

# INVESTMENT ADVISORY COMMITTEE MEETING

March 2, 2016

## 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

MARCH 2, 2016

## Agenda



- 9:30 a.m. Call to Order and Opening Remarks
- 9:40 a.m. Approval of the 9/3/15 & 12/1/15 IAC Meeting Minutes
- 9:45 a.m. Executive Summary & Performance for Periods Ending 12/31/15
- 10:00 a.m. Current Asset Allocation Review
- Markets Review and Outlook
- 10:15 a.m. Round Table Discussion ~ Key Take-away from each Asset Class
- Review of Investment Reports – *Receive and File*
- Absolute and Real Return/Opportunistic
  - Domestic Equity
  - Fixed Income
  - International Equity
  - Private Equity
  - Real Estate & Infrastructure
- Basket Clause – *Receive and File*
- 11:00 a.m. Closing Remarks ~ Adjournment



### 2016 Meeting Schedule

Thursday, June 16, 2016  
Thursday, September 1, 2016  
Thursday, December 15, 2016

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**

**MARCH 2, 2016**



**Jon M. Braeutigam  
Chief Investment Officer  
Bureau of Investments**



## INVESTMENT ADVISORY COMMITTEE

The Investment Advisory Committee (IAC) held its quarterly meeting on Thursday, December 1, 2015, at the Bureau of Investments, Great Lakes Conference Room, 2501 Coolidge Road, Suite 400, East Lansing, Michigan.

### Members Present:

James B. Nicholson, Chair  
L. Erik Lundberg – Via phone  
Reginald G. Sanders

### In attendance from the Department of Treasury:

Treasurer Nick A. Khouri  
Robert L. Brackenbury  
Jack Behar  
Dan Quigley  
Marge McPhee  
Janet Sudac

Jon M. Braeutigam  
Jim Elkins  
Brian Liikala  
Karen Stout  
Karl Borgquist

Gregory J. Parker  
Peter Woodford  
Richard Holcomb  
Woody Tyler  
Emma Khavari

### Others in attendance:

Max Kotary  
Phil Kivarkis  
Molly Jason  
Paul Lerg

Steve Cummings  
Todd Sinclair  
Mark Guastella  
Jim Bauer

Tim McEnery  
June Morse  
Charles Abshagen

### **Call to Order**

Mr. James B. Nicholson called the December 1, 2015, IAC meeting to order at 9:27 a.m.

### **Approval of Minutes of September 1, 2015**

- The minutes of the September 1, 2015, will be approved at the March 2, 2016, meeting as there was not a quorum at the December 1, 2015, meeting.

### **Executive Summary Tab – Performance Review**

- Mr. Braeutigam noted that a new asset liability study was due for the State Employees' Retirement System because of some of the changes in the Law.
- He noted that the one-year return for the plan was 2.6%, and in any one year there are variations in the stock and equity returns, which is to be expected.
- He discussed the length of the current bull run, which is 55 months, and noted that the longest bull run was 110 months.
- The annualized ten-year return was 6.7%, the timeframe, of which, was in the midst of the Great Recession. He felt this return was impressive, and it was due, in part, to the diversification of the portfolio.

- Mr. Braeutigam discussed the one-year return and how the selloff in late August affected the stock market.
- There was a discussion on how the Great Recession affected the stock market, and what was learned from the Great Recession.

### **Performance Tab**

- Mr. Parker discussed the strong relative returns and the rates, noting the plan is in the top decile (2<sup>nd</sup> or 3<sup>rd</sup> for four of the five years) over the near and long terms.
- He noted that the ten-year return for the plan was 6.7% while the annualized median return over the past ten years was 5.7%.
- He felt it is impressive the value that has been added to the plan by the members of the BOI team.
- There was a discussion regarding the annualized rate-of-return for private equity and the benefits of investing in this asset class at the present time.
- It was noted that the plan is doing well due in part to the selectivity of top decile performing managers.
- Mr. Parker reviewed the AON study and explained that this information is beneficial to the BOI team. He noted that a section of the study compares the returns versus the policy benchmark. The policy benchmark is the strategic asset allocation times the benchmark weight.
- Mr. Parker discussed the three ways that value can be added to the plan – through asset allocation, selectivity, and effective rebalancing. He noted that selectivity was a key for added value at the present time.

### **Asset Allocation Tab**

- Mr. Parker discussed the sources and uses of cash, noting that the largest use of cash was for benefit payments to the retirees.
- He noted that over the past year, money was added to the absolute return, and real return and opportunistic strategies.

### **Markets Review and Outlook Tab**

- Mr. Parker discussed the 12% correction in the domestic equity market which occurred in August and the narrowing of the market itself. This indicates that the number of stocks that are doing well are fewer.
- He indicated that growth strategies have outperformed value strategies over the past several years. Typically, value strategies have outperformed growth strategies.
- He noted that international equity returns have been poor over the past year, especially in emerging markets.
- Mr. Parker discussed the meeting the Fed was scheduled to have mid-December where it was anticipated that they would begin a normalization policy and raise short-term interest rates.
- There was a discussion about the interest rates, the driver of the rates, where they are going, and how they will affect the long and short-term investments.

- Mr. Parker also discussed the U.S. economy – vehicle sales, new housing starts, and the labor markets. He noted that the number of vehicles sold over the past year was at a record high and that the labor market is strong.

### **Domestic Equity**

- Mr. Jack Behar discussed the investment return on stocks. He commented on the multiple expansion component of stocks and why he feels it is so hard to predict; and the investment return on stocks and why he feels it is easier to predict.
- He noted that short-term returns are dominated by the speculative return while long-term returns are dominated by the investment return.
- Mr. Behar discussed the possibility of multiple expansion. He believes that either the long bond yield increases or multiples continue to expand.
- He noted that one risk is that multiples expand significantly and then long bond yields increase dramatically, which will set the stage for another recession.
- He also discussed the 30-year U.S. Treasury which is 3%, that is a 5.5% equity risk premium. He believes the equity risk premium will continue to compress over time.
- He noted that the historical equity risk premium over 50 years is 3.1% and over 90 years is 4.6%.
- He also noted that the expected return on the market is 8.5% versus 9.6% long term.
- Mr. Behar stated that the domestic equity portfolio trades at a lower multiple than the historical S&P 1500. He believes going forward the returns will be above 9%. In accomplishing this expected return and paying 10 basis points in fees will drop the long-term net return from 9.6% to 9.5%, versus the industry average of 8.2%.

### **Fixed Income**

- Mr. Dan Quigley discussed the goals of the division, which are to seek a low to negative correlation with the equity market risk; the four objectives of the portfolio, which are principal preservation, diversification, liquidity, and income; and meet all four objectives in a low rate environment.
- He noted that the core portfolio outperformed the benchmark while the return seeking allocation underperformed. The risk in the portfolio was lowered by reducing the duration bet and the high-yield allocation.
- He discussed the short-term rates, which were driven by the FOMC tightening. The long-term rates were driven by lowered inflation expectations and real rates due to a slower global economy.
- The 10-year U.S. Treasury yielded 2.2% with a breakeven inflation level of 1.6%; the 2-year U.S. Treasury yielded 0.9%.
- He noted that the portfolio is setup with a barbell approach on credit quality and liquidity.
- Mr. Quigley discussed the market breakdown, noting that defaults are rising for both high yield energy and emerging market bonds. There is a possibility of a rate hike at the December FOMC meeting.

## **Asset Liability Study** ~ AON Hewitt – Phil Kivarkis

- Mr. Phil Kivarkis discussed the analysis that was performed of the Michigan State Employees' Retirement System portfolio and plans. He discussed the risk/reward tradeoffs within the context of the plans.
- He anticipates the funded ratios in both plans will trend toward 100% over the next 20 years. He noted this will not be an easy task, but it is attainable if the plan's funding policy remains in place.
- He discussed why the contributions may be increasingly volatile.
- Mr. Kivarkis discussed the relationship between the plan assets and liabilities, the impact of the various asset allocation targets, the trend lines for the funded ratios and contributions; and the risk/reward tradeoffs.
- He noted that the goal is to achieve a balance between the assets and liabilities. He discussed how to balance the growth of assets relative to the growth of the liabilities.
- He discussed the growth of the liabilities which are primarily driven by the liabilities return, which is an actuarial assumption. He noted that assets can grow in one of two ways, by investment performance or cash contributions into the plan – or a combination of the two.
- Mr. Kivarkis talked about the number of participants, both active and inactive and how the Pension Reform affected the plan. The plan is becoming more mature as indicated by the drop in the number of participants.
- He discussed the projection of the pension plan and how the contribution policy will close the funding shortfall.
- He noted that the contribution rate is expected to decline over time.
- He believes that from the analysis performed, the current portfolio is constructed very well. It is nicely diversified across asset classes.

## **Absolute and Real Return/Opportunistic; International Equity; Private Equity; Real Estate and Infrastructure; and Basket Clause**

In the spirit of time, these reports were received and filed.

### **Closing Remarks**

Chairman Nicholson thanked everyone for attending.

### **Next Meeting Date and Adjournment**

The next Investment Advisory Committee Meeting is scheduled for Wednesday, March 2, 2016. The meeting was adjourned by Chairman Nicholson at 11:17 a.m.

Approved:

---

James B. Nicholson, Chairman

**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**EXECUTIVE SUMMARY**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



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



# EXECUTIVE SUMMARY

December 2015

## Performance

*An overview.*

| <b>MPSERS Plan (12/31/15)</b> | <b>1-Year</b> | <b>3-Years</b> | <b>5-Years</b> | <b>7-Years</b> | <b>10-Years</b> |
|-------------------------------|---------------|----------------|----------------|----------------|-----------------|
| Annualized Returns            | 2.8%          | 10.0%          | 9.2%           | 10.1%          | 6.6%            |
| Policy Return                 | 2.2%          | 9.3%           | 8.9%           | 10.8%          | 6.4%            |
| Peer Median Return            | 0.4%          | 7.8%           | 7.4%           | 9.4%           | 5.8%            |

- The peer group is the State Street Universe of U.S. public funds that are greater than \$10 billion in assets. There were an average of 30 observations across the time periods. Over the past one, three, and five years, the MPSERS plan returns were the highest of the peer group. Over the past ten years, the plan earned the second highest rate of return of the peer group.
- Compared to the median plan returns, the dollar value added to the combined plans over the past five years equates to approximately \$6 billion in additional assets.
- After posting double-digit gains each year for the three years prior, the one-year return for the period ending December 2015 was 2.8%.
- The returns exceeded the policy benchmark over the past year by 0.6%. Positive contributions to the excess returns were primarily from selectivity in private equity, international equity, and long-term fixed income.
- The outperformance to the peer median over the past year was helped by superior selectivity especially in private equity and long-term fixed income. The absolute return and real return / opportunistic asset classes added tremendous value over the time period. The overweight in real estate and private equity as well as the underweight to international equity also added relative value versus peers.

## Asset Allocation

*Building up commitments in private markets.*

- The combined systems paid out approximately \$2.2 billion net of contributions over the past twelve months ending in December 2015; 3.6% of the December 2015 AUM.
- Over the past year, the plans put to work \$950 million in real return / opportunistic strategies, \$650 million in absolute return, \$300 million into international equities and \$100 million into real estate and long-term fixed income each. Over the same time period, the plans reduced the allocation to domestic equity by \$2.4 billion and private equity by \$1.2 billion. The allocation to short-term cash decreased by nearly \$700 million.
- According to the State Street peer universe data, the peer median allocation for the long-term fixed income asset class is 23.1% versus the plan's allocation of 12.2%. The strategic target allocation for fixed income is 10.5%.
- The plans have outstanding capital commitments to fund approximately \$8.2 billion in illiquid asset classes, primarily private equity. This figure is about 13.7% of the December 2015 market value and is an additional liquidity consideration. In the quarter ending December 2015, just over \$1 billion of new commitments were made.

## **Capital Markets**

*Risk assets in focus.*

- Capital market assumptions used for determining strategic asset allocations are being reduced across the board. This is the general opinion for most consultants, investment banks, and other market participants. The reason for this 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 five years, after the depths of the Great Recession.
- Earnings growth for the S&P 500 over the past year, ending December 2015, is close to 0%. Valuation metrics are above average, and the absolute returns over the next cycle will not likely be as strong as the historical average.
- International equities continue to underperform domestic. Over the past one, three, five, seven, and ten years ending December 2015, the international market index, MSCI ACWI ex USA, underperformed the S&P 1500 index by -6.7%, -13.4%, -11.3%, -7.5%, and -4.5% annualized respectively.
- Credit spreads are becoming more attractively priced. At the end of December 2015, investment grade spreads were about 70 bps higher than average. High-yield spreads were 270 bps higher than their long-term averages and have widened about 2.25% since a year ago.
- At the end of December 2015, the REIT Index was yielding almost 3.9% in income. Relative to the ten-year U.S. Treasury rate, this is about 90 bps above average. Other valuation metrics indicate that the index is very expensively priced. In other words, real estate is not expected to deliver high absolute returns over the longer term.

## **Economic Backdrop**

*U.S. economy continues to slowly grow.*

- After months of anticipation, at its December 2015 meeting, the Federal Reserve Board voted to increase short-term interest rates by 25 basis points. This marks the first time in roughly seven years that the Fed Funds rate is higher than effectively zero percent.
- The most recent reading of the annualized U.S. GDP growth was 0.7%, slightly below the consensus estimate of 0.8%. Current estimates for 2016 GDP growth for the U.S. is 2.4%. Nearly all economists expect the U.S. economy to continue to grow in 2016, although at a low rate.
- There are a number of tailwinds to the U.S. economy. Over the last two years, the price of crude oil has dropped by approximately \$60 per barrel. A study by Union Bank of Switzerland concludes that for every \$10 drop in oil, the U.S. economy gets a boost of 0.1% growth the following year. Also, real government spending is up year-over-year by approximately 1%, which will likely add an additional few tenths of a percent to GDP.
- The jobs market is strong. The four-week moving average for initial jobless claims in October was the lowest since 1973. The national unemployment rate is at 4.9%, the lowest level since November 2007. The tightening labor market has not created wage inflation of any significance yet.
- In September 2015, U.S. auto sales eclipsed 18 million units on a seasonally adjusted basis. Except for a few one-time spikes in sales, this figure is among the best ever. Over the past five years, growth in sales of autos has averaged 8.8% year-over-year.

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

(\$ Millions)

**NEW COMMITMENTS**  
**October 1 – December 31, 2015**

| <b>Asset Class</b>           | <b>Fund Name</b>                          | <b>Commitment</b> |
|------------------------------|---|-------------------|
| Private Equity               | Warburg Pincus XII                        | \$175             |
| Private Equity               | TSG7                                      | 125               |
| Private Equity               | Dover Street IX                           | 100               |
| Private Equity               | Harvest Partners VII                      | 75                |
| Private Equity               | FIMI Opportunity 6                        | 50                |
| Private Equity               | Riverside IV                              | 50                |
| Private Equity               | Shamrock Growth Capital IV                | 50                |
| Private Equity               | Axiom Asia IV                             | 50                |
| Real Estate & Infrastructure | Rialto Real Estate Fund III-Debt, LP      | \$50              |
| Real Estate & Infrastructure | TSP Value and Income Fund, LP             | 50                |
| Real Estate & Infrastructure | Avanath II SMRS Co-Investment Fund, LLC   | 20                |
| Real Estate & Infrastructure | M1 Westgate Colinvest, LLC                | 10                |
| Absolute Return              | Visium Balanced Fund, LP                  | \$100             |
| Real Return & Opportunistic  | RPEP SMRS Partners                        | 65                |
| Real Return & Opportunistic  | Carlyle Energy Mezzanine Opportunity Fund | 50                |
| Real Return & Opportunistic  | Orion Coinvest III, LP                    | 20                |
| <b>Total</b>                 |   | <b>\$1,040</b>    |



**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**PERFORMANCE**

**FOR PERIODS ENDING  
DECEMBER 31, 2015**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



**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.*

# MPSERS PENSION

## Time-Weighted Rates of Return

Periods Ending December 31, 2015

|   | % of Portfolio 12/31/15 | 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>6.6</b>             | <b>7</b>  | <b>10.1</b>              | <b>17</b> | <b>9.2</b>              | <b>5</b>  | <b>10.0</b>              | <b>4</b>  | <b>2.8</b>  | <b>4</b>  | <b>2.0</b>      | <b>68</b> |
| Median - Greater than \$10 Billion <sup>2</sup> |                         | 5.8                    |           | 9.4                      |           | 7.4                     |           | 7.8                      |           | 0.4         |           | 2.4             |           |
| MPSERS Total Plan Policy                        |                         | 6.4                    |           | 10.8                     |           | 8.9                     |           | 9.3                      |           | 2.2         |           | 1.7             |           |
| <b>DOMESTIC EQUITIES</b>                        | <b>27.8</b>             | <b>7.4</b>             | <b>34</b> | <b>15.0</b>              | <b>41</b> | <b>12.1</b>             | <b>27</b> | <b>15.0</b>              | <b>24</b> | <b>-0.5</b> | <b>60</b> | <b>5.4</b>      | <b>41</b> |
| Median <sup>2</sup>                             |                         | 6.9                    |           | 14.7                     |           | 11.1                    |           | 13.6                     |           | -0.2        |           | 5.2             |           |
| S&P 1500 Index                                  |                         | 7.4                    |           | 15.0                     |           | 12.4                    |           | 14.9                     |           | 1.0         |           | 6.6             |           |
| <b>PRIVATE EQUITIES</b>                         | <b>16.1</b>             | <b>12.7</b>            | <b>6</b>  | <b>13.0</b>              | <b>5</b>  | <b>15.1</b>             | <b>5</b>  | <b>15.1</b>              | <b>17</b> | <b>10.6</b> | <b>15</b> | <b>-1.2</b>     | <b>78</b> |
| Median <sup>2</sup>                             |                         | 9.6                    |           | 9.5                      |           | 10.5                    |           | 11.2                     |           | 5.5         |           | -0.5            |           |
| Alternative Blended Benchmark <sup>3</sup>      |                         | 10.9                   |           | 18.4                     |           | 16.4                    |           | 15.5                     |           | 2.4         |           | -5.7            |           |
| <b>INTERNATIONAL EQUITIES</b>                   | <b>15.0</b>             | <b>2.6</b>             | <b>80</b> | <b>8.7</b>               | <b>46</b> | <b>2.9</b>              | <b>53</b> | <b>3.3</b>               | <b>57</b> | <b>-2.3</b> | <b>39</b> | <b>4.3</b>      | <b>47</b> |
| Median <sup>2</sup>                             |                         | 3.7                    |           | 8.7                      |           | 3.2                     |           | 3.8                      |           | -2.9        |           | 4.2             |           |
| International Blended Benchmark <sup>4</sup>    |                         | 1.5                    |           | 6.4                      |           | 1.4                     |           | 1.8                      |           | -5.7        |           | 3.2             |           |
| <b>BONDS</b>                                    | <b>12.2</b>             | <b>5.3</b>             | <b>41</b> | <b>5.6</b>               | <b>63</b> | <b>3.8</b>              | <b>56</b> | <b>2.2</b>               | <b>30</b> | <b>1.4</b>  | <b>11</b> | <b>-0.2</b>     | <b>14</b> |
| Median <sup>2</sup>                             |                         | 5.0                    |           | 5.9                      |           | 3.9                     |           | 1.7                      |           | -0.3        |           | -0.7            |           |
| Barclays Aggregate                              |                         | 4.5                    |           | 4.1                      |           | 3.3                     |           | 1.4                      |           | 0.6         |           | -0.6            |           |
| <b>REAL ESTATE &amp; INFRASTRUCTURE</b>         | <b>10.2</b>             | <b>6.0</b>             | <b>42</b> | <b>3.7</b>               | <b>59</b> | <b>12.4</b>             | <b>45</b> | <b>13.5</b>              | <b>26</b> | <b>9.6</b>  | <b>52</b> | <b>2.0</b>      | <b>56</b> |
| Median <sup>2</sup>                             |                         | 5.3                    |           | 4.6                      |           | 12.0                    |           | 12.1                     |           | 9.9         |           | 2.4             |           |
| NCREIF - Property Blended Index <sup>5</sup>    |                         | 6.4                    |           | 6.2                      |           | 10.8                    |           | 10.6                     |           | 11.9        |           | 2.6             |           |
| NCREIF Open Fund Index Net                      |                         | 5.6                    |           | 5.5                      |           | 12.6                    |           | 12.8                     |           | 14.0        |           | 3.1             |           |
| <b>REAL RETURN AND OPPORTUNISTIC</b>            | <b>7.8</b>              |                        |           |                          |           | <b>9.8</b>              |           | <b>13.1</b>              |           | <b>6.2</b>  |           | <b>1.8</b>      |           |
| 50% (CPI +500 bps) + 50% (8% actuarial rate)    |                         |                        |           |                          |           | <b>7.3</b>              |           | <b>7.0</b>               |           | <b>6.9</b>  |           | <b>1.3</b>      |           |
| <b>ABSOLUTE RETURN</b>                          | <b>7.6</b>              |                        |           | <b>6.9</b>               |           | <b>4.9</b>              |           | <b>6.2</b>               |           | <b>1.2</b>  |           | <b>-1.0</b>     |           |
| HFRI FOF Cons 1 month lagged                    |                         |                        |           | 3.3                      |           | 2.7                     |           | 4.2                      |           | 1.3         |           | -0.7            |           |
| <b>CASH EQUIVALENTS</b>                         | <b>3.3</b>              | <b>1.2</b>             |           | <b>0.6</b>               |           | <b>0.4</b>              |           | <b>0.4</b>               |           | <b>0.5</b>  |           | <b>0.1</b>      |           |
| 1 Month T-Bill                                  |                         | 1.1                    |           | 0.1                      |           | 0.0                     |           | 0.0                      |           | 0.0         |           | 0.0             |           |

<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> 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.

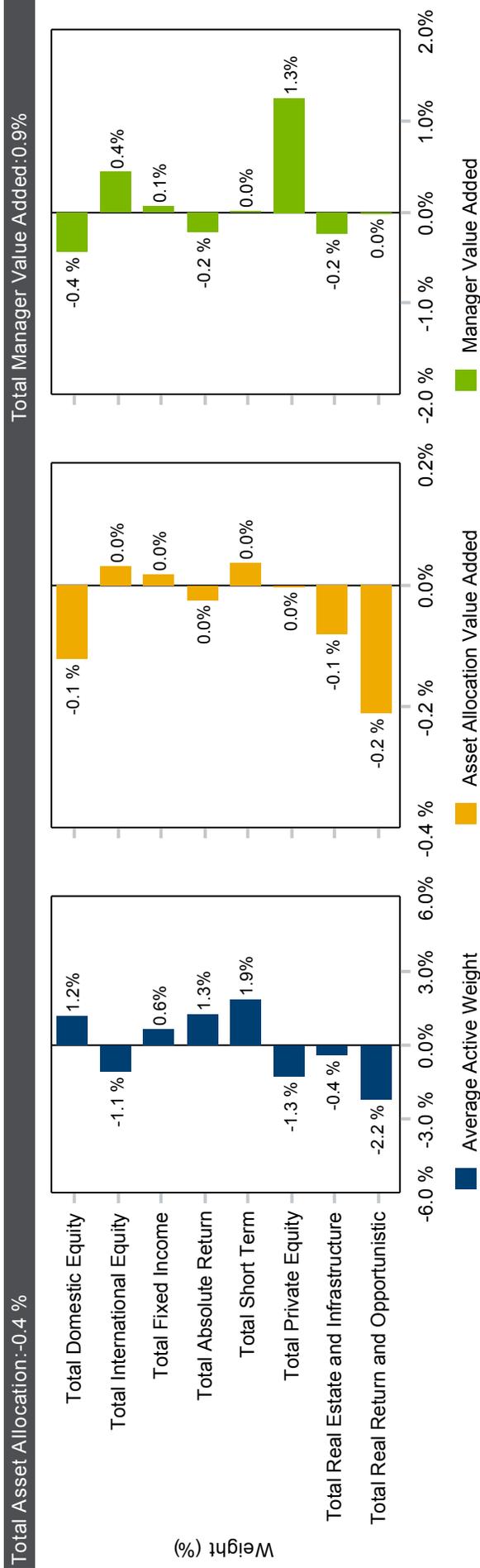
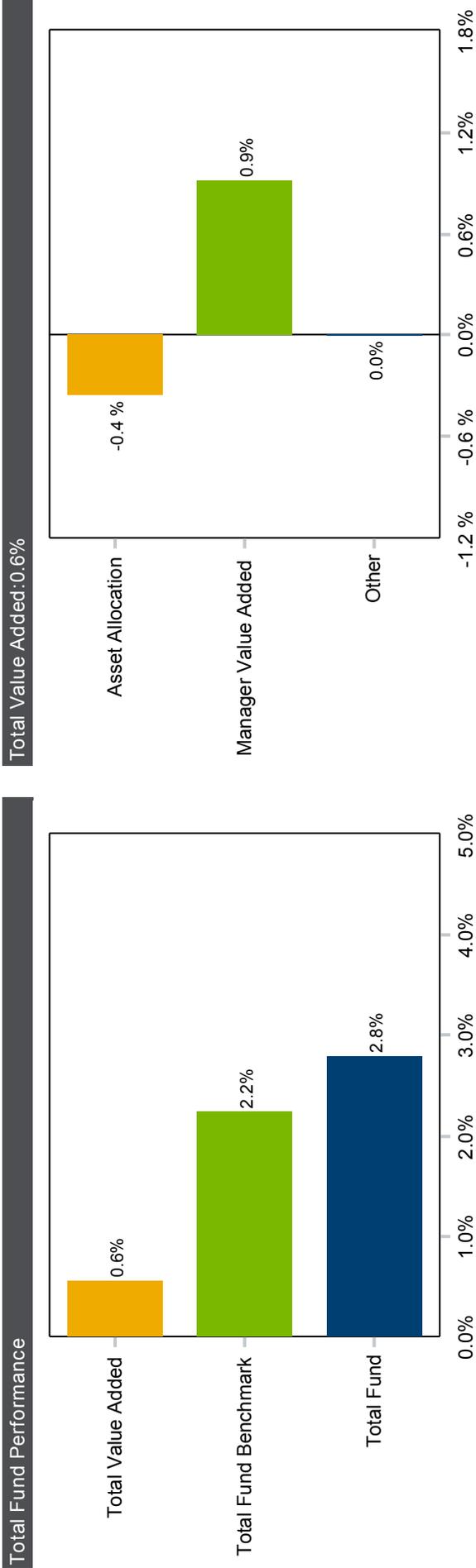
<sup>4</sup> International blended benchmark is S&P Developed BMI-EPAC 50/50 prior to 1/1/2010. S&P Developed BMI-EPAC 75 USD / 25 Local, 1/1/2010 to 9/30/10. MSCI ACWI Ex USA Gross 10/1/2010 to present.

<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 12/31/15

|  | 1 Year     | 2 Year      | 3 Year      | 4 Year      | 5 Year     | 6 Year      | 7 Year      | 8 Year       | 9 Year      | 10 Year     |
|--|------------|-------------|-------------|-------------|------------|-------------|-------------|--------------|-------------|-------------|
| <b>MPSERS</b>                                    | <b>2.8</b> | <b>7.0</b>  | <b>10.0</b> | <b>10.7</b> | <b>9.2</b> | <b>9.7</b>  | <b>10.1</b> | <b>5.1</b>   | <b>5.7</b>  | <b>6.6</b>  |
| <b>Public Plan - Median (&gt; \$10 billion)*</b> | <b>0.4</b> | <b>3.8</b>  | <b>7.8</b>  | <b>9.1</b>  | <b>7.4</b> | <b>8.3</b>  | <b>9.4</b>  | <b>4.3</b>   | <b>4.9</b>  | <b>5.8</b>  |
| <b>Rank</b>                                      | <b>4</b>   | <b>5</b>    | <b>4</b>    | <b>11</b>   | <b>5</b>   | <b>8</b>    | <b>17</b>   | <b>18</b>    | <b>12</b>   | <b>7</b>    |
| <b>bp Difference - Median</b>                    | <b>237</b> | <b>319</b>  | <b>222</b>  | <b>155</b>  | <b>174</b> | <b>140</b>  | <b>71</b>   | <b>79</b>    | <b>81</b>   | <b>85</b>   |
| <b>Consecutive For Years Ending</b>              |            |             |             |             |            |             |             |              |             |             |
|  | 12/15      | 12/14       | 12/13       | 12/12       | 12/11      | 12/10       | 12/09       | 12/08        | 12/07       | 12/06       |
| <b>MPSERS</b>                                    | <b>2.8</b> | <b>11.3</b> | <b>16.4</b> | <b>12.6</b> | <b>3.3</b> | <b>12.7</b> | <b>12.1</b> | <b>-24.2</b> | <b>11.1</b> | <b>15.0</b> |
| <b>Public Plan - Median (&gt; \$10 billion)*</b> | <b>0.4</b> | <b>7.1</b>  | <b>15.4</b> | <b>13.4</b> | <b>1.6</b> | <b>12.7</b> | <b>17.5</b> | <b>-25.9</b> | <b>9.6</b>  | <b>14.5</b> |
| <b>Rank</b>                                      | <b>4</b>   | <b>5</b>    | <b>38</b>   | <b>77</b>   | <b>18</b>  | <b>51</b>   | <b>80</b>   | <b>36</b>    | <b>23</b>   | <b>33</b>   |
| <b>bp Difference - Median</b>                    | <b>237</b> | <b>429</b>  | <b>94</b>   | <b>-74</b>  | <b>172</b> | <b>-1</b>   | <b>-538</b> | <b>169</b>   | <b>151</b>  | <b>50</b>   |

## MSERS

Cumulative For Years Ending 12/31/15

|   | 1 Year     | 2 Year      | 3 Year      | 4 Year      | 5 Year     | 6 Year      | 7 Year      | 8 Year       | 9 Year      | 10 Year     |
|---|------------|-------------|-------------|-------------|------------|-------------|-------------|--------------|-------------|-------------|
| <b>MSERS</b>                                    | <b>2.8</b> | <b>7.0</b>  | <b>10.0</b> | <b>10.6</b> | <b>9.1</b> | <b>9.7</b>  | <b>10.0</b> | <b>4.9</b>   | <b>5.6</b>  | <b>6.5</b>  |
| <b>Public Plan - Median (&gt; \$1 billion)*</b> | <b>0.3</b> | <b>3.5</b>  | <b>7.8</b>  | <b>9.1</b>  | <b>7.4</b> | <b>8.2</b>  | <b>9.5</b>  | <b>4.5</b>   | <b>4.9</b>  | <b>5.8</b>  |
| <b>Rank</b>                                     | <b>2</b>   | <b>3</b>    | <b>3</b>    | <b>8</b>    | <b>3</b>   | <b>7</b>    | <b>34</b>   | <b>26</b>    | <b>17</b>   | <b>12</b>   |
| <b>bp Difference - Median</b>                   | <b>246</b> | <b>349</b>  | <b>219</b>  | <b>155</b>  | <b>173</b> | <b>142</b>  | <b>43</b>   | <b>47</b>    | <b>68</b>   | <b>67</b>   |
| <b>Consecutive For Years Ending</b>             |            |             |             |             |            |             |             |              |             |             |
|   | 12/15      | 12/14       | 12/13       | 12/12       | 12/11      | 12/10       | 12/09       | 12/08        | 12/07       | 12/06       |
| <b>MSERS</b>                                    | <b>2.8</b> | <b>11.3</b> | <b>16.3</b> | <b>12.6</b> | <b>3.2</b> | <b>12.5</b> | <b>11.9</b> | <b>-24.4</b> | <b>11.0</b> | <b>15.0</b> |
| <b>Public Plan - Median (&gt; \$1 billion)*</b> | <b>0.3</b> | <b>6.9</b>  | <b>16.1</b> | <b>13.3</b> | <b>1.2</b> | <b>13.0</b> | <b>18.5</b> | <b>-26.2</b> | <b>9.7</b>  | <b>14.7</b> |
| <b>Rank</b>                                     | <b>2</b>   | <b>3</b>    | <b>48</b>   | <b>72</b>   | <b>17</b>  | <b>63</b>   | <b>85</b>   | <b>31</b>    | <b>16</b>   | <b>35</b>   |
| <b>bp Difference - Median</b>                   | <b>246</b> | <b>445</b>  | <b>14</b>   | <b>-67</b>  | <b>201</b> | <b>-43</b>  | <b>-663</b> | <b>176</b>   | <b>135</b>  | <b>31</b>   |

