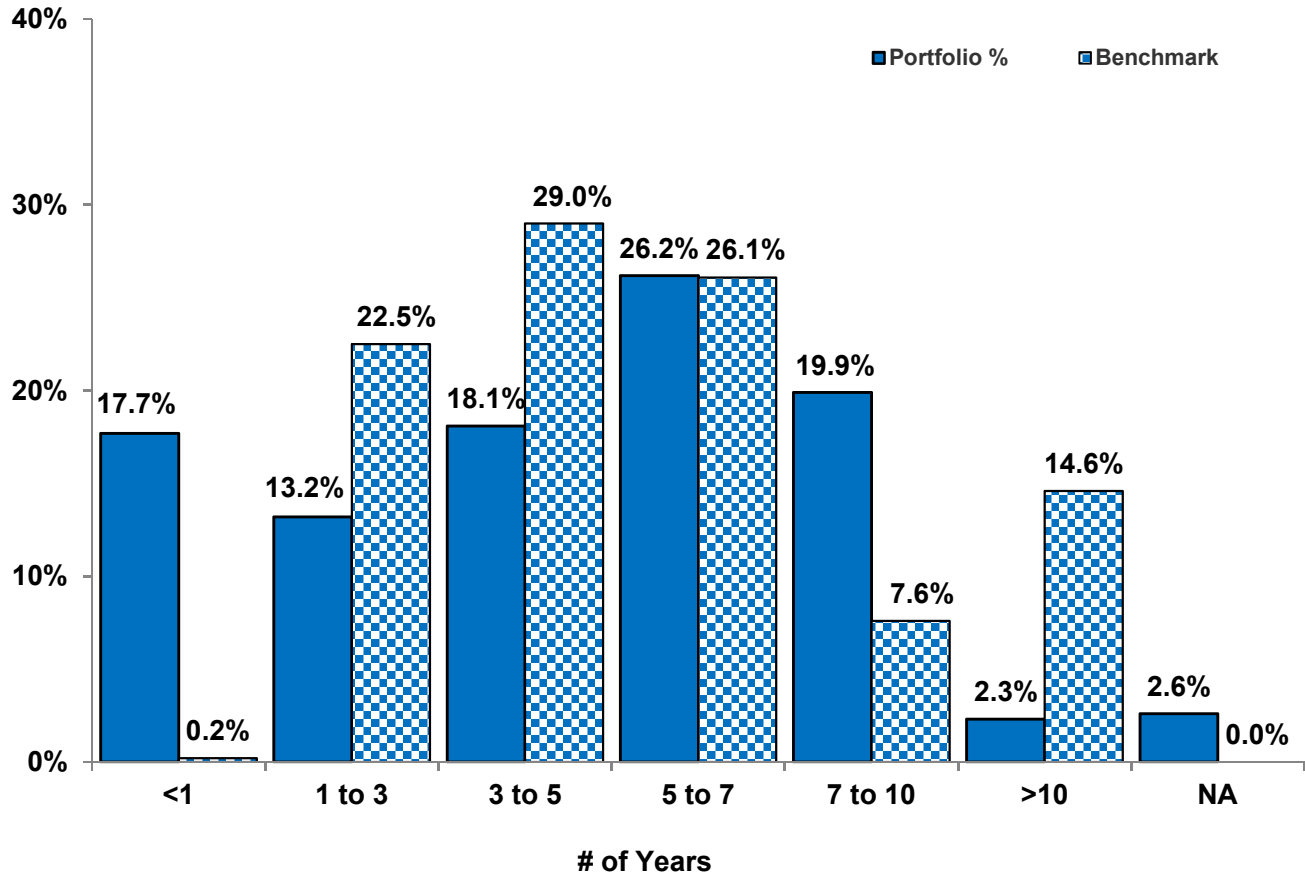
Benchmark: Barclays US Aggregate

# SMRS

## Duration Distribution

### Fixed Income Composite Versus Benchmark

#### 3/31/18



Source: Factset

Market Value in Millions					
Duration	Assets	Portfolio Weight	Benchmark Weight	Portfolio Duration*	Benchmark Duration*
<1	\$1,527	17.7%	0.2%	0.1	1.0
1 to 3	1,141	13.2%	22.5%	1.7	2.0
3 to 5	1,560	18.1%	29.0%	4.1	4.1
5 to 7	2,260	26.2%	26.1%	6.0	5.8
7 to 10	1,714	19.9%	7.6%	7.9	7.9
>10	198	2.3%	14.6%	15.6	15.7
NA	227	2.6%	0.0%	0.0	0.0
<b>Total</b>	<b>\$8,627</b>	<b>100.0%</b>	<b>100.0%</b>	<b>4.6</b>	<b>6.0</b>

