

**AGENDA**  
**INVESTMENT ADVISORY COUNCIL MEETING**  
**Monday, August 22, 2016**  
**12:00 Noon**  
**State Board of Investment**  
**Retirement Systems Building**  
**Room 117 – Main Floor**  
**60 Empire Drive, St. Paul, MN**

- |   |            |
|---|------------|
| <b>1. Approval of Minutes of May 17, 2016</b>                               | <b>TAB</b> |
| <b>2. Report from the Executive Director</b>                                | <b>A</b>   |
| A. Quarterly Investment Review<br>(April 1, 2016 – June 30, 2016)           |            |
| B. Administrative Report  | <b>B</b>   |
| 1. Reports on Budget and Travel   |            |
| 2. Sudan Update   |            |
| 3. Iran Update  |            |
| 4. Litigation Update  |            |
| <b>3. Private Markets Report</b>  | <b>C</b>   |
| A. Review of current strategy   |            |
| B. Consideration of investment commitments with five existing managers      |            |
| <b>4. Public Markets, Non-Retirement, and Defined Contribution Report</b>   | <b>D</b>   |
| <b>5. Public Markets: Small-Cap Growth Manager Search</b>                   | <b>E</b>   |
| <b>6. Asset Allocation Implementation and Public Equity Plan Discussion</b> |            |
| <b>7. Other items</b>   |            |

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**INVESTMENT ADVISORY COUNCIL**

**MINUTES**

**August 22, 2016**

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**Minutes  
Investment Advisory Council  
May 17, 2016**

The Investment Advisory Council (IAC) met at 12:00 P.M. on Tuesday, May 17, 2016 in the Board Room – First Floor, 60 Empire Drive, St. Paul, Minnesota.

**MEMBERS PRESENT:** Denise Anderson, Doug Anderson, Jeff Bailey, Dave Bergstrom, Kerry Brick, Dennis Duerst, Cindy Farrell (for Myron Frans), Susanna Gibbons, Morris Goodwin, Laurie Hacking, Peggy Ingison, Gary Martin, Malcolm McDonald, Carol Peterfeso, and Elaine Voss.

**MEMBERS ABSENT:** Kim Faust and Shawn Wischmeier.

**SBI STAFF:** Mansco Perry, LeaAnn Stagg, Patricia Ammann, Paul Anderson, Cassandra Boll, Nate Blumenshine, Tammy Brusehaver, Stephanie Gleeson, Inma Conde Goldman, Aaron Griga, Andrew Krech, Steve Kuettel, Mike Menssen, Jonathan Stacy, Charlene Olson, and Melissa Mader.

**OTHERS ATTENDING:** Ann Posey, Rod Bare and Jim Van Heuit, Callan Associates Inc.; Ramona Advani, State Auditor's Office; Bert Black, Secretary of State's Office; Christie Eller and John Mule, Attorney General's Office; Kim Holmes, Office of the Governor; Erin Leonard, MSRS; Jill Schurtz, SPTRFA; Jay Stoffel, TRA; Jim Mulrooney, Wells Fargo; Rick Baert, Pensions and Investments; Edgar Hernandez, SEIU; and Gordon Voss, private citizen.

Mr. Bailey, Chair of the Investment Advisory Council, asked members of the IAC to introduce themselves with their name and affiliation. The newest members to the IAC were: Cindy Farrell, Susanna Gibbons, Morris Goodwin, Peggy Ingison, and Carol Peterfeso.

The minutes of the February 16, 2016 meeting were approved.

**Executive Director's Report**

Mr. Perry referred members to Tab A of the meeting materials, and he reported that the Combined Funds had outperformed its Composite Index over the ten year period ending March 31, 2016 (Combined Funds 6.3% vs. Composite 6.1%) and had provided a real rate of return of 5.5% above inflation over the latest 20 year period (Combined Funds 7.6% vs. CPI 2.1%).

Mr. Perry said that assets decreased over the quarter (Combined Funds ending value of \$57.6 versus a beginning value of \$57.8 billion). The Combined Funds return was 70 basis points (bps) below the benchmark for the quarter (Combined Funds 0.5% vs. Composite 1.2%) and 80 bps below for the year (Combined Funds -1.1% vs. Composite -0.3%). The Combined Funds did outperform its target in all other time periods reported.

Mr. Perry reported that the domestic stock manager group underperformed its target for the quarter (Domestic Stocks 0.0% vs. Domestic Equity Asset Class Target 1.0%) and for the year (Domestic Stocks -1.9% vs. Domestic Equity Asset Class Target -0.3%). He said the international stock manager group underperformed its target for the quarter (International Stocks -1.4% vs. International Equity Asset Class Target -0.4%) and outperformed for the year and over longer time periods. Mr. Perry then stated that the bond segment matched its target for the quarter (Bonds 3.0% vs. Fixed Income Asset Class Target 3.0%), underperformed for the year (Bonds 1.9% vs. Fixed Income Asset Class Target 2.0%) but outperformed its target in all other time periods. He stated that the alternative investments had a small lag to performance for the quarter but contributed for the year (total return of -0.4% and 4.2%, respectively). Mr. Perry concluded his report noting that, as of March 31, 2016, the SBI was responsible for managing slightly under \$80 billion of assets.

Mr. Perry referred members to Tab B of the meeting materials for the administrative report. He reported that fiscal year-to-date, the SBI was running below budget. Next, Mr. Perry noted that the legislative session was still in session and there were a few bills that had potential impact to the SBI. One bill would require the SBI to report on the feasibility of divesting in fossil fuel companies while another bill had the SBI develop climate change risk management strategies in its investment approach. Staff has been in discussion with Minnesota Management and Budget and the Pollution Control Agency (PCA) on another bill that gives the SBI authority to invest the assets of the Metropolitan Landfill Contingency Action Trust account. PCA would administer this account. Lastly, Mr. Perry noted that the fund directors will update the committee on the status of the funding sustainability measures brought forth by the Minnesota State Retirement System (MSRS) and Teachers' Retirement Association (TRA). There is also language in this bill that would lower the investment return assumption for TRA to 8 percent, which MSRS and PERA did last year.

Mr. Perry stated that Tab B contained the updated information for Sudan and Iran. Mr. Perry noted that there is currently no litigation involving the SBI.

Ms. Hacking, Chair of the Administrative Committee, and Mr. Perry referred members to Tab C of the meeting materials for the Administrative Committee Report. Ms. Hacking noted that a number of request for proposals (RFPs) will go out this year for consultant, custodian, and accounting services. She also noted that, pending approval of the IAC and Board, there is a workplan to implement asset allocation changes to the Combined Fund. Mr. Perry highlighted the two workplans under Development of Investment Policies which include enhanced private equity fee reporting and a review of Environmental, Social and Governance (ESG) issues. Lastly, Mr. Perry asked for the IAC's endorsement of the Proposed Workplan and Budget Plan. Mr. McDonald made a motion to endorse the Proposed Workplan and Budget Plan and Mr. Bergstrom seconded the motion. The motion passed.

Mr. Bergstrom reviewed the recommendations of the Deferred Compensation Review Committee. The Minnesota Deferred Compensation Plan (MNDC Plan) is a joint effort between the SBI and MSRS where the SBI chooses the investment vehicles and MSRS provides administration of the plan. The Deferred Compensation Review Committee reviewed the MN Target Date Funds and

recommended no changes to the current custom glide path which is shifted out five years from the State Street Global Advisors (SSgA) shelf glide path so that the most conservative allocation lands at retirement. This committee also reviewed the fee structure of the funds and recommended transitioning away from the retail mutual fund structure into a lower cost fund structure, like an Institutional Share Class or Commingled Investment Trust (CIT), if the firm has one available for the same strategy. The Fidelity Diversified International Equities Fund will have a CIT available some time during 4Q16 and the T. Rowe Price Small Cap Equity Fund offers an Institutional Share Class Fund. Lastly, this Deferred Compensation Review Committee recommended replacing the Janus Twenty Fund with the Vanguard Dividend Growth Fund. The Janus Twenty Fund is a relatively higher cost option that has underperformed its benchmark, the Russell 1000 Growth. Ms. Voss made a motion to endorse the Deferred Compensation Review Committee's recommendations and Mr. McDonald seconded the motion. The motion passed.

Andrew Krech provided a brief overview of the current alternative investment program and identified three funds staff was bringing before the committee to consider for new investment. Mr. Krech described IK Partners Fund VIII (Private Equity); Jon Stacy described Rockwood Capital Fund X (Real Estate), and Cassie Boll described LBC Credit (Credit). After discussion, Mr. McDonald moved approval of the three recommendations and Ms. Hacking seconded the motion. The motion passed.

Ms. Ann Posey and Mr. Jim Van Heuit reviewed the Asset Liability study conducted by Callan. Ms. Posey first walked through the objectives of the Asset Liability study, which were to evaluate the current asset allocation policy and determine if it was still appropriate considering the funding and benefit policies. The SBI is only responsible for the investment policy for the Combined Funds and the three statewide retirement systems are responsible for the funding and benefit policies for their respective plans. Public funds use the same rate to discount liabilities and to calculate expected investment return. This rate is selected by the legislature. Mr. Van Heuit reviewed the methodology and the assumptions for each of the asset allocation mixes provided.

After the Callan discussion, the Council discussed the aggressive nature of the equity orientation of the current and proposed asset mixes and its implications. It was pointed out that the asset allocation of most public funds tended to be aggressive, reflecting the longer term horizon of the funds. Mr. Perry then reviewed the recommendations and the implications of the changes. He stated that Staff would transition to the new policy over the course of Fiscal Year 2017. He also mentioned that additional proposals may be forthcoming which would modify the portfolio. Mr. Goodwin moved approval of staff's recommendation outlined in Tab F of the meeting materials as modified, and Ms. Hacking seconded the motion to adopt the following as it relates to the asset allocation policy:

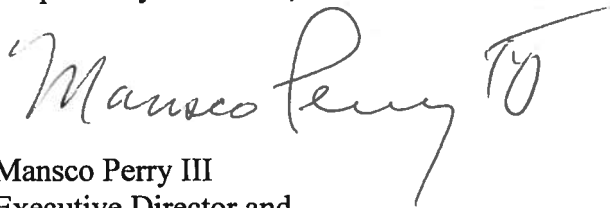
- 1) Adopt the Combined Funds Asset Allocation Policy shown below:

	<u>Combined Funds Asset Allocation</u>
<b>Public Equity</b>	<b>58%</b>
<b>Domestic Bonds</b>	<b>20%</b>
<b>Private Markets</b>	<b>20%</b>
<b>Cash</b>	<b><u>2%</u></b>
<b>Total</b>	<b>100%</b>

- 2) Allocate the un-invested Private Markets allocation to Public Equities.
- 3) The Asset Class Target for Public Equities will be a composite index of the domestic equity asset class target, the Russell 3000 Index and the international equity asset class target, the MSCI ACWI ex USA Index. The current weighting of these two indices is 75% U.S. and 25% Non-U.S. The weightings will transition to a blend of 67% U.S. and 33% Non-U.S. by Fiscal Year 2018.
- 4) The U.S. equity portion of the Public Equities will continue to be benchmarked against the Russell 3000. The SBI will be authorized to invest in and benchmark U.S. Equity managers to the Russell 3000 Index or any of the Russell 3000 sub-indices that are segmented by market cap and by style such that the aggregation of the U.S. equity manager benchmarks are reflective of the Russell 3000 Index.
- 5) The Non-U.S. equity portion of the Public Equities will continue to be benchmarked against the MSCI ACWI ex USA Index. The SBI will be authorized to invest in and benchmark Non-U.S. equity managers to the MSCI ACWI ex USA (standard) Index or any of the MSCI ACWI ex USA sub-indices that are segmented by market cap, style, or geography such that the aggregation of the Non-U.S. equity manager benchmarks are reflective of the MSCI ACWI ex USA Index. Additionally, the SBI will be authorized to opportunistically invest in Non-U.S. equity managers that are benchmarked to the small cap segments of the MSCI ACWI.
- 6) Authorize the SBI to invest with Global Managers who invest in and are benchmarked to the MSCI ACWI or the MSCI World indices. The motion passed.

The meeting adjourned at 2:55 p.m.

Respectfully submitted,

A handwritten signature in cursive script that reads "Mansco Perry III". The signature is written in black ink and is positioned above the printed name and title.

Mansco Perry III  
Executive Director and  
Chief Investment Officer



TAB

A

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# LONG TERM OBJECTIVES

Period Ending 6/30/16

<b>COMBINED FUNDS: \$57.8 Billion</b>	<b>Result</b>	<b>Compared to Objective (2)</b>
<b>Match or Exceed Composite Index (10 Yr.)</b>  Outperform a composite market index weighted in a manner that reflects the long-term asset allocation of the Combined Funds over the latest 10 year period.	6.5% (1)	0.2 percentage point above the target
<b>Provide Real Return (20 Yr.)</b>  Provide returns that are 3-5 percentage points greater than inflation over the latest 20 year period.	7.5%	5.3 percentage points above CPI

(1) Performance is calculated net of fees.

(2) Differential from composite may occur due to rounding.

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## EXECUTIVE SUMMARY

### Combined Funds (Net of Fees)

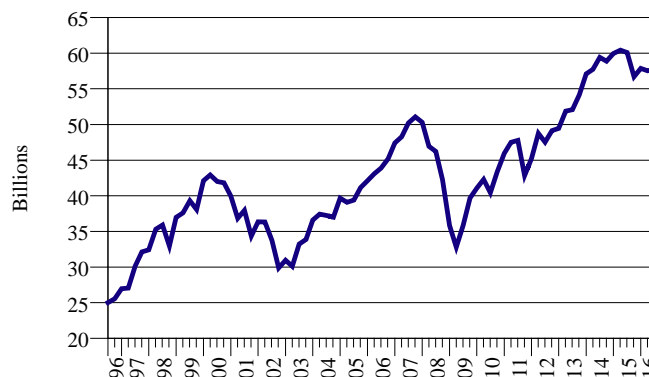
#### Asset Growth

The market value of the Combined Funds increased 0.4% during the second quarter of 2016. The negative net contributions were outweighed by positive investment returns during the quarter.

#### Asset Growth During Second Quarter 2016 (Millions)

Beginning Value	\$57,566
Net Contributions	-548
Investment Return	787
Ending Value	\$57,804

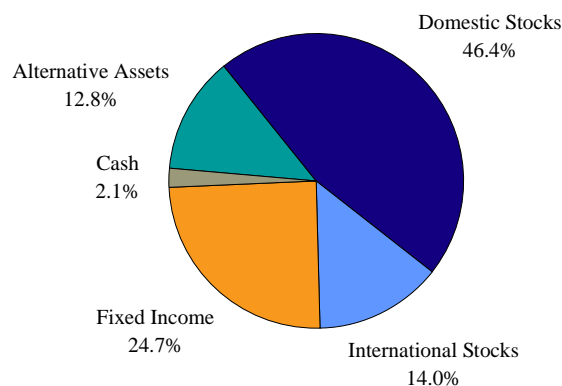
#### Combined Funds Market Value



#### Asset Mix

During the quarter there was an increase in the domestic stocks allocation due to positive performance. The allocation to bonds decreased due to a rebalance to cash.

	Policy Targets	Actual Mix 6/30/16	Actual Market Value (Millions)
Domestic Stocks	45.0%	46.4%	\$26,817
International Stocks	15.0%	14.0%	8,095
Bonds	18.0%	24.7%	14,279
Alternative Assets*	20.0%	12.8%	7,404
Cash	2.0%	2.1%	1,209
	100.0%	100.0%	\$57,804

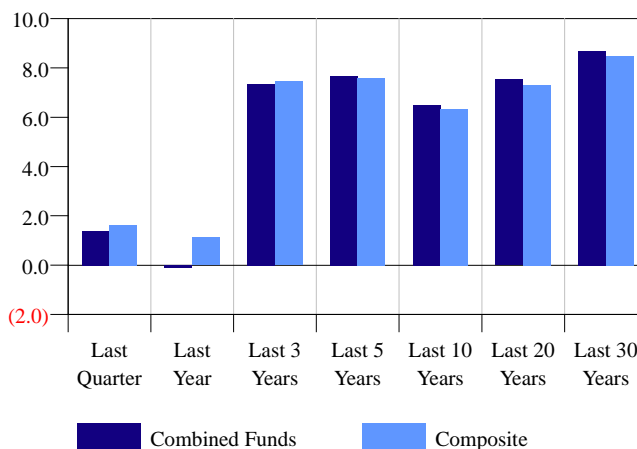


\* Any uninvested allocation is held in bonds.

#### Fund Performance (Net of Fees)

The Combined Funds underperformed its benchmark for the quarter and year.

	Periods Ended 6/30/16						
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years	Last 30 Years
Combined Funds	1.4%	-0.1%	7.3%	7.7%	6.5%	7.5%	8.7%
Composite	1.6%	1.1%	7.4%	7.6%	6.3%	7.3%	8.5%



Note: All periods over one year are annualized.

Column sums throughout this report may not add due to rounding.

## EXECUTIVE SUMMARY

### Stock and Bond Manager Performance (Net of Fees)

#### Domestic Stocks

The domestic stock manager group (active, semi-passive and passive combined) underperformed its target for the quarter and for the year.

**Russell 3000:** The Russell 3000 measures the performance of the 3000 largest U.S. companies based on total market capitalization.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Dom. Stocks</b>	<b>2.0%</b>	<b>0.0%</b>	<b>10.7%</b>	<b>11.2%</b>	<b>7.2%</b>
Asset Class Target*	2.6%	2.1%	11.1%	11.6%	7.4%

\* The Domestic Equity Asset Class Target is the Russell 3000 effective 10/1/03. From 7/1/99 to 9/30/03, it was the Wilshire 5000 Investable Index.

#### International Stocks

The international stock manager group (active, semi-passive and passive combined) underperformed its target for the quarter and outperformed its target for the year.

**MSCI ACWI Free ex USA (net):** The Morgan Stanley Capital International All Country World Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global developed and emerging markets. There are 45 countries included in this index. It does not include the United States.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Int'l Stocks</b>	<b>-0.8%</b>	<b>-9.7%</b>	<b>1.8%</b>	<b>0.9%</b>	<b>2.4%</b>
Asset Class Target*	-0.6%	-10.2%	1.2%	0.1%	1.9%

\* Since 6/1/08 the International Equity Asset Class Target is the Standard MSCI ACWI ex U.S. (net). From 10/1/07 to 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex USA (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex USA (net).

#### Bonds

The bond manager group (active and semi-passive combined) outperformed its target for the quarter and underperformed for the year.

**Barclays Aggregate:** The Barclays Aggregate Bond Index reflects the performance of the broad bond market for investment grade (Baa or higher) bonds, U.S. treasury and agency securities, and mortgage obligations with maturities greater than one year.

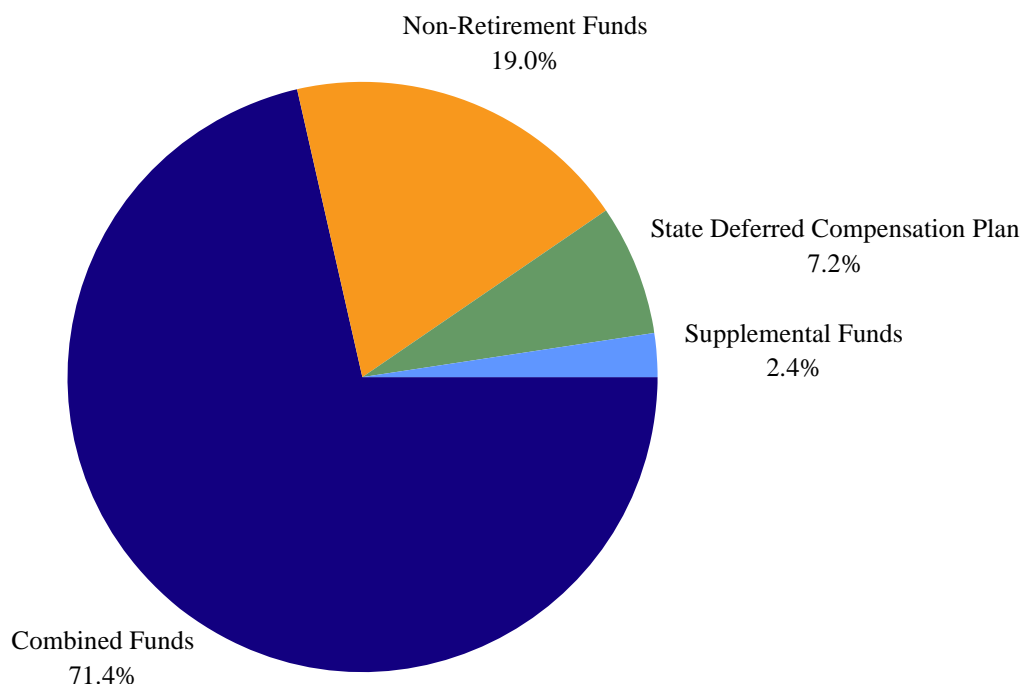
	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Bonds</b>	<b>2.4%</b>	<b>5.9%</b>	<b>4.3%</b>	<b>4.3%</b>	<b>5.4%</b>
Asset Class Target	2.2%	6.0%	4.1%	3.8%	5.1%

#### Alternative Investments

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Alternatives</b>	<b>-0.3%</b>	<b>0.2%</b>	<b>8.6%</b>	<b>9.4%</b>	<b>9.6%</b>

Note: All periods over one year are annualized.

**EXECUTIVE SUMMARY**  
**Funds Under Management**



**6/30/16**  
**Market Value**  
**(Billions)**

**Retirement Funds**

Combined Funds	\$57.8
Supplemental Investment Fund (Excluding Deferred Compensation Plan Assets)	1.9
State Deferred Compensation Plan	5.8

**Non-Retirement Funds**

Assigned Risk Plan	0.3
Permanent School Fund	1.2
Environmental Trust Fund	0.9
Closed Landfill Investment Fund	0.1
Miscellaneous Trust Accounts	0.2
Other Post Employment Benefits Accounts	0.5
State Cash Accounts	11.0
<u>Minnesota College Savings Plan</u>	<u>1.2</u>

**Total** **\$80.9**

Note: Amounts and percentages may not add due to rounding.

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# MINNESOTA STATE BOARD OF INVESTMENT

## QUARTERLY INVESTMENT REPORT

Second Quarter 2016  
(April 1, 2016 - June 30, 2016)

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## VARIOUS CAPITAL MARKET INDICES

Periods Ended June 30, 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 20 Years
<b>Domestic Equity</b>						
Russell 3000 (broad market)	2.6%	2.1%	11.1%	11.6%	7.4%	8.0%
Russell 1000 (large cap)	2.5	2.9	11.5	11.9	7.5	8.0
Russell 2000 (small cap)	3.8	-6.7	7.1	8.4	6.2	7.6
Dow Jones Wilshire Composite	2.6	2.0	11.0	11.5	7.5	8.0
Dow Jones Industrials	2.1	4.5	9.0	10.4	7.7	8.4
S&P 500	2.5	4.0	11.7	12.1	7.4	7.9
<b>Domestic Fixed Income</b>						
Barclays Aggregate (1)	2.2	6.0	4.1	3.8	5.1	5.7
Barclays Gov't/Credit	2.7	6.7	4.2	4.1	5.2	5.7
3 month U.S. Treasury Bills	0.1	0.2	0.1	0.1	1.0	2.4
<b>International</b>						
MSCI Emerging Markets Free Index (2)	0.7	-12.1	-1.6	-3.8	3.5	5.0
MSCI ACWI ex USA (3)	-0.6	-10.2	1.2	0.1	1.9	--
MSCI EAFE (4)	-1.5	-10.2	2.1	1.7	1.6	4.0
MSCI World ex USA (5)	-1.1	-9.8	1.9	1.2	1.6	4.2
Salomon Non U.S. Gov't Bond	4.0	13.8	2.4	0.3	4.0	4.5
<b>Inflation Measure</b>						
Consumer Price Index CPI-U (6)	1.2	1.0	1.1	1.3	1.7	2.2
Consumer Price Index CPI-W (7)	1.3	0.6	0.8	1.1	1.7	2.1

(1) Barclays Capital Aggregate Bond index. Includes governments, corporates and mortgages.

(2) Morgan Stanley Capital International Emerging Markets Free Index (Net index).

(3) Morgan Stanley Capital International All Country World Index ex USA (Net index).

(4) Morgan Stanley Capital International Index of Europe, Australasia and the Far East (EAFE) (Net index).

(5) Morgan Stanley Capital International World ex USA Index (Developed Markets) (Net index).

(6) Consumer Price Index (CPI) for all urban consumers, also known as CPI-U.

(7) Consumer Price Index (CPI) for all wage earners, also known as CPI-W.

Note: All periods over one year are annualized.

## FINANCIAL MARKETS REVIEW

### DOMESTIC STOCKS

The U.S. stock market, as measured by the Russell 3000 index, posted a 2.6% return for the second quarter of 2016. Positive global growth, albeit modest, helped U.S. equities generate positive returns for the second quarter. Investors responded to the surprising "Brexit" development by continuing to rotate into low-volatility and high-dividend stocks. Within the Russell 3000, Energy was the best performing sector with a 10.9% return while Technology was the weakest sector with -2.1% return for the quarter. Value stocks outperformed growth stocks during the quarter.

Performance for the Russell Style Indices for the quarter is shown below:

Large Growth	Russell 1000 Growth	0.6%
Large Value	Russell 1000 Value	4.6%
Small Growth	Russell 2000 Growth	3.2%
Small Value	Russell 2000 Value	4.3%

The Russell 3000 index returned 2.1% for the year ending June 30, 2016.

### DOMESTIC BONDS

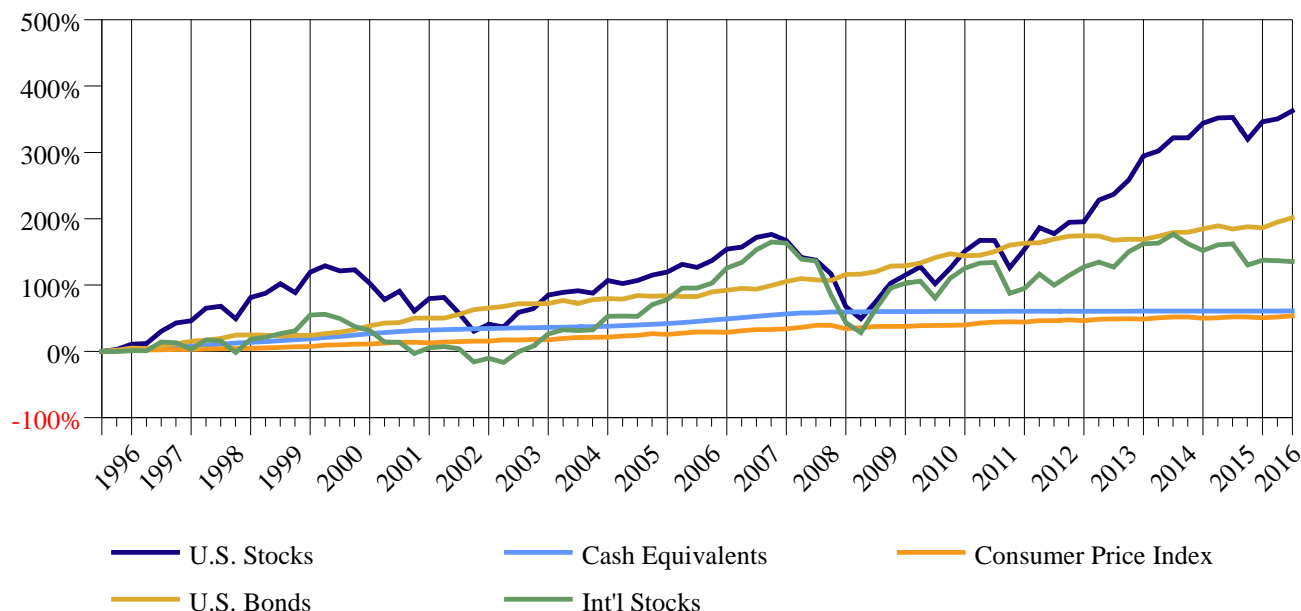
The U.S. bond market, as measured by the Barclays Capital U.S. Aggregate Bond Index, produced a total return of 2.2% for the quarter. The 2-year U.S. Treasury yield ended the quarter lower by 14 basis points at 0.6%, the 5-year decreased by 20 basis points to 1.0%, the 10-year decreased by 23 basis points to 1.5%, and the 30-year decreased by 32 basis points to 2.3%. Corporate bonds were the biggest driver of performance followed by CMBS and U.S. Treasuries.

The major sector returns for the Barclays Capital U.S. Aggregate Bond Index for the quarter were:

U.S. Treasury	2.1%
Agency	1.7%
Corporates	3.6%
Agency MBS	1.1%
Commercial Mortgages	2.2%
Asset-Backed	1.2%

### PERFORMANCE OF CAPITAL MARKETS

#### Cumulative Returns



## FINANCIAL MARKETS REVIEW

### DEVELOPED INTERNATIONAL MARKETS

In aggregate, developed international stock markets (as measured by MSCI World ex USA index net) provided a return of -1.1% for the quarter. The quarter started with positive returns in April but failed to hold onto those gains in May and June. Equities reversed course in the middle of the quarter due to a strong recovery in oil prices and concerns over economic growth in China. Volatility was also amplified when the United Kingdom unexpectedly voted to leave the European Union at the end of June. The top performing sectors for the quarter were Energy, Health Care and Materials. The worst performing sectors were Consumer Discretionary, Financials and Information Technology.

The quarterly performance of the six largest stock markets, which comprise about 73% of the MSCI World ex USA index, is shown below:

Japan	-1.0%
United Kingdom	-0.7%
Canada	3.4%
France	-4.3%
Switzerland	2.0%
Germany	-5.6%

The MSCI World ex USA index returned -9.8% during the last year.

### EMERGING INTERNATIONAL MARKETS

Emerging markets (as measured by MSCI Emerging Markets Free index net) provided a return of 0.7% for the quarter. The quarterly performance of the six largest stock markets in the index is shown below:

China	0.1%
Korea	-1.2%
Taiwan	0.7%
India	3.7%
South Africa	1.6%
Brazil	13.9%

The Emerging Markets Free index returned -12.1% during the last year.

The Emerging Markets Free (EMF) index is compiled by MSCI and measures performance of 23 stock markets in Latin America, Asia, Africa and Eastern Europe. EMF includes only those securities foreign investors are allowed to hold. The markets listed above comprise over 75% of the value of the emerging international markets in the index.

### REAL ESTATE

During the second quarter of 2016, private real estate posted its 26th consecutive quarter of positive returns with the NCREIF Property Index posting a return of 2.0%. Real Estate markets have seen a healthy recovery since the 2008-2009 crash. An aggregate \$27bn in private real estate funds was raised in 2Q16, with approximately 60% of the total amount focused on Value Added or Opportunistic strategies. Closed-end private real estate dry powder stands at \$238bn, but 66% of institutional investors still plan to commit more than \$50mn to the space over the next 12 months. (Sources: NCREIF; Preqin)

### PRIVATE EQUITY

During the second quarter of 2016, an aggregate \$101 billion in private equity funds was raised across 180 funds. Buyout funds topped the list of aggregate capital raised with \$56bn and Venture Capital closed the most funds with 89. Heading into 3Q16, there are 1,720 private equity funds raising capital, targeting an aggregate \$445bn. While the number of funds raising capital is a new record, the aggregate target capital declined for the fourth straight quarter. (Source: Preqin)

The aggregate value of the 434 buyout exits in 2Q16 was \$90bn. The aggregate exit value was a 33% increase over 1Q16, and is the first increase in value in four quarters. The largest deal announced in the quarter was the \$7.5bn buyout of MultiPlan, which was purchased by GIC, Hellman & Friedman, and Leonard Green & Partners. (Sources: Preqin)

### RESOURCE FUNDS

During the second quarter of 2016, crude oil traded between a range of \$36/bbl and \$51/bbl. The average price for the quarter was \$46/bbl, which was \$12 above the average price from the first quarter. It was the first quarterly average price increase after three consecutive quarterly declines. Investors anticipating a supply/demand equilibrium on the horizon began bidding up the price of crude oil. (Source: Bloomberg, Wall Street Journal)

### COMBINED FUNDS

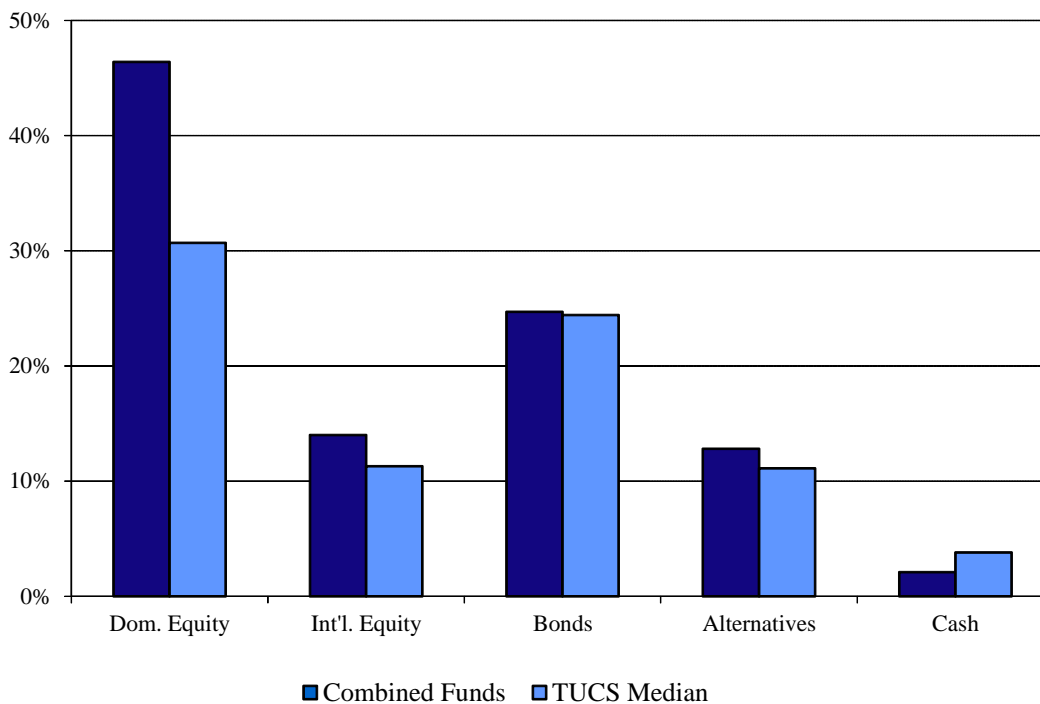
The comparison universe used by the SBI is the Trust Universe Comparison Service (TUCS). Only funds with assets over \$1 billion are included in the comparisons shown in this section.

#### Asset Mix Compared to Other Pension Funds

On 6/30/16, the asset mix of the Combined Funds was:

	<b>\$ Million</b>	<b>%</b>
Domestic Stocks	\$26,817	46.4%
International Stocks	8,095	14.0%
Bonds	14,279	24.7%
Alternative Assets	7,404	12.8%
Unallocated Cash	1,209	2.1%
<b>Total</b>	<b>\$57,804</b>	<b>100.0%</b>

Comparisons of the Combined Funds' asset mix to the median allocation to stocks, bonds and other assets of the public and corporate funds in TUCS over \$1 billion are shown below:



	<b>Domestic Equity</b>	<b>Int'l Equity</b>	<b>Bonds</b>	<b>Alternatives</b>	<b>Cash</b>
<b>Combined Funds</b>	46.4%	14.0%	24.7%	12.8%	2.1%
Median Allocation in TUCS*	30.7%	11.3%	24.4%	11.1%**	3.8%

\* Public and corporate plans over \$1 billion.  
 \*\* May include assets other than alternatives.

## COMBINED FUNDS

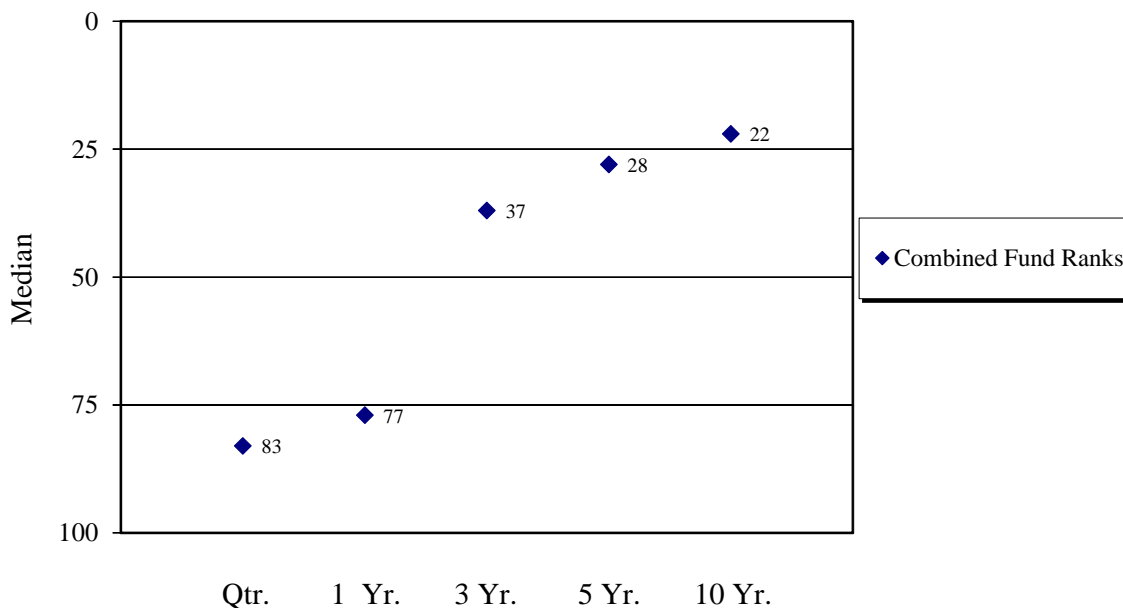
### Performance Compared to Other Pension Funds

While the SBI is concerned with how its returns compare to other pension investors, universe comparisons should be used with great care. There are several reasons why such comparisons will provide an "apples to oranges" look at performance:

- **Differing Allocations.** Asset allocation will have a dominant effect on return. The allocation to stocks among the funds in TUCS typically ranges from 20-90%, a very wide range for meaningful comparison. In addition, it appears that many funds do not include alternative asset holdings in their reports to TUCS. This further distorts comparisons among funds.
- **Differing Goals/Liabilities.** Each pension fund structures its portfolio to meet its own liabilities and risk tolerance. This will result in different asset mix choices. Since asset mix will largely determine investment results, a universe ranking is not relevant to a discussion of how well a plan sponsor is meeting its long-term liabilities.

With these considerations in mind, the performance of the Combined Funds compared to other public and corporate pension funds in Trust Universe Comparison Service (TUCS) are shown below.

The SBI's returns are ranked against public and corporate plans with over \$1 billion in assets. All funds in TUCS report their returns gross of fees.



	Periods Ended 6/30/16				
	<u>Quarter</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>10 Years</u>
Combined Funds					
Percentile Rank in TUCS*	83th	77th	37th	28th	22th

\* Compared to public and corporate plans greater than \$1 billion, gross of fees.

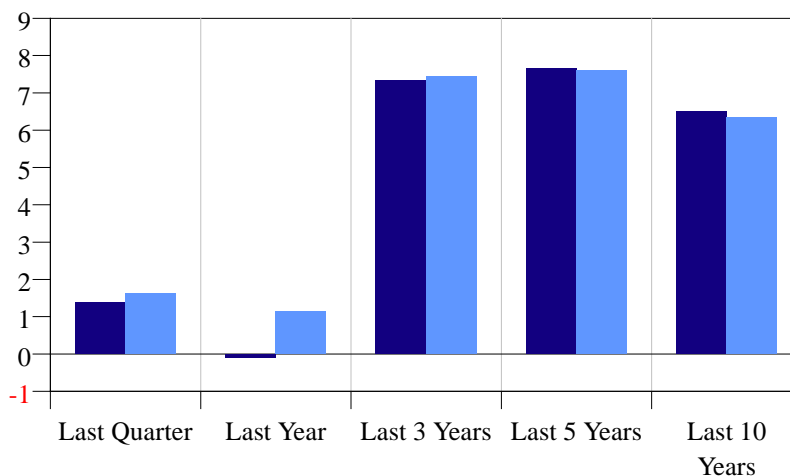
Note: All periods over one year are annualized.

## COMBINED FUNDS Performance Compared to Composite Index

The Combined Funds' performance is evaluated relative to a composite of market indices. The composite is weighted in a manner that reflects the asset allocation of the Combined Funds:

	<b>Maret Index</b>	<b>Combined Funds Composite 2Q16</b>
Domestic Stocks	Russell 3000	45.0%
Int'l Stocks	MSCI ACWI Free ex USA	15.0%
Bonds	Barclays Capital Aggregate	25.4% *
Alternative Investments	Alternative Investments	12.6% *
Unallocated Cash	3 Month T-Bills	2.0%
		100.0%

\* Alternative asset and fixed income weights are reset in the composite at the start of each month to reflect the amount of unfunded commitments in alternative asset classes. The above Combined Funds Composite weighting was as of the beginning of the quarter.



**Periods Ended 6/30/16**

Combined Funds **		1.4%	-0.1%	7.3%	7.7%	6.5%
Composite		1.6%	1.1%	7.4%	7.6%	6.3%

\*\* Actual returns are reported net of fees.

Note: All periods over one year are annualized.

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## STOCK AND BOND MANAGERS

### Performance of Asset Pools

(Net of Fees)

#### Domestic Stocks

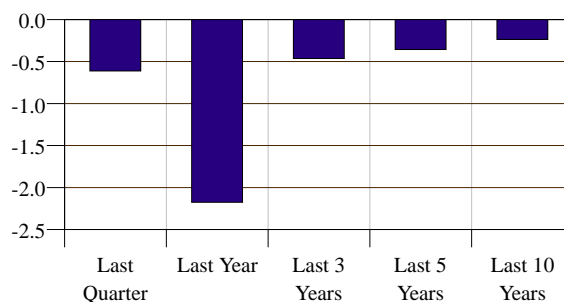
**Target:** Russell 3000

**Expectation:** If one-third of the pool is actively managed, one-third is semi-passively managed, and one-third is passively managed, the entire pool is expected to exceed the target by .18% - .40% annualized over time.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Domestic Stocks</b>	<b>2.0%</b>	<b>0.0%</b>	<b>10.7%</b>	<b>11.2%</b>	<b>7.2%</b>
Asset Class Target*	2.6%	2.1%	11.1%	11.6%	7.4%

\* The Domestic Equity Asset Class Target is the Russell 3000 effective 10/1/03. From 7/1/99 to 9/30/03, it was the Wilshire 5000 Investable Index.

Value Added to Domestic Equity Target (1)



#### International Stocks

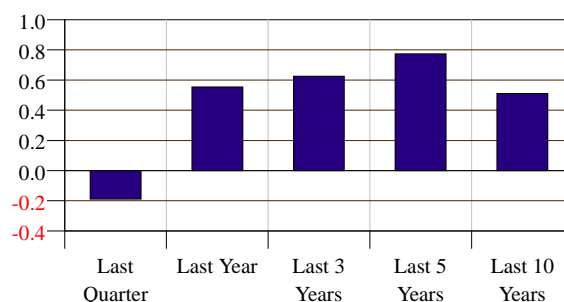
**Target:** Standard MSCI ACWI Free ex U.S. (net)

**Expectation:** If at least one-third of the pool is managed actively, no more than one-third is semi-passively managed, and at least one-quarter is passively managed, the entire pool is expected to exceed the target by .25% - .75% annualized, over time.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Int'l Stocks</b>	<b>-0.8%</b>	<b>-9.7%</b>	<b>1.8%</b>	<b>0.9%</b>	<b>2.4%</b>
Asset Class Target*	-0.6%	-10.2%	1.2%	0.1%	1.9%

\* The Int'l Equity Asset Class Target is MSCI ACWI Free ex U.S. (net) effective 10/1/03.

Value Added to International Equity Target (1)



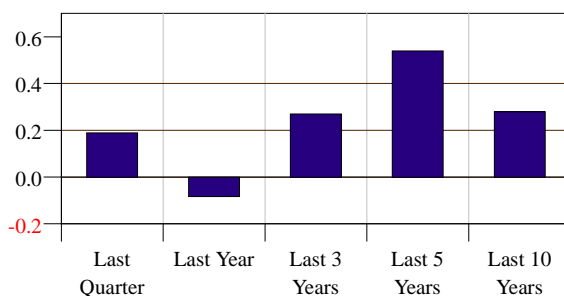
#### Bonds

**Target:** Barclays Capital Aggregate Bond Index

**Expectation:** If half of the pool is actively managed and half is managed semi-passively, the entire pool is expected to exceed the target by .20% - .35% annualized, over time.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Bonds</b>	<b>2.4%</b>	<b>5.9%</b>	<b>4.3%</b>	<b>4.3%</b>	<b>5.4%</b>
Asset Class Target	2.2%	6.0%	4.1%	3.8%	5.1%

Value Added to Fixed Income Target (1)



Note: All periods over one year are annualized.

(1) Graph data is based on actual return and may not match table due to rounding.

## ALTERNATIVE INVESTMENTS

### Performance of Asset Categories (Net of Fees)

#### Alternative Investments

**Expectation:** The Alternative investments are measured against themselves using actual portfolio returns.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Alternatives	-0.3%	0.2%	8.6%	9.4%	9.6%
Inflation	1.2%	1.0%	1.1%	1.3%	1.7%

#### Real Estate Investments (Equity emphasis)

**Expectation:** Real estate investments are expected to exceed the rate of inflation by 5% annualized, over the life of the investment.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Real Estate	2.5%	8.4%	15.2%	12.7%	6.2%

The SBI began its real estate program in the mid-1980's and periodically makes new investments. Some of the existing investments are relatively immature and returns may not be indicative of future results.

#### Private Equity Investments (Equity emphasis)

**Expectation:** Private equity investments are expected to exceed the rate of inflation by 10% annualized, over the life of the investment.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Private Equity	1.3%	7.4%	13.1%	12.0%	11.5%

The SBI began its private equity program in the mid-1980's and periodically makes new investments. Some of the existing investments are relatively immature and returns may not be indicative of future results.

#### Resource Investments (Equity emphasis)

**Expectation:** Resource investments are expected to exceed the rate of inflation by 5% annualized, over the life of the investment.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Resource	-10.1%	-24.2%	-7.9%	-1.0%	7.8%

The SBI began its resource program in the mid-1980's and periodically makes new investments. Some of the existing investments are relatively immature and returns may not be indicative of future results.