\*State Street Public Funds Universe

# Cumulative and Consecutive Total Fund Returns

## MSPRS

Cumulative For Years Ending 12/31/15

|   | 1 Year | 2 Year | 3 Year | 4 Year | 5 Year | 6 Year | 7 Year | 8 Year | 9 Year | 10 Year |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| <b>MSPRS</b>                                    | 2.8    | 6.9    | 9.9    | 10.6   | 9.1    | 9.7    | 9.9    | 4.9    | 5.6    | 6.5     |
| <b>Public Plan - Median (&gt; \$1 billion)*</b> | 0.3    | 3.5    | 7.8    | 9.1    | 7.4    | 8.2    | 9.5    | 4.5    | 4.9    | 5.8     |
| <b>Rank</b>                                     | 3      | 3      | 4      | 10     | 3      | 7      | 35     | 26     | 16     | 12      |
| <b>bp Difference - Median</b>                   | 245    | 347    | 215    | 151    | 173    | 143    | 39     | 47     | 70     | 70      |
| Consecutive For Years Ending                    |        |        |        |        |        |        |        |        |        |         |
|   | 12/15  | 12/14  | 12/13  | 12/12  | 12/11  | 12/10  | 12/09  | 12/08  | 12/07  | 12/06   |
| <b>MSPRS</b>                                    | 2.8    | 11.3   | 16.2   | 12.5   | 3.3    | 12.6   | 11.5   | -24.2  | 11.2   | 15.1    |
| <b>Public Plan - Median (&gt; \$1 billion)*</b> | 0.3    | 6.9    | 16.1   | 13.3   | 1.2    | 13.0   | 18.5   | -26.2  | 9.7    | 14.7    |
| <b>Rank</b>                                     | 3      | 3      | 49     | 74     | 15     | 63     | 88     | 28     | 14     | 34      |
| <b>bp Difference - Median</b>                   | 245    | 441    | 6      | -74    | 216    | -36    | -701   | 198    | 156    | 39      |

## MJRS

Cumulative For Years Ending 12/31/15

|   | 1 Year | 2 Year | 3 Year | 4 Year | 5 Year | 6 Year | 7 Year | 8 Year | 9 Year | 10 Year |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| <b>MJRS</b>                                     | 2.8    | 6.8    | 9.7    | 10.4   | 8.9    | 9.4    | 9.5    | 4.7    | 5.4    | 6.3     |
| <b>Public Plan - Median (&gt; \$1 billion)*</b> | 0.3    | 3.5    | 7.8    | 9.1    | 7.4    | 8.2    | 9.5    | 4.5    | 4.9    | 5.8     |
| <b>Rank</b>                                     | 3      | 3      | 10     | 16     | 8      | 8      | 52     | 35     | 19     | 17      |
| <b>bp Difference - Median</b>                   | 245    | 336    | 189    | 130    | 151    | 118    | -5     | 26     | 49     | 49      |
| Consecutive For Years Ending                    |        |        |        |        |        |        |        |        |        |         |
|   | 12/15  | 12/14  | 12/13  | 12/12  | 12/11  | 12/10  | 12/09  | 12/08  | 12/07  | 12/06   |
| <b>MJRS</b>                                     | 2.8    | 11.0   | 15.6   | 12.5   | 3.1    | 12.2   | 9.9    | -23.3  | 11.0   | 14.8    |
| <b>Public Plan - Median (&gt; \$1 billion)*</b> | 0.3    | 6.9    | 16.1   | 13.3   | 1.2    | 13.0   | 18.5   | -26.2  | 9.7    | 14.7    |
| <b>Rank</b>                                     | 3      | 3      | 55     | 74     | 17     | 72     | 91     | 19     | 16     | 42      |
| <b>bp Difference - Median</b>                   | 245    | 418    | -51    | -78    | 190    | -73    | -862   | 293    | 136    | 9       |

\*State Street Public Funds Universe



**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**ASSET ALLOCATION REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



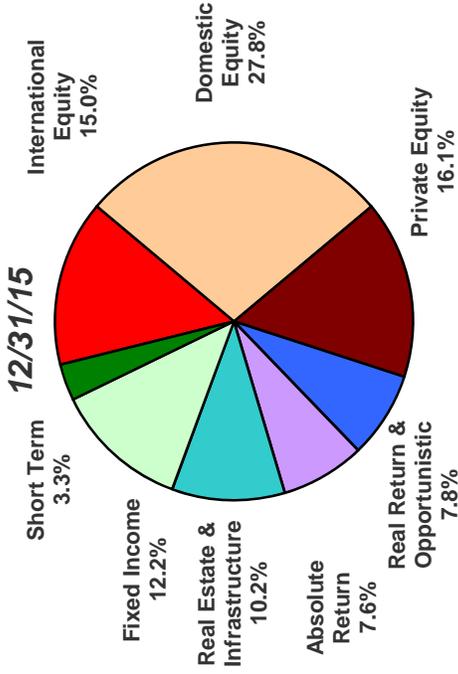
**Jon M. Braeutigam  
Chief Investment Officer  
Bureau of Investments**





# STATE OF MICHIGAN RETIREMENT SYSTEMS PROFILE - DECEMBER 2015

## Asset Allocation 12/31/15



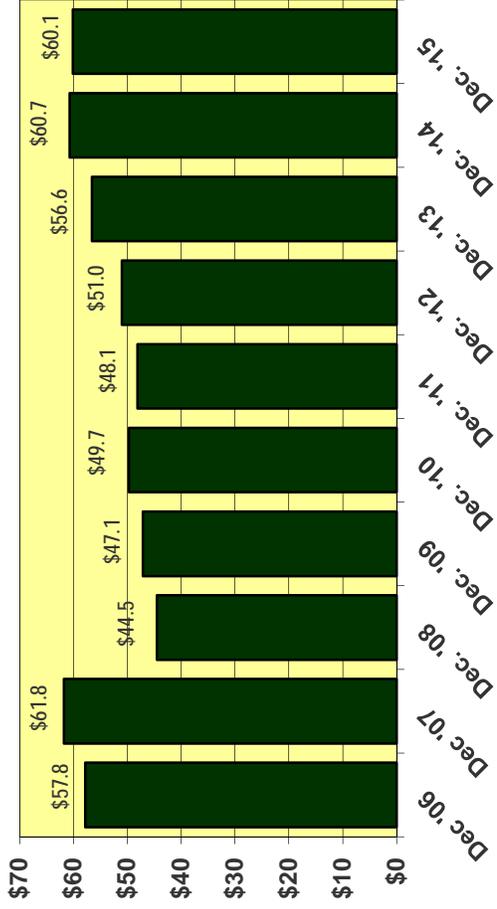
## Asset Allocation By Market Value (In Millions)

| Investment Strategies | 12/31/15        | 9/30/15         |
|-----------------------|-----------------|-----------------|
| Domestic Equity       | \$16,724        | \$16,605        |
| Private Equity        | 9,659           | 10,124          |
| International Equity  | 9,034           | 8,190           |
| Fixed Income          | 7,301           | 7,216           |
| Real Estate & Infra.  | 6,157           | 5,946           |
| Real Return & Opport. | 4,681           | 4,307           |
| Absolute Return       | 4,544           | 4,442           |
| Short Term**          | 1,971           | 2,577           |
| <b>TOTAL</b>          | <b>\$60,071</b> | <b>\$59,407</b> |

## Short Term Equivalents (in Billions)

|                                     |                     |
|-------------------------------------|---------------------|
| Short Term Strategy***              | \$2.0               |
| Short Term in Other Inv. Strategies | 0.8                 |
| <b>TOTAL SHORT TERM</b>             | <b>\$2.8</b>        |
|                                     | 4.7% of Total Funds |

## Market Value\* (Billions of Dollars)



## Market Value By Plan ~ 12/31/15 (in Millions)

|                  | Pension Plan    |               | OPEB**         |               | Combined        |               |
|------------------|-----------------|---------------|----------------|---------------|-----------------|---------------|
|                  | Mkt. Value      | %             | Mkt. Value     | %             | Mkt. Value      | %             |
| MPERS            | \$42,576        | 77.1%         | \$3,719        | 7.1%          | \$46,295        | 77.1%         |
| MSERS - (closed) | 10,802          | 20.3%         | 1,368          | 2.6%          | 12,170          | 20.3%         |
| MSPRS            | 1,248           | 2.2%          | 100            | 0.2%          | 1,348           | 2.2%          |
| MJRS - (closed)  | 257             | 0.4%          | 1              | 0.0%          | 258             | 0.4%          |
| <b>TOTAL</b>     | <b>\$54,883</b> | <b>100.0%</b> | <b>\$5,188</b> | <b>100.0%</b> | <b>\$60,071</b> | <b>100.0%</b> |



18th Largest DB Public Pension Fund in the U.S.  
19th Largest DB Pension Fund in the U.S.

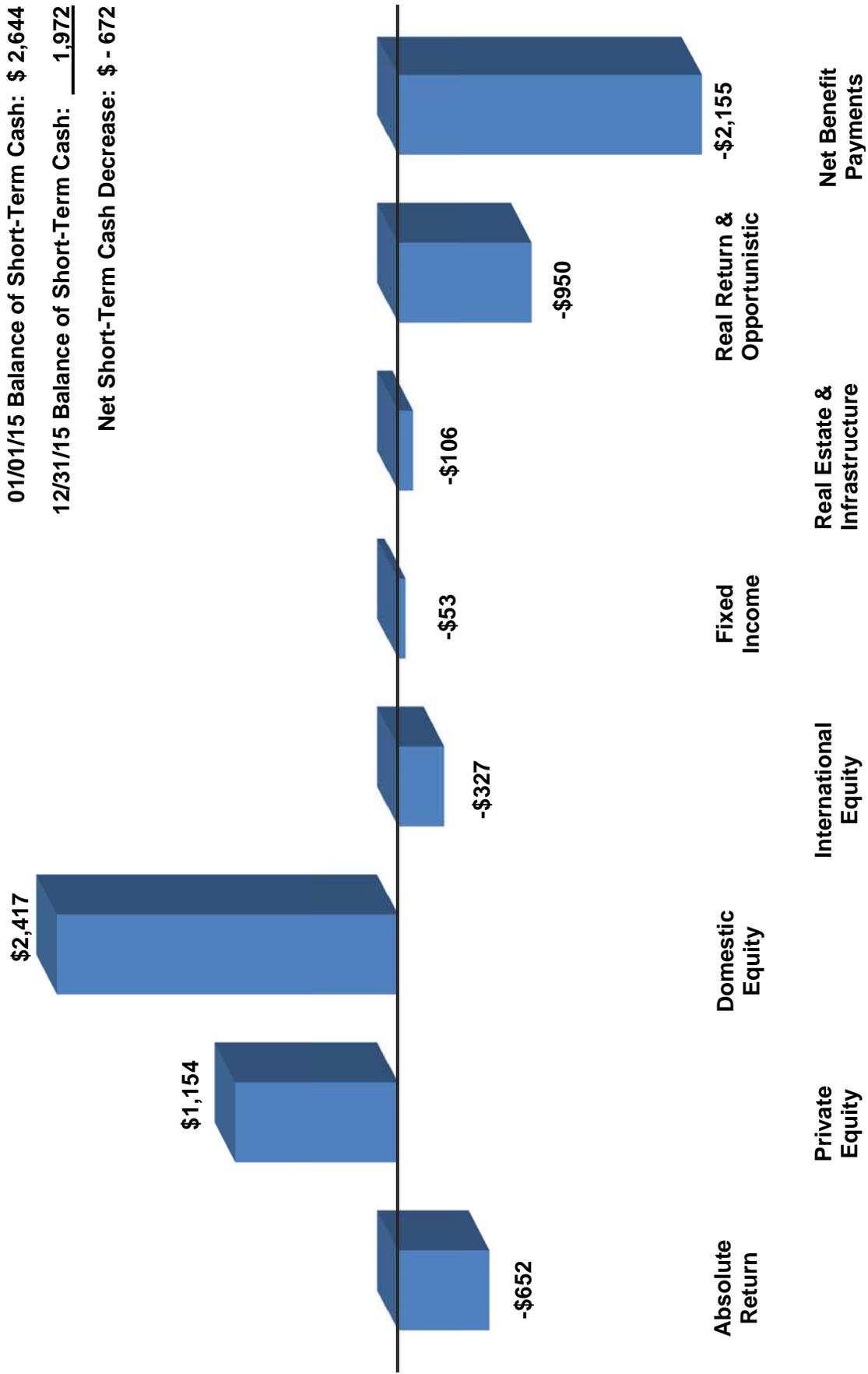
Pensions & Investments Survey - February 8, 2016 Issue



\*The combined net payout for the plans for FY 2015 was \$2.2 billion with \$19.9 billion paid out since 2008 (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

## January 2015 ~ December 2015



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 12/31/15

| Asset Class                             | MPSERS             |                   |                    | MSERS              |                   |                    | MSPRS              |                   |                    | MJRS               |                   |                    | SMRS      |
|---|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|--------------------|-------------------|--------------------|-----------|
|   | Actual<br>12/31/15 | Target<br>9/30/16 | Target*<br>9/30/17 | Ranges    |
| <b>Broad U.S. Equity</b>                | 27.8%              | 28.0%             | 28.0%              | 27.8%              | 28.0%             | 28.0%              | 27.8%              | 28.0%             | 28.0%              | 27.9%              | 28.0%             | 28.0%              | 20% - 50% |
| <b>Private Equity</b>                   | 16.1%              | 17.0%             | 18.0%              | 16.1%              | 17.0%             | 18.0%              | 16.1%              | 17.0%             | 18.0%              | 16.1%              | 17.0%             | 18.0%              | 10% - 25% |
| <b>Broad Int'l Equity</b>               | 15.0%              | 15.5%             | 16.0%              | 15.0%              | 15.5%             | 16.0%              | 15.0%              | 15.5%             | 16.0%              | 15.0%              | 15.5%             | 16.0%              | 10% - 20% |
| <b>U.S. Fixed Income<br/>Core</b>       | 12.2%              | 11.5%             | 10.5%              | 12.2%              | 11.5%             | 10.5%              | 12.2%              | 11.5%             | 10.5%              | 12.1%              | 11.5%             | 10.5%              | 8% - 25%  |
| <b>Real Estate /<br/>Infrastructure</b> | 10.2%              | 10.0%             | 10.0%              | 10.2%              | 10.0%             | 10.0%              | 10.2%              | 10.0%             | 10.0%              | 10.2%              | 10.0%             | 10.0%              | 0% - 15%  |
| <b>Real Return /<br/>Opportunistic</b>  | 7.8%               | 8.5%              | 9.5%               | 7.8%               | 8.5%              | 9.5%               | 7.8%               | 8.5%              | 9.5%               | 7.8%               | 8.5%              | 9.5%               | 0% - 15%  |
| <b>Absolute Return</b>                  | 7.6%               | 7.0%              | 6.0%               | 7.6%               | 7.0%              | 6.0%               | 7.6%               | 7.0%              | 6.0%               | 7.6%               | 7.0%              | 6.0%               | 0% - 12%  |
| <b>Cash</b>                             | 3.3%               | 2.5%              | 2.0%               | 3.3%               | 2.5%              | 2.0%               | 3.3%               | 2.5%              | 2.0%               | 3.3%               | 2.5%              | 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**

**MARCH 2, 2016**



**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.*

| <b>MPSERS Plan</b>     | <b>Assumed Return* (Arithmetic)</b> | <b>Standard Deviation*</b> | <b>Trailing 10-Year (Benchmark**)</b> | <b>Tactical (Short Term) Expectations***</b> |
|------------------------|-------------------------------------|----------------------------|---------------------------------------|--|
| Private Equity         | 11.4%                               | 24.0%                      | 10.9%                                 | Hold   |
| International Equity   | 9.4%                                | 20.9%                      | 2.9%                                  | Add  |
| Domestic Equity        | 8.0%                                | 17.4%                      | 7.4%                                  | Hold   |
| Real Estate (Core)     | 6.3%                                | 11.5%                      | 6.4%                                  | Trim   |
| Absolute Return        | 5.7%                                | 9.0%                       | 5.1%                                  | Trim   |
| Real Ret/Opportunistic | 7.6%                                | 12.1%                      | 7.4%                                  | Add  |
| Long-Term Fixed        | 3.0%                                | 3.5%                       | 4.5%                                  | Add  |
| Short-Term             | 2.2%                                | 1.0%                       | 1.1%                                  | Hold   |

\* Aon Hewitt Investment Consultants Q1-2016 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

*Softening the outlook for risk assets.*

- Capital market assumptions used for determining strategic asset allocations are being reduced across the board. 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 six years after the depths of the Great Recession.
- Over the past seven years ending December 2015, the broad domestic market index, S&P 1500, has returned a 15.0% annualized rate of return. In August 2015, the market hit a correction level of -12%. Technical price trends and market breadth are weak and valuations are above normal.
- International equities continue to underperform domestic. Over the past one, three, five, seven, and ten years ending December 2015, the international market index, MSCI ACWI ex USA, underperformed the S&P 1500 index by -6.7%, -13.4%, -11.3%, -7.5%, and -4.5% annualized respectively. Technical price trends are poor for both developed and emerging markets. The strengthening U.S. dollar looks to be the swing-factor.
- The 10-year U.S. Treasury closed January 2016 at 1.9%, however nearly 30 basis points (bps) higher than one year prior. Perhaps in response to tightening of Federal Reserve Board policy in December 2015, the yields in 6-month U.S. Treasuries ended January at 0.5% or 40 bps higher than the year prior. The curve is somewhat steep, about 20 bps higher than average.
- Credit spreads are becoming more attractively priced. At the end of December 2015, investment grade spreads were about 70 bps higher than average. High-yield spreads were 270 bps higher than their long-term averages and have widened about 2.25% since a year ago.
- At the end of January 2016, the 2-year U.S. Treasury rate was 0.8%. This yield is very attractive when compared to Japan (-0.1%), Germany (-0.5%) and Switzerland (-1.0%). With the backdrop of good price strength, very competitive yields, and fundamentals in the favor of the U.S., it seems very logical that the dollar will continue to strengthen in 2016, placing additional pressure on commodities.

## **Domestic Equity**

*Market breadth continues to narrow.*

- Over the past seven years ending December 2015, the broad domestic market index, S&P 1500, has returned a 15.0% annualized rate of return. However, there remains concern with market breadth and price level technicals.
- Since the bottom, six-and-a-half years ago now, the strength in appreciation of the U.S. stock market has been very powerful. However, at the end of October 2015, from a technical perspective, the large-cap market price appreciation has slowed.
- The breadth of the domestic market continues to narrow. By the end of January 2016, the S&P 500 had corrected 8.7% off its 52-week high. However, the average S&P 500 stock was underperforming the cap-weighted benchmark by approximately -12%. In addition, at the end of January 2016, nearly half of the S&P 500 companies were more than -20% below its 52-week high, and a quarter of companies have corrected by more than 30%.
- Earnings growth for the S&P 500 over the past year, ending December 2015, is close to 0%. Valuation metrics are above average, and the absolute returns over the next cycle will not likely be as strong as the historical average.
- For the period ending December 2015, large-cap stocks beat small caps by 5.8%, 3.5%, 3.4%, 0.8% and 0.5% over the past one, three, five, seven, and ten years respectively. Over the past year, growth continued its dominance over value style outperforming by 9.2%. Over the past three, five, seven, and ten years growth led value by roughly 2-4% annually.

## **International Equity**

*Relative value in international equity.*

- International equities continue to underperform domestic. Over the past one, three, five, seven, and ten years ending December 2015, the international market index, MSCI ACWI ex USA, underperformed the S&P 1500 index by -6.7%, -13.4%, -11.3%, -7.5%, and -4.5% annualized respectively.
- Within international equities, developed markets convincingly outperformed emerging markets over the past one, three, and five years ending December 2015 by 11.9%, 10.7%, and 7.6% annualized respectively. Emerging markets have outperformed developed markets by 0.7% annualized over the past ten years.
- The price trend (measured in local currency) of developed international was significantly weakened during the December 2015 quarter. Both developed and emerging markets have weak market technicals, both are priced below their respective 200-day moving averages.
- The plan is underweight international equity against a global benchmark – approximately 33% versus 50%; and it is also slightly underweight peers – approximately 15.0% versus 17.6%.
- Based on a price-to-earnings valuation multiple, excluding non-earning companies, developed international equity markets trade at roughly a 10% discount to the U.S. counterparts, while emerging markets trade at over a 40% discount. However, it appears that much of this valuation gap is due to the sector weights of the non-U.S. indexes.
- Earnings in international markets have been below trend for some time, due in part to the pro-cyclicality of these markets. A catalyst for international equity markets to perform more competitively with U.S. markets would be a stabilization with modest economic growth prospects.

## **Interest Rates**

*Credit looks interesting.*

- The 10-year U.S. Treasury closed January 2016 at 1.9%; however, nearly 30 bps higher than one year prior. Perhaps in response to tightening of Federal Reserve Board policy in December 2015, the yields in 6-month U.S. Treasuries ended January at 0.5% or 40 bps higher than the year prior. The curve is somewhat steep, about 20 bps higher than average.
- Credit spreads are becoming more attractively priced. At the end of December 2015, investment grade spreads were about 70 bps higher than average. High-yield spreads were 270 bps higher than their long-term averages and have widened about 2.25% since a year ago.
- Inflation expectations are being priced lower in the bond markets. The 10-year breakeven rates at the end of December 2015 were priced at 1.6%, 60 bps below the average of the past five years, and the lowest since the 2008 financial crisis.
- The Barclays Aggregate Index sensitivity to changes in interest rates has increased over time as measured by the modified adjusted duration. At the end of December 2015, the Barclays Aggregate Index had a duration of 6.0.

## **Real Estate**

*Rich valuations continue.*

- The publicly traded FTSE NAREIT Index was up 2.8% over the past year for the period ending December 2015, beating the broad domestic equity market by 1.8%. Over the past three and five years, the index is up 10.6% and 11.9% respectively.
- There has been some pull back in the REIT Index. As of January 2016 the index is almost 12% off its January 2015 highs.
- At the end of December 2015, the REIT Index was yielding almost 3.9% in income. Relative to the 10-year U.S. Treasury rate, this is about 90 bps above average. Other valuation metrics indicate that the index is expensively priced.

## **Commodities**

*Getting weaker.*

- At the end of January 2016, commodity prices, as measured by the Thomson Reuters CRB Index, collapsed by -46.7% since June 2014. Since its peak in 2008, prices are down by almost -65%, and prices are now less than at the March 2009 levels. The CRB Index is now at the low end of its trading range, and seemingly on an even lower trend.
- As measured by the DXY Index, the U.S. dollar has strengthened by around 40% since the winter months of 2008. At the end of January 2016, the U.S. dollar is 6% higher than the year prior as measured by the DXY Index
- At the end of January 2016, the 2-year U.S. Treasury rate was 0.8%. This yield is very attractive when compared to Japan (-0.1%), Germany (-0.5%) and Switzerland (-1.0%). With the backdrop of good price strength, very competitive yields, and fundamentals in the favor of the U.S., it seems logical that the dollar may continue to strengthen in 2016, which would place additional pressure on commodities.

# ECONOMIC OUTLOOK

## Select Historic Economic Growth with Forecasts

*An eye to 2016.*

| <b>Real GDP Growth Actual/Forecasts</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016</b> | <b>2017</b> |
|---|-------------|-------------|-------------|-------------|-------------|
| World                                   | 3.3         | 3.4         | 3.1         | 3.3         | 3.5         |
| U.S.                                    | 1.5         | 2.4         | 2.4         | 2.4         | 2.3         |
| Developed (G10)                         | 1.2         | 1.8         | 2.0         | 2.1         | 2.1         |
| Asia                                    | 4.9         | 4.8         | 4.6         | 4.9         | 4.9         |
| EMEA                                    | 2.3         | 2.2         | 0.9         | 2.0         | 2.8         |
| Europe                                  | -0.3        | 0.9         | 1.5         | 1.6         | 1.7         |
| Latin America                           | 3.5         | 1.1         | -1.0        | -0.5        | 2.2         |
| China                                   | 7.7         | 7.3         | 6.9         | 6.5         | 6.3         |

\*Source: Bloomberg

## Economic Overview

*U. S. economy remains the bright spot.*

- After months of anticipation, at its December 2015 meeting, the Federal Reserve Board voted to increase short-term interest rates by 25 basis points. This marks the first time in roughly seven years that the Fed Funds rate is higher than effectively zero percent. In the accompanying statements, the Fed has signaled that any additional rate increases will come at a gradual pace.
- The most recent reading of the annualized U.S. GDP growth was 0.7%, slightly below the consensus estimate of 0.8%. Current estimates for 2016 GDP growth for the U.S. is 2.4%. The Conference Board's Leading Economic Indicators index continues to signal economic expansion.
- The declines in energy costs are likely to continue to act as a tailwind to the U.S. economy. The costs of energy commodities such as crude oil, gasoline, and heating oil are down by half over the past two years. The mild winter of 2015-16 will also give consumers additional savings on energy use.
- Government spending increases should also begin to boost U.S. economic activity. For the most recent period, real government spending increased year-over-year by 1.3%.
- In September 2015, U.S. auto sales eclipsed 18 million units on a seasonally adjusted basis. Except for a few one-time spikes in sales, this figure is among the best ever. Over the past five years, growth in sales of autos have averaged 8.8% year-over-year. With the average vehicle age still higher than ten years old, the trend in growth could continue well through the next year.





**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**ABSOLUTE AND REAL RETURN REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



**James L. Elkins  
Senior Investment Manager  
Short-Term, Absolute and Real Return Division**



## EXECUTIVE SUMMARY

### Absolute Return

| MPSERS Plan            | 1-Year | 3-Years | 5-Years | 7-Years | 10-Years |
|------------------------|--------|---------|---------|---------|----------|
| Absolute Return        | 1.2%   | 6.2%    | 4.9%    | 6.9%    | N/A      |
| HFRI FOF Conservative* | 1.3%   | 4.2%    | 2.7%    | 3.3%    | N/A      |

\*One month lag on the index

- The strategy of the Absolute Return portfolio is to further 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 hedge out unwanted risk.
- Multi-Strategy/Event – The strategy was flat for the quarter. Given the turbulence in energy markets, managers continued to suffer from midstream sector and credit exposure over the period. Most underperformance was due to long exposures to equity and credit names. Specific exposure to energy across the portfolio was the largest detractor over the quarter, with losses coming from both midstream and upstream positions.
- Credit – Performance for credit managers was negative for the quarter. Spreads across credit products widened further in the fourth quarter. For much of the period, the high-yield corporate space, in particular, suffered from poor technicals and a lack of liquidity, creating a difficult environment for credit managers. Long leaning corporate strategies tended to underperform as a result of high volatility and technical selling. Performance lagged primarily due to the underperformance of stressed and distressed credits. Energy credits, especially oil and gas names, drove underperformance in the lower rated high-yield space. Relative value / trading oriented credit strategies fared better than corporate fundamental and distressed strategies since higher liquidity of trading strategies helped limit losses during times of high volatility. Despite spread widening in structured credit markets, mortgage and structured product strategies generally outperformed corporate and trading oriented strategies. Continued robust collateral performance and positive carry provided stability for structured credit portfolios. In non-energy sectors, fundamentals remain favorable when compared to previous negative episodes within high yield and will likely present dislocations to take advantage of in 2016.
- Equity – Performance over the quarter was mixed. Against a backdrop of equity markets generating gains in the fourth quarter, equity hedge fund strategies were challenged over the period. The majority of equity market gains were attributable to a strong October which compensated for lack-luster performance in the subsequent months. While lower net managers and those strategies more relative value in nature generally benefitted, other managers underperformed. This underperformance was concentrated in managers that were overly exposed to the energy space. On the positive side, managers focusing on the technology, media and telecommunications and healthcare sectors fared well.
- Diversifying – Performance for diversifying strategies was positive overall for the quarter, primarily driven by quantitative strategies. In the first week of October, several managers experienced sharp losses on the back of factor reversals, most notably momentum. However, most managers were able to quickly rebound, generating positive returns in October and into the end of the quarter. Long momentum and long size biases benefitted many portfolios. This was especially true for strategies with longer holding periods, which typically have a higher likelihood of overweighting these factors, as well as managers with large short biotech and energy exposures. Commodity prices suffered another sharp leg down, registering the sector's worst

quarter since the global financial crisis, with many commodities reaching their lowest levels since 2003. Three key themes drove prices lower over the quarter: i) continuation of supply resilience, with much production being protected by weak emerging market currencies and cost deflation; ii) stronger U.S. dollar continuing to affirm the supply demand imbalance as it protects non-USD supply and dampens non-USD demand; and iii) Chinese growth concerns, that were spurred on by further devaluation of the Chinese currency. These themes combined to take most commodity prices significantly lower, especially in November and December. Commodity trading advisor strategies generated strong performance in the fourth quarter; positions in commodities, particularly short positions in energies, drove a large portion of the profits.

- In terms of strategy allocations, we remain cautious on taking material directional risks in the portfolio and continue to shift towards more diversifying, lower net exposures in fundamental strategies. We continue to favor managers who are able to generate returns on both the long and short sides and continue to observe the macro opportunity set while looking for attractive bottoms up opportunities.
- During the quarter, one new commitment was closed:
  - \$100 million Visium Balanced Fund LP ~ Healthcare Long/Short Equity

### **Real Return and Opportunistic**

| <b>MPSERS Plan</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. | 6.2%          | 13.1%          | 9.8%           | N/A            | N/A             |
| Custom Benchmark        | 6.9%          | 7.0%           | 7.3%           | N/A            | N/A             |

- The strategy of the Real Return & Opportunistic portfolio is to provide an inflation hedge or to gain exposure to attractive opportunities that may not fit in another plan portfolio.
- Senior Secured Credit – The spread on the LSTA Leveraged Loan Index widened from L+518 to L+623 since the beginning of 2015 as the default rate climbed up from 1.8% to 1.5%. The quarter saw an increase in volatility that was driven by several factors including the declining price of oil, concerns over global terrorism, and the ECB’s decision to maintain its quantitative easing pace. Furthermore, China’s pronounced deceleration of growth during 2015 drove market weakness globally. Periods of market volatility have become exacerbated as large retail flows dramatically shift prices due to liquidity fears, but the markets recovered some to round out the year as the Federal Reserve decided to raise its benchmark interest rate by 0.25%. The S&P/LSTA Leveraged Loan Index and Merrill Lynch U.S. High Yield Master II Index returned negative 2.10% and -2.17% respectively, for the quarter. The technical story for the loan market during the fourth quarter saw a slowing in demand with a net demand of \$7.1 billion versus a supply of \$36.5 billion in leveraged loans. Year-to-date total loan demand slowed toward the end of the year to reach \$76.1 billion, with \$97.3 billion in CLO issuance offsetting \$21.2 billion in redemptions from retail loan funds.
- Direct Lending – Fourth quarter volatility within the financial markets created uncertainty and forced firms who could typically access the public debt markets to seek out private solutions. As capital markets slowed towards a halt, it pushed private loan issuance even higher in the most robust quarter of the year. Direct lending funds have been able to target and lend to much larger companies and improve credit quality while maintaining their returns from the spreads on loans.
- Energy Funds – For the quarter, Spot WTI crude prices were down 18% and spot natural gas prices were down 7%, with long-dated futures contracts in those commodities decreasing by similar amounts. The current oil price downturn is now deeper and/or longer than any other

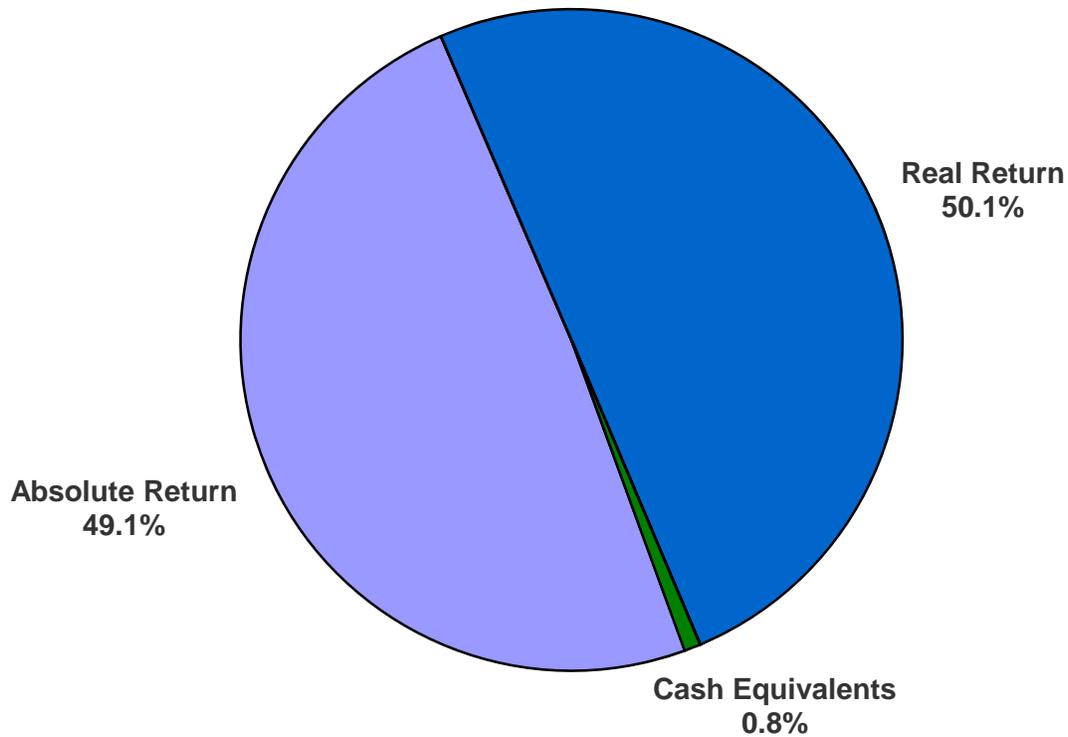
downturn since 1970. There have been five major oil price downturns in the last 45 years. During each of these, the oil price was trading 40-50% below their peak one year into the downturn. Oil is presently 70% below its peak – a historical outlier. With only approximately 30% of our energy commitments presently invested, a substantial amount of uncalled commitments remain ready to capitalize on the opportunities presented by lower energy prices should they persist.