\* Effective Duration



## SMRS Internal/External Manager Performance – Net of Fees

3/31/18

### Total Fixed Income Performance, Net of Fees (MPSERS)

	<u>Market Value</u>	<u>1-Year</u>	<u>3-Years</u>	<u>5-Years</u>	<u>7-Years</u>	<u>10-Years</u>
<b>Total Fixed Income</b>	<b>\$8,626,615,580</b>	<b>3.1%</b>	<b>3.1%</b>	<b>3.2%</b>	<b>4.0%</b>	<b>4.8%</b>
<i>Bloomberg/Barclays Aggregate Bond Index</i>	<i>N/A</i>	<i>1.2%</i>	<i>1.2%</i>	<i>1.8%</i>	<i>2.9%</i>	<i>3.6%</i>
<b>Internal Fixed Income</b>	<b>\$4,839,827,942</b>	<b>2.3%</b>	<b>2.6%</b>	<b>2.8%</b>	<b>3.6%</b>	<b>4.5%</b>
<b>Internal Core Portfolio</b>	4,562,757,880	2.1%	2.5%	2.7%	3.2%	3.8%
<b>Internal Swaps Portfolio</b>	277,070,062	--	--	--	--	--
<b>External Fixed Income</b>	<b>\$3,786,787,638</b>	<b>4.3%</b>	<b>4.0%</b>	<b>3.7%</b>	<b>4.7%</b>	<b>5.3%</b>
<b>Fixed Income Core</b>	<b>\$486,683,035</b>	<b>3.9%</b>	<b>3.1%</b>	<b>2.7%</b>	<b>3.8%</b>	<b>4.7%</b>
<b>Dodge &amp; Cox Core</b>	239,778,937	2.1%	2.4%	2.9%	3.8%	4.9%
<b>PIMCO Mortgage Fund</b>	246,904,098	--	--	--	--	--
<i>Bloomberg/Barclays Aggregate Bond Index</i>	<i>N/A</i>	<i>1.2%</i>	<i>1.2%</i>	<i>1.8%</i>	<i>2.9%</i>	<i>3.6%</i>
<b>Investment Grade Credit</b>	<b>\$228,714,697</b>	<b>3.0%</b>	<b>2.8%</b>	<b>3.3%</b>	<b>4.8%</b>	<b>5.6%</b>
<b>PGIM Investment Grade</b>	228,714,697	3.0%	2.8%	3.4%	5.0%	6.1%
<i>Bloomberg/Barclays Credit Index</i>	<i>N/A</i>	<i>2.6%</i>	<i>2.2%</i>	<i>2.8%</i>	<i>4.4%</i>	<i>5.2%</i>
<b>Tactical Fixed Income</b>	<b>\$522,530,420</b>	<b>3.0%</b>	<b>3.2%</b>	<b>4.1%</b>	<b>5.2%</b>	<b>--</b>
<b>Loomis Sayles CorePlus</b>	225,022,201	2.8%	2.4%	--	--	--
<b>Fidelity Tactical Bond Fund</b>	297,508,219	3.2%	3.6%	--	--	--
<i>Bloomberg/Barclays Aggregate Bond Index</i>	<i>N/A</i>	<i>1.2%</i>	<i>1.2%</i>	<i>1.8%</i>	<i>2.9%</i>	<i>3.6%</i>
<b>High Yield Fixed Income</b>	<b>\$459,165,986</b>	<b>3.1%</b>	<b>4.7%</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Columbia Management High Yield</b>	247,327,361	2.6%	4.4%	--	--	--
<b>PGIM High Yield</b>	211,838,625	3.7%	5.1%	--	--	--
<i>Bloomberg/Barclays US HY BA/B 2% Cap</i>	<i>N/A</i>	<i>6.9%</i>	<i>5.9%</i>	<i>--</i>	<i>--</i>	<i>--</i>
<b>Structured Fixed Income</b>	<b>\$1,760,169,066</b>	<b>5.6%</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>Principal CMBS</b>	526,272,554	4.5%	3.0%	4.8%	5.8%	--
<b>MetWest Securitized Opportunities</b>	604,994,959	6.8%	4.4%	--	--	--
<b>Napier Park ABS Income</b>	159,345,517	11.7%	--	--	--	--
<b>Napier Park Strategic Loan LP</b>	56,674,668	6.8%	--	--	--	--
<b>Napier Park CLO Debt</b>	207,646,010	3.8%	--	--	--	--
<b>TICP CLO Debt</b>	205,235,358	2.7%	--	--	--	--
<i>Bloomberg/Barclays Aggregate Bond Index</i>	<i>N/A</i>	<i>1.2%</i>	<i>1.2%</i>	<i>1.8%</i>	<i>2.9%</i>	<i>3.6%</i>
<i>Blended CMBS Benchmark</i>	<i>N/A</i>	<i>3.5%</i>	<i>3.2%</i>	<i>2.8%</i>	<i>5.8%</i>	
<b>Global Fixed Income</b>	<b>329,524,433.40</b>	<b>4.1%</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>T. Rowe Global Multi-Sector</b>	229,584,433.40	4.4%	--	--	--	--
<i>Custom GMS Benchmark</i>	<i>N/A</i>	<i>3.7%</i>				
<b>PGIM GLRV</b>	99,940,000.00	--	--	--	--	--