#### Yield Oriented Investments (Debt emphasis)

**Expectation:** Yield oriented investments are expected to exceed the rate of inflation by 5.5% annualized, over the life of the investment.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Yield Oriented	3.2%	-3.7%	6.5%	9.4%	10.4%

The SBI began its yield oriented program in 1994. Some of the existing investments are relatively immature and returns may not be indicative of future results.

## SUPPLEMENTAL INVESTMENT FUND

The Minnesota Supplemental Investment Fund (SIF) is a multi-purpose investment program that offers a range of investment options to state and local public employees.

The SIF provides some or all of the investment options to the Unclassified Employees Retirement Plan, Minnesota Deferred Compensation Plan, Public Employees Defined Contribution Plan, Hennepin County Supplemental Retirement Plan, Health Care Savings Plan, local police and firefighter retirement plans and the Voluntary Statewide Volunteer Firefighter plan.

A wide diversity of investment goals exists among the Fund's participants. In order to meet those needs, the Fund has been structured much like a "family of mutual funds." Participants may allocate their investments among one or more accounts that are appropriate for their needs, within the statutory requirements and rules established by the participating organizations. Participation in the Fund is accomplished through the purchase or sale of shares in each account. All returns are net of investment management fees.

On June 30, 2016 the market value of the entire Fund was \$1.9 billion.

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### Investment Options

	<b>6/30/16 Market Value (In Millions)</b>
<b>Balanced Fund</b> - a balanced portfolio utilizing both common stocks and bonds.	\$375
<b>U.S. Stock Actively Managed Fund</b> - an actively managed, all common stock portfolio.	\$209
<b>U.S. Stock Index Fund</b> - a passively managed, all common stock portfolio designed to track the performance of the entire U.S. stock market.	\$481
<b>Broad International Stock Fund</b> - a portfolio of non U.S. stocks that incorporates both active and passive management.	\$166
<b>Bond Fund</b> - an actively managed, all bond portfolio.	\$143
<b>Money Market Fund</b> - a portfolio utilizing short-term, liquid debt securities.	\$303
<b>Stable Value Fund</b> - a portfolio of stable value instruments, including security backed contracts and insurance company and bank investment contracts.	\$206
<b>Volunteer Firefighter Account</b> - a balanced portfolio only used by the Voluntary Statewide Volunteer Firefighter Plan.	\$54

**SUPPLEMENTAL INVESTMENT FUND ACCOUNTS**

**BALANCED FUND**

**Investment Objective**

The primary investment objective of the Balanced Fund is similar to that of the Combined Funds. The Fund seeks to maximize long-term real rates of return, while limiting short-run portfolio return volatility.

**Asset Mix**

The Balanced Fund is invested in a balanced portfolio of common stocks and bonds. Common stocks provide the potential for significant capital appreciation, while bonds act as a deflation hedge and provide portfolio diversification.

	Target	Actual
Stocks	60.0%	60.2%
Bonds	35.0%	35.0%
Cash	5.0%	4.9%
	100.0%	100.0%

**Periods Ended 6/30/16**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>2.4%</b>	<b>3.4%</b>	<b>8.3%</b>	<b>8.7%</b>	<b>6.9%</b>
Benchmark*	2.4%	3.6%	8.2%	8.4%	6.4%

\* 60% Russell 3000/35% Barclays Aggregate Bond Index/5% T-Bills Composite.

**U.S. STOCK ACTIVELY MANAGED FUND**

**Investment Objective**

The U.S. Stock Actively Managed Fund's investment objective is to generate above-average returns from capital appreciation on common stocks.

**Asset Mix**

The U.S. Stock Actively Managed Fund is invested primarily in the common stocks of US companies. The managers in the account also hold varying levels of cash.

**Periods Ended 6/30/16**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>1.7%</b>	<b>-1.1%</b>	<b>10.4%</b>	<b>11.0%</b>	<b>7.0%</b>
Benchmark*	2.6%	2.1%	11.1%	11.6%	7.4%

\* Russell 3000.

**U.S. STOCK INDEX FUND**

**Investment Objective and Asset Mix**

The investment objective of the U.S. Stock Index Fund is to generate returns that track those of the U.S. stock market as a whole. The Fund is designed to track the performance of the Russell 3000, a broad-based equity market indicator.

The Fund is invested 100% in common stock.

**Periods Ended 6/30/16**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>2.6%</b>	<b>2.2%</b>	<b>11.1%</b>	<b>11.6%</b>	<b>7.5%</b>
Benchmark*	2.6%	2.1%	11.1%	11.6%	7.4%

\* Russell 3000.

Note: All periods over one year are annualized.

## SUPPLEMENTAL INVESTMENT FUND ACCOUNTS

### **BROAD INTERNATIONAL STOCK FUND**

#### **Investment Objective and Asset Mix**

The investment objective of the Broad International Stock Fund is to earn a high rate of return by investing in the stock of companies outside the U.S. At least 25% of the Fund is "passively managed" and no more than 33% of the Fund is "semi-passively managed." These portions of the Fund are designed to track and modestly outperform, respectively, the return of 23 developed markets included in the MSCI World ex USA Index. The remainder of the Fund is "actively managed" by several international managers and emerging markets specialists who buy and sell stocks in an attempt to maximize market value.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>-0.8%</b>	<b>-9.7%</b>	<b>1.8%</b>	<b>0.9%</b>	<b>2.5%</b>
Benchmark*	-0.6%	-10.2%	1.2%	0.1%	1.9%

\* The Int'l Equity Asset Class Target is MSCI ACWI ex USA (net).

### **BOND FUND**

#### **Investment Objective**

The investment objective of the Bond Fund is to exceed the return of the broad domestic bond market by investing in fixed income securities.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>2.4%</b>	<b>5.9%</b>	<b>4.3%</b>	<b>4.3%</b>	<b>5.4%</b>
Barclays Agg	2.2%	6.0%	4.1%	3.8%	5.1%

#### **Asset Mix**

The Bond Fund invests primarily in high-quality, government and corporate bonds that have intermediate to long-term maturities, usually 3 to 20 years.

### **MONEY MARKET FUND**

#### **Investment Objective**

The investment objective of the Money Market Fund is to protect principal by investing in short-term, liquid U.S. Government securities.

	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Account</b>	<b>0.1%</b>	<b>0.4%</b>	<b>0.2%</b>	<b>0.2%</b>	<b>1.2%</b>
3 month T-Bills	0.1%	0.2%	0.1%	0.1%	1.0%

#### **Asset Mix**

The Fund is invested entirely in high-quality, short-term U.S. Treasury and Agency securities. The average maturity of the portfolios is less than 90 days.

Note: All periods over one year are annualized.

**SUPPLEMENTAL INVESTMENT FUND ACCOUNTS**

**STABLE VALUE FUND**

**Investment Objective**

The investment objectives of the Stable Value Fund are to protect investors from loss of their original investment and to provide competitive interest rates using somewhat longer-term investments than typically found in a money market fund.

**Asset Mix**

The Fund is invested in a well-diversified portfolio of high-quality fixed income securities with strong credit ratings. The Fund also invests in contracts issued by highly rated insurance companies and banks which are structured to provide principal protection for the Fund's diversified bond portfolios, regardless of daily market changes.

**Periods Ended 6/30/16**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Last 10 Years</b>
<b>Total Account</b>	<b>0.5%</b>	<b>2.0%</b>	<b>1.9%</b>	<b>2.3%</b>	<b>3.4%</b>
Benchmark*	0.3%	1.4%	1.3%	1.1%	2.0%

\* The Stable Value Fund Benchmark is the 3-year Constant Maturity Treasury Bill +45 basis points.

**VOLUNTEER FIREFIGHTER ACCOUNT**

The investment objective of the Volunteer Firefighter Account is to maximize long-term returns while limiting short-term portfolio return volatility.

The Account is invested in a balanced portfolio:

	<b>Target</b>	<b>Actual</b>
Domestic Stocks	35.0%	35.2%
International Stocks	15.0%	14.5%
Bonds	45.0%	45.9%
Cash	5.0%	4.5%
	100.0%	100.0%

**Periods Ended 6/30/16**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Last 10 Years</b>
<b>Total Account</b>	<b>1.9%</b>	<b>1.9%</b>	<b>6.1%</b>	<b>6.2%</b>	<b>--</b>
Benchmark*	1.8%	2.1%	6.0%	6.0%	--

\* The benchmark for this account is 35% Russell 3000, 15% MSCI ACWI ex USA (net), 45% Barclays Aggregate, 5% 3 Month T-Bills.

Note: All periods over one year are annualized.

## DEFERRED COMPENSATION PLAN ACCOUNTS

The Deferred Compensation Plan provides public employees with a tax-sheltered retirement savings plan that is supplemental to their primary retirement plan. (In most cases, the primary plan is a defined benefit plan administered by TRA, PERA, or MSRS.)

Participants choose from 4 actively managed stock and bond funds, 5 passively managed stock and bond funds and 11 target retirement fund options.

The SBI also offers a money market option and a stable value option. All provide for daily pricing needs of the plan administrator. Participants may also choose from hundreds of funds in a mutual fund window. The current plan structure became effective July 1, 2011. The investment options and objectives are outlined below.

On June 30, 2016, the market value of the entire Fund was \$5.8 billion.

### Investment Options

	<b>6/30/16 Market Value (In Millions)</b>
Vanguard Index Institutional Plus Shares (passive)	\$995.8
Janus Twenty (active)	\$522.6
Vanguard Mid Cap Index Institutional Shares (passive)	\$429.6
T. Rowe Price Small-Cap Stock (active)	\$567.9
Fidelity Diversified International (active)	\$270.6
Vanguard Total International Stock Index Institutional Plus (passive)	\$136.5
Vanguard Balanced Index Institutional Shares (passive)	\$698.0
Dodge & Cox Income Fund (active)	\$212.2
Vanguard Total Bond Market Index Institutional Shares (passive)	\$202.1
SIF Money Market Fund	\$62.9
SIF Stable Value Fund	\$1,338.7
State Street Global Advisors MN Target Retirement Funds	\$350.8
Income Fund	\$67.4
2020 Fund	\$79.5
2025 Fund	\$67.2
2030 Fund	\$43.1
2035 Fund	\$33.0
2040 Fund	\$21.1
2045 Fund	\$16.9
2050 Fund	\$11.7
2055 Fund	\$5.7
2060 Fund	\$5.2

## DEFERRED COMPENSATION PLAN ACCOUNTS

### LARGE CAP EQUITY

#### Vanguard Index Institutional Plus (passive)

A passive domestic stock portfolio that tracks the S&P 500.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>2.5%</b>	<b>4.0%</b>	<b>11.7%</b>	<b>12.1%</b>
S&P 500	2.5%	4.0%	11.7%	12.1%

#### Janus Twenty (active)

A concentrated fund of large cap stocks which is expected to outperform the S&P 500, over time.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>-1.1%</b>	<b>0.7%</b>	<b>11.1%</b>	<b>10.4%</b>
S&P 500	2.5%	4.0%	11.7%	12.1%

### MID CAP EQUITY

#### Vanguard Mid Cap Index (passive)

A fund that passively invests in companies with medium market capitalizations that tracks the CRSP US Mid-Cap Index.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>2.3%</b>	<b>-0.9%</b>	<b>10.8%</b>	<b>10.6%</b>
CRSP U.S. Mid Cap	2.3%	-0.9%	10.8%	10.7%

### SMALL CAP EQUITY

#### T Rowe Price Small Cap (active)

A fund that invests primarily in companies with small market capitalizations and is expected to outperform the Russell 2000.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>4.2%</b>	<b>-2.3%</b>	<b>8.6%</b>	<b>10.0%</b>
Russell 2000	3.8%	-6.7%	7.1%	8.4%

### INTERNATIONAL EQUITY

#### Fidelity Diversified International (active)

A fund that invests primarily in stocks of companies located outside of the United States and is expected to outperform the MSCI index of Europe, Australasia and the Far East (EAFE), over time.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>-2.3%</b>	<b>-10.0%</b>	<b>4.2%</b>	<b>3.4%</b>
MSCI EAFE	-1.5%	-10.2%	2.1%	1.7%

#### Vanguard Total International Stock Index (passive)

A fund that seeks to track the investment performance of the MSCI All Country World ex USA Investable Market Index, an index designed to measure equity market performance in developed and emerging markets, excluding the United States.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>0.2%</b>	<b>-9.1%</b>	<b>2.1%</b>	<b>0.6%</b>
ACWI ex USA IMI	-0.4%	-9.2%	2.2%	0.7%

Note: All periods over one year are annualized.



## DEFERRED COMPENSATION PLAN ACCOUNTS

### BALANCED

#### Vanguard Balanced Index (passive)

A fund that passively invests in a mix of domestic stocks and bonds. The fund is expected to track a weighted benchmark of 60% CRSP US Total Market Index/40% Barclays Aggregate.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>2.6%</b>	<b>4.0%</b>	<b>8.4%</b>	<b>8.6%</b>
Benchmark	2.5	3.9	8.4	8.6

### FIXED INCOME

#### Dodge & Cox Income Fund (active)

A fund that invests primarily in investment grade securities in the U.S. bond market which is expected to outperform the Barclays Aggregate, over time.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>2.6%</b>	<b>4.4%</b>	<b>4.0%</b>	<b>4.0%</b>
Barclays Agg	2.2%	6.0%	4.1%	3.8%

#### Vanguard Total Bond Market Index (passive)

A fund that passively invests in a broad, market weighted bond index that is expected to track the Barclays Aggregate.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
	<b>Fund</b>	<b>2.4%</b>	<b>6.1%</b>	<b>4.0%</b>
Barclays Agg	2.2%	6.0%	4.1%	3.8%

#### SIF Money Market Fund

A fund that invests in short-term debt instruments which is expected to outperform the return on 3-month U.S. Treasury Bills.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
	<b>Fund</b>	<b>0.1%</b>	<b>0.4%</b>	<b>0.2%</b>
3-Mo. Treas.	0.1%	0.2%	0.1%	0.1%

### SIF STABLE VALUE FUND

A portfolio composed of stable value instruments which are primarily investment contracts and security backed contracts. The fund is expected to outperform the return of the 3 year Constant Maturity Treasury +45 basis points, over time.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	<b>0.5%</b>	<b>2.0%</b>	<b>1.9%</b>	<b>2.3%</b>
Benchmark	0.3%	1.4%	1.3%	1.1%

### MN TARGET RETIREMENT ACCOUNTS

Target retirement funds offer a mix of investments that are adjusted over time to reduce risk and become more conservative as the target retirement date approaches.

**See the "Performance Summaries" section of the Public Markets, Non-Retirement, and Defined Contribution Report.**

Note: All periods over one year are annualized.

## MN COLLEGE SAVINGS PLAN ACCOUNTS

The Minnesota College Savings Plan is an education savings plan designed to help families set aside funds for future college costs. The SBI is responsible for the investments and the Minnesota Office of Higher Education (OHE) is responsible for the overall administration of the Plan.

The SBI and OHE contract jointly with TIAA to provide administrative, marketing, communication, recordkeeping and investment management services.

On June 30, 2016, the market value of the entire Fund was \$1.2 billion.

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### Investment Options

	<b>6/30/16 Market Value (In Millions)</b>
<b>Age Based Managed Allocation</b>	
Age Band 0-4 Years	\$24.3
Age Band 5-8 Years	\$72.2
Age Band 9-10 Years	\$72.7
Age Band 11-12 Years	\$103.1
Age Band 13-14 Years	\$130.5
Age Band 15 Years	\$62.4
Age Band 16 Years	\$62.3
Age Band 17 Years	\$64.8
Age Band 18 Years and over	\$151.4
<b>Risk Based Managed Allocations</b>	
Aggressive	\$9.4
Moderate	\$53.4
Conservative	\$3.4
<b>Static Options:</b>	
U.S. Large Cap Equity	\$8.8
International Equity	\$2.3
U.S. and International Equity	\$269.8
Equity and Interest Accumulation	\$1.1
100% Fixed Income	\$11.5
Money Market	\$8.2
Principal Plus Interest	\$107.9

## MN COLLEGE SAVINGS PLAN ACCOUNTS

### AGE-BASED MANAGED ALLOCATIONS

The Age-Based Managed Allocation Option seeks to align the investment objective and level of risk, which will become more conservative as the beneficiary ages and moves closer to entering an eligible educational institution.

See the "Performance Summaries" section of the Public Markets, Non-Retirement, and Defined Contribution Report.

### RISK BASED ALLOCATIONS

The Risk Based Allocation Option offers three separate allocation investment options: Aggressive, Moderate and Conservative, which have a fixed risk level and does not change as the Beneficiary ages.

See the "Performance Summaries" section of the Public Markets, Non-Retirement, and Defined Contribution Report.

### U.S. LARGE CAP EQUITY INDEX

A passive domestic stock portfolio that tracks the S&P 500.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	2.4%	3.7%	--	--
<b>S&amp;P 500</b>	2.5%	4.0%	--	--

### INTERNATIONAL EQUITY INDEX

A fund that passively invests in a mix of developed and emerging market equities. The fund is expected to track a weighted benchmark of 80% MSCI ACWI World ex USA and 20% Emerging Markets Free Index.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	-0.2%	-10.2%	1.4%	--
<b>Benchmark</b>	-1.0%	-10.7%	1.3%	--

### U.S. AND INTERNATIONAL EQUITY INDEX

A fund that invests in a mix of equities, both U.S. and international, across all capitalization ranges and real estate-related securities. The fund is expected to track a weighted benchmark of 60% Russell 3000, 24% International, 6% Emerging Markets, and 10% Real Estate Securities Fund.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	2.0%	0.3%	8.3%	8.5%
<b>Benchmark</b>	2.0%	0.2%	8.5%	8.7%

Note: All periods over one year are annualized.

## MN COLLEGE SAVINGS PLAN ACCOUNTS

### EQUITY AND INTEREST ACCUMULATION

A fund that passively invests half of the portfolio in equities across all capitalization ranges and the other half in a funding agreement. The fund is expected to track a weighted benchmark of 50% Russell 3000 and 50% 3-month T-Bill.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	1.4%	1.6%	--	--
<b>Benchmark</b>	1.3%	1.4%	--	--

### 100% FIXED INCOME

A fund that passively invests in fixed income holdings that tracks the Barclays Aggregate and two active funds that invest in inflation-linked bonds and high yield securities. The fund is expected to track a weighted benchmark of 70% Barclays Aggregate, 20% inflation-linked bond, and 10% high yield.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	2.2%	4.8%	3.1%	2.8%
<b>Benchmark</b>	2.3%	5.0%	3.5%	3.4%

### MONEY MARKET

An active fund that invests in high-quality, short-term money market instruments of both domestic and foreign issuers that tracks the iMoneyNet Average All Taxable benchmark.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	0.0%	0.0%	0.0%	0.0%
<b>iMoney Net Average All Taxable</b>	0.0%	0.1%	0.0%	0.0%

### PRINCIPAL PLUS INTEREST OPTION

A passive fund where contributions are invested in a Funding Agreement issued by TIAA-CREF Life. The funding agreement provides for a return of principal plus a guaranteed rate of interest which is made by the insurance company to the policyholder, not the account owners. The account is expected to outperform the return of the 3-month T-Bill.

	Periods Ended 6/30/16			
	Last Quarter	Last Year	Last 3 Years	Last 5 Years
<b>Fund</b>	0.3%	1.4%	1.3%	1.5%
<b>3-Month T-Bill</b>	0.1%	0.1%	0.1%	0.1%

Note: All periods over one year are annualized.

## ASSIGNED RISK PLAN

### Investment Objectives

The Assigned Risk plan has two investment objectives: to minimize the mismatch between assets and liabilities and to provide sufficient liquidity for the payment of ongoing claims and operating expenses.

### Asset Mix

The Assigned Risk Plan is invested in a portfolio of common stocks and bonds. The actual asset mix will fluctuate in response to changes in the Plan's liability stream.

	6/30/16 Target	6/30/16 Actual
Stocks	20.0%	19.6%
Bonds	80.0%	80.4%
Total	100.0%	100.0%

### Investment Management

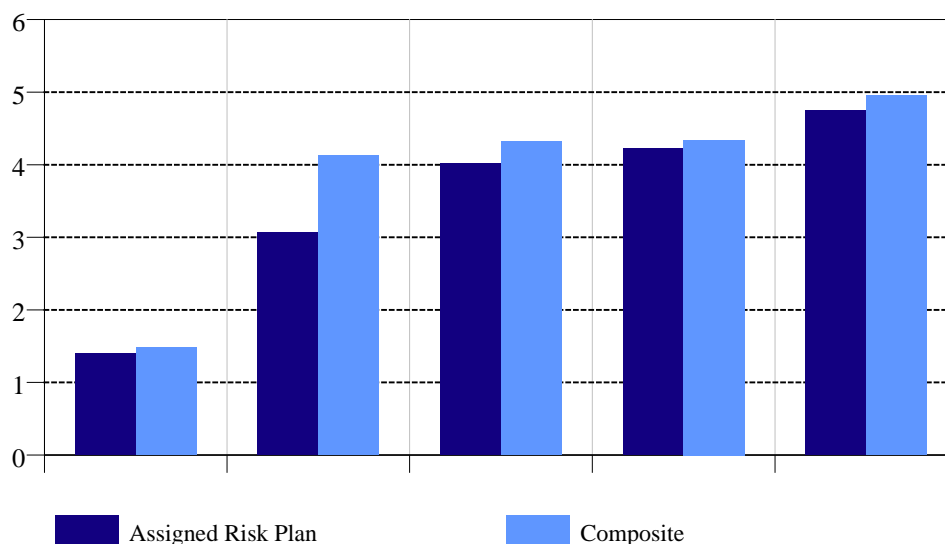
RBC Global Asset Management (US) manages the bond segment of the Fund. GE Investment Management manages the equity segment.

### Performance Benchmarks

Since July 1, 2011, the fixed income benchmark has been the Barclays Capital Intermediate Government Index. Since July 1, 1994, the equity benchmark has been the S&P 500 index. The total fund benchmark is a combination of the fixed income and equity benchmarks, weighted according to the total fund asset allocation targets.

### Market Value

On June 30, 2016 the market value of the Assigned Risk Plan was \$309 million.



### Periods Ended 6/30/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund*</b>	<b>1.4%</b>	<b>3.1%</b>	<b>4.0%</b>	<b>4.2%</b>	<b>4.8%</b>
Composite	1.5%	4.1%	4.3%	4.3%	5.0%
<b>Equity Segment*</b>	<b>2.2%</b>	<b>-1.1%</b>	<b>9.7%</b>	<b>10.7%</b>	<b>7.2%</b>
S&P 500	2.5%	4.0%	11.7%	12.1%	7.4%
<b>Bond Segment*</b>	<b>1.2%</b>	<b>4.0%</b>	<b>2.4%</b>	<b>2.2%</b>	<b>3.9%</b>
Barclays Int Gov Index	1.2%	3.9%	2.4%	2.3%	4.1%

\* Actual returns are calculated net of fees.

Note: All periods over one year are annualized.

## PERMANENT SCHOOL FUND

### Investment Objectives

The investment objective of the Permanent School Fund is to produce a growing level of spendable income, within the constraints of maintaining adequate portfolio quality and liquidity. The income from the portfolio is transferred to the school endowment fund and distributed to Minnesota's public schools.

### Asset Mix

Effective with FY98, the Permanent School Fund is invested in a balanced portfolio of common stocks and bonds. Common stocks provide the potential for significant capital appreciation, while bonds provide portfolio diversification and a more stable stream of current income.

	6/30/16 Target	6/30/16 Actual
Stocks	50.0%	51.0%
Bonds	48.0%	47.1%
Cash	2.0%	1.9%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>

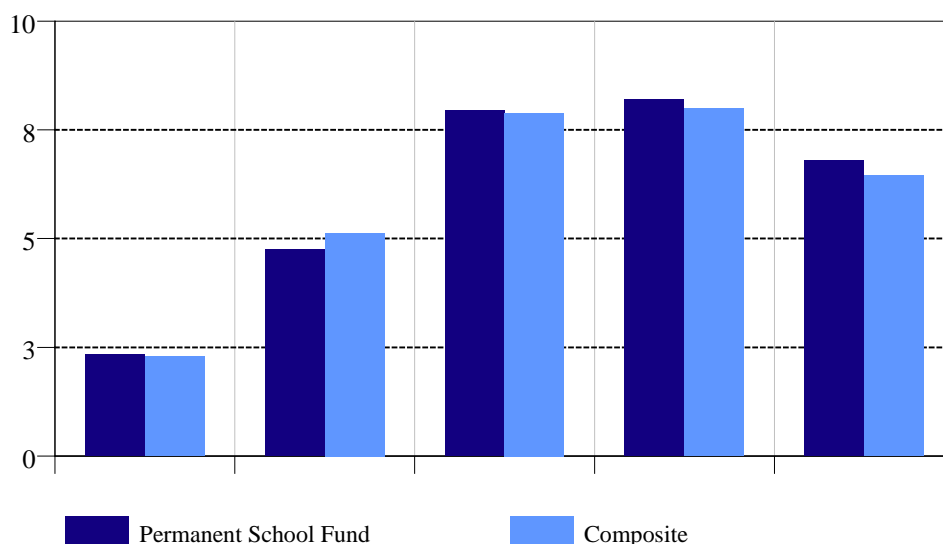
Prior to FY98, the Fund was invested entirely in fixed income securities in order to maximize current income. It was understood that the change in asset mix would reduce portfolio income in the short term, but enhance the value of the fund, over time.

### Investment Management

SBI staff manages all assets of the Permanent School Fund. The stock segment is passively managed to track the performance of the S&P 500. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions.

### Market Value

On June 30, 2016 the market value of the Permanent School Fund was \$1.2 billion.



	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund*</b>	<b>2.3%</b>	<b>4.8%</b>	<b>8.0%</b>	<b>8.2%</b>	<b>6.8%</b>
Composite	2.3%	5.1%	7.9%	8.0%	6.5%
<b>Equity Segment*</b>	<b>2.5%</b>	<b>4.0%</b>	<b>11.7%</b>	<b>12.1%</b>	<b>7.5%</b>
S&P 500	2.5%	4.0%	11.7%	12.1%	7.4%
<b>Bond Segment*</b>	<b>2.3%</b>	<b>5.7%</b>	<b>4.4%</b>	<b>4.2%</b>	<b>5.6%</b>
Barclays Agg	2.2%	6.0%	4.1%	3.8%	5.1%

\* Actual returns are calculated net of fees.

Note: All periods over one year are annualized.

## ENVIRONMENTAL TRUST FUND

### Investment Objectives

The objective of the Environmental Trust Fund is to increase the market value of the Fund over time in order to increase the annual amount made available for spending within the constraints of maintaining adequate portfolio quality and liquidity.

### Asset Mix

The Environmental Trust Fund is invested in a balanced portfolio of common stocks and bonds. Common stocks provide the potential for significant capital appreciation, while bonds act as a deflation hedge and provide portfolio diversification. As of July 1, 1999, the asset allocation changed from 50% stocks/50% fixed income to 70% stocks/30% fixed income.

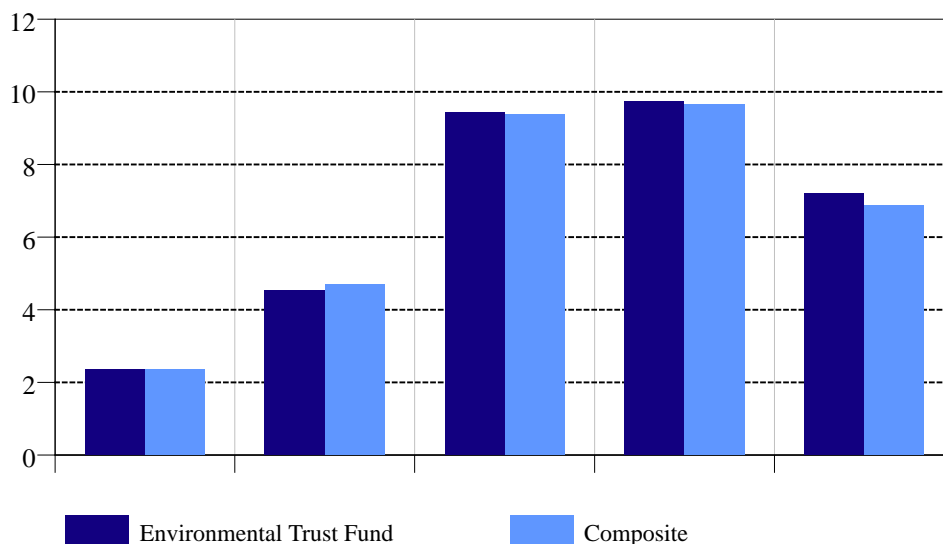
	6/30/16 Target	6/30/16 Actual
Stocks	70.0%	69.8%
Bonds	28.0%	28.3%
Cash	2.0%	1.9%
Total	100.0%	100.0%

### Investment Management

SBI staff manages all assets of the Environmental Trust Fund. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The stock segment is passively managed to track the performance of the S&P 500.

### Market Value

On June 30, 2016 the market value of the Environmental Trust Fund was \$924 million.



	Periods Ended 6/30/16				
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund*</b>	<b>2.4%</b>	<b>4.5%</b>	<b>9.4%</b>	<b>9.7%</b>	<b>7.2%</b>
Composite	2.3%	4.7%	9.4%	9.6%	6.9%
<b>Equity Segment*</b>	<b>2.5%</b>	<b>4.0%</b>	<b>11.7%</b>	<b>12.1%</b>	<b>7.5%</b>
S&P 500	2.5%	4.0%	11.7%	12.1%	7.4%
<b>Bond Segment*</b>	<b>2.3%</b>	<b>5.7%</b>	<b>4.4%</b>	<b>4.2%</b>	<b>5.6%</b>
Barclays Agg	2.2%	6.0%	4.1%	3.8%	5.1%

\* Actual returns are calculated net of fees.

Note: All periods over one year are annualized.

## CLOSED LANDFILL INVESTMENT FUND

### Investment Objectives

The investment objective of the Closed Landfill Investment Fund is to increase the market value of the Fund and to reduce volatility to meet future expenditures. By statute, the assets of the Fund are unavailable for expenditure until after the fiscal year 2020 to pay for long-term costs of maintaining the integrity of landfills in Minnesota once they are closed.

### Asset Mix

From July 1999 to September 2014 the Fund's target allocation was 100% domestic equities. The SBI changed the Fund allocation in 2014 to a more balanced allocation of 70% a domestic equities and 30% bonds.

	6/30/16 Target	6/30/16 Actual
Stocks	70.0%	69.5%
Bonds	30.0%	30.5%
Total	100.0%	100.0%

### Investment Management

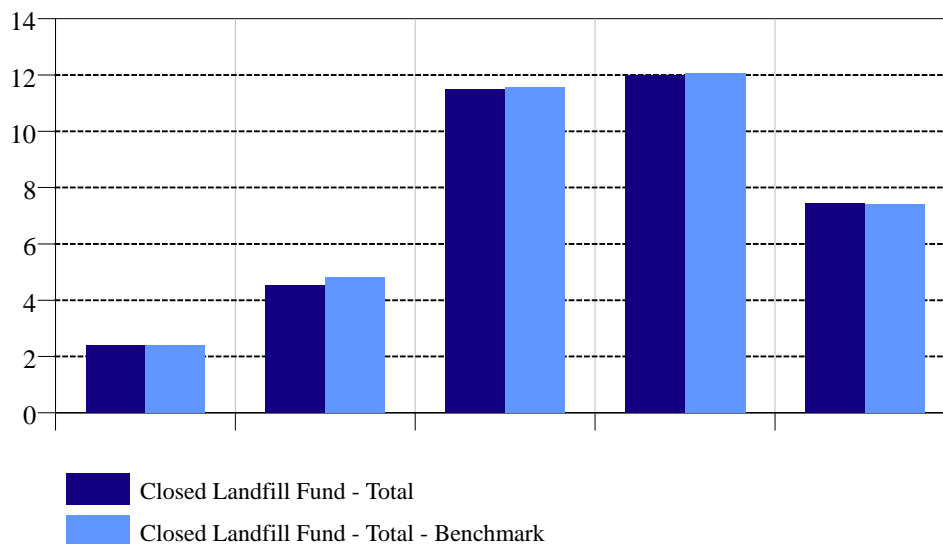
SBI staff manage all assets of the Closed Landfill Investment Fund. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The stock segment is managed to passively track the performance of the S&P 500.

### Legislation

In FY 2011 \$48 million was transferred out of the general fund, leaving a balance of \$1 million in the account. Legislation was enacted in 2013 to replenish the principle and earnings back into the fund and in FY 2014 a repayment was made in the amount of \$64.2 million. In 2015 legislation was passed which repealed any further repayments..

### Market Value

On June 30, 2016, the market value of the Closed Landfill Investment Fund was \$72 million.



### Periods Ended 6/30/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
<b>Total Fund (1)</b>	<b>2.4%</b>	<b>4.5%</b>	<b>11.5%</b>	<b>12.0%</b>	<b>7.4%</b>
Composite (3)	2.4%	4.8%	11.6%	12.1%	7.4%
<b>Equity Segment (1)</b>	<b>2.5%</b>	<b>4.0%</b>	<b>11.7%</b>	<b>12.1%</b>	<b>7.5%</b>
S&P 500	2.5%	4.0%	11.7%	12.1%	7.4%
<b>Bond Segment (1,2)</b>	<b>2.3%</b>	<b>5.7%</b>	--	--	--
Barclays Agg	2.2%	6.0%	--	--	--

(1) Actual returns are calculated net of fees.

(2) Bond Segment admission date 9/10/14. Returns to be reported upon first full quarter of history (12/31/2014)

(3) The benchmark of the fund is the S&P 500 from mid July 1999 to 9/9/14. As of 9/10/14 the benchmark consist of S&P 500 (70%) and Barclays Aggregate (30%).

Note: All periods over one year are annualized.



## STATE CASH ACCOUNTS

**Description**

State Cash Accounts represent the balances in more than 400 separate accounts that flow through the Minnesota State Treasury. These accounts vary greatly in size.

Most accounts are invested by SBI staff through a short-term pooled fund referred to as the Treasurer's Cash Pool. It contains the cash balances of special or dedicated accounts necessary for the operation of certain State agencies and non-dedicated cash in the State treasury.

In addition, each State of Minnesota bond sale requires two additional pools, one for bond proceeds and one for debt reserve transfer.

Because of special legal restrictions, a small number of cash accounts cannot be commingled. These accounts are invested separately.

**Investment Objectives**

**Safety of Principal.** To preserve capital.

**Liquidity.** To meet cash needs without the forced sale of securities at a loss.

**Competitive Rate of Return.** To provide a level of current income consistent with the goal of preserving capital.

**Asset Mix**

The SBI seeks to provide safety of principal by investing all cash accounts in high quality, liquid, short term investments. These include U.S. Treasury and Agency issues, repurchase agreements, bankers acceptances, commercial paper, and certificates of deposit.

**Investment Management**

All state cash accounts are managed by SBI investment staff. As noted above, most of the assets of the cash accounts are invested through the large commingled investment pool.

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	<b>Period Ending 6/30/16</b>					
	<b>Market Value (Millions)</b>	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Last 10 Years</b>
<b>Treasurer's Cash Pool*</b>	<b>\$10,791</b>	<b>0.3%</b>	<b>0.7%</b>	<b>0.6%</b>	<b>0.6%</b>	<b>1.7%</b>
Custom Benchmark**		0.0%	0.1%	0.0%	0.0%	0.9%
3 month T-Bills		0.1%	0.2%	0.1%	0.1%	1.0%

\* Actual returns are calculated net of fees.

\*\* Beginning in January 2003, the Treasurer's Cash Pool is measured against the iMoneyNet, All Taxable Money Fund Report Average.

**MINNESOTA STATE BOARD OF INVESTMENT**  
**Composition of State Investment Portfolios By Type of Investment**  
**Market Value June 30, 2016 (in Thousands)**

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intl	Alternative	Total
<b>COMBINED RETIREMENT FUNDS</b>								
Teachers Retirement Fund	410,605 2.12%	0	4,788,125 24.70%	0	8,992,512 46.38%	2,714,605 14.00%	2,482,640 12.80%	19,388,487 100%
Public Employees Retirement Fund	351,826 2.05%	0	4,250,931 24.71%	0	7,983,616 46.41%	2,410,046 14.01%	2,204,105 12.81%	17,200,524 100%
State Employees Retirement Fund	240,753 2.15%	0	2,760,133 24.68%	0	5,183,767 46.36%	1,564,844 14.00%	1,431,127 12.80%	11,180,624 100%
Public Employees Police & Fire	142,997 2.02%	0	1,751,552 24.72%	0	3,289,566 46.43%	993,035 14.02%	908,179 12.82%	7,085,329 100%
Highway Patrol Retirement Fund	13,609 2.17%	0	155,056 24.68%	0	291,209 46.36%	87,909 13.99%	80,397 12.80%	628,180 100%
Judges Retirement Fund	4,407 2.67%	0	40,576 24.56%	0	76,205 46.12%	23,004 13.92%	21,039 12.74%	165,231 100%
Correctional Employees Retirement	20,928 2.33%	0	220,910 24.64%	0	414,888 46.28%	125,244 13.97%	114,541 12.78%	896,511 100%
Public Employees Correctional	10,953 2.16%	0	125,331 24.69%	0	235,382 46.36%	71,056 14.00%	64,984 12.80%	507,706 100%
PERA Minneapolis Retirement	13,340 1.77%	0	186,310 24.78%	0	349,906 46.54%	105,628 14.05%	96,601 12.85%	751,785 100%
<b>TOTAL COMBINED FUNDS</b>	1,209,418 2.09%	0	14,278,924 24.70%	0	26,817,051 46.39%	8,095,371 14.00%	7,403,613 12.81%	57,804,377 100%

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intd	Alternative	Total
<b>MINNESOTA SUPPLEMENTAL FUNDS</b>								
Balanced Fund	18,174 4.85%	131,076 34.99%	0	0	225,383 60.16%	0	0	374,633 100%
U.S. Stock Actively Managed Fund	0	0	0	0	208,782 100.00%	0	0	208,782 100%
Money Market Fund	302,873 100.00%	0	0	0	0	0	0	302,873 100%
U.S. Stock Index Fund	0	0	0	0	481,351 100.00%	0	0	481,351 100%
Bond Fund	0	0	143,378 100.00%	0	0	0	0	143,378 100%
Broad International Stock Fund	0	0	0	0	0	166,328 100.00%	0	166,328 100%
Stable Value Fund	0	0	205,871 100.00%	0	0	0	0	205,871 100%
Volunteer Firefighters Account	2,432 4.49%	0	24,900 45.88%	0	19,094 35.18%	7,843 14.45%	0	54,269 100%
<b>TOTAL SUPPLEMENTAL FUNDS</b>	<b>323,479 16.70%</b>	<b>131,076 6.77%</b>	<b>374,149 19.31%</b>	<b>0</b>	<b>934,610 48.24%</b>	<b>174,171 8.99%</b>	<b>0</b>	<b>1,937,485 100%</b>
<b>MN DEFERRED COMP PLAN</b>								
	65,694 1.14%	0	2,177,258 37.62%	0	3,066,008 52.98%	478,823 8.27%	0	5,787,783 100%
<b>TOTAL RETIREMENT FUNDS</b>								
	1,598,591 2.44%	131,076 0.20%	16,830,331 25.68%	0	30,817,669 47.03%	8,748,365 13.35%	7,403,613 11.30%	65,529,645 100%

	Cash & ST	Bonds Int	Bonds Ext	Stock Int	Stock Ext	Ext Intl	Alternative	Total
<b>ASSIGNED RISK PLAN</b>	5,687 1.84%	0	242,837 78.53%	0	60,693 19.63%	0	0	309,217 100%
<b>ENVIRONMENTAL FUND</b>	17,821 1.93%	261,127 28.26%	0	645,204 69.82%	0	0	0	924,152 100%
<b>PERMANENT SCHOOL FUND</b>	23,208 1.91%	574,135 47.08%	0	622,098 51.02%	0	0	0	1,219,441 100%
<b>CLOSED LANDFILL FUND</b>	0	22,002 30.52%	0	50,078 69.48%	0	0	0	72,080 100%
<b>MISCELLANEOUS TRUST FUND</b>	481 0.30%	68,210 42.28%	0	92,642 57.42%	0	0	0	161,333 100%
<b>Other Post Employment Funds (OPEB's)</b>	17,456 3.34%	100,704 19.26%	0	404,821 77.41%	0	0	0	522,981 100%
<b>TREASURERS CASH</b>	10,791,450 100.00%	0	0	0	0	0	0	10,791,450 100%
<b>MISCELLANEOUS STATE ACCOUNTS</b>	0	160,449 100.00%	0	0	0	0	0	160,449 100%
<b>MN COLLEGE SAVINGS PLAN</b>	8,184 0.67%	0	600,296 49.22%	0	443,788 36.39%	167,377 13.72%	0	1,219,645 100%
<b>TOTAL CASH AND NON-RETIREMENT</b>	10,864,287 70.64%	1,186,627 7.72%	843,133 5.48%	1,814,843 11.80%	504,481 3.28%	167,377 1.09%	0	15,380,748 100%
<b>GRAND TOTAL</b>	<b>12,462,878</b> <b>15.40%</b>	<b>1,317,703</b> <b>1.63%</b>	<b>17,673,464</b> <b>21.84%</b>	<b>1,814,843</b> <b>2.24%</b>	<b>31,322,150</b> <b>38.71%</b>	<b>8,915,742</b> <b>11.02%</b>	<b>7,403,613</b> <b>9.15%</b>	<b>80,910,393</b> <b>100%</b>

**TAB**

**B**

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## **EXECUTIVE DIRECTOR'S ADMINISTRATIVE REPORT**

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DATE: August 15, 2016

TO: Members, State Board of Investment

**FROM: Mansco Perry III**

### **1. Reports on Budget and Travel**

A report on the SBI's administrative budget for the period ending June 30, 2016 is included as **Attachment A**.

A report on travel for the period from April 1, 2016 – June 30, 2016 is included as **Attachment B**.

### **2. Sudan Update**

Each quarter, staff provides a report to the Board on steps taken to implement *Minnesota Statutes*, section 11A.243 that requires SBI actions concerning companies with operations in Sudan. Staff receives periodic reports from the Empowering Responsible Investment (EIRIS) Conflict Risk Network (CRN) about the status of companies with operations in Sudan.

The SBI is restricted from purchasing stock in the companies designated as highest offenders by the CRN. Accordingly, staff updates the list of restricted stocks and notifies investment managers that they may not purchase shares in companies on the restricted list. Staff receives monthly reports from the SBI's custodian bank concerning SBI holdings of companies on the CRN list and writes letters as required by law.

According to the law, if after 90 days following the SBI's communication, a company continues to have active business operations in Sudan, the SBI must divest holdings of the company according to the following schedule:

- at least 50% shall be sold within nine months after the company appeared on the Task Force list; and
- 100% shall be sold within fifteen months after the company appeared on the list.

In the second quarter, the SBI was not required to divest any shares of companies on the divestment list.

**Attachment C** is a copy of the June 28, 2016 letter sent to each international equity manager and domestic equity manager containing the most recent restricted list and the list of stocks to be divested.

### **3. Iran Update**

Each quarter, staff provides a report to the Board on steps taken to implement *Minnesota Statutes*, section 11A.244 that requires SBI actions concerning companies with operations in Iran.

SBI receives information on companies with Iran operations from IW Financial, through Glass Lewis. Staff receives monthly reports from the SBI's custodian bank concerning SBI holdings of companies on the restricted list and writes letters as required by the law.

According to the law, if after 90 days following the SBI's communication a company continues to have scrutinized business operations, the SBI must divest all publicly traded securities of the company according to the following schedule:

- at least 50% shall be sold within nine months after the company appeared on the scrutinized list; and
- 100% within fifteen months after the company appeared on the scrutinized list.

In the second quarter, SBI managers sold 222,170 shares in a company on the divestment list.

**Attachment D** is a copy of the June 24, 2016 letter sent to each international equity manager and domestic equity manager and fixed income manager containing the end of quarter restricted list and the list of companies to be divested.

### **4. Litigation Update**

SBI legal counsel will give a verbal update on the status of any litigation at the meeting.