- During the quarter, three new commitments were closed:
  - \$50 million Carlyle Energy Mezzanine Opportunity Fund ~ Energy Mezzanine Debt
  - \$20 million Orion Coinvest III LP ~ Zinc Mine Equity
  - \$65 million RPEP SMRS Partners ~ Power Transmission Line Equity



# SMRS

## Absolute, Real Return and Opportunistic 12/31/15



| Market Value in Millions |                       |                      |                       |                      |
|--------------------------|-----------------------|----------------------|-----------------------|----------------------|
|                          | <u>12/31/15</u>       |                      | <u>9/30/15</u>        |                      |
| Absolute Return          | \$4,533               | 49.1%                | \$4,317               | 49.3%                |
| Real Return              | 4,621                 | 50.1%                | 4,143                 | 47.4%                |
| Cash Equivalents         | 71                    | 0.8%                 | 289                   | 3.3%                 |
| <b>Total Investments</b> | <b><u>\$9,225</u></b> | <b><u>100.0%</u></b> | <b><u>\$8,749</u></b> | <b><u>100.0%</u></b> |



**SMRS**  
**Absolute Return**  
**12/31/15**

**Net Market Values by Entity**

|   | <u>Net Market Value</u> |                      |
|---|-------------------------|----------------------|
| Apollo Offshore Credit Strategies Fund Ltd. | \$                      | 141,099,540          |
| Brevan Howard Multi-Strategy Fund, L.P.     |                         | 25,774,524           |
| Drawbridge Opportunities Fund               |                         | 188,493,830          |
| * EnTrust White Pine Partners L.P.          |                         | 358,244,159          |
| JM IV, LP                                   |                         | 21,187,967           |
| MP Securitized Credit Master Fund, L.P.     |                         | 73,374,542           |
| * Sand Hill, LLC                            |                         | 468,103,742          |
| Spartan Partners L.P.                       |                         | 7,489,254            |
| * Tahquamenon Fund L.P.                     |                         | 3,153,263,231        |
| ** <b>Visium Balanced Fund LP</b>           |                         | 96,312,063           |
| <b>Total Market Value</b>                   | <b>\$</b>               | <b>4,533,342,852</b> |

\* Fund of Funds

\*\* **New Commitment**

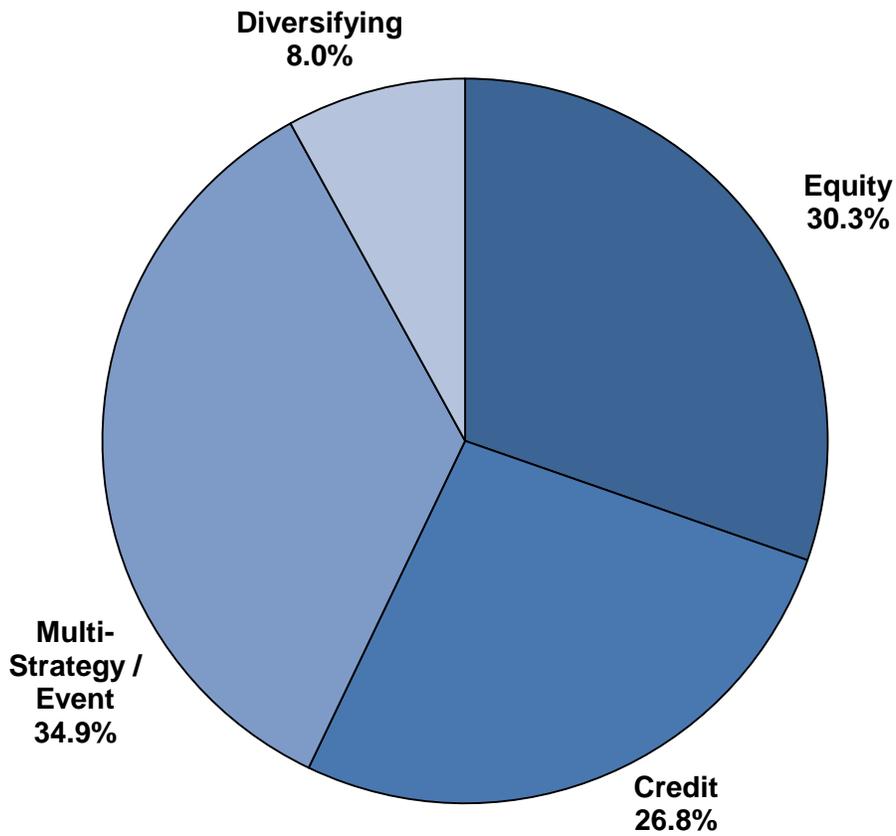


# SMRS

## Absolute Return

### 12/31/15

### Investments By Strategy



| Strategy Breakdown |     |                        |       |
|--------------------|-----|------------------------|-------|
| Underlying Funds:  | 103 | Median Position Size:  | 0.4%  |
| Strategies:        | 4   | Average Position Size: | 0.9%  |
| Relationships:     | 9   | Largest Position Size: | 10.4% |



# SMRS

## Real Return and Opportunistic 12/31/15

### Net Market Value by Entity

|   | <u>Net Market Value</u> | <u>Unfunded<br/>Commitment</u> |
|---|-------------------------|--------------------------------|
| * Abernathy Fund I, LLC                                   | \$ 335,886,775          | \$ 110,113,870                 |
| Apollo Credit Opportunities Fund III LP                   | 66,763,332              | 35,733,791                     |
| Apollo European Principal Finance Fund II                 | 46,868,082              | 12,984,293                     |
| Apollo Financial Credit Investments Fund II               | 313,575,834             | 145,406,390                    |
| Apollo HK TMS Investments Holdings LP                     | 29,585,278              | -                              |
| Apollo Offshore Credit Fund Ltd                           | 252,798,390             | -                              |
| Apollo Offshore Structured Credit Recovery Fund II        | 6,624,857               | -                              |
| Apollo Offshore Structured Credit Recovery Fund III       | 117,563,131             | 96,701,504                     |
| Blackstone Strategic Capital Holdings LP                  | 11,482,257              | 114,159,057                    |
| Blue Peninsula Fund LP                                    | 55,486,090              | 145,160,000                    |
| Carlyle Intl Energy Partners LP                           | 11,359,605              | 38,920,030                     |
| <b>** Carlyle Energy Mezzanine Opportunity Fund</b>       | <b>301,540</b>          | <b>46,221,394</b>              |
| * Content Holdings LLC                                    | 476,968,964             | 82,920,938                     |
| Elegantree Fund SPC                                       | 46,001,582              | 5,076,770                      |
| Energy Recapitalization and Restructuring Fund LP         | 40,812,067              | 18,700,269                     |
| ERR Michigan Holdings LP                                  | 7,346,512               | 2,335,070                      |
| * Fairfield Settlement Partners, LLC                      | 60,544,431              | 58,718,523                     |
| FCO MA MI LP  | 29,841,811              | 66,891,765                     |
| Fortress MSR Opportunities Fund I A LP                    | 113,733,861             | -                              |
| <b>** Fortress Transport</b>                              | <b>34,646,153</b>       | <b>-</b>                       |
| * Galaxie Ave. Partners, LLC                              | 99,900,000              | -                              |
| GSO Credit Alpha Fund LP                                  | 30,296,090              | 66,891,765                     |
| Highbridge Principal Strategies - Specialty Loan Fund III | 132,794,107             | 18,076,412                     |
| Hopen Life Sciences Fund II                               | 6,970,142               | 3,900,000                      |
| Innocor   | 30,000,000              | -                              |
| JP Morgan Global Maritime Investment Fund LP              | 78,818,656              | 33,458,310                     |
| KANG Fund LP  | 15,296,149              | -                              |
| KKR EI&G Fund   | 19,114,493              | 37,563,014                     |
| KKR Lending Partners I LP                                 | 66,607,487              | -                              |
| KKR Lending Partners II LP                                | 34,837,868              | 66,466,087                     |
| Lakewater LLC, Series 1                                   | 135,525,410             | 6,979,331                      |
| Lakewater LLC, Series 2                                   | 261,272,893             | 18,880,547                     |
| Lakewater LLC, Series 3                                   | 291,836,023             | -                              |
| Lakewater LLC, Series 4                                   | 57,229,277              | 19,408,778                     |
| Lakewater LLC, Series 5                                   | 44,385,370              | 205,384,913                    |
| Merit Energy Partners LP                                  | 838,063                 | 34,154,498                     |
| MidCap FinCo Holdings LTD                                 | 295,199,826             | -                              |
| Napier Park Aircraft Leasing Vehicle I, LLC               | 32,340,339              | 65,356,807                     |
| <b>** Orion Coinvest III LP</b>                           | <b>20,000,000</b>       | <b>2,236,552</b>               |
| Orion Mine Finance Fund 1A LP                             | 40,350,190              | 8,674,180                      |
| Orion Mine Finance Fund I LP                              | 105,124,601             | 15,797,261                     |
| Renaissance Venture Cap Fund II LP                        | 5,871,620               | 18,500,000                     |

|                                   | <u>Net Market Value</u> | <u>Unfunded<br/>Commitment</u> |
|-----------------------------------|-------------------------|--------------------------------|
| REOG Fund II Coinvest LP          | 11,895,976              | 15,579,217                     |
| Ridgewood Energy Oil & Gas II     | 66,480,959              | 55,840,665                     |
| Ridgewood Energy Oil & Gas III    | 1,135,722               | 223,864,278                    |
| ** <b>RPEP SMRS Holdings, LLC</b> | <b>65,000,000</b>       | -                              |
| SJC Direct Lending Fund I, LP     | 42,710,785              | 20,976,981                     |
| SJC Direct Lending Fund II, LP    | 296,920,989             | 55,071,319                     |
| * Social Network Holdings, LLC    | 221,834,820             | -                              |
| Varo Coinvestment LP              | 11,959,287              | 940,992                        |
| Warwick Energy Partners III       | 39,335,687              | 9,673,667                      |
| Income Accruals                   | 419,178                 |                                |
|                                   | <hr/>                   | <hr/>                          |
| <b>Total Market Value</b>         | <b>\$ 4,620,492,560</b> | <b>\$ 1,983,719,239</b>        |
|                                   | <hr/> <hr/>             | <hr/> <hr/>                    |

\* Fund of Funds

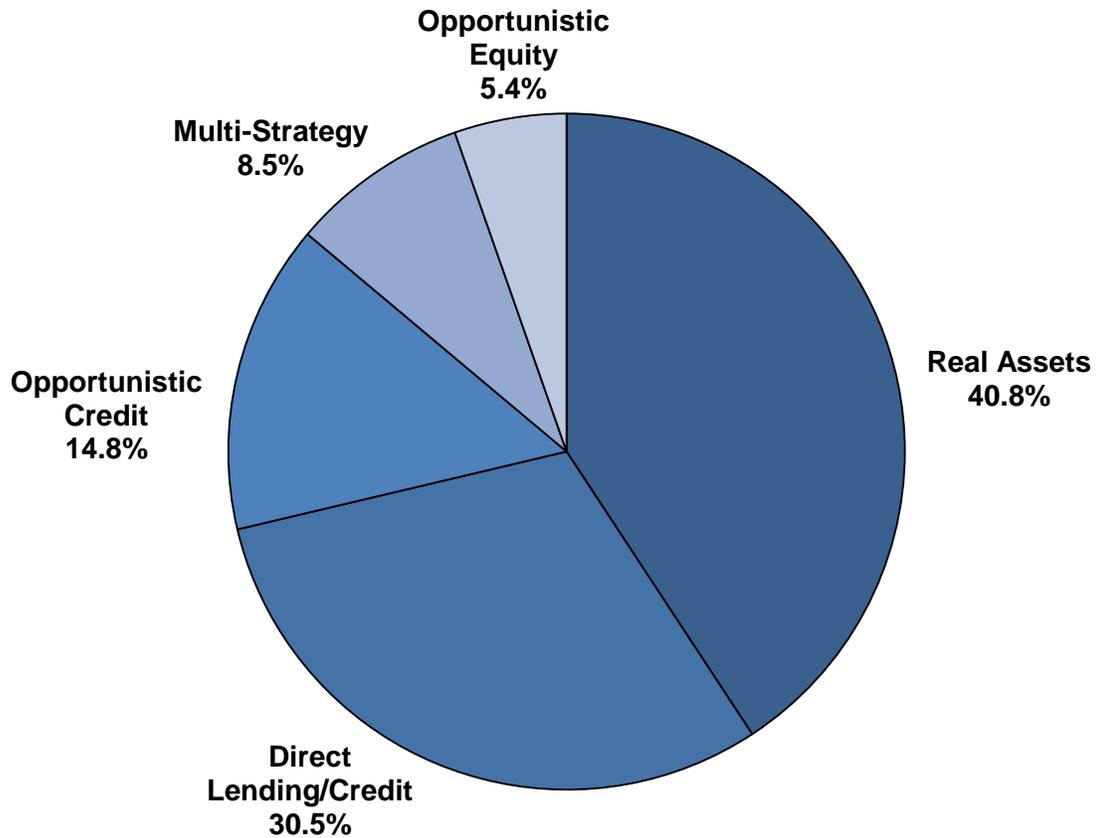
\*\* **New Commitment**



# SMRS

## Real Return and Opportunistic 12/31/15

### Investments By Strategy



| Investment Strategy   |                 |
|-----------------------|-----------------|
| Real Assets           | \$1,871,752,346 |
| Direct Lending/Credit | \$1,402,958,674 |
| Opportunistic Credit  | \$680,623,790   |
| Multi-Strategy        | \$391,372,865   |
| Opportunistic Equity  | \$246,158,839   |



**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**DOMESTIC EQUITY REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



**Jack A. Behar, CFA  
Senior Investment Manager  
Stock Analysis Division**



## EXECUTIVE SUMMARY

### Performance

| <b>Total Domestic Equity, Gross</b> | <b>1-Year</b> | <b>3-Years</b> | <b>5-Years</b> | <b>7-Years</b> | <b>10-Years</b> |
|-------------------------------------|---------------|----------------|----------------|----------------|-----------------|
| Annualized Returns                  | -0.5%         | 15.0%          | 12.1%          | 15.0%          | 7.4%            |
| S&P 1500                            | 1.0%          | 14.9%          | 12.4%          | 15.0%          | 7.4%            |
| Peer Median Return                  | -0.2%         | 13.6%          | 11.1%          | 14.7%          | 6.9%            |
| Rank vs. Peers                      | 60            | 24             | 27             | 41             | 34              |

| <b>Total Domestic Equity, Net</b> | <b>1-Year</b> | <b>3-Years</b> | <b>5-Years</b> | <b>7-Years</b> |
|-----------------------------------|---------------|----------------|----------------|----------------|
| Annualized Returns                | -0.6%         | 14.9%          | 11.9%          | 14.9%          |
| S&P 1500                          | 1.0%          | 14.9%          | 12.4%          | 15.0%          |
| Lipper Multi Core                 | -2.4%         | 12.7%          | 10.2%          | 13.9%          |

| <b>Total Active Equity, Net</b> | <b>1-Year</b> | <b>3-Years</b> | <b>5-Years</b> | <b>7-Years</b> |
|---------------------------------|---------------|----------------|----------------|----------------|
| Annualized Returns              | -1.9%         | 14.8%          | 11.7%          | 14.8%          |
| S&P 1500                        | 1.0%          | 14.9%          | 12.4%          | 15.0%          |
| Lipper Multi Core               | -2.4%         | 12.7%          | 10.2%          | 13.9%          |
| Rank vs. Lipper Multi Core      | 49            | 25             | 32             | 38             |

- Total domestic equity, gross of fees, lagged the S&P 1500 on a one year and a five year basis, while three, seven and ten year performance roughly matched the benchmark. This put domestic equity at or near the top third of its peer group over most long-term time periods.
  - Total domestic equity has a 25 basis points (bps) per year cost advantage over its peers, narrowing the one year 30 basis point gap in underperformance relative to peers to 5 basis points, net of fees.
- Total active equity had a difficult year, underperforming the benchmark by 290 bps net of fees. Such performance, while not satisfactory, was nevertheless at the median of its actively managed peer group. Three, five, and seven year performance remains at or near the top third of peers, albeit below the S&P 1500.
  - Growth stocks have outperformed value stocks by a cumulative 58% over the past seven years, which has been a headwind to performance. Historically, value stocks have outperformed growth stocks over extended periods of time.
  - Total active equity remains significantly over-weighted to value stocks, which should provide the portfolio with a substantial tailwind if and when this trend reverses.
- Both internal management and external management now rank solidly in the top half of their respective peer groups in terms of three, five, and seven year performance.
  - External management ranked in the top quartile of its peer group over the past year, which we see as a validation of SMRS' high quality/low cost manager strategy.

## **Strategy Update**

- Total Active Equity's portfolio trades at an estimated 20% discount to the S&P 1500 on the basis of normalized earnings, with similar volatility and rates of growth going forward.
  - We expect Total Active Equity's PE ratio to at least partially converge with that of the S&P 1500 over the next five years, driving annualized outperformance.
  - If PE ratios do not converge, we nonetheless expect long term outperformance on the basis of a higher net dividend yield (dividends + buybacks) than the benchmark alongside similar or faster rates of earnings reinvestment.
  - Total active equity remains over-weighted to both the financial sector and to defensive stocks.

## **Market Environment and Outlook**

- At ~17x normalized earnings, equity markets are reasonably priced relative to history, and attractively priced for an environment where bond yields stay abnormally low.
- Assuming a 2.0% normalized dividend yield, expected share count reductions of 2% via share buybacks and 4.6% long-term expected earnings growth, the S&P 1500 is poised to return approximately 8.6% over the long-term.
  - This compares to the 30-year U.S. Treasury at 3.0%, and a historical average return for the S&P 500 of 9.6% from 1928 - 2014.



# SMRS

## Domestic Equities

12/31/15

| Markets                       | Amount  | Total          | % of Total   |
|-------------------------------|---------|----------------|--------------|
| <b>Internal</b> (in millions) |         |                |              |
| Indexed Portfolios            | \$7,207 |                |              |
| <b>Total Indexed</b>          |         | <b>\$7,207</b> | <b>43.1%</b> |
| <b>Internal</b>               |         |                |              |
| Active Portfolios             | \$5,806 |                |              |
| <b>Total Active</b>           |         | <b>\$5,806</b> | <b>35.2%</b> |
| <b>Active</b>                 |         |                |              |
| Fisher Investments            | \$861   |                |              |
| Los Angeles Capital           | 804     |                |              |
| Seizert Capital Partners      | 664     |                |              |
| Clarkston Capital Partners    | 516     |                |              |
| Attucks Asset Management      | 260     |                |              |
| Bivium Capital                | 244     |                |              |
| Northpointe Capital           | 154     |                |              |
| Munder Capital Management     | 142     |                |              |
| GW Capital                    | 66      |                |              |
| <b>Total Active</b>           |         | <b>\$3,711</b> | <b>22.2%</b> |

**TOTAL**

**\$16,724**

**100.0%**

## Combined Active Equity Portfolio, Return Expectations 12/31/15

### Return Assumption Estimates

|                                   | <u>Expected<br/>Return ****</u> | <u>Normal Dividend<br/>Yield **</u> | <u>LT Growth<br/>Rate ***</u> |
|-----------------------------------|---------------------------------|-------------------------------------|-------------------------------|
| <b>SAD Combined Active Equity</b> | <b>9.7%</b>                     | <b>5.2%</b>                         | <b>4.5%</b>                   |
| S&P 1500 All-Cap                  | 8.6%                            | 4.0%                                | 4.6%                          |
| S&P 500 Large-Cap                 | 8.6%                            | 4.1%                                | 4.5%                          |
| S&P 500 Historical Average        | 9.6%                            |                                     |                               |
| S&P 400 Mid-Cap                   | 8.5%                            | 2.5%                                | 6.0%                          |
| S&P 600 Small-Cap                 | 8.3%                            | 1.3%                                | 7.0%                          |
| US 30-Year Treasury               | 3.0%                            | 3.0%                                | 0.0%                          |

### Normal Dividend Yield Decomposition

|                                   | <u>Normal<br/>Price/Earnings</u> | <u>Normal<br/>Earnings<br/>Yield*</u> | <u>Normal<br/>Payout Ratio</u> | <u>Normal<br/>Dividend<br/>Yield**</u> |
|-----------------------------------|----------------------------------|---------------------------------------|--------------------------------|--|
| <b>SAD Combined Active Equity</b> | <b>13.5</b>                      | <b>7.4%</b>                           | <b>70%</b>                     | <b>5.2%</b>                            |
| S&P 1500 All-Cap                  | 17.0                             | 5.9%                                  | 67%                            | 4.0%                                   |
| S&P 500 Large-Cap                 | 16.9                             | 5.9%                                  | 70%                            | 4.1%                                   |
| S&P 400 Mid-Cap                   | 18.5                             | 5.4%                                  | 45%                            | 2.5%                                   |
| S&P 600 Small-Cap                 | 18.9                             | 5.3%                                  | 24%                            | 1.3%                                   |

### Portfolio and Benchmark Risk Estimates

|                                   | <u>Expected<br/>Return ****</u> | <u>Standard<br/>Deviation</u> | <u>Expected<br/>Return/Volatility</u> |
|-----------------------------------|---------------------------------|-------------------------------|---------------------------------------|
| <b>SAD Combined Active Equity</b> | <b>9.7%</b>                     | <b>17.3%</b>                  | <b>0.6</b>                            |
| S&P 1500 All-Cap                  | 8.6%                            | 17.2%                         | 0.5                                   |
| S&P 500 Large-Cap                 | 8.6%                            | 17.4%                         | 0.5                                   |
| S&P 400 Mid-Cap                   | 8.5%                            | 17.0%                         | 0.5                                   |
| S&P 600 Small-Cap                 | 8.3%                            | 17.7%                         | 0.5                                   |
| US 30-Year Treasury               | 3.0%                            | 22.0%                         | 0.1                                   |

\*Earnings Yield = Earnings/Price

\*\*Includes Share Buybacks

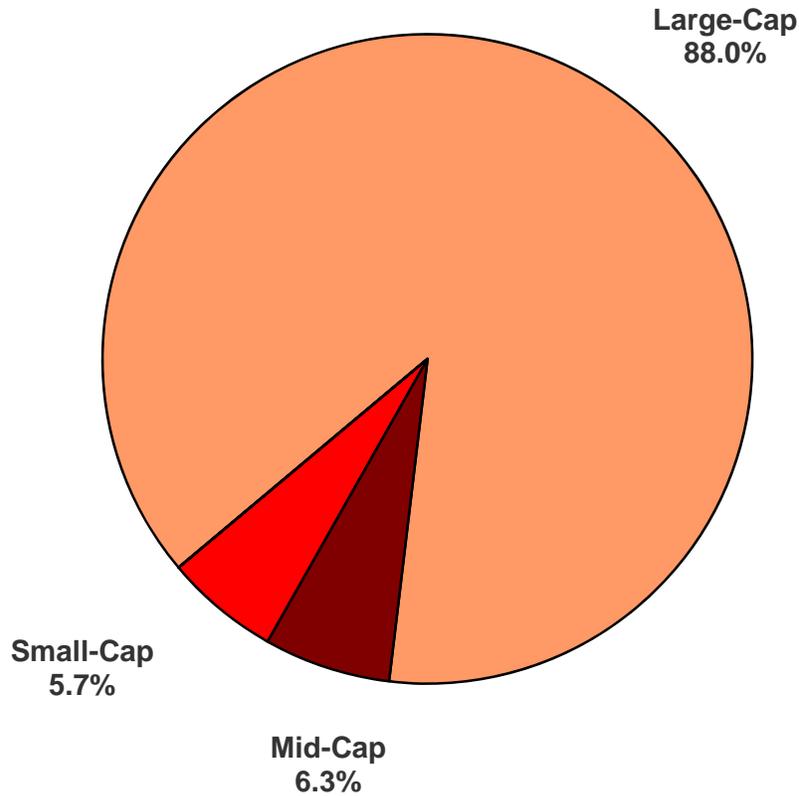
\*\*\*LT Growth Rate Calculation: Return on Equity \* (1-Dividend Payout Ratio)

\*\*\*\*Expected Return Formula: Dividend Yield + LT Growth Rate



# SMRS

## Domestic Equity Exposure By Market Cap 12/31/15



### Market Value in Millions

12/31/15

|                              | <u>Assets</u>          | <u>Percent</u>       | <u>S&amp;P 1500</u>  |
|------------------------------|------------------------|----------------------|----------------------|
| Large-Cap (>\$10B)           | \$14,717               | 88.0%                | 84.8%                |
| Mid-Cap (>\$4 <\$10B)        | 1,054                  | 6.3%                 | 8.6%                 |
| Small-Cap (<\$4B)            | 953                    | 5.7%                 | 6.6%                 |
| <b>Total Domestic Equity</b> | <b><u>\$16,724</u></b> | <b><u>100.0%</u></b> | <b><u>100.0%</u></b> |



SMRS

## All Domestic Equities Composite

12/31/15

| <b>Date:</b>          | <b><u>12/31/15</u></b> | <b><u>9/30/15</u></b> | <b><u>6/30/15</u></b> | <b><u>3/31/15</u></b> |
|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|
| Assets (\$million):   | \$16,724               | \$16,605              | \$18,521              | \$18,807              |
| Number of Securities: | 1,258                  | 1,217                 | 1,209                 | 1,186                 |
| Active Share:         | 34%                    | 34%                   | 34%                   | 32%                   |

Benchmark: S&P 1500

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

| <b>Characteristics:</b>                      | <b><u>SMRS</u></b> | <b><u>S&amp;P 1500</u></b> |
|--|--------------------|----------------------------|
| Weighted Average Capitalization (\$billion): | \$134.7            | \$125.2                    |
| Trailing 12-month P/E:                       | 16.4x              | 19.0x                      |
| Forecast P/E:                                | 15.1x              | 17.2x                      |
| Price/Book:                                  | 2.3x               | 2.5x                       |
| Beta:  | 1.00               | 1.00                       |
| Dividend Yield:                              | 2.3%               | 2.1%                       |
| 3-5 Year EPS Growth Estimate:                | 10.5%              | 10.8%                      |
| Return on Equity:                            | 14.0%              | 13.2%                      |

### TOP TEN HOLDINGS - All Domestic Equities 12/31/15

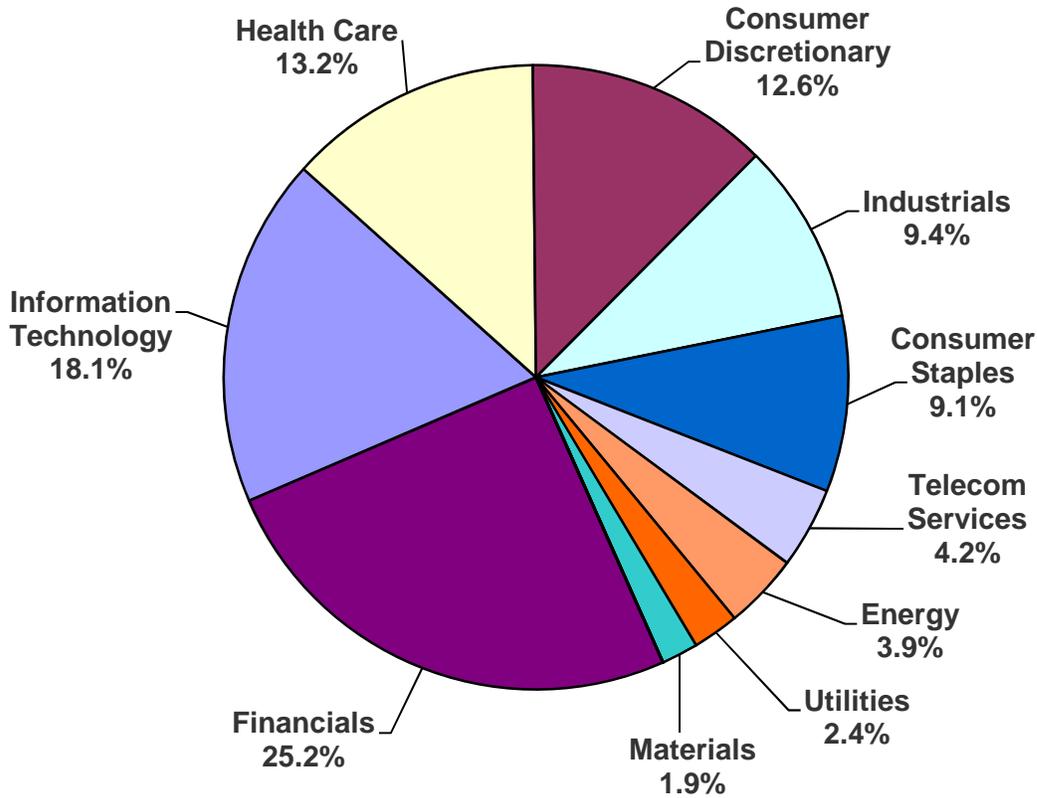
|                             | <b><u>Portfolio Weight</u></b> | <b><u>Total Shares</u></b> | <b><u>12/31/15 Price</u></b> | <b><u>YTD15 Total Return</u></b> | <b><u>Market Value</u></b> |
|-----------------------------|--------------------------------|----------------------------|------------------------------|----------------------------------|----------------------------|
| Verizon Communications Inc. | 3.5%                           | 12,679,024                 | \$46.22                      | 3.6%                             | \$586,024,489              |
| Apple Inc.                  | 3.3%                           | 5,193,441                  | \$105.26                     | -3.0%                            | 546,661,600                |
| U.S. Bancorp                | 3.2%                           | 12,391,091                 | \$42.67                      | -2.8%                            | 528,727,853                |
| Wells Fargo & Company       | 2.8%                           | 8,627,122                  | \$54.36                      | 1.8%                             | 468,970,352                |
| SPDR S&P 500 ETF Trust      | 2.7%                           | 2,189,950                  | \$203.87                     | 1.3%                             | 446,465,107                |
| Gilead Sciences, Inc.       | 2.1%                           | 3,469,271                  | \$101.19                     | 8.6%                             | 351,055,532                |
| Wal-Mart Stores, Inc.       | 2.1%                           | 5,608,666                  | \$61.30                      | -26.6%                           | 343,811,226                |
| Microsoft Corporation       | 1.9%                           | 5,858,501                  | \$55.48                      | 22.7%                            | 325,029,635                |
| Aflac Incorporated          | 1.9%                           | 5,274,148                  | \$59.90                      | 0.5%                             | 315,921,465                |
| Home Depot, Inc.            | <u>1.6%</u>                    | 2,063,679                  | \$132.25                     | 28.5%                            | <u>272,921,548</u>         |
| TOTAL                       | <u>25.0%</u>                   |                            |                              |                                  | <u>\$4,185,588,807</u>     |



# SMRS

## All Domestic Equity By Sector

12/31/15



| Market Value in Millions |                 |                |                  |                   |
|--------------------------|-----------------|----------------|------------------|-------------------|
| 12/31/15                 |                 |                |                  |                   |
|                          | <u>Assets</u>   | <u>Percent</u> | <u>Benchmark</u> | <u>Difference</u> |
| Financials               | \$4,220         | 25.2%          | 17.6%            | 7.6%              |
| Information Technology   | 3,031           | 18.1%          | 20.3%            | -2.2%             |
| Health Care              | 2,201           | 13.2%          | 14.7%            | -1.5%             |
| Consumer Discretionary   | 2,113           | 12.6%          | 12.9%            | -0.3%             |
| Industrials              | 1,569           | 9.4%           | 10.5%            | -1.1%             |
| Consumer Staples         | 1,527           | 9.1%           | 9.4%             | -0.3%             |
| Telecom Services         | 709             | 4.2%           | 2.2%             | 2.0%              |
| Energy                   | 643             | 3.9%           | 6.1%             | -2.2%             |
| Utilities                | 404             | 2.4%           | 3.2%             | -0.8%             |
| Materials                | 307             | 1.9%           | 3.1%             | -1.2%             |
| <b>Total</b>             | <b>\$16,724</b> | <b>100.0%</b>  | <b>100.0%</b>    |                   |