State of Michigan Retirement Systems

# INTERNATIONAL EQUITY REVIEW

Investment Advisory Committee Meeting

June 14, 2018



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

# EXECUTIVE SUMMARY

## Performance

<b>MPSERS Plan (3/31/18)</b>	<b>1-Year</b>	<b>3-Years</b>	<b>5-Years</b>	<b>7-Years</b>	<b>10-Years</b>
Annualized Returns	18.2%	7.6%	7.3%	5.9%	3.9%
MSCI ACWI ex USA Returns	16.5%	6.2%	6.0%	4.5%	2.9%
Peer Median Returns	17.3%	6.9%	7.2%	5.8%	3.5%
Percentile Rank vs. Peers*	36	41	38	46	32

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

- The International Equity Division (IED) portfolio outperformed the benchmark by 1.7% over the last twelve months. The outperformance was a result of exposures to emerging markets, momentum factor, and information technology sector.

## 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 risk management decisions.

## Strategy

- The International Equity Division uses three distinct portfolio strategies to add value.
  - Index investments, 28.3% of assets, to gain broad international stock market exposure with minimal tracking risk.
  - Stock plus investments, 35.0% of assets, to implement a portable alpha strategy onto high-level strategic tilts.
  - Active investments, 36.7% of assets, to gain specific international stock market exposures.
- Current portfolio drivers of risk and return.
  - Changes to the index strategy have further decreased the tracking error of the portfolio. Tracking error is expected to increase in the coming months partly due to a normalization of volatility in markets but primarily due to medium term changes to the strategic position of the portfolio.
  - Primary contributors to IED's tracking error are emerging markets, quality factor, momentum factor, information technology sector, and energy sector.
  - The division remains focused on identifying high information ratio (IR) investments to more efficiently use its risk budget. Future portfolio returns will be driven by the performance of emerging markets, with an expected IR of 0.4, and the dividend yield factor, with an expected IR of 0.8.

- Quarterly changes to International Equity Division allocation.
  - Transferred \$1.4 billion from Vanguard Developed and Vanguard Emerging to BlackRock MSCI ACWI ex USA index. The Vanguard products were benchmarked to FTSE developed and emerging market indexes. The changes will reduce tracking error while saving an estimated \$0.7 million per year in investment fees.
  - Rolled \$153.0 million from maturing swaps to new swaps on the MSCI Emerging Markets Index. The capital allocation is supported by historically wide valuation spreads. Annualized return is estimated at 11.1%, nearly 220 basis points (bps) higher than the benchmark MSCI ACWI ex USA.

### **Market Environment and Outlook**

- Global markets remain in a correction phase that began at the end of January 2018. Although geopolitical events and trade discussions continue to weigh on markets, forward-looking growth estimates have stalled further declines in stock prices.
- International stock markets' top line continues to grow, albeit at a slightly slower pace than the first quarter. Sales grew 13.7% year-over-year through early April 2018 on the MSCI ACWI ex USA. The rate of growth is a one standard deviation event over the last twenty years. Energy, materials, and information technology were the leading sectors. The growth is broad-based with nine of the eleven index sectors experiencing double digit sales growth.
- MSCI ACWI ex USA trailing twelve-month normalized price-to-earnings ratio was 19.0, slightly lower than the twenty-year average of 22.3.
- Normalized annual compound rate of return for the MSCI ACWI ex USA index was estimated to be approximately 8.9%. This rate is based on the current price and actual fundamentals over multiple periods to remove fundamental variability, better estimating the earnings power of the index.
- A ten-year blended international government yield of 1.9% implies an international equity risk premium of 7.0%. The equity risk premium increased over the last quarter by approximately 30 bps. Global interest rates decreasing accounted for 10 bps of compression and stock prices decreasing accounted for the remaining 20 bps.
- Emerging markets were up 37.3% in 2017. Through early May, the MSCI Emerging Markets Index is up 0.8% versus the MSCI ACWI ex USA at -0.2%. Emerging market valuations remain attractive with wider value spreads relative to developed markets. Forward looking annualized compound rate for emerging markets was estimated to be approximately 11.1% versus developed markets at 8.3%.
- Large-cap and small-cap companies remain slightly overvalued; however, mid-cap companies' value spreads look attractive, trading just above the +1 standard deviation relative to its twenty-year history. Forward returns are estimated at 8.3%.