**ATTACHMENT A**

**STATE BOARD OF INVESTMENT  
FISCAL YEAR 2016 ADMINISTRATIVE BUDGET REPORT  
FISCAL YEAR TO DATE THROUGH JUNE 30, 2016**

<b>ITEM</b>	<b>FISCAL YEAR 2016 BUDGET</b>	<b>FISCAL YEAR 2016 6/30/2016</b>
<b>PERSONNEL SERVICES</b>		
FULL TIME EMPLOYEES	\$ 4,591,000	\$ 3,858,969
PART TIME EMPLOYEES	\$ 0	0
MISCELLANEOUS PAYROLL	100,000	14,027
<b>SUBTOTAL</b>	<b>\$ 4,691,000</b>	<b>\$ 3,872,996</b>
<b>STATE OPERATIONS</b>		
RENTS & LEASES	282,000	284,490
REPAIRS/ALTERATIONS/MAINTENANCE	372,000	377,361
PRINTING & BINDING	7,000	5,462
PROFESSIONAL/TECHNICAL SERVICES	150,000	49,671
COMPUTER SYSTEMS SERVICES	20,000	16,585
COMMUNICATIONS	40,000	27,742
TRAVEL, IN-STATE	1,000	416
TRAVEL, OUT-STATE	119,000	69,699
SUPPLIES	122,000	118,782
EQUIPMENT	25,000	26,072
EMPLOYEE DEVELOPMENT	35,000	47,901
OTHER OPERATING COSTS	140,000	117,039
INDIRECT COSTS	250,000	197,224
ATTORNEY GENERAL COSTS	-	63,499
<b>SUBTOTAL</b>	<b>\$ 1,563,000</b>	<b>\$ 1,401,943</b>
<b>TOTAL ADMINISTRATIVE BUDGET</b>	<b>\$ 6,254,000</b>	<b>\$ 5,274,939</b>

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**ATTACHMENT B**

**STATE BOARD OF INVESTMENT**

**Travel Summary by Date**

**SBI Travel April 1, 2016 - June 30, 2016**

<b>Purpose</b>	<b>Name(s)</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Manager Monitoring Alternative Investment Managers:</b> Permira; Lexington Partners	J. Stacy	New York, NY 4/4-4/6	\$ 1,769.69
<b>Manager Search Alternative Investment Manager:</b> Rockwood			
<b>Manager Search Domestic Equity Managers:</b> Arrowpoint Partners; Elk Creek Partners	R. Weiler	Denver, CO 4/5-4/6	770.53
<b>Manager Monitoring Domestic Equity Manager:</b> Hotchkis & Wiley	R. Weiler	Los Angeles, CA Pasadena, CA 4/11-4/12	960.51
<b>Manager Search Domestic Equity Manager:</b> Rice Hall James			
<b>Manager Monitoring Alternative Investment Manager:</b> Prudential Capital Partners	A. Krech	Chicago, IL 4/14	320.18
<b>Manager Monitoring Alternative Investment Manager:</b> Prudential Capital Partners	C. Boll	Chicago, IL 4/14	280.18

**STATE BOARD OF INVESTMENT**

**Travel Summary by Date  
SBI Travel April 1, 2016 - June 30, 2016**

<b>Purpose</b>	<b>Name(s)</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Manager Monitoring Alternative Investment Manager:</b> Silver Lake <b>Manager Search Alternative Investment Managers:</b> Vector Capital; Thoma Bravo	J. Stacy	San Francisco, CA 4/18-4/20	\$ 1,479.79
<b>Conference:</b> National Association of State Investment Professionals (NASIP)	M. Menssen	Austin, TX 4/19-4/22	2,325.31
<b>Conference:</b> National Association of State Investment Professionals (NASIP)	P. Ammann	Austin, TX 4/19-4/21	2,392.31
<b>Manager Monitoring Domestic Equity Manager:</b> Martingale <b>Manager Search Domestic Equity Managers:</b> Lee Munder; Wellington	R. Weiler	Boston, MA 4/21-4/22	1,694.10
<b>Manager Monitoring Alternative Investment Managers:</b> IK Partners; Nordic Capital <b>Manager Search Alternative Investment Manager:</b> LBC Credit Partners	A. Krech	New York, NY Philadelphia, PA 4/25-4/27	1,774.41

**STATE BOARD OF INVESTMENT**

**Travel Summary by Date  
SBI Travel April 1, 2016 - June 30, 2016**

<b>Purpose</b>	<b>Name(s)</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Manager Monitoring Alternative Investment Managers:</b> IK Partners; Nordic Capital <b>Manager Search Alternative Investment Manager:</b> LBC Credit Partners	C. Boll	New York, NY Philadelphia, PA 4/25-4/27	\$ 1,864.36
<b>Conference:</b> Institutional Investor Public Funds Roundtable	M. Perry	Los Angeles, CA 4/26-4/29	1,325.22
<b>Manager Monitoring Alternative Investment Managers:</b> Blackstone Capital Partners; Paine & Partners; Warburg Pincus	N. Blumenshine	New York, NY 5/3-5/5	1,498.01
<b>Conference:</b> Client Advisory Council Meeting sponsored by State Street	L. Stagg	Boston, MA 5/18-5/19	1,280.33
<b>Conference:</b> Government Finance Officers Association (GFOA) Annual Conference	W. Murphy	Toronto, Canada 5/19-5/25	3,175.84
<b>Conference:</b> Government Finance Officers Association (GFOA) Annual Conference	B. Nicol	Toronto, Canada 5/22-5/25	1,906.94

**STATE BOARD OF INVESTMENT**

**Travel Summary by Date  
SBI Travel April 1, 2016 - June 30, 2016**

<b>Purpose</b>	<b>Name(s)</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Conference:</b> Institutional Limited Partners Association (ILPA) Members Conference 2016	J. Stacy	Chicago, IL 6/1-6/3	\$ 1,693.47
<b>Conference:</b> Institutional Limited Partners Association (ILPA) Level 1	L. Stagg	Chicago, IL 6/14-6/17	3,717.82
<b>Conference:</b> Institutional Limited Partners Association (ILPA) Level 1	A. Krech	Chicago, IL 6/14-6/18	3,550.34
<b>Conference:</b> Institutional Limited Partners Association (ILPA) Level 1	J. Stacy	Chicago, IL 6/15-6/17	3,392.82
<b>Conference:</b> National Association of Public Pension Attorneys (NAPPA)	J. Mule	New Orleans, LA 6/21-6/24	1,983.51



**Attachment 2** is the List of Sudan Stocks Requiring Divestment. If you own securities of companies on this list then you must **divest** those holdings according to the schedule provided in the attachment:

- At least 50 percent of a company's holdings must be sold by the date indicated, and
- At least 100 percent of a company's holdings must be sold by the date indicated.

Changes to **Attachment 2**: There have been no changes to this list.

**Attachment 3** is a list of security identifiers for the companies on the List of Restricted Sudan Stocks (Attachment 1) that your organization may use. The SBI does not represent that this is a complete list of identifiers. The manager is responsible for identifying all listings. Please note that the list of security identifiers may have information on companies not on the restricted list.

If you have any questions about this matter, please contact your assigned SBI Investment Officer.

Sincerely,

LeaAnn M. Stagg  
Chief Operating Officer

Enclosures

cc: Michael J. Menssen, Director, Public Markets  
Tammy Brusehaver, Investment Officer, Public Markets  
Inma Conde Goldman, Investment Officer, Public Markets  
Stephanie Gleeson, Investment Officer, Public Markets  
Patricia Ammann, Investment Officer, DC & Trust Services



**ATTACHMENT 1**

<b>Restricted Sudan Stocks</b>	
<b>Company Name</b>	<b>Country of Origin</b>
Andritz AG	Austria
Orca Gold Inc.	Canada
AKM Industrial Company Limited	China
China Gezhouba Group Company Limited	China
China North Industries Group Corporation AKA CNGC/NORINCO	China
China Petroleum and Chemical Corporation AKA Sinopec Corp.	China
China Poly Group Corporation	China
Daqing Huake Group Company Limited	China
Dongfeng Motor Group Company Limited	China
Harbin Electric Company Ltd.	China
Jiangxi Hongdu Aviation	China
NORINCO International Cooperation Ltd	China
North Huajin Chemical Industries Co.	China
North Navigation Control Technology Co. Ltd	China
Petrochina Co. Ltd AKA China National Petroleum Corporation (CNPC)	China
Poly Property Group Co. Ltd.	China
Power Construction Corporation of China Ltd.	China
Shanghai Electric Group Co. Ltd.	China
Sinopec Engineering Group Co. Ltd.	China
Sinopec Shanghai Petrochemicals Ltd	China
Sinopec Oilfield Service Corp	China
ASEC Company for Mining (ASCOM)	Egypt
Egypt Kuwait Holding Company	Egypt
ENGIE	France
MAN SE	Germany
Renk AG	Germany
Volkswagen AG	Germany
Kunlun Energy Co. Ltd	Hong Kong
Sinopec Kanton Holdings Limited	Hong Kong
Bharat Electronics Limited	India
Bharat Heavy Electricals Limited	India
Chennai Petroleum Corporation Ltd. AKA CPCL	India
Indian Oil Corporation Ltd.	India
Lanka IOC Limited	India
Mangalore Refinery and Petrochemicals Limited	India
Oil & Natural Gas Corp. Ltd.	India
Oil India Limited	India
Energy House Holding Co KSCC, The	Kuwait
Kuwait Finance House	Kuwait
Engen Botswana Ltd. AKA Engen	Malaysia
KLCCP Stapled Group AKA KLCC Property Holdings	Malaysia
Malaysia International Shipping Company AKA MISC Berhad	Malaysia

## ATTACHMENT 1

### Restricted Sudan Stocks

Company Name	Country of Origin
Malaysia Marine and Heavy Engineering Holdings Bhd	Malaysia
Petroliam Nasional Berhad AKA Petronas	Malaysia
Petronas Chemicals Group Berhad	Malaysia
Petronas Dagangan Berhad	Malaysia
Petronas Gas Berhad	Malaysia
Managem	Morocco
Societe Metallurgique D'imiter	Morocco
GAZ OAO	Russia
GAZ Group	Russia
Kamaz PJSC	Russia
Pavlovo Bus JSC	Russia
LS Industrial Systems	South Korea

Note: List contains parent companies and subsidiaries publicly traded.  
AKA means "Also Known As"

Source: EIRIS Conflict Risk Network

Effective Date: June 30, 2016

## ATTACHMENT 2

### Sudan Stocks Requiring Divestment

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this date</b>
Shanghai Electric Group Co. Ltd.	China	March 31, 2016	September 30, 2016

Effective Date: June 30, 2016

### Completed/Historical Divestments

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this date</b>
China Petroleum and Chemical Corporation AKA Sinopec Corp	China	April 30, 2008	October 31, 2008
PetroChina Company	China	April 30, 2008	October 31, 2008
Oil and Natural Gas Corp AKA ONGC	India	April 30, 2008	October 31, 2008
Malaysia International Shipping Company AKA MISC Berhad	Malaysia	April 30, 2008	October 31, 2008
Dongfeng Motor Group Company Limited	China	March 31, 2011	September 30, 2011
Andritz AG	Austria	September 30, 2014	March 31, 2015
Bharat Electronics Limited	India	September 30, 2014	March 31, 2015
Bharat Heavy Electricals	India	September 30, 2014	March 31, 2015
MAN SE	Germany	December 31, 2014	June 30, 2015
Poly Property Group	China	March 31, 2015	September 30, 2015
Volkswagen AG	Germany	June 30, 2015	December 31, 2015





CHINA PETROLEUM & CHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROLEUM & CHEMICAL-ADR	SNP UP	578971	2639189 US	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNP US	578971	2639189 US	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNP UT	578971	2639189 US	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNP UX	578971	2639189 US	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNP VJ	578971	2639189 US	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNP VK	578971	2639189 US	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNP VY	578971	2639189 US	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNP LI	578971	2654375 GB	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	CHUA GB	578971	B0RSW00 DE	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	CHUA GF	578971	B0RSW00 DE	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	CHUA GM	578971	B0RSW00 DE	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	CHUA GR	578971	B0RSW00 DE	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	CHUA GS	578971	B0RSW00 DE	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	SNPN MM	578971	B4GSF22 MX	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	CHINA PETROCHEMICAL-ADR	CHUA TH	578971	1694R108	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	2386 H1	A1T97T	B92NYC9	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	2386 HK	A1T97T	B92NYC9	1694R108	093502256
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GF	A1T97T	B96WKB3	1694R108	093502256
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GM	A1T97T	B96WKB3	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GR	A1T97T	B96WKB3	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GS	A1T97T	B96WKB3	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS QT	A1T97T	B98WKB3 DE	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC ENGINEERING GROUP-H	2386EUR EU	A1T97T	1694R108	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GB	923923	4601197 DE	1694R108	093502256
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GF	923923	4601197 DE	1694R108	011563384
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GR	923923	4601197 DE	1694R108	011563384
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GS	923923	4601197 DE	1694R108	011563384
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC KANTONS HOLDINGS	934 HK	923923	6162892 HK	1694R108	011563384
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC KANTONS HOLDINGS	934 HI	923923	BFRXQJ9 HK	1694R108	011563384
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY PQ	923923	B3KRT60	82334W207	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY UV	923923	B3KRT60	82334W207	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY LV	923923	B3KRT60	82334W207	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC OILFIELD EQUIPMENT-A	00852 CH	A0M37A	6136385	1694R108	Y4446MT08
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC OILFIELD EQUIPMENT-A	00852 CS	A0M37A	6136385	1694R108	Y4446MT08
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC YIZHENG CHEMICAL -A	600871 CG	A0M3V6	6986740 CN	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC YIZHENG CHEMICAL -A	600871 CH	A0M3V6	6986740 CN	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC YIZHENG CHEMICAL -A	600871 C1	A0M3V6	BWFT5TJ CN	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC YIZHENG CHEMICAL-H	1033 HK	A0M4Y6	6984669 HK	1694R108	008069662
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC YIZHENG CHEMICAL-H	1033 H1	A0M4Y6	6984669 HK	1694R108	008069662
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHE-A	600688 CG	A0M3RA	6802794	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHE-A	600688 CH	A0M3RA	6802794	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHE-A	600688 C1	A0M3RA	BPR3R596 CN	1694R108	011899374
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GB	A0M4Y5	5988632 DE	1694R108	005096162
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GD	A0M4Y5	5988632 DE	1694R108	005096162
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GF	A0M4Y5	5988632 DE	1694R108	005096162
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GH	A0M4Y5	5988632 DE	1694R108	005096162
CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GM	A0M4Y5	5988632 DE	1694R108	005096162

SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GR	AOMAYS	588632 DE	908303	CNE1000004C8	005096162
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GS	AOMAYS	588632 DE	908303	CNE1000004C8	005096162
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Quatrix Exch (XQTX)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH QT	AOMAYS	588632 DE	908303	CNE1000004C8	005096162
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338 HK	AOMAYS	6797465 HK	908303	CNE1000004C8	005096162
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Shi SSE-SEHK (SHSC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338 H1	AOMAYS	BP3BX80 HK	908303	CNE1000004C8	005096162
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI UB	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI UD	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI UF	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI UN	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI UP	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI UT	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI VJ	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI VK	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI VY	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI GB	887169	5734638 DE	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI GF	887169	5734638 DE	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI GM	887169	5734638 DE	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI GR	887169	5734638 DE	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI GS	887169	5734638 DE	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Singapore (XSES)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI SP	887169	B3MNGN2	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	New York (KNYS)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI US	887169	2800059 US	908289	US82935M1099	012248750
SINOPEC SHANGHAI PETROCHEMICALS LTD GROUP	CHINA PETROCHEMICAL CORP aka SINOPEC GROUP	Hong Kong (XHKG)	ADR	SINOPEC SHANGHAI SPONS ADR	SHI LX	887169	6200059 US	908289	US82935M1099	12248750
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Hong Kong (XHKG)	Common Stock	SINOPEC SHANGHAI SPONS ADR	119 HK	885546	2800087 HK	908289	HK0119000674	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CJM GB	885546	B1HJUS7 DE	908289	HK0119000674	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CJM GR	885546	B1HJUS7 DE	908289	HK0119000674	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CJM GR	885546	B1HJUS7 DE	908289	HK0119000674	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CJM GR	885546	B1HJUS7 DE	908289	HK0119000674	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	PKHF US	885546	B23CST1 US	908289	HK0119000674	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Shi SSE-SEHK (SHSC)	Common Stock	POLY PROPERTY GROUP CO LTD	119 H1	885546	BP3RQJ8 HK	908289	HK0119000674	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	PKHY PQ	885546	B1JXRN4 US	908289	US7316541090	004580702
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	PKHY PQ	885546	B1JXRN4 US	908289	US7316541090	004580702
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFGF PQ	AOMAXY	BOXZ765 US	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Hong Kong (XHKG)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	488 HK	AOMAXY	B0PH5N8 HK	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DAD GB	AOMAXY	B0TB866 DE	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DAD GF	AOMAXY	B0TB866 DE	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DAD GM	AOMAXY	B0TB866 DE	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DAD GR	AOMAXY	B0TB866 DE	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Frankfurt (XFFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DAD GS	AOMAXY	B0TB866 DE	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Quatrix Exch (XQTX)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DAD QT	AOMAXY	B0TB866 DE	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFGF UV	AOMAXY	BOXZ765 US	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFGF US	AOMAXY	BOXZ765 US	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	Hong Kong (XHKG)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	488 H1	AOMAXY	BP3RTP9 HK	023857456	CNE100000312	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFGY PQ	AOMAXY	B3SQPT4 US	023857456	US257738203	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFGY US	AOMAXY	B3SQPT4 US	023857456	US257738203	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFGY US	AOMAXY	B3SQPT4 US	023857456	US257738203	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY LIMITED	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFGY US	AOMAXY	B3SQPT4 US	023857456	US257738203	Y21042109
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Kuwait (KKUW)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHOLDIN KK	AHHTGT	B0S9H15 KW	E669062C013	EG69062C013	F42788105
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Cairo (XCAN)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	AHHTGT	AHHTGT	B0C4MD0 EG	EGS69082C013	EGS69082C013	F42788105
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Cairo (XCAN)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHO EY	AHHTGT	B0C4MD0 EG	EGS69082C013	EGS69082C013	F42788105
KUWAIT FINANCE HOUSE	ENERGY HOUSE HOLDING CO KSCC/THE	Kuwait (KKUW)	Common Stock	KUWAIT FINANCE HOUSE	KFIN KK	AUC70	6503138 KW	KWICEQ0100085	KWICEQ0100085	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	Kuwait (KKUW)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENERGYH KK	AKMDC	B18BV99 KW	KWICEQ0100085	KWICEQ0100085	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	Euro Comp (XLON)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENERGYH KK	AKMDC	B18BV99 KW	KWICEQ0100085	KWICEQ0100085	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	EN Paris (XPAR)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENGF PP	AEER6Q	B0C2C03	FR0010209488	FR0010209488	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	Equifax (XEQF)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENGF BQ	AEER6Q	B0C2C03	FR0010209488	FR0010209488	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	Amex Europe (XELT)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENGF EP	AEER6Q	B0C2C03	FR0010209488	FR0010209488	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	China Exch (CHX)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENGF OX	AEER6Q	B0C2C03	FR0010209488	FR0010209488	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	Anus Exchgr (AQSE)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENGF OX	AEER6Q	B0C2C03	FR0010209488	FR0010209488	F42788105
ENERGY HOUSE HOLDING CO KSCC/THE	ENERGY HOUSE HOLDING CO KSCC/THE	Turquoise (TROX)	Common Stock	ENERGY HOUSE HOLDING CO KSCC/THE	ENGF TO	AEER6Q	B0C2C03	FR0010209488	FR0010209488	F42788105











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## ATTACHMENT D

### Letter to SBI International and Domestic Equity Managers

June 24, 2016

#### Regarding: Iran Companies

Dear Manager:

The Minnesota State Board of Investment (SBI) sent you prior communication concerning holdings in companies doing business in Iran. **This new communication applies to all SBI equity portfolios managed by your organization and replaces all prior communications. This communication also applies to all depository receipts or ADR's of any of the listed companies.**

*Minnesota Statutes*, section 11A.244, requires the Minnesota State Board of Investment (SBI) to implement an Iran restriction.

**Attachment 1** is the List of Restricted Iran Companies. **These securities may not be purchased for the SBI portfolio that your organization manages.** If you own securities of companies on the Restricted List **and** the companies are **not** on the divestment list, then you do not need to sell your holdings. Please note that the attached list makes changes to the List of Restricted Iran Companies that was attached to the March 21, 2016 letter you received. **This new list is effective June 30, 2016.**

#### Changes to Attachment 1:

The following companies have been **added** to the Restricted List:

- **Linde AG** **Germany**
- **Maire Tecnimont S.p.A** **Italy**

The following company has been **removed** from the Restricted List:

- **Eni Spa** **Italy**

**Attachment 2** is the List of Iran Companies Requiring Divestment. If you own securities of companies on this list then you must **divest** those holdings according to the schedule provided in the attachment:

- At least 50 percent of a company's holdings must be sold by the date indicated, and
- At least 100 percent of a company's holdings must be sold by the date indicated.

Changes to **Attachment 2**:

The following company has been **added** to the Divestment List:

- **Daelim Industrial** **South Korea**

The following company has been **removed** from the Divestment List:

- **Eni Spa** **Italy**

**Attachment 3** is a list of security identifiers for the companies on the List of Restricted Iran Companies (Attachment 1) that your organization may use. The SBI does not represent that this is a complete list of identifiers. Please note that the SBI does not represent that this is a complete list of identifiers. The manager is responsible for identifying all listings.

If you have any questions about this matter, please contact your assigned SBI Investment Officer.

Sincerely,

LeaAnn M. Stagg  
Chief Operating Officer

Enclosures

cc: Michael J. Menssen, Director, Public Markets  
Patricia Ammann, Investment Officer, DC & Trust Services  
Tammy Brusehaver, Investment Officer, Public Markets  
Inma Conde Goldman, Investment Officer, Public Markets  
Stephanie Gleeson, Investment Officer, Public Markets

**ATTACHMENT 1**  
**RESTRICTED IRAN COMPANIES**  
**SECURITIES OF COMPANIES MAY NOT BE PURCHASED FOR PORTFOLIO**

<b>COMPANY NAME</b>	<b>COUNTRY</b>
Bharat Petroleum Corporation Ltd.	India
China Petroleum & Chemical Corp	China
Daelim Industrial	South Korea
Gail (India) Ltd.	India
Gazprom OAO	Russia
GS Engineering & Construction Corp	South Korea
Gubre Fabrikalari T.A.S.	Turkey
Indian Oil Corporation Ltd.	India
L G International	South Korea
Linde AG	Germany
Lukoil Oil Co.	Russia
Maire Tecnimont S.p.A	Italy
Mitsui & Co. Ltd	Japan
Oil & Natural Gas Corporation Ltd.	India
PetroChina Co. Ltd.	China
Toyo Engineering Corporation	Japan
Toyota Tsusho Corporation	Japan

Effective Date: June 30, 2016

## ATTACHMENT 2

### LIST OF IRAN COMPANIES REQUIRING DIVESTMENT

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this Date</b>
GS Engineering & Construction Corp	South Korea	June 30, 2016	December 31, 2016
Gazprom OAO	Russia	December 31, 2015	June 30, 2016
Lukoil Oil Co.	Russia	March 31, 2016	September 30, 2016
Daelim Industrial	South Korea	December 31, 2016	June 30, 2017

Effective Date: June 30, 2016

### COMPLETED/HISTORICAL DIVESTMENTS

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this Date</b>
Mitsui & Company, Ltd.	Japan	September 30, 2012	March 31, 2013
Toyota Tsusho	Japan	September 30, 2012	March 31, 2013



**ATTACHMENT 3**  
**IRAN RESTRICTED COMPANIES**  
**Security Identifiers**

ISIN	Company	SYMBOL	CUSIP	COUNTRY
INE029A01011	Bharat Petroleum Corporation Ltd.	500547		India
CNE1000002Q2	China Petroleum & Chemical Corp	386	16941R108	China
ARDEUT114071	China Petroleum & Chemical Corp	386	16941R108	China
US16941R1086	China Petroleum & Chemical Corp	386	16941R108	China
CNE0000018G1	China Petroleum & Chemical Corp	386	16941R108	China
KR7000211003	Daelim Industrial	A000210		Korea South
KR7000210005	Daelim Industrial	A000210		Korea South
INE129A01019	Gail (India) Ltd.	532155	36268T206	India
US36268T2069	Gail (India) Ltd.	532155	36268T206	India
US36268T1079	Gail (India) Ltd.	532155	36268T206	India
ARDEUT114261	Gazprom OAO	GAZP	368287207	Russia
RU0007661625	Gazprom OAO	GAZP	368287207	Russia
US3682871088	Gazprom OAO	GAZP	368287207	Russia
US3682872078	Gazprom OAO	GAZP	368287207	Russia
KR7006360002	GS Engineering & Construction Corp	A006360		Korea South
TRAGUBRF91E2	Gubre Fabrikalari T.A.S.	GUBRF		Turkey
INE242A01010	Indian Oil Corporation Ltd.	530965		India
KR7001120005	L G International	A001120		Korea South
US5352232004	Linde AG	LIN	535223200	Germany
DE0006483001	Linde AG	LIN	535223200	Germany
US5498741058	Lukoil Oil Co.	LKOH	677862104	Russia
US69343P1057	Lukoil Oil Co.	LKOH	677862104	Russia
US69343P2048	Lukoil Oil Co.	LKOH	677862104	Russia
RU0009024277	Lukoil Oil Co.	LKOH	677862104	Russia
ARDEUT114253	Lukoil Oil Co.	LKOH	677862104	Russia
US69343P3038	Lukoil Oil Co.	LKOH	677862104	Russia
US69343P4028	Lukoil Oil Co.	LKOH	677862104	Russia
US69343P7096	Lukoil Oil Co.	LKOH	677862104	Russia
IT0004931058	Maire Tecnimont S.p.A.	MT	56064T101	Italy
US56064T1016	Maire Tecnimont S.p.A.	MT	56064T101	Italy
JP3893600001	Mitsui & Co. Ltd	8031	606827202	Japan
US6068272029	Mitsui & Co. Ltd	8031	606827202	Japan
INE213A01029	Oil & Natural Gas Corporation Ltd.	500312		India
CNE1000007Q1	PetroChina Co. Ltd.	857	71646E100	China
US71646E1001	PetroChina Co. Ltd.	857	71646E100	China
ARDEUT113958	PetroChina Co. Ltd.	857	71646E100	China
CNE1000003W8	PetroChina Co. Ltd.	857	71646E100	China
JP3607800004	Toyo Engineering Corporation	6330		Japan
JP3635000007	Toyota Tsusho Corporation	8015		Japan

Source: IW Financial list of scrutinized Iran holdings as of May 31, 2016

Please note that the SBI does not represent that this is a complete list of identifiers. The manager is responsible for identifying all listings.

## Letter to SBI Fixed Income Managers

June 24, 2016

### Regarding: Iran Companies

Dear Manager:

The Minnesota State Board of Investment (SBI) sent you prior communication concerning holdings in companies doing business in Iran. **This communication applies to the SBI fixed income portfolio managed by your organization.**

*Minnesota Statutes*, section 11A.244, requires the Minnesota State Board of Investment (SBI) to implement an Iran restriction.

**Attachment 1** is the List of Restricted Iran Companies. **These securities may not be purchased for the SBI portfolio that your organization manages.** If you own securities of companies on the Restricted List **and** the companies are **not** on the divestment list, then you do not need to sell your holdings. Please note that the attached list makes changes to the List of Restricted Iran Companies that was attached to the March 21, 2016 letter you received. **This new list is effective June 30, 2016.**

#### Changes to **Attachment 1**:

The following companies have been **added** to the Restricted List:

- **Linde AG** **Germany**
- **Maire Tecnimont S.p.A** **Italy**

The following company has been **removed** from the Restricted List:

- **Eni Spa** **Italy**

**Attachment 2** is the List of Iran Companies Requiring Divestment. If you own securities of companies on this list then you must **divest** those holdings according to the schedule provided in the attachment:

- At least 50 percent of a company's holdings must be sold by the date indicated, and
- At least 100 percent of a company's holdings must be sold by the date indicated.

Changes to **Attachment 2**:

The following company has been **added** to the Divestment List:

- **Daelim Industrial** **South Korea**

The following company has been **removed** from the Divestment List:

- **Eni Spa** **Italy**

If you have any questions about this matter, please contact your assigned SBI Investment Officer.

Sincerely,

LeaAnn M. Stagg  
Chief Operating Officer

Enclosures

cc: Michael J. Menssen, Director, Public Markets  
Aaron Griga, Investment Officer, Public Markets  
Cassandra Boll, Investment Officer, Public Markets & Private Markets  
Steve Kuettel, Investment Officer, Cash Mgmt. Services  
Patricia Ammann, Investment Officer, DC & Trust Services

**ATTACHMENT 1**  
**RESTRICTED IRAN COMPANIES**  
**SECURITIES OF COMPANIES MAY NOT BE PURCHASED FOR PORTFOLIO**

<b>COMPANY NAME</b>	<b>COUNTRY</b>
Bharat Petroleum Corporation Ltd.	India
China Petroleum & Chemical Corp	China
Daelim Industrial	South Korea
Gail (India) Ltd.	India
Gazprom OAO	Russia
GS Engineering & Construction Corp	South Korea
Gubre Fabrikalari T.A.S.	Turkey
Indian Oil Corporation Ltd.	India
L G International	South Korea
Linde AG	Germany
Lukoil Oil Co.	Russia
Maire Tecnimont S.p.A	Italy
Mitsui & Co. Ltd	Japan
Oil & Natural Gas Corporation Ltd.	India
PetroChina Co. Ltd.	China
Toyo Engineering Corporation	Japan
Toyota Tsusho Corporation	Japan

Effective Date: June 30, 2016

## ATTACHMENT 2

### LIST OF IRAN COMPANIES REQUIRING DIVESTMENT

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this Date</b>
GS Engineering & Construction Corp	South Korea	June 30, 2016	December 31, 2016
Gazprom OAO	Russia	December 31, 2015	June 30, 2016
Lukoil Oil Co.	Russia	March 31, 2016	September 30, 2016
Daelim Industrial	South Korea	December 31, 2016	June 30, 2017

Effective Date: June 30, 2016

### COMPLETED/HISTORICAL DIVESTMENTS

<b>Company Name</b>	<b>Country of Origin</b>	<b>Divest 50 Percent By this Date</b>	<b>Divest 100 Percent By this Date</b>
Mitsui & Company, Ltd.	Japan	September 30, 2012	March 31, 2013
Toyota Tsusho	Japan	September 30, 2012	March 31, 2013

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DATE: August 15, 2016

TO: Members, Investment Advisory Council

FROM: SBI Staff

Staff has reviewed the following information and action agenda items:

- Review of current strategy.
- Consideration of new commitments.

**Existing Managers:**

Credit	Prudential Capital Partners	Fund V	\$150 Million
Private Equity	Permira	Fund VI	€150 Million
Private Equity	Thoma Bravo	Fund XII	\$100 Million
Private Equity	Warburg Pincus	China	\$50 Million
Real Estate	AG Asia Realty	Fund III	\$50 Million

**IAC action is required on the second item.**

**INFORMATION ITEM:**

**1) Review of Current Strategy.**

To increase overall portfolio diversification, 20% of the Combined Funds is allocated to Private Markets investments. Private Markets investments include real estate, private equity, resource, and yield-oriented investments in which Minnesota State Board of Investment (SBI) participation is limited to commingled funds or other pooled vehicles. Charts summarizing the Board's current commitments are attached (see **Attachments A and B**).

- a. The real estate investment strategy is to establish and maintain a broadly diversified real estate portfolio comprised of investments that provide overall diversification by property type and location. The main component of this portfolio consists of investments in diversified Real Estate Investment Trusts (REITs) and closed-end commingled funds. The remaining portion of the portfolio can include investments in less diversified, more focused (specialty) commingled funds and REITs.
- b. The private equity investment strategy, which includes leveraged buyouts and venture capital, is to establish and maintain a broadly diversified private equity portfolio comprised of investments that provide diversification by industry type, stage of corporate development and location.

- c. The strategy for resource investments is to establish and maintain a portfolio of resource investment vehicles that provide an inflation hedge and additional diversification. Resource investments will include oil and gas investments, energy service industry investments and other investments that are diversified geographically and by type.
- d. The strategy for yield-oriented investments is to target funds that typically provide a current return and may have an equity component such as subordinated debt or mezzanine investments. Yield-oriented investments will provide diversification by including investments in the private equity, resource and real estate categories.

#### **ACTION ITEMS:**

**1) Investment with an existing credit manager, Prudential Capital Group (“Prudential”), in Prudential Capital Partners V (“Prudential V”).**

Prudential Capital Group is seeking investors for a new \$1.4 billion private credit fund, Prudential Capital Partners V. Prudential Capital Partners has invested approximately \$3.6 billion in 165 mezzanine and structured equity transactions since its formation in September 2000. The SBI has invested in all previous Prudential Capital Partners funds.

Fund V will invest primarily in subordinated debt and structured equity securities. Such investments typically combine both debt and equity securities and include convertible debt, preferred stock and warrants. Fund V will continue the investment strategy of previous funds with a focus on transactions with middle market companies that typically generate annual revenues in the \$30 million to \$500 million range. The portfolio of investments is expected to be broadly diversified with respect to industry, geography and type of financing. Investments will primarily be made in North American companies with the option to pursue some western European opportunities.

In addition to reviewing the attractiveness of the Prudential V investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on Prudential V is included as **Attachment C**.

#### **RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff’s recommendation to commit up to \$150 million, or 20% of Prudential Capital Partners V, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Prudential Capital Group upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and**

**negotiations may result in the imposition of additional terms and conditions on Prudential Capital Group or reduction or termination of the commitment.**

**2) Investment with an existing private equity manager, Permira Advisers LLC (“Permira”), in Permira VI (“P6”).**

Permira is seeking investors for a new €6.5 billion private equity fund, Permira VI. Since its formation in 1985, the firm has invested approximately €1 billion of equity in 102 portfolio companies. The SBI has invested in one prior Permira fund.

Permira’s investment strategy focuses on acquiring businesses that are underpinned by long-term growth drivers and exposure to global growth opportunities. This approach seeks to minimize dependence on the macroeconomic cycle and reduce the need to use significant debt as a means of amplifying performance. Permira’s sector teams are charged with identifying enduring sector trends and translating them into investable opportunities for the funds, allowing for a more focused origination approach. The sector teams are consumer, financial services, healthcare, industrials, and technology. The Permira funds typically seek to invest in businesses with an enterprise value of between €500m and €3bn. Since 2009, the funds have completed 29 deals (not including add-on deals) with an average enterprise value of €750m and an average equity commitment of €240m. Over the same period of time, the funds have invested 50% of their committed capital into businesses with headquarters in Europe, 37% in North America and 13% elsewhere in the world.

In addition to reviewing the attractiveness of the P6 investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on P6 is included as **Attachment D**.

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff’s recommendation to commit up to €150 million, or 20% of Permira VI, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Permira Advisers LLC upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Permira Advisers LLC or reduction or termination of the commitment.**

**3) Investment with an existing private equity manager, Thoma Bravo, LLC (“Thoma Bravo”), in Thoma Bravo Fund XII (“Thoma Bravo XII”).**

Thoma Bravo is seeking investors for a new \$7.0 billion private equity fund, Thoma Bravo XII. Since Thoma Bravo began focusing on software and technology-enabled services in 2000, they have invested \$8 billion of equity across 43 portfolio companies.

Fund XII will build upon the investment strategy and process originally created by Carl Thoma and his partners more than 30 years ago, and more recently refined by Orlando Bravo and the other current Thoma Bravo partners. This strategy seeks to create value by transforming businesses in fragmented, consolidating industry sectors into larger, more profitable and more valuable businesses through rapid operational improvements, growth initiatives, and strategic and accretive add-on acquisitions. The application and infrastructure software and technology-enabled services industry sectors, on which Thoma Bravo focuses today, are fragmented, consolidating and lend themselves particularly well to this strategy. Fund XII will target roughly 12 platform investments, with 3-4 large investments (approximately \$1 billion of equity) and 7-10 medium-sized investments (approximately \$400 million of equity).

In addition to reviewing the attractiveness of the Thoma Bravo XII investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on Thoma Bravo XII is included as **Attachment E**.

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff’s recommendation to commit up to \$100 million, or 20% of Thoma Bravo Fund XII, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Thoma Bravo, LLC upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Thoma Bravo, LLC reduction or termination of the commitment.**

**4) Investment with an existing private equity manager, Warburg Pincus LLC (“Warburg Pincus”), in Warburg Pincus China, L.P. (“WPC”).**

Warburg Pincus is seeking investors for a new \$2.0 billion private equity fund, Warburg Pincus China. Warburg Pincus opened its Hong Kong office in 1994 under the direction of current firm co-head Charles R. Kaye. Since 1994, the firm has invested \$6.8 billion across more than 90 China investments.

WPC will follow the same growth focused investment strategy and share investments with Warburg Pincus Private Equity XII. Most investments in companies, businesses or projects with significant connections and exposure to China will be split evenly between the two funds. The Warburg Pincus investment strategy in China is to identify rapidly growing areas of the economy that the firm believes can benefit from the ongoing economic and structural transformations occurring in the country. These areas include healthcare, logistics, e-commerce, technology, consumer, retail, and businesses focused on environmental improvements and protections. Warburg Pincus investments in China are typically non-control and low leverage. These investments have historically been \$25-\$300 million of equity per transaction.

In addition to reviewing the attractiveness of the WPC investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on WPC is included as **Attachment F**.

#### **RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff's recommendation to commit up to \$50 million, or 20% of Warburg Pincus China, L.P., whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Warburg Pincus LLC upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions Warburg Pincus LLC reduction or termination of the commitment.**

#### **5) Investment with an existing real estate manager, AG Asia Realty Fund III (“AG Asia III”), in Angelo, Gordon & Co., L.P. (“Angelo, Gordon”).**

Angelo, Gordon & Co. is seeking investors for a new \$750 million private Asian real estate fund, AG Asia Realty Fund III. Since its first Asia Realty Fund in 2006, Angelo, Gordon has invested approximately \$1.2 billion of equity in Asia. The Fund will invest alongside the Angelo, Gordon global real estate funds in Asian opportunistic deals.

The Fund's strategy emphasizes the purchase of sub-performing and troubled real estate assets and non-performing loans from owners who lack the capital, patience, or expertise to improve cash flow and value. The assets are often attractively priced due to an inefficiency of the sale process, unique attributes of the asset, or the seller's need for near-term liquidity. The Fund will also target high margin development opportunities that meet the growing needs of the region's large population. Fund III intends to focus on the largest markets in Asia, with a strong emphasis on China, Japan, Hong Kong, and South Korea. This multi-country approach allows the Fund to pursue what Angelo, Gordon believes to be the best risk-adjusted returns

among a wide array of opportunities. With rapidly changing regulations, growth rates, liquidity, and market cycles in Asia, Angelo, Gordon intends to respond flexibly as new opportunities arise or old opportunities become less attractive, as the firm has done over its history of investing in the region.

In addition to reviewing the attractiveness of the AG Asia III investment offering, staff conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the fund.

More information on AG Asia III is included as **Attachment G**.

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff's recommendation to commit up to \$50 million, or 20% of AG Asia Realty Fund III, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Angelo, Gordon & Co., L.P. upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions Angelo, Gordon & Co., L.P. reduction or termination of the commitment.**

**ATTACHMENT A**

**Minnesota State Board of Investment**  
*Pooled Alternative Investments*  
**Combined Funds**  
*June 30, 2016*

Combined Funds Market Value \$57,804,376,668

Amount Available for Investment **\$4,276,718,417**

	<b>Current Level</b>	<b>Target Level</b>	<b>Difference</b>
Market Value (MV)	\$7,284,156,917	\$11,560,875,334	\$4,276,718,417
MV +Unfunded	\$12,697,147,793	\$20,231,531,834	\$7,534,384,041

<b>Asset Class</b>	<b>Market Value</b>	<b>Unfunded Commitment</b>	<b>Total</b>
Private Equity	\$4,579,281,103	\$3,217,911,386	\$7,797,192,489
Real Estate	\$627,766,434	\$454,297,691	\$1,082,064,125
Resource	\$1,162,299,396	\$987,308,286	\$2,149,607,682
Yield-Oriented	\$914,809,984	\$753,473,513	\$1,668,283,497
<b>Total</b>	<b>\$7,284,156,917</b>	<b>\$5,412,990,876</b>	<b>\$12,697,147,793</b>

*Cash Flows*  
*June 30, 2016*

<b>Year</b>	<b>Capital Calls</b>	<b>Distributions</b>	<b>Net Invested</b>
2016 (thru 6/30)	\$899,000,918	(\$614,382,802)	\$284,618,116
2015	\$1,541,161,769	(\$2,128,301,645)	(\$587,139,876)
2014	\$1,378,984,263	(\$2,133,698,037)	(\$754,713,774)
2013	\$1,257,559,066	(\$2,522,817,494)	(\$1,265,258,428)

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# ATTACHMENT B

## Minnesota State Board of Investment - Alternative Investments - As of June 30, 2016

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>I. REAL ESTATE</b>								
<b>Angelo, Gordon &amp; Co.</b>								
AG Realty Fund IX	100,000,000	22,000,000	22,000,000	0	78,000,000	0.00	<b>1.00</b>	1.56
<b>Blackstone</b>								
Blackstone Real Estate Partners V	100,000,000	97,030,342	57,098,379	143,593,882	4,174,052	10.94	<b>2.07</b>	9.93
Blackstone Real Estate Partners VI	100,000,000	99,320,387	58,067,559	146,916,040	4,907,906	12.73	<b>2.06</b>	9.00
Blackstone Real Estate Partners VII	100,000,000	92,693,726	102,200,236	55,024,977	17,790,521	19.94	<b>1.70</b>	4.34
Blackstone Real Estate Partners VIII	150,000,000	55,665,044	58,387,953	661,745	94,775,931	5.90	<b>1.06</b>	1.02
<b>Blackstone Strategic Partners (CSFB)</b>								
Strategic Partners III RE	25,000,000	25,752,810	5,719,657	9,432,168	9,006	-7.33	<b>0.59</b>	10.75
Strategic Partners IV RE	50,000,000	50,421,406	13,925,985	34,982,820	1,548,842	-0.70	<b>0.97</b>	7.79
<b>Colony Capital</b>								
Colony Investors III	100,000,000	100,000,000	5,177,800	172,642,105	0	14.58	<b>1.78</b>	18.25
<b>Silverpeak Real Estate Partners</b>								
Silverpeak Legacy Pension Partners II	75,000,000	78,517,189	12,673,666	86,238,226	7,898,904	5.27	<b>1.26</b>	10.75
Silverpeak Legacy Pension Partners III	150,000,000	69,730,998	21,757,740	6,284,584	80,269,002	-12.54	<b>0.40</b>	7.86
<b>Rockpoint</b>								
Rockpoint Real Estate Fund V	100,000,000	10,076,473	10,400,673	0	89,923,527	-11.44	<b>1.03</b>	1.47
<b>T.A. Associates Realty</b>								
Realty Associates Fund VII	75,000,000	75,000,000	474,976	76,273,641	0	0.33	<b>1.02</b>	11.37
Realty Associates Fund VIII	100,000,000	100,000,000	57,278,241	37,023,671	0	-0.75	<b>0.94</b>	9.75
Realty Associates Fund IX	100,000,000	100,000,000	76,754,451	81,342,780	0	11.03	<b>1.58</b>	7.60
Realty Associates Fund X	100,000,000	100,000,000	101,427,470	28,981,791	0	12.37	<b>1.30</b>	4.08
Realty Associates Fund XI	100,000,000	25,000,000	24,421,650	0	75,000,000	-2.38	<b>0.98</b>	0.75
<b>Real Estate Total</b>	<b>1,525,000,000</b>	<b>1,101,208,375</b>	<b>627,766,434</b>	<b>879,398,429</b>	<b>454,297,691</b>		<b>1.37</b>	0.25
<b>II. RESOURCE</b>								
<b>Apache Corp.</b>								
1986 Net Profits Interest	30,000,000	30,000,000	442,830	59,464,292	0	12.14	<b>2.00</b>	29.25
<b>EIG Global Energy Partners</b>								
EIG Energy Fund XIV	100,000,000	111,231,819	10,672,914	91,878,849	4,542,385	-3.19	<b>0.92</b>	8.95
EIG Energy Fund XV	150,000,000	145,074,733	97,124,854	59,767,072	6,322,679	2.75	<b>1.08</b>	5.82
EIG Energy Fund XVI	200,000,000	96,880,546	62,649,597	9,427,545	109,730,852	-23.33	<b>0.74</b>	2.55
<b>EnCap Energy</b>								
EnCap Energy Capital Fund VII	100,000,000	96,167,312	10,087,065	130,396,887	4,385,431	15.62	<b>1.46</b>	8.75
EnCap Energy Capital Fund VIII	100,000,000	84,348,483	36,698,958	24,368,428	15,976,786	-13.18	<b>0.72</b>	5.50
Encap Energy Fund IX	100,000,000	78,318,209	67,008,494	14,654,210	27,731,917	3.20	<b>1.04</b>	3.31
EnCap Energy Capital Fund X	100,000,000	22,842,892	19,181,127	1,536,826	78,693,934	-24.62	<b>0.91</b>	1.07
<b>EnerVest Energy</b>								
EnerVest Energy Institutional Fund XIV	100,000,000	49,664,299	47,088,938	689,376	50,335,701	-6.65	<b>0.96</b>	0.94
<b>Energy &amp; Minerals Group</b>								
NGP Midstream & Resources	100,000,000	99,954,848	75,789,689	111,083,932	366,338	16.00	<b>1.87</b>	9.00
The Energy & Minerals Group Fund II	100,000,000	87,469,973	116,932,899	20,007,774	12,790,265	16.70	<b>1.57</b>	4.52
The Energy & Minerals Group Fund III	200,000,000	172,051,198	138,251,762	4,391,607	29,677,136	-12.25	<b>0.83</b>	2.07
The Energy & Minerals Group Fund IV	150,000,000	89,434,503	87,955,167	85,406	60,566,344	-2.31	<b>0.98</b>	0.67
<b>Energy Capital Partners</b>								
Energy Capital Partners II	100,000,000	78,605,087	46,860,207	68,244,933	32,024,037	11.51	<b>1.46</b>	5.70
Energy Capital Partners III	200,000,000	54,189,931	48,683,638	0	145,810,069	-6.97	<b>0.90</b>	2.28
<b>First Reserve</b>								
First Reserve Fund X	100,000,000	100,000,000	505,822	182,429,002	0	31.06	<b>1.83</b>	11.41
First Reserve Fund XI	150,000,000	150,292,121	12,653,768	86,471,982	0	-9.96	<b>0.66</b>	9.27
First Reserve Fund XII	150,000,000	157,599,884	49,746,415	69,465,629	5,983,588	-7.69	<b>0.76</b>	7.42
First Reserve Fund XIII	200,000,000	29,828,244	17,608,228	2,279,302	170,171,756	-33.14	<b>0.67</b>	2.41
<b>NGP</b>								
Natural Gas Partners IX	150,000,000	160,873,757	30,372,806	206,006,844	2,302,742	11.29	<b>1.47</b>	8.44
NGP Natural Resources X	150,000,000	131,327,674	85,367,642	37,976,728	18,672,326	-2.75	<b>0.94</b>	4.47
Natural Gas Capital Resources XI	150,000,000	31,426,000	29,143,543	0	118,574,000	-13.45	<b>0.93</b>	1.31
<b>Sheridan</b>								
Sheridan Production Partners I	100,000,000	100,000,000	42,636,008	82,750,000	0	5.43	<b>1.25</b>	9.00
Sheridan Production Partners II	100,000,000	100,000,000	24,023,030	7,000,000	0	-32.46	<b>0.31</b>	5.50
Sheridan Production Partners III	100,000,000	7,350,000	4,813,998	0	92,650,000	-77.67	<b>0.65</b>	1.31
<b>Resource Total</b>	<b>3,180,000,000</b>	<b>2,264,931,513</b>	<b>1,162,299,396</b>	<b>1,270,376,625</b>	<b>987,308,286</b>		<b>1.07</b>	0.25