Benchmark: S&P 1500



# SMRS

## All Actively Managed Composite

12/31/15

| <b>Date:</b>           | <b><u>12/31/15</u></b> | <b><u>9/30/15</u></b> | <b><u>6/30/15</u></b> | <b><u>3/31/15</u></b> |
|------------------------|------------------------|-----------------------|-----------------------|-----------------------|
| Assets (\$million):    | \$9,517                | \$9,118               | \$10,222              | \$10,502              |
| Numbers of Securities: | 922                    | 888                   | 872                   | 836                   |
| Active Share:          | 59%                    | 62%                   | 61%                   | 59%                   |

Benchmark: S&P 1500

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> |
|--|--------------------|----------------------------|
| Weighted Average Capitalization (\$billion): | \$137.7            | \$125.2                    |
| Trailing 12-month P/E:                       | 15.1x              | 19.0x                      |
| Forecast P/E:                                | 13.9x              | 17.2x                      |
| Price/Book:                                  | 2.2x               | 2.5x                       |
| Beta:  | 0.99               | 1.00                       |
| Dividend Yield:                              | 2.4%               | 2.1%                       |
| 3-5 Year EPS Growth Estimate:                | 10.4%              | 10.8%                      |
| Return on Equity:                            | 14.6%              | 13.2%                      |

### TOP TEN HOLDINGS - All Actively Managed 12/31/15

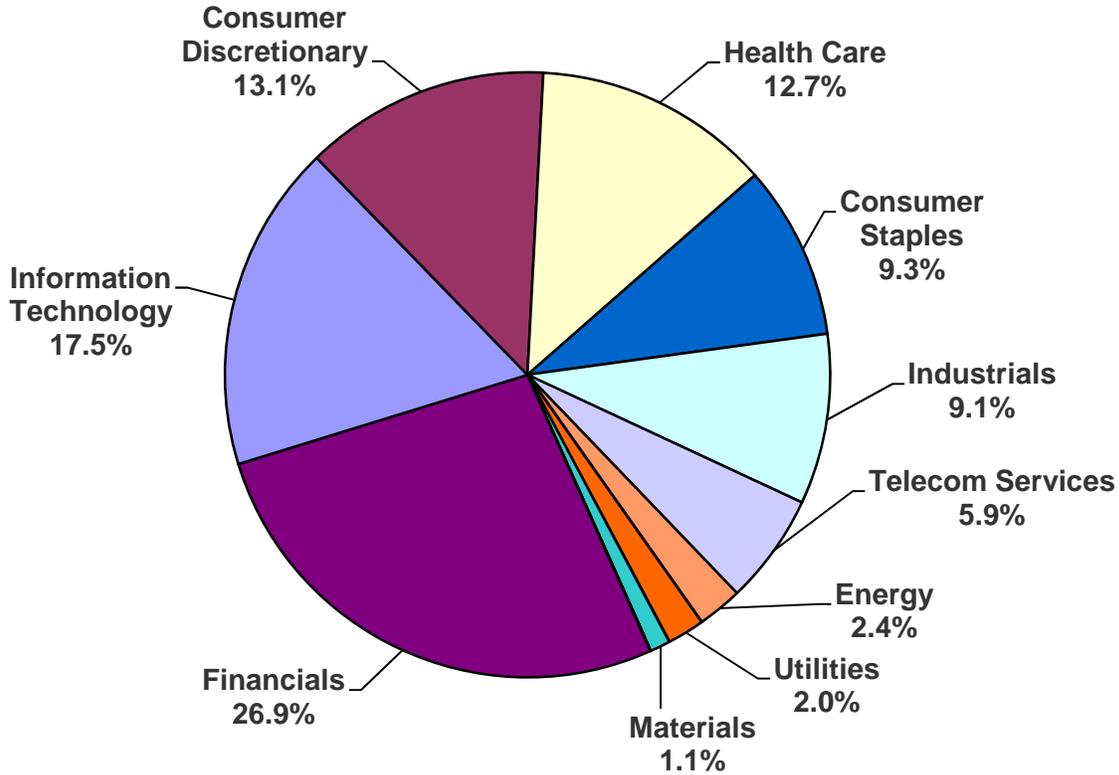
|                             | <b><u>Portfolio Weight</u></b> | <b><u>Total Shares</u></b> | <b><u>12/31/15 Price</u></b> | <b><u>YTD15 Total Return</u></b> | <b><u>Market Value</u></b> |
|-----------------------------|--------------------------------|----------------------------|------------------------------|----------------------------------|----------------------------|
| Verizon Communications Inc. | 5.5%                           | 11,287,353                 | \$46.22                      | 3.6%                             | \$521,701,456              |
| U.S. Bancorp                | 5.3%                           | 11,828,753                 | \$42.67                      | -2.8%                            | 504,732,891                |
| Wells Fargo & Company       | 4.0%                           | 7,037,288                  | \$54.36                      | 1.8%                             | 382,546,976                |
| Apple Inc.                  | 3.6%                           | 3,286,510                  | \$105.26                     | -3.0%                            | 345,938,043                |
| Wal-Mart Stores, Inc.       | 3.3%                           | 5,072,032                  | \$61.30                      | -26.6%                           | 310,915,562                |
| Aflac Incorporated          | 3.2%                           | 5,128,239                  | \$59.90                      | 0.5%                             | 307,181,516                |
| Gilead Sciences, Inc.       | 3.2%                           | 2,976,359                  | \$101.19                     | 8.6%                             | 301,177,767                |
| Home Depot, Inc.            | 2.3%                           | 1,630,039                  | \$132.25                     | 28.5%                            | 215,572,658                |
| American Express Company    | 2.2%                           | 2,989,700                  | \$69.55                      | -24.2%                           | 207,933,635                |
| Alphabet Inc. Class A       | <u>1.9%</u>                    | 231,841                    | \$778.01                     | 46.6%                            | <u>180,374,616</u>         |
| TOTAL                       | <u>34.4%</u>                   |                            |                              |                                  | <u>\$3,278,075,119</u>     |



# SMRS

## All Active Domestic Equity By Sector

12/31/15



### Market Value in Millions

12/31/15

|                        | <u>Assets</u>         | <u>Percent</u>       | <u>Benchmark</u>     | <u>Difference</u> |
|------------------------|-----------------------|----------------------|----------------------|-------------------|
| Financials             | \$2,568               | 26.9%                | 17.6%                | 9.3%              |
| Information Technology | 1,662                 | 17.5%                | 20.3%                | -2.8%             |
| Consumer Discretionary | 1,246                 | 13.1%                | 12.9%                | 0.2%              |
| Health Care            | 1,212                 | 12.7%                | 14.7%                | -2.0%             |
| Consumer Staples       | 888                   | 9.3%                 | 9.4%                 | -0.1%             |
| Industrials            | 866                   | 9.1%                 | 10.5%                | -1.4%             |
| Telecom Services       | 559                   | 5.9%                 | 2.2%                 | 3.7%              |
| Energy                 | 227                   | 2.4%                 | 6.1%                 | -3.7%             |
| Utilities              | 190                   | 2.0%                 | 3.2%                 | -1.2%             |
| Materials              | 99                    | 1.1%                 | 3.1%                 | -2.0%             |
| <b>Total</b>           | <b><u>\$9,517</u></b> | <b><u>100.0%</u></b> | <b><u>100.0%</u></b> |                   |

Benchmark: S&P 1500

**Manager Performance - Net of Fees**  
12/31/15

| <u>Fund Name</u>                           | <u>Market Value</u>    | <u>1-Year</u> | <u>3-Years</u> | <u>5-Years</u> | <u>7-Years</u> |
|--|------------------------|---------------|----------------|----------------|----------------|
| <b>Total Internal Active</b>               | <b>\$5,680,677,952</b> | <b>-2.7%</b>  | <b>14.3%</b>   | <b>11.4%</b>   | <b>14.3%</b>   |
| S&P 500                                    |                        | 1.4%          | 15.1%          | 12.6%          | 14.8%          |
| Style & Risk Adjusted Benchmark            |                        | -1.3%         | 12.6%          | 11.2%          | 14.0%          |
| Lipper Large-Cap Core                      |                        | -0.5%         | 13.5%          | 11.1%          | 13.7%          |
| <i>Excess Return</i>                       |                        | <i>-4.1%</i>  | <i>-0.8%</i>   | <i>-1.1%</i>   | <i>-0.5%</i>   |
| <i>Alpha</i>                               |                        | <i>-1.4%</i>  | <i>1.7%</i>    | <i>0.3%</i>    | <i>0.3%</i>    |
| <i>Pct. Rank vs. Lipper Large-Cap Core</i> |                        | <i>78</i>     | <i>36</i>      | <i>44</i>      | <i>35</i>      |
| <b>Total External Active</b>               | <b>3,710,952,728</b>   | <b>0.6%</b>   | <b>14.0%</b>   | <b>11.0%</b>   | <b>14.8%</b>   |
| S&P 1500                                   |                        | 1.0%          | 14.9%          | 12.4%          | 15.0%          |
| Style & Risk Adjusted Benchmark            |                        | -0.6%         | 13.1%          | 11.1%          | 14.9%          |
| Lipper Multi Core                          |                        | -2.4%         | 12.7%          | 10.2%          | 13.9%          |
| <i>Excess Return</i>                       |                        | <i>-0.4%</i>  | <i>-0.9%</i>   | <i>-1.4%</i>   | <i>-0.2%</i>   |
| <i>Alpha</i>                               |                        | <i>1.3%</i>   | <i>0.9%</i>    | <i>-0.1%</i>   | <i>-0.1%</i>   |
| <i>Pct. Rank vs. Lipper Multi Core</i>     |                        | <i>20</i>     | <i>39</i>      | <i>44</i>      | <i>38</i>      |

**Manager Performance - Net of Fees**  
12/31/15

| <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 Large-Cap Core</b>                 | <b>\$2,378,566,370</b> | <b>-7.3%</b>  | <b>15.3%</b>   | <b>12.0%</b>   | <b>15.4%</b>   | <b>6.4%</b>      | <b>8/31/07</b>        |
| S&P 500                                    |                        | 1.4%          | 15.1%          | 12.6%          | 14.8%          | 6.4%             |                       |
| Style & Risk Adjusted Benchmark            |                        | -0.7%         | 10.5%          | 10.1%          | 13.3%          | 5.3%             |                       |
| Lipper Large-Cap Core                      |                        | -0.5%         | 13.5%          | 11.1%          | 13.7%          | 5.6%             |                       |
| <i>Excess Return</i>                       |                        | <i>-8.7%</i>  | <i>0.1%</i>    | <i>-0.5%</i>   | <i>0.6%</i>    | <i>0.0%</i>      |                       |
| <i>Alpha</i>                               |                        | <i>-6.6%</i>  | <i>4.8%</i>    | <i>1.9%</i>    | <i>2.1%</i>    | <i>1.1%</i>      |                       |
| <i>Pct Rank vs Lipper Large-Cap Core</i>   |                        | <i>98</i>     | <i>15</i>      | <i>32</i>      | <i>14</i>      | <i>25</i>        |                       |
| <b>SMRS Large-Cap Growth</b>               | <b>1,742,362,172</b>   | <b>6.0%</b>   | <b>18.7%</b>   | <b>14.3%</b>   | <b>17.4%</b>   | <b>9.2%</b>      | <b>5/31/05</b>        |
| S&P 500 Growth Index                       |                        | 5.5%          | 17.2%          | 14.1%          | 16.6%          | 8.9%             |                       |
| Style & Risk Adjusted Benchmark            |                        | 5.0%          | 16.5%          | 13.8%          | 16.4%          | 8.9%             |                       |
| Lipper Large Growth                        |                        | 5.1%          | 16.5%          | 12.7%          | 16.4%          | 8.7%             |                       |
| <i>Excess Return</i>                       |                        | <i>0.5%</i>   | <i>1.5%</i>    | <i>0.3%</i>    | <i>0.9%</i>    | <i>0.3%</i>      |                       |
| <i>Alpha</i>                               |                        | <i>1.0%</i>   | <i>2.2%</i>    | <i>0.5%</i>    | <i>1.1%</i>    | <i>0.3%</i>      |                       |
| <i>Pct Rank vs Lipper Large-Cap Growth</i> |                        | <i>47</i>     | <i>18</i>      | <i>21</i>      | <i>28</i>      | <i>33</i>        |                       |
| <b>SMRS All-Cap Garp</b>                   | <b>1,031,075,454</b>   | <b>-0.1%</b>  | <b>15.3%</b>   | <b>--</b>      | <b>--</b>      | <b>14.5%</b>     | <b>4/30/11</b>        |
| S&P 1500 Super Composite                   |                        | 1.0%          | 14.9%          | --             | --             | 11.6%            |                       |
| Style & Risk Adjusted Benchmark            |                        | -0.7%         | 13.8%          | --             | --             | 11.1%            |                       |
| Lipper Multi Core                          |                        | -2.4%         | 12.7%          | --             | --             | 9.3%             |                       |
| <i>Excess Return</i>                       |                        | <i>-1.1%</i>  | <i>0.4%</i>    | <i>--</i>      | <i>--</i>      | <i>2.9%</i>      |                       |
| <i>Alpha</i>                               |                        | <i>0.5%</i>   | <i>1.5%</i>    | <i>--</i>      | <i>--</i>      | <i>3.4%</i>      |                       |
| <i>Pct. Rank vs. Lipper Multi Core</i>     |                        | <i>32</i>     | <i>18</i>      | <i>--</i>      | <i>--</i>      | <i>1</i>         |                       |
| <b>Fisher All-Cap</b>                      | <b>861,163,354</b>     | <b>4.6%</b>   | <b>15.9%</b>   | <b>10.1%</b>   | <b>16.1%</b>   | <b>10.0%</b>     | <b>10/31/04</b>       |
| S&P 1500/S&P 600 Value Blend               |                        | 1.0%          | 14.9%          | 11.4%          | 14.8%          | 8.4%             |                       |
| Style & Risk Adjusted Benchmark            |                        | 3.4%          | 15.9%          | 13.4%          | 16.0%          | 8.8%             |                       |
| Lipper Multi Core                          |                        | -2.4%         | 12.7%          | 10.2%          | 13.9%          | 7.2%             |                       |
| <i>Excess Return</i>                       |                        | <i>3.6%</i>   | <i>1.0%</i>    | <i>-1.3%</i>   | <i>1.3%</i>    | <i>1.6%</i>      |                       |
| <i>Alpha</i>                               |                        | <i>1.2%</i>   | <i>0.1%</i>    | <i>-3.3%</i>   | <i>0.1%</i>    | <i>1.2%</i>      |                       |
| <i>Pct. Rank vs. Lipper Multi Core</i>     |                        | <i>2</i>      | <i>11</i>      | <i>58</i>      | <i>16</i>      | <i>3</i>         |                       |

**Manager Performance - Net of Fees**  
12/31/15

| <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>\$663,835,883</b> | <b>-5.6%</b>  | <b>12.1%</b>   | <b>11.1%</b>   | <b>--</b>      | <b>14.0%</b>     | <b>11/30/09</b>       |
| S&P 1500/S&P 400 Value Blend                 |                      | 1.0%          | 14.9%          | 12.9%          | --             | 16.5%            |                       |
| Style & Risk Adjusted Benchmark              |                      | -4.2%         | 12.6%          | 11.1%          | --             | 13.1%            |                       |
| Lipper Multi Core                            |                      | -2.4%         | 12.7%          | 10.2%          | --             | 12.4%            |                       |
| <i>Excess Return</i>                         |                      | -6.6%         | -2.8%          | -1.8%          | --             | -2.5%            |                       |
| <i>Alpha</i>                                 |                      | -1.4%         | -0.5%          | 0.0%           | --             | 0.9%             |                       |
| <i>Pct. Rank vs. Lipper Multi Core</i>       |                      | 82            | 66             | 40             | --             | 24               |                       |
| <b>LA Capital All-Cap Growth</b>             | <b>418,986,055</b>   | <b>7.2%</b>   | <b>19.5%</b>   | <b>14.1%</b>   | <b>18.3%</b>   | <b>11.3%</b>     | <b>5/31/05</b>        |
| S&P 1500 Growth                              |                      | 5.2%          | 16.9%          | 13.8%          | 16.7%          | 9.0%             |                       |
| Style & Risk Adjusted Benchmark              |                      | 2.3%          | 13.5%          | 11.5%          | 15.4%          | 9.1%             |                       |
| Lipper Multi-Cap Growth                      |                      | 2.2%          | 14.8%          | 11.1%          | 15.8%          | 8.5%             |                       |
| <i>Excess Return</i>                         |                      | 2.0%          | 2.6%           | 0.3%           | 1.6%           | 2.3%             |                       |
| <i>Alpha</i>                                 |                      | 4.9%          | 6.0%           | 2.7%           | 2.9%           | 2.1%             |                       |
| <i>Pct. Rank vs. Lipper Multi-Cap Growth</i> |                      | 11            | 6              | 8              | 14             | 6                |                       |
| <b>Concentrated Equity</b>                   | <b>401,968,136</b>   | <b>-10.4%</b> | <b>--</b>      | <b>--</b>      | <b>--</b>      | <b>0.2%</b>      | <b>5/31/13</b>        |
| S&P 1500 Super Composite                     |                      | 1.0%          | --             | --             | --             | 11.7%            |                       |
| Style & Risk Adjusted Benchmark              |                      | -4.3%         | --             | --             | --             | 12.6%            |                       |
| Lipper Multi Core                            |                      | -2.4%         | --             | --             | --             | 9.5%             |                       |
| <i>Excess Return</i>                         |                      | -11.4%        | --             | --             | --             | -11.5%           |                       |
| <i>Alpha</i>                                 |                      | -6.1%         | --             | --             | --             | -12.4%           |                       |
| <i>Pct. Rank vs. Lipper Multi Core</i>       |                      | 96            | --             | --             | --             | 99               |                       |
| <b>LA Capital Deep Value</b>                 | <b>385,169,460</b>   | <b>--</b>     | <b>--</b>      | <b>--</b>      | <b>--</b>      | <b>-3.8%</b>     | <b>4/1/15</b>         |
| S&P 1500 Value                               |                      | --            | --             | --             | --             | -3.2%            |                       |
| Style & Risk Adjusted Benchmark              |                      | --            | --             | --             | --             | -3.3%            |                       |
| Lipper Multi-Cap Value                       |                      | --            | --             | --             | --             | -6.2%            |                       |
| <i>Excess Return</i>                         |                      | --            | --             | --             | --             | -0.6%            |                       |
| <i>Alpha</i>                                 |                      | --            | --             | --             | --             | -0.5%            |                       |
| <i>Pct. Rank vs. Lipper Multi-Cap Value</i>  |                      | --            | --             | --             | --             | 33               |                       |
| <b>Attucks Asset Management</b>              | <b>259,992,446</b>   | <b>-1.3%</b>  | <b>12.6%</b>   | <b>10.2%</b>   | <b>13.5%</b>   | <b>5.2%</b>      | <b>11/30/07</b>       |
| S&P 1500 Super Composite                     |                      | 1.0%          | 14.9%          | 12.4%          | 15.0%          | 5.9%             |                       |
| Style & Risk Adjusted Benchmark              |                      | 0.4%          | 13.6%          | 11.6%          | 14.9%          | 6.7%             |                       |
| Lipper Small-Cap Core                        |                      | -2.4%         | 12.7%          | 10.2%          | 13.9%          | 4.6%             |                       |
| <i>Excess Return</i>                         |                      | -2.3%         | -2.3%          | -2.2%          | -1.5%          | -0.7%            |                       |
| <i>Alpha</i>                                 |                      | -1.7%         | -1.0%          | -1.4%          | -1.5%          | -1.5%            |                       |
| <i>Pct. Rank vs. Lipper Multi Core</i>       |                      | 44            | 57             | 56             | 64             | 42               |                       |
| <b>Clarkston Capital Small-Cap</b>           | <b>259,547,478</b>   | <b>6.0%</b>   | <b>--</b>      | <b>--</b>      | <b>--</b>      | <b>11.2%</b>     | <b>1/1/14</b>         |
| S&P 600                                      |                      | -2.0%         | --             | --             | --             | 1.8%             |                       |
| Style & Risk Adjusted Benchmark              |                      | -0.9%         | --             | --             | --             | 3.1%             |                       |
| Lipper Small-Cap Core                        |                      | -5.0%         | --             | --             | --             | -0.7%            |                       |
| <i>Excess Return</i>                         |                      | 8.0%          | --             | --             | --             | 9.4%             |                       |
| <i>Alpha</i>                                 |                      | 7.0%          | --             | --             | --             | 8.1%             |                       |
| <i>Pct. Rank vs. Lipper Small-Cap Core</i>   |                      | 1             | --             | --             | --             | 1                |                       |
| <b>Clarkston Capital Large-Cap</b>           | <b>256,252,031</b>   | <b>--</b>     | <b>--</b>      | <b>--</b>      | <b>--</b>      | <b>2.9%</b>      | <b>4/1/15</b>         |
| S&P 500                                      |                      | --            | --             | --             | --             | 0.4%             |                       |
| Style & Risk Adjusted Benchmark              |                      | --            | --             | --             | --             | -2.1%            |                       |
| Lipper Large-Cap Core                        |                      | --            | --             | --             | --             | -1.4%            |                       |
| <i>Excess Return</i>                         |                      | --            | --             | --             | --             | 2.5%             |                       |
| <i>Alpha</i>                                 |                      | --            | --             | --             | --             | 5.0%             |                       |
| <i>Pct. Rank vs. Lipper Large-Cap Core</i>   |                      | --            | --             | --             | --             | 4                |                       |

**Manager Performance - Net of Fees**  
12/31/15

| <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>Bivium Capital Partners</b>              | <b>\$243,903,161</b> | <b>-3.6%</b>  | <b>11.5%</b>   | <b>10.1%</b>   | <b>13.8%</b>   | <b>4.7%</b>      | <b>11/30/07</b>       |
| S&P 1500 Super Composite                    |                      | -3.5%         | 12.7%          | 10.9%          | 13.2%          | 3.9%             |                       |
| Style & Risk Adjusted Benchmark             |                      | -5.5%         | 12.8%          | 11.3%          | 15.3%          | 6.2%             |                       |
| Lipper Multi Core                           |                      | -5.7%         | 11.0%          | 9.0%           | 12.8%          | 3.9%             |                       |
| <i>Excess Return</i>                        |                      | 0.0%          | -1.2%          | -0.8%          | 0.7%           | 0.8%             |                       |
| <i>Alpha</i>                                |                      | 1.9%          | -1.3%          | -1.2%          | -1.5%          | -1.5%            |                       |
| <i>Pct. Rank vs. Lipper Multi Core</i>      |                      | 38            | 55             | 46             | 34             | 34               |                       |
| <b>NorthPointe All-Cap Core</b>             | <b>153,804,077</b>   | <b>-0.7%</b>  | <b>12.7%</b>   | <b>7.9%</b>    | <b>13.1%</b>   | <b>6.7%</b>      | <b>10/31/04</b>       |
| NorthPointe Blended Benchmark               |                      | -2.0%         | 13.6%          | 10.7%          | 14.3%          | 8.2%             |                       |
| Style & Risk Adjusted Benchmark             |                      | -0.8%         | 12.2%          | 11.3%          | 16.0%          | 8.8%             |                       |
| Lipper Multi Core                           |                      | -2.4%         | 12.7%          | 10.2%          | 13.9%          | 7.2%             |                       |
| <i>Excess Return</i>                        |                      | 1.2%          | -0.9%          | -2.8%          | -1.2%          | -1.5%            |                       |
| <i>Alpha</i>                                |                      | 0.1%          | 0.5%           | -3.4%          | -2.9%          | -2.1%            |                       |
| <i>Pct. Rank vs. Lipper Multi Core</i>      |                      | 39            | 57             | 84             | 69             | 69               |                       |
| <b>Munder Mid-Cap Core Growth</b>           | <b>141,992,020</b>   | <b>-6.4%</b>  | <b>11.9%</b>   | <b>10.0%</b>   | <b>--</b>      | <b>16.9%</b>     | <b>4/30/09</b>        |
| S&P 400 Mid-Cap Growth                      |                      | 2.0%          | 13.4%          | 11.1%          | --             | 19.3%            |                       |
| Style & Risk Adjusted Benchmark             |                      | 2.4%          | 12.8%          | 10.7%          | --             | 17.2%            |                       |
| Lipper Mid-Cap Growth                       |                      | -1.3%         | 12.9%          | 9.7%           | --             | 17.1%            |                       |
| <i>Excess Return</i>                        |                      | -8.4%         | -1.5%          | -1.1%          | --             | -2.3%            |                       |
| <i>Alpha</i>                                |                      | -8.9%         | -0.9%          | -0.7%          | --             | -0.3%            |                       |
| <i>Pct. Rank vs. Lipper Mid-Cap Growth</i>  |                      | 86            | 61             | 49             | --             | 57               |                       |
| <b>SMRS Large-Cap Value</b>                 | <b>101,160,647</b>   | <b>-7.6%</b>  | <b>10.2%</b>   | <b>8.4%</b>    | <b>10.0%</b>   | <b>1.9%</b>      | <b>7/31/07</b>        |
| S&P 500 Value Index                         |                      | -3.1%         | 12.8%          | 11.0%          | 13.0%          | 3.6%             |                       |
| Style & Risk Adjusted Benchmark             |                      | -3.1%         | 11.4%          | 10.1%          | 12.6%          | 4.0%             |                       |
| Lipper Large Value                          |                      | -3.7%         | 12.3%          | 10.1%          | 12.4%          | 3.7%             |                       |
| <i>Excess Return</i>                        |                      | -4.4%         | -2.6%          | -2.6%          | -3.0%          | -1.8%            |                       |
| <i>Alpha</i>                                |                      | -4.5%         | -1.2%          | -1.7%          | -2.6%          | -2.1%            |                       |
| <i>Pct. Rank vs. Lipper Large-Cap Value</i> |                      | 93            | 84             | 86             | 95             | 92               |                       |
| <b>GW Capital</b>                           | <b>66,295,827</b>    | <b>-9.1%</b>  | <b>--</b>      | <b>--</b>      | <b>--</b>      | <b>-4.0%</b>     | <b>1/1/14</b>         |
| S&P 500 Value                               |                      | -3.5%         | --             | --             | --             | 4.0%             |                       |
| Style & Risk Adjusted Benchmark             |                      | -6.3%         | --             | --             | --             | 3.5%             |                       |
| Lipper Multi-Cap Value                      |                      | -5.7%         | --             | --             | --             | 1.2%             |                       |
| <i>Excess Return</i>                        |                      | -5.6%         | --             | --             | --             | -8.0%            |                       |
| <i>Alpha</i>                                |                      | -2.8%         | --             | --             | --             | -7.5%            |                       |
| <i>Pct. Rank vs. Lipper All-Cap Value</i>   |                      | 76            | --             | --             | --             | 91               |                       |
| <b>Concentrated All-Cap Growth</b>          | <b>25,536,840</b>    | <b>-14.5%</b> | <b>--</b>      | <b>--</b>      | <b>--</b>      | <b>-6.4%</b>     | <b>5/31/13</b>        |
| S&P 600                                     |                      | -2.0%         | --             | --             | --             | 10.8%            |                       |
| Style & Risk Adjusted Benchmark             |                      | -2.0%         | --             | --             | --             | 7.2%             |                       |
| Lipper Small-Cap Core                       |                      | -5.0%         | --             | --             | --             | 7.7%             |                       |
| <i>Excess Return</i>                        |                      | -12.5%        | --             | --             | --             | -17.1%           |                       |
| <i>Alpha</i>                                |                      | -12.5%        | --             | --             | --             | -13.5%           |                       |
| <i>Pct. Rank vs. Lipper Small-Cap Core</i>  |                      | 98            | --             | --             | --             | 100              |                       |

**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**FIXED INCOME REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



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



## EXECUTIVE SUMMARY

### Performance

| MPSERS Plan            | 1-Year | 3-Years | 5-Years | 7-Years | 10-Years |
|------------------------|--------|---------|---------|---------|----------|
| Long-Term Fixed Income | 1.4%   | 2.2%    | 3.8%    | 5.6%    | 5.3%     |
| Barclays Aggregate     | 0.6%   | 1.4%    | 3.3%    | 4.1%    | 4.5%     |
| Peer Median Return     | -0.3%  | 1.7%    | 3.9%    | 5.9%    | 5.0%     |
| Rank vs. Peers         | 11     | 30      | 56      | 63      | 41       |

- Long-Term Fixed Income outperformed the Barclay's Aggregate benchmark and its peer group on a one-year basis. The fixed income portfolio has outperformed the benchmark across all time periods. This outperformance was aided by an overweight to corporate bonds and structured securities over longer time periods and by strong security selection on a one-year basis. The shorter duration of the portfolio was a small contributor to relative performance on a one-year basis as long-term interest rates increased slightly.

### Strategy Update

- Allocation to Long-Term Fixed Income has remained stable for the last twelve months.
- Long-Term Fixed Income continues to look to increase the overall rate of return by allocating to securities with attractive risk-adjusted yields when the market allows. The portfolio currently maintains an out-of-benchmark exposure to high yield credit managers (11.1% of division assets) as well as securitized credit mandates (15.8% of division assets). This strategy increases the credit risk of the portfolio, however, this risk is offset by relatively lower interest rate risk due to the portfolio's lower duration.
- The portfolio addresses liquidity concerns by maintaining an allocation to U.S. Treasuries and U.S. TIPS (18.2% of portfolio assets). This government bond allocation also increases the portfolio's diversification.
- As opportunities present themselves, Long-Term Fixed Income will look to diversify from Barclay's Aggregate and Barclay's Investment Grade Credit focused investment strategies. This is due to the relatively lower yield levels and longer durations of these benchmarks when compared with historical levels. These changes will occur at the margin as the overall characteristics of the fund will continue to meet the diversification requirements of a core bond portfolio.

### Market Environment and Outlook

- The U.S. Treasury yield curve has flattened on a year-over-year (YOY) basis as long-term interest rates have declined while short-term interest rates have increased. Lower inflation, reduced global growth expectations, and central bank intervention have contained long-term interest rates. The Federal Reserve increased short-term interest rates as they tightened monetary policy during their December FOMC meeting. The 2-year/10-year U.S. Treasury spread decreased by roughly 28 basis points (bps) YOY to 1.2% as of December 31, 2015.

- The U.S. investment grade credit spreads widened during the 2015 calendar year by 35 bps to 165 bps. This widening was driven both by volatile markets in the previous quarter as well as a record amount of corporate bond issuance.
- High-yield spreads widened by 177 bps during the past year to 660 bps. The energy, metals, and mining sectors were the main contributors to this widening as weakness in the commodity markets persist. High-yield energy spreads ended the year at 1,296 bps. These spreads widened by 568 bps during the calendar year and are the highest spreads that the energy sector has experienced since the credit crisis.
- Global weakness continued to suppress inflation expectations in developed markets. The breakeven inflation expectation implied by the yield of the 10-year U.S. TIPS ended the year at 1.56%, lower than the stated 2% inflation target of the Federal Reserve.
- U.S. interest rates continued to trade at higher levels than those in many developed markets. This has been driven by the relative strength of the U.S. economy as well as the expected tightening of monetary policy by the Federal Reserve. This tightening has been contrasted by monetary easing and lower interest rates by many of the major global central banks. This relative yield pickup is highlighted by ten-year yields of 0.26% in Japan and 0.63% in Germany.
- The portfolio remains defensively positioned for interest rate increases. The duration remains short of the benchmark as we focus on intermediate securities. We have offset this short position by holding a larger allocation to securitized and corporate debt securities in order to increase the interest income of the portfolio.

## **Conclusion**

- Given the current level and shape of the yield curve, it seems appropriate to focus on intermediate duration securities. This area of the yield curve offers the best risk-adjusted return in this environment. We will continue to target investments that offer attractive yield pick-up for the portfolio as we believe that price appreciation opportunities are limited in a low yield environment. We will also look to maintain our overweight to securitized assets and high yield bonds within the portfolio.