### **Conclusion**

International equity markets continue to offer an attractive equity risk premium relative to international ten-year government bonds. Emerging markets and the dividend yield factor are particularly attractive due to wider valuation spreads and higher estimated annualized returns relative to active risk.

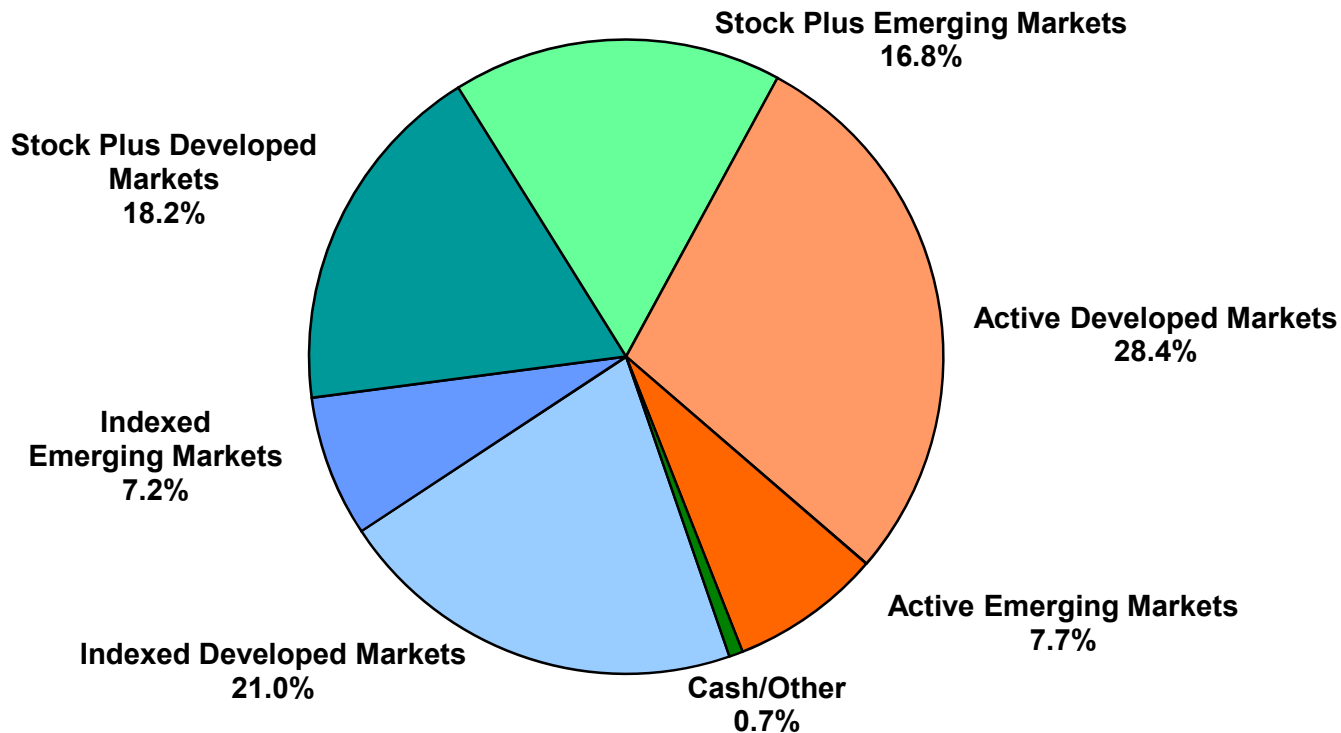
**SMRS**  
**International Equity Strategies**  
**3/31/18**

Markets	Amount	Total	% of Total
<b>Indexed</b> (\$ in Millions)			
SSGA	\$2,292		
BlackRock	1,353		
<b>Total Indexed</b>		<b>\$3,645</b>	<b>28.2%</b>
<b>Stock Plus</b>			
Internal Swaps	\$2,686		
PIMCO	1,829		
<b>Total Stock Plus</b>		<b>\$4,515</b>	<b>35.0%</b>
<b>Active</b>			
Los Angeles Capital Management	\$1,420		
Wellington	1,052		
Marathon-London	739		
SSGA	723		
Effissimo Capital Management	322		
Lazard	250		
Martin Currie	235		
<b>Total Active</b>		<b>\$4,741</b>	<b>36.8%</b>
<b>TOTAL</b>		<b><u>\$12,901</u></b>	<b><u>100.0%</u></b>