**Minnesota State Board of Investment**  
**- Alternative Investments -**  
**As of June 30, 2016**

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>III. YIELD-ORIENTED</b>								
<b>Audax Group</b>								
<i>Audax Mezzanine Fund III</i>	100,000,000	88,528,865	55,086,168	50,064,864	19,979,131	8.73	<b>1.19</b>	5.99
<i>Audax Mezzanine Fund IV</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	0.98
<b>Avenue Capital Partners</b>								
<i>Avenue Energy Opportunities Fund</i>	100,000,000	89,026,598	74,872,526	934,495	10,973,402	-21.34	<b>0.85</b>	1.02
<b>Citicorp Mezzanine</b>								
<i>CM Liquidating Partnership</i>	100,000,000	88,029,296	11,534,804	132,324,719	0	16.25	<b>1.63</b>	16.41
<b>Crescent Capital Group</b>								
<i>TCW/Crescent Mezzanine Partners III</i>	75,000,000	68,835,269	2,418,763	156,868,939	29,733,852	35.89	<b>2.31</b>	15.00
<b>Gold Hill Venture Lending</b>								
<i>Gold Hill Venture Lending</i>	40,000,000	40,000,000	960,856	63,913,250	0	10.63	<b>1.62</b>	11.51
<i>Gold Hill 2008</i>	25,852,584	25,852,584	11,728,114	30,318,755	0	13.10	<b>1.63</b>	7.75
<b>GS Mezzanine Partners</b>								
<i>GS Mezzanine Partners 2006 Institutional</i>	100,000,000	74,999,888	11,169,895	122,211,034	13,858,563	4.75	<b>1.78</b>	9.98
<i>GS Mezzanine Partners V</i>	150,000,000	112,057,963	12,895,410	165,434,372	60,803,216	9.31	<b>1.59</b>	8.44
<b>Kohlberg Kravis Roberts</b>								
<i>KKR Lending Partners II L.P.</i>	75,000,000	35,008,845	25,774,508	13,565,405	49,248,419	12.39	<b>1.12</b>	1.08
<b>Merit Capital Partners</b>								
<i>William Blair Mezzan. Cap. Fd. III</i>	60,000,000	57,243,241	620,711	112,755,951	2,756,759	15.51	<b>1.98</b>	16.25
<i>Merit Mezzanine Fund IV</i>	75,000,000	70,178,571	35,035,547	77,869,657	4,821,429	9.39	<b>1.61</b>	11.29
<i>Merit Mezzanine Fund V</i>	75,000,000	70,420,408	56,168,656	30,753,497	4,579,592	8.06	<b>1.23</b>	6.28
<i>Merit Mezzanine Fund VI</i>	45,000,000	6,965,000	6,965,000	0	38,035,000	0.00	<b>1.00</b>	0.27
<b>Merit Energy Partners</b>								
<i>Merit Energy Partners B</i>	24,000,000	24,000,000	11,410,092	179,952,067	0	24.33	<b>7.97</b>	19.75
<i>Merit Energy Partners C</i>	50,000,000	50,000,000	20,115,833	489,223,800	0	30.97	<b>10.19</b>	17.42
<i>Merit Energy Partners D</i>	88,000,000	70,938,303	43,213,152	299,459,151	0	22.86	<b>4.83</b>	14.85
<i>Merit Energy Partners E</i>	100,000,000	39,983,197	27,449,786	66,033,008	0	12.86	<b>2.34</b>	11.46
<i>Merit Energy Partners F</i>	100,000,000	59,522,861	27,981,947	27,251,921	0	-1.38	<b>0.93</b>	10.02
<i>Merit Energy Partners H</i>	100,000,000	100,000,000	76,958,085	7,499,078	0	-7.35	<b>0.84</b>	5.16
<i>Merit Energy Partners I</i>	169,721,518	125,099,999	124,358,531	246,000	44,621,519	-4.68	<b>1.00</b>	1.45
<b>Oaktree Capital Management</b>								
<i>Oaktree Opportunities Fund X</i>	50,000,000	7,500,000	7,949,093	0	42,500,000	6.98	<b>1.06</b>	1.08
<i>Oaktree Opportunities Fund Xb</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	1.08
<b>Pimco Brovo</b>								
<i>Pimco Bravo Fund OnShore Feeder I</i>	3,958,027	3,958,027	914,585	3,009,894	1,379,331	-1.07	<b>0.99</b>	1.25
<i>Pimco Bravo Fund OnShore Feeder II</i>	5,243,670	5,243,670	5,502,414	0	0	3.46	<b>1.05</b>	1.25
<b>Portfolio Advisors</b>								
<i>DLJ Investment Partners II</i>	27,375,168	23,164,217	80,537	34,829,566	0	10.37	<b>1.51</b>	16.25
<i>DLJ Investment Partners III</i>	100,000,000	63,523,951	7,569,882	75,601,649	38,475,338	6.83	<b>1.31</b>	9.77
<b>Prudential Capital Partners</b>								
<i>Prudential Capital Partners I</i>	100,000,000	99,713,348	0	155,231,567	286,652	11.06	<b>1.56</b>	14.95
<i>Prudential Capital Partners II</i>	100,000,000	96,914,485	6,265,580	134,813,665	3,218,268	9.00	<b>1.46</b>	10.75
<i>Prudential Capital Partners III</i>	100,000,000	95,640,218	52,714,454	103,162,213	7,802,176	13.73	<b>1.63</b>	6.96
<i>Prudential Capital Partners IV</i>	100,000,000	74,958,617	69,595,823	20,138,126	25,607,497	13.17	<b>1.20</b>	4.20
<b>Summit Partners</b>								
<i>Summit Subordinated Debt Fund III</i>	45,000,000	42,750,000	5,746,843	55,057,070	2,250,000	8.41	<b>1.42</b>	12.12
<i>Summit Subordinated Debt Fund IV</i>	50,000,000	55,250,000	28,748,656	39,930,617	15,669,302	9.05	<b>1.24</b>	8.01
<b>TCW Asset Management</b>								
<i>TCW Direct Lending LLC</i>	100,000,000	43,904,432	32,541,333	10,904,432	63,002,762	-1.94	<b>0.99</b>	1.21
<b>Windjammer Capital Investors</b>								
<i>Windjammer Mezzanine &amp; Equity Fund II</i>	66,708,861	56,569,498	375,776	84,439,334	10,139,363	8.93	<b>1.50</b>	16.00
<i>Windjammer Senior Equity Fund III</i>	75,000,000	61,619,620	18,626,107	125,791,032	13,380,380	19.10	<b>2.34</b>	10.24
<i>Windjammer Senior Equity Fund IV</i>	100,000,000	51,441,402	41,460,516	5,107,209	50,351,563	-5.04	<b>0.91</b>	4.10
<i>Yield-Oriented Total</i>	<b>2,875,859,828</b>	<b>2,078,842,374</b>	<b>914,809,984</b>	<b>2,874,696,336</b>	<b>753,473,513</b>		<b>1.82</b>	0.25

**Minnesota State Board of Investment**  
**- Alternative Investments -**  
**As of June 30, 2016**

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>IV. PRIVATE EQUITY</b>								
<b>Adams Street Partners</b>								
<i>Adams Street Global Secondary Fund 5</i>	100,000,000	61,270,000	43,120,079	16,728,046	38,730,000	-1.65	<b>0.98</b>	3.78
<b>Advent International</b>								
<i>Advent International GPE VI</i>	50,000,000	48,700,005	39,180,060	62,192,372	1,299,995	18.12	<b>2.08</b>	8.00
<i>Advent International GPE VII</i>	90,000,000	76,815,000	86,758,755	12,015,083	13,185,000	13.56	<b>1.29</b>	3.54
<i>Advent International GPE VIII</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	0.40
<b>Affinity Ventures</b>								
<i>Affinity Ventures IV</i>	4,000,000	4,000,000	2,048,297	1,541,970	0	-2.04	<b>0.90</b>	11.75
<i>Affinity Ventures V</i>	5,000,000	4,500,000	2,419,110	1,585,611	500,000	-2.66	<b>0.89</b>	7.74
<b>APAX Partners</b>								
<i>Apax VIII - USD</i>	200,000,000	171,727,016	193,892,095	12,851,430	41,124,415	13.97	<b>1.20</b>	3.06
<b>Banc Fund</b>								
<i>Banc Fund VII</i>	45,000,000	45,000,000	45,241,785	812,725	0	0.25	<b>1.02</b>	11.00
<i>Banc Fund VIII</i>	98,250,000	98,250,000	129,786,383	23,381,973	0	11.14	<b>1.56</b>	7.93
<i>Banc Fund IX</i>	107,205,932	47,170,610	49,376,638	0	60,035,322	5.15	<b>1.05</b>	1.81
<b>BlackRock</b>								
<i>BlackRock Tempus Fund</i>	1,774,870	1,774,870	1,168,233	912,543	0	24.01	<b>1.17</b>	0.81
<b>Blackstone</b>								
<i>Blackstone Capital Partners IV</i>	70,000,000	72,253,913	16,065,057	180,226,981	2,017,395	37.11	<b>2.72</b>	13.72
<i>Blackstone Capital Partners V</i>	140,000,000	130,900,605	47,767,976	187,399,975	8,616,043	8.09	<b>1.80</b>	10.16
<i>Blackstone Capital Partners VI</i>	100,000,000	82,327,996	94,172,816	11,627,625	20,092,175	8.99	<b>1.29</b>	7.68
<i>Blackstone Capital Partners VII</i>	130,000,000	0	0	0	130,000,000	0.00	<b>0.00</b>	0.75
<b>Blackstone Strategic Partners (CSFB/ DLJ)</b>								
<i>Strategic Partners II-B</i>	100,000,000	86,130,202	2,354,794	160,385,889	4,717,359	35.09	<b>1.89</b>	12.70
<i>Strategic Partners III-B</i>	100,000,000	78,066,047	28,151,148	89,299,130	15,092,801	6.57	<b>1.50</b>	10.83
<i>Strategic Partners III VC</i>	25,000,000	24,701,953	7,225,296	26,181,192	1,255,264	6.25	<b>1.35</b>	10.83
<i>Strategic Partners IV-B</i>	100,000,000	91,473,610	27,674,486	121,081,931	24,739,783	12.82	<b>1.63</b>	8.01
<i>Strategic Partners IV VC</i>	40,500,000	39,593,841	18,658,536	42,452,437	3,420,675	10.30	<b>1.54</b>	7.79
<i>Strategic Partners V</i>	100,000,000	75,962,800	54,156,082	69,379,143	43,254,682	22.69	<b>1.63</b>	4.62
<i>Strategic Partners VI</i>	150,000,000	69,701,931	92,486,998	2,898,221	83,196,290	31.60	<b>1.37</b>	1.96
<i>Strategic Partners VII</i>	150,000,000	3,000,000	3,000,000	0	147,000,000	0.00	<b>1.00</b>	0.38
<b>BLUM Capital Partners</b>								
<i>Blum Strategic Partners II</i>	50,000,000	40,185,889	64,749	89,708,870	2,127,584	22.41	<b>2.23</b>	14.70
<i>Blum Strategic Partners III</i>	75,000,000	78,121,020	0	83,508,219	471,064	0.25	<b>1.07</b>	10.83
<i>Blum Strategic Partners IV</i>	150,000,000	170,916,780	0	167,939,991	5,896,033	-0.75	<b>0.98</b>	8.36
<b>Brookfield Asset Management Inc.</b>								
<i>Brookfield Capital Partners Fund IV</i>	100,000,000	23,879,468	23,795,676	687,022	76,807,554	-0.04	<b>1.03</b>	0.78
<b>Carval Investors</b>								
<i>CVI Global Value Fund</i>	200,000,000	190,000,000	41,140,637	277,390,695	10,000,000	9.75	<b>1.68</b>	9.22
<i>CVI Credit Value Fund I</i>	100,000,000	95,000,000	75,346,317	124,392,269	5,000,000	19.09	<b>2.10</b>	5.50
<i>CVI Credit Value Fund A II</i>	150,000,000	142,500,000	171,569,434	428,690	7,500,000	6.78	<b>1.21</b>	3.42
<i>CVI Credit Value Fund A III</i>	150,000,000	52,500,000	55,527,150	0	97,500,000	7.91	<b>1.06</b>	0.83
<b>Cardinal Partners</b>								
<i>DSV Partners IV</i>	10,000,000	10,000,000	31,339	39,196,082	0	10.61	<b>3.92</b>	30.97
<b>Carlyle Group</b>								
<i>Carlyle Strategic Partners IV</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	0.25
<b>Chicago Growth Partners (William Blair)</b>								
<i>William Blair Capital Partners VII</i>	50,000,000	48,150,000	3,834,938	64,292,866	1,650,000	8.30	<b>1.41</b>	15.06
<i>Chicago Growth Partners I</i>	50,000,000	52,441,998	5,462,427	53,058,188	300,000	2.57	<b>1.12</b>	10.68
<i>Chicago Growth Partners II</i>	60,000,000	57,711,626	56,476,803	54,637,903	2,036,374	18.87	<b>1.93</b>	8.06
<b>Court Square Capital Partners</b>								
<i>Court Square Capital Partners</i>	100,000,000	80,813,422	315,541	181,518,369	1,934,741	28.91	<b>2.25</b>	14.30
<i>Court Square Capital Partners II</i>	175,000,000	158,078,327	80,206,908	219,194,852	17,968,871	13.41	<b>1.89</b>	9.57
<i>Court Square Capital Partners III</i>	175,000,000	72,080,916	52,858,537	31,632,963	110,583,173	6.99	<b>1.17</b>	3.83
<b>Crescendo</b>								
<i>Crescendo IV</i>	101,500,000	101,500,000	11,946,220	37,386,052	0	-6.78	<b>0.49</b>	16.06
<b>CVC Capital Partners</b>								
<i>CVC European Equity Partners V</i>	133,854,073	129,528,618	58,396,136	137,933,978	4,325,455	11.01	<b>1.52</b>	8.01
<i>CVC Capital Partners VI</i>	253,044,804	93,141,812	82,333,070	545,893	160,410,603	-11.93	<b>0.89</b>	2.73
<b>Diamond Castle Partners</b>								
<i>Diamond Castle Partners IV</i>	92,487,949	91,151,326	0	94,068,606	1,377,108	0.40	<b>1.03</b>	9.56

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Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>Elevation Partners</b>								
<i>Elevation Partners</i>	75,000,000	69,311,710	1,281,295	112,437,120	799,634	11.85	<b>1.64</b>	10.87
<b>Fox Paine &amp; Company</b>								
<i>Fox Paine Capital Fund II</i>	50,000,000	46,299,626	3,958,216	86,859,891	11,953,212	18.96	<b>1.96</b>	15.75
<b>GHJM Marathon Fund</b>								
<i>GHJM Marathon Fund V</i>	50,000,000	50,093,425	35,590	95,838,392	46,502	12.09	<b>1.91</b>	11.50
<i>TrailHead Fund</i>	20,000,000	14,914,187	20,138,314	6,955	5,085,813	12.04	<b>1.35</b>	4.10
<b>GS Capital Partners</b>								
<i>GS Capital Partners 2000</i>	50,000,000	50,000,000	1,978,830	112,309,390	0	23.46	<b>2.29</b>	15.58
<i>GS Capital Partners V</i>	100,000,000	73,958,901	7,314,452	209,467,705	3,441,099	18.18	<b>2.93</b>	11.00
<i>GS Capital Partners VI</i>	100,000,000	80,215,619	29,424,053	93,231,417	21,939,971	5.73	<b>1.53</b>	9.16
<b>GTCR Golder Rauner</b>								
<i>GTCR VI</i>	90,000,000	90,000,000	2,202,275	77,813,800	0	-3.81	<b>0.89</b>	17.75
<i>GTCR IX</i>	75,000,000	69,539,933	7,163,406	119,144,001	5,460,067	14.00	<b>1.82</b>	9.75
<i>GTCR X</i>	100,000,000	89,248,604	70,352,709	88,929,872	10,751,396	20.02	<b>1.78</b>	5.31
<i>GTCR Fund XI</i>	110,000,000	44,812,553	46,128,193	649,653	65,187,447	4.55	<b>1.04</b>	2.38
<b>HarbourVest</b>								
<i>Dover Street VII Cayman Fund</i>	2,198,112	2,070,612	1,131,553	924,868	127,500	-0.91	<b>0.99</b>	1.25
<i>HarbourVest Intl PE Partners V-Cayman US</i>	3,515,929	3,293,739	2,172,029	1,610,205	222,190	13.70	<b>1.15</b>	1.25
<i>Harbourvest Intl PE Partners VI-Cayman</i>	4,231,488	3,298,291	3,210,362	663,888	933,198	15.33	<b>1.17</b>	1.25
<i>HarbourVest Partners VIII Cayman Buyout</i>	4,506,711	4,116,711	2,949,525	1,727,274	390,000	12.67	<b>1.14</b>	1.25
<i>HarbourVest Partners VIII-Cayman Venture</i>	7,190,898	7,015,898	5,545,771	1,945,345	175,000	5.46	<b>1.07</b>	1.25
<b>Hellman &amp; Friedman</b>								
<i>Hellman &amp; Friedman Capital Partners V</i>	160,000,000	146,165,961	3,680,225	414,391,023	8,070,303	27.91	<b>2.86</b>	11.33
<i>Hellman &amp; Friedman Capital Partners VI</i>	175,000,000	170,298,546	40,423,942	296,606,878	5,824,073	12.86	<b>1.98</b>	9.00
<i>Hellman &amp; Friedman Capital Partners VII</i>	50,000,000	47,201,722	48,637,996	16,600,705	2,798,278	14.73	<b>1.38</b>	6.95
<b>IK Investment Partners</b>								
<i>IK Fund VII</i>	180,017,921	169,629,300	170,725,370	7,279,701	10,388,622	3.54	<b>1.05</b>	2.55
<b>Kohlberg Kravis Roberts</b>								
<i>KKR Millennium Fund</i>	200,000,000	200,000,000	27,340,125	395,356,677	0	16.48	<b>2.11</b>	13.31
<i>KKR 2006 Fund</i>	200,000,000	209,602,896	117,918,693	216,266,731	4,820,615	8.08	<b>1.59</b>	9.51
<i>KKR Americas Fund XII</i>	150,000,000	0	0	0	150,000,000	0.00	<b>0.00</b>	0.33
<b>Leonard Green &amp; Partners</b>								
<i>Green Equity Investors VI</i>	200,000,000	162,062,098	160,968,287	26,937,369	58,597,364	9.07	<b>1.16</b>	4.04
<b>Lexington Capital Partners</b>								
<i>Lexington Capital Partners VI</i>	100,000,000	98,365,297	29,882,735	111,993,641	1,634,703	7.99	<b>1.44</b>	10.27
<i>Lexington Capital Partners VII</i>	200,000,000	164,170,550	101,493,168	147,048,771	42,978,366	16.52	<b>1.51</b>	6.80
<i>Lexington Capital Partners VIII</i>	150,000,000	33,194,146	35,703,867	6,539,346	119,799,195	36.83	<b>1.27</b>	2.07
<b>Madison Dearborn Capital Partners</b>								
<i>Madison Dearborn Capital Partners VII</i>	100,000,000	8,947,735	8,266,759	0	91,052,265	-7.82	<b>0.92</b>	0.53
<b>MHR Institutional Partners</b>								
<i>MHR Institutional Partners IV</i>	75,000,000	11,250,000	10,361,610	140,761	63,750,000	-7.35	<b>0.93</b>	0.96
<b>Merced Capital</b>								
<i>Merced Partners II</i>	75,000,000	63,768,881	8,336,856	121,622,383	0	24.10	<b>2.04</b>	9.00
<i>Merced Partners III</i>	100,000,000	100,000,000	64,679,691	65,997,107	0	6.96	<b>1.31</b>	5.90
<i>Merced Partners IV</i>	125,000,000	125,000,000	126,777,500	0	0	0.88	<b>1.01</b>	2.72
<b>Nordic Capital</b>								
<i>Nordic Capital Fund VIII</i>	176,853,163	96,314,587	87,327,112	49,418	80,538,576	-5.27	<b>0.91</b>	2.55
<b>North Sky Capital</b>								
<i>North Sky Capital LBO Fund III</i>	1,070,259	720,259	532,611	277,491	350,000	10.20	<b>1.12</b>	1.25
<i>North Sky Capital Venture Fund III</i>	1,384,080	1,277,830	710,638	689,583	106,250	8.35	<b>1.10</b>	1.25
<b>Oaktree Capital Management</b>								
<i>Oaktree Principal Fund VI</i>	100,000,000	21,393,823	15,969,646	6,962,555	85,169,872	14.89	<b>1.07</b>	1.25
<b>Paine &amp; Partners</b>								
<i>Paine &amp; Partners Capital Fund IV</i>	75,000,000	16,566,346	13,196,586	0	58,433,654	-23.69	<b>0.80</b>	1.30
<b>Permal Capital</b>								
<i>Permal PE Opportunities IV</i>	5,337,098	4,247,098	2,850,798	1,635,487	1,090,000	4.53	<b>1.06</b>	1.25
<b>PERMIRA</b>								
<i>Permira V</i>	178,160,389	136,416,465	133,609,384	2,229,773	41,743,924	-0.31	<b>1.00</b>	2.25
<b>Public Pension Capital Management</b>								
<i>Public Pension Capital</i>	92,000,000	7,517,316	7,638,728	180,012	84,482,684	-29.93	<b>1.04</b>	1.88
<b>RWI Ventures</b>								
<i>RWI Ventures I</i>	7,603,265	7,603,265	487,500	6,094,262	0	-4.41	<b>0.87</b>	9.75

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Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>Sightline Healthcare</b>								
<i>Sightline Healthcare Fund III</i>	20,000,000	20,000,000	0	8,718,066	0	-8.18	<b>0.44</b>	17.19
<i>Sightline Healthcare Fund IV</i>	7,700,000	7,753,673	53,731	7,829,436	0	0.15	<b>1.02</b>	12.52
<b>Silver Lake Partners</b>								
<i>Silver Lake Partners II</i>	100,000,000	90,121,966	20,433,483	155,275,475	11,771,953	11.46	<b>1.95</b>	11.75
<i>Silver Lake Partners III</i>	100,000,000	86,048,986	60,319,148	108,396,322	15,442,553	17.52	<b>1.96</b>	9.00
<i>Silver Lake Partners IV</i>	100,000,000	55,270,096	59,977,989	14,656,610	53,019,700	28.90	<b>1.35</b>	3.51
<b>Split Rock Partners</b>								
<i>Split Rock Partners</i>	50,000,000	47,454,543	27,529,419	14,926,433	2,545,457	-1.56	<b>0.89</b>	10.92
<i>Split Rock Partners II</i>	60,000,000	57,565,000	39,041,926	22,389,936	2,435,000	2.07	<b>1.07</b>	7.92
<b>Summit Partners</b>								
<i>Summit Ventures V</i>	25,000,000	24,125,000	47,512	33,358,461	875,000	8.11	<b>1.38</b>	18.00
<i>Summit Partners Growth Equity Fund VIII</i>	100,000,000	91,301,274	85,031,256	27,224,839	21,758,082	12.91	<b>1.23</b>	4.91
<i>Summit Partners Growth Equity Fund IX</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	0.84
<b>TPG Capital</b>								
<i>TPG Partners VII</i>	100,000,000	16,386,043	14,900,653	25,996	83,613,957	-16.02	<b>0.91</b>	0.56
<b>Thomas H. Lee Partners</b>								
<i>Thomas H. Lee Equity Fund VII</i>	100,000,000	9,805,255	6,410,659	28,576	90,194,745	-38.87	<b>0.66</b>	0.56
<b>T. Rowe Price</b>	66,919,415	66,919,415	22,240,508	46,503,936	0	2.26	<b>1.03</b>	0.25
<b>Thoma Cressey</b>								
<i>Thoma Cressey Fund VI</i>	35,000,000	33,915,000	431,930	34,128,882	1,085,000	0.22	<b>1.02</b>	17.61
<i>Thoma Cressey Fund VII</i>	50,000,000	50,000,000	1,069,671	106,625,069	0	23.63	<b>2.15</b>	15.60
<i>Thoma Cressey Fund VIII</i>	70,000,000	68,932,574	1,203,030	231,747,763	770,000	18.17	<b>2.90</b>	9.92
<b>Thomas, Mc Nerney &amp; Partners</b>								
<i>Thomas, Mc Nerney &amp; Partners I</i>	30,000,000	30,000,000	6,786,722	10,504,694	0	-10.68	<b>0.58</b>	13.40
<i>Thomas, Mc Nerney &amp; Partners II</i>	50,000,000	47,125,000	26,168,023	81,819,983	2,875,000	17.19	<b>2.29</b>	9.75
<b>Varde Fund</b>								
<i>Varde Fund IX</i>	100,000,000	100,000,000	30,944,170	172,501,253	0	14.45	<b>2.03</b>	7.77
<i>Varde Fund X</i>	150,000,000	150,000,000	167,170,043	85,907,152	0	11.29	<b>1.69</b>	5.94
<i>Varde Fund XI</i>	200,000,000	200,000,000	241,006,400	0	0	7.77	<b>1.21</b>	2.73
<b>Vestar Capital Partners</b>								
<i>Vestar Capital Partners IV</i>	55,000,000	53,635,969	1,002,656	101,917,140	57,313	14.67	<b>1.92</b>	16.29
<i>Vestar Capital Partners V</i>	75,000,000	74,813,444	53,803,903	35,038,613	186,556	2.63	<b>1.19</b>	10.28
<i>Vestar Capital Partners VI</i>	100,000,000	54,073,206	68,718,538	16,535,695	45,926,794	27.76	<b>1.58</b>	4.52
<b>Warburg Pincus</b>								
<i>Warburg Pincus Equity Partners</i>	100,000,000	100,000,000	1,349,813	162,262,253	0	10.02	<b>1.64</b>	17.76
<i>Warburg Pincus Private Equity VIII</i>	100,000,000	100,000,000	23,322,726	202,439,603	0	14.76	<b>2.26</b>	13.96
<i>Warburg Pincus Private Equity IX</i>	100,000,000	100,000,000	11,478,012	163,310,456	0	9.98	<b>1.75</b>	10.68
<i>Warburg Pincus Private Equity X</i>	150,000,000	150,000,000	73,525,947	138,609,697	0	7.37	<b>1.41</b>	8.44
<i>Warburg Pincus Private Equity XI</i>	200,000,000	174,000,000	194,358,907	20,152,200	26,000,000	11.69	<b>1.23</b>	3.28
<i>Warburg Pincus Private Equity XII</i>	131,000,000	9,170,000	8,420,242	0	121,830,000	-16.83	<b>0.92</b>	0.36
<b>Wayzata</b>								
<i>Wayzata Opportunities Fund</i>	100,000,000	93,180,000	1,904,581	155,200,366	18,920,000	8.45	<b>1.69</b>	10.28
<i>Wayzata Opportunities Fund II</i>	150,000,000	57,450,000	29,190,966	169,824,823	30,000,000	16.18	<b>3.46</b>	8.44
<i>Wayzata Opportunities Fund III</i>	150,000,000	66,750,000	52,386,891	5,641,917	88,755,000	-9.53	<b>0.87</b>	3.79
<b>Welsh, Carson, Anderson &amp; Stowe</b>								
<i>Welsh, Carson, Anderson &amp; Stowe VIII</i>	100,000,000	100,000,000	151,498	128,668,552	0	3.12	<b>1.29</b>	17.69
<i>Welsh, Carson, Anderson &amp; Stowe IX</i>	125,000,000	123,750,000	71,930	205,602,079	1,250,000	11.19	<b>1.66</b>	15.76
<i>Welsh, Carson, Anderson &amp; Stowe X</i>	100,000,000	98,000,000	21,620,506	141,375,595	2,000,000	7.91	<b>1.66</b>	10.29
<i>Welsh, Carson, Anderson &amp; Stowe XI</i>	100,000,000	96,849,896	64,520,633	80,463,834	3,150,104	12.70	<b>1.50</b>	7.69
<i>Welsh, Carson, Anderson &amp; Stowe XII</i>	150,000,000	38,858,359	36,170,177	0	111,141,641	-7.07	<b>0.93</b>	1.25
<b>Private Equity Total</b>	<b>11,602,306,355</b>	<b>8,444,180,227</b>	<b>4,579,281,103</b>	<b>8,418,546,940</b>	<b>3,217,911,386</b>		<b>1.54</b>	
<b>Alternatives Total</b>	<b>19,183,166,183</b>	<b>13,889,162,489</b>	<b>7,284,156,917</b>	<b>13,443,018,330</b>	<b>5,412,990,876</b>		<b>1.49</b>	

**Notes**

None of the data presented herein has been reviewed or approved by either the general partner or investment manager. The performance and valuation data presented herein is not a guarantee or prediction of future results. Ultimately, the actual performance and value of any investment is not known until final liquidation. Because there is no industry-standardized method for valuation or reporting comparisons of performance and valuation data among different investments is difficult.

\* MOIC: Multiple of Invested Capital

\*\* Partnership interests transferred to the MSBI during 1Q2015. All data presented as of the transfer date.

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## ATTACHMENT C

### CREDIT MANAGER SUMMARY PROFILE

#### I. Background Data

<b>Name of Fund:</b>	Prudential Capital Partners V, L.P.
<b>Type of Fund:</b>	Credit - Mezzanine
<b>Target Fund Size:</b>	\$1.4 Billion <sup>1</sup>
<b>Fund Manager:</b>	Prudential Capital Partners
<b>Manager Contact:</b>	Mark Hoffmeister 180 North Stetson Avenue, Suite 5600 Chicago, IL 60601 312-540-4215

#### II. Organization and Staff

Prudential Capital Group (“PCG”) is an indirect, wholly owned subsidiary of Prudential Financial, Inc. PCG has been investing in private placements for non-affiliated investors since 1976. PCG formed Prudential Capital Partners, L.P. (Fund I), a middle middle-market mezzanine fund, in September 2000. Collectively, PCG through the Legacy Portfolio (US Legacy Portfolio and the European Legacy Portfolio, both managed on behalf of Prudential affiliates) and Predecessor Funds (Funds I-IV), has invested approximately \$3.7 billion in 168 mezzanine and structured equity transactions as of March 31, 2016. In each of the prior four funds, approximately one-third of each fund was committed by Prudential with the other two-thirds being raised from other insurance companies, public pensions, private pensions, fund-of-funds and a small number of high net worth individuals.

Prudential Capital Group is headquartered in Chicago but has a global network of regional offices, with U.S. offices located in Atlanta, Chicago, Dallas, Los Angeles, Minneapolis, New York, and San Francisco. International offices include London, Frankfurt, Milan, Paris, and Sydney.

Fund V will be managed by seven members of PCG’s senior management team, including six of the seven members who manage the Predecessor Funds. All seven Principals have strong mezzanine investment backgrounds, and together they have an average of over 30 years of private market investment experience. The seven Principals will collectively make up the Investment Committee. Three of the seven Principals will be solely dedicated to the activities of the Mezzanine Funds. The three dedicated Principals include Jeffrey Dickson, Mark Hoffmeister and Paul Meiring. The other four Principals split their time between other Prudential Capital Group activities and the mezzanine funds.

<sup>1</sup> The Private Placement Memorandum lists a \$1.4 billion fund target. PCP is proposing a hard cap of \$1.8 billion.

### **III. Investment Strategy**

Fund V will invest primarily in subordinated debt and structured equity securities. Such investments typically combine both debt and equity securities and include convertible debt, preferred stock and warrants. Fund V intends to structure its investments with significant current return, debt protection rights, and equity features in order to participate in the growth of shareholder value that is expected from its portfolio companies. Mezzanine investments combine a current rate of return through scheduled interest payments with opportunities for significant capital appreciation through equity participation. These securities typically have a liquidation preference over common equity, and benefit from covenants tied to the issuer's financial performance.

Fund V will continue to focus on transactions with middle market companies that typically generate annual revenues in the \$30 million to \$500 million range. Fund V's investments are expected to be sized between \$10 million and \$100 million. The average deal size in Predecessor Funds has ranged from \$19 to \$31 million with an average of 30 deals in each fund. The portfolio of investments is expected to be broadly diversified with respect to industry, geography and type of financing. Investments will generally be made to facilitate the financing of recapitalizations, acquisitions, internal growth opportunities and buyouts. The Predecessor Funds' mezzanine activities have been concentrated in more stable industries, such as manufacturing and services, and have generally avoided more volatile or regulated industries, such as technology, telecommunications and healthcare. Fund V will not invest in energy companies, which include companies whose revenues are generated primarily by (i) generation and/or transmission of electric power, steam, and/or chilled water or ancillary utility services or (ii) oil and/or gas exploration or production or ancillary services where profitability is a function of the same or similar economic drivers including oilfield service companies. PCG primarily focuses on companies pursuing a targeted market with a value-added product, process or service. These companies are typically the leading firms in their industry segments in terms of sales, margins and growth. As these companies grow over time, they typically become attractive acquisition targets for larger companies, providing an exit opportunity for investors.

The investment strategy will primarily be concentrated on North American middle market subordinated debt and structured equity investments with the option to pursue western European opportunities. The regional offices are all involved in mezzanine origination and portfolio management. Deal flow will be sourced through PCG's direct prospect calling efforts and financing relationships with over 750 U.S. and Canadian companies, 230 international companies, and through strong equity sponsor relationships. PCG's global regional deal teams are organized by geography and thoroughly cover the middle market companies, intermediaries and equity sponsors in their respective territories.

PCG's broad investment capabilities enable it to provide "one-stop" capital structure solutions. PCG believes that this capability represents a competitive advantage versus investors providing only one layer of the capital structure, particularly during times of severe capital market volatility. While the Fund will invest only in the mezzanine and equity portions of these financings, it should gain access to additional investment opportunities as a result of Prudential Insurance's appetite for senior debt.



It is expected that Fund V will have the opportunity to invest in non-sponsored transactions, similar to the Predecessor Funds. In a non-sponsored deal the Fund will back an owner/management team directly, without the involvement of a private equity sponsor. Historically, non-sponsored investments have represented close to half of the investments in prior funds.

Prudential Capital Group aims to perform thorough due diligence on each investment, utilizing its network of contacts to understand and analyze the particular industry, company and management team. After closing an investment, PCG continues to work actively with its portfolio companies by maintaining an ongoing dialogue with management and through board membership and/or observer rights.

#### **IV. Investment Performance**

Previous fund performance as of 06/30/16 is shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
Prudential Capital Partners	2000	\$619 million	\$100 million	11.1%	1.6x
Prudential Capital Partners II	2005	\$775 million	\$100 million	9.0%	1.5x
Prudential Capital Partners III	2008	\$967 million	\$100 million	13.7%	1.6x
Prudential Capital Partners IV	2012	\$1.15 billion	\$100 million	13.2%	1.2x

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Net MOIC provided by State Street.

#### **V. General Partner's Investment**

The Prudential Insurance Company of America and its affiliated insurance companies will together contribute the lesser of one-third of the Capital Commitments or up to \$450 million on substantially the same terms as other Limited Partners, provided that they will be charged a Carried Interest of 15%.

#### **VI. Fees**

Throughout the life of the fund, the General Partner will receive an annual management fee equal to 1.5% of Actively Invested Capital. There will be a 100% transaction fee offset of management fees based on fees received and retained by the General Partner. The carried interest will be 20% based on a hurdle rate of an annual 8% internal rate of return. The Fund will utilize a European Waterfall structure.

## **VII. Distributions**

The proportionate share of each such Limited Partner generally will be distributed as follows:

- (a) first, 100% to such Limited Partner until the cumulative amount distributed to such Limited partner is equal to the aggregate capital contributions of such Limited Partners;
- (b) second, 100% to such Limited partner until the cumulative amount distributed to such Limited Partner is sufficient to provide such Limited Partner with an 8% annualized effective internal rate of return on the aggregate capital contributions of such Limited Partner;
- (c) third 100%, to the General Partner until the cumulative amount distributed to the General partner attributable to such Limited Partner is equal to 20% of the excess of (i) the cumulative amount distributed to such Limited Partner and to the General Partner attributable to such Limited Partner over (ii) the aggregate capital contributions of such Limited Partner; and
- (d) thereafter, 80% to such Limited partner and 20% to the General Partner.

Notwithstanding the foregoing, the Fund may make tax distributions to the Partners in respect of gain and other income in accordance with the manner in which such gain and other income are allocated to the Partners. Such tax distributions will subsequently be taken into account for purposes of making the calculations required by the distribution waterfall described above.

## **VIII. Key Persons**

Following the occurrence of the departure of at least two Dedicated Principals or at least three Principals, the general partner shall give the Limited Partners prompt written notice thereof and, unless the Advisory committee otherwise consents to a continuation of the Investment Period within 10 Business Days, a Suspension Period shall be deemed to have commenced.

## **IX. Investment Period and Term**

The term of the Fund is contemplated to be ten years, subject to three consecutive additional one-year extensions as determined by the General Partner to allow for the orderly liquidation of the Fund's investments. The investment period will be up to five years from the final closing date.

*Note: This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the "PPM"). It is qualified in its entirety by the more detailed information provided in the PPM.*

## ATTACHMENT D

### PRIVATE EQUITY MANAGER SUMMARY PROFILE

#### I. Background Data

<i>Name of Fund:</i>	Permira VI
<i>Type of Fund:</i>	Private Equity - Buyout
<i>Target Fund Size:</i>	€6.5 billion (target), €7.25 billion (hard cap)
<i>Fund Manager:</i>	Permira Advisers LLC
<i>Administrative Contact:</i>	Monica Chase 320 Park Avenue New York, NY 10022 (212) 386-7473

#### II. Organization and Staff

Permira was one of the first entrants into the European Private Equity market in the 1980s. The firm entered the UK in 1985, was the first entrant into Germany in 1986 and Italy in 1988, and has had a presence in France since 1989. In 1996, these operations were integrated to form a single organization, Schroder Ventures Europe, which was renamed Permira in 2001. The firm strengthened its pan-European presence by opening offices in Stockholm in 2003 and Madrid in 2004. Outside of Europe the firm has built a global presence to enhance origination within sectors the firm knows well and to support portfolio company growth. It was one of the earliest European private equity firms to extend its reach to the USA, opening an office in New York in 2002 and Menlo Park in 2008. The firm has also opened offices in Asia, starting with Tokyo in 2005, Hong Kong in 2008, and Shanghai in 2016. Permira is 100% owned and controlled by the firm's 27 Partners.

Permira has built a deep and experienced organization over the last three decades. Its roots across key European markets are long-standing and its teams in the USA and Asia are well-established. The investment team today is comprised of 89 professionals across 12 investing offices, making it one of the largest firms of European heritage. The investment team consists of 26 Partners, 22 Principals, and 41 other professionals, with 21 of the 26 Partners having worked at Permira for more than 10 years.

#### III. Investment Strategy

Permira's investment strategy focuses on acquiring businesses that are underpinned by long-term growth drivers and exposure to global growth opportunities. This approach seeks to minimize dependence on the macroeconomic cycle and reduce the need to use significant debt as a means of amplifying performance. Permira believes this investment strategy has the potential to deliver outsized and attractive risk-adjusted returns throughout the cycle. Permira's sector teams are charged with identifying enduring sector trends and translating them into investable opportunities for the funds, allowing for a more focused origination approach.

Permira's thematically-focused strategy results in a high degree of proactive origination. Teams leverage their knowledge and networks to engage early, often exclusively, with vendors and management teams of the businesses they find most attractive. Moreover, Permira's entrepreneurial origination focuses on what the funds want to acquire rather than what is for sale.

The Permira funds have a long history of highly active and engaged ownership. While portfolio company management teams are the agents for driving operational change, the firm's investment professionals have the mind-set of building businesses rather than doing deals. This approach is underpinned by an operationally-oriented team; more than half of the Partners and almost a third of all investment professionals have industry or consulting backgrounds. Investment teams have continuous responsibility from origination to exit; this very high level of accountability is at the heart of Permira's approach to business transformation.

The refined investment strategy has elevated the importance of growth as a driver of returns, requiring a combination of many value creation levers which are often complex in nature. Reflecting this evolution, Permira is committed to further investing into the Portfolio Group, a core team of internal operating specialists, to support investment teams in delivering these growth initiatives, as well as driving a more systematic application of value creation levers across the portfolio. The Portfolio Group has a centralized functional "toolkit" which is relevant across different industries and regions. These often universal initiatives are overlaid with a strong sector dimension, codified in each sector team's own toolkit, which provides a powerful framework for analyzing opportunities during diligence and measuring progress during the life of an investment. Examples of value creation initiatives from the Technology team's toolkit are salesforce optimization, recurring revenue optimization, automation of the marketing function, re-vamping the product portfolio, and leveraging big data.

The sector-focused investment team driving the origination of a deal maintains responsibility from onset through exit. The breadth of the local footprint means that resources can be increased where required, typically to build stronger relationships with management or the vendor, or to increase credibility around an international expansion story. Investment teams are complemented where necessary by dedicated internal specialists and expert external networks, which provide support throughout the investment lifecycle. Permira believes this model ensures flexibility of resources and the ability to augment teams during the investment.

The Permira funds typically seek to invest in businesses with an enterprise value of between €500m and €3bn. Since 2009, the funds have completed 29 deals (not including add-on deals) with an average enterprise value of €750m and an average equity commitment of €240m. Over the same period of time, the funds have invested 50% of their committed capital into businesses with headquarters in Europe, 37% in North America and 13% elsewhere in the world. While the businesses in which the funds invest typically have significant activities in Europe, they often have a diversified global revenue stream. Permira VI's expected core range of equity investment and regional focus are expected to be consistent with this pattern. The benefit of a broad international approach is that the funds' capital can be deployed into the most attractive risk-adjusted opportunities at any point, with no pressure to invest in geographies or sectors that are at a less attractive stage in the cycle. There is no pre-allocation of capital by sector or geography.

#### **IV. Investment Performance**

Previous fund performance as of March 31, 2016 for Permira and the SBI's investments with previous funds, where applicable, is shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
Permira I	1997	€890 million	--	84%	2.5
Permira II	2000	€3,300 million	--	17%	1.7
Permira III	2003	€4,955 million	--	23%	1.7
Permira IV	2006	€9,411 million	--	10%	1.7
Permira V	2014	€5,000 million	€150 million	0%	1.0

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Multiple of Invested Capital (MOIC) were provided by Permira for Funds I – IV (€) and provided by State Street for Fund V (\$).

#### **V. General Partner's Investment**

The Partners and executives of Permira, and/or certain Permira co-investment programs established for current or former Permira Partners and executives, will invest in or alongside the fund at least €250 million (~3.3% of total commitments to the fund).

#### **VI. Fees**

During the investment period, the annual management fee, payable quarterly in advance, is equal to 1.50% of aggregate commitments. After the expiration of the investment period, or once the fund has invested or committed to invest at least 90% of its committed capital, the management fee is reduced to 1.25% per annum of the aggregate acquisition cost of unrealized investments.

#### **VII. Distributions**

Distributions will be apportioned to Limited Partners as follows:

- (a) first, 100% to each investor until it has received total distributions equal to its capital contributions;
- (b) second, 100% to each investor until it has received an 8% per annum return (compounded annually) on the investor's outstanding capital contributions (the "Preferred Return");
- (c) third, 100% to the General Partner as carried interest until it has received 20% of all distributions made by the fund pursuant to sub-paragraph (b) above and this sub-paragraph (c); and
- (d) fourth, 80% to investors and 20% to the General Partner as carried interest.

## **VIII. Key Persons**

The General Partner shall notify the Limited Partners as soon as practicable upon (and in any event within 30 days of) one or more of the following conditions being met at any time during the Investment Period (which conditions trigger a Key Person Suspension Period): (a) either (i) three or more of the Executive Committee/Investment Committee Members or (ii) both of the Co- Managing Partners, cease to satisfy the Business Time Requirement; or (b) the occurrence of a Change of Control.

Following such notice, the investment powers of the General Partner with respect to new investments will be automatically suspended until such time as the suspension is lifted with the approval of the Advisory Committee.

## **IX. Investment Period and Term**

The Investment Period will last for a period of six years, subject to possible extension. The fund will terminate 10 years from the later of the Effective Date and the final closing. The term may be extended for up to three additional one-year periods with the consent of investors representing at least a majority of total commitments.

*Note: This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the "PPM"). It is qualified in its entirety by the more detailed information provided in the PPM and any supplemental thereto.*

## ATTACHMENT E

### PRIVATE EQUITY MANAGER SUMMARY PROFILE

#### I. Background Data

<i>Name of Fund:</i>	Thoma Bravo Fund XII, L.P.
<i>Type of Fund:</i>	Private Equity - Buyout
<i>Target Fund Size:</i>	\$7.0 billion
<i>Fund Manager:</i>	Thoma Bravo, LLC
<i>Manager Contact:</i>	Jennifer James 600 Montgomery Street, 20 <sup>th</sup> Floor San Francisco, CA 94111 (415) 249-6717

#### II. Organization and Staff

Thoma Bravo, LLC (“Thoma Bravo” or the “Firm”) is sponsoring Thoma Bravo Fund XII, L.P. (the “Fund” or “Fund XII”) to make control buyouts of software and technology-enabled services companies in North America.

Thoma Bravo is a successor to Golder Thoma & Co., which was founded in 1980 by Stanley Golder and Carl Thoma, who had worked together within what was then First Chicago Corporation’s venture capital group. It was there that the partners began to develop the consolidation or “buy and build” investment strategy of seeking to create value by building companies in fragmented industries through add-on acquisitions. The original firm subsequently became Golder, Thoma, Cressey, Rauner, Inc. (often referred to as GTCR), which in 1998 split into two firms, one of which was Thoma Cressey Equity Partners Inc. (“TCEP”). From 1998 through 2007, TCEP (renamed Thoma Cressey Bravo, Inc. in 2007) raised and invested three private equity funds: Fund VI, Fund VII and Fund VIII, which invested principally in companies in the services, software and healthcare sectors.

With offices in San Francisco and Chicago, the Firm employs 49 full-time individuals, including 18 senior investment professionals. The Firm also utilizes the services of 10 operating partners and operating advisors. By August 2016, the Firm expects to add 6 individuals to its team, including 2 senior investment professionals. All six Managing Partners have been with Thoma Bravo for a minimum of ten years.

#### III. Investment Strategy

Fund XII will build upon the investment strategy and process originally created by Carl Thoma and his partners more than 30 years ago, and more recently refined by Orlando Bravo and the other current Thoma Bravo partners. This strategy seeks to create value by transforming businesses in fragmented, consolidating industry sectors into larger, more profitable and more valuable businesses through rapid operational improvements, growth initiatives, and strategic

and accretive add-on acquisitions. The application and infrastructure software and technology enabled services industry sectors on which Thoma Bravo focuses today are fragmented and consolidating, which lend themselves particularly well to this strategy. Fund XII will target roughly 12 platform investments, with 3-4 large investments (approximately \$1 billion of equity) and 7-10 medium-sized investments (approximately \$400 million of equity).