# SMRS

## Long-Term Fixed Income

12/31/15

| Markets                       | Amount  | Total          | % of Total   |
|-------------------------------|---------|----------------|--------------|
| <b>Core</b> (in millions)     |         |                |              |
| LTFID Internal                | \$4,452 |                |              |
| Dodge & Cox                   | 220     |                |              |
| <b>Total Core</b>             |         | <b>\$4,672</b> | <b>64.0%</b> |
| <b>Credit</b>                 |         |                |              |
| Prudential                    | \$205   |                |              |
| <b>Total Credit</b>           |         | <b>\$205</b>   | <b>2.8%</b>  |
| <b>Securitized Debt</b>       |         |                |              |
| Mid West Securitized Ops      | \$668   |                |              |
| Principal Global              | 384     |                |              |
| Napier Park ABS Income        | 101     |                |              |
| <b>Total Securitized Debt</b> |         | <b>\$1,153</b> | <b>15.8%</b> |
| <b>High Yield</b>             |         |                |              |
| Columbia Management           | \$459   |                |              |
| Prudential High Yield         | 355     |                |              |
| <b>Total High Yield</b>       |         | <b>\$814</b>   | <b>11.1%</b> |
| <b>Tactical</b>               |         |                |              |
| Pyramis                       | \$256   |                |              |
| Loomis Core Plus              | 201     |                |              |
| <b>Total Tactical</b>         |         | <b>\$457</b>   | <b>6.3%</b>  |

**TOTAL**

**\$7,301**

**100.0%**



# SMRS

## Fixed Income Holdings Portfolio Characteristics

Benchmark: Barclays Aggregate

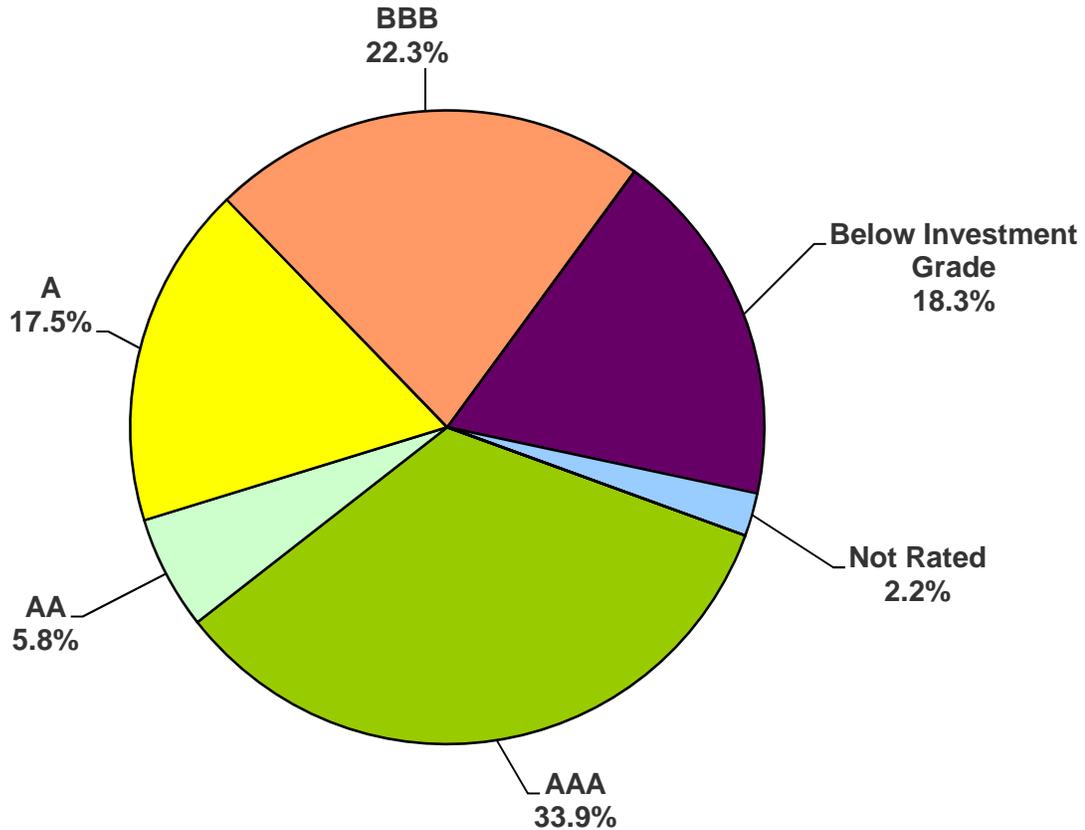
12/31/15

| <u>Characteristic</u>        | <u>Portfolio</u> | <u>Benchmark</u> | <u>Relative (%)</u> |
|------------------------------|------------------|------------------|---------------------|
| Average Life                 | 6.7              | 8.3              | 81                  |
| Average Life w/Cash Equiv.   | 6.5              | 8.3              | 78                  |
| Duration (Yrs)               | 5.3              | 6.0              | 88                  |
| Duration (Yrs) w/Cash Equiv. | 5.2              | 6.0              | 87                  |
| Coupon (%)                   | 3.6              | 3.3              | 109                 |
| Yield to Maturity (%)        | 3.9              | 2.6              | 150                 |
| Moody's Credit Rating        | A3               | Aa2              |                     |
| S&P Credit Rating            | BBB              | AA-              |                     |



# SMRS

## Fixed Income By Rating Total U.S. Long-Term Fixed Income 12/31/15



| Market Value in Millions |                |                |                  |                   |
|--------------------------|----------------|----------------|------------------|-------------------|
| 12/31/15                 |                |                |                  |                   |
|                          | <u>Assets</u>  | <u>Percent</u> | <u>Benchmark</u> | <u>Difference</u> |
| AAA                      | \$2,474        | 33.9%          | 71.5%            | -37.6%            |
| AA                       | 426            | 5.8%           | 5.2%             | 0.6%              |
| A                        | 1,275          | 17.5%          | 10.7%            | 6.8%              |
| BBB                      | 1,628          | 22.3%          | 11.5%            | 10.8%             |
| Not Rated                | 161            | 2.2%           | 1.1%             | 1.1%              |
| * Below Investment Grade | 1,337          | 18.3%          | 0.0%             | 18.3%             |
| <b>Total Investments</b> | <b>\$7,301</b> | <b>100.0%</b>  | <b>100.0%</b>    |                   |

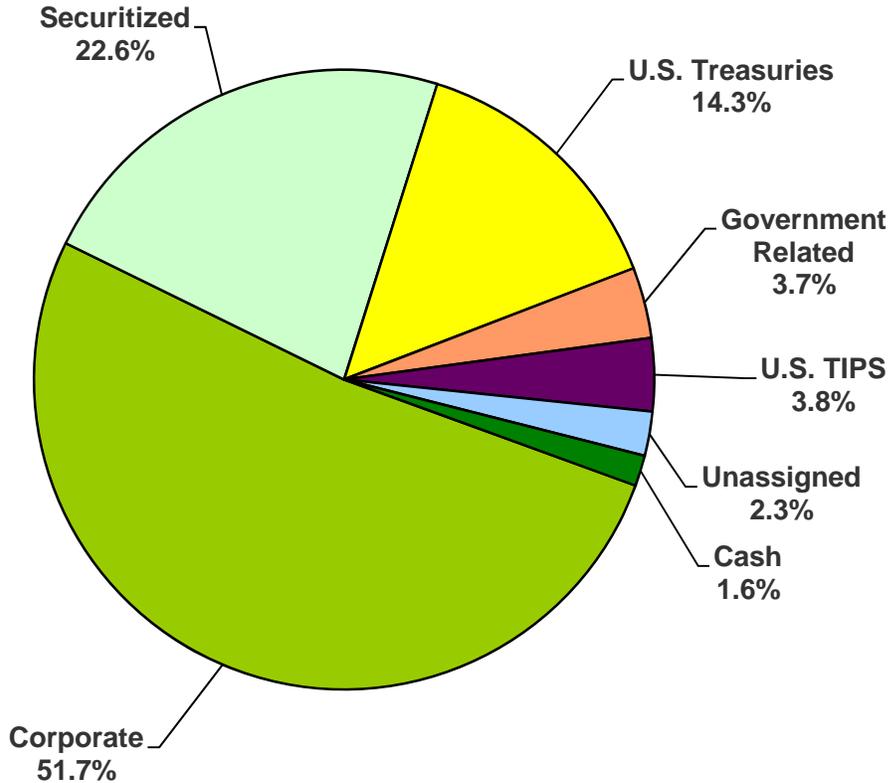
\* Comprised of approximately 12.6% High Yield Credit and 5.7% High Yield RMBS/ABS

Benchmark: Barclays US Aggregate



# SMRS

## Fixed Income By Asset Type Total U.S. Long-Term Fixed Income 12/31/15



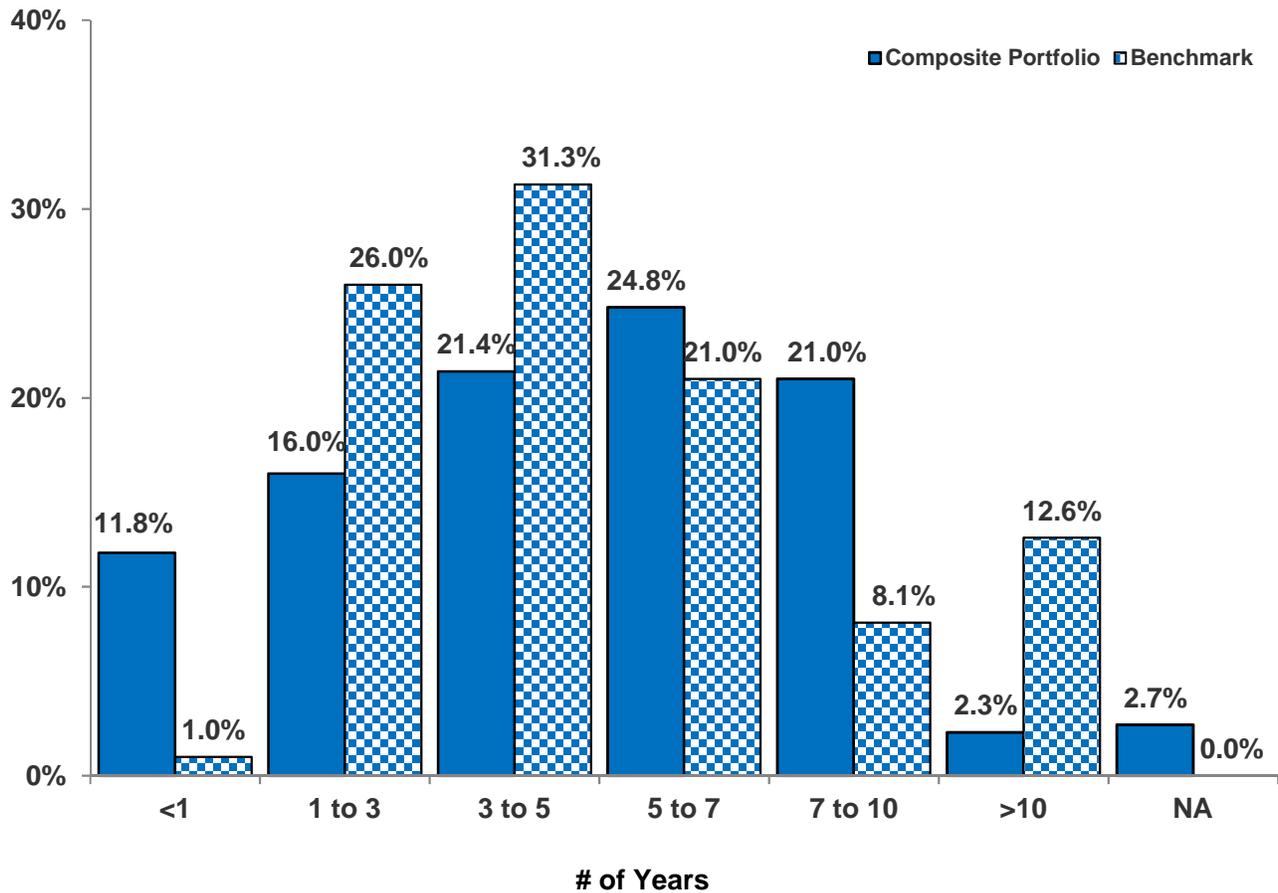
| Market Value in Millions |                       |                      |                      |                   |
|--------------------------|-----------------------|----------------------|----------------------|-------------------|
| 12/31/15                 |                       |                      |                      |                   |
|                          | <u>Assets</u>         | <u>Percent</u>       | <u>Benchmark</u>     | <u>Difference</u> |
| Corporate                | \$3,772               | 51.7%                | 24.2%                | 27.5%             |
| Securitized              | 1,650                 | 22.6%                | 31.1%                | -8.5%             |
| U.S. Treasuries          | 1,047                 | 14.3%                | 36.3%                | -22.0%            |
| Government Related       | 273                   | 3.7%                 | 8.4%                 | -4.7%             |
| U.S. TIPS                | 278                   | 3.8%                 | 0.0%                 | 3.8%              |
| Unassigned               | 165                   | 2.3%                 | 0.0%                 | 2.3%              |
| Cash                     | 116                   | 1.6%                 | 0.0%                 | 1.6%              |
| <b>Total Investments</b> | <b><u>\$7,301</u></b> | <b><u>100.0%</u></b> | <b><u>100.0%</u></b> |                   |

Benchmark: Barclays US Aggregate



# SMRS

## Duration Distribution Fixed Income Composite Versus Benchmark 12/31/15



Source: Factset

| Market Value in Millions |                |                  |                  |                     |                     |
|--------------------------|----------------|------------------|------------------|---------------------|---------------------|
| Duration                 | Assets         | Portfolio Weight | Benchmark Weight | Portfolio Duration* | Benchmark Duration* |
| <1                       | \$866          | 11.8%            | 1.0%             | 1.0                 | 1.2                 |
| 1 to 3                   | 1,165          | 16.0%            | 26.0%            | 2.3                 | 1.9                 |
| 3 to 5                   | 1,564          | 21.4%            | 31.3%            | 4.2                 | 4.0                 |
| 5 to 7                   | 1,808          | 24.8%            | 21.0%            | 6.1                 | 6.0                 |
| 7 to 10                  | 1,533          | 21.0%            | 8.1%             | 7.9                 | 8.1                 |
| >10                      | 167            | 2.3%             | 12.6%            | 15.1                | 15.3                |
| NA                       | 198            | 2.7%             | 0.0%             | 0.0                 | 0.0                 |
| <b>Total</b>             | <b>\$7,301</b> | <b>100.0%</b>    | <b>100.0%</b>    | <b>4.8</b>          | <b>5.6</b>          |

\* Effective Duration

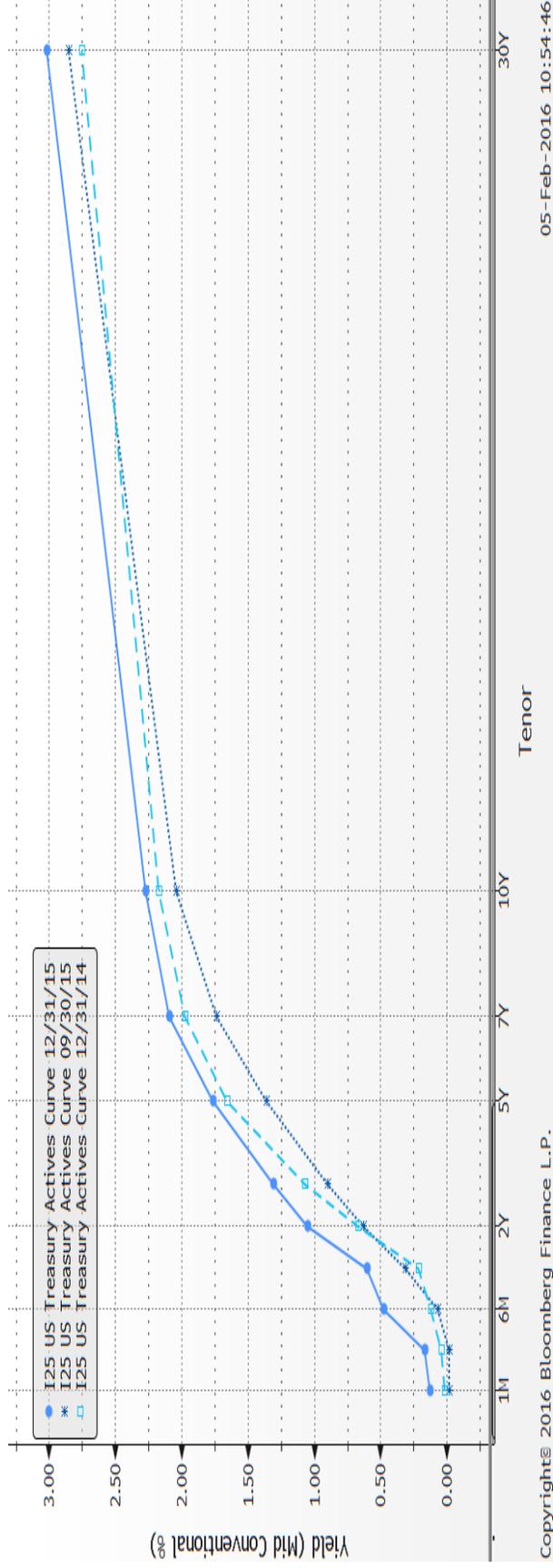
## SMRS Internal/External Manager Performance – Net of Fees

12/31/15

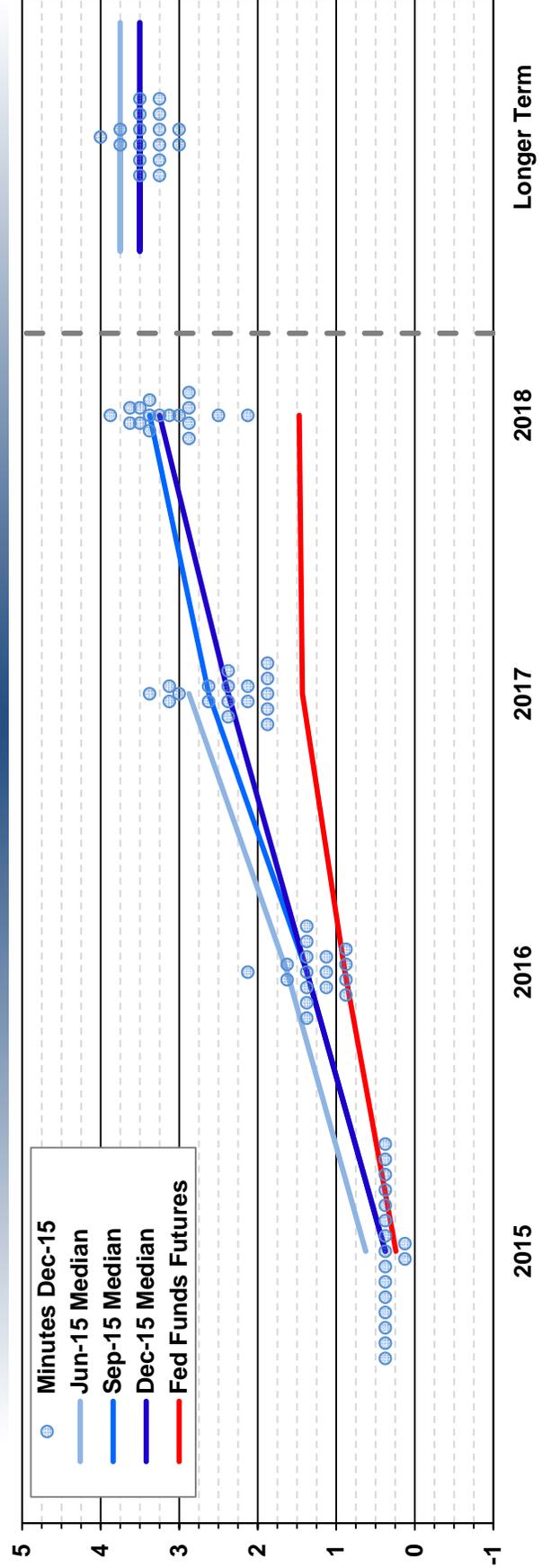
### Total Fixed Income Performance, Net of Fees (MPSERS)

|  | <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>\$7,300,858,126</b> | <b>1.3%</b>   | <b>2.1%</b>    | <b>3.7%</b>    | <b>5.5%</b>    | <b>5.2%</b>     |
| <i>Barclays Aggregate Bond Index</i>     | <i>N/A</i>             | <i>0.6%</i>   | <i>1.4%</i>    | <i>3.1%</i>    | <i>4.1%</i>    | <i>4.5%</i>     |
| <b>Internal Fixed Income</b>             | <b>\$4,451,941,059</b> | <b>2.0%</b>   | <b>2.2%</b>    | <b>3.6%</b>    | <b>5.1%</b>    | <b>5.2%</b>     |
| <b>External Fixed Income</b>             | <b>\$2,848,917,067</b> | <b>-0.1%</b>  | <b>1.4%</b>    | <b>4.1%</b>    | <b>6.1%</b>    | <b>--</b>       |
| <b>MetWest Securitized Opportunities</b> | 667,783,030            | 0.9%          | --             | --             | --             | --              |
| <b>Principal CMBS</b>                    | 384,049,612            | 1.6%          | 6.5%           | 8.9%           | 23.7%          | --              |
| <b>Pyramis Tactical Bond Fund</b>        | 256,481,766            | -1.4%         | --             | --             | --             | --              |
| <b>Prudential Investment Grade</b>       | 205,178,900            | -0.4%         | 2.0%           | 4.9%           | 7.6%           | --              |
| <b>Dodge &amp; Cox Core</b>              | 219,813,467            | -0.2%         | 2.1%           | 3.8%           | 5.7%           | --              |
| <b>Loomis Sayles CorePlus</b>            | 200,653,054            | -3.2%         | --             | --             | --             | --              |
| <b>Napier Park ABS Income</b>            | 101,452,288            | N/A           |                |                |                |                 |
| <i>Barclays Aggregate Bond Index</i>     | <i>N/A</i>             | <i>0.6%</i>   | <i>1.4%</i>    | <i>3.3%</i>    | <i>4.1%</i>    | <i>4.5%</i>     |
| <b>Columbia Management High Yield</b>    | 458,568,122            | 0.2%          | --             | --             | --             | --              |
| <b>Prudential High Yield</b>             | 354,936,828            | -1.2%         | --             | --             | --             | --              |
| <i>Barclays US HY BA/B 2% Cap</i>        | <i>N/A</i>             | <i>-2.7%</i>  | <i>--</i>      | <i>--</i>      | <i>--</i>      | <i>--</i>       |

# U.S. Yield Movement



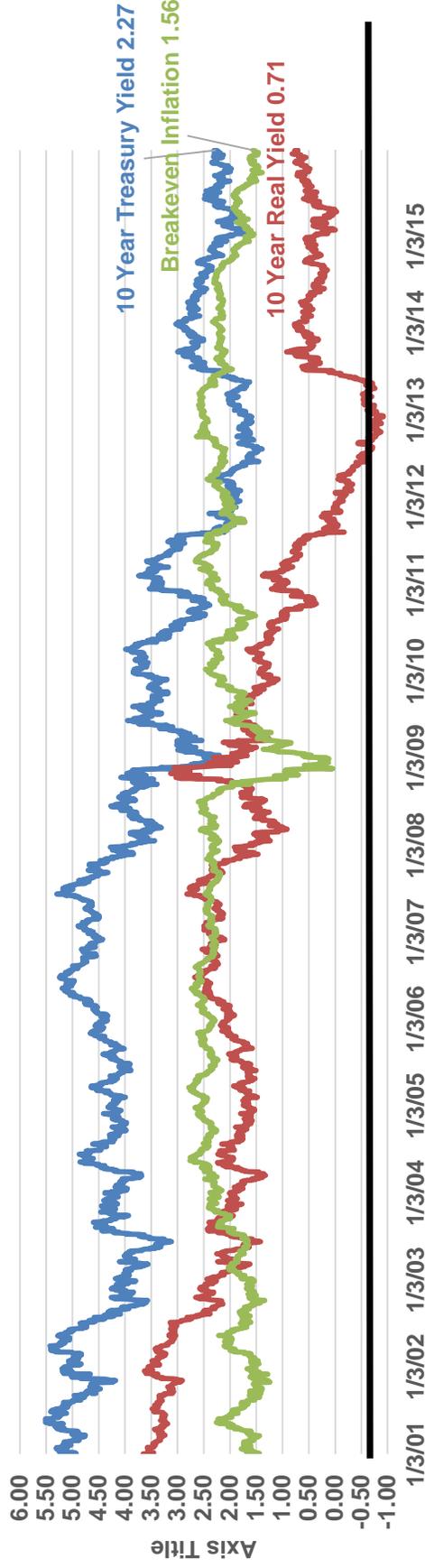
# FOMC DOT PLOT



## 2-Year/10-Year U.S. Treasury Spread

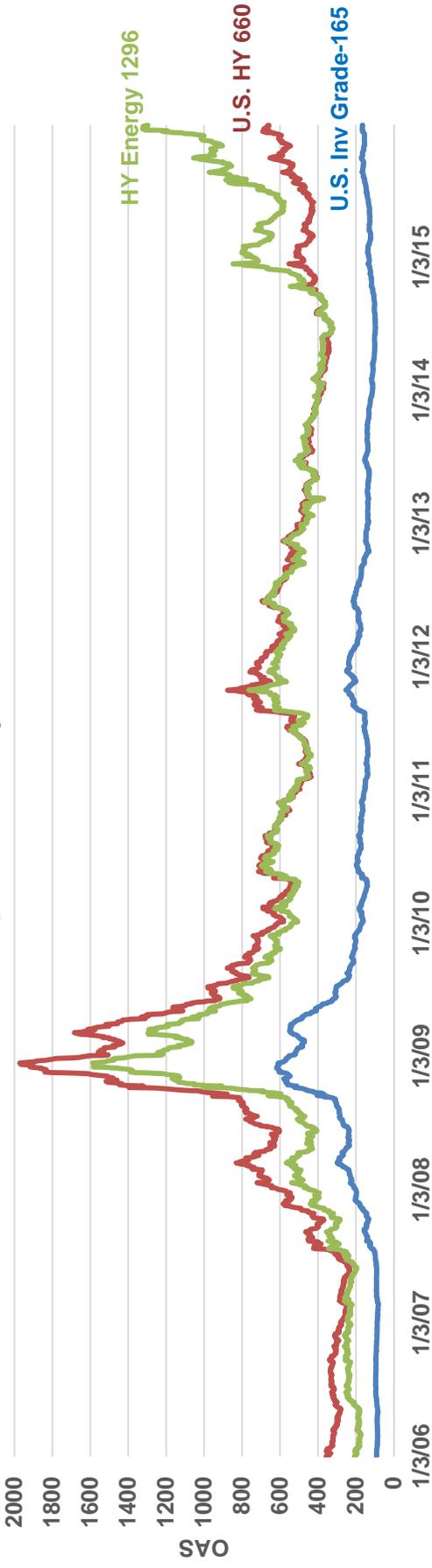


## U.S. Real Yields and Inflation Expectations

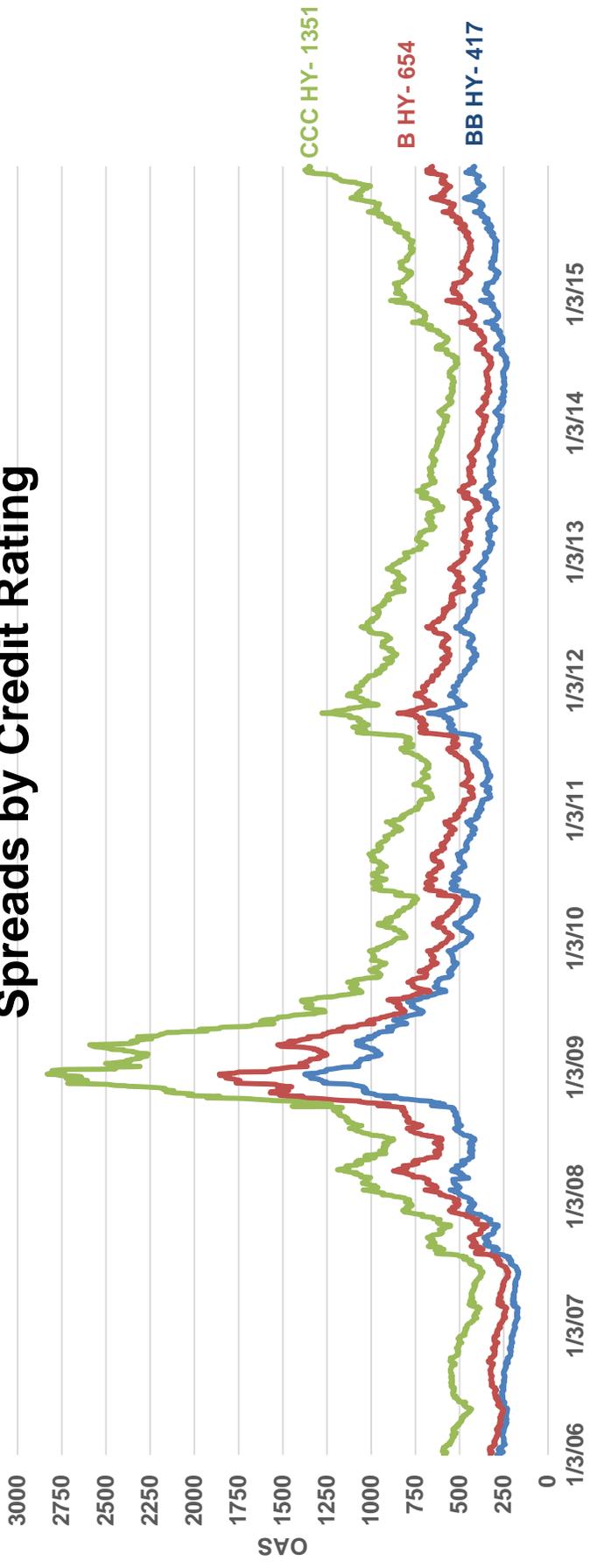


Source: Bloomberg

# HY Spreads by Sector

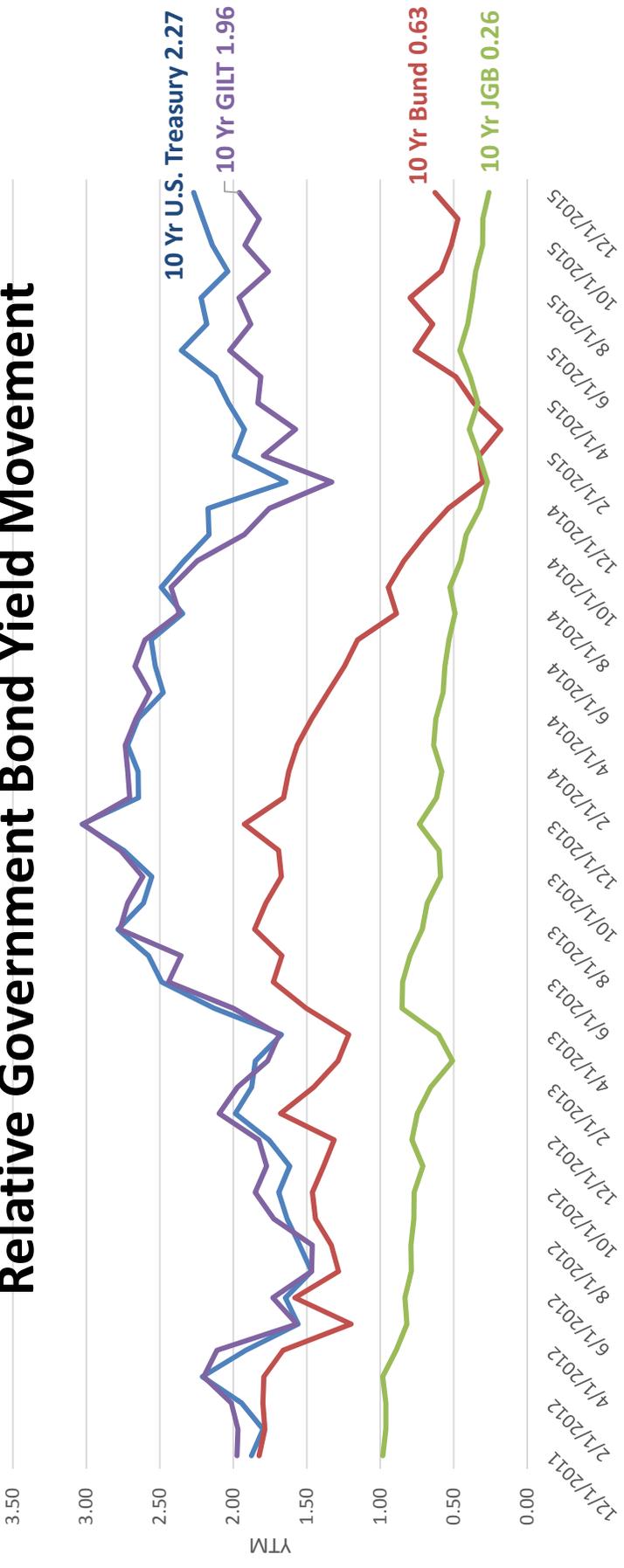


# Spreads by Credit Rating



Source: Bloomberg

# Relative Government Bond Yield Movement

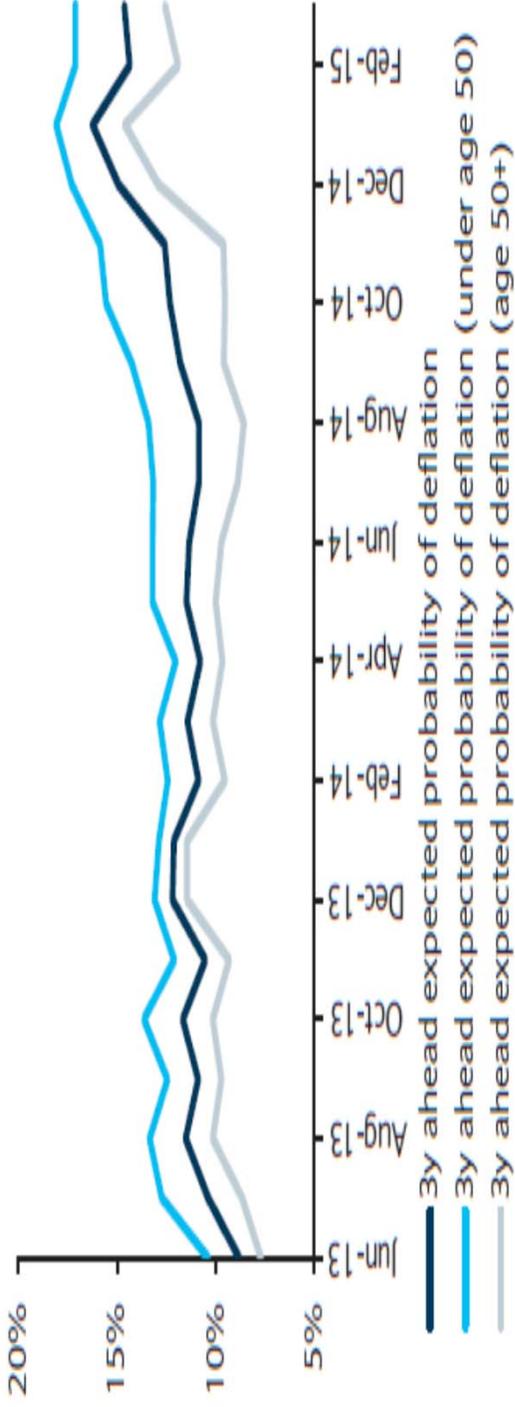


## Large EGB market ownership of the ECB in various QE extension/expansion scenarios

|         | % of eligible QE universe owned by ECB (including SMP) - Dec 15 | % of eligible QE universe owned by ECB in Mar 17 with €60bn QE | % of eligible QE universe owned by ECB in Sep 17 with €60bn QE | Scenario A: % of eligible QE universe owned by ECB in Mar 17 with QE increased from €60bn to €80bn from Jun 16 onwards | Scenario B: % of eligible QE universe owned by ECB in Mar 17 with QE increased from €60bn to €80bn from Jun 16 onwards |
|---------|---|--|--|--|--|
| Germany | 12.9%   | 29.2%  | 33.1%  | 33.0%  |  |
| France  | 7.5%  | 16.6%  | 18.5%  | 18.8%  |  |
| Italy   | 7.7%  | 14.0%  | 16.1%  | 15.8%  |  |
| Spain   | 11.7%   | 21.0%  | 22.5%  | 23.8%  |  |