# SMRS

## International Equity Exposure By Category

### 3/31/18



<b>Market Value in Millions</b>		
	<u>3/31/18</u>	
<b><u>Indexed</u></b>		
Developed Markets	\$2,716	21.0%
Emerging Markets	929	7.2%
<b>Total Indexed Equity</b>	<u>\$3,645</u>	<u>28.2%</u>
<b><u>Stock Plus</u></b>		
Developed Markets	\$2,343	18.2%
Emerging Markets	2,172	16.8%
<b>Total Stock Plus Equity</b>	<u>\$4,515</u>	<u>35.0%</u>
<b><u>Active</u></b>		
Developed Markets	\$3,659	28.4%
Emerging Markets	996	7.7%
Cash/Other	86	0.7%
<b>Total Active Equity</b>	<u>\$4,741</u>	<u>36.8%</u>
<b>Total International Equity</b>	<u><u>\$12,901</u></u>	<u><u>100.0%</u></u>

# SMRS

## International Equities

### 3/31/18

Date:	<u>3/31/18</u>	<u>12/31/17</u>	<u>9/30/17</u>	<u>6/30/17</u>
Assets (\$ in Millions):	\$12,901	\$12,990	\$12,351	\$11,637
Number of Securities:	5,771	9,225	9,109	9,210
Active Share:	25%	27%	33%	34%

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>
<b>Return:</b>				
Annualized Compound Rate	9.8%	9.2%	9.6%	8.9%
Sustainable Growth Rate	7.5%	6.9%	7.4%	6.9%
Dividend Yield	2.1%	2.0%	2.3%	2.2%
Buyback Yield	-0.3%	-0.2%	-0.1%	-0.1%
Overlay Yield	0.5%	0.5%	--	--
<b>Risk:</b>				
Beta	1.0	--	1.0	--
Volatility	11.9%	--	11.7%	--
Tracking Error	0.8%	--	0.0%	--
<b>Fundamental:</b>				
Average Capitalization (\$ in Billions)	58.5	--	66.1	--
Price/Earnings	17.1	20.2	15.7	19.0
Price/Book	1.9	2.2	1.8	2.1
ROE	10.8%	10.9%	11.4%	11.2%

#### TOP TEN HOLDINGS

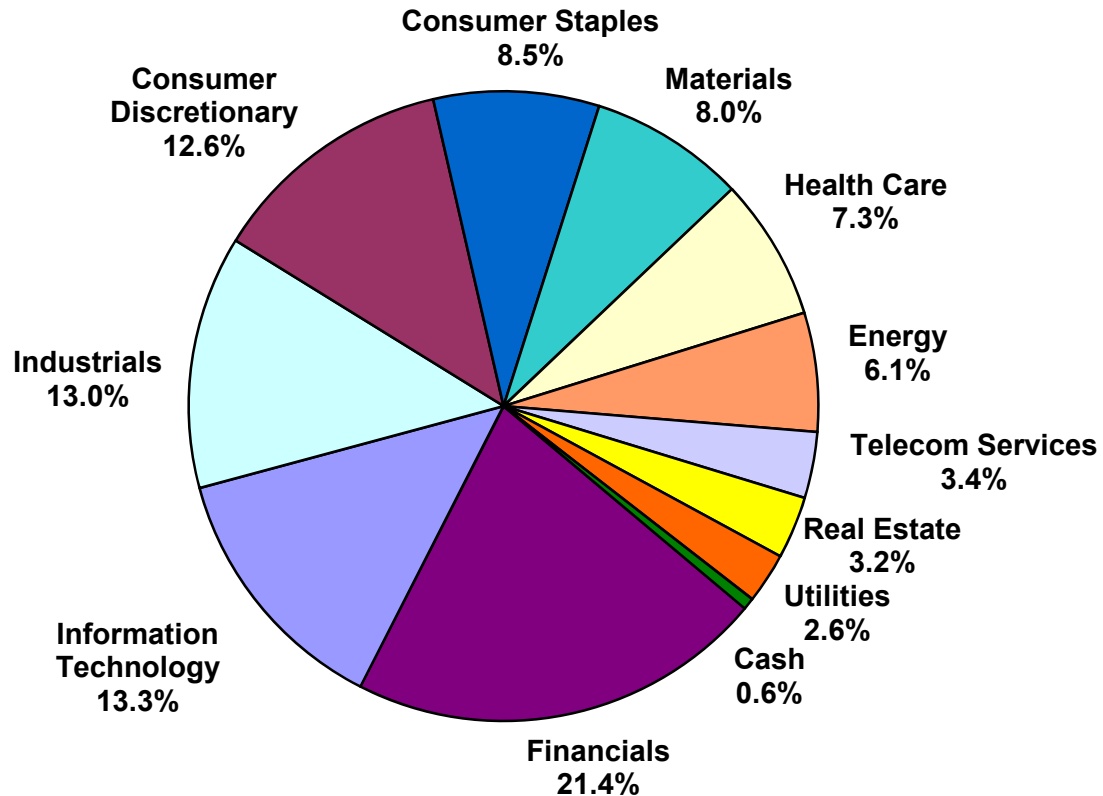
(\$ in Billions\* - \$ in Millions\*\*)