The investment process starts with proactive deal sourcing, where investment professionals seek out companies that appear to fit with Thoma Bravo's consolidation strategy. Thoma Bravo professionals are consistently active in the software and technology enabled services sectors by contacting industry professionals and intermediaries, through face-to-face meetings, email correspondence, phone conversations, and attendance at industry conferences. Once formal due diligence is initiated on a company, the Thoma Bravo investment staff embark on a rigorous, hands-on and time-intensive process. In addition to thoroughly evaluating all aspects of the prospective portfolio company, the process also allows Thoma Bravo time to work with the target company's management team to develop an operational improvement program. Upon the closing of an investment, management is expected to immediately implement the operational improvement plan agreed upon during due diligence with the guidance of Thoma Bravo and often one or more operating partners or operating advisors.

Once the operating improvements are achieved and management is operating as planned, a consolidation strategy typically will be pursued to generate continued growth. Like their operating plans, Thoma Bravo's consolidation plans typically are formulated pre-investment and are central to the investment thesis on which any investment is pursued. However, the investment return to which the investment is underwritten does not include the impact of acquisitions, so a successful consolidation program should produce a return that is incremental to the original plan. Together, these consolidation initiatives and operational improvements are intended to quickly transform a company into a more profitable, larger and more valuable business that is attractive to strategic or financial acquirers or public investors. Throughout the process of managing an investment, Thoma Bravo intends to proactively manage liquidity options by developing and cultivating relationships with potential strategic and financial purchasers, the investment community and lending sources. Thoma Bravo expects to use the following methods of exiting investments in portfolio companies: (i) sales to strategic purchasers or financial purchasers; (ii) initial public offerings; and (iii) recapitalizations (for initial or interim liquidity).

Thoma Bravo and its predecessor firms have invested in many consolidating sectors over the years, including distribution, education, insurance, finance, communications, media, marketing, consulting, asset management, and security services. As early as 2001, the Firm's research identified the software industry as an area of opportunity. Many software industry sectors were fragmented and consolidating. Formerly rapidly growing companies were becoming mature, growing less rapidly than in earlier years and had not yet adjusted their cost structures to current growth opportunities. A high proportion of their revenue was derived from predictable, recurring maintenance revenue. Since then, the funds managed by Thoma Bravo have made investments in about 43 software and technology enabled services platforms, representing about \$25 billion of enterprise value. These platform portfolio companies have invested in 98 add-ons, representing about another \$5 billion of value, making Thoma Bravo one of the leading private equity investors in the software sector.



#### **IV. Investment Performance**

Previous fund performance as of March 31, 2016 for Thoma Bravo is shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
Fund VII**	2000	\$554 million	\$50 million	23.7%	2.2
Fund VIII**	2005	\$765 million	\$70 million	18.2%	2.9
Fund IX	2008	\$823 million	--	43.9%	3.3
Fund X	2011	\$1,275 million	--	32.9%	1.7
SOFI	2013	\$418 million	--	19.4%	1.2
Fund XI	2014	\$3,662 million	--	6.6%	1.1
SOFII	2015	\$1,065 million	--	14.8%	1.1

\* Previous fund investments are not indicative of future results. Net IRR and Net MOIC were provided by State Street for Funds VII and VIII and provided by Thoma Bravo for Funds IX, X, SOFI, XI and SOFII. \*\* Funds VII and VIII include Healthcare deals.

#### **V. General Partner's Investment**

The General Partner and its partners will commit to the Fund an aggregate of at least \$300 million in cash.

#### **VI. Fees**

During the investment period, the annual management fee, payable quarterly in advance, is equal to 1.5% of aggregate commitments. After the expiration of the investment period, or earlier upon the occurrence of certain events as set forth in the Fund's Agreement of Limited Partnership, the management fee of 1.5% will be charged on the acquisition cost of unrealized investments, less acquisition costs attributed to permanently written-down investments. The management fee will be reduced by an amount equal to 100% of transaction fees attributable to Limited Partners not designated as "affiliated partners" by the General Partner.

#### **VII. Distributions**

Distributions will be apportioned to Limited Partners as follows:

- (a) first, 100% to such Limited Partner until the cumulative amount distributed equals the aggregate of:
  - (i) the Limited Partner's funded commitment attributable to realized investments and unrealized investments to the extent they are permanently written down as of that time; and
  - (ii) such Limited Partner's funded commitment attributable to all organizational expenses, Management Fees and other expenses paid to date;

- (b) thereafter, 80% to such Limited Partner and 20% to the General Partner as carried interest. However, distributions to the General Partner with respect to its carried interest cannot be made if, immediately after such distribution, the “Fair Value Test” would not be satisfied. The “Fair Value Test” is satisfied if, with respect to a limited partner, as of the date of determination, either (i) such limited partner’s share of aggregate fair market value of unrealized investments and realized investments not fully disposed of, plus such limited partner’s share of aggregate amount of investment proceeds then held by the partnership, equals at least 125% of the aggregate amount of investment contributions made by such limited partner with respect to unrealized investments and realized investments not fully disposed of; or (ii) the cumulative amount of partnership distributions from all sources received by a limited partner equals or exceeds the aggregate amount of such limited partner’s aggregate capital contributions.

### **VIII. Key Persons**

- (1) In the event that (i) there ceases to be at least three of the current managing partners active in the Partnership’s affairs; (ii) Orlando Bravo ceases to be active in the Partnership’s affairs; or (iii) there ceases to be at least one of Seth J. Boro, S. Scott Crabill and Holden Spaht active in the Partnership’s affairs, the Fund will not fund further investments (other than follow-on or committed investments) unless and until limited partners holding a majority of aggregate commitments grant a waiver.
- (2) In the event that the General Partner ceases to be controlled by the current Thoma Bravo managing partners (or persons later approved by a majority of the limited partners), one of which must be Orlando Bravo, limited partners holding two-thirds of aggregate commitments may direct the General Partner not to fund any further investments (other than follow-on or committed investments).

### **IX. Investment Period and Term**

The Investment Period will last for a period of six years. The Fund will have a term of ten years, with the possibility of a one-year extension at the discretion of the General Partner and two additional one-year extensions at the discretion of the General Partner with the consent of the Advisory Committee.

*Note: This document is a summary of more detailed information provided in the Fund’s Confidential Private Placement Memorandum (the “PPM”). It is qualified in its entirety by the more detailed information provided in the PPM and the Fund’s Agreement of Limited Partnership.*

## ATTACHMENT F

### PRIVATE EQUITY MANAGER SUMMARY PROFILE

#### I. Background Data

<i>Name of Fund:</i>	Warburg Pincus China, L.P.
<i>Type of Fund:</i>	Private Equity - Growth
<i>Target Fund Size:</i>	\$2 Billion
<i>Fund Manager:</i>	Warburg Pincus LLC
<i>Manager Contact:</i>	James W. Wilson 450 Lexington Ave. New York, NY 10017 212-878-6126

#### II. Organization and Staff

Warburg Pincus was founded in 1966 and raised its first institutional fund in 1971. Since that time, Warburg Pincus has raised 15 private equity funds which collectively represent \$70 billion in committed capital – twelve prior global funds, two international-only companion funds, and an energy-only companion fund. The firm also established a \$1.2 billion global real estate fund in 2006 that is fully invested. Warburg Pincus was founded in New York and remains headquartered there, but has a global presence with seven additional offices around the world.

All of the firm's investment activities are coordinated by a 20-person Executive Management Group led by the firm's Co-Chief Executive Officers. The members of the EMG have an average tenure of 14 years with the firm and an average age of 50. The current Co-Chief Executive Officers - Charles R. Kaye and Joseph P. Landy - manage an ownership structure and carried interest pool for the firm that is spread broadly and deeply among employees. Over 150 professionals now participate in carried interest generated by all Warburg Pincus private equity funds through one common allocation program.

The Warburg Pincus China fund is being raised to invest alongside the current Warburg Pincus global fund. Led by Charles R. Kaye, Warburg Pincus opened its office in Hong Kong in 1994, followed by Beijing in 2003 and Shanghai in 2005. Since 1994, the firm has invested \$6.8 billion across more than 90 China investments. The China Team responsible for investing capital in China is comprised of 35 investment professionals based out of offices in Beijing, Hong Kong and Shanghai. The team is led by Co-Heads Julian Cheng and Frank Wei who have been with Warburg Pincus for 16 years and 14 years respectively. The nine managing directors on the team have an average tenure with the firm of 10 years.

Warburg Pincus China will invest in the same companies as the Warburg Pincus global fund. Most investments in companies, businesses or projects with significant connections and exposure to China will be shared 50-50 between the two funds. Energy related investments will be split 50-25-25 between Warburg's global fund, China fund and energy-only fund respectively.

### **III. Investment Strategy**

The firm's predominant focus is on growth investing. The Warburg Pincus investment strategy in China is to identify rapidly growing areas of the economy that the firm believes can benefit from the ongoing economic and structural transformations occurring in the country. The China Team intends to focus on sectors that it believes are capable of continuing to deliver 15% to 25% annual growth rates, even in times of lower overall gross domestic product ("GDP") growth. This includes areas such as healthcare, logistics, e-commerce, technology, consumer, retail, and businesses focused on environmental improvements and protections.

The China Team is organized into six industry verticals:

- Healthcare
- Real Estate
- Financial Services
- Consumer & Services
- Energy, Industrial & Business Services
- Technology, Media & Telecommunications (TMT)

The firm believes that Warburg Pincus China is well-positioned to benefit from trends underway in China including the rise in domestic consumption, growing productivity, and the expanding impact of technology. With the firm's long-standing knowledge of growth sectors and industries, combined with a well-established and substantial presence in China, Warburg Pincus often sees differentiated opportunities and proprietary deal flow in these areas. When situations arise, Warburg Pincus can leverage its experience lifting out single business units or intellectual property to form new stand-alone companies with the backing of a management team.

In addition to a core focus on backing talented management teams, the firm's broader investment strategy hinges on the development of specific industry theses and combining the right management teams with these theses to create successful portfolio companies. The China Team's thesis-building work focuses on identifying attractive themes for investment, sometimes before the team has identified a management team or specific opportunity related to these themes. The China Team routinely collaborates with dozens of Warburg Pincus managing directors and other investment professionals based outside of the region who provide additional perspective, sector expertise and support in developing investment theses.

Driven by China's rapidly growing middle-class and increasing level of disposable income, demand for more and higher quality consumer and healthcare products and services has been on the rise, and the firm has built an established track record in consumer and healthcare investing in China. In addition, the firm sees the rapid evolution of mobile internet technology continuing to transform a wide range of industries beyond just TMT. The firm is leveraging its

expertise in TMT and other industry sectors to be at the forefront of online to offline integrated investment opportunities. China’s financial services sector is also being reshaped by a number of ongoing reforms and innovations. Warburg Pincus is also focused on investment opportunities in China in alternative lending and asset management that benefit from interest rate and capital control deregulation, as well as opportunities in the rapidly growing area of consumer and internet finance. In addition, as environmental issues such as air pollution have spurred changes in China’s energy policies, the firm has invested in non-conventional gas exploration, natural gas distribution and related industrial areas. Real estate investing has also benefited from the “mega” trends in areas such as housing, lodging and warehousing. These have all been important focus areas for Warburg Pincus in China.

#### **IV. Investment Performance**

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
EMW Ventures Inc.	1971	\$41 million	N/A	14.9%	3.3x
Warburg Pincus Associates	1980	\$101 million	N/A	19.0%	3.3x
Warburg Pincus Capital Partners	1983	\$341 million	N/A	14.6%	2.8x
Warburg Pincus Capital Company	1986	\$1.2 billion	N/A	18.4%	4.4x
Warburg Pincus Investors	1989	\$1.8 billion	N/A	14.8%	2.4x
Warburg Pincus Ventures	1994	\$2 billion	\$50 million	49.2%	5.3x
Warburg Pincus Equity Partners	1998	\$5 billion	\$100 million	10.0%	1.6x
Warburg Pincus VIII	2001	\$5.3 billion	\$100 million	14.8%	2.3x
Warburg Pincus IX	2005	\$8 billion	\$100 million	10.0%	1.8x
Warburg Pincus X	2007	\$15.1 billion	\$150 million	7.4%	1.4x
Warburg Pincus XI	2012	\$11.2 billion	\$200 million	11.7%	1.2x
Warburg Pincus XII	2015	\$13.4 billion	\$131 million	-16.8%	0.9x

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Net MOIC for all funds prior to Warburg Pincus Ventures provided by the manager as of 3-31-16. Net IRR and Net MOIC for Warburg Pincus Ventures through Warburg Pincus XII provided by State Street as of 6-30-16.

Track Record of China Investments by Warburg Pincus IX and more recent funds as of March 31, 2016 is shown below:

<i>(\$ millions)</i>	<b>Investments</b>	<b>\$ Invested</b>	<b>Total Gross Return</b>	<b>Estimated Net IRR*</b>	<b>Estimated Net MOIC*</b>
Realized	32	\$1,621	\$3,586	20%	2.0x
Partially Realized	15	\$2,185	\$5,574	17%	2.3x
Unrealized	20	\$2,232	\$2,707	8%	1.1x
<b>Total</b>	<b>67</b>	<b>\$6,038</b>	<b>\$11,867</b>	<b>17%</b>	<b>1.8x</b>
<b>Total (Realized and Partially Realized)</b>	<b>47</b>	<b>\$3,806</b>	<b>\$9,160</b>	<b>18%</b>	<b>2.2x</b>

\* Net IRRs in China investments are estimated as 72.5% of gross IRR on a sequential cash flow basis and net Multiples are estimated to be 90% of gross Multiples. Exact net IRRs and net Multiples for China investments cannot be calculated due to lack of a mechanism to allocate fees, taxes, expenses and general partner carried interest to each investment. Net IRR and Net MOIC provided by the manager.

## **V. General Partner's Investment**

Warburg Pincus Partners and professionals will invest at least \$100 million in and alongside the Partnership.

## **VI. Fees**

An annual management fee of 1.4% of total commitments will be paid to the Manager for the six years following the commencement of the Partnership's activities. From the 6<sup>th</sup> anniversary of the effective date through the 8<sup>th</sup>, the annual management fee will be 1.4% of the cost of investments remaining in the portfolio less any write offs and the line of equity balance the General Partner believes will be funded during the two-year period. From 8<sup>th</sup> anniversary of the effective date through the 10<sup>th</sup>, the annual management fee will be 1.25% of the cost of investments remaining in the portfolio less any write offs. After the 10<sup>th</sup> anniversary, the annual management fee will decrease to 1% of the cost of the remaining investments less any write offs.

## **VII. Distributions**

Realized profits will be distributed 80% to Limited Partners and 20% to the General Partner, subject to a requirement that the value of each partners' net capital account must exceed 125% of cost basis before any distributions are made.

## **VIII. Key Persons**

A key person event will occur if any six or more of the senior managers (Charles Kaye, Joseph Landy, Mark Colodny, Timothy Geithner, Peter Kagan, Julian Cheng, Vishal Mahadevia, Michael Martin, James Neary, Frank Wei, or, in each case, any successors to or substitutes for any of the foregoing individuals approved by the Advisory Committee) fail to be actively involved in the affairs of the General Partner. Upon notice of a key person event, the obligations of the Limited Partners to make capital commitments will be suspended. A majority in interest of the Limited Partners may vote to make the suspension permanent.

## **IX. Investment Period and Term**

The Partnership's investment period will be six years and the Partnership's term will be 12 years subject two years of extension with the approval of the Advisory Committee.

*Note: This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the "PPM"). It is qualified in its entirety by the more detailed information provided in the PPM.*

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## ATTACHMENT G

### REAL ESTATE MANAGER SUMMARY PROFILE

#### I. Background Data

<i>Name of Fund:</i>	AG Asia Realty Fund III, L.P.
<i>Type of Fund:</i>	Private Real Estate
<i>Target Fund Size:</i>	\$750 million
<i>Fund Manager:</i>	Angelo, Gordon & Co., L.P.
<i>Manager Contact:</i>	Brigid Flanagan 245 Park Avenue New York, NY, 10167 (221) 692-8240

#### II. Organization and Staff

Angelo, Gordon & Co., L.P. (“Angelo, Gordon” or the “Firm”) is forming AG Asia Realty Fund III, L.P. (“Fund III” or the “Fund”) to make opportunistic investments in real estate in Asia. The Fund expects to focus on several Asian countries, with an emphasis on China, Japan, Hong Kong, and South Korea. Angelo, Gordon has been actively investing in Asia since 2005 and currently has associated offices and staff in Hong Kong, Seoul, and Tokyo. Fund III will invest alongside Angelo Gordon’s global real estate funds in Asian opportunistic deals. The SBI is invested in Angelo Gordon Realty Fund IX, the Firm’s most recent global real estate fund.

Angelo, Gordon was founded in 1988 by John Angelo and Michael Gordon. Headquartered in New York City, the Firm is 100% employee owned and has roughly 140 investment professionals working across their three core disciplines – credit, real estate, and private equity. As of March 31<sup>st</sup>, the firm had approximately \$26 billion in assets under management.

Over the past 23 years, Angelo, Gordon has acquired over \$22 billion of real estate assets globally, representing over \$9 billion of equity in a series of opportunistic and core plus real estate funds. Angelo, Gordon began making opportunistic investments in 1993 and has been an active investor in distressed real estate debt since 1990.

#### III. Investment Strategy

The Fund’s strategy emphasizes the purchase of sub-performing and troubled real estate assets and non-performing loans from owners who lack the capital, patience, or expertise to improve cash flow and value. The assets are often attractively priced due to an inefficiency of the sale process, unique attributes of the asset, or the seller’s need for near-term liquidity. The Fund will also target high margin development opportunities that meet the growing needs of the region’s large population. Fund III intends to focus on the largest markets in Asia, with a strong emphasis on China, Japan, Hong Kong, and South Korea.

To correct an asset's sub-performance, increase cash flow, and add significant value, Angelo, Gordon works in tandem with a local operating partner. In many cases, local operating partners are able to source opportunities which are off-market and proprietary. For the past eleven years, Angelo, Gordon has been building an operating partner network in Asia and is currently working with approximately 55 firms to pursue joint acquisitions. These relationships are critical to the successful execution of a value-added and development strategy and are expected to grow. In addition, Angelo, Gordon has executed numerous repeat transactions in Asia with the same operating partners, demonstrating its ability to source and maintain these long-term relationships.

The Fund's targeted holding period for assets will typically be three to five years, depending upon the length of time needed to correct an asset's underperformance or complete development. The Fund will seek to invest in assets that have a predictable exit or liquidity event. Angelo, Gordon will continue to seek opportunities to purchase assets with all or some of the following fundamental strengths:

- Clearly identifiable reasons for underperformance and a well-defined and achievable plan for turnaround.
- Purchase price and forecasted stabilized value that are discounts to replacement cost or competition.
- Favorable long-term demand growth in the local market.
- Barriers to new supply in the local market due to density, restrictions on land availability, or zoning.
- Attractive profit margins that adequately compensate equity investors for the risk of the investment.

Angelo, Gordon and its senior real estate team in Asia have an average of over 16 years of experience in making opportunistic real estate investments. The team's experience includes significant operating experience encompassing all aspects of both real estate investment and management, including acquisition, financing, disposition, leasing, and construction management for a broad range of real estate product types in various geographic regions. The development and purchase of out-of-favor assets that require substantial repositioning demands a great deal of construction and operating experience supported by fundamental research capabilities, a cornerstone of Angelo, Gordon's investment approach.

The senior members of the Angelo, Gordon Asian real estate team have worked with one another for many years. All local team members are fluent in the local language and most are natives of the local market. Through affiliates, Angelo, Gordon operates local offices in Hong Kong, Tokyo, and Seoul. The senior real estate members of these offices will have a significant economic stake in the Fund. They also have produced successful investment results through executing an opportunistic real estate strategy in these markets. Over the past eleven years, Angelo, Gordon has been one of the most active U.S.-based investors in the region, having purchased 56 real estate assets representing over \$1.8 billion of equity.

Angelo, Gordon believes that the Asian market possesses a number of fundamental characteristics that make it an extremely attractive opportunity. They believe significant inefficiency, coupled with improving market fundamentals and a potential for opportunities caused by market volatility, provide an attractive environment to make value-added real estate

investments. In addition, Angelo, Gordon expects that the many non-professional owners of sub-performing real estate in the market will continue to sell properties at distressed prices in off-market situations. In Angelo, Gordon's experience, most Asian domestic real estate owners avoid purchasing unstabilized assets, particularly when such investments involve substantial renovation and repositioning of the property. Repositioning sub-performing assets requires significant capital expertise, market information, and tolerance for risk that deters many Asian domestic investors.

The Fund plans to focus its investments in Japan, South Korea, and Hong Kong, the more economically mature countries in Asia, as well as China, the largest developing country in the region. This multi-country approach allows the Fund to pursue what Angelo, Gordon believes to be the best risk-adjusted returns among a wide array of opportunities. With rapidly changing regulations, growth rates, liquidity, and market cycles in Asia, Angelo, Gordon intends to respond flexibly as new opportunities arise or old opportunities become less attractive, as the firm has done over its history of investing in the region.

#### **IV. Investment Performance**

Previous fund performance as of March 31, 2016 for the Angelo, Gordon Asia Opportunistic portfolios is shown below:

<b>Fund</b>	<b>Vintage Year</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
AG Asia Realty Fund	2006	\$526 million	---	4%	1.2
AG Asia Realty Fund II	2010	\$616 million	---	19%	1.5

\* Previous Fund investments may be relatively immature and therefore, returns may not be indicative of future results. Net IRR and MOIC provided by Angelo, Gordon & Co. The net IRR and multiple shown above are based on liquidation at NAV (at 3/31/16).

#### **V. General Partner's Investment**

Angelo, Gordon and its affiliates will make a capital commitment equal to 3% of total capital commitments up to a maximum of \$15 million.

#### **VI. Fees**

During the investment period, the annual management fee, payable quarterly in advance, is equal to 1.75% of aggregate commitments. For each Limited Partner with a capital commitment between \$50 million and \$100 million, the portion of the management fee based on undrawn capital commitments will be reduced to an annual rate of 1.5%.

## **VII. Distributions**

Distributions will be apportioned to Limited Partners as follows:

- (a) first, 100% to such Limited Partner until the cumulative amount distributed equals such Limited Partner's total capital contributions;
- (b) second, 100% to such Limited Partner until the cumulative amount distributed is equal to a 9% cumulative compounded annual return on capital contributions;
- (c) third, 50% to such Limited Partner and 50% to the General Partner, until the General Partner has received 20% of the aggregate distributions;
- (d) thereafter, 80% to such Limited Partner and 20% to the General Partner.

## **VIII. Key Persons**

If at any time during the commitment period Wilson Leung ceases to be actively involved with the General Partner or Angelo, Gordon in the management of the Partnership ("Key Person Event"), the commitment period will be suspended. The General Partner will have the ability to present a successor candidate to the Advisory Committee for approval within 90 days. If the successor is approved, the suspension will be lifted. If a replacement is not approved, the Commitment Period will be terminated 15 days thereafter unless the General Partner obtains a two-thirds approval vote by the Advisory Committee to reinstate the Commitment Period. In this case, the Commitment Period will continue in accordance with the Partnership Agreement (without further regard to such Key Person Event).

## **IX. Investment Period and Term**

The Investment Period will last for a period of four years. The Fund will have a term of eight years, with the possibility of two one-year extensions at the discretion of the General Partner.

*Note: This document is a summary of more detailed information provided in the Fund's Confidential Private Placement Memorandum (the "PPM"). It is qualified in its entirety by the more detailed information provided in the PPM and the Fund's Agreement of Limited Partnership.*

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DATE: August 15, 2016

TO: Members, Investment Advisory Council

FROM: Members, SBI Staff

**SUBJECT: Public Markets, Non-Retirement, and Defined Contribution Report**

This section of the report provides a brief overview of economic and capital market performance as it pertains to the SBI portfolio. Also, included in this section is a summary of investment manager activity and performance summaries of the equity and fixed income managers in the SBI portfolio.

Also, we have included commentary and performance for the non-retirement managers, deferred compensation plan mutual funds, and performance for options within the Minnesota College Savings Plan.

The report includes the following sections:

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• Public Markets Manager Activity	5
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## Public Markets Economic and Market Overview Second Quarter 2016

### Overview

U.S. stocks rose modestly in the second quarter after a quick recovery from the late June selling and volatility that followed the British referendum rejecting membership of the European Union (Brexit). The U.S. economy continued to grind along and although first quarter company earnings reports showed another decline, the Dollar's strength and oil price weakness masked continued modest growth for most companies. Within the market, risk aversion was once again the dominant theme. As a result, Energy, Utilities and Health Care were the best performing sectors in the Russell 3000 index. Technology and Consumer Discretionary were the only two sectors with negative returns for the quarter.

International equity markets started the quarter with positive returns in April but failed to hold onto those gains in May and June. Equities reversed course in the middle of the quarter due to concerns over economic growth in China. In addition, financial markets around the world reacted negatively to Brexit and its implications for global economic growth. The top performing sectors within the *MSCI World ex USA Index* for the quarter were Energy, Health Care and Materials. The worst performing sectors were Consumer Discretionary, Financials and Information Technology.

The emerging markets (EM) edged higher in a volatile quarter as investors weighed the timing of the next Federal Reserve rate hike and gauged the impact of Brexit. Latin America's performance led among the three emerging markets regions, as energy stocks outpaced the return of the index. The EM Asian region remained effectively unchanged during the quarter, while EM Europe, Middle East and Africa lagged the index, driven by concerns over spillover effects of a divided Eurozone. Stocks in the Consumer Staples, Information Technology, and Energy sectors led gains, while stocks in the Industrials, Consumer Discretionary, Materials, and Telecom sectors lagged. Overall, EM currencies strengthened minimally against the U.S. dollar during the quarter.

In the fixed income markets, U.S. Treasury yields increased in April and May in response to a steady stream of positive economic reports and hawkish FOMC minutes, only to reverse course and fall sharply in June. While the surprisingly low May Nonfarm payroll was cause for suppressed yields, none was greater than the flight to quality that occurred following Brexit. Global sovereign bond markets rallied while world stock markets fell in the news. While global equity markets quickly recovered, U.S. Treasuries largely maintained their gains. The Fed maintained the Federal Funds rate at a range between 0.25% and 0.50% during the quarter, and the probability of hikes at future meetings via Fed Funds Futures diminished on the negative news. The Barclays Aggregate Index rose 2.21% for the quarter with long duration Treasuries contributing the most to performance.

## **SBI Portfolio**

In the second quarter, SBI's overall portfolio, the Combined Funds, underperformed the composite benchmark return (Combined Funds 1.4% vs. 1.6% Composite Benchmark return). Domestic equities underperformed the *Russell 3000 Index* return (2.0 vs. 2.6%), while international equities underperformed the *MSCI ACWI ex USA Index* return (-0.8% vs. -0.6%). The fixed income portfolio outperformed the *Barclays Aggregate Index* return (2.4% vs. 2.2%).

## **Domestic Equity**

The large cap growth managers exceeded the *Russell 1000 Growth* benchmark by 0.2% for the quarter. The large cap value managers underperformed the *Russell 1000 Value* benchmark by 2.6% for the quarter. Negative stock selection and sector allocation across several sectors detracted from quarterly returns.

## **International Equity**

Active developed equity managers underperformed the *MSCI World ex USA Index (net)* by 0.7 percentage point for the quarter as stock selection and country allocation detracted from performance. From a country point of view, stock selection was negative in the United Kingdom, Canada and Switzerland. Country allocation was negative in Canada and Ireland. Stock selection was negative in the Industrials, Financials and Materials sectors. Overall sector allocation was negative in Consumer Discretionary and Energy. The semi-passive developed markets managers underperformed the *MSCI World ex USA Index (net)* for the quarter. Stock selection in the Industrials and Consumer Discretionary sectors and within the United Kingdom and Canadian markets detracted from the semi-passive portfolio's relative returns.

## **Emerging Markets**

The SBI's emerging markets equity managers outpaced the *MSCI Emerging Markets Index (net)* during the quarter. Both stock selection and country allocation added value. Stock selection in India, China, Korea, Taiwan and Russia added value. The portfolio's underweight position in China, Korea, Malaysia and an overweight position in Peru were also positive contributors to performance during the quarter.

## **Fixed Income**

While outperforming in total, the relative performance of SBI's fixed income managers vs. the *Barclays Aggregate* benchmark for the quarter was mixed. Managers with an underweight duration positioning largely underperformed the benchmark. Managers with equal or overweight benchmark duration, particularly in the long end, outperformed. Exposure to investment grade corporate bonds and CMBS also benefited from narrowing spreads during the quarter. Manager holdings in Treasury Inflation Protected Securities (TIPS) contributed negatively to performance, as inflation remained subdued and breakeven rates declined.

## **Public Markets Manager Activity Second Quarter 2016**

### **Manager Summary**

For the quarter, the majority of the investment managers had no material organizational issues. There were some noteworthy manager developments for the quarter involving AQR, BlackRock (Passive U.S. Equities), BlackRock (Semi-Passive U.S. Equities), Capital International, Columbia Threadneedle, Fidelity, Marathon, McKinley, Morgan Stanley, Sands Capital and State Street Global Advisors (SSgA),

### **Domestic Equity Managers**

#### **Sands Capital**

As previously indicated, Tom Ricketts, one of three Select Growth Portfolio Managers, departed Sands on June 30, 2016 to pursue other interests. He has been replaced by Wes Johnston, who has managed the Global Life Sciences sector the last 3 years. Wes joined Sands in 2004 and has been a part of the Select Growth team for several years. Staff will monitor the change and does not have any concerns with the pending change.

### **International Equity Managers**

#### **AQR**

AQR hired a new co-Head of Trading, Issac Chang, during the second quarter. AQR Principal, Brian Hurst, former Head of Trading, reassumed the role effective July 31, 2015 after AQR ended its employment relationship with Hitesh Mittal. Issac Chang is expected to take over as sole Head of Trading once he is familiar with the team, the strategies, counterparties and clients.

#### **BlackRock (Passive U.S. Equities)**

Corin Frost, Global Head of Index Product Strategy (a client-facing role) within Beta Strategies, retired during the quarter. Kristen Dickey, Managing Director within Index Product Strategy has succeeded Corin as Global Head of Index Strategy. Kristen has been a product strategist in the Beta Strategies group since 2013 and previously led BlackRock's Financial Institution group as well as serving as Head of Investor Relations. Kristen joined the firm in 1996 and brings twenty years of BlackRock experience to this role.

#### **BlackRock (Semi-Passive U.S. Equities)**

During the quarter, BlackRock announced that Mark Wiseman will be joining in September 2016 as Head of Global Active Equity. As Senior Managing Director, Mark will join the Global Executive Committee and also will become Chairman of the BlackRock Global Investment Committee. Mark is currently President and Chief Executive Officer of CPP Investment Board (CPPIB) responsible for managing all investment activities of the CPPIB and was previously responsible for the private equity fund and co-investment program of the Ontario Teachers' Pension plan. BlackRock has further established a structure for the Global Active Equity platform, which is responsible for managing Minnesota's semi-passive equity portfolio, under co-CIOs Nigel Bolton, Raffaele Savi and Jeff Shen (all of whom will report to Mark Wiseman): Nigel Bolton will lead Fundamental Active Equity globally with Tony DeSpirito and James Macpherson

reporting to him and taking investment leadership responsibility for several teams, Raffaele Savi will continue to lead the North American, European and Developed Market Cross-Border scientific active equity teams, Jeff Shen will continue to lead the Asia-Pacific and Emerging Markets scientific active equity teams. Staff has no concerns with this announcement.

### **Capital International**

During the quarter, Capital International announced changes to the multi-portfolio manager team which took effect at the end of June 2016. The strategy has had six portfolio managers who each manage a portion of the strategy's assets along with a research portfolio managed by the team's analysts. Two of the six portfolio managers, David Fisher and Luis Freitas de Olivera, will be transitioning out of the group. F. Chapman Taylor, who has been with Capital for 21 years and is a member of the analyst team, has been named a portfolio manager. Shaw Wagner, Chris Cho, Rick Torres, and Victor Cohn remain on the portfolio management team. Staff is closely monitoring the firm due to the strategy's underperformance and personnel turnover.

### **Columbia Threadneedle**

In April 2016, Columbia Threadneedle announced the resignation of Campbell Fleming, Chief Executive Officer EMEA and Global Chief Operating Officer. In June 2016, the firm announced the retirement of Leigh Harrison, Head of Equities Europe. William Davies, current Head of Global Equities, will assume most of Harrison's responsibilities. SBI staff will monitor these changes.

### **Fidelity**

In April 2016, Fidelity announced three executive level promotions. Gerard McGraw was named CFO of Fidelity's parent, FMR LLC. Jeff Lagarce was named President of Fidelity Institutional and Scott Couto was named President of Fidelity Institutional Asset Management Trust Company. Staff has no concerns with this announcement.

### **Marathon**

In May 2016, Marathon announced the additions of Simon Somerville and Ian Deacon as Portfolio Manager and Analyst, respectively. They will be working with the two lead portfolio managers as part of the investment process in managing the SBI account. Staff has no concerns with this announcement.

### **McKinley**

In June 2016, McKinley announced the departure of Portfolio Manager, Miles Wixon. Also, the firm is hiring Debora Lam as Chief Compliance Officer and Lexi Wang as Quantitative Research Analyst. Staff will monitor these changes.

### **Morgan Stanley**

During the second quarter, Cristina Piedrahita, a portfolio manager covering Latin America, who was based in Greece, left the firm due to personal reasons. Gaithe Ali will remain the sole lead portfolio manager of Latin American countries will be assisted by Jessica Witt, a dedicated regional analyst.

### **State Street Global Advisors (SSgA) (Semi-Passive Developed Markets)**

Yosuke Ota, a point person for Japan, on SSgA's quantitative team, has left SSgA. Ami Teruya, who has served in a quantitative research on the team, will take over Yosuke Ota's responsibilities. Stuart Hall and Chee Ooi are remaining as back-ups for the Japan portion of the portfolio. Staff continues to monitor this strategy closely due to performance issues, changes in investment strategy, and personnel turnover.

### **Fixed Income Managers**

#### **Aberdeen**

In June 2016, Aberdeen Asset Management announced the departure of four research analysts supporting the US Core Fixed Income strategy. Jon Prestley, Jamie Chiarieri, Geoff Roth and Jee-Hyea Choi were members of the research team that supported the SBI's portfolio manager, Neil Moriarty, as well as other sector managers. The four left for opportunities outside the firm and their duties will be assumed by remaining analyst staff. Also, Aberdeen has replaced Greg Hopper, Global Head of High Yield, with Steve Logan. The SBI has limited exposure to high yield in its account with Aberdeen. Additionally, Don Quigley, head of Total Return Bond was replaced with Lynn Chen. The Total Return Bond product is a different investment strategy than the SBI account. Staff will closely monitor performance of the new team.

#### **PIMCO**

PIMCO's managing directors have appointed Emmanuel (Manny) Roman as their next Chief Executive Officer, effective November 1, 2016. Manny will replace current CEO Doug Hodges, who will assume a new role as Managing Director and Senior Advisor. Earlier in the year PIMCO assessed their strategic business plan and identified the need for a senior-level executive who could provide additional leadership and strategic insight for the business. Mr. Roman joins PIMCO from Man Group PLC, and has 30 years of investment experience. As Mr. Hodges was appointed CEO only two years ago. Staff will monitor the situation and watch for additional turnover in key senior leadership positions.

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## 2016 Manager Meetings

Staff continued with the SBI Stock and Bond Manager Annual Reviews. The second quarter manager reviews are noted below.

<b>Investment Manager</b>	<b>Asset Class</b>
• Aberdeen Asset Management Inc.	Fixed Income
• INTECH Investment Management, LLC	Domestic Equity
• Jacobs Levy Equity Management, Inc.	Domestic Equity
• Neuberger Berman Fixed Income LLC	Fixed Income
• Pacific Investment Management Company LLC (PIMCO)	Fixed Income
• Sands Capital Management, LLC	Domestic Equity
• Systematic Financial Management, L.P.	Domestic Equity
• Western Asset Management Company	Fixed Income

## **Non-Retirement Manager Update Second Quarter 2016**

### **Domestic Equities**

#### ***GE Asset Management***

The domestic equity portfolio underperformed the S&P 500 for the quarter and for the year. Performance lagged during the quarter mostly from sector allocation with an underweight in telecommunications and consumer staples. The portfolio was underweight defensive sectors as GE did not feel the fundamentals justified the current valuations. For the year, stock selection in financials, consumer staples, information technology, and utilities detracted from performance.

The sale of GE Asset Management (GEAM) to State Street was completed on July 1, 2016. There are no planned changes to the portfolio management team or process. Staff is closely monitoring this portfolio.

#### ***Internal Stock Pool***

The performance in the domestic equity portfolio tracked the S&P 500 for the quarter and the year.

### **Fixed Income**

#### ***RBC Global Asset Management***

The fixed income portfolio tracked the benchmark, the Barclays Intermediate Government Index, for the quarter and outperformed for the year. For the year, out of benchmark allocation to municipals and securitized assets benefited performance.

#### ***Internal Bond Pool***

The bond portfolio outperformed its benchmark, the Barclays Aggregate, for the quarter and underperformed for the year. For the quarter, an allocation to industrial bonds, especially within energy was the biggest driver of performance. The portfolio's defensive duration position detracted from performance for the year.



## **Deferred Compensation Managers Second Quarter 2016**

### **Domestic Equities**

#### ***Janus Twenty***

The domestic equity portfolio underperformed the S&P 500 for the quarter and for the year.

The MNDC Plan will liquidate Janus Twenty Fund investors during the 3Q16 and map the assets to the Vanguard Dividend Growth Fund unless instructed otherwise by the participant. Since Janus Twenty is a closed fund it will only be available in the brokerage window to current Janus Twenty investors.

#### ***Vanguard Institutional Index Plus***

The domestic equity portfolio tracked the return of the S&P 500 Index for the quarter and the year.

#### ***Vanguard Mid-Cap Index***

The mid-cap equity portfolio tracked the benchmark, CRSP US Mid Cap Index, for the quarter and the year.

#### ***T. Rowe Price***

The small cap equity portfolio outperformed the Russell 2000 for the quarter and for the year. For the year, the portfolio benefited from strong stock selection.

The MNDC Plan will transition the T. Rowe Price Small Cap Equity investors out of the Retail Mutual Fund and into the lower fee, Institutional Share Class Fund during 3Q16. This will be an in-kind transfer. There will be no changes to the process, team, or portfolio. As reported last quarter, portfolio manager Greg McCrickard plans to retire October 2016 and will be succeeded by the associate portfolio manager, Frank Alonso. Staff has no concerns at this time.

### **International Equities**

#### ***Fidelity Diversified International***

The international equity portfolio underperformed the MSCI EAFE Free for the quarter and outperformed for the year. Performance for the quarter lagged almost entirely due to stock selection in the United Kingdom. UK based stocks dominated the list of top 10 (and top 20) detractors. Sector allocation in Materials, Industrials and Energy detracted from returns for the quarter.

The MNDC Plan will transition the Fidelity Diversified International investors out of the Retail Mutual Fund and into the lower fee, Commingled Investment Trust (CIT) product during 4Q16. This will be an in-kind transfer. There will be no changes to the process, team, or portfolio.

### ***Vanguard Total International Stock Index***

The portfolio outperformed its benchmark, the FTSE Global All Cap ex US Index, for the quarter and for the year. In the short term, the international portfolio will have higher tracking error as a result of fair value pricing, which tends to smooth out over time.

### ***Dodge & Cox Income Fund***

The fixed income portfolio outperformed the benchmark, the Barclays Aggregate, for the quarter and underperformed for the year. The quarterly performance benefited from certain emerging market energy holdings, an overweight to the Industrial sub-sector, and Agency MBS holdings. For the year, the portfolio's short relative duration position was the primary driver for the underperformance.

### ***Vanguard Total Bond Market Index***

The fixed income portfolio tracked the benchmark, the Barclays Aggregate Index, for the quarter and for the year.

## **Balanced and Conservative Options**

### ***Vanguard Balanced***

The portfolio tracked its benchmark for the quarter and the year. The benchmark is a combined return of 60% CRSP US total Market and 40% Barclays Aggregate.

### ***Galliard Capital Management***

The stable value portfolio outperformed its benchmark, the 3 Year Constant Maturity Treasury plus 0.45%, for the quarter and the year. For the quarter, the portfolio benefited from holdings in CMBS, Agency RMBS, and Taxable Municipals. An allocation to CMBS and Taxable Municipals along with an overweight to the intermediate part of the yield curve also benefited returns as that segment of the curve outperformed shorter maturities for the quarter and the year. A high quality bias in Corporate bonds, along with allocations to CMBS and Taxable Municipals had a positive impact on relative performance for the year.

John Caswell, one of Galliard's Founding Managing Partners will retire later this year. There are no changes to the investment management of the portfolio.



# STATE BOARD OF INVESTMENT

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## Domestic Equity Manager Performance Summaries

Second Quarter 2016



# MINNESOTA STATE BOARD OF INVESTMENT

## Domestic Equity

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**COMBINED RETIREMENT FUNDS  
ACTIVE DOMESTIC EQUITY MANAGERS**

**Periods Ended June 30, 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years
Russell 1000 Growth Aggregate	0.8	-3.4	11.5	10.6
<i>Russell 1000 Growth Index</i>	0.6	3.0	13.1	12.3
Russell 1000 Value Aggregate	2.0	-3.6	8.8	10.0
<i>Russell 1000 Value Index</i>	4.6	2.9	9.9	11.4
Russell 2000 Growth Aggregate	1.9	-14.1	5.2	5.8
<i>Russell 2000 Growth Index</i>	3.2	-10.8	7.7	8.5
Russell 2000 Value Aggregate	1.9	-7.0	7.3	9.4
<i>Russell 2000 Value Index</i>	4.3	-2.6	6.4	8.1
<b>Active Manager Aggregate</b>	1.5	-5.1	9.3	9.5
<i>Benchmark</i>	2.9	0.7	10.4	11.0
<b>Semi-Passive Aggregate</b>	1.8	1.8	11.3	12.1
<i>Benchmark</i>	2.5	2.9	11.5	11.9
<b>Passive Manager (BlackRock)</b>	2.6	2.2	11.2	11.6
<i>Russell 3000 Index</i>	2.6	2.1	11.1	11.6
<b>Total Aggregate</b>	<b>2.0</b>	<b>0.0</b>	<b>10.7</b>	<b>11.2</b>
<i>Russell 3000 Index</i>	2.6	2.1	11.1	11.6

**Calendar Years**

	2015	2014	2013	2012	2011
Russell 1000 Growth Aggregate	4.6	9.6	42.0	15.5	-0.4
<i>Russell 1000 Growth Index</i>	5.7	13.0	33.5	15.3	2.6
Russell 1000 Value Aggregate	-3.2	13.1	36.5	16.9	-2.1
<i>Russell 1000 Value Index</i>	-3.8	13.5	32.5	17.5	0.4
Russell 2000 Growth Aggregate	1.0	-3.4	47.2	12.0	-5.6
<i>Russell 2000 Growth Index</i>	-1.4	5.6	43.3	14.6	-2.9
Russell 2000 Value Aggregate	-6.5	7.5	40.8	19.6	-4.5
<i>Russell 2000 Value Index</i>	-7.5	4.2	34.5	18.1	-5.5
<b>Active Manager Aggregate</b>	-0.4	9.3	40.2	15.4	-2.7
<i>Active Manager Benchmark</i>	-0.6	11.0	34.7	16.3	0.0
<b>Semi-Passive Aggregate</b>	0.5	14.2	33.2	17.7	2.2
<i>Benchmark</i>	0.9	13.2	33.1	16.4	1.5
<b>Passive Manager (BlackRock)</b>	0.5	12.6	33.5	16.4	0.8
<i>Russell 3000 Index</i>	0.5	12.6	33.6	16.4	1.0
<b>Total Aggregate</b>	<b>0.3</b>	<b>12.3</b>	<b>35.1</b>	<b>16.6</b>	<b>0.4</b>
<i>Russell 3000 Index</i>	0.5	12.6	33.6	16.4	1.0

**COMBINED RETIREMENT FUNDS  
ACTIVE DOMESTIC EQUITY MANAGERS**

Periods Ended June 2016

**Performance versus Russell Style Benchmarks for All Periods**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(1)
<b>Russell 1000 Growth Index</b>	<b>0.6</b>	<b>3.0</b>	<b>13.1</b>	<b>12.3</b>	<b>10.9</b>
INTECH	3.0	5.4	14.0	12.3	7.5
<i>Benchmark</i>	<i>0.6</i>	<i>3.0</i>	<i>13.1</i>	<i>12.3</i>	<i>8.0</i>
Jacobs Levy	1.4	2.1	13.4	12.1	7.0
<i>Benchmark</i>	<i>0.6</i>	<i>3.0</i>	<i>13.1</i>	<i>12.3</i>	<i>8.0</i>
Sands Capital	-0.2	-7.7	9.9	11.2	8.6
<i>Benchmark</i>	<i>0.6</i>	<i>3.0</i>	<i>13.1</i>	<i>12.3</i>	<i>8.0</i>
Winslow-Large Cap	1.4	-2.2	11.9	10.4	8.6
<i>Benchmark</i>	<i>0.6</i>	<i>3.0</i>	<i>13.1</i>	<i>12.3</i>	<i>8.0</i>
Zevenbergen Capital	-1.2	-13.6	8.5	7.5	9.3
<i>Benchmark</i>	<i>0.6</i>	<i>3.0</i>	<i>13.1</i>	<i>12.3</i>	<i>8.8</i>
<b>Aggregate</b>	<b>0.8</b>	<b>-3.4</b>	<b>11.5</b>	<b>10.6</b>	
<b>Russell 1000 Value Index</b>	<b>4.6</b>	<b>2.9</b>	<b>9.9</b>	<b>11.4</b>	<b>8.3</b>
Barrow, Hanley	3.3	-0.1	9.7	10.7	7.4
<i>Benchmark</i>	<i>4.6</i>	<i>2.9</i>	<i>9.9</i>	<i>11.4</i>	<i>7.2</i>
Earnest Partners	2.4	-2.8	9.2	8.9	5.8
<i>Benchmark</i>	<i>4.6</i>	<i>2.9</i>	<i>9.9</i>	<i>11.4</i>	<i>6.6</i>
LSV Asset Mgmt.	1.4	-2.8	10.0	12.1	8.1
<i>Benchmark</i>	<i>4.6</i>	<i>2.9</i>	<i>9.9</i>	<i>11.4</i>	<i>7.2</i>
Systematic Financial Mgmt.	0.9	-8.8	6.3	7.4	6.1
<i>Benchmark</i>	<i>4.6</i>	<i>2.9</i>	<i>9.9</i>	<i>11.4</i>	<i>7.2</i>
<b>Aggregate</b>	<b>2.0</b>	<b>-3.6</b>	<b>8.8</b>	<b>10.0</b>	

(1) Since inception by the SBI. Inception dates as follows:

4/1/94: Zevenbergen Capital

7/1/00: Earnest Partners

4/1/04: Barrow Hanley, LSV Asset Mgmt., Systematic Financial Mgmt.