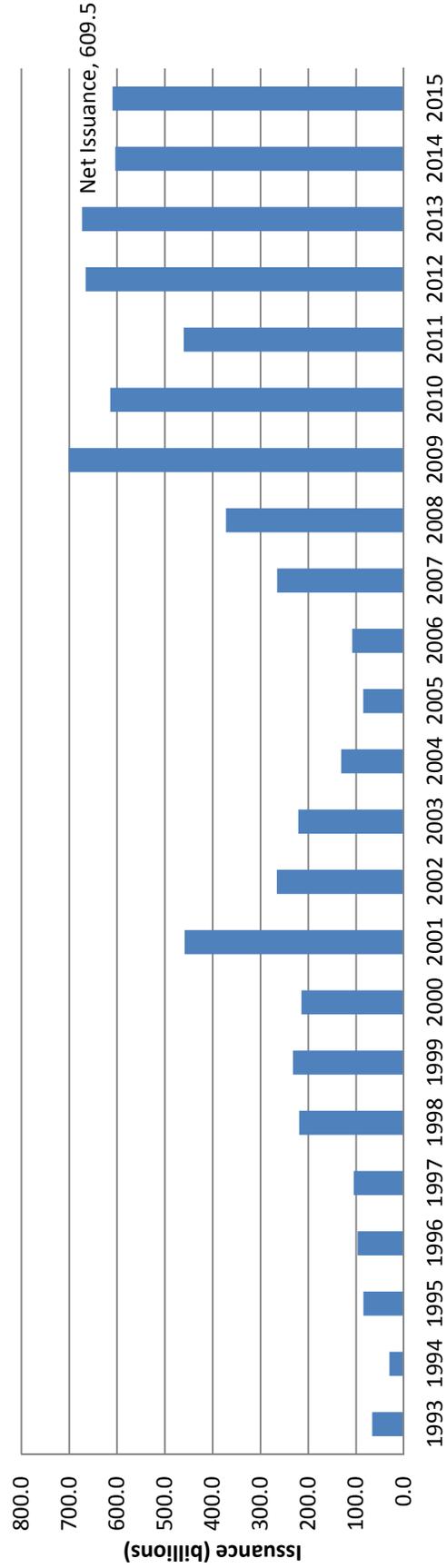
Source: Bloomberg, ECB, Barclays Research

### Expected probability of deflation



Source: *Survey of Consumer Expectations*. © 2013-2015 Federal Reserve Bank of New York (FRBNY). The SCE data are available without charge at [/microeconomics/sce/index](http://microeconomics/sce/index) and may be used subject to license terms posted below. FRBNY disclaims any responsibility or legal liability for this analysis and interpretation of *Survey of Consumer Expectations* data

### Net Corporate Bond Issuance





**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**INTERNATIONAL EQUITY REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



**Richard J. Holcomb, CFA  
Senior Investment Manager  
Quantitative Analysis Division**



## EXECUTIVE SUMMARY

### Performance

| <b>MPSERS Plan</b> | <b>1-Year</b> | <b>3-Years</b> | <b>5-Years</b> | <b>7-Years</b> | <b>10-Years</b> |
|--------------------|---------------|----------------|----------------|----------------|-----------------|
| Annualized Returns | -2.3%         | 3.3%           | 2.9%           | 8.7%           | 2.6%            |
| Benchmark Return   | -5.7%         | 1.8%           | 1.4%           | 6.4%           | 1.5%            |
| Peer Return        | -2.9%         | 3.8%           | 3.2%           | 8.7%           | 3.7%            |
| Rank vs. Peers     | 39            | 57             | 53             | 46             | 80              |

- International equity returns trailed U.S. returns in the fourth quarter, as slowing economic growth in China, and energy and commodities pricing weakness strongly impacted emerging markets. The returns in the developed market countries continued to lead the emerging market countries, reflecting ongoing ECB stimulus and the net benefits from declining oil prices. Canada and Australia were notable exceptions. The U.S. dollar outperformed the Euro and Pound, and gained even more strongly against the currencies of commodity-related emerging market countries. Chinese stocks were quite strong at the end of December, before growth concerns and a weaker Yuan led to their correction in early 2016. Significant geopolitical risks remain unresolved throughout the world, and most political reforms appear on hold. Our international portfolio returns have exceeded their internal benchmark over all time periods.
- Performance comparisons with peer group returns have improved, reflecting contributions from all three strategic investment approaches. Indexed investments have benefited from an overweight to smaller capitalization stocks. Stock Plus strategies returns have benefited from the shift to the MSCI EM overlay by PIMCO, and are positioned to return to the longer term positive performance trend. Active managers have taken advantage of a more favorable investment environment for their individual disciplines.
- Indexed investments represent 31.4% of international equity exposure, and had a return of 3.7% in the fourth quarter, and -2.1% for the year. The positive relative performance can be attributed to an overweight of small capitalization stocks in the selection of index fund exposure components.
- Internally-managed stock plus funds have experienced a headwind in dividend stocks and Libor note spreads in the fourth quarter, but have outperformed their benchmarks over longer periods. Currency hedging in internal fund swap agreements has had a very significant positive impact. All counterparties used for swap agreements, and all fixed income securities held as collateral continue to be rated investment grade.

- Active developed market fund managers had a return of 4.7% for the quarter, and 0.3% for the year. Manager returns made a significant positive contribution to returns, and are well diversified with a combination of fundamental analysis driven and quantitative factor strategies. The Wellington Emerging Markets Local Equity fund continued to contribute to excess returns through its focus on India and EM local demand beneficiaries. The cumulative active exposure is designed to produce a positive ensemble alpha through multiple expert processes.

## **Outlook**

- The outlook for international equities is positive based on expected slow improvement in the European economies, continued European Central Bank support and stimulus through QE actions, the competitive advantage of weaker currencies, and attractive valuation with the U.S. market. Emerging markets have been negatively affected by lower energy and commodity prices, and slower export growth. Political instability and currency devaluation stress are and will remain important issues.
- External managers, diversified by style, are benefiting from a better environment for active stock selection with wider universe return dispersion and more trading opportunities. Small and mid-cap international stocks are experiencing greater volatility, but will continue to have more attractive fundamentals than the larger State owned or influenced group. Stock Plus absolute return strategies have been impacted by interest rate and risk concerns, but can continue to achieve returns in excess of overlay costs.
- Emerging markets performance will continue to benefit from growing local consumer demand trends and access to technology. Positive governance, regulation, and financial system changes will gradually improve investment opportunities in many countries. Political instability, systemic corruption, rule of law, and unfavorable tax regimes will remain concerns. Infrastructure projects should stimulate emerging market economies, and China's plans for an Asian Infrastructure Investment Bank could be very supportive of regional and global trade. Commodity rates will improve as capacity is reduced.

## **Investment Plan**

- Move toward longer-term asset allocation objectives as a slow global recovery develops and relative valuations of international markets remain positive.
- Take advantage of opportunities to enhance returns in internal stock plus strategies to achieve absolute returns in excess of equity overlay costs. Collaborate with internal fixed income and equities staff for an effective hybrid approach to security research and selection.
- Prepare for derivative market regulatory and structural changes, and focus on further development of counterparty relationships as a strategic advantage.



# SMRS

## International Equities

12/31/15

| Markets                      | Amount  | Total          | % of Total   |
|------------------------------|---------|----------------|--------------|
| <b>Indexed</b> (in millions) |         |                |              |
| SSgA                         | \$1,756 |                |              |
| Vanguard                     | 1,084   |                |              |
| <b>Total Indexed</b>         |         | <b>\$2,840</b> | <b>31.4%</b> |
| <b>Stock Plus</b>            |         |                |              |
| Internal Swaps               | \$1,653 |                |              |
| PIMCO                        | 1,315   |                |              |
| <b>Total Stock Plus</b>      |         | <b>\$2,968</b> | <b>32.9%</b> |
| <b>Active</b>                |         |                |              |
| Los Angeles Capital          | \$885   |                |              |
| Wellington                   | 756     |                |              |
| Marathon London              | 348     |                |              |
| Effissimo                    | 250     |                |              |
| Lazard                       | 214     |                |              |
| T. Rowe Price                | 208     |                |              |
| Templeton                    | 199     |                |              |
| MFS                          | 185     |                |              |
| SSgA                         | 181     |                |              |
| <b>Total Active</b>          |         | <b>\$3,226</b> | <b>35.7%</b> |

**TOTAL**

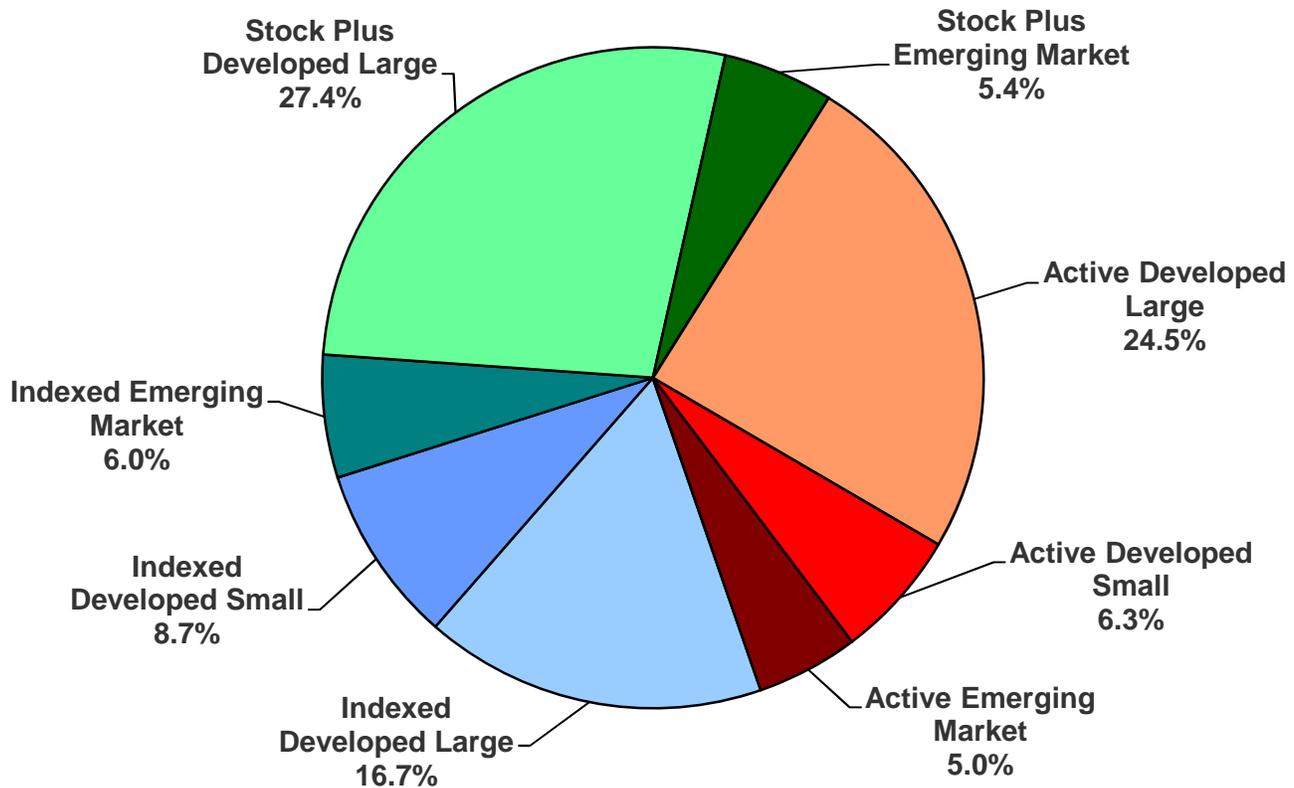
**\$9,034**

**100.0%**



# SMRS

## International Equity Exposure By Category 12/31/15



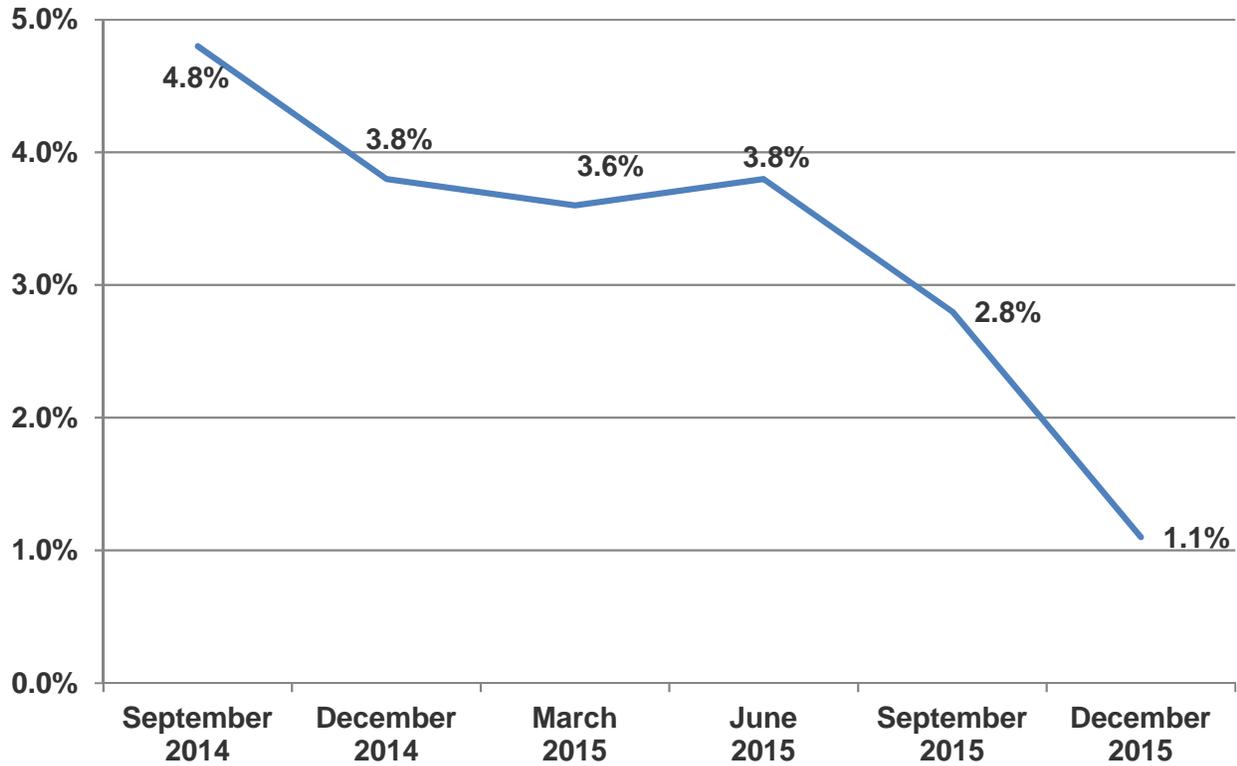
| Market Value in Millions          |                |               |                |               |
|-----------------------------------|----------------|---------------|----------------|---------------|
|                                   | 12/31/15       |               | 9/30/15        |               |
| <b>Indexed</b>                    |                |               |                |               |
| Developed Large                   | \$1,513        | 16.7%         | \$1,455        | 17.8%         |
| Developed Small                   | 785            | 8.7%          | 742            | 9.1%          |
| Emerging Market                   | 542            | 6.0%          | 543            | 6.6%          |
| <b>Total Indexed Equity</b>       | <b>\$2,840</b> | <b>31.4%</b>  | <b>\$2,740</b> | <b>33.5%</b>  |
| <b>Stock Plus</b>                 |                |               |                |               |
| Developed Large                   | \$2,478        | 27.4%         | \$2,357        | 28.7%         |
| Emerging Market                   | 490            | 5.4%          | 489            | 6.0%          |
| <b>Total Stock Plus Equity</b>    | <b>\$2,968</b> | <b>32.8%</b>  | <b>\$2,846</b> | <b>34.7%</b>  |
| <b>Active</b>                     |                |               |                |               |
| Developed Large                   | \$2,213        | 24.5%         | \$1,619        | 19.8%         |
| Developed Small                   | 565            | 6.3%          | 539            | 6.6%          |
| Emerging Market                   | 448            | 5.0%          | 446            | 5.4%          |
| <b>Total Active Equity</b>        | <b>\$3,226</b> | <b>35.8%</b>  | <b>\$2,604</b> | <b>31.8%</b>  |
| <b>Total International Equity</b> | <b>\$9,034</b> | <b>100.0%</b> | <b>\$8,190</b> | <b>100.0%</b> |

Michigan Department of Treasury, Bureau of Investments



# SMRS

## Emerging Market Allocation SMRS Versus Benchmark 12/31/15



### Investments by Region

| <u>Date</u>    | <u>EM Allocation<br/>SMRS Relative to Benchmark*</u> |
|----------------|--|
| September 2014 | 4.8%   |
| December 2014  | 3.8%   |
| March 2015     | 3.6%   |
| June 2015      | 3.8%   |
| September 2015 | 2.8%   |
| December 2015  | 1.1%   |

\*As measured by Factset Equity Analytics



SMRS

## Active International Equities Composite 12/31/15

| <b>Date:</b>           | <b><u>12/31/15</u></b> | <b><u>9/30/15</u></b> | <b><u>6/30/15</u></b> | <b><u>3/31/15</u></b> |
|------------------------|------------------------|-----------------------|-----------------------|-----------------------|
| Assets (\$million):    | \$3,226                | \$2,604               | \$2,906               | \$2,848               |
| Numbers of Securities: | 1,775                  | 1,717                 | 1,684                 | 1,686                 |
| Active Share:          | 59%                    | 63%                   | 55%                   | 59%                   |

Benchmark: MSCI ACWI ex USA

Description: The Active International Equities Composite represents the profile of cumulative investments by active international managers with developed market large and small cap, and emerging market mandates. The manager returns are well diversified and reflect a combination of fundamental analysis driven and quantitative management approaches. The cumulative exposure, supported by multiple expert processes, is constructed to produce a positive, long-term ensemble alpha with control of assumed risk.

| <b>Characteristics:</b>                      | <b><u>SMRS</u></b> | <b><u>ACWI ex USA</u></b> |
|--|--------------------|---------------------------|
| Weighted Average Capitalization (\$billion): | \$3.9              | \$12.9                    |
| Trailing 12-month P/E:                       | 15.1x              | 16.9x                     |
| Forecast P/E:                                | 15.5x              | 14.5x                     |
| Price/Book:                                  | 1.5x               | 1.5x                      |
| Beta:  | 0.83               | 1.00                      |
| Dividend Yield:                              | 2.6%               | 3.1%                      |
| 3-5 Year EPS Growth Estimate:                | 8.5%               | 10.1%                     |
| Return on Equity:                            | 10.2%              | 9.2%                      |

### TOP TEN HOLDINGS – Active International Equities 12/31/15

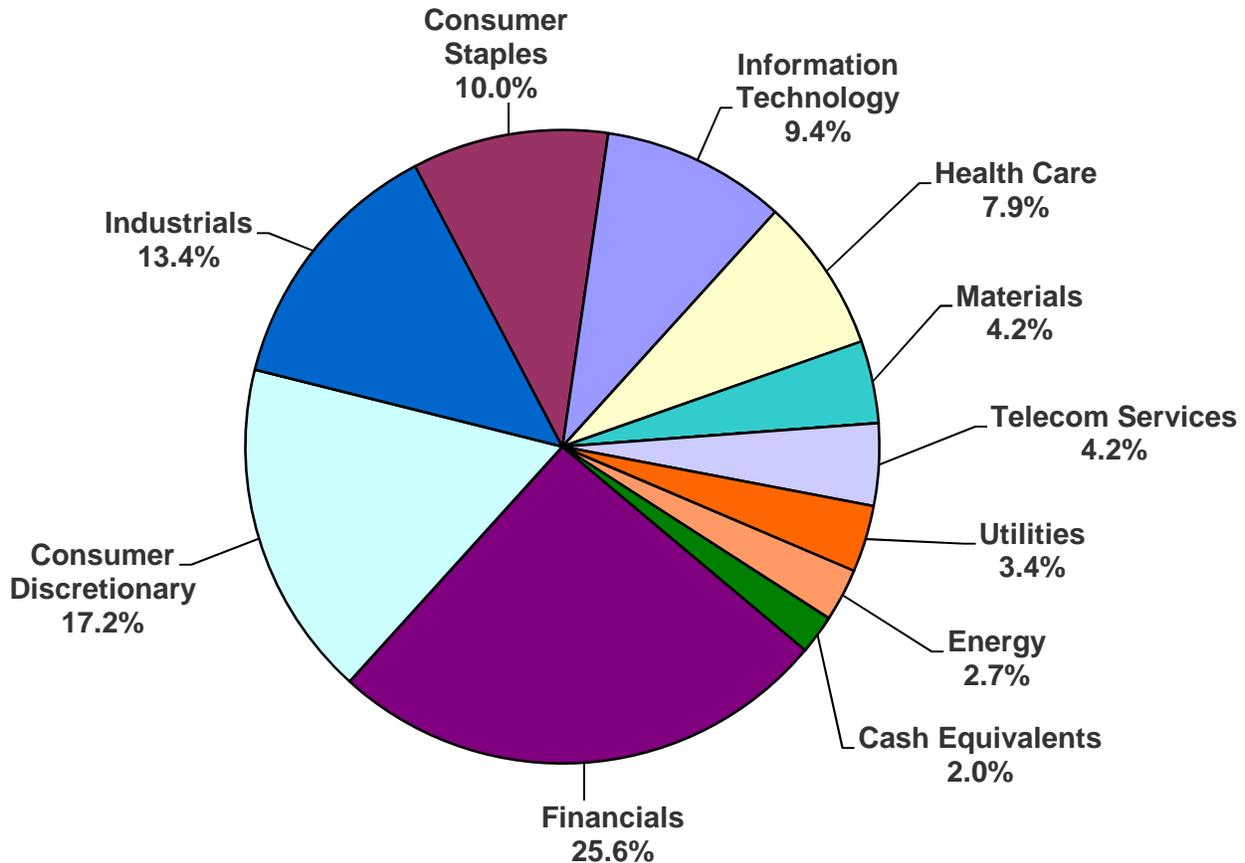
|                                 | <b>Portfolio Weight</b> | <b>Market Value<br/>(Millions)</b> |
|---------------------------------|-------------------------|------------------------------------|
| Ricoh Company, Ltd.             | 2.0%                    | \$63.3                             |
| Yamada Denki Co., Ltd.          | 1.5%                    | 47.5                               |
| Novartis AG                     | 0.9%                    | 28.8                               |
| Nissan Shatai Co., Ltd.         | 0.8%                    | 26.1                               |
| Kawasaki Kisen Kaisha, Ltd.     | 0.8%                    | 24.7                               |
| Anheuser-Busch InBev Sa         | 0.5%                    | 17.3                               |
| Adecco S.A.                     | 0.5%                    | 16.5                               |
| Lonza Group AG                  | 0.5%                    | 16.2                               |
| TOC Co., Ltd.                   | 0.5%                    | 16.0                               |
| Direct Line Insurance Group Plc | <u>0.5%</u>             | <u>15.5</u>                        |
| <b>TOTAL</b>                    | <b><u>8.4%</u></b>      | <b><u>\$271.9</u></b>              |



# SMRS

## Active International Equity By Sector

12/31/15



### Market Value in Millions

12/31/15

|                        | <u>Assets</u>  | <u>Percent</u> | <u>Benchmark</u> | <u>Difference</u> |
|------------------------|----------------|----------------|------------------|-------------------|
| Financials             | \$826          | 25.6%          | 27.1%            | -1.5%             |
| Consumer Discretionary | 555            | 17.2%          | 12.1%            | 5.1%              |
| Industrials            | 432            | 13.4%          | 11.2%            | 2.2%              |
| Consumer Staples       | 323            | 10.0%          | 10.8%            | -0.8%             |
| Information Technology | 303            | 9.4%           | 8.3%             | 1.1%              |
| Health Care            | 255            | 7.9%           | 9.5%             | -1.6%             |
| Materials              | 135            | 4.2%           | 6.4%             | -2.2%             |
| Telecom Services       | 135            | 4.2%           | 5.2%             | -1.0%             |
| Utilities              | 110            | 3.4%           | 3.5%             | -0.1%             |
| Energy                 | 87             | 2.7%           | 5.9%             | -3.2%             |
| Total Investments      | \$3,161        | 98.0%          | 100.0%           |                   |
| Cash Equivalents       | 65             | 2.0%           | 0.0%             | 2.0%              |
| <b>Total</b>           | <b>\$3,226</b> | <b>100.0%</b>  | <b>100.0%</b>    |                   |

Benchmark: MSCI ACWI ex USA

**International Active Manager Performance - Net of Fees**  
12/31/15

| <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 Date</u> |
|--|----------------------|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>PIMCO Intl StocksPlus TR Strategy</b><br>MSCI EAFE Net Div Index (unhedged)               | <b>\$941,616,246</b> | <b>-4.1%</b><br>-0.8%   | <b>3.2%</b><br>5.0%   | <b>4.8%</b><br>3.6%   | <b>--</b><br>--       | <b>10/1/10</b>        |
| <b>LA Capital World</b><br>MSCI ACWI Ex-US   | <b>617,608,926</b>   | <b>--</b>               | <b>--</b>             | <b>--</b>             | <b>--</b>             | <b>10/30/15</b>       |
| <b>Wellington Intl Research Equity</b><br>S&P BMI World Ex-US Index                          | <b>575,207,397</b>   | <b>0.5%</b><br>-1.6%    | <b>6.2%</b><br>4.4%   | <b>4.2%</b><br>3.0%   | <b>9.7%</b><br>8.5%   | <b>12/1/05</b>        |
| <b>Pimco EM Stock Plus</b><br>MSCI Emerging Market Index                                     | <b>373,265,581</b>   | <b>--</b>               | <b>--</b>             | <b>--</b>             | <b>--</b>             | <b>3/31/15</b>        |
| <b>Marathon-London Intl Fund</b><br>MSCI EAFE Index  | <b>348,273,321</b>   | <b>6.5%</b><br>-0.8%    | <b>9.4%</b><br>5.0%   | <b>--</b><br>--       | <b>--</b><br>--       | <b>2/1/12</b>         |
| <b>LA Capital Emerging Market</b><br>MSCI Emerging Market Index                              | <b>267,409,951</b>   | <b>-15.7%</b><br>-14.9% | <b>-6.4%</b><br>-6.8% | <b>-3.4%</b><br>-4.8% | <b>--</b><br>--       | <b>12/8/09</b>        |
| <b>Effissimo Capital Management Japan</b><br>MSCI EAFE Net Div Index (unhedged)              | <b>249,999,999</b>   | <b>--</b>               | <b>--</b>             | <b>--</b>             | <b>--</b>             | <b>10/30/15</b>       |
| <b>Lazard Wilmington Intl Equity Portfolio</b><br>MSCI EAFE Net Div Index (unhedged)         | <b>213,525,000</b>   | <b>1.9%</b><br>-0.8%    | <b>--</b><br>--       | <b>--</b><br>--       | <b>--</b><br>--       | <b>5/1/14</b>         |
| <b>T Rowe Price Intl Core</b><br>MSCI EAFE Index   | <b>208,321,894</b>   | <b>-2.3%</b><br>-0.8%   | <b>--</b><br>--       | <b>--</b><br>--       | <b>--</b><br>--       | <b>4/1/14</b>         |
| <b>Templeton Intl Smaller Companies Fund</b><br>MSCI All Country World Index Ex-US Small Cap | <b>198,646,440</b>   | <b>3.0%</b><br>2.6%     | <b>7.2%</b><br>5.6%   | <b>--</b><br>--       | <b>--</b><br>--       | <b>6/1/12</b>         |
| <b>MFS Intl Small Cap Equity Fund</b><br>MSCI All Country World Index Ex-US Small Cap        | <b>185,068,100</b>   | <b>3.0%</b><br>0.4%     | <b>6.7%</b><br>4.7%   | <b>--</b><br>--       | <b>--</b><br>--       | <b>5/1/12</b>         |
| <b>Wellington Emerging Local Equity</b><br>MSCI Emerging Market Index                        | <b>181,467,630</b>   | <b>-8.8%</b><br>-14.9%  | <b>1.3%</b><br>-6.8%  | <b>--</b><br>--       | <b>--</b><br>--       | <b>12/1/11</b>        |
| <b>SSGA Small Cap Intl Alpha Strategy</b><br>S&P Developed Ex-US Small Cap                   | <b>181,174,615</b>   | <b>9.10%</b><br>5.5%    | <b>10.9%</b><br>8.5%  | <b>8.0%</b><br>5.1%   | <b>14.1%</b><br>12.7% | <b>5/1/07</b>         |

**International Indexed Manager Performance, Net of Fees**  
12/31/15

| <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 Date</u> |
|--|----------------------|-------------------------|-----------------------|-----------------------|-----------------|-----------------------|
| <b>SSgA PMI Fund</b><br>S&P Developed Ex-US Large/Midcap               | <b>\$971,222,012</b> | <b>-2.6%</b><br>-3.1%   | <b>3.7%</b><br>3.6%   | <b>2.9%</b><br>2.6%   | <b>--</b><br>-- | <b>4/1/10</b>         |
| <b>SSgA EMI Fund - Europe/Pacific</b><br>S&P EPAC Small Cap            | <b>785,011,305</b>   | <b>8.9%</b><br>8.6%     | <b>10.5%</b><br>10.3% | <b>6.9%</b><br>6.5%   | <b>--</b><br>-- | <b>4/1/10</b>         |
| <b>Vanguard Developed Mkts Fund</b><br>Spliced Developed Ex-US Index * | <b>542,226,752</b>   | <b>-0.2%</b><br>-0.3%   | <b>4.8%</b><br>5.2%   | <b>3.9%</b><br>3.7%   | <b>--</b><br>-- | <b>4/1/10</b>         |
| <b>Vanguard Emerging Market</b><br>Spliced Emerging Market Index **    | <b>541,625,640</b>   | <b>-15.3%</b><br>-15.4% | <b>-6.7%</b><br>-6.4% | <b>-4.8%</b><br>-4.6% | <b>--</b><br>-- | <b>7/1/09</b>         |

\* Spliced Developed Ex-US Index: MSCI EAFE Index through May 29, 2013; FTSE Developed Ex North America Index through December 20, 2015; FTSE Developed All-Cap Ex-US Transition Index thereafter. Benchmark returns are adjusted for withholding taxes.