	<u>Portfolio Weight</u>	<u>Market Capitalization*</u>	<u>FY1 P/E</u>	<u>Market Value**</u>
Tencent Holdings Ltd.	1.6%	\$496.0	38.0	\$205.9
Samsung Electronics Co., Ltd.	1.2%	329.7	6.9	153.2
Alibaba Group Holding Ltd. Sponsored ADR	1.1%	471.6	35.0	140.1
Taiwan Semiconductor Manufacturing Co., Ltd.	1.1%	217.0	16.5	135.5
Dai-ichi Life Holdings, Inc.	0.8%	21.9	6.7	105.3
Nestle S.A.	0.8%	245.8	19.7	101.7
Toshiba Corporation	0.8%	18.8	4.7	99.5
Novartis AG	0.7%	211.1	15.1	92.5
Naspers Limited Class N	0.6%	107.1	36.0	77.3
China Construction Bank Corporation Class H	<u>0.6%</u>	<u>258.6</u>	6.2	<u>71.6</u>
<b>TOTAL</b>	<b><u>9.2%</u></b>	<b><u>\$2,377.5</u></b>		<b><u>\$1,182.5</u></b>

# SMRS

## International Equity By Sector

### 3/31/18



<b>Market Value in Millions</b>				
<b>3/31/18</b>				
	<u>Assets</u>	<u>Percent</u>	<u>Benchmark</u>	<u>Difference</u>
Financials	\$2,759	21.4%	23.0%	-1.6%
Information Technology	1,722	13.3%	11.5%	1.8%
Industrials	1,673	13.0%	11.8%	1.2%
Consumer Discretionary	1,630	12.6%	11.4%	1.2%
Consumer Staples	1,091	8.5%	9.3%	-0.8%
Materials	1,031	8.0%	8.1%	-0.1%
Health Care	939	7.3%	7.6%	-0.3%
Energy	790	6.1%	7.1%	-1.0%
Telecom Services	439	3.4%	4.0%	-0.6%
Real Estate	416	3.2%	3.2%	0.0%
Utilities	335	2.6%	3.0%	-0.4%
Total Investments	<u>\$12,825</u>	<u>99.4%</u>	<u>100.0%</u>	
Cash	76	0.6%	0.0%	0.6%
<b>Total</b>	<b><u>\$12,901</u></b>	<b><u>100.0%</u></b>	<b><u>100.0%</u></b>	

Benchmark: MSCI ACWI ex USA



**International Equity Performance - Net of Fees**  
3/31/18

<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>Inception</u>	<u>Inception Date</u>
<b>Total International Equity</b>	<b>\$12,901,082,087</b>	<b>18.0%</b>	<b>7.4%</b>	<b>7.1%</b>	<b>5.7%</b>	<b>6.3%</b>	<b>1/1/04</b>
MSCI ACWI ex USA		16.5%	6.2%	5.9%	4.3%	6.6%	
Lipper International Multi-Cap Core		14.9%	6.0%	6.6%	5.3%	5.9%	
<i>Excess Return</i>		1.4%	1.2%	1.2%	1.4%	-0.2%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		14	17	38	36	31	