1/1/05: INTECH, Jacobs Levy, Sands Capital, Winslow-Large Cap

Note: All aggregates include the performance of terminated managers



**COMBINED RETIREMENT FUNDS  
ACTIVE DOMESTIC EQUITY MANAGERS**

Periods Ended June 2016

**Performance versus Russell Style Benchmarks for All Periods**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception <sup>(1)</sup>
<b>Small Cap</b>					
<b>Russell 2000 Growth Index</b>	<b>3.2</b>	<b>-10.8</b>	<b>7.7</b>	<b>8.5</b>	<b>9.4</b>
McKinley Capital	-0.9	-10.7	9.3	10.3	6.3
<i>Benchmark</i>	3.2	-10.8	7.7	8.5	7.7
Next Century Growth	5.1	-17.6	2.1	2.9	2.1
<i>Benchmark</i>	3.2	-10.8	7.7	8.5	3.8
<b>Aggregate</b>	<b>1.9</b>	<b>-14.1</b>	<b>5.2</b>	<b>5.8</b>	
<b>Russell 2000 Value Index</b>	<b>4.3</b>	<b>-2.6</b>	<b>6.4</b>	<b>8.1</b>	<b>8.2</b>
Goldman Sachs	4.8	-2.9	8.7	10.5	9.0
<i>Benchmark</i>	4.3	-2.6	6.4	8.1	7.0
Hotchkis & Wiley	-3.1	-15.6	5.9	8.5	7.3
<i>Benchmark</i>	4.3	-2.6	6.4	8.1	7.0
Martingale Asset Mgmt.	4.4	-0.6	10.0	11.3	7.2
<i>Benchmark</i>	4.3	-2.6	6.4	8.1	7.0
Peregrine Capital	1.5	-7.8	5.4	8.0	9.6
<i>Benchmark</i>	4.3	-2.6	6.4	8.1	9.0
<b>Aggregate</b>	<b>1.9</b>	<b>-7.0</b>	<b>7.3</b>	<b>9.4</b>	
<b>Active Mgr. Aggregate (2)</b>	<b>1.5</b>	<b>-5.1</b>	<b>9.3</b>	<b>9.5</b>	

(1) Since inception by the SBI. Inception dates as follows:

7/1/00: Next Century, Peregrine Capital

1/1/04: Goldman Sachs, Hotchkis & Wiley, Martingale Asset Mgmt., McKinley Capital

(2) The Active Manager Aggregate Benchmark is the aggregate of the weighted average of the active manager benchmarks and is not the Russell 3000.

Note: All aggregates include the performance of terminated managers

**COMBINED RETIREMENT FUNDS  
DOMESTIC EQUITY MANAGERS  
Periods Ended June 2016  
Versus Manager Benchmarks**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(1)
<b>Semi-Passive Managers (2)</b>					
BlackRock Institutional	2.2	1.9	11.6	12.5	9.2
<i>Benchmark</i>	2.5	2.9	11.5	11.9	8.9
INTECH	2.4	2.2	10.7	11.4	11.9
<i>Benchmark</i>	2.5	2.9	11.5	11.9	12.2
JP Morgan	2.1	2.4	11.8	12.3	9.2
<i>Benchmark</i>	2.5	2.9	11.5	11.9	8.9
Mellon Capital	0.6	0.7	11.0	12.2	8.6
<i>Benchmark</i>	2.5	2.9	11.5	11.9	8.9
<b>Semi-Passive Aggregate (R1000)</b>	<b>1.8</b>	<b>1.8</b>	<b>11.3</b>	<b>12.1</b>	
<b>Passive Manager (R3000)</b>					
BlackRock Institutional	2.6	2.2	11.2	11.6	8.7
<i>Benchmark</i>	2.6	2.1	11.1	11.6	8.6
<b>Total Aggregate (3)</b>	<b>2.0</b>	<b>0.0</b>	<b>10.7</b>	<b>11.2</b>	<b>10.1</b>
<i>Benchmark (3,4)</i>	2.6	2.1	11.1	11.6	10.3
<i>Russell 3000 Index (3)</i>	2.6	2.1	11.1	11.6	10.6
<i>Russell 1000 Index (3)</i>	2.5	2.9	11.5	11.9	10.8
<i>Russell 2000 Index (3)</i>	3.8	-6.7	7.1	8.4	9.1

(1) Since retention by the SBI. Inception dates as follows:

1/1/95: BlackRock Institutional (semi-passive), J.P. Morgan, Mellon Capital

7/1/95: BlackRock Institutional (passive)

4/1/10: INTECH

(2) Semi-Passive managers' benchmark is the Russell 1000 index beginning 1/1/04 and was the Completeness Fund benchmark prior to 1/1/04.

(3) Total Aggregate and Benchmarks Inception as of 1/1/84

(4) The Total Aggregate benchmark is the Russell 3000 effective 10/1/03. From 7/1/99 to 9/30/03, it was the Wilshire 5000 Investable Index. From 11/1/93 to 6/30/99, the target was the Wilshire 5000 as reported with no adjustments. Prior to 11/1/93, the Wilshire 5000 was adjusted to reflect SBI mandated restrictions, which included liquor and tobacco, American Home Products and South Africa.

Note: All aggregates include the performance of terminated managers.

**COMBINED RETIREMENT FUNDS  
DOMESTIC EQUITY MANAGERS**

	<b>June 30, 2016</b>		<b>March 31, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
<b>Russell 1000 Growth Aggregate</b>	<b>\$2,902,263,835</b>	<b>10.5%</b>	<b>\$2,877,850,847</b>	<b>10.6%</b>
INTECH	\$642,485,709	2.3%	\$623,902,612	2.3%
Jacobs Levy	\$724,067,067	2.6%	\$714,173,102	2.6%
Sands Capital	\$646,540,430	2.3%	\$647,770,046	2.4%
Winslow-Large Cap	\$313,547,522	1.1%	\$309,319,168	1.1%
Zevenbergen Capital	\$575,623,105	2.1%	\$582,685,919	2.1%
<b>Russell 1000 Value Aggregate</b>	<b>\$2,947,553,474</b>	<b>10.6%</b>	<b>\$2,888,809,485</b>	<b>10.6%</b>
Barrow Hanley	\$843,422,888	3.0%	\$816,226,050	3.0%
Earnest Partners	\$559,627,807	2.0%	\$546,450,674	2.0%
LSV Asset Mgmt.	\$833,429,314	3.0%	\$821,627,065	3.0%
Systematic Financial Mgmt.	\$711,073,465	2.6%	\$704,505,696	2.6%
<b>Russell 2000 Growth Aggregate</b>	<b>\$731,619,577</b>	<b>2.6%</b>	<b>\$718,031,890</b>	<b>2.6%</b>
McKinley Capital	\$384,529,827	1.4%	\$387,875,733	1.4%
Next Century Growth	\$347,089,750	1.3%	\$330,156,157	1.2%
<b>Russell 2000 Value Aggregate</b>	<b>\$1,060,570,082</b>	<b>3.8%</b>	<b>\$1,040,840,007</b>	<b>3.8%</b>
Goldman Sachs	\$273,510,256	1.0%	\$260,962,327	1.0%
Hotchkis & Wiley	\$224,633,552	0.8%	\$231,805,552	0.9%
Martingale Asset Mgmt.	\$222,875,223	0.8%	\$213,517,184	0.8%
Peregrine Capital	\$339,551,051	1.2%	\$334,554,944	1.2%
<b>Semi-Passive Manager Aggregate</b>	<b>\$10,450,129,983</b>	<b>37.7%</b>	<b>\$10,260,447,586</b>	<b>37.7%</b>
BlackRock Institutional	\$2,594,540,987	9.3%	\$2,537,992,028	9.3%
INTECH	\$2,353,846,996	8.5%	\$2,299,573,591	8.5%
JP Morgan	\$2,977,204,819	10.7%	\$2,914,534,102	10.7%
Mellon Capital	\$2,524,537,181	9.1%	\$2,508,347,865	9.2%
<b>Passive Manager</b>	<b>\$9,659,523,740</b>	<b>34.8%</b>	<b>\$9,413,074,009</b>	<b>34.6%</b>
BlackRock Institutional	\$9,659,523,740	34.8%	\$9,413,074,009	34.6%
<b>Total Portfolio</b>	<b>\$27,751,660,692</b>	<b>100.0%</b>	<b>\$27,199,053,825</b>	<b>100.0%</b>

**COMBINED RETIREMENT FUNDS**  
**ACTIVE DOMESTIC EQUITY MANAGERS**  
**Calendar Year Returns**  
**Russell Style Manager Benchmarks**

	2015	2014	2013	2012	2011
<b>LARGE CAP</b>					
<b>Russell 1000 Growth Index</b>	<b>5.7</b>	<b>13.0</b>	<b>33.5</b>	<b>15.3</b>	<b>2.6</b>
INTECH	4.0	12.8	34.1	17.8	0.1
Jacobs Levy	4.3	12.9	37.0	13.0	6.6
Sands Capital	2.9	9.1	42.4	24.2	2.7
Winslow - Large Cap	6.7	11.0	37.4	13.7	0.1
Zevenbergen Capital	6.4	3.4	60.6	8.0	-9.8
<b>Aggregate</b>	<b>4.6</b>	<b>9.6</b>	<b>42.0</b>	<b>15.5</b>	<b>-0.4</b>
<b>Russell 1000 Value Index</b>	<b>-3.8</b>	<b>13.5</b>	<b>32.5</b>	<b>17.5</b>	<b>0.4</b>
Barrow, Hanley	-2.1	13.0	35.5	15.5	1.7
Earnest Partners	-2.7	14.0	32.0	10.7	-4.7
LSV Asset Mgmt.	-2.2	14.0	41.2	20.4	-0.8
Systematic Financial Mgmt.	-5.7	11.6	35.0	18.2	-7.4
<b>Aggregate</b>	<b>-3.2</b>	<b>13.1</b>	<b>36.5</b>	<b>16.9</b>	<b>-2.1</b>
<b>SMALL CAP</b>					
<b>Russell 2000 Growth Index</b>	<b>-1.4</b>	<b>5.6</b>	<b>43.3</b>	<b>14.6</b>	<b>-2.9</b>
McKinley Capital	3.6	2.0	51.6	23.2	-7.9
Next Century Growth	-1.7	-6.5	50.3	1.9	-4.5
<b>Aggregate</b>	<b>1.0</b>	<b>-3.4</b>	<b>47.2</b>	<b>12.0</b>	<b>-5.6</b>
<b>Russell 2000 Value Index</b>	<b>-7.5</b>	<b>4.2</b>	<b>34.5</b>	<b>18.1</b>	<b>-5.5</b>
Goldman Sachs	-5.2	7.4	39.3	16.6	1.3
Hotchkis & Wiley	-8.5	13.0	46.0	24.1	-10.8
Martingale Asset Mgmt.	-5.2	7.3	43.1	20.1	-5.2
Peregrine Capital	-6.7	4.1	37.3	18.8	-4.1
<b>Aggregate</b>	<b>-6.5</b>	<b>7.5</b>	<b>40.8</b>	<b>19.6</b>	<b>-4.5</b>
<b>Active Mgr. Aggregate</b>	<b>-0.4</b>	<b>9.3</b>	<b>40.2</b>	<b>15.4</b>	<b>-2.7</b>
<i>Active Mgr. Aggregate Benchmark (1)</i>	<i>-0.6</i>	<i>11.0</i>	<i>34.7</i>	<i>16.3</i>	<i>0.0</i>

(1) The Active Manager Aggregate Benchmark is the aggregate of the weighted average of the active manager benchmarks and is not the Russell 3000.

Note: All aggregates include the performance of terminated managers. Returns shown are full-year returns only. Performance of managers hired during a calendar year are reported beginning with the following calendar year.

**COMBINED RETIREMENT FUNDS  
DOMESTIC EQUITY MANAGERS  
Calendar Year Returns  
Versus Manager Benchmarks**

	2015	2014	2013	2012	2011
<b>Semi-Passive Managers</b>					
<b>Russell 1000 Index</b>	<b>0.9</b>	<b>13.2</b>	<b>33.1</b>	<b>16.4</b>	<b>1.5</b>
BlackRock Institutional	0.8	14.2	33.3	19.0	1.6
INTECH	0.7	11.6	33.0	16.6	2.9
JP Morgan	0.8	15.0	33.7	17.6	1.1
Mellon Capital	-0.2	15.9	32.6	17.3	4.6
<b>Semi-Passive Aggregate (R1000)</b>	<b>0.5</b>	<b>14.2</b>	<b>33.2</b>	<b>17.7</b>	<b>2.2</b>
<b>Passive Managers</b>					
<b>Russell 3000 Index</b>	<b>0.5</b>	<b>12.6</b>	<b>33.6</b>	<b>16.4</b>	<b>1.0</b>
BlackRock Institutional	0.5	12.6	33.5	16.4	0.8
<b>Total Aggregate</b>	<b>0.3</b>	<b>12.3</b>	<b>35.1</b>	<b>16.6</b>	<b>0.4</b>
<i>Russell 3000 Index</i>	<i>0.5</i>	<i>12.6</i>	<i>33.6</i>	<i>16.4</i>	<i>1.0</i>
<i>Russell 1000 Index</i>	<i>0.9</i>	<i>13.2</i>	<i>33.1</i>	<i>16.4</i>	<i>1.5</i>
<i>Russell 2000 Index</i>	<i>-4.4</i>	<i>4.9</i>	<i>38.8</i>	<i>16.3</i>	<i>-4.2</i>

Note: All aggregates include the performance of terminated managers. Returns shown are full year returns only. Performance of managers hired during a calendar year are reported beginning with the following calendar year.





# STATE BOARD OF INVESTMENT

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## International Manager Performance Summaries

Second Quarter 2016





# MINNESOTA STATE BOARD OF INVESTMENT

## International Managers

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**COMBINED RETIREMENT FUNDS  
INTERNATIONAL MANAGERS  
Periods Ended June 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
<b>Active Developed Markets (2)</b>					
Acadian	1.0	-0.9	6.4	4.4	4.8
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	3.7
Columbia	-3.1	-10.9	2.7	2.7	1.6
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	2.3
Fidelity	-0.6	-8.6	2.7	3.2	5.4
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	3.7
J.P. Morgan	-1.1	-13.4	0.3	0.6	3.4
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	3.7
Marathon Asset Management	-2.8	-8.1	4.4	4.6	7.9
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	4.5
McKinley	-3.7	-13.2	2.1	2.1	3.4
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	3.7
<b>Aggregate</b>	<b>-1.8</b>	<b>-8.8</b>	<b>3.4</b>	<b>3.1</b>	
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	
<b>Active Emerging Markets (3)</b>					
Capital International	1.8	-12.8	-3.0	-5.9	7.8
<i>Benchmark</i>	0.7	-12.1	-1.6	-3.8	8.6
Morgan Stanley	1.4	-8.7	-0.5	-1.1	9.6
<i>Benchmark</i>	0.7	-12.1	-1.6	-3.8	8.6
<b>Aggregate</b>	<b>1.6</b>	<b>-10.6</b>	<b>-1.6</b>	<b>-3.6</b>	
<i>Benchmark</i>	0.7	-12.1	-1.6	-3.8	
<b>Semi-Passive Developed Markets (2)</b>					
AQR	-2.6	-8.6	2.6	2.2	4.4
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	3.7
Fidelity	-1.8	-11.8	2.4	2.0	4.6
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	3.7
State Street	-1.9	-12.4	1.7	0.7	3.1
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	3.7
<b>Aggregate</b>	<b>-2.1</b>	<b>-11.0</b>	<b>2.3</b>	<b>1.7</b>	
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	

(1) Since inception by the SBI. Inception dates as follows:  
10/1/92: State Street (semi-passive developed markets)  
10/1/93: Marathon Asset Management (active developed markets)  
1/1/00: Columbia (active developed markets)  
1/1/01: Capital International, Morgan Stanley (active emerging markets)  
7/1/05: Acadian, J.P. Morgan, McKinley (active developed markets) AQR, Fidelity (semi-passive developed markets)

(2) Pyramis changed its name to Fidelity in October 2015.

(3) Since 6/1/08 the developed markets manager's benchmark is the Standard (large + mid) MSCI World ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex USA (net). From 10/1/03 to 9/30/07 the benchmark was MSCI World ex USA (net). Prior to that date, it was MSCI EAFE Free (net). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI EAFE Free (net).

(4) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net). Prior to that date, it was MSCI Emerging Markets Free (gross). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI Emerging Markets Free (net).

**COMBINED RETIREMENT FUNDS  
INTERNATIONAL MANAGERS  
Periods Ended June 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
<b>Passive Developed Markets (2)</b>					
State Street	-0.8	-9.3	2.3	1.6	5.8
<i>Benchmark</i>	-1.1	-9.8	1.9	1.2	5.4
<b>Passive Emerging Markets (3)</b>					
State Street	0.7	-11.6	-1.3	--	0.6
<i>Benchmark</i>	0.7	-12.1	-1.6	--	0.4
Equity Only (4)	-0.8	-9.7	1.8	0.9	6.1
<i>Benchmark (5)</i>	-0.6	-10.2	1.2	0.1	5.5
<b>Total Program (5,9)</b>	<b>-0.8</b>	<b>-9.7</b>	<b>1.8</b>	<b>0.9</b>	<b>6.2</b>
<i>Benchmark (6,9)</i>	-0.6	-10.2	1.2	0.1	5.5
<i>SBI Int'l Equity Target (6,9)</i>	-0.6	-10.2	1.2	0.1	5.5
<i>MSCI ACWI Free ex USA (7,9)</i>	-0.6	-10.2	1.2	0.1	5.8
<i>MSCI World ex USA (net) (9)</i>	-1.1	-9.8	1.9	1.2	5.5
<i>MSCI EAFE Free (net) (9)</i>	-1.5	-10.2	2.1	1.7	5.4
<i>MSCI Emerging Markets Free (8,9)</i>	0.7	-12.1	-1.6	-3.8	6.9

(1) Since retention by the SBI. Inception dates as follows:

10/1/92: State Street (passive developed markets)

1/1/12: State Street (passive emerging markets)

- (2) Since 6/1/08 the developed markets managers' benchmark is the Standard (large + mid) MSCI World ex U.S. (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex U.S. (net). From 10/1/03 to 9/30/07 the benchmark was MSCI World ex U.S. (net). Prior to that date, it was MSCI EAFE Free (net). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI EAFE Free (net).
- (3) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net). Prior to that date, it was MSCI Emerging Markets Free (gross). From 10/1/01 to 5/31/02 the benchmark was the Provisional MSCI Emerging Markets Free (net).
- (4) Equity managers only. Includes impact of terminated managers.
- (5) Includes impact of currency overlay on the passive EAFE portfolio from 12/1/95-10/31/00.
- (6) Since 6/1/08 the International Equity asset class target is the Standard (large + mid) MSCI ACWI ex U.S. (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex U.S. (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex U.S. (net). From 1/1/01 to 9/30/03, the target was MSCI EAFE Free (net) plus Emerging Markets Free (net), and from 7/1/99 to 12/31/00 the target was MSCI EAFE Free (net) plus Emerging Markets Free (gross). From 7/1/99 to 9/30/03, the weighting of each index fluctuated with market capitalization. From 10/1/01 to 5/31/02 all international benchmarks being reported were the MSCI Provisional indices. From 12/31/96 to 6/30/99 the benchmark was fixed at 87% EAFE Free (net)/13% Emerging Markets Free (gross). On 5/1/96, the portfolio began transitioning from 100% EAFE Free (net) to the 12/31/96 fixed weights. 100% EAFE Free (net) prior to 5/1/96.
- (7) MSCI ACWI Free ex U.S. (gross) through 12/31/00. MSCI ACWI Free ex U.S. (net) thereafter.
- (8) MSCI Emerging Markets Free (gross) through 12/31/00. MSCI Emerging Markets Free (net) thereafter.
- (9) Total Program and Benchmarks Inception as of 10/1/92

**COMBINED RETIREMENT FUNDS**  
**INTERNATIONAL STOCK MANAGERS**  
**Periods Ended June 2016**

	<b>June 30, 2016</b>		<b>March 31, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
<b>Active Developed Markets</b>	<b>\$2,304,703,452</b>	<b>27.9%</b>	<b>\$2,347,786,243</b>	<b>28.2%</b>
Acadian	\$375,162,372	4.5%	\$371,434,968	4.5%
Columbia	\$331,467,747	4.0%	\$341,915,380	4.1%
Fidelity	\$331,933,224	4.0%	\$333,896,266	4.0%
J.P. Morgan	\$264,115,034	3.2%	\$267,053,655	3.2%
Marathon	\$726,265,010	8.8%	\$747,151,369	9.0%
McKinley	\$275,760,065	3.3%	\$286,334,605	3.4%
<b>Active Emerging Markets</b>	<b>\$1,365,310,657</b>	<b>16.5%</b>	<b>\$1,344,015,078</b>	<b>16.1%</b>
Capital International	\$619,511,164	7.5%	\$608,669,952	7.3%
Morgan Stanley	\$745,799,493	9.0%	\$735,345,126	8.8%
<b>Semi-Passive Developed Markets</b>	<b>\$1,071,434,610</b>	<b>13.0%</b>	<b>\$1,094,272,615</b>	<b>13.1%</b>
AQR	\$320,409,936	3.9%	\$329,055,342	3.9%
Fidelity	\$471,352,159	5.7%	\$480,024,995	5.8%
State Street	\$279,672,516	3.4%	\$285,192,278	3.4%
<b>Passive Developed Markets</b>	<b>\$3,260,989,280</b>	<b>39.4%</b>	<b>\$3,287,682,382</b>	<b>39.4%</b>
State Street	\$3,260,989,280	39.4%	\$3,287,682,382	39.4%
<b>Passive Emerging Markets</b>	<b>\$267,103,049</b>	<b>3.2%</b>	<b>\$265,190,891</b>	<b>3.2%</b>
State Street	\$267,103,049	3.2%	\$265,190,891	3.2%
<b>Total Portfolio</b>	<b>\$8,269,541,048</b>	<b>100.0%</b>	<b>\$8,338,947,209</b>	<b>100.0%</b>

**COMBINED RETIREMENT FUNDS  
INTERNATIONAL STOCK MANAGERS  
Calendar Year Returns**

	2015	2014	2013	2012	2011
<b>Active Developed Markets (1)</b>					
Acadian	2.4	-1.7	26.1	17.6	-12.9
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
Columbia	6.4	-5.6	23.9	19.0	-12.1
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
Fidelity	0.1	-5.6	26.7	20.3	-11.9
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
J.P. Morgan	-4.7	-5.1	19.5	18.4	-10.2
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
Marathon	6.7	-4.0	28.5	17.9	-9.2
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
McKinley	3.1	-2.7	28.0	16.9	-15.5
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
<b>Aggregate</b>	<b>3.2</b>	<b>-4.1</b>	<b>25.4</b>	<b>17.9</b>	<b>-11.7</b>
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
<b>Active Emerging Markets (2)</b>					
Capital International	-16.4	-5.9	0.7	13.8	-22.8
<i>Benchmark</i>	-14.9	-2.2	-2.6	18.2	-18.4
Morgan Stanley	-9.4	-2.4	0.5	21.1	-17.8
<i>Benchmark</i>	-14.9	-2.2	-2.6	18.2	-18.4
<b>Aggregate</b>	<b>-12.7</b>	<b>-4.1</b>	<b>0.6</b>	<b>17.5</b>	<b>-20.6</b>
<i>Benchmark</i>	-14.9	-2.2	-2.6	18.2	-18.4
<b>Semi-Passive Developed Markets (1)</b>					
AQR	0.9	-4.4	24.1	20.8	-13.9
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
Fidelity	-0.7	-4.0	23.2	19.4	-12.6
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
State Street	-0.9	-5.1	25.3	17.3	-15.6
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
<b>Aggregate</b>	<b>-0.3</b>	<b>-4.4</b>	<b>24.0</b>	<b>19.2</b>	<b>-13.8</b>
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2

- (1) Since 6/1/08 the developed markets manager's benchmark is the Standard (large + mid) MSCI World ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex USA (net). From 10/1/03 to 9/30/07 the benchmark was the MSCI World ex USA (net).
- (2) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net).
- (3) Equity managers only. Includes impact of terminated managers.
- (4) Since 6/1/08 the International Equity asset class target is the Standard (large + mid) MSCI ACWI ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex USA (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex USA (net).

**COMBINED RETIREMENT FUNDS  
INTERNATIONAL STOCK MANAGERS  
Calendar Year Returns**

	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
<b>Passive Developed Markets (1)</b>					
State Street	-2.6	-3.9	21.4	16.7	-11.9
<i>Benchmark</i>	-3.0	-4.3	21.0	16.4	-12.2
<b>Passive Emerging Markets (2)</b>					
State Street	-14.6	-2.1	-2.5	18.5	--
<i>Benchmark</i>	-14.9	-2.2	-2.6	18.2	--
Equity Only (3) (4)	-2.9	-4.0	17.8	17.6	-14.2
<i>Benchmark</i>	-5.7	-3.9	15.3	16.8	-13.7
<b>Total Program (4)</b>	<b>-2.9</b>	<b>-4.0</b>	<b>17.8</b>	<b>17.6</b>	<b>-14.2</b>
<i>Benchmark</i>	-5.7	-3.9	15.3	16.8	-13.7
<i>SBI Int'l Equity Target (5)</i>	-5.7	-3.9	15.3	16.8	-13.7
<i>MSCI ACWI Free ex USA (net)</i>	-5.7	-3.9	15.3	16.8	-13.7
MSCI World ex USA (net)	-3.0	-4.3	21.0	16.4	-12.2
MSCI EAFE Free (net)	-0.8	-4.9	22.8	17.3	-12.1
<i>MSCI Emerging Markets Free (net)</i>	-14.9	-2.2	-2.6	18.2	-18.4

- (1) Since 6/1/08 the developed markets manager's benchmark is the Standard (large + mid) MSCI World ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI World ex USA (net). From 10/1/03 to 9/30/07 the benchmark was the MSCI World ex USA (net).
- (2) Since 6/1/08 the emerging markets manager's benchmark is the Standard (large + mid) MSCI Emerging Markets Free (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI Emerging Markets Free (net). From 1/1/01 to 9/30/07 the benchmark was MSCI Emerging Markets Free (net).
- (3) Equity managers only. Includes impact of terminated managers.
- (4) Since 6/1/08 the International Equity asset class target is the Standard (large + mid) MSCI ACWI ex USA (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex USA (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex USA (net).



# STATE BOARD OF INVESTMENT

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## Bond Manager Performance Summaries

Second Quarter 2016





# MINNESOTA STATE BOARD OF INVESTMENT

## Bond Managers

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**COMBINED RETIREMENT FUNDS**  
**BOND MANAGERS**  
**Periods Ended June 2016**

	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
<b>Active Managers</b>					
<b>Barclays Aggregate Index</b>	<b>2.2</b>	<b>6.0</b>	<b>4.1</b>	<b>3.8</b>	
Aberdeen	2.7	6.2	4.6	4.7	5.7
<i>Benchmark</i>	2.2	6.0	4.1	3.8	5.6
Columbia (RiverSource)	2.8	5.7	4.4	4.5	5.7
<i>Benchmark</i>	2.2	6.0	4.1	3.8	5.6
Dodge & Cox	2.1	4.8	4.3	4.4	6.5
<i>Benchmark</i>	2.2	6.0	4.1	3.8	5.6
PIMCO	2.2	5.2	3.9	4.2	6.6
<i>Benchmark</i>	2.2	6.0	4.1	3.8	5.0
Western	3.0	6.6	4.9	4.8	8.8
<i>Benchmark</i>	2.2	6.0	4.1	3.8	7.7
<b>Active Mgr. Aggregate</b>	<b>2.5</b>	<b>5.7</b>	<b>4.4</b>	<b>4.5</b>	
<b>Semi-Passive Managers</b>					
BlackRock	2.3	6.1	4.3	4.1	5.7
<i>Benchmark</i>	2.2	6.0	4.1	3.8	5.6
Goldman	2.3	6.1	4.3	4.2	5.9
<i>Benchmark</i>	2.2	6.0	4.1	3.8	5.6
Neuberger	2.2	6.2	4.3	4.0	6.8
<i>Benchmark</i>	2.2	6.0	4.1	3.8	6.6
<b>Semi-Passive Mgr. Aggregate</b>	<b>2.3</b>	<b>6.1</b>	<b>4.3</b>	<b>4.1</b>	
<i>Benchmark</i>	2.2	6.0	4.1	3.8	
<b>Historical Aggregate (2,3)</b>	<b>2.4</b>	<b>5.9</b>	<b>4.3</b>	<b>4.3</b>	<b>7.9</b>
<i>Benchmark (3,4)</i>	2.2	6.0	4.1	3.8	7.7
Barclays Aggregate Index (3,4)	2.2	6.0	4.1	3.8	7.7

(1) Since inception by the SBI. Inception dates as follows:

7/1/84: Western  
7/1/88: Neuberger  
7/1/93: Columbia, Goldman  
4/1/96: BlackRock  
1/1/00: Aberdeen, Dodge & Cox  
10/1/08: PIMCO

(2) Includes performance of terminated managers.

(3) Historical Aggregate and benchmarks inception date: 7/1/84

(4) Prior to July 1994, this index reflects the Solomon BIG

**COMBINED RETIREMENT FUNDS**  
**BOND MANAGERS**  
**Periods Ending June 2016**

	<b>June 30, 2016</b>		<b>March 31, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
<b>Semi-Passive</b>	<b>\$7,289,927,864</b>	<b>50.0%</b>	<b>\$7,523,746,727</b>	<b>50.4%</b>
BlackRock	\$2,069,472,383	14.2%	\$2,023,187,167	13.6%
Goldman	\$2,482,558,420	17.0%	\$2,821,911,617	18.9%
Neuberger	\$2,737,897,062	18.8%	\$2,678,647,943	17.9%
<b>Active Managers</b>	<b>\$7,288,279,045</b>	<b>50.0%</b>	<b>\$7,402,769,031</b>	<b>49.6%</b>
Aberdeen	\$1,185,409,947	8.1%	\$1,154,268,239	7.7%
Columbia (RiverSource)	\$1,138,131,044	7.8%	\$1,254,855,655	8.4%
Dodge & Cox	\$1,604,207,631	11.0%	\$1,571,046,145	10.5%
PIMCO	\$1,563,237,473	10.7%	\$1,676,896,224	11.2%
Western	\$1,797,292,951	12.3%	\$1,745,702,767	11.7%
<b>Total Portfolio</b>	<b>\$14,578,206,909</b>	<b>100.0%</b>	<b>\$14,926,515,758</b>	<b>100.0%</b>

**COMBINED RETIREMENT FUNDS**  
**BOND MANAGERS**  
**Calendar Year Returns**

	2015	2014	2013	2012	2011
<b>Active Managers</b>					
Aberdeen	0.8	6.7	-1.5	7.7	8.0
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Columbia (RiverSource)	0.2	5.8	-1.0	6.9	8.1
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Dodge & Cox	0.3	6.0	0.9	8.5	5.0
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
PIMCO	1.0	5.5	-1.3	9.3	4.5
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Western	0.7	7.0	-1.4	7.8	7.1
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
<b>Active Mgr. Aggregate</b>	<b>0.6</b>	<b>6.2</b>	<b>-0.8</b>	<b>8.1</b>	<b>6.4</b>
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
<b>Semi-Passive Managers</b>					
BlackRock	0.9	6.0	-1.8	5.0	8.0
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Goldman	0.8	6.1	-1.7	5.4	8.3
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Neuberger	0.7	6.1	-2.0	5.4	7.6
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
<b>Semi-Passive Mgr. Aggregate</b>	<b>0.8</b>	<b>6.1</b>	<b>-1.8</b>	<b>5.3</b>	<b>8.0</b>
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
<b>Historical Aggregate</b>	<b>0.7</b>	<b>6.1</b>	<b>-1.3</b>	<b>6.7</b>	<b>7.2</b>
<i>Benchmark</i>	0.5	6.0	-2.0	4.2	7.8
Barclays Aggregate Index	0.5	6.0	-2.0	4.2	7.8

The benchmark for the Fixed Income Asset Class is the Barclays Capital U.S. Aggregate Bond Index.



# STATE BOARD OF INVESTMENT

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## Non-Retirement Manager Performance Summaries

Second Quarter 2016



# MINNESOTA STATE BOARD OF INVESTMENT

## Non-Retirement Managers

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**NON-RETIREMENT MANAGERS**  
**Periods Ended June 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
GE Asset Management	2.2	-1.1	9.7	10.7	9.5
<i>S&amp;P 500 Index</i>	2.5	4.0	11.7	12.1	9.4
RBC Global Asset Management (2)	1.2	4.0	2.4	2.2	5.3
<i>Barclays Intermediate Government</i>	1.2	3.9	2.4	2.3	5.4
Internal Stock Pool	2.5	4.0	11.7	12.1	9.1
<i>S&amp;P 500 Index</i>	2.5	4.0	11.7	12.1	9.0
Internal Bond Pool - Trust	2.3	5.7	4.4	4.2	6.4
<i>Barclays Aggregate</i>	2.2	6.0	4.1	3.8	5.9

(1) Since retention by the SBI. Inception dates as follows:

7/1/91: RBC Global Asset Management

7/1/93: Internal Stock Pool

7/1/94: Internal Bond Pool - Trust

1/1/95: GE Asset Management

(2) Prior to July 2011, a blended benchmark consisting of 25% Merrill Lynch (ML) Mortgage Master, 25% ML 1-3 Yr Gov't, 25% ML 5-10 Year Treasury/Ag, 15% ML 3-5 Year Treasury/Ag, and 10% ML 91-day T-Bill was utilized.



**NON-RETIREMENT MANAGERS**  
**Periods Ended June 2016**

	<b>June 30, 2016</b>		<b>March 31, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
GE Asset Management	\$62,012,336	2.0%	\$60,669,329	2.0%
RBC Global Asset Management	\$247,204,792	7.9%	\$240,296,585	7.9%
Internal Stock Pool	\$1,811,952,176	58.1%	\$1,781,456,409	58.3%
Internal Bond Pool - Trust	\$999,299,424	32.0%	\$973,416,156	31.9%
<b>Total Portfolio</b>	<b>\$3,120,468,728</b>	<b>100.0%</b>	<b>\$3,055,838,479</b>	<b>100.0%</b>

**NON-RETIREMENT MANAGERS**  
**Calendar Year Returns**

	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
GE Asset Management	-1.4	13.2	34.5	16.8	-2.2
<i>S&amp;P 500 Index</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
RBC Global Asset Management (1)	1.3	2.5	-1.3	1.8	7.1
<i>Barclays Intermediate Gov</i>	<i>1.2</i>	<i>2.5</i>	<i>-1.2</i>	<i>1.7</i>	<i>6.2</i>
Internal Stock Pool	1.5	13.7	32.2	16.0	2.2
<i>S&amp;P 500 Index</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
Internal Bond Pool - Trust	0.8	6.0	0.0	5.8	5.6
<i>Barclays Aggregate</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>	<i>7.8</i>

(1) Prior to July 2011, a blended benchmark consisting of 25% Merrill Lynch (ML) Mortgage Master, 25% ML 1-3 Year Gov't, 25% ML 5-10 Year Treasury/Ag, 15% ML 3-5 Year Treasury/Ag, and 10% ML 91-day T-Bill was utilized.



# **STATE BOARD OF INVESTMENT**

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## **Deferred Compensation Plan Minnesota College Savings Plan Performance Summaries**

**Second Quarter 2016**



# MINNESOTA STATE BOARD OF INVESTMENT

## Deferred Compensation Plan and Minnesota College Savings Plan

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**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Periods Ended June 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(1)
<b>Large Cap Equity</b>					
Janus Twenty	-1.1	0.7	11.1	10.4	4.0
<i>S&amp;P 500</i>	2.5	4.0	11.7	12.1	4.5
Vanguard Institutional Index Plus	2.5	4.0	11.7	12.1	4.5
<i>S&amp;P 500</i>	2.5	4.0	11.7	12.1	4.5
<b>Mid Cap Equity</b>					
Vanguard Mid-Cap Index	2.3	-0.9	10.8	10.6	9.3
<i>CRSP US Mid Cap (2)</i>	2.3	-0.9	10.8	10.7	9.4
<b>Small Cap Equity</b>					
T. Rowe Price Small-Cap Stock	4.2	-2.3	8.6	10.0	9.6
<i>Russell 2000</i>	3.8	-6.7	7.1	8.4	7.0
<b>International</b>					
Fidelity Diversified International	-2.3	-10.0	4.2	3.4	6.0
<i>MSCI EAFE Free</i>	-1.5	-10.2	2.1	1.7	3.1
Vanguard Total International Stock Index	0.2	-9.1	2.1	0.6	0.6
<i>FTSE Global All Cap ex US (3)</i>	-0.4	-9.2	2.2	0.7	0.7
<b>Balanced</b>					
Vanguard Balanced Index Inst. Fund	2.6	4.0	8.4	8.6	7.0
<i>60% CRSP US Tot Mkt, 40% Barclays Agg (4)</i>	2.5	3.9	8.4	8.6	7.0
<b>Fixed Income</b>					
Dodge & Cox Income Fund	2.6	4.4	4.0	4.0	5.8
<i>Barclays Aggregate</i>	2.2	6.0	4.1	3.8	5.4
Vanguard Total Bond Market Index Inst.	2.4	6.1	4.0	3.7	4.6
<i>Barclays Aggregate</i>	2.2	6.0	4.1	3.8	4.6
SIF Money Market (5)	0.1	0.4	0.2	0.2	2.1
3 Month T-Bills	0.1	0.2	0.1	0.1	1.8
<b>SIF Fixed Interest (5)</b>					
Galliard Capital Management	0.5	2.0	1.9	2.3	4.7
<i>3-Year Constant Maturity Treasury +45bp</i>	0.3	1.4	1.3	1.1	3.6

Benchmarks for the Funds are noted in italics below the Fund names.

- (1) Since retention by the SBI. Time periods varies for each manager.
- (2) Benchmark is the CRSP US Mid-Cap Index beginning February 2013. Prior to that date it was the MSCI US Mid-Cap 450 Index.
- (3) Benchmark is the FTSE Global All Cap ex US Index beginning June 2013; MSCI ACWI ex USA IMI beginning December 2010; MSCI EAFE and Emerging Markets Index beginning August 2006. Prior to that date it was the total International Composite Index, which is the MSCI EAFE Index and the Select Emerging Markets Free Index.
- (4) Benchmark is 60% CRSP US Total Market Index and 40% Barclays Aggregate Bond Index beginning January 2013. Prior to that date it was 60% MSCI US Broad Market Index and 40% Barclays Aggregate Bond Index..
- (5) SIF Money Market Account and SIF Fixed Interest Accounts are Supplemental Investment Fund options (SIF), which are also offered under the Deferred Compensation Plan.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Periods Ended June 2016**

<b>MN Target Retirement Funds</b>	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
<b>SSgA</b>					
Income Fund	2.2	1.9	3.8	4.3	4.3
Income Fund Benchmark	2.1	1.9	3.8	4.4	4.4
2020 Fund	2.4	1.7	5.1	6.4	6.4
2020 Fund Benchmark	2.2	1.6	5.1	6.4	6.4
2025 Fund	2.6	1.3	6.0	7.2	7.2
2025 Fund Benchmark	2.4	1.2	6.0	7.3	7.3
2030 Fund	2.7	0.9	6.6	7.6	7.6
2030 Fund Benchmark	2.5	0.7	6.6	7.7	7.7
2035 Fund	2.6	0.4	6.9	7.8	7.8
2035 Fund Benchmark	2.4	0.2	6.9	7.8	7.8
2040 Fund	2.5	-0.2	7.0	7.6	7.6
2040 Fund Benchmark	2.3	-0.4	7.0	7.7	7.7
2045 Fund	2.5	-0.8	7.1	7.6	7.6
2045 Fund Benchmark	2.3	-1.0	7.1	7.6	7.6
2050 Fund	2.5	-1.1	7.0	7.5	7.5
2050 Fund Benchmark	2.3	-1.3	7.0	7.6	7.6
2055 Fund	2.5	-1.1	7.0	7.5	7.5
2055 Fund Benchmark	2.3	-1.3	7.0	7.6	7.6
2060 Fund	2.5	-1.1	7.0	7.5	7.5
2060 Fund Benchmark	2.3	-1.3	7.0	7.6	7.6

Note: Each SSgA Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.  
The underlying index funds are listed below.

(1) Since retention by the SBI. Time period varies for each manager.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Periods Ended June 2016**

<b>SSgA Index Funds</b>	<b>Last Quarter</b>	<b>Last Year</b>	<b>Last 3 Years</b>	<b>Last 5 Years</b>	<b>Since Inception (1)</b>
S&P 500 Index Fund	2.4	4.0	11.6	12.1	12.1
<i>S&amp;P 500</i>	2.5	4.0	11.7	12.1	12.1
DJ-UBS Roll Select Commodity Index Fund	12.6	-10.4	-9.0	--	-8.5
<i>DJ-UBS Roll Select Commodity Index</i>	12.6	-10.4	-8.9	--	-8.4
Russell Small/Mid Cap Index Fund	3.5	-5.2	8.6	--	12.6
<i>Russell Small Cap Completeness Index</i>	3.5	-5.2	8.6	--	12.6
Global All-Cap Equity ex-US Index Fund	0.1	-8.8	2.1	0.8	0.8
<i>MSCI ACWI ex USA IMI</i>	-0.7	-9.6	1.7	0.4	0.4
Global Real Estate Securities Index Fund	3.5	12.3	8.5	8.3	8.3
<i>FTSE EPRA/NAREIT Dev Liquid</i>	3.1	11.1	7.6	7.5	7.5
Long Government Bond Index Fund	6.4	19.0	10.4	10.1	10.1
<i>Barclays Long Government</i>	6.4	19.0	10.4	10.2	10.2
Bond Index Fund	2.2	6.0	4.1	3.8	3.8
<i>Barclays Aggregate</i>	2.2	6.0	4.1	3.8	3.8
Inflation Protected Bond Index Fund	1.7	4.3	2.3	2.6	2.6
<i>Barclays U.S. TIPS</i>	1.7	4.4	2.3	2.6	2.6
High Yield Bond Index Fund	5.2	0.8	3.8	5.4	5.4
<i>Barclays U.S. High Yield Very Liquid</i>	5.0	0.9	3.8	5.6	5.6
U.S. Short-Term Gov/Credit Index Fund	0.6	1.6	1.2	1.6	1.6
<i>Barclays 1-3 Yr Govt/Credit</i>	0.7	1.6	1.2	1.1	1.1

Benchmarks for the SSgA Funds are noted in italics below the Fund names.

(1) Minnesota Target Retirement Funds inception date is July 2011.



**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Calendar Year Returns**

	2015	2014	2013	2012	2011
<b>Large Cap Equity</b>					
Janus Twenty	4.9	8.9	33.1	22.3	-8.2
<i>S&amp;P 500</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
Vanguard Institutional Index Plus	1.4	13.7	32.4	16.0	2.1
<i>S&amp;P 500</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
<b>Mid Cap Equity</b>					
Vanguard Mid-Cap Index	-1.3	13.8	35.2	16.0	-2.0
<i>CRSP US Mid Cap (1)</i>	<i>-1.3</i>	<i>13.8</i>	<i>35.4</i>	<i>16.0</i>	<i>-1.9</i>
<b>Small Cap Equity</b>					
T. Rowe Price Small-Cap Stock	-3.2	6.9	37.6	18.0	-0.1
<i>Russell 2000</i>	<i>-4.4</i>	<i>4.9</i>	<i>38.8</i>	<i>16.3</i>	<i>-4.2</i>
<b>International</b>					
Fidelity Diversified International	3.1	-3.2	25.2	19.4	-13.8
<i>MSCI EAFE Free</i>	<i>-0.8</i>	<i>-4.9</i>	<i>22.8</i>	<i>17.3</i>	<i>-12.1</i>
Vanguard Total International Stock Index	-4.2	-4.1	15.2	18.3	--
<i>FTSE Global All Cap ex US (2)</i>	<i>-4.0</i>	<i>-3.1</i>	<i>15.9</i>	<i>17.0</i>	<i>--</i>
<b>Balanced</b>					
Vanguard Balanced Index Inst. Fund	0.5	10.0	18.1	11.5	4.3
<i>60% CRSP US Tot Mkt, 40% Barclays Agg (3)</i>	<i>0.7</i>	<i>10.0</i>	<i>18.2</i>	<i>11.6</i>	<i>4.1</i>
<b>Fixed Income</b>					
Dodge & Cox Income Fund	-0.6	5.5	0.6	7.9	4.8
<i>Barclays Aggregate</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>	<i>7.8</i>
Vanguard Total Bond Market Index Inst.	0.4	5.9	-2.1	4.2	7.7
<i>Barclays Aggregate</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>	<i>7.8</i>
SIF Money Market (4)	0.2	0.1	0.2	0.3	0.2
3 Month T-Bills	0.1	0.0	0.1	0.1	0.1
<b>SIF Fixed Interest (4)</b>					
Galliard Capital Management	2.0	1.8	2.2	2.8	3.4
<i>3-Year Constant Maturity Treasury +45bp</i>	<i>1.5</i>	<i>1.3</i>	<i>1.0</i>	<i>0.8</i>	<i>1.2</i>

Benchmarks for the Funds are noted in italics below the Fund names.