\*\* Spliced Emerging Market Index: Select Emerging Markets Index through August 23, 2006; MSCI Emerging Markets Index through January 9, 2013; FTSE Emerging Transition Index through June 27, 2013; FTSE Emerging Index through November 1, 2015; and FTSE Emerging Markets All-Cap China A Transition Index thereafter. Benchmark returns are adjusted for withholding taxes.

**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**PRIVATE EQUITY REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



**Peter A. Woodford  
Senior Investment Manager  
Private Equity Division**



## EXECUTIVE SUMMARY

### Performance

| <b>MPSERS Plan</b> | <b>1-Year</b> | <b>3-Years</b> | <b>5-Years</b> | <b>7-Years</b> | <b>10-Years</b> |
|--------------------|---------------|----------------|----------------|----------------|-----------------|
| Annualized Returns | 10.6%         | 15.1%          | 15.1%          | 13.0%          | 12.7%           |
| Benchmark Return   | 2.4%          | 15.5%          | 16.4%          | 18.4%          | 10.9%           |
| Peer Median Return | 5.5%          | 11.2%          | 10.5%          | 9.5%           | 9.6%            |
| Rank vs. Peers     | 15            | 17             | 5              | 5              | 6               |

- The Private Equity Division annualized returns have been strong in absolute terms for all time periods over the past ten years; returning 10.6% and 12.7% over the past one and ten years respectively.
- The Private Equity Division annualized returns have been strong relative to peer median returns for all time periods over the past ten years, ranking in the top 6% and 10% of peers over the past one and ten years respectively.
- It is not unusual for private equity returns to lag the public market benchmark return in a strong up market; the past several years have been no exception. However, over the past ten years, a full market cycle, the Private Equity Division has delivered 5.4% annualized excess returns over the S&P 500 (10-year S&P 500 return 7.3%).

### Strategy Update

Over the past twelve months ending 12/31/15, the Private Equity Division returned approximately \$1.2 billion, net of contributions, to the pension fund. This trend has continued into the first quarter of 2016, albeit at a slower pace. A low interest rate environment favors higher prices, asset sellers rather than buyers, and excess distributions over capital calls. The target allocation remains 18%.

- The Private Equity Division has approximately \$4.9 billion in unfunded commitments. New commitments closed during the quarter include:
  - \$175 million to Warburg Pincus XII: diversified venture, growth and buyout fund
  - \$125 million to TSG7: middle market buyout fund
  - \$100 million to Dover Street IX: secondary investment fund
  - \$75 million to Harvest Partners VII: middle market buyout fund
  - \$50 million to FIMI Opportunity 6: leveraged buyout/distressed fund
  - \$50 million to Riverside IV: lower middle market buyout fund
  - \$50 million to Shamrock Growth Capital IV: Low-middle market buyout fund
  - \$50 million to Axiom Asia IV: Asia fund of funds manager targeting growth manager's
- The Private Equity Division strategy is focused on the asset classes of: leveraged buyouts, venture, distressed debt, mezzanine debt, and special situations. The division is overweight leveraged buyouts. This strategy has resulted in higher, more consistent long-term returns (10+ years) vs. other asset classes.

- The Private Equity Division continues to allocate to the other asset classes for portfolio diversification and to capitalize on cyclical market dislocations.
- Recently, the Private Equity Division began evaluating co-investments and secondary opportunities to enhance returns and to average down fees.

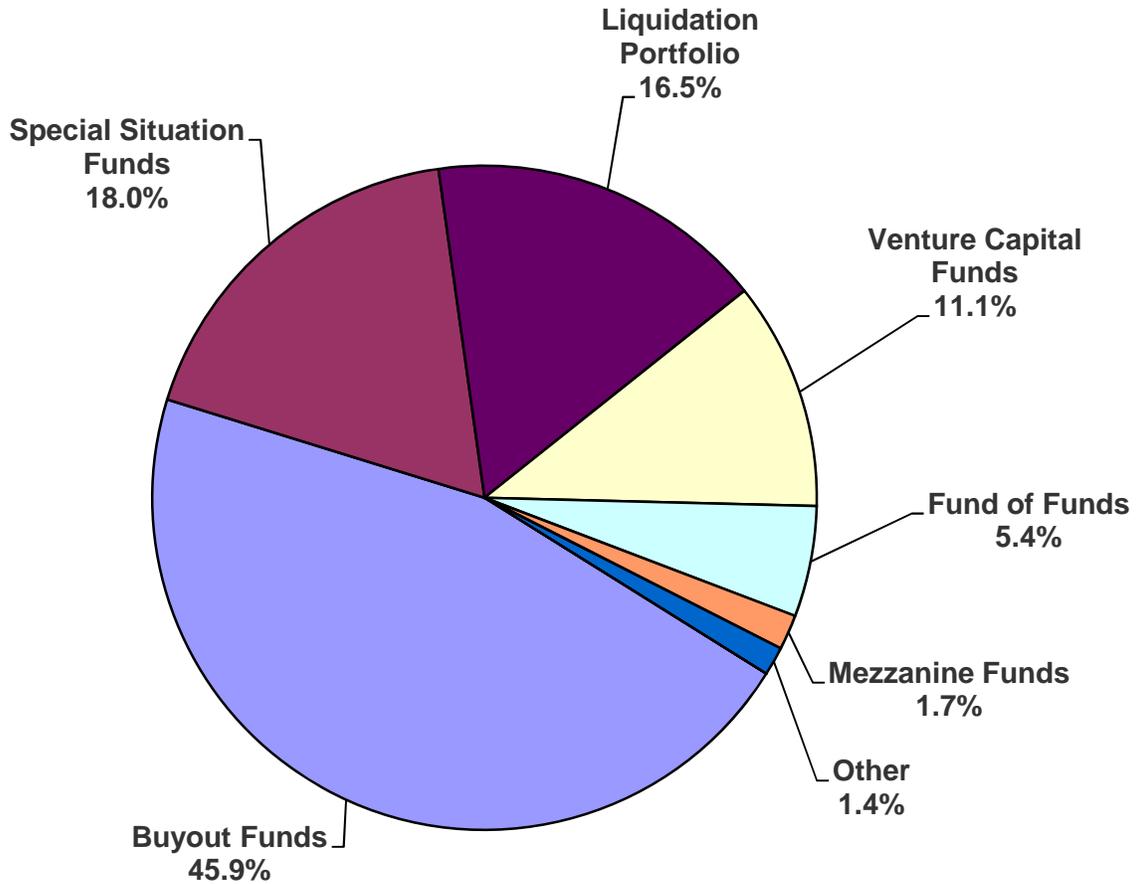
### **Market Environment**

- The fourth quarter was characterized by significant market volatility, a Fed interest rate hike of 25 basis points, tightening in the leveraged finance markets and high acquisition multiples. Weakness in the equity markets and market volatility caused downward pressure on valuations and raise the following question: is this a temporary dip in the market or something more permanent? Some recent transactions by buyout firms indicate additional correction is expected, as targets are more defensive in nature and have higher downside protection. The biggest challenge continues to be finding good value relative to growth and paying reasonable entry multiples for these transactions.
- Secondary pricing remained strong throughout 2015, however, due in part to heightened volatility in global equity and commodity markets, secondary pricing moderated down slightly in the second half of the year. Buyout funds and venture funds priced at 91% and 74% of NAV respectively, during the second half of 2015.



# SMRS Private Equity

12/31/15

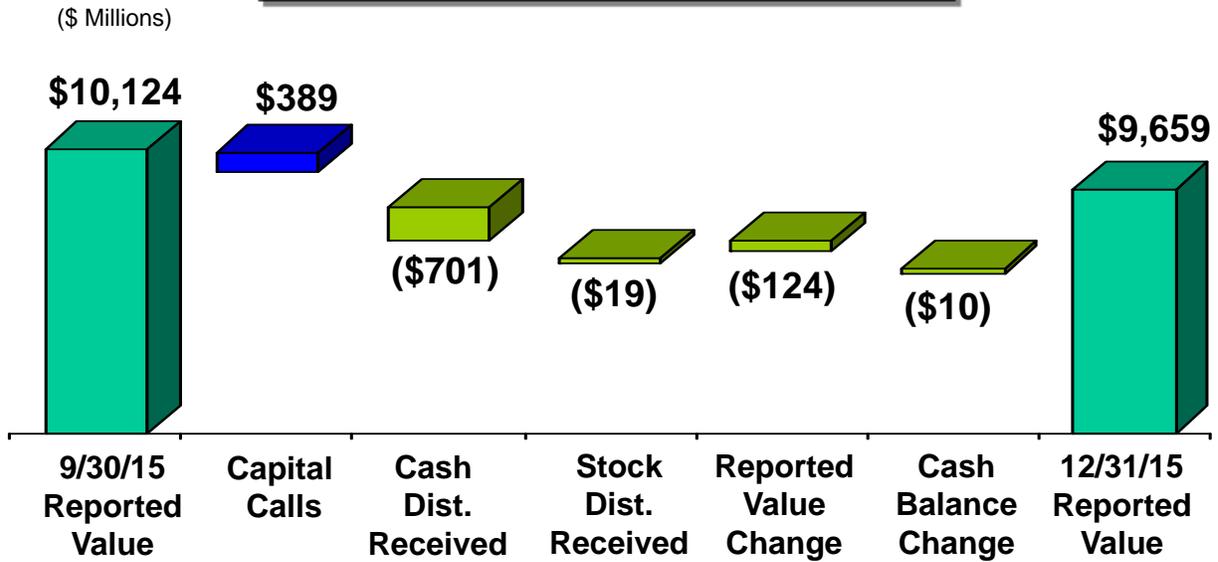


| Market Value in Millions |                |               |                 |               |
|--------------------------|----------------|---------------|-----------------|---------------|
|                          | 12/31/15       |               | 9/30/15         |               |
| Buyout Funds             | \$4,430        | 45.9%         | \$5,541         | 54.7%         |
| Special Situation Funds  | 1,743          | 18.0%         | 1,919           | 19.0%         |
| Liquidation Portfolio    | 1,594          | 16.5%         | 270             | 2.6%          |
| Venture Capital Funds    | 1,073          | 11.1%         | 1,562           | 15.4%         |
| Fund of Funds            | 520            | 5.4%          | 526             | 5.2%          |
| Mezzanine Funds          | 168            | 1.7%          | 164             | 1.6%          |
| Other                    | 131            | 1.4%          | 142             | 1.5%          |
| <b>Total</b>             | <b>\$9,659</b> | <b>100.0%</b> | <b>\$10,124</b> | <b>100.0%</b> |

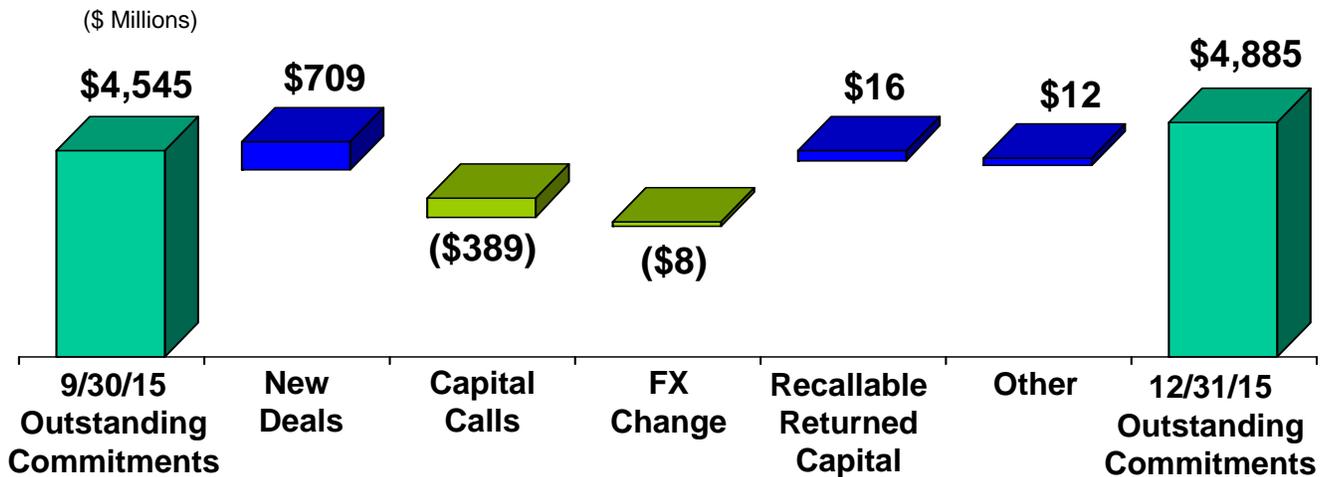


# SMRS Private Equity 12/31/15

## Invested Commitments



## Outstanding Commitments



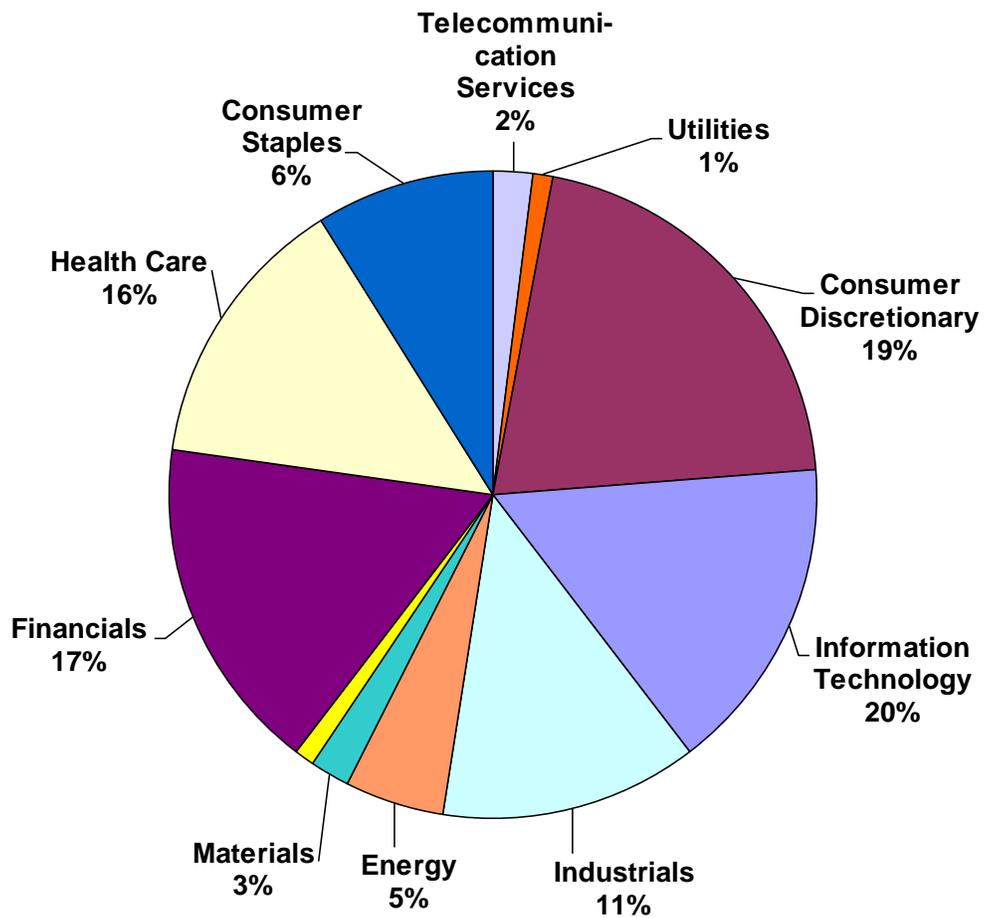


# SMRS

## Private Equity

### 12/31/2015

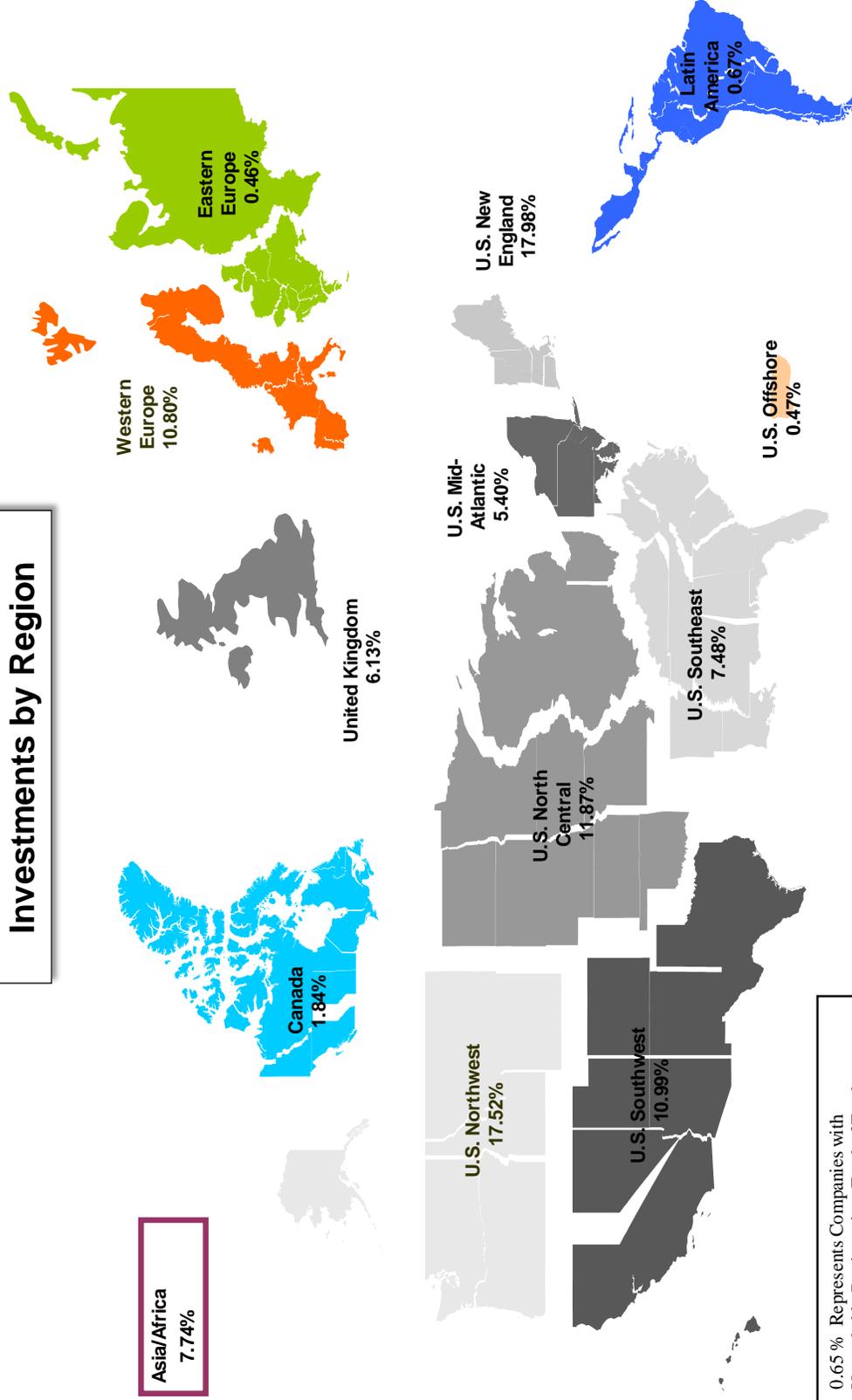
#### Investments by Industry



These numbers are based on the most recent available General Partner Data; primarily 9/30/15 and are subject to change.

**SMRS**  
Private Equity  
12/31/15

**Investments by Region**



0.65 % Represents Companies with Untrackable Regions, i.e.; Fund of Funds

Geographic Report: North America 73%, Europe 17%, Asia 8%, Other 2%



**SMRS**  
**Private Equity**  
**12/31/15**

**Portfolio by Vintage Year**

(\$ Millions)

| <b>Asset Vintage</b>        | <b>Reported Value</b> | <b>Outstanding Commitment</b> | <b>Total Exposure</b> |
|-----------------------------|-----------------------|-------------------------------|-----------------------|
| 1986-98                     | \$ 21                 | \$ 16                         | \$ 37                 |
| 1999                        | 34                    | 10                            | 44                    |
| 2000                        | 74                    | 28                            | 102                   |
| 2001                        | 229                   | 43                            | 272                   |
| 2002                        | 107                   | 9                             | 116                   |
| 2003                        | 35                    | 18                            | 53                    |
| 2004                        | 207                   | 46                            | 253                   |
| 2005                        | 467                   | 25                            | 492                   |
| 2006*                       | 1,347                 | 281                           | 1,628                 |
| 2007                        | 1,132                 | 167                           | 1,299                 |
| 2008                        | 1,154                 | 236                           | 1,390                 |
| 2009                        | 87                    | 2                             | 89                    |
| 2010                        | 301                   | 33                            | 334                   |
| 2011                        | 712                   | 247                           | 959                   |
| 2012                        | 938                   | 468                           | 1,406                 |
| 2013                        | 391                   | 341                           | 732                   |
| 2014                        | 605                   | 897                           | 1,502                 |
| 2015                        | 1,688                 | 2,018                         | 3,706                 |
| Cash                        | 128                   | -                             | 128                   |
| Act. Small Cap - Stock Dist | 2                     | -                             | 2                     |
| <b>Total</b>                | <b>\$ 9,659</b>       | <b>\$ 4,885</b>               | <b>\$14,544</b>       |

\*Liquidation portfolio is 2006 vintage

**FX Exposure**

(\$ Millions)

|                   | <b>Reported Value</b> | <b>Outstanding Commitment</b> | <b>Total Exposure</b> | <b>Total (USD)</b> |
|-------------------|-----------------------|-------------------------------|-----------------------|--------------------|
| Euro (\$1.09/ €)  | € 441                 | € 265                         | € 706                 | \$767              |
| Pound (\$1.47/ £) | £9                    | £1                            | £10                   | \$15               |



**SMRS**  
**Private Equity**  
**12/31/15**

**Top 10 Sponsors**

(\$ Millions)

| <u>Asset Type</u>            | <u>Reported Value</u> | <u>Outstanding Commitment</u> | <u>Total</u>          |
|------------------------------|-----------------------|-------------------------------|-----------------------|
| HarbourVest Partners         | \$ 1,492              | \$ 360                        | \$1,852               |
| Blackstone Capital Partners  | 456                   | 418                           | 874                   |
| KKR                          | 612                   | 250                           | 862                   |
| Grosvenor Capital Management | 635                   | 149                           | 784                   |
| Warburg Pincus Capital       | 450                   | 300                           | 750                   |
| The Carlyle Group            | 382                   | 268                           | 650                   |
| TPG                          | 393                   | 202                           | 595                   |
| Advent International         | 370                   | 95                            | 465                   |
| Coller Capital               | 152                   | 255                           | 407                   |
| Leonard Green & Partners     | 327                   | 70                            | 397                   |
| <b>Top 10 Total Value</b>    | <b><u>\$5,269</u></b> | <b><u>\$2,367</u></b>         | <b><u>\$7,636</u></b> |

**Cash Weighted Rates of Return\***

| <u>(Net IRR)</u>   | <u>Current Qtr.</u> | <u>1-Year</u> | <u>3-Years</u> | <u>5-Years</u> | <u>10-Years</u> |
|--------------------|---------------------|---------------|----------------|----------------|-----------------|
| Buyout             | 0.1%                | 8.0%          | 14.8%          | 13.5%          | 13.4%           |
| Fund of Funds      | -0.1%               | 5.4%          | 11.5%          | 10.1%          | 10.9%           |
| Mezzanine          | -0.2%               | 1.2%          | 10.0%          | 11.6%          | 9.7%            |
| Special Situations | 0.4%                | 4.1%          | 9.8%           | 10.2%          | 8.7%            |
| Venture Capital    | 1.3%                | 9.4%          | 20.3%          | 17.6%          | 17.0%           |

\*These numbers are based on most recent available General Partner reported data; primarily 12/31/15 and are subject to change.



# SMRS Private Equity 12/31/15

## Net Market Values by Ownership Entity

|  | Adjusted<br>Reported Value | Unfunded<br>Commitment |
|--|----------------------------|------------------------|
| Accel Europe I, L.P.                               | \$ 17,527,973              | \$ 1                   |
| Accel Europe II                                    | 14,742,801                 | 3,300,000              |
| Accel Growth Fund II, L.P.                         | 12,715,057                 | 1,260,000              |
| Accel Growth Fund III, L.P.                        | 9,237,236                  | 4,760,000              |
| Accel IX, L.P.                                     | 9,650,393                  | 3,000,000              |
| Accel VI, L.P.                                     | 1,388,840                  | -                      |
| Accel VII, L.P.                                    | 1,109,626                  | 5,000,000              |
| Accel VIII, L.P.                                   | 2,984,249                  | 4,782,499              |
| Accel VI-S   | 2,564,780                  | 652,611                |
| Accel X, L.P.                                      | 23,681,929                 | 750,000                |
| Accel XI, L.P.                                     | 7,167,988                  | 1,680,000              |
| Accel XII, L.P.                                    | 3,996,983                  | 2,975,000              |
| Advent Global Private Equity III                   | 990,230                    | 20                     |
| Advent Global Private Equity IV                    | 1,853,370                  | -                      |
| Advent Global Private Equity V                     | 26,166,001                 | 8,700,000              |
| Advent International GPE VI-A LP                   | 185,317,716                | 7,299,980              |
| Advent International GPE VII-B, L.P.               | 151,943,178                | 48,500,000             |
| Advent Latin American Private Equity Fund VI, L.P. | 3,703,419                  | 30,362,500             |
| Affinity Asia Pacific Fund II, L.P.                | 0                          | 5,288,237              |
| Affinity Asia Pacific Fund III, L.P.               | 71,058,776                 | 14,200,795             |
| Affinity Asia Pacific Fund IV L.P.                 | 57,082,704                 | 84,432,562             |
| APA Excelsior V                                    | 114,494                    | 545,625                |
| Apax Europe Fund VI                                | 52,747,726                 | 2,297,305              |
| Apax Europe V, L.P.                                | 343,119                    | -                      |
| Apax Europe VII, L.P.                              | 83,042,747                 | 3,077,848              |
| Apax Excelsior VI                                  | 339,852                    | 1,614,434              |
| Apax US VII  | 19,924,385                 | 417,509                |
| Apax VIII - B, L.P.                                | 96,077,285                 | 14,136,492             |
| Apollo Investment Fund VIII L.P.                   | 28,984,035                 | 70,148,851             |
| Arboretum Ventures II                              | 2,445,389                  | -                      |
| Arboretum Ventures III, L.P.                       | 13,350,015                 | 1,485,000              |
| Arboretum Ventures IV, L.P.                        | 1,979,814                  | 27,840,000             |
| Ares Corporate Opportunities Fund II               | 20,944,487                 | 11,423,773             |
| Ares Corporate Opportunities Fund III, LP          | 93,864,972                 | 11,415,987             |
| Ares Corporate Opportunities Fund IV, L.P.         | 76,463,851                 | 30,217,263             |
| ASF Norman, LLC Receivable                         | 90,956,104                 | -                      |
| AXA ASF Miller Co-Investment                       | 58,520,840                 | 23,071,187             |
| Axiom Asia Private Capital Fund III, L.P.          | 20,804,924                 | 16,676,764             |
| ** Axiom Asia IV, L.P.                             | <b>0</b>                   | <b>50,000,000</b>      |
| BC European Capital IX                             | 53,683,730                 | 18,916,108             |
| BC European Capital VII, L.P.                      | 530,897                    | -                      |

|  | <u>Adjusted<br/>Reported Value</u> | <u>Unfunded<br/>Commitment</u> |
|--|------------------------------------|--------------------------------|
| BC European Capital VIII, L.P.                   | 27,890,658                         | 8,494,866                      |
| Berkshire Fund IV, L.P.                          | 0                                  | 1,898,016                      |
| Berkshire Fund V, L.P.                           | 258,713                            | 3,281,560                      |
| Berkshire Fund VI, L.P.                          | 39,094,802                         | 6,922,675                      |
| Berkshire Fund VII, L.P.                         | 78,857,995                         | 5,005,332                      |
| Berkshire Fund VIII, L.P.                        | 91,690,292                         | 33,326,760                     |
| Blackstone Capital Partners IV                   | 42,542,725                         | 5,085,117                      |
| Blackstone Capital Partners V                    | 110,501,057                        | 17,079,209                     |
| Blackstone Capital Partners VI, LP               | 262,481,375                        | 76,547,874                     |
| Blackstone Capital Partners VII, L.P.            | 0                                  | 300,000,000                    |
| Blackstone Capital Partners V-S                  | 17,469,706                         | 711,131                        |
| Bridgepoint Europe IV                            | 38,689,705                         | 6,557,393                      |
| Carlyle Europe Partners II                       | 7,952,799                          | 4,025,038                      |
| Carlyle Europe Partners III                      | 65,232,924                         | 11,900,557                     |
| Carlyle Europe Partners IV, L.P.                 | 27,889,581                         | 81,095,644                     |
| Carlyle Partners IV, L.P.                        | 22,416,689                         | 16,009,296                     |
| Carlyle Partners V L.P.                          | 182,021,065                        | 58,421,628                     |
| Carlyle Partners VI, L.P.                        | 76,507,242                         | 96,424,469                     |
| Castle Harlan Partners IV                        | 11,775,291                         | 5,286,319                      |
| Castle Harlan Partners V                         | 42,533,426                         | 41,721,990                     |
| CCMP Capital Investors II                        | 89,964,963                         | 10,330,517                     |
| CCMP Capital Investors III, L.P.                 | 25,090,407                         | 25,510,101                     |
| Centerbridge Capital Partners III, LP            | 16,667,902                         | 58,444,740                     |
| Cerberus SMRS Partners, L.P.                     | 107,194,030                        | 3,304,657                      |
| CM Liquidity Fund, L.P.                          | 0                                  | 25,000,000                     |
| CMEA Ventures VI                                 | 0                                  | -                              |
| Coller International Partners IV                 | 4,850,057                          | 1,000,000                      |
| Coller International Partners V, L.P.            | 70,422,556                         | 43,600,000                     |
| Coller International Partners VI, L.P.           | 76,642,054                         | 35,316,302                     |
| Coller International Partners VII, L.P.          | 0                                  | 150,000,000                    |
| Crescent Mezzanine Partners VI, L.P.             | 57,047,384                         | 18,029,522                     |
| DLJ Investment Partners II                       | 161,053                            | -                              |
| DLJ Investment Partners III                      | 14,751,537                         | 57,712,985                     |
| DLJ Merchant Banking Ptrs II, L.P.               | 432,679                            | 1,856,746                      |
| <b>** Dover Street IX, L.P.</b>                  | <b>0</b>                           | <b>100,000,000</b>             |
| EDF Ventures III                                 | 1,886,809                          | -                              |
| EnCap Energy Capital Fund X, L.P.                | 2,729,345                          | 41,885,230                     |
| Entertainment IP Fund, L.P.                      | 518,400                            | 49,481,600                     |
| <b>** FIMI Opportunity 6, L.P.</b>               | <b>0</b>                           | <b>50,000,000</b>              |
| FirstMark Capital I, L.P.                        | 104,815,590                        | 196,596                        |
| FirstMark Capital OF I, L.P.                     | 8,989,947                          | 11,300,000                     |
| FirstMark Capital P2, L.P.                       | 168,350,000                        | -                              |
| Flagship Ventures Fund 2004                      | 11,493,121                         | -                              |
| Flagship Ventures Fund 2007, L.P.                | 45,203,258                         | -                              |
| Flagship Ventures Fund IV, L.P.                  | 67,585,518                         | 2,100,000                      |
| Flagship Ventures Fund V                         | 7,500,872                          | 26,950,000                     |
| Fox Paine Capital Fund II, LP                    | 20,266,741                         | 15,539,184                     |
| FS Equity Partners VII, L.P.                     | 16,685,062                         | 82,320,533                     |
| GCM Grosvenor Fund Investment Program I, L.P.    | 19,447,461                         | 1,456,755                      |
| GCM Grosvenor Fund Investment Program II, L.P.   | 67,572,295                         | 15,984,173                     |
| GCM Grosvenor Fund Investment Program III - 2004 | 79,645,385                         | 4,976,736                      |