<b>Total International Active Strategy</b>	<b>\$4,740,828,833</b>	<b>17.2%</b>	<b>7.0%</b>	<b>6.9%</b>	<b>5.4%</b>	<b>5.6%</b>	<b>5/1/05</b>
MSCI ACWI ex USA		16.5%	6.2%	5.9%	4.3%	5.9%	
Lipper International Multi-Cap Core		14.9%	6.0%	6.6%	5.3%	5.3%	
<i>Excess Return</i>		0.7%	0.8%	1.0%	1.2%	-0.3%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		25	22	45	51	42	
<b>LACM World ex USA</b>	<b>1,011,758,284</b>	<b>14.1%</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>9.3%</b>	<b>12/1/15</b>
MSCI World ex USA		13.9%	--	--	--	9.2%	
Lipper International Multi-Cap Core		14.9%	--	--	--	9.8%	
<i>Excess Return</i>		0.2%	--	--	--	0.1%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		72	--	--	--	60	
<b>Marathon-London International Fund</b>	<b>739,310,116</b>	<b>14.8%</b>	<b>7.5%</b>	<b>8.5%</b>	<b>--</b>	<b>10.0%</b>	<b>2/1/12</b>
MSCI World ex USA		13.9%	5.3%	6.0%	--	7.4%	
Lipper International Multi-Cap Core		14.9%	6.0%	6.6%	--	7.9%	
<i>Excess Return</i>		0.9%	2.2%	2.4%	--	2.6%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		66	16	7	--	8	
<b>Wellington IRE Fund</b>	<b>732,588,984</b>	<b>19.2%</b>	<b>6.8%</b>	<b>7.7%</b>	<b>6.1%</b>	<b>5.1%</b>	<b>12/1/05</b>
MSCI World ex USA		13.9%	5.3%	6.0%	4.7%	4.6%	
Lipper International Multi-Cap Core		14.9%	6.0%	6.6%	5.3%	4.6%	
<i>Excess Return</i>		5.3%	1.5%	1.7%	1.4%	0.5%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		6	25	19	25	32	
<b>SSGA International Alpha Small Cap</b>	<b>722,586,576</b>	<b>17.3%</b>	<b>9.5%</b>	<b>9.9%</b>	<b>8.6%</b>	<b>4.5%</b>	<b>5/1/07</b>
MSCI World ex USA Small Cap		21.2%	11.3%	9.7%	7.3%	3.9%	
Lipper International Small/Mid-Cap Core		18.8%	9.2%	8.1%	6.2%	3.8%	
<i>Excess Return</i>		-3.9%	-1.8%	0.2%	1.4%	0.6%	
<i>Pct Rank vs. Lipper International Small/Mid-Cap Core</i>		83	51	26	7	11	
<b>LACM Emerging Markets Fund</b>	<b>408,326,518</b>	<b>23.0%</b>	<b>8.1%</b>	<b>4.7%</b>	<b>3.3%</b>	<b>5.9%</b>	<b>12/8/09</b>
MSCI Emerging Markets		24.9%	8.8%	5.0%	2.5%	4.9%	
Lipper Emerging Markets		23.0%	8.1%	4.4%	2.5%	5.1%	
<i>Excess Return</i>		-1.9%	-0.7%	-0.3%	0.8%	0.9%	
<i>Pct Rank vs. Lipper Emerging Markets</i>		55	57	53	38	39	
<b>Effissimo Capital Management Japan</b>	<b>321,887,287</b>	<b>13.6%</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>11.5%</b>	<b>12/1/15</b>
MSCI Japan		19.6%	--	--	--	11.3%	
Lipper International Small/Mid-Cap Value		16.2%	--	--	--	12.9%	
<i>Excess Return</i>		-6.1%	--	--	--	0.2%	
<i>Pct Rank vs. Lipper International Small/Mid-Cap Value</i>		71	--	--	--	67	
<b>Wellington Emerging Markets Local Equity</b>	<b>318,850,773</b>	<b>30.8%</b>	<b>11.5%</b>	<b>7.0%</b>	<b>--</b>	<b>9.7%</b>	<b>12/1/11</b>
MSCI Emerging Markets		24.9%	8.8%	5.0%	--	6.2%	
Lipper Emerging Markets		23.0%	8.1%	4.4%	--	6.0%	
<i>Excess Return</i>		5.9%	2.7%	2.0%	--	3.5%	
<i>Pct Rank vs. Lipper Emerging Markets</i>		10	13	16	--	10	
<b>Lazard/Wilmington International Equity</b>	<b>250,200,000</b>	<b>16.1%</b>	<b>4.4%</b>	<b>--</b>	<b>--</b>	<b>2.8%</b>	<b>6/1/14</b>
MSCI World ex USA		13.9%	5.3%	--	--	2.9%	
Lipper International Large-Cap Core		14.9%	6.0%	--	--	3.8%	
<i>Excess Return</i>		2.2%	-0.9%	--	--	-0.1%	
<i>Pct Rank vs. Lipper International Large-Cap Core</i>		40	87	--	--	84	
<b>Martin Currie International Long-term Unconstrained</b>	<b>235,288,004</b>	<b>13.0%</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>16.8%</b>	<b>2/1/17</b>
MSCI ACWI ex USA		13.9%	--	--	--	15.4%	
Lipper International Multi-Cap Core		14.9%	--	--	--	16.6%	
<i>Excess Return</i>		-0.9%	--	--	--	1.4%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		79	--	--	--	62	