- (1) Benchmark is the CRSP US Mid-Cap Index beginning February 2013. Prior to that date it was the MSCI US Mid-Cap 450 Index.
- (2) Benchmark is the FTSE Global All Cap ex US Index beginning June 2013; MSCI ACWI ex USA IMI beginning December 2010; MSCI EAFE and Emerging Markets Index beginning August 2006. Prior to that date it was the total International Composite Index, which is the MSCI EAFE Index and the Select Emerging Markets Free Index.
- (3) Benchmark is 60% CRSP US Total Market Index and 40% Barclays Aggregate Bond Index beginning January 2013. Prior to that date it was 60% MSCI US Broad Market Index and 40% Barclays Aggregate Bond Index.
- (4) SIF Money Market Account and SIF Fixed Interest Accounts are Supplemental Investment Fund options (SIF), which are also offered under the Deferred Compensation Plan accounts.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Calendar Year Returns**

<b>MN Target Retirement Funds</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
<b>SSgA</b>					
Income Fund	-1.4	3.6	5.1	9.7	--
Income Fund Benchmark	-1.3	3.8	5.3	9.8	--
2020 Fund	-1.6	5.3	8.8	12.5	--
2020 Fund Benchmark	-1.6	5.5	9.1	12.5	--
2025 Fund	-1.9	5.9	13.2	13.7	--
2025 Fund Benchmark	-1.9	6.2	13.5	13.7	--
2030 Fund	-2.0	6.3	16.0	14.3	--
2030 Fund Benchmark	-2.0	6.6	16.3	14.1	--
2035 Fund	-2.0	6.4	18.1	14.9	--
2035 Fund Benchmark	-2.0	6.7	18.5	14.7	--
2040 Fund	-2.2	6.4	19.7	15.5	--
2040 Fund Benchmark	-2.1	6.6	20.0	15.3	--
2045 Fund	-2.4	6.2	21.3	16.0	--
2045 Fund Benchmark	-2.3	6.5	21.6	15.8	--
2050 Fund	-2.5	6.2	21.4	15.9	--
2050 Fund Benchmark	-2.4	6.5	21.7	15.8	--
2055 Fund	-2.5	6.2	21.4	15.9	--
2055 Fund Benchmark	-2.4	6.5	21.7	15.8	--
2060 Fund	-2.5	6.2	21.4	16.0	--
2060 Fund Benchmark	-2.4	6.5	21.7	15.8	--

Note: Each SSgA Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

**MN STATE 457 DEFERRED COMPENSATION PLAN**  
**FUND OPTIONS**  
**Calendar Year Returns**

<b>SSgA Index Funds</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
S&P 500 Index Fund	1.4	13.7	32.4	16.0	--
<i>S&amp;P 500</i>	<i>1.4</i>	<i>13.7</i>	<i>32.4</i>	<i>16.0</i>	<i>2.1</i>
DJ-UBS Roll Select Commodity Index Fund	-23.4	-15.3	-9.3	--	--
DJ-UBS Roll Select Commodity Index	-23.4	-15.2	-9.1	--	--
Russell Small/Mid Cap Index Fund	-3.5	7.5	38.4	--	--
<i>Russell Small Cap Completeness Index</i>	<i>-3.4</i>	<i>7.4</i>	<i>38.5</i>	<i>--</i>	<i>--</i>
Global All-Cap Equity ex-US Index Fund	-4.4	-4.2	15.4	18.2	--
<i>MSCI ACWI ex USA IMI</i>	<i>-4.6</i>	<i>-3.9</i>	<i>15.8</i>	<i>17.0</i>	<i>--</i>
Global Real Estate Securities Index Fund	0.2	15.5	2.7	28.9	--
<i>FTSE EPRA/NAREIT Dev Liquid</i>	<i>-0.5</i>	<i>15.0</i>	<i>2.5</i>	<i>27.5</i>	<i>-5.8</i>
Long Government Bond Index Fund	-1.1	24.6	-12.5	3.8	--
<i>Barclays Long Government</i>	<i>-1.2</i>	<i>24.7</i>	<i>-12.5</i>	<i>3.8</i>	<i>29.1</i>
Bond Index Fund	0.6	6.0	-2.1	4.2	--
<i>Barclays Aggregate</i>	<i>0.5</i>	<i>6.0</i>	<i>-2.0</i>	<i>4.2</i>	<i>7.8</i>
Inflation Protected Bond Index Fund	-1.4	3.6	-8.6	6.9	--
<i>Barclays U.S. TIPS</i>	<i>-1.4</i>	<i>3.6</i>	<i>-8.6</i>	<i>7.0</i>	<i>13.6</i>
High Yield Bond Index Fund	-5.2	2.1	6.6	14.8	--
<i>Barclays U.S. High Yield Very Liquid</i>	<i>-5.3</i>	<i>2.1</i>	<i>6.6</i>	<i>15.4</i>	<i>6.1</i>
U.S. Short-Term Gov/Credit Index Fund	0.6	0.7	0.6	3.9	--
<i>Barclays 1-3 Yr Govt/Credit</i>	<i>0.7</i>	<i>0.8</i>	<i>0.6</i>	<i>1.3</i>	<i>1.6</i>

Note: Each SSgA Fund benchmark is the aggregate of the returns of the Fund's underlying index funds weighted by the Fund's asset allocation.

Benchmarks for the Funds are noted in italics below the Fund names.

Numbers in blue include returns prior to retention by SBI.

**MN STATE 457 DEFERRED COMPENSATION PLAN  
FUND OPTIONS**

	<b>June 30, 2016</b>		<b>March 31, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
<b>Fixed Income</b>	<b>\$477,196,705</b>	<b>8.2%</b>	<b>\$453,053,487</b>	<b>7.9%</b>
Dodge & Cox Income Fund	\$212,184,648	3.7%	\$202,700,466	3.6%
Vanguard Total Bond Market Index Inst.	\$202,076,677	3.5%	\$187,412,239	3.3%
Money Market	\$62,935,380	1.1%	\$62,940,782	1.1%
<b>Stable Value</b>	<b>\$1,338,725,839</b>	<b>23.1%</b>	<b>\$1,328,303,451</b>	<b>23.3%</b>
Galliard Stable Value Composite	\$1,338,725,839	23.1%	\$1,328,303,451	23.3%
<b>Large Cap Equity</b>	<b>\$1,518,362,992</b>	<b>26.2%</b>	<b>\$1,513,716,635</b>	<b>26.5%</b>
Janus Twenty	\$522,605,769	9.0%	\$536,377,526	9.4%
Vanguard Institutional Index Plus	\$995,757,223	17.2%	\$977,339,109	17.1%
<b>Mid Cap Equity</b>	<b>\$429,590,616</b>	<b>7.4%</b>	<b>\$426,482,793</b>	<b>7.5%</b>
Vanguard Mid-Cap Index	\$429,590,616	7.4%	\$426,482,793	7.5%
<b>Small Cap Equity</b>	<b>\$567,937,098</b>	<b>9.8%</b>	<b>\$553,059,949</b>	<b>9.7%</b>
T. Rowe Price Small-Cap Stock	\$567,937,098	9.8%	\$553,059,949	9.7%
<b>Balanced</b>	<b>\$698,017,886</b>	<b>12.1%</b>	<b>\$684,879,511</b>	<b>12.0%</b>
Vanguard Balanced Index Inst. Fund	\$698,017,886	12.1%	\$684,879,511	12.0%
<b>International</b>	<b>\$407,146,576</b>	<b>7.0%</b>	<b>\$418,055,434</b>	<b>7.3%</b>
Fidelity Diversified International	\$270,615,627	4.7%	\$278,760,306	4.9%
Vanguard Total International Stock Index	\$136,530,949	2.4%	\$139,295,128	2.4%
<b>Target Retirement Funds (1)</b>	<b>\$350,811,208</b>	<b>6.1%</b>	<b>\$328,897,989</b>	<b>5.8%</b>
Income Fund	\$67,358,307	1.2%	\$66,060,967	1.2%
2020 Fund	\$79,542,830	1.4%	\$75,748,637	1.3%
2025 Fund	\$67,248,838	1.2%	\$61,907,901	1.1%
2030 Fund	\$43,094,834	0.7%	\$39,710,496	0.7%
2035 Fund	\$33,042,229	0.6%	\$30,503,496	0.5%
2040 Fund	\$21,116,030	0.4%	\$19,427,250	0.3%
2045 Fund	\$16,872,493	0.3%	\$15,368,881	0.3%
2050 Fund	\$11,702,888	0.2%	\$10,314,461	0.2%
2055 Fund	\$5,666,063	0.1%	\$4,901,470	0.1%
2060 Fund	\$5,166,696	0.1%	\$4,954,431	0.1%

(1) Target Retirement Funds is a deferred comp option also offered in the Unclassified Plan. The Target Date Funds were first offered in the Unclassified Plan as of July 1, 2015.

**MINNESOTA COLLEGE SAVINGS PLAN**  
**STATIC OPTIONS (1)**  
**Periods Ended June 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception (1)
<b>Equity</b>					
MNCSP US Intl Equity Allocation	2.0	0.3	8.3	8.5	6.1
MNCSP US Intl Equity Allocation Bnmk	2.0	0.2	8.5	8.7	7.1
MNCSP Equity Interest Allocation	1.4	1.6	--	--	2.8
MNCSP Equity Interest Allocation Bnmk	1.3	1.4	--	--	2.5
MNCSP Intl Eq Index Allocation	-0.2	-10.2	1.4	--	0.1
MNCSP Intl Eq Index Allocation Bnmk	-1.0	-10.7	1.3	--	0.1
MNCSP US LC Equity Allocation	2.4	3.7	--	--	6.3
MNCSP US LC Equity Allocation Bnmk	2.5	4.0	--	--	6.6
<b>Fixed Income</b>					
MNCSP Fixed Income Allocation	2.2	4.8	3.1	2.8	4.1
MNCSP Fixed Income Allocation Bnmk	2.3	5.0	3.5	3.4	4.8
MNCSP Principal Interest Allocation	0.3	1.4	1.3	1.5	2.7
MNCSP Principal Interest Allocation Bnmk	0.1	0.1	0.1	0.1	1.3
MNCSP Money Market Allocation	0.0	0.0	0.0	0.0	0.3
MNCSP Money Market Allocation Bnmk	0.0	0.1	0.0	0.0	0.4

(1) Since retention by the SBI. Time periods varies for each option

**MINNESOTA COLLEGE SAVINGS PLAN**  
**ALLOCATION OPTIONS**  
**Periods Ended June 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Since Inception(1)
<b>Allocation Options</b>					
MNCSP Aggressive Allocation	2.0	1.0	--	--	2.8
MNCSP Aggressive Allocation Bnmk	2.1	1.3	--	--	3.0
MNCSP Moderate Allocation	2.1	2.0	6.3	6.2	4.4
MNCSP Moderate Allocation Bnmk	2.1	2.3	6.6	6.8	5.2
MNCSP Conservative Allocation	1.7	2.5	--	--	2.0
MNCSP Conservative Allocation Bnmk	1.7	2.6	--	--	2.0
<b>Managed Allocation Options</b>					
MNCSP Managed 0-4 Yrs	2.0	1.1	--	--	2.9
MNCSP Managed 0-4 Yrs Bnmk	2.1	1.3	--	--	3.0
MNCSP Managed 5-8 Yrs	2.1	1.6	--	--	2.9
MNCSP Managed 5-8 Yrs Bnmk	2.1	1.8	--	--	3.1
MNCSP Managed 9-10 Yrs	2.1	2.1	--	--	2.9
MNCSP Managed 9-10 Yrs Bnmk	2.1	2.3	--	--	3.1
MNCSP Managed 11-12 Yrs	2.1	2.4	--	--	2.8
MNCSP Managed 11-12 Yrs Bnmk	2.1	2.6	--	--	3.0
MNCSP Managed 13-14 Yrs	1.9	2.5	--	--	2.7
MNCSP Managed 13-14 Yrs Bnmk	2.0	2.8	--	--	2.9
MNCSP Managed 15 Yrs	1.7	2.5	--	--	2.4
MNCSP Managed 15 Yrs Bnmk	1.7	2.6	--	--	2.4
MNCSP Managed 16 Yrs	1.6	2.5	--	--	2.3
MNCSP Managed 16 Yrs Bnmk	1.4	2.3	--	--	2.1
MNCSP Managed 17 Yrs	1.3	2.3	--	--	2.1
MNCSP Managed 17 Yrs Bnmk	1.2	2.0	--	--	1.8
MNCSP Managed 18+ Yrs	1.2	2.2	--	--	1.9
MNCSP Managed 18+ Yrs Bnmk	1.0	1.7	--	--	1.5

(1) Since retention by the SBI. Time period varies for each option.

**MINNESOTA COLLEGE SAVINGS PLAN**  
**ALLOCATION OPTIONS UNDERLYING FUNDS**  
**Periods Ended June 2016**

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
TIAA-CREF:Bond Idx;Inst	2.1	6.0	4.0	3.6	--
Barclays Agg (SBI Toolbox Returns)	2.2	6.0	4.1	3.8	5.1
TIAA-CREF:EM Eq Idx;Inst	1.3	-11.5	-1.3	-4.0	--
MSCI:EM Gross	0.8	-11.7	-1.2	-3.4	3.9
TIAA-CREF:Eq Idx;Inst	2.6	2.1	11.1	11.6	7.4
Russell 3000 Index	2.6	2.1	11.1	11.6	7.4
TIAA-CREF:Hi-Yld;Inst	4.8	0.9	3.9	5.5	7.1
ML:1-3 BB US HY CP	2.8	3.8	4.3	5.3	6.7
TIAA-CREF:Infl Bond;Inst	1.3	3.2	1.7	2.2	4.3
Barclays U.S. TIPS Index	1.7	4.4	2.3	2.6	4.7
TIAA-CREF:Itl Eq Ix;Inst	-0.5	-9.6	2.4	1.9	1.8
MSCI EAFE USD Index	-1.5	-10.2	2.1	1.7	1.6
TIAA-CREF:Money Mkt;Inst	0.1	0.2	0.1	0.0	1.1
MFR Avg All-Taxble	0.1	0.3	0.2	0.1	1.0
TIAA-CREF:Real Est;Inst	4.4	19.4	12.8	11.6	6.6
FTSE:NAREIT All Eq Index	7.4	23.6	13.3	12.5	7.5
TIAA-CREF:S&P500 Idx;Ins	2.4	3.9	11.6	12.0	7.4
S&P 500 Index	2.5	4.0	11.7	12.1	7.4

**MINNESOTA COLLEGE SAVINGS PLAN  
FUND OPTIONS**

	<b>June 30, 2016</b>		<b>March 31, 2016</b>	
	<b>Market Value</b>	<b>Percent</b>	<b>Market Value</b>	<b>Percent</b>
<b>Fixed Income</b>	<b>\$127,667,485</b>	<b>10.5%</b>	<b>\$121,885,865</b>	<b>10.3%</b>
MNCSP Fixed Income Allocation	\$11,538,110	0.9%	\$10,493,389	0.9%
MNCSP Principal Interest Allocation	\$107,945,249	8.9%	\$103,559,974	8.7%
MNCSP Money Market Allocation	\$8,184,126	0.7%	\$7,832,502	0.7%
<b>Equity</b>	<b>\$281,978,681</b>	<b>23.1%</b>	<b>\$277,398,582</b>	<b>23.4%</b>
MNCSP US Intl Equity Allocation	\$269,771,387	22.1%	\$266,034,649	22.5%
MNCSP Equity Interest Allocation	\$1,105,993	0.1%	\$1,024,576	0.1%
MNCSP Intl Eq Index Allocation	\$2,266,382	0.2%	\$2,193,065	0.2%
MNCSP US LC Equity Allocation	\$8,834,919	0.7%	\$8,146,292	0.7%
<b>Allocation Options</b>	<b>\$66,184,354</b>	<b>5.4%</b>	<b>\$62,744,588</b>	<b>5.3%</b>
MNCSP Aggressive Allocation	\$9,370,486	0.8%	\$8,497,245	0.7%
MNCSP Moderate Allocation	\$53,428,190	4.4%	\$51,244,574	4.3%
MNCSP Conservative Allocation	\$3,385,678	0.3%	\$3,002,769	0.3%
<b>Managed Allocation Options</b>	<b>\$743,814,322</b>	<b>61.0%</b>	<b>\$722,846,372</b>	<b>61.0%</b>
MNCSP Managed 0-4 Yrs	\$24,308,558	2.0%	\$24,205,225	2.0%
MNCSP Managed 5-8 Yrs	\$72,218,552	5.9%	\$73,908,200	6.2%
MNCSP Managed 9-10 Yrs	\$72,718,701	6.0%	\$74,062,494	6.3%
MNCSP Managed 11-12 Yrs	\$103,116,866	8.5%	\$104,608,402	8.8%
MNCSP Managed 13-14 Yrs	\$130,516,740	10.7%	\$125,726,404	10.6%
MNCSP Managed 15 Yrs	\$62,431,054	5.1%	\$63,150,089	5.3%
MNCSP Managed 16 Yrs	\$62,277,004	5.1%	\$59,186,557	5.0%
MNCSP Managed 17 Yrs	\$64,823,376	5.3%	\$59,057,970	5.0%
MNCSP Managed 18+ Yrs	\$151,403,471	12.4%	\$138,941,031	11.7%



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DATE: August 15, 2016

TO: Members, Investment Advisory Council

FROM: SBI Staff

**SUBJECT: Public Markets Manager Search**

In anticipation of public market manager searches in the least efficient areas of the market as was outlined in the Investment Strategy discussion with the IAC at the November 2015 meeting, the SBI Staff has refreshed its public manager search process. Much like in the private markets, the SBI public markets investment manager searches will follow a documented process that culminates with a presentation of findings and manager recommendations to the IAC prior to seeking approval from the Board. During the IAC presentations, the Committee will have the chance to ask questions and get a deeper understanding of the investment managers, the organizations, the investment strategies and the fit within the current SBI investment program.

The August 22, 2016, IAC meeting will include a presentation outlining the public manager search process that is followed by SBI Staff and its consultant Callan Associates, and a summary of the most recent Small-Cap manager search and recommendations. If endorsed by the IAC, these manager recommendations will be brought to the Board at the September 8, 2016 meeting.

IAC members may also find more detailed information about the Small-Cap managers and a summary of the final Small-Cap manager recommendations in Tab E of the current quarterly IAC materials.

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DATE: August 15, 2016

TO: Members, Investment Advisory Council

FROM: SBI Staff

**SUBJECT: Small-Cap Growth Manager Search**

### **Background**

The Minnesota State Board of Investment (SBI) has managed misfit risk in the Domestic Equity Program of the Combined Funds by allocating assets to managers based on market capitalization and style relative to the Russell 3000 asset class target since 2003.

As of 2004, the small-cap growth manager portfolio of the SBI's Basic Retirement Funds was made up of four managers - McKinley Capital, Next Century Growth, Winslow Small-Cap and Turner Investment Partners. At that time, the average asset size for the small-cap growth managers was about \$119 million. Today, there are only two small-cap managers remaining - Next Century and McKinley. With market growth and capital additions over the past decade, the concentration of assets with these managers has grown significantly. Each of the two small-cap growth managers is now managing more than \$300 million in the Combined Funds small-cap growth portfolio.

SBI Staff believes it would be prudent to add additional active, small-cap growth managers to its line-up in order to reduce this concentration of assets by manager. A search for active managers in the small-cap space is consistent with the strategy outlined at the November 2015 IAC meeting wherein the Executive Director noted that Staff efforts related to active management would be focused on those areas of the market with the greatest inefficiencies. Staff believes that there is a higher probability of finding skilled, active managers that are capable of generating sustained, positive alpha within the small-cap space compared to other areas of domestic equity such as large-cap. This search will allow the SBI to approximately balance the small-cap segment of the program.

### **Small-Cap Manager Search Process**

Staff determined those manager characteristics that would help diversify the manager group relative to the characteristics of the SBI's two current small-cap growth managers. Staff used the following screens on small-cap growth managers from the eVestment universe:

- 1) Excess returns that are diversifying to the existing small-cap growth portfolio;
- 2) Product assets of \$400 million or greater;
- 3) Stable investment team;
- 4) Good long-term relative performance; and
- 5) Open to new accounts.

After completing the initial screening process, Staff established a preliminary candidate list of 10 managers which included the following:

- Arrowpoint Asset Management
- EAM Investors
- Elk Creek Partners
- Hood River Capital Management
- Kennedy Capital Management
- Lee Munder Capital Group Investments
- Rice Hall James & Associates
- Summit Creek Advisors
- Wellington Management Company
- William Blair Investment Management.

Staff conducted additional due diligence which included detailed analysis on the investment products as well as meetings and phone calls with these managers to better understand the organizations, the teams, the investment strategies, the risk-adjusted performance and risk management efforts. Staff also discussed each of the managers on the preliminary list with Callan to get their expertise and additional insights into these managers. The preliminary list was reduced to a shorter, finalist list that would be subject to additional manager due diligence.

The five managers selected are shown below:

- *Arrowpoint Asset Management LLC*
- *Hood River Capital Management, LLC*
- *Lee Munder Capital Group Investments, LLC*
- *Rice Hall James & Associates, LLC*
- *Wellington Management Company LLP.*

SBI Staff required each finalist to respond to an extensive due diligence questionnaire. In addition, Staff held in-house meetings which provided an opportunity for additional Staff members to gain a better understanding of the investment process directly from the portfolio managers. SBI Staff also visited the managers' offices to perform a broader due diligence effort by meeting with members of the investment staff and various support operations including trading, compliance, and risk management and back office operations. Finally, both Callan and the SBI Staff compiled their manager analyses and the SBI Staff and Callan held a conference call to review the finalist information in detail.

### **Summary of Small-Cap Manager Growth Search**

In summary, SBI Staff and Callan believe that all five finalist have good investment organizations, with good investment processes and performance histories.

Other than Wellington, the portfolio managers all have a sole focus on smaller capitalization products, running either only small-cap growth or a combination of small, small/mid and/or mid-capitalization portfolios. In addition to small capitalization portfolios, the portfolio manager at Wellington, runs large capitalization portfolios as well. Each of the finalists has three to eight

investment professionals dedicated to the small-cap growth portfolio. Wellington, has a substantial central research analyst group that the small-cap growth team can tap.

The Staff has confidence in the portfolio managers and their teams. While Arrowpoint was recently founded (2013), the two portfolio managers - Brian Schaub and Chad Meade - managed small/mid and small-cap products at Janus beginning in 2006 and 2010, respectively. Similarly, the assets managed by the long-tenured portfolio managers, Robert Marvin, Brian Smoluch and David Swank of Roxbury Capital Management, were transferred to Hood River through a sub-advisory agreement in 2013. Andrew Morey of Lee Munder, Lou Holtz and Yossi Lipsker of Rice Hall James and Mammen Chally of Wellington, all have long tenures as portfolio managers with good, long-term relative investment performance.

Based on an analysis of various portfolio characteristics, all managers provide diversification benefits to the current small-cap growth portfolio managers. All of the finalists, with the exception of Wellington and Hood River, run higher volatility portfolios with a tracking error of 5% or greater over the five year period ending March 31, 2016. Wellington, with its more core approach, has a tracking error of 2.8% and a beta of close to 1.00. While Hood River's beta is also 1.0, it has a slightly higher tracking error than Wellington - about 3.8%.

The fees for all finalists are similar. The Executive Director will negotiate the best fee structure possible with each investment management firm. While performance fees may be a part of some manager fee negotiations, in other cases, lower overall fees may be achieved without the use of performance fees.

While confident in Lee Munder Capital Group's organization and investment process, Staff noted that, of the five managers, this manager displayed characteristics that were the most similar to those of Next Century. Given this, Staff determined that it would be appropriate to keep Lee Munder on its short list but not bring them forward for hire at this time.

Based on information gathered by Staff and Callan's review, Staff is recommending the SBI retain the following four firms for potential inclusion in the Domestic Equity Small-Cap Growth portfolio.

#### **RECOMMENDATION:**

**Staff is requesting that the IAC concur with Staff's recommendation to retain up to four of the following small-cap growth investment managers below for the Domestic Equity portfolio**

- *Arrowpoint Asset Management LLC*
- *Hood River Capital management, LLC*
- *Rice Hall James & Associates, LLC*
- *Wellington Management Company LLP*

**and that the SBI authorize the Executive Director, with assistance from SBI's legal counsel, to negotiate fees and execute a contract with each firm.**

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# MINNESOTA STATE BOARD OF INVESTMENT

## SUMMARY INFORMATION

<b>Firm Name:</b>	Arrowpoint Asset Management LLC
<b>Name of Product:</b>	Small Cap Growth
<b>Investment Style:</b>	Small Cap Growth
<b>Number of portfolio managers on this product:</b>	2
<b>Number of analysts on this product:</b>	6

### **Investment Philosophy:**

Arrowpoint believes that fundamental research, when applied to small cap growth companies, can generate investment insight. This investment insight, when combined with a long time horizon and a “risk-before-reward” investment approach, can lead to consistent and sustained outperformance versus the benchmark. Their “risk-before-reward” approach is applied in every stage of the investment process - from idea generation, to portfolio construction, to sell discipline. The ultimate goal in their investment strategy is to deliver ~80% downside protection in turbulent, bear market periods. Secondly, they aim to deliver a minimum of 100% upside participation in bull market environments. This combination of 80% downside protection and 100% upside participation should lead to strong relative returns during most market environments and strong absolute returns over a full market cycle.

To execute on this strategy, Arrowpoint’s team tries to identify companies with sustainable competitive advantages, large and growing markets, high quality business models, and attractive risk-reward profiles. They believe that avoiding mistakes is the most important goal of any successful small cap growth team. Sidestepping the many pitfalls and landmines that occupy their investment universe can generate significant alpha, comparable to correctly identifying good investments.

### **Investment Process:**

The initial universe of approximately 1,500-1,700 stocks is narrowed first using quantitative screens based on growth, profitability and return metrics. Qualitative screens are then used to eliminate companies or subsectors that do not meet the criteria for competitive advantage, growing markets, high-quality business or risk/return profile.

The team undertakes both quantitative analysis and qualitative assessments, ranging from financial models to on-site information gathering during interviews with management. Extensive financial modeling to forecast cash flow generation and value creation potential is the core of the fundamental research process. Scenario analysis is utilized to project a range of outcomes (best/base/stressed) that could occur under different macroeconomic environments. Every investment opportunity purchased will have an investment thesis, financial model and information such as key leverage points, competitive analysis, etc.

**COMPETITIVE ADVANTAGE** – Arrowpoint assesses the company’s competitive position. Any small cap company that demonstrates success will face competition. To generate long-term value, it must be able to defend its position against larger peers. There are many forms of competitive advantage, but some of Arrowpoint’s favorites include:

- Network effects - Where success begets further success (i.e. auction based business models).
- Database business models – Companies that have built a proprietary database that would be timely, costly and virtually impossible to recreate.
- Low-cost positions that simply cannot be matched – Young companies that are not burdened with legacy business process and infrastructure.
- Patent portfolios that serve as a barrier to entry.

**ADDRESSABLE MARKET** – Arrowpoint looks for a large and growing market. Once they get comfortable with a company’s competitive position, they move on to assess the size of the company’s addressable market. Arrowpoint is looking for large and growing markets, but their approach is a bit more nuanced in that they look for companies with a low share or low penetration of the market. This creates the opportunity for long-duration revenue growth. If a company has 5% share today but can increase it to 20%, then this is a four-fold increase in revenue. They believe that Wall Street is myopically focused on the short term, the next quarter or the next 90-180 days, and often does not give companies credit for long-duration revenue growth. They often find these companies are systematically undervalued in the market, providing long-term growth investors opportunity.

**QUALITY OF THE BUSINESS MODEL** – Provides for long-term value creation. After they get comfortable with the competitive position and growth opportunity, they assess the quality of the business model.

To Arrowpoint, quality means two things:

- Predictable, recurring revenue.
- Scalable business model that has improving margins and returns as the top-line grows.

They believe investing in high-quality businesses affords the management team the luxury of thinking about long-term shareholder value creation instead of focusing on near-term business results and execution. They also find that good businesses have a much higher probability of sustainable, long-term value creation.

**ASSESSMENT OF THE RISK AND REWARD** – Arrowpoint believes in discipline around valuation. Their final step in the process is the assessment of the risk/reward trade-offs. Their primary tool is Discounted Cash Flow (DCF) analysis. Their goal is not to come up with a point estimate of what a company is worth, but to understand the full range of outcomes, both upside and downside. They go through a scenario analysis that incorporates their worst/bear case, their base case, and their best/bull case scenarios. This provides a framework to understand the risk and opportunity associated with each company and is a direct input into their portfolio construction process.

Arrowpoint's construction process is bottom-up and their weightings and investments are a direct output of their fundamental research at the micro level. They attempt to find growth ideas in all sectors of the market and given the depth and breadth of their team they believe they are well positioned to uncover investment ideas in all sectors. They believe this will help provide additional risk protection as it helps to reduce the risk of sector exposure.

Generally, three triggers may cause the sale of a full position. 1) market cap exceeds that of the coverage universe (currently \$4.5 billion market cap); 2) market price exceeds "best case" estimate of fair value; or investment thesis is tested (e.g. competitive advantage deteriorates, poor capital allocation decisions by management), or 3) regulatory environment becomes unpredictable. Two additional triggers may cause the partial or full sale of a position through price appreciation - position size grows too large for the risk, or comparable names present similar or better risk-reward profiles.

#### **Portfolio Team:**

**Chad Meade, Partner, Portfolio Manager**

Chad is a Partner and Portfolio Manager at Arrowpoint and has 16 years of experience in the financial industry. He previously served as the Co-Portfolio Manager and Executive Vice President of the Janus Triton Fund (2006-2013) and the Janus Venture Fund (2010-2013). Prior to joining Janus Capital, he was a financial analyst for Goldman Sachs' global investment research team. Chad graduated summa cum laude from Virginia Tech with a bachelor's degree in Finance.

**Brian Schaub, CFA, Partner, Portfolio Manager**

Brian is a Partner and Portfolio Manager at Arrowpoint and has 15 years of experience in the financial industry. He previously served as the Co-Portfolio Manager and Executive Vice President of the Janus Triton Fund (2006-2013) and the Janus Venture Fund (2010-2013). During his time as an equity research analyst at Janus Capital (2000-2011), he focused on small and mid capitalization stocks in the communications sector. Brian graduated cum laude from Williams College with a bachelor's degree in Economics.

**George Braun, Investment Analyst**

George is an Investment Analyst at Arrowpoint and has 16 years of investment and other experience. Prior to Arrowpoint, George was an analyst at Janus Capital Group, where he focused on the healthcare industry (2008-2010). Prior to that, George worked as an investment banking analyst with Salomon Smith Barney. He also spent four years as an Engineer at National Semiconductor and Analog Devices. George graduated from Dartmouth College with a bachelor's

degree in Electrical and Biomedical Engineering and from Stanford with a master's degree in Electrical Engineering.

**Tuan Huynh, Investment Analyst**

Tuan is an Investment Analyst at Arrowpoint and has 9 years of investment and finance related experience. Prior to joining Arrowpoint, he worked as a Senior Equity Research Associate at Janus Capital Group (2006-2012). Prior to that, Tuan worked as a Fee and Expense Analyst with Lipper. Tuan graduated from the University of Colorado with both a bachelor's degree in Business and an MBA.

**Maneesh Modi, Investment Analyst**

Maneesh is an Investment Analyst at Arrowpoint and has 12 years of investment experience. Prior to joining Arrowpoint, Maneesh served as Co-Portfolio Manager of Janus Capital's small cap growth strategy, as well as an equity research analyst (2008-2015). He began his career as a research analyst at Wasatch Funds. Maneesh graduated cum laude with a degree in Economics from Duke University and received his MBA from Harvard University.

**Brandon Teel, CFA, Investment Analyst**

Brandon is an Investment Analyst at Arrowpoint and has 11 years of investment and other experience. Prior to joining Arrowpoint, he was an analyst at American Century Investments (2009-2013). Prior to that, Brandon worked as a Senior Consultant at Deloitte & Touche (2005-2008) and as a Software Engineer at Raytheon (2004-2005). Brandon graduated from the University of Southern California with a BS in Computer Science and earned an MBA from the University of Michigan.

**Jeff Torres, CFA, Investment Analyst**

Jeff is an Investment Analyst at Arrowpoint and has 9 years of investment experience. Prior to joining Arrowpoint, he worked as an Equity Associate Analyst at Janus Capital Group. Jeff graduated with a double concentration in Finance and Real Estate from Colorado State University.

**Tony Yao, M.D., Ph.D., Investment Analyst**

Tony is an Investment Analyst at Arrowpoint and has 14 years of investment experience. Prior to joining Arrowpoint, Tony was an equity analyst at Janus Capital Group (2002-2012). Tony was also the Assistant Portfolio Manager of the Janus Worldwide Fund (2009-2010). Tony graduated magna cum laude from Brown University with a bachelor's degree in Biochemistry and earned both an M.D. and Ph.D. in immunology from Stanford University.

**Risk Management:**

Arrowpoint's risk management policy is shaped by years of investment experience in a variety of market environments. They manage risk at the security level by identifying and quantifying the downside risk of each investment in the portfolio. Conservative assumptions are used to stress test their financial models to project returns under worst-case/base/best-case scenarios. They manage risk at the portfolio level through regular analysis of both ex post facto (historical) and prospective (forward looking) risk measures including attribution, sector weights, performance ratios (Sharpe, Treynor, Information, etc.), VAR analysis (value at risk), volatility, risk factor analyses and market simulations, among others.

The Risk Management Committee meets at least quarterly to review the portfolio structure. Initial moves outside the typical range for any measure will be discussed with the portfolio team and the Risk Management Committee to determine whether the changes are intentional or inadvertent. Portfolio Managers may make changes at that time if the shift was unintentional. Continued extremes in risk measures or deviations from the index that are inconsistent with the strategy would result in portfolio intervention by the Risk Management Committee.

Arrowpoint utilizes several tools to help ensure that the portfolio is appropriately positioned from a risk standpoint. First, a focus on high quality companies and their “risk-before-reward” approach allows them to narrow the investable universe to the higher quality and lower risk companies in the benchmark. They monitor factors such as profitability, return on capital and financial leverage at the individual security level. Second, their portfolio construction process is bottom-up and their portfolio weightings are a direct output of the fundamental research and valuation work performed at the security level. Positions are sized in the portfolio according to risk rather than risk-reward:

- Large positions (typically 1.5-3.0%) will have lower downside risk;
- Mid-size positions (typically 1.0-1.5%) will have a moderate downside risk; and
- Small positions (typically 0.5-1.0%) may have more downside risk accompanied by more upside potential.

#### **Ownership:**

Arrowpoint is a 100% employee owned firm. Arrowpoint and its subsidiaries named four additional partners over the past five years: Kaelyn Abrell, Chad Meade, Brian Schaub and Sanjai Bhonsle. The ownership stakes for Arrowpoint and its investment related subsidiary (“Arrowpoint”) are listed below:

<b>Partner</b>	<b>Position</b>	<b>Ownership</b>
David Corkins	Co-founder, Portfolio Manager	Between 50% - 75%
Minyoung Sohn, CFA	Co-founder, Portfolio Manager	Between 25% - 50%
Karen Reidy, CFA	Co-founder, Portfolio Manager	Less than 5%
Kaelyn Abrell	Partner, Investment Analyst	Less than 5%
Sanjai Bhonsle	Partner, Portfolio Manager	Less than 5%
Brian Schaub, CFA	Partner, Portfolio Manager	Less than 5%
Chad Meade	Partner, Portfolio Manager	Less than 5%

**Data as of June 30, 2016:**

**Firm's total assets under management:** \$9,234M  
**Total assets under management in this product:** \$500M  
**Institutional assets under management in this product:** \$316M  
**Number of separate accounts in this product:** 6

**Number of stocks in portfolio:** 110  
**Weighted average market cap:** \$1.4B  
*Russell weighted average market cap:* \$1.8B  
**Weighted median market cap:** \$1.1B  
*Russell median market cap:* \$1.8B  
**Historical since 12/16/13 beta\*:** 0.76  
**Historical since 12/16/13 tracking error\*:** 6.9%

**Turnover for the last five calendar years (ending December 31)\*:**

2015: 75.2%  
2014: 68.2%

**Account growth for period ending June 30**

	<b>Number of accounts</b>	<b>Assets under management (Millions)</b>
<b>2012</b>	N/A	N/A
<b>2013</b>	2	\$13
<b>2014</b>	1	\$167
<b>2015</b>	6	\$406
<b>2016</b>	5**	\$440

**Largest Accounts:**

Below are the firm's five largest tax-exempt institutional separate accounts for small cap growth product being considered.

<b><u>Type</u></b>	<b><u>Amount</u></b>
OCIO - Defined Benefit Trust	\$43.8M
Corporate ERISA Pension	\$25.0M
Corporate ERISA Defined Contribution	\$24.5M
Corporate ERISA Defined Contribution	\$17.2M
Public Pension	\$11.9M

\* Arrowpoint as of 1/1/2014, Janus Venture Fund linked returns prior to 2014.

\*\* One client converted to a model only portfolio and is therefore no longer included in the composite.

Returns as of June 30, 2016

	<b>Last Quarter</b>	<b>One Year</b>	<b>Three Years</b>	<b>Five Years</b>	<b>Ten Years</b>	<b>Since Inception (7/1/2010)</b>
<b>Arrowpoint*</b>	6.0	-5.8	14.1	13.7	n/a	18.4
<b>Russell 2000 Growth</b>	<b>3.2</b>	<b>-10.8</b>	<b>7.7</b>	<b>8.5</b>	<b>n/a</b>	13.7
<i>Difference</i>	2.7	5.0	6.4	5.2	n/a	4.7

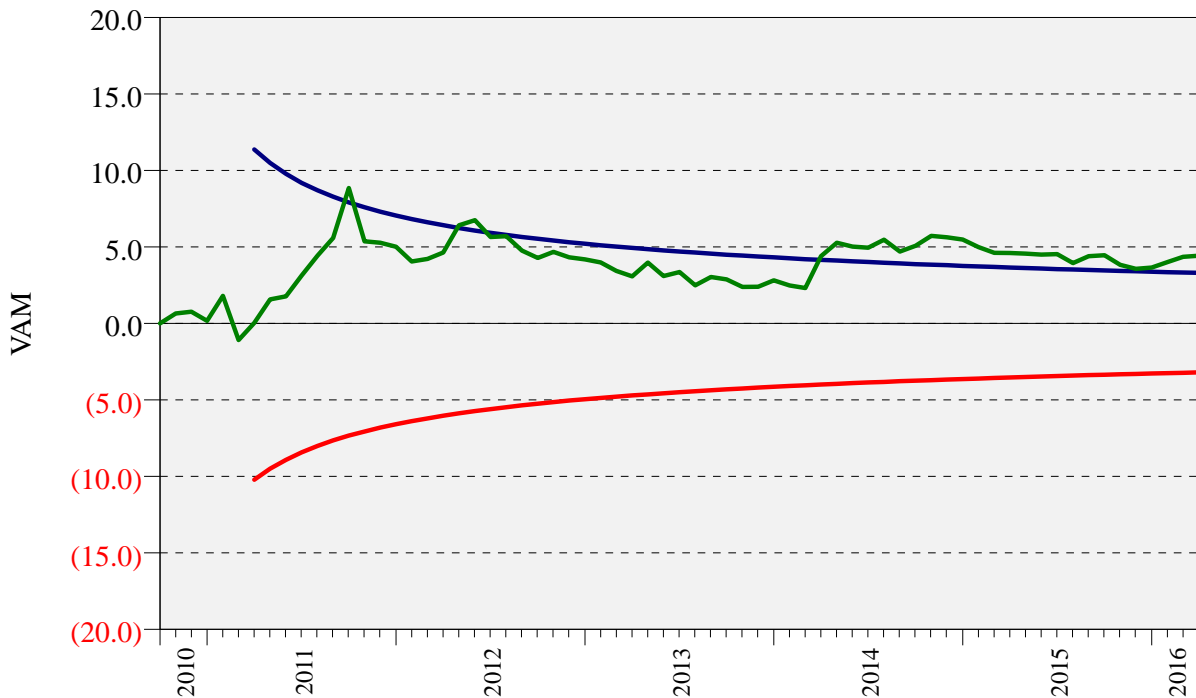
	Year Ending December 31, 2015	Year Ending December 31, 2014	Year Ending December 31, 2013	Year Ending December 31, 2012	Year Ending December 31, 2011
<b>Arrowpoint*</b>	-5.1	21.0	43.0	18.2	3.1
<b>Russell 2000 Growth</b>	<b>-1.4</b>	<b>5.6</b>	<b>43.3</b>	<b>14.6</b>	<b>-2.9</b>
<i>Difference</i>	-3.7	15.4	-0.3	3.6	6.0

\* Arrowpoint as of 1/1/2014, Janus Venture Fund linked returns prior to 2014.

Arrowpoint splice

Cumulative VAM Relative To Russell:2000 Growth

5 1/2 Years Ended March 31, 2016



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# MINNESOTA STATE BOARD OF INVESTMENT

## SUMMARY INFORMATION

<b>Firm Name:</b>	Hood River Capital Management LLC
<b>Name of Product:</b>	Small Cap Growth
<b>Investment Style:</b>	Small Cap Growth
<b>Number of portfolio managers on this product:</b>	3
<b>Number of analysts on this product:</b>	1

### **Investment Philosophy:**

Hood River believes the small cap market is relatively inefficient. This small-cap inefficiency is caused by a variety of factors, including a decline in the quantity and quality of sell-side coverage, higher probability of errors in sell-side models, accessible but under-followed management teams, and pure-play companies whose fundamentals are more volatile than those of their larger-cap counterparts. Small-cap stocks are scrutinized less closely than larger cap ones, which creates an opportunity for research to add value.

In-depth, original research can uncover companies whose future fundamentals, such as sales or earnings, are likely to exceed the market's expectations. Hood River calls this difference between reality and the market's perception the "information gap." Hood River is intently focused on identifying and capturing the information gap in the small-cap market. They pursue a research advantage by speaking to management teams, customers, competitors, suppliers and other primary sources. By generating insight on high quality stocks, they have historically generated outperformance for their clients while taking less risk. Their objective is to outperform the Russell 2000® Growth Index over the course of a market cycle.

### **Investment Process:**

Hood River believes the small cap market is inefficient and their process is designed to profit from those inefficiencies. Their investment process is driven by bottom-up research; they typically do not make top-down decisions for their portfolio.

The first step in their process is to find the best small cap growth companies. Typically, Hood River looks for companies growing at least 15%, with less than a \$3B market cap, with strong cash flows, superior products, increasing market share, and excellent management. The second, and most important step in their process, is to conduct original research into these companies to develop

a proprietary understanding of how the company is currently performing and how it will perform in the future. This means talking to management, customers, suppliers, competitors, and industry experts to gather insights from people with empirical knowledge of the businesses. This research should give them better insight into the company's fundamentals than is held by other investors.

The third step in the process is to forecast a company's earnings based on the inputs obtained from their research. They then compare and contrast their views with the Street's. They are looking for situations where they have a well-founded belief that a company will surpass the expectations of other investors. The fourth and final step in their buy process is to consider valuation, and ensure that they are paying the right price for a company. To this end, they consider valuation multiples compared to a company's own history, its industry, and the market. They hope to achieve at least a 15% appreciation within 12 months before any multiple expansion. In general, high valuations increase risk and suggest the market may know a lot of what they know, so they stay away from such situations.

Once they have identified stocks they like, portfolio construction comes into play. In this step they try to balance risk and return, and typically position sizes reflect the magnitude of the information gap. They also pay close attention to liquidity. The portfolio normally comes together on a bottom-up basis based on their fundamental beliefs about specific stocks. They do not make sector or industry decisions on a top down basis, but, in looking for new ideas, they may gravitate toward or away from sectors based on where they are underweight or overweight. While they monitor factor exposures and expected tracking error portfolio exposures typically look similar enough to the index that they don't need to manage to these metrics.

The final step to Hood River's investment process is their sell discipline. In general, they sell stocks as the information gap disappears. When everything goes right, companies report upside surprises to earnings, and the stocks rise to meet their price targets, by which point they should have taken profits and exited the name. Other factors that lead to sells include a deteriorating thesis, which ideally their research would detect prior to the stock price reflecting that deterioration. In situations where a stock price does decline significantly, they have a weekly "sell criteria meeting" in which they focus on the worst-performing stocks in the portfolio and determine what is happening fundamentally, what additional research may be needed, and what to do with their position. When a stock comes up repeatedly in these meetings, they most frequently trim or sell the position. However, the extent their research indicates that fundamentals are surprisingly good they may hold or even add to their existing position. In general, they pride themselves on not getting emotionally attached to their positions, and they typically aggressively cut positions where their original thesis has been wrong.

## **Portfolio Team**

Brian P. Smoluch, CFA, Portfolio Manager

Brian founded Hood River in 2013 and has 20 years of investment management experience. Before starting Hood River, Brian spent 10 years at Roxbury managing the Small-Cap Growth strategy. Prior to Roxbury, he was a portfolio manager and equity analyst on the small/mid-cap investment team at Columbia Management Group. Previously, he was a financial analyst at Salomon Brothers investment banking in New York. Brian has a B.S. with Distinction from the University of Virginia and an M.B.A. in finance from Harvard University.

**Robert C. Marvin, CFA, Portfolio Manager**

Rob founded Hood River in 2013 and has 24 years of investment management experience. Before starting Hood River, Rob spent 10 years at Roxbury managing the Small-Cap Growth strategy. Prior to Roxbury he was a portfolio manager and equity analyst for the small/mid-cap investment team at Columbia Management Group. Before joining Columbia, he was a vice president and consumer analyst for The Seidler Companies, a boutique research and brokerage firm. Rob began his career as a senior consultant at Deloitte & Touche where he earned his CPA (license inactive). He has a B.S. in business administration from the University of California, Berkeley and an M.B.A. in finance from The Anderson School of Business at UCLA.

**David G. Swank, CFA, Portfolio Manager**

David founded Hood River in 2013 and has 20 years of investment management experience. Before starting Hood River, David spent three years at Roxbury managing the Small-Cap Growth portfolio. Prior to Roxbury, he worked for GMT Capital Corporation as Vice President, Healthcare. Prior to joining GMT Capital, he was with Morgan Stanley Investment Management. He began his investment career as a research associate in 1994 with Furman Selz and later worked at Montgomery Securities. David has a B.S. with Distinction from the University of Virginia and an M.B.A. from the Tuck School of Business at Dartmouth College.

**Rohan B. Kumar, Research Analyst**

Rohan joined Hood River in 2015 as a research analyst and has 6 years of investment experience. Prior to joining Hood River, Rohan was a research analyst at Hawkeye Capital Management. He previously was an analyst at Reliance Capital and began his career as a Component Design Engineer at Intel. Rohan has a Bachelor of Technology in electrical engineering from the Indian Institute of Technology at Kharagpur, a Masters from Harvard's Kennedy School and his M.B.A. from The Wharton School of the University of Pennsylvania.