|   | <u>Adjusted<br/>Reported Value</u> | <u>Unfunded<br/>Commitment</u> |
|---|------------------------------------|--------------------------------|
| GCM Grosvenor Fund Investment Program III - 2006  | 104,810,185                        | 10,677,893                     |
| GCM Grosvenor Fund Investment Program V, L.P.     | 101,827,797                        | 16,613,747                     |
| GCM Grosvenor Fund Investment Program VI, L.P.    | 13,906,729                         | 20,246,671                     |
| GCM Grosvenor SeasPriFIP LP (PIS06-10)            | 90,221,056                         | 27,753,029                     |
| GCM Grosvenor SeasPriFIP LP (PIS14)               | 83,077,442                         | 37,547,659                     |
| GCM Grosvenor SeasPriFIP LP (Seed)                | 74,549,893                         | 13,933,191                     |
| G-II Acquisition Holdings Note                    | 6,932,579                          | -                              |
| Glencoe Capital Michigan Opportunities Fund, LP   | 34,948,091                         | 10,449,534                     |
| Green Equity Investors IV                         | 25,677,154                         | 1,136,036                      |
| Green Equity Investors V                          | 208,769,518                        | 25,966,435                     |
| Green Equity Investors VI, L.P.                   | 93,190,533                         | 43,049,693                     |
| GSO Capital Opportunities Fund II, L.P.           | 23,104,013                         | 18,777,931                     |
| HarbourVest Dover Street VIII, L.P.               | 40,307,380                         | 24,975,000                     |
| HarbourVest Int'l III Direct                      | 3,917,666                          | 1,000,000                      |
| HarbourVest Int'l III Partnership                 | 1,651,592                          | 1,200,000                      |
| HarbourVest Partners Mezzanine Income Fund        | 2,625,000                          | 47,375,000                     |
| HarbourVest V Partnership                         | 254,134                            | 300,000                        |
| HarbourVest VI - Direct Fund LP                   | 4,152,963                          | 750,000                        |
| HarbourVest VI Partnership                        | 13,620,593                         | 2,000,000                      |
| <b>** Harvest Partners VII, L.P.</b>              | <b>0</b>                           | <b>75,000,000</b>              |
| HVST - TOPE LLC                                   | 79,000,000                         | -                              |
| Insight Ventures Growth-Buyout Coinvestment Fund  | 11,572,924                         | 37,875,000                     |
| Insight Venture Partners IX, L.P.                 | 24,160,661                         | 74,000,000                     |
| Kelso Investment Associates IX, L.P.              | 7,707,328                          | 92,292,672                     |
| Kelso Investment Associates VII                   | 4,017,756                          | 4,970,176                      |
| Kelso Investment Associates VIII                  | 132,907,163                        | 26,658,476                     |
| Khosla Ventures III, L.P.                         | 65,872,000                         | 2,000,000                      |
| Khosla Ventures IV, L.P.                          | 62,499,810                         | 4,750,000                      |
| Khosla Ventures V, L.P.                           | 16,570,452                         | 33,500,000                     |
| KKR 2006 Fund, L.P.                               | 199,141,118                        | 8,059,689                      |
| KKR Asia  | 55,190,489                         | 2,902,553                      |
| KKR Asian Fund II, L.P.                           | 21,036,236                         | 33,932,337                     |
| KKR China Growth Fund                             | 32,367,747                         | 14,477,088                     |
| KKR E2 Investors (Annex) Fund                     | 2,711,327                          | 587,747                        |
| KKR European Fund II                              | 42,699,556                         | -                              |
| KKR European Fund III                             | 95,386,265                         | 23,204,025                     |
| KKR European Fund IV L.P.                         | 9,670,742                          | 116,413,425                    |
| KKR European Fund LP 1                            | 1,345,549                          | -                              |
| KKR Millennium Fund                               | 61,780,656                         | -                              |
| KKR North America Fund XI, L.P.                   | 90,329,691                         | 50,284,098                     |
| Lightspeed Venture Partners VI                    | 2,013,840                          | -                              |
| Lightspeed Venture Partners VII, L.P.             | 48,525,208                         | 510,436                        |
| Lion Capital Fund I (HME II)                      | 89,210                             | 11,017,644                     |
| Lion Capital Fund II                              | 6,650,344                          | 4,688,281                      |
| Lion Capital Fund III, L.P.                       | 86,474,015                         | 13,024,187                     |
| Matlin Patterson Global Opportunities Partners    | 37,306                             | -                              |
| MatlinPatterson Global Opportunities Partners II  | 3,027,047                          | -                              |
| MatlinPatterson Global Opportunities Partners III | 66,470,569                         | 5,688,461                      |
| Menlo Ventures IX, L.P.                           | 7,036,049                          | -                              |
| Menlo Ventures X, L.P.                            | 43,850,843                         | -                              |

|   | <u>Adjusted<br/>Reported Value</u> | <u>Unfunded<br/>Commitment</u> |
|---|------------------------------------|--------------------------------|
| Menlo Ventures XI, L.P.                         | 64,590,200                         | 3,000,000                      |
| MeriTech Capital Partners II, L.P.              | 2,005,467                          | 1,850,000                      |
| Meritech Capital Partners III, L.P.             | 18,218,075                         | 600,000                        |
| Meritech Capital Partners IV, L.P.              | 16,874,691                         | 425,000                        |
| Meritech Capital Partners V, L.P.               | 4,651,660                          | 14,850,000                     |
| Michigan Growth Capital Partners II, L.P.       | 126,821,641                        | 64,300,599                     |
| Michigan Growth Capital Partners, LP            | 120,714,421                        | 17,551,945                     |
| Midtown Fund III, L.P.                          | 1,403,547                          | -                              |
| Midtown II Liquidating Trust                    | 2,344,625                          | -                              |
| New Leaf Growth Fund I, L.P.                    | 120,879,008                        | -                              |
| New Leaf Ventures II, L.P.                      | 22,619,746                         | -                              |
| New Leaf Ventures III, L.P.                     | 12,356,154                         | 25,312,500                     |
| Nordic Capital VI, L.P.                         | 29,953,602                         | -                              |
| Nordic Capital VII                              | 61,845,874                         | 5,518,376                      |
| Nordic Capital VIII, L.P. (Alpha)               | 21,442,254                         | 22,452,041                     |
| Oak Investment Partners X, L.P.                 | 8,261,741                          | -                              |
| Oak Investments Partners IX, L.P.               | 1,379,686                          | -                              |
| Oaktree Opportunities Fund X, L.P.              | 4,377,774                          | 25,500,000                     |
| Oaktree Opportunities Fund Xb, L.P.             | 0                                  | 70,000,000                     |
| OCM Opportunities Fund IX, L.P.                 | 71,484,390                         | -                              |
| OCM Opportunities Fund VII (B), L.P.            | 4,669,635                          | -                              |
| OCM Opportunities Fund VII, L.P.                | 6,069,929                          | -                              |
| OCM Opportunities Fund VIII B, L.P.             | 33,115,354                         | -                              |
| OCM Opportunities Fund VIII, L.P.               | 18,650,131                         | -                              |
| OCM Principal Opportunities Fund IV             | 25,733,940                         | 5,002,377                      |
| Ocqueoc Holdings, LLC                           | 10,836,889                         | -                              |
| One Liberty Fund III                            | 606,907                            | -                              |
| One Liberty Fund IV                             | 1,803,415                          | -                              |
| One Liberty Ventures 2000                       | 7,416,400                          | -                              |
| Parthenon Investors II                          | 2,478,787                          | 3,186,779                      |
| Parthenon Investors III                         | 46,279,974                         | 2,268,428                      |
| Parthenon Investors IV, L.P.                    | 24,594,492                         | 18,195,937                     |
| Peninsula Capital Fund IV                       | 12,691,276                         | 2,201,026                      |
| Peninsula Fund VI, L.P.                         | 5,250,000                          | 34,750,000                     |
| Phoenix Equity Partners IV                      | 13,245,803                         | 880,972                        |
| Public Pension Capital, LLC                     | 3,371,331                          | 47,160,985                     |
| Questor Partners Fund II                        | 4,787,754                          | 5,883,006                      |
| Rhone Partners V, L.P.                          | 599,503                            | 107,289,463                    |
| Riverside Capital Appreciation Fund VI, LP      | 42,959,596                         | 34,816,404                     |
| Riverside Micro Cap Fund I, LP                  | 27,208,409                         | 6,535,026                      |
| Riverside Micro-Cap Fund II, L.P.               | 45,581,306                         | 162,018                        |
| Riverside Micro-Cap Fund III, L.P.              | 40,169,207                         | 6,194,999                      |
| <b>** Riverside Micro-Cap Fund IV</b>           | <b>0</b>                           | <b>50,000,000</b>              |
| <b>** Shamrock Growth Capital Fund IV, L.P.</b> | <b>279,599</b>                     | <b>49,720,401</b>              |
| Silver Lake Partners II                         | 9,279,884                          | 3,531,586                      |
| Silver Lake Partners III                        | 64,720,656                         | 19,303,187                     |
| Silver Lake Partners IV, L.P.                   | 19,890,812                         | 35,303,205                     |
| SM/TCP L.P.                                     | 18,462,599                         | 27,176,054                     |
| SMRS-NCRP LLC                                   | 1,346,254,329                      | 182,483,832                    |
| Sprout Capital IX                               | 80,309                             | -                              |

|   | <u>Adjusted<br/>Reported Value</u> | <u>Unfunded<br/>Commitment</u> |
|---|------------------------------------|--------------------------------|
| TCW Shared Op Fund III                              | 1,048,221                          | -                              |
| TCW Shared Op Fund IV                               | 5,588                              | 4,524,779                      |
| TCW/Crescent Mezzanine Partners III, L.P.           | 4,102,241                          | 4,552,763                      |
| TCW/Crescent Mezzanine Partners IV, L.P.            | 7,179,249                          | 6,030,737                      |
| TCW/Crescent Mezzanine Partners V, LLC              | 46,723,397                         | 12,906,252                     |
| The Huron Fund III, L.P.                            | 8,962,979                          | 4,992,756                      |
| The Huron Fund IV, L.P.                             | 9,573,955                          | 23,646,846                     |
| The Shansby Group 4                                 | 2,497,364                          | 520,829                        |
| The Shansby Group 5 (TSG5)                          | 61,566,184                         | 6,128,637                      |
| TPG IV (Texas Pacific Group IV)                     | 13,990,699                         | 211,725                        |
| TPG Partners III, LP                                | 9,946,105                          | 2,087,002                      |
| TPG Partners VI, L.P.                               | 200,341,092                        | 26,194,845                     |
| TPG Partners, VII, L.P.                             | 2,276,824                          | 146,711,151                    |
| TPG V (Texas Pacific Group V)                       | 166,355,949                        | 26,611,195                     |
| Trilantic Capital Partners V (North America) Fund A | 21,026,082                         | 25,879,408                     |
| TSG6, L.P.  | 111,446,724                        | 55,954,457                     |
| <b>** TSG7 A L.P.</b>                               | <b>0</b>                           | <b>125,000,000</b>             |
| Turnbridge Capital Partners I , LP                  | 15,302,533                         | 79,331,373                     |
| Veritas Capital Fund V, L.P.                        | 37,610,503                         | 36,969,209                     |
| Veritas V Co-Investors, L.P.                        | 4,999,609                          | 20,000,000                     |
| Vista Equity Partners Fund V, L.P.                  | 35,662,769                         | 16,303,560                     |
| Warburg Pincus Energy MCIP, L.P.                    | 9,680,147                          | 15,415,371                     |
| Warburg Pincus Energy, L.P.                         | 16,715,218                         | 81,300,000                     |
| Warburg Pincus Equity Partners, L.P.                | 4,139,731                          | -                              |
| Warburg Pincus International Partners               | 10,579,366                         | -                              |
| Warburg Pincus Private Equity IX                    | 32,417,612                         | -                              |
| Warburg Pincus Private Equity VIII, L.P.            | 19,329,815                         | -                              |
| Warburg Pincus Private Equity X, L.P.               | 163,578,688                        | -                              |
| Warburg Pincus Private Equity XI, L.P.              | 190,727,472                        | 31,500,000                     |
| <b>** Warburg Pincus Private Equity XII, L.P.</b>   | <b>2,712,500</b>                   | <b>172,287,500</b>             |
| WestAm COREplus Private Equity QP                   | 5,179,744                          | 2,086,719                      |
| WestAm Special Private Equity Partners              | 4,502,562                          | 2,317,427                      |
| <b>* Total Private Equity</b>                       | <b>\$ 9,528,902,309</b>            | <b>\$ 4,884,778,403</b>        |
| Cash  | 103,051,877                        | -                              |
| Active Small Cap Cash                               | 25,338,465                         | -                              |
| Active Small Cap                                    | 1,913,637                          | -                              |
| Income Accruals                                     | 103,704                            | -                              |
| <b>Grand Total</b>                                  | <b>\$ 9,659,309,992</b>            | <b>\$ 4,884,778,403</b>        |

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

\*\* New Commitments made during quarter reported



**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**REAL ESTATE AND  
INFRASTRUCTURE REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



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



# EXECUTIVE SUMMARY

## Performance

| <b>MPSERS Plan</b> | <b>1-Year</b> | <b>3-Years</b> | <b>5-Years</b> | <b>7-Years</b> | <b>10-Years</b> |
|--------------------|---------------|----------------|----------------|----------------|-----------------|
| Annualized Return  | 9.6%          | 13.5%          | 12.4%          | 3.7%           | 6.0%            |
| NCREIF NPI         | 11.9%         | 10.6%          | 10.8%          | 6.2%           | 6.4%            |
| Peer Median Return | 9.9%          | 12.1%          | 12.0%          | 4.6%           | 5.3%            |
| Rank vs. Peers     | 52            | 26             | 45             | 59             | 42              |

- Total Real Estate and Infrastructure Division (REID) value was \$6.2 billion with a total one-year return of 9.6%. Strong performance was the result of increased rental income and valuations in for-rent housing and hospitality assets. Credit strategies and unique opportunities sourced by staff have also contributed to overall performance. The return was negatively impacted by the decline in foreign currency in REID's infrastructure investments.

## Strategy Update

- The REID strategy of obtaining the highest risk-adjusted returns focuses on developing apartments and industrial warehouse buildings in select urban markets, investing in under-managed office properties in markets that have strong economic fundamentals by adding value through leasing and management, and credit strategy investing through mezzanine debt opportunities on transitional properties. Also, REID has gained exposure in Europe where pricing and returns are favorable.
- The REID has been selling stabilized assets at attractive low capitalization rates where rental income increases are expected to be limited. The REID has disposed of suburban properties in favor of developing/redeveloping properties in dense urban areas where rent growth and appreciation are strong. The REID is also working with its advisors in executing the disposition of non-strategic properties in secondary markets at attractive values, returning over \$2 billion in gross distributions over the last two years.
- The REID has approximately \$1.4 billion in unfunded commitments. New commitments closed during the quarter include:
  - \$50 million in Rialto Real Estate Fund III-Debt, LP, a commingled fund investing in high-yield real estate debt, managed by Rialto Capital Management.
  - \$50 million in TSP Value and Income Fund LP, a commingled fund focused on value-add real estate properties, managed by Transwestern Investment Group.
  - \$20 million in Avanath II SMRS Co-Investment Fund LLC, a co-investment in affordable multi-family apartments in various locations, managed by Avanath Capital Management.
  - \$10 million in M1 Westgate CoInvest LLC, a co-investment in a multi-family development in Santa Monica, CA, managed by CIM Investment Advisors.

## **Market Environment**

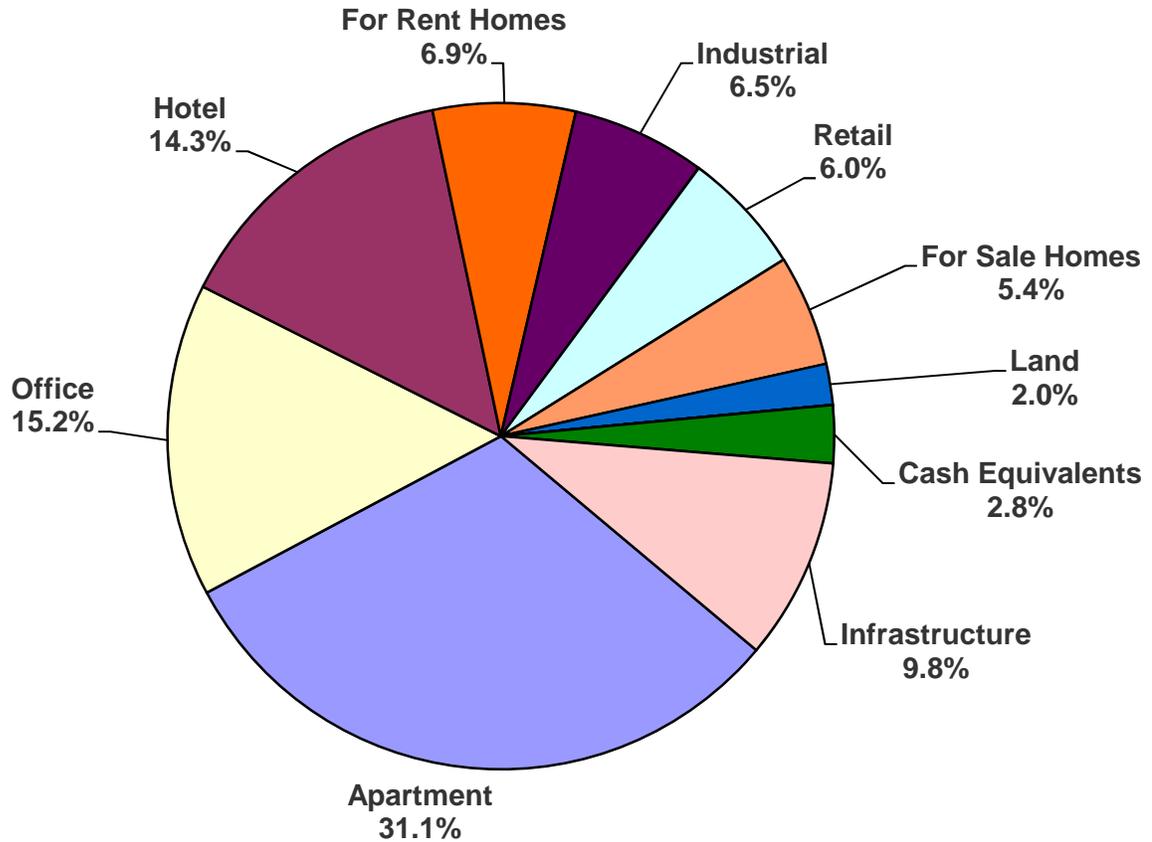
- High quality core assets continue to be in high demand as investors, both domestic and international, seek long-term protection from volatility at the expense of historically low yields. Investors are also valuing unleased space into their pricing. In major markets including New York, San Francisco, and Boston, properties are trading at near record low capitalization rates. However, early signs of pricing leveling off are appearing. Secondary markets are now being targeted by investors seeking higher yields. Development of apartments and condominiums in major urban markets continue. Office and industrial construction has started in the major markets, the highest starts since 2007. The U.S. has eased FIRPTA Rules to reduce federal taxes on foreign investors for real estate investments.
- 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 where distressed pricing is appearing, power generation, European transportation, and emerging market fundamental infrastructure projects.
- In the commercial mortgage-backed securities (CMBS) market, spreads over the swap rate for 10-year AAA-rated securities increased 12 basis points (bps) from the prior quarter and now stand at 136 bps. Commercial Mortgage Alert reported that CMBS issuance is projected to be over \$110 billion for 2016 compared to \$106 billion in 2015. A wave of refinancing for 2007 ten-year vintage loans is on the horizon. New banking rules by the federal government could negatively impact traditional bank lenders in 2016. This could make it difficult for borrowers to refinance properties, with borrowing costs expected to rise due to the new rules. However, this provides opportunities for non-bank lenders, where REID's strategy has focused its attention.



# SMRS

## Real Estate and Infrastructure

12/31/15



| Market Value in Millions |                       |                      |                       |                      |
|--------------------------|-----------------------|----------------------|-----------------------|----------------------|
|                          | 12/31/15              |                      | 9/30/15               |                      |
| Apartment                | \$1,913               | 31.1%                | \$1,840               | 30.9%                |
| Office                   | 937                   | 15.2%                | 905                   | 15.2%                |
| Hotel                    | 883                   | 14.3%                | 902                   | 15.2%                |
| Infrastructure           | 603                   | 9.8%                 | 582                   | 9.8%                 |
| For Rent Homes           | 423                   | 6.9%                 | 397                   | 6.7%                 |
| Industrial               | 401                   | 6.5%                 | 326                   | 5.5%                 |
| Retail                   | 371                   | 6.0%                 | 384                   | 6.5%                 |
| For Sale Homes           | 334                   | 5.4%                 | 338                   | 5.7%                 |
| Land                     | 123                   | 2.0%                 | 133                   | 2.2%                 |
|                          | <u>\$5,988</u>        | <u>97.2%</u>         | <u>\$5,807</u>        | <u>97.7%</u>         |
| Cash Equivalents         | <u>169</u>            | <u>2.8%</u>          | <u>139</u>            | <u>2.3%</u>          |
| <b>Total Investments</b> | <b><u>\$6,157</u></b> | <b><u>100.0%</u></b> | <b><u>\$5,946</u></b> | <b><u>100.0%</u></b> |





**SMRS**  
Real Estate and Infrastructure  
12/31/15

**Top Ten  
Advisors or Entity**

| <u>Advisor or Entity</u>         | <u>Net Market Value</u> |
|----------------------------------|-------------------------|
| MWT Holdings, LLC (SHLP)         | \$ 1,257,870,739        |
| Clarion Partners                 | 637,082,229             |
| Blackstone Group                 | 581,881,010             |
| Kensington Realty Advisors, Inc. | 302,084,803             |
| CIM Investment Advisors LLC      | 247,752,834             |
| Principal Real Estate Investors  | 238,087,506             |
| Bentall Kennedy LP               | 232,312,095             |
| Five Star Realty Partners, LLC   | 199,023,610             |
| Domain Capital Advisors Inc      | 196,809,757             |
| KBS Realty Advisors              | 184,150,629             |
|                                  | \$ 4,077,055,212        |

**Occupancy  
by Property Type**

|                  | Apartment | Office | Industrial | Retail | Hotel |
|------------------|-----------|--------|------------|--------|-------|
| SMRS Portfolio   | 94.3%     | 86.5%  | 90.8%      | 94.5%  | 76.8% |
| National Average | 93.0%     | 86.0%  | 89.8%      | 94.2%  | 71.3% |



SMRS  
**Net Market Values by Ownership Entity**  
12/31/15

**REAL ESTATE**

|   | <u>Net<br/>Market Value</u> | <u>Unfunded<br/>Commitment</u> |
|---|-----------------------------|--------------------------------|
| 801 Grand Avenue Capital, LLC                   | \$ 85,429,986               | \$ 0                           |
| AGL Annuity Contract GVA 0016                   | 227,614,719                 | 0                              |
| Avanath Affordable Housing I, LLC               | 25,650,148                  | 2,492,748                      |
| Avanath Affordable Housing II, LLC              | 18,899,227                  | 2,914,830                      |
| * <b>Avanath II SMRS Co-Investment Fund LLC</b> | 20,000,000                  | 0                              |
| Beacon Capital Strategic Partners IV, LP        | 6,851,418                   | 0                              |
| Beacon Capital Strategic Partners V, LP         | 9,455,972                   | 2,500,000                      |
| Blackstone R/E IH3 Co-Inv Partners              | 422,544,780                 | 0                              |
| Blackstone Real Estate Partners V, LP           | 38,079,264                  | 2,087,026                      |
| Blackstone Real Estate Partners VI, LP          | 49,865,682                  | 4,080,193                      |
| Blackstone Real Estate Partners VIII, LP        | 14,514,743                  | 70,235,000                     |
| Capri Select Income II                          | 135,606                     | 0                              |
| Capri Urban Investors, LLC                      | 22,104,300                  | 0                              |
| CIM Fund III, LP                                | 85,532,219                  | 0                              |
| CIM Fund VIII, LP                               | 35,089,037                  | 63,803,421                     |
| CIM Urban REIT, LLC                             | 91,636,834                  | 0                              |
| CIM VI (Urban REIT), LLC                        | 28,352,857                  | 0                              |
| City Lights Investments, LLC                    | 5,843                       | 0                              |
| Clarion Gables Multifamily Trust                | 27,345,642                  | 0                              |
| CPI Capital Partners N.A., LP                   | 424,559                     | 0                              |
| CPI Capital Partners N.A. Secondary, LP         | 5,303,457                   | 0                              |
| Crown Small Cap Real Estate                     | 5,000,640                   | 19,875,000                     |
| Devon Real Estate Conversion Fund, LP           | 5,622,441                   | 0                              |
| Domain GVA-1, LLC                               | 167,169,280                 | 175,041,710                    |
| Domain Hotel Properties, LLC                    | 436,234,680                 | 0                              |
| Dynamic Retail Trust                            | 68,195,917                  | 0                              |
| Eastport Properties, LLC                        | 20,114,418                  | 0                              |
| Gateway Capital R/E Fund II, LP                 | 58,459,880                  | 1,275,000                      |
| Great Lakes Property Group Trust                | 286,859,186                 | 0                              |
| Invesco Mortgage Recovery Feeder Fund           | 24,382,694                  | 140,620                        |
| Invesco Mortgage Recovery Fund II, LP           | 46,630,972                  | 27,764,976                     |
| IPF II Co-Invest LP                             | 5,047,192                   | 26,465,897                     |
| JBC North LaSalle, LLC                          | 19,191,878                  | 7,800,000                      |
| JBC Opportunity Fund III, LP                    | 10,581,493                  | 0                              |
| JP Morgan India Property Fund II, LLC           | 18,090,168                  | 24,026,173                     |
| KBS/SM Fund III, LP                             | 126,593,028                 | 5,938,078                      |
| L-A Saturn Acquisition, LP                      | 33,933,044                  | 0                              |
| Landmark Real Estate Partners V, LP             | 17,535,145                  | 3,900,000                      |
| LaSalle Asia Opportunity Fund II, LP            | 272,086                     | 0                              |
| LaSalle Asia Opportunity Fund III, LP           | 17,443,597                  | 1,250,000                      |
| Lion Industrial Trust                           | 155,313,780                 | 0                              |
| Lion Mexico Fund, LP                            | 18,188,127                  | 0                              |
| Lowe Hospitality Investment Partners            | 166,784                     | 0                              |
| Lubert-Adler Real Estate Fund VII, LP           | 28,335,663                  | 45,000,000                     |
| * <b>M1 Westgate ColInvest LLC</b>              | 7,141,887                   | 2,563,592                      |
| MERS Acquisitions, Ltd.                         | 126,279,270                 | 0                              |
| MG Alliance, LLC                                | 16,176,748                  | 0                              |
| MIP Holdco, LLC                                 | 62,153,516                  | 37,000,000                     |
| Morgan Stanley R/E Fund V - International       | 4,311,398                   | 0                              |
| Morgan Stanley R/E Fund VI - International      | 23,963,379                  | 0                              |

|  | <b>Net<br/>Market Value</b>    | <b>Unfunded<br/>Commitment</b> |
|--|--------------------------------|--------------------------------|
| Morgan Stanley R/E Fund V - U.S.                 | 16,978,523                     | 0                              |
| Morgan Stanley R/E Special Situations Fund III   | 46,620,420                     | 0                              |
| MWT Holdings, LLC                                | 1,257,870,739                  | 0                              |
| Northpark-Land Associates, LLLP                  | 29,640,477                     | 64,500,000                     |
| Orange Investors LLC                             | 34,227,942                     | 0                              |
| Paladin Realty Brazil Investors III (USA), LP    | 26,802,250                     | 0                              |
| Paladin Realty Latin America Investors IV-CI, LP | 14,536,770                     | 28,109,562                     |
| Principal Separate Account                       | 152,657,520                    | 0                              |
| Proprium RE Spec Situations Fund LP              | 19,351,440                     | 16,660,593                     |
| Rialto Real Estate Fund, LP                      | 32,803,170                     | 0                              |
| Rialto Real Estate Fund II, LP                   | 47,411,802                     | 0                              |
| * <b>Rialto Real Estate Fund III-Debt, LP</b>    | 0                              | 50,000,000                     |
| Rialto Mezzanine Partners Fund                   | 71,867,957                     | 0                              |
| SM Brell II, LP                                  | 57,557,601                     | 0                              |
| Stockbridge Real Estate Fund II-C, LP            | 33,686,219                     | 0                              |
| Strategic LP                                     | 232,310,999                    | 43,600,000                     |
| TPG RE Finance Trust                             | 94,528,224                     | 5,659,260                      |
| TPG RE Fund II                                   | 5,969,316                      | 41,587,286                     |
| * <b>TSP Value and Income Fund LP</b>            | 21,528,826                     | 28,743,396                     |
| Trophy Property Development LP                   | 61,542,979                     | 7,408,100                      |
| True North High Yield Investment Fund II         | 27,229,203                     | 5,000,000                      |
| True North Real Estate Fund III                  | 11,634,381                     | 38,131,387                     |
| Venture Center, LLC                              | 40,132,549                     | 0                              |
| Western National Realty Fund II, LP              | 24,038,642                     | 0                              |
|  | <u>\$ 5,385,152,533</u>        | <u>\$ 855,553,848</u>          |
| Short-Term Investments and Other                 | 144,263,234                    | 0                              |
| <b>Total Real Estate Investments</b>             | <b><u>\$ 5,529,415,767</u></b> | <b><u>\$ 855,553,848</u></b>   |

### INFRASTRUCTURE

|   |                                |                                |
|---|--------------------------------|--------------------------------|
| ArcLight Energy Partners Fund VI, LP                      | \$ 13,769,395                  | \$ 35,076,963                  |
| ASF VI Infrastructure B LP                                | 8,190,540                      | 22,094,113                     |
| ASF Como Co-Investment LP                                 | 30,608,895                     | 15,877,402                     |
| Balfour Beatty Infrastructure Partners, LP                | 26,091,665                     | 24,979,809                     |
| Blackstone Energy Partners, LP                            | 52,970,163                     | 5,460,000                      |
| Blackstone Energy Partners II, LP                         | 0                              | 85,000,000                     |
| Brookfield Infrastructure Fund II-B, LP                   | 35,872,908                     | 13,993,142                     |
| Customized Infrastructure Strategies, LP                  | 77,392,032                     | 8,433,467                      |
| Dalmore Capital Fund                                      | 66,728,642                     | 0                              |
| First Reserve Energy Infrastructure Fund II, LP           | 8,015,247                      | 65,600,000                     |
| GCM Grosvenor Infrastructure Investment Program, LP       | 51,451,819                     | 0                              |
| GCM Grosvenor Customized Infrastructure Strategies II, LP | 15,792,480                     | 45,867,578                     |
| GSO Energy Select Opportunities Fund LP                   | 3,906,378                      | 46,093,622                     |
| JP Morgan AIRRO India Sidecar Fund US, LLC                | 69,549,563                     | 5,033,815                      |
| JP Morgan AIRRO Fund II US, LLC                           | 12,259,160                     | 83,384,246                     |
| KKR Eagle Co-Invest GP LTD                                | 14,876,775                     | 8,575,281                      |
| KKR Global Infrastructure Investors, LP                   | 63,838,474                     | 14,582,543                     |
| StonePeak Infrastructure Fund LP                          | 51,112,983                     | 16,573,057                     |
|   | <u>\$ 602,427,121</u>          | <u>\$ 496,625,038</u>          |
| Short-Term Investments and Other                          | 25,019,106                     | 0                              |
| <b>Total Infrastructure Investments</b>                   | <b><u>\$ 627,446,226</u></b>   | <b><u>\$ 496,625,038</u></b>   |
| <b>TOTAL INVESTMENTS</b>                                  | <b><u>\$ 6,156,861,993</u></b> | <b><u>\$ 1,352,178,886</u></b> |

\* New or additional commitment made during the quarter reported



**STATE OF MICHIGAN  
RETIREMENT SYSTEMS**

**BASKET CLAUSE REVIEW**

**INVESTMENT ADVISORY COMMITTEE MEETING**

**MARCH 2, 2016**



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





# SMRS

## Basket Clause Investments

12/31/15

| <u>Asset Class</u>                     | <u>Value</u>                  |
|--|-------------------------------|
| Total Absolute Return                  | \$4,533,342,852               |
| Total Real Return and Opportunistic    | 864,840,505                   |
| Total International Equity             | 517,410,091                   |
| Total Long-Term Fixed Income           | <u>33,158,160</u>             |
| <b>Total Basket Clause Investments</b> | <b><u>\$5,948,751,608</u></b> |

The basket clause investments at December 31, 2015, were \$6.0 billion or 9.9% of the total portfolio value of \$60.1 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.**