<b>Fund Name</b>	<b>Market Value</b>	<b>1-Year</b>	<b>3-Years</b>	<b>5-Years</b>	<b>7-Years</b>	<b>Inception</b>	<b>Inception Date</b>
<b>Total International Stock Plus Strategy</b>	<b>\$4,515,619,968</b>	<b>18.6%</b>	<b>7.6%</b>	<b>7.8%</b>	<b>6.8%</b>	<b>8.6%</b>	<b>1/1/09</b>
MSCI ACWI ex USA		16.5%	6.2%	5.9%	4.3%	8.8%	
Lipper International Multi-Cap Core		14.9%	6.0%	6.6%	5.3%	8.7%	
<i>Excess Return</i>		2.1%	1.4%	1.9%	2.5%	-0.1%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		9	17	19	11	46	
<b>Internal Stock Plus</b>	<b>2,687,142,300</b>	<b>17.8%</b>	<b>8.1%</b>	<b>10.0%</b>	<b>8.9%</b>	<b>6.9%</b>	<b>1/1/09</b>
MSCI ACWI ex USA		16.5%	6.2%	10.3%	4.3%	5.3%	
Lipper International Multi-Cap Core		14.9%	6.0%	6.6%	5.3%	6.0%	
<i>Excess Return</i>		4.4%	2.9%	5.2%	5.2%	4.2%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		2	2	1	1	1	
<b>PIMCO StockPLUS International TR Fund</b>	<b>1,221,727,978</b>	<b>15.5%</b>	<b>5.8%</b>	<b>6.5%</b>	<b>6.7%</b>	<b>7.3%</b>	<b>10/1/10</b>
MSCI World ex USA		13.9%	5.3%	6.0%	4.7%	5.9%	
Lipper International Large-Cap Core		14.9%	6.0%	6.6%	5.3%	6.3%	
<i>Excess Return</i>		1.6%	0.5%	0.5%	2.0%	1.4%	
<i>Pct Rank vs. Lipper International Large-Cap Core</i>		50	61	51	11	26	
<b>PIMCO Emerging Markets StockPLUS AR Fund</b>	<b>606,749,690</b>	<b>25.9%</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>8.9%</b>	<b>4/1/15</b>
MSCI Emerging Markets		24.9%	--	--	--	8.8%	
Lipper Emerging Markets		23.0%	--	--	--	8.1%	
<i>Excess Return</i>		0.9%	--	--	--	0.1%	
<i>Pct Rank vs. Lipper Emerging Markets</i>		31	--	--	--	32	

<b>Total International Index Strategy</b>	<b>\$3,644,633,285</b>	<b>20.0%</b>	<b>8.4%</b>	<b>7.0%</b>	<b>5.0%</b>	<b>9.1%</b>	<b>7/1/09</b>
MSCI ACWI ex USA		16.5%	6.2%	5.9%	4.3%	7.7%	
Lipper International Multi-Cap Core		14.9%	6.0%	6.6%	5.3%	8.2%	
<i>Excess Return</i>		3.5%	2.2%	1.2%	0.8%	1.4%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		3	8	38	70	19	
<b>SSGA MSCI ACWI ex USA Index</b>	<b>2,291,968,717</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>2.0%</b>	<b>11/1/17</b>
MSCI ACWI ex USA		--	--	--	--	1.8%	
Lipper International Multi-Cap Core		--	--	--	--	1.1%	
<i>Excess Return</i>		--	--	--	--	0.2%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		--	--	--	--	27	
<b>BlackRock MSCI ACWI ex USA Index</b>	<b>1,352,664,568</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-1.9%</b>	<b>2/22/18</b>
MSCI ACWI ex USA		--	--	--	--	-6.4%	
Lipper International Multi-Cap Core		--	--	--	--	-5.6%	
<i>Excess Return</i>		--	--	--	--	4.5%	
<i>Pct Rank vs. Lipper International Multi-Cap Core</i>		--	--	--	--	89	

State of Michigan Retirement Systems

# BASKET CLAUSE REVIEW

Investment Advisory Committee Meeting

June 14, 2018



Karen M. Stout, CPA, CGFM  
Administrator  
Trust Accounting Division

# SMRS

## Basket Clause Investments

### 3/31/18

<u>Asset Class</u>	<u>Value</u>
Total Absolute Return	\$4,029,938,626
Total Real Return and Opportunistic	958,186,627
Total International Equity	321,887,286
Total Long-Term Fixed Income	<u>43,169,950</u>
<b>Total Basket Clause Investments</b>	<b><u>\$5,353,182,489</u></b>

The basket clause investments at March 31, 2018, were \$5.4 billion or 7.6% of the total portfolio value of \$70.6 billion.

The Public Employee Retirement System Investment Act, 1965 PA 314, MCL 38.1132 *et seq*, authorizes the State Treasurer to invest up to 30% of the system's assets in investments "not otherwise qualified under the act." MCL 38.1140d(1). Commonly referred to as Section 20d (after the authorizing section of PA 314) or Basket Clause investments, this provision gives the State Treasurer the flexibility to take advantage of market opportunities not specifically authorized in PA 314 while conserving protections against imprudent investment.

# Disclaimer



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