On January 1, 2013, Brian Smoluch, Robert Marvin and David Swank, formerly of Roxbury Capital Management, restructured Hood River Capital Management, as a majority employee owned firm, to manage their small growth strategy. On 5/31/13, all of the assets under their management at Roxbury transitioned to Hood River.

**Risk Management:**

Hood River uses a number of tools to measure and manage risks in the portfolio. At the most basic level, position sizes are limited to 5% of the portfolio, and sector weights are always within 15 percentage points of the index (and typically within 700 bps). This has helped ensure that no one position will overwhelm the portfolio's returns, and has ensured that the vast majority of their relative performance is attributable to bottom-up stock selection. Beyond that, they are not market timers, and they understand that their clients want them to own small-cap growth stocks. To that end, their portfolio never exceeds 5% cash or 10% non-U.S. equities, and the overall risk profile of the portfolio should look reasonably similar to that of the Russell 2000® Growth Index. To accomplish that risk profile, they monitor various metrics including the portfolio's expected beta, liquidity, market cap profile, exposure to growth, momentum, interest rates, FX and other macro factors. While they do not manage to these metrics because the portfolio organically looks relatively similar to the index, they want to be aware of any implicit positioning in their portfolio.

They also use stress tests based on historical scenarios to further understand how their portfolio might react in different market conditions.

They track risk via a combination of Portfolio Analysis (PA) within FactSet (for portfolio analysis and risk attribution), Bloomberg, and proprietary spreadsheets. Their investment team reviews these risk management reports at least weekly.

### **Ownership:**

Hood River principals, Brian Smoluch, Robert Marvin and David Swank, own 100% of the firm, divided equally among them. Brian Smoluch: 33.33%; Robert Marvin: 33.33%; David Swank: 33.33%

### **Data as of June 30, 2016:**

<b>Firm's total assets under management:</b>	\$766.4M
<b>Total assets under management in this product:</b>	\$766.0M
<b>Institutional assets under management in this product:</b>	\$766.0M
<b>Number of separate accounts in this product:</b>	23

<b>Number of stocks in portfolio:</b>	82
<b>Weighted average market cap:</b>	\$2.2B
<i>Russell weighted average market cap:</i>	<i>\$1.8B</i>
<b>Weighted median market cap:</b>	\$1.9B
<i>Russell median market cap:</i>	<i>\$1.8B</i>
<b>Historical 3 year beta:</b>	0.83
<b>Historical 5 year beta:</b>	0.92
<b>Historical 3 year tracking error:</b>	6.1%
<b>Historical 3 year tracking error:</b>	8.7%

### **Turnover for the last five calendar years (ending December 31):**

2015: 145%
2014: 104%
2013: 111%
2012: 121%
2011: 157%

**Account growth for period ending June 30**

	<b>Number of accounts</b>	<b>Assets under management (Millions)</b>
<b>2012</b>	26	\$623.3
<b>2013</b>	26	\$698.7
<b>2014</b>	22	\$810.8
<b>2015</b>	23	\$810.4
<b>2016</b>	23	\$766.0

**Largest Accounts:**

Below are the firm's five largest tax-exempt institutional separate accounts for small cap growth product being considered.

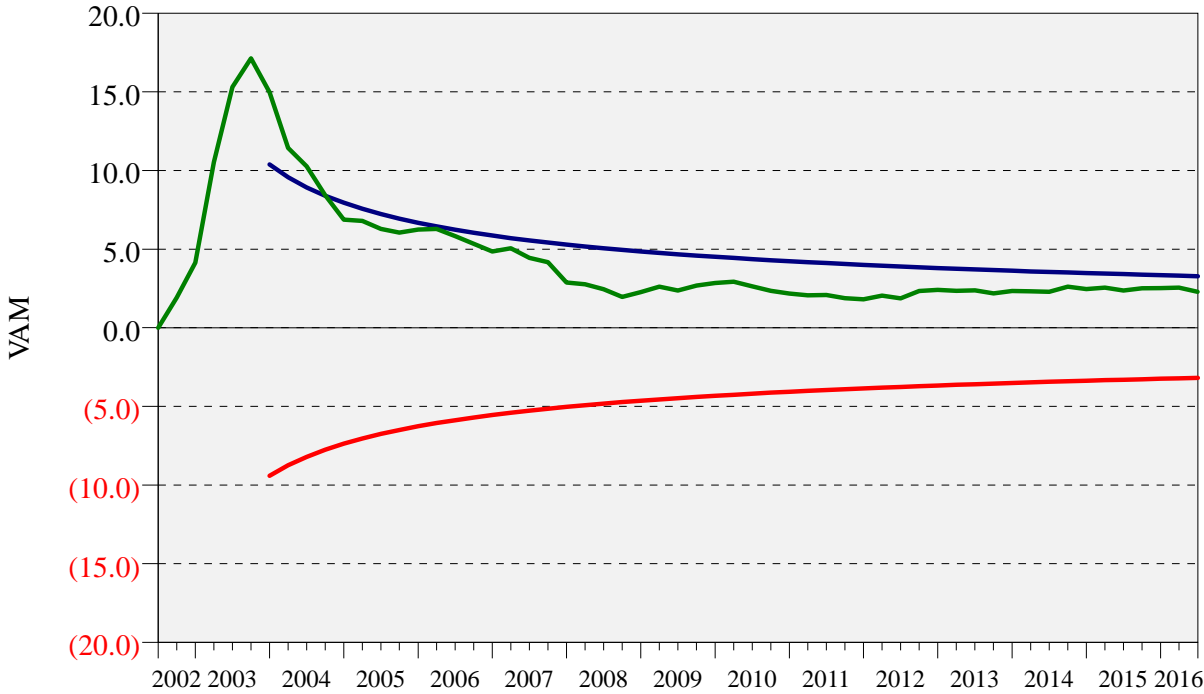
<b><u>Type</u></b>	<b><u>Amount</u></b>
Corporation/DC Plan	\$179.4M
Mutual Fund	\$133.2M
Corporation/DB Plan	\$116.5M
Corporation/DB Plan	\$65.3M
Corporation/DB Plan	\$31.4M

Returns as of June 30, 2016:

	<b>Last Quarter</b>	<b>One Year</b>	<b>Three Years</b>	<b>Five Years</b>	<b>Ten Years</b>	<b>Since Inception (7/1/2002)</b>
<b>Hood River</b>	0.4	-9.5	9.9	11.4	8.1	11.1
<b>Russell 2000 Growth</b>	<b>3.2</b>	<b>-10.8</b>	<b>7.7</b>	<b>8.5</b>	<b>7.1</b>	<b>8.6</b>
<i>Difference</i>	-2.9	1.2	2.1	2.9	1.0	2.5

	<b>Year ending December 2015</b>	<b>Year ending December 2014</b>	<b>Year ending December 2013</b>	<b>Year ending December 2012</b>	<b>Year ending December 2011</b>
<b>Hood River</b>	1.7	9.7	45.7	24.1	-4.2
<b>Russell 2000 Growth</b>	<b>-1.4</b>	<b>5.6</b>	<b>43.3</b>	<b>14.6</b>	<b>-2.9</b>
<i>Difference</i>	3.1	4.1	2.4	9.5	-1.3

Hood River:Sm Cap Growth  
Cumulative VAM Relative To Russell:2000 Growth  
Since Inception Ended June 30, 2016



# MINNESOTA STATE BOARD OF INVESTMENT

## SUMMARY INFORMATION

<b>Firm Name:</b>	Lee Munder Capital Group Investments, LLC
<b>Name of Product:</b>	Small Cap Growth
<b>Investment Style:</b>	Small Cap Growth
<b>Number of portfolio managers on this product:</b>	1
<b>Number of analysts on this product:</b>	3

### **Investment Philosophy:**

Lee Munder Capital Group's (LMCG) Small Cap Growth (SCG) team believes that the small cap growth universe is inefficient and can be exploited by identifying unrecognized growth potential before others. Unrecognized growth potential is growth that is not currently seen or may be misinterpreted or misunderstood. They believe that companies with unrecognized growth potential can be identified by bottom-up, fundamental research accomplished through industry-specific screening models and in-depth knowledge of the driving forces affecting those companies. Key characteristics that help act as a catalyst for recognition are factors such as revenue growth, margin expansion, and positive surprises and revisions. Valuation analysis plays a critical role in establishing a high conviction portfolio and ensuring that they do not overpay for future growth.

The portfolio objective is to seek unrecognized growth potential across all sectors and market environments. The team targets between 300-400 basis points of outperformance on an annualized basis over the Russell 2000 Growth Index, over a full market cycle.

### **Investment Process:**

The Small Cap Growth portfolio is constructed from a bottom up perspective and each investment must go through their investment process of identifying unrecognized growth potential.

Throughout LMCG's fundamental due diligence, they look at revenue growth, margin expansion and the ability to surprise/revise estimates as key characteristics that help lead to recognition of growth potential. Their research process includes detailed financial modeling of revenue, earnings and cash flows. The end result of the research process yields a deep understanding of the most important fundamental drivers of each company.

The strategy is 100% bottom-up and they do not make top-down decisions to set sector or industry weights. In constructing the portfolio they constrain smaller sectors like Energy, Financials, and Staples to 300-500 basis points over/underweight positions relative to the benchmark where larger sectors such as Healthcare, Technology, Consumer Discretionary and Industrials are typically no more than 800-900 basis points over/underweight but can be up to 1000 basis points over/underweight. Initial position sizes are between 50 basis points and 2 percent. The team will take smaller or larger initial positions depending on the risk/reward of each individual security. Increases or decreases in position size are also based upon the risk/reward of each stock.

Portfolio Manager Andrew Morey is responsible for the investment strategy and has the ultimate decision-making authority and accountability for all investment decisions, including portfolio construction and security selection. He is actively involved at all stages of the research process.

All Growth team members have research responsibilities. Each member of the team is responsible for covering certain sectors. Portfolio Manager Andrew Morey covers Healthcare, Energy, Financials, IT and Industrials. Analyst Sri Anantha is responsible for Technology, Business Services and Telecommunications. Analyst Bryan Lassiter is responsible for Consumer Discretionary & Staples, Industrials, and Materials. Analyst David Cavanaugh covers Financials, Business Services, and Consumer Discretionary.

The strategy's sell discipline is based on one of four factors: 1) Achievement of price objective (all securities in the portfolio are assigned a price target that is internally derived); 2) Developments alter their original thesis; 3) A loss of confidence in the management team; or 4) A more attractive alternative allows for better deployment of capital.

## **Portfolio Team**

Andrew Morey, CFA – Managing Director, Growth Equities

Andrew Morey joined LMCG in January 2012 as Portfolio Manager of the Small Cap Growth and Small/Mid Cap Growth strategies by virtue of LMCG's acquisition of Crosswind Investments, LLC. Prior to joining LMCG, Mr. Morey was a Partner with Crosswind Investments, LLC and the portfolio manager for the Crosswind Small and Small/Mid Cap strategies. Mr. Morey was also the founder and lead portfolio manager of Tartan Partners, LLC. Prior to Tartan Partners, Mr. Morey worked at State Street Research & Management from 1995-2005. Mr. Morey was also a research analyst for Gabelli & Co. from 1994-1995 and worked as a research analyst for Kidder Peabody from 1991-1993. Mr. holds a B.A. from Vanderbilt University and an M.B.A. from Columbia Business School.

Srinivas Anantha, CFA – Senior Analyst, Growth Equities

Srinivas Anantha joined LMCG in January 2012 as an Analyst for the Growth team by virtue of LMCG's acquisition of Crosswind Investments, LLC. Prior to joining LMCG, Mr. Anantha was an analyst for the Small Cap Growth and Small/Mid Cap Growth strategies at Crosswind Investments, LLC. Prior to working at Crosswind, he was a senior analyst at Oppenheimer & Co. Mr. Anantha holds a B.S. in electronics and telecommunications engineering from Madras University and an M.B.A. from Loyola University Chicago.



Bryan Lassiter, CFA – Senior Analyst, Growth Equities

Bryan Lassiter currently serves as an Analyst for the Growth team by virtue of LMCG's acquisition of Crosswind Investments, LLC. Prior to joining LMCG in January 2012, Mr. Lassiter was an analyst for the Small Cap Growth and Small/Mid Cap Growth strategies at Crosswind Investments, LLC. Prior to Crosswind, he worked as an investment analyst with Globalt Investments, Inc. Mr. Lassiter holds a BBA in Finance from the University of Georgia and an M.B.A. from Columbia Business School.

David Cavanaugh – Senior Analyst, Growth Equities

David Cavanaugh currently serves as an Analyst for the Growth team. Prior to joining LMCG in July 2015, Mr. Cavanaugh was at Copper Rock Capital Partners LLC for nine years serving as a research analyst and assistant portfolio manager for Small/Mid Cap US equity strategies. Prior to that, he was a research analyst at MFS Investment Management from 1999–2005. Mr. Cavanaugh was also a research analyst at State Street Research & Management covering various financials. Mr. Cavanaugh holds a Bachelor of Science in Finance and Accounting from the Carroll School of Management at Boston College and an M.B.A. in Finance and Accounting from the Wharton School at University of Pennsylvania.

### **Risk Management:**

LMCG's Investment Review Committee is responsible for monitoring and providing oversight of the firm's investment strategies. The Committee is chaired by LMCG's Chief Investment Officer Jeffrey Davis and meets on a quarterly basis. Among the issues reviewed by the Investment Review Committee are:

- Each strategy's adherence to its investment style as communicated to clients, consultants, and prospects.
- Quantitative reports that measure adherence to the defined investment style as needed (FactSet SPAR Analytics software, Barra, FactSet Portfolio Analytics Attribution).
- Evidence of adherence to buy/sell discipline, turnover targets, and individual stock/portfolio summary fundamental characteristics.
- Performance relative to the benchmark and peer group performance comparisons.

In addition to the Chief Investment Officer, the Investment Review Committee is comprised of the Chief Executive Officer, Chief Operating Officer/Chief Compliance Officer, and Managing Director of Operations, along with other compliance and investment staff. Portfolio Manager Andrew Morey attends, as requested, to review the Small Cap Growth strategy.

With regard to Small Cap Growth strategy, risk is defined at the individual stock and portfolio construction levels. They pay particular attention to the risk/reward profile on individual stocks, the position size of each holding, and the relative position size vs. peers and benchmark. They view volatility in small cap as an opportunity because their process takes them deep into the fundamentals of each stock.

They monitor risk daily by viewing the portfolio's relationship to its benchmark through the use of real-time attribution tools in FactSet and Bloomberg. They consider both absolute and relative

performance when measuring risk and return. They also utilize risk reports from BARRA that are run by the Chief Investment Officer, Jeff Davis, and his team of analysts. These are reviewed monthly with interim analyses being performed as needed. BARRA is used to understand the risk and factor exposures to ensure consistency of their investment approach, and to highlight any unintended correlations or factor exposures. They do not constrain the portfolio based on systematic factor risks in the portfolio but monitor and discuss such risks when considering stock inclusion and weighting decisions.

### **Ownership:**

LMCG Investments, LLC (“LMCG”) is a board-managed limited liability company owned by its employees, Lee P. Munder, and Royal Bank of Canada (“RBC”). LMCG operates independently of RBC, a publicly held Canadian bank that on November 2, 2015 acquired City National Corporation, LMCG’s former majority owner.

The firm’s current ownership structure is as follows:

RBC	61%
Lee P. Munder	21%
LMCG Employees	18%

### **Data as of June 30, 2016:**

<b>Firm’s total assets under management:</b>	\$6,932.1M
<b>Total assets under management in this product:</b>	\$675.1M
<b>Institutional assets under management in this product:</b>	\$672.6M
<b>Number of separate accounts in this product:</b>	29

<b>Number of stocks in portfolio:</b>	69
<b>Weighted average market cap:</b>	\$2.7B
<i>Russell weighted average market cap:</i>	<i>\$1.8B</i>
<b>Weighted median market cap:</b>	\$2.2B
<i>Russell median market cap:</i>	<i>\$1.8B</i>
<b>Historical 3 year beta:</b>	0.97
<b>Historical 5 year beta:</b>	1.02
<b>Historical 3 year tracking error:</b>	6.0%
<b>Historical 3 year tracking error:</b>	5.9%

### **Turnover for the last five calendar years (ending December 31):**

2015: 107.4%
2014: 131.1%
2013: 179.1%
2012: 171.9%
2011: 212.0%

### Account growth for period ending June 30

	Number of accounts	Assets under management (Millions)
2012	5	\$50.8
2013	6	\$97.0
2014	13	\$135.2
2015	22	\$337.3
2016	29	\$675.1

### Largest Accounts:

Below are the firm's five largest tax-exempt institutional separate accounts for small cap growth product being considered.

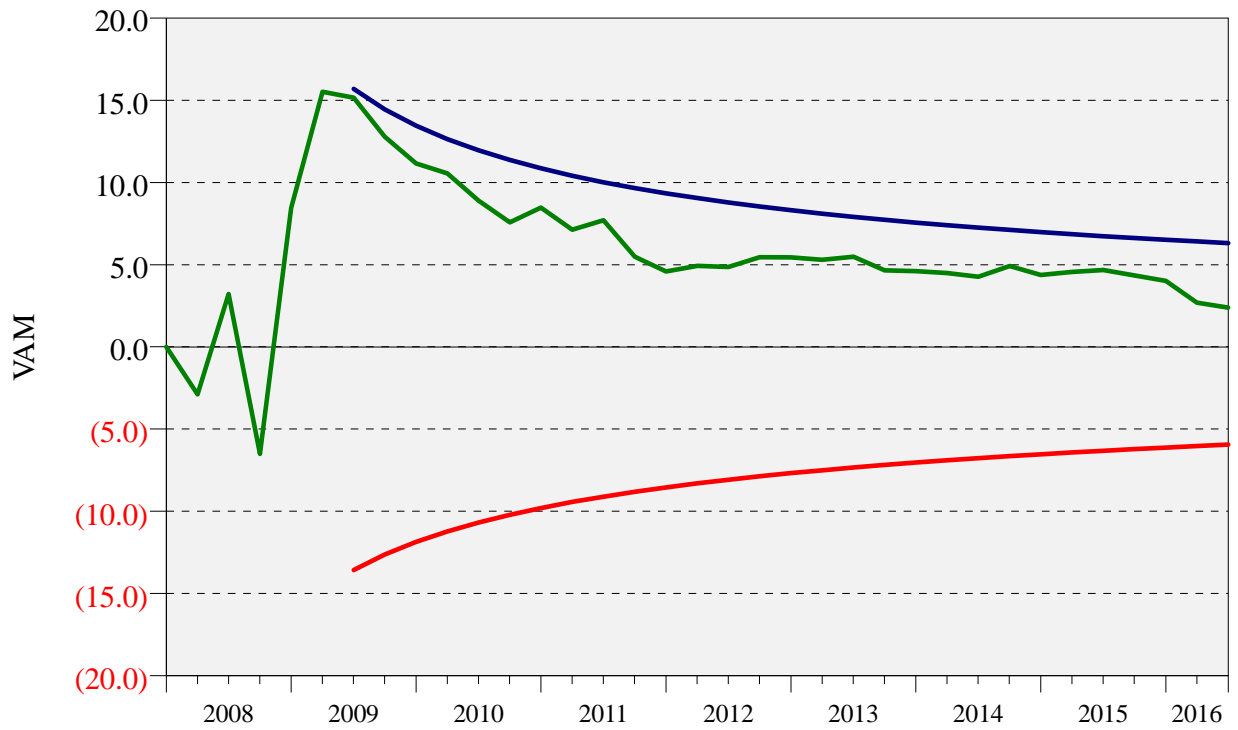
<u>Type</u>	<u>Amount</u>
Public Pension	\$40M
Public Pension	\$31M
Public Pension	\$28M
Corporate	\$26M
Public Pension	\$15M

Returns as of June 30, 2016

	Last Quarter	One Year	Three Years	Five Years	Ten Years	Since Inception (1/1/2008)
<b>Lee Munder</b>	1.4	-22.5	4.5	7.3	n/a	9.3
<b>Russell 2000 Growth</b>	<b>3.2</b>	<b>-10.8</b>	<b>7.7</b>	<b>8.5</b>	<b>n/a</b>	<b>6.8</b>
<i>Difference</i>	-1.8	-11.8	-3.3	-1.3	n/a	2.6

	Year ending December 2015	Year ending December 2014	Year ending December 2013	Year ending December 2012	Year ending December 2011
<b>Lee Munder</b>	0.1	8.9	44.1	24.8	-9.0
<b>Russell 2000 Growth</b>	<b>-1.4</b>	<b>5.6</b>	<b>43.3</b>	<b>14.6</b>	<b>-2.9</b>
<i>Difference</i>	1.5	3.3	0.8	10.2	-6.1

LMCG:Small Cap Growth  
Cumulative VAM Relative To Russell:2000 Growth  
Since Inception Ended June 30, 2016



# MINNESOTA STATE BOARD OF INVESTMENT

## SUMMARY INFORMATION

<b>Firm Name:</b>	Rice Hall James & Associates, LLC
<b>Name of Product:</b>	Small Cap Opportunities
<b>Investment Style:</b>	Small Cap Growth
<b>Number of portfolio managers on this product:</b>	2
<b>Number of analysts on this product:</b>	1

### **Investment Philosophy:**

Rice Hall James (RHJ) believes that superior risk-adjusted performance can be achieved by creating a diversified portfolio of companies that have three primary characteristics: 1) above-average earnings growth, 2) high or improving return on invested capital and 3) sustainable competitive advantages. Having studied historical returns for small cap companies, RHJ believes that earnings-per-share (EPS) growth alone is not a comprehensive determinant of outperformance relative to benchmark. However, over longer holding periods, companies exhibiting EPS growth in combination with high or improving returns on invested capital consistently show strong outperformance relative to a benchmark. This observation provides the foundation for both their philosophy and the criteria they seek out for potential investments. RHJ believes that a disciplined, fundamental, bottom-up research process best serves the search for these types of companies.

Since strong relative results tend to manifest over longer holding periods, RHJ focuses on long-term sustainability factors rather than short-term data points and market movements. As such, low turnover is a notable characteristic of their portfolio. This feature is consistent with their inclusion of only high-conviction, long-term ideas and the resulting lower turnover which helps mitigate unnecessary cost and transaction risk for clients.

### **Investment Process:**

The heart of RHJ's process is fundamental, bottom-up analysis at the company level. The portfolio managers conduct all research on every company held in the portfolio. As generalists, each with over twenty years of investment experience, both portfolio managers bring extensive knowledge of the companies they own or follow, understanding of industries, and general expertise on the small cap landscape in various market environments. Cornerstones of their bottom-up, fundamental investment process include:

- Clear understanding of a firm's competitive context and advantages.
- Assessment of the sustainability characteristics of the underlying business.
- Emphasis on high or improving returns on invested capital (ROIC); a clear sense of the future direction of ROIC.
- Estimation of ability to generate and grow free cash flow over the life of the investment.
- Valuation that affords a reasonable return over investment horizon.
- Scrutiny of company management, ability to identify/ execute on the right plan.

Idea generation begins with an analysis of the industries comprising the Russell 2000 Index, focusing on growth-oriented industries comprised of companies that feature high earnings growth and high ROIC criteria. Health Care, Technology, Consumer Discretionary and Consumer Staples traditionally have been rich with such companies.

RHJ also looks for new or emerging industries that can support high growth companies going forward. While these types of investments typically carry more risk, certain areas of the internet and biotechnology, for example, can create space for attractive long-term growth characteristics.

Finally, RHJ looks for catalysts within industries that are not typically associated with growth characteristics and seek to capitalize on tactical growth opportunities that arise due to demographic, regulatory and supply/demand issues. Cyclical industries can provide the landscape for attractive growth opportunities to occur due to such changes.

At the company level, they focus on businesses that can generate above-average earnings and free cash flow relative to the benchmark. RHJ favors companies that they believe can achieve these results in tandem with sustained high ROIC, or that can increase their returns to above-average levels over RHJ's investment horizon. It is essential that a company can protect these attributes through a well-defined, competitive position, which will protect growth, margins and returns.

In order to identify risks that could potentially undermine the investment thesis, portfolio managers conduct in-depth research geared at understanding the business and ascertaining the competency of management. Management meetings are an important part of vetting companies that RHJ believes meet their investment criteria and are viable investment candidates.

Valuation analysis is essential in confirming that current valuation affords reasonable upside for a particular investment. Per the philosophy that governs this portfolio, valuation discipline is a critical element in delivering long-term results and is a key step in the portfolio construction process.

Portfolio managers typically collaborate on developing an idea after reaching an initial conclusion that a company meets their investment criteria. Over a period of time, discussions ensue between the portfolio managers regarding the merits of the investment candidate. As the thesis matures and more questions arise, the team conducts additional research. Management meetings are an important part of vetting companies that they believe meet their investment criteria and are viable investment candidates.

The portfolio managers jointly review all potential investments believed to satisfy three primary criteria - future EPS growth, high or improving return on ROIC, and a strong competitive advantage. If consensus is reached on the viability of the investment idea according to the criteria, valuation analysis is the next step. Valuation methods focus on discounted cash flows, future free cash flow yield, and comparable company analysis. Companies that exhibit all three primary investment characteristics but do not satisfy valuation requirements are kept on a list for future portfolio consideration.

While no company finds its way into the portfolio without collaborative analysis and rigorous debate, buy and sell decisions do not require consensus, and a portfolio manager may nonetheless act on the investment idea, albeit at a smaller position.

Additionally, the portfolio managers define the role of each stock in the portfolio as “Growth,” “Aggressive Growth,” or “Moderate Growth.” These roles are constructed to balance the growth/upside potential versus the risks introduced by each stock.

Securities in the “Growth” category, which constitutes 40% to 80% of the portfolio, must be either a leader in their industry, or gaining market share, and must exhibit sustainable competitive advantages driving growth. In addition, the company must exhibit a growth rate relatively higher than the Russell 2000 Growth Index. Confidence in management is also an important consideration. “Aggressive Growth” holdings, which make up typically 10% to 30% of the portfolio, generally are either found in emerging/high growth industries or involve unique/turnaround stories, growth rates higher than the Russell 2000 Growth Index, and higher risk attributes. “Moderate Growth” holdings, also 10% to 30% of the portfolio, are characterized by a dominant industry position, relatively lower growth rate compared with the Russell 2000 Growth Index, and free cash flow generation.

Individual positions are limited to 6%, and sector limits are +/-1000 basis points relative to the Russell 2000 Growth Index. The portfolio is expected to have high weightings in traditional growth sectors such as Technology, Health Care, Consumer Discretionary and Consumer Staples. The portfolio usually contains between 50-70 stocks, and is generally fully invested with cash below 5%.

The sell discipline is a function of a review and violation of one or more of the following: change in fundamentals or competitive advantages; missing guideposts; change of management; or relative valuation. Identification of deterioration in any of the factors listed above will result in an immediate review of the investment thesis. The investment team will speak or meet with management to assess their view of the situation and associated risks. If the investment team views the situation as an anomaly and/or temporary in nature, no action will be taken; in fact the situation may be used as a buying opportunity. However, if the situation is viewed as a longer term negative change to the investment thesis, the position will be reduced or eliminated. The primary source of turnover in the portfolio is relative valuation. Securities achieving price targets are reduced or eliminated for other securities that meet the three primary investment criteria and have a more attractive valuation.

## **Portfolio Team**

Lou Holtz, CFA, Portfolio Manager

Lou is a portfolio manager who joined RHJ in October 2008 and has 25 years of investment experience. Prior to joining the firm he was a Managing Director and Portfolio Manager at Engemann Asset Management. Prior to that, Lou was a business valuation analyst at a national independent appraisal firm and an analyst for a regional real estate appraisal firm. Lou holds a Bachelor of Arts degree in business economics with honors from the University of California, Santa Barbara and an M.B.A. with an emphasis in finance from the University of Southern California.

Yossi Lipsker, CFA, Portfolio Manager

Yossi is a portfolio manager who joined RHJ in October 2008 and has 22 years of investment experience. Prior to joining the firm he was a Managing Director and Portfolio Manager at Engemann Asset Management. He received an M.B.A. with an emphasis in finance from Columbia Business School. Additionally, Yossi holds a B.R.S. degree in religious studies from the Rabbinical College of America.

Douglas L. Tran, Investment Analyst

Douglas is an analyst and joined RHJ in July 2014. He graduated in 2014 from the University of Southern California with a B.S. in Business Administration. While at USC, he was involved in the Undergraduate Student Investment Fund, where he was responsible for the Telecommunications and Energy sectors.

## **Risk Management:**

Risk is measured, at the portfolio level, by portfolio beta. At the stock level, risk is assessed as the probability of permanent loss of capital. Risk management and monitoring is the responsibility of the portfolio managers/analysts, and these metrics are generated and monitored with the support of Axioma's risk analysis software and FactSet's Portfolio Analysis tool.

Idiosyncratic, or stock-specific risk, has historically driven portfolio performance and thus, in their view, constitutes the most instructive angle for risk analysis and monitoring. They believe that by managing their exposures to the "Aggressive Growth," "Growth," and "Moderate Growth" categories, they are able to monitor and diversify the types of risk driving investment outcomes for their holdings.

Through the establishment of "guideposts," they identify, analyze and closely monitor the individual, stock-specific risks introduced by every holding in a portfolio. Guideposts are factors that they can measure and monitor in an effort to identify deteriorating fundamentals before they are reflected in a company's earnings, valuation, and stock price. These guideposts are a risk management tool used to assess the quality and execution of a company's business plan. A company's failure to meet one or more guideposts triggers a review of their investment thesis that includes discussion with management and may result in reduction or elimination of a position. Their goal is to use guideposts as leading indicators of deteriorating fundamentals, allowing the investment team to identify objectively and mitigate the risks associated with each company's business model.



Further mechanisms for risk management include diversification by category (aggressive growth, growth, and moderate growth). A stock's category is determined by risk attributes, and the system seeks to ensure that that higher-risk, high-octane growth ideas are balanced against steady, longer-term growers they believe are less susceptible to binary outcomes or steep downswings. The team also evaluates correlation among the largest position sizes, and sector constraints help ensure diversification among industries and themes, and should be supportive of lower tracking risk.

### **Ownership:**

Rice Hall James & Associates is a 100% employee-owned, Limited Liability Company. Ownership percentages, which are consistent with RHJ's Form ADV, are as follows:

Thomas W. McDowell – More than 25% but less than 50%  
 Cara M. Thome – More than 10% but less than 25%  
 Timothy A. Todaro – More than 10% but less than 25%  
 Gary S. Rice – More than 10% but less than 25%  
 Thao N. Buuhoan – More than 10% but less than 25%  
 Carl M. Obeck – More than 5% but less than 10%  
 Reed M. Wirick – Less than 5%

Please note as of July 31, 2016, RHJ will have further diversified its ownership structure by granting equity to Portfolio Managers, George Kruntchev, Lou Holtz and Yossi Lipsker, and Vice President, Mike Meoli; thus expanding the overall ownership to eleven shareholders. With the additional shareholders, RHJ remains an independent, 100% employee-owned firm, which—based on four decades of experience—is a business model RHJ believes best serves its clients.

### **Data as of June 30, 2016:**

<b>Firm's total assets under management:</b>	\$2,257.16 million
<b>Total assets under management in this product:</b>	\$823.04 million
<b>Institutional assets under management in this product:</b>	\$609.95 million
<b>Number of separate accounts in this product:</b>	18
<b>Number of stocks in portfolio:</b>	65
<b>Weighted average market cap:</b>	\$2.04B
<i>Russell weighted average market cap:</i>	<i>\$1.8B</i>
<b>Weighted median market cap:</b>	\$1.69B
<i>Russell median market cap:</i>	<i>\$1.8B</i>
<b>Historical 3 year beta:</b>	0.89
<b>Historical 5 year beta:</b>	0.85
<b>Historical 3 year tracking error:</b>	5.2%
<b>Historical 3 year tracking error:</b>	5.6%

**Turnover for the last five calendar years (ending December 31):**

2015: 34%  
 2014: 22%  
 2013: 34%  
 2012: 28%  
 2011: 13%

**Account growth for period ending June 30**

	Number of accounts	Assets under management (Millions)
<b>2012</b>	2	\$30.02
<b>2013</b>	4	\$51.29
<b>2014</b>	39	\$207.97
<b>2015</b>	89	\$620.30
<b>2016</b>	118	\$823.04

**Largest Accounts:**

Below are the firm's five largest tax-exempt institutional separate accounts for small cap growth product being considered.

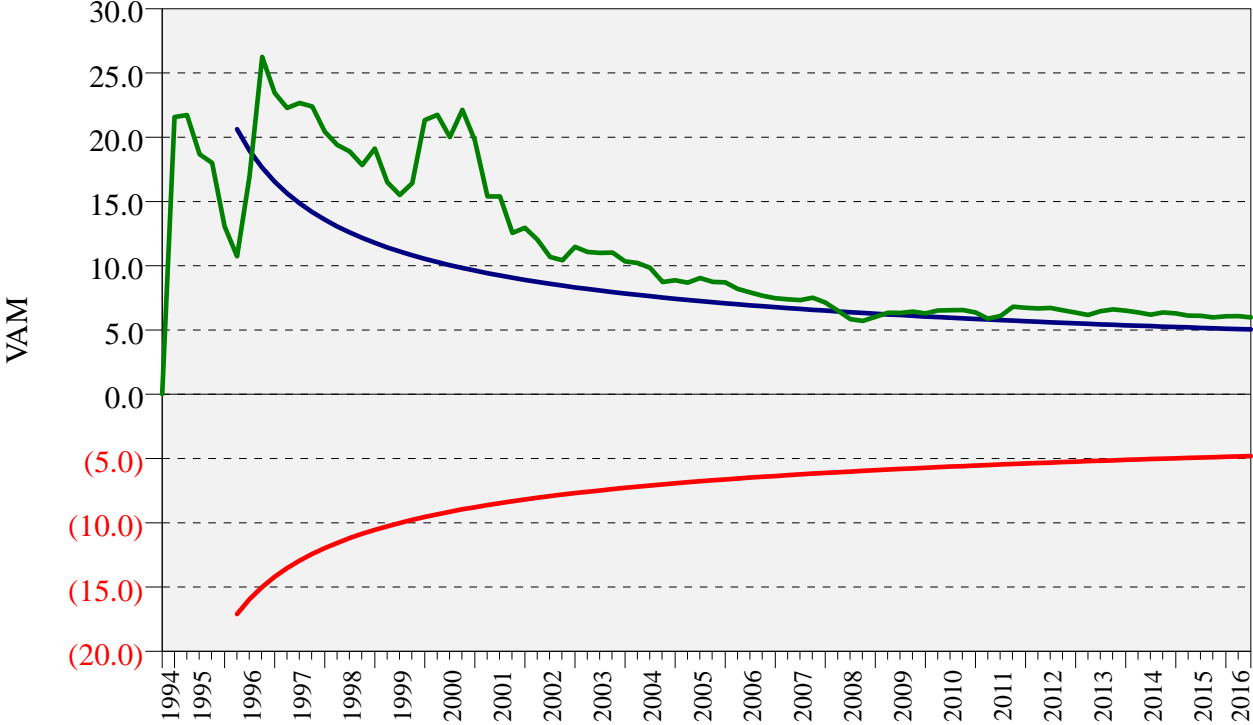
<u>Type</u>	<u>Amount</u>
Public	\$190M
Endowment	\$ 50M
Corporate	\$ 32M
Public	\$ 28M
Taft-Hartley	\$ 21M

Returns as of June 30, 2016

	Last Quarter	One Year	Three Years	Five Years	Ten Years	Since Inception (10/1/94)
<b>Rice Hall James</b>	2.7	-7.9	10.9	14.6	11.1	13.4
<b>Russell 2000 Growth</b>	<b>3.2</b>	<b>-10.8</b>	<b>7.7</b>	<b>8.5</b>	<b>7.1</b>	<b>7.0</b>
<i>Difference</i>	-0.5	2.9	3.1	6.1	4.0	6.4

	Year ending December 2015	Year ending December 2014	Year ending December 2013	Year ending December 2012	Year ending December 2011
<b>Rice Hall James</b>	-0.1	8.4	56.3	14.6	9.6
<b>Russell 2000 Growth</b>	<b>-1.4</b>	<b>5.6</b>	<b>43.3</b>	<b>14.6</b>	<b>-2.9</b>
<i>Difference</i>	1.3	2.8	13.0	0.0	12.5

RHJ:Small Cap Opportunities  
 Cumulative VAM Relative To Russell:2000 Growth  
 Since Inception Ended June 30, 2016



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# MINNESOTA STATE BOARD OF INVESTMENT

## SUMMARY INFORMATION

**Firm Name:** Wellington Management Company LLP

**Name of Product:** Disciplined US Small Cap Growth

**Investment Style:** Small Cap Growth

**Number of portfolio managers on this product:** 1

**Number of analysts on this product:** 2

### **Investment Philosophy:**

The objective of the Disciplined US Small Cap Growth Portfolio is long-term, risk-adjusted returns in excess of the Russell 2000 Growth Index. Central to the investment process is intense, fundamental research focused on uncovering companies with improving quality metrics, business momentum, and attractive relative valuations. Portfolio construction emphasizes stock specific risk while minimizing other sources of active risk. The goal is a portfolio whose relative performance is not dependent on the market environment.

The Disciplined US Small Cap Growth investment philosophy is based on the following core beliefs:

- Changes in the quality of a company's fundamentals are often not reflected in its stock price.
- The persistence of a company's fundamentals is frequently underestimated by the market.
- Active managers frequently underestimate the range of possible outcomes when evaluating an investment idea.

### **Investment Process:**

The Disciplined US Small Cap Growth stock selection process is derived from Wellington's observation that the quality and persistence of a company's business is often not reflected in its current stock price. Central to the investment process is intense, fundamental research focused on uncovering companies with improving quality metrics, business momentum, and attractive relative valuations.

The initial investment universe is comprised of:

- Securities held in the Russell 2000 Growth Index and S&P 600 Growth Index.
- Equity securities within the market-cap range of the index with historical or projected growth rates greater than the Russell 2000 Growth Index median.

The investment process is aided by a proprietary screening process that narrows the investment universe to companies that are consistent with the investment philosophy. An internally developed, multi-factor model is employed to systematically capture business improvements and identify relative mis-valuations. Measures of quality improvement include capital structure and intensity, return on assets, and cash generation potential. Fundamental momentum factors incorporate revenue and earnings momentum/surprise, analyst revisions, and margin trends. Valuation metrics consist of both cash flow and earnings ratios applied on an industry-relative basis.

The investment team spends most of its time conducting fundamental research on companies identified by the screening process. Research emphasizes the sustainability of a company's competitive advantages, revenue and margin drivers, and cash generation capacity. Other important considerations include capital allocation discipline, off financial statement factors, management track record, and analysis of products and competition.

The research process relies on extensive management meetings and a high level of collaboration between the investment team and Wellington Management's global industry analysts and other team analysts to produce forecast models and long-term valuation targets. The majority of their research is the result of direct contact with company management in their offices, on site, and at conferences. Wellington also incorporates a great deal of information by talking to competitors, suppliers, and vendors. They consider their ability to make independent evaluations and to establish their own research priorities central to their ability to produce superior returns for their clients.

Wellington views portfolio construction as a separate, but equally important, component of the investment process. Their approach to portfolio construction is based on their observation that active managers frequently underestimate the range of outcomes when assessing an investment idea. As such, conviction tends to be overstated. They recognize this uncertainty and explicitly incorporate the risk characteristics of stocks when setting position sizes. This practice leads to superior diversification of risk across stocks and limits the impact of negative surprises.

The investment team uses a proprietary, portfolio construction tool to focus active risk on stock selection and to control beta. Uncompensated risks such as style and cycle exposures are minimized. The goal is a portfolio whose relative performance is largely independent of the market environment. Consistent with their longer-term investment perspective, they incorporate anticipated transaction costs when making buy and sell decisions, which supports lower turnover.

The portfolio is fully invested in equity securities traded on an U.S. exchange with market capitalizations generally within the range of the benchmark. Residual cash is generally limited to 3% of portfolio assets. The portfolio is diversified across 150 – 200 securities with individual position sizes typically limited to 3% of assets. Generally, sector exposure differences from the benchmark are a residual of the bottom-up process and will not exceed  $\pm 3\%$ , with a limit of 5% relative to the benchmark. Projected tracking risk is expected to be within a range of 3% – 5% and projected beta within a range of 0.95 – 1.05. The Portfolio Manager is very conscious of the performance drag that trading costs can have on performance, and as such, aims to keep turnover below 60% per annum in most market environments.

For the Disciplined US Small Cap Growth strategy, they expect that stock selection will be the dominant driver of relative performance over time. Portfolio construction is driven by stock selection, with sector/industry weightings being a residual of the bottom-up process.

They sell companies that no longer demonstrate improving quality or exhibit strong fundamental momentum; where fundamentals have changed leading to less confidence in risk/reward assessment; when there are more attractive alternatives; the risk/reward assessment is no longer favorable after the stock has appreciated.

### **Portfolio Team**

**Mammen Chally, CFA, Senior Managing Director, Partner, and Equity Portfolio Manager**  
Mammen is a portfolio manager in Global Equity Portfolio Management and the leader of the firm's Disciplined Equity Team. Prior to joining Wellington Management in 1994, Mammen worked for the Gas Authority of India Limited, New Delhi, India (1989 – 1992). Mammen earned his MBA from Northeastern University (1994) and his bachelor of technology in mechanical engineering from the Indian Institute of Technology (1989).

**Douglas W. McLane, CFA, Managing Director and Equity Research Analyst**  
Doug is an equity research analyst in Global Equity Portfolio Management on the Disciplined Equity Team. Prior to joining Wellington Management in 2011, Doug worked as a portfolio manager at Samlyn Capital (2009 – 2011) and an analyst at Sirios Capital Management (2003 – 2009). Before earning his MBA, he held a variety of positions at Kozmo.com (1999 – 2001) and The Carson Group (1996 – 1999). Doug earned his MBA from the Kellogg School of Management at Northwestern University (2003) and his BA in history from Princeton University (1996).

**David A. Siegle, CFA, Managing Director and Equity Research Analyst**  
David is an equity research analyst in Global Equity Portfolio Management on the Disciplined Equity Team. Prior to joining the Disciplined Equity Team in 2008, David worked as an equity research analyst on the Global and International Growth Team (2007 – 2008). Before that, he worked as an analyst in the Quantitative Investment Group (2003 – 2007) and as a client service analyst in the Global Relationship Management Group (2001 – 2003). David earned his BA in history from Amherst College (2001).

**Michael P. McElroy, CFA, Managing Director and Investment Director, Equity Product Management**  
Mike is an investment director in Equity Product Management. Prior to joining Wellington Management in 2013, Mike worked at Batterymarch Financial Management, where he was senior portfolio manager and head of global equities (2005 – 2013). Before that, he worked at Citigroup Asset Management in London as managing director and head of global equities (2000 – 2005), at Independence Investment Associates as senior vice president and director of quantitative research (1991 – 2000), and at Digital Equipment Corporation as a consultant (1989 – 1991). He began his career as an associate at Intermarket Capital Associates (1987 – 1989). Mike received both an MS in management and an MS in transportation planning from the Massachusetts Institute of Technology (1992), and a BS in applied mathematics from the Massachusetts Institute of Technology (1987).

## **Risk Management:**

There are several groups within Wellington that are closely involved in the compliance and risk control effort: Portfolio Management, Product Management, the Legal and Compliance Group, and various investment review groups. Each function plays an independent and important role in the compliance and risk monitoring process.

The Portfolio Manager constructs the portfolio with the aid of quantitative portfolio construction tools to ensure active risk is focused on stock selection and the portfolio maintains a consistent growth profile. Other sources of risk are minimized. A key characteristic of the Disciplined US Small Cap Growth Portfolio is intended to be the lack of surprises, and the approach seeks to add value consistently.

Product Management is responsible for monitoring risk on a quantitative basis. Risk is monitored and managed at the security, sector, and total portfolio levels. Wellington measures portfolio risk by comparing a portfolio to its benchmark and a universe of peers, specifically in the form of risk characteristics including tracking risk, standard deviation, Sharpe ratio, and information ratio. They also review key financial ratios and Barra risk factor exposures. They employ multiple technologies (both in-house software and third-party programs) so they are not beholden to a single view of risk management, but rather take a more holistic approach.

## **Ownership:**

The parent company of the Wellington Management organization is Wellington Management Group LLP, a Massachusetts private limited liability partnership owned by 155 partners, all fully active in the business of the firm. Individual percentages of ownership are confidential. However, no single partner owns or has the right to vote more than 5% of the Partnership's capital.

## **Data as of June 30, 2016:**

<b>Firm's total assets under management:</b>	\$942.89 billion
<b>Total assets under management in this product:</b>	\$2,584,202,823
<b>Institutional assets under management in this product:</b>	\$2,584,202,823
<b>Number of separate accounts in this product:</b>	3
<b>Number of stocks in portfolio:</b>	149
<b>Weighted average market cap:</b>	\$2.4B
<i>Russell weighted average market cap:</i>	<i>\$1.8B</i>
<b>Weighted median market cap:</b>	\$1.9B
<i>Russell median market cap:</i>	<i>\$1.8B</i>
<b>Historical 3 year beta:</b>	0.94
<b>Historical 5 year beta:</b>	0.97
<b>Historical 3 year tracking error:</b>	3.2%
<b>Historical 3 year tracking error:</b>	2.9%



**Turnover for the last five calendar years (ending December 31)**

2015: 53%  
 2014: 41%  
 2013: 37%  
 2012: 56%  
 2011: 45%

**Account growth for period ending June 30**

	<b>Number of accounts</b>	<b>Assets under management (Millions)</b>
<b>2012</b>	4	\$1,132
<b>2013</b>	5	\$1,110
<b>2014</b>	6	\$1,979
<b>2015</b>	7	\$2,913
<b>2016</b>	10	\$2,865

**Largest Accounts:**

Below are the firm's five largest tax-exempt institutional separate accounts for small cap growth product being considered.

<b><u>Type</u></b>	<b><u>Amount</u></b>
Separate Account for Sub-advised mutual fund	\$855M
Separate Account for Sub-advised mutual fund	\$713M
Separate Account for Sub-advised mutual fund	\$463M
Separate Account for Sub-advised mutual fund	\$411M
Insurance Company Pension/General Account assets	\$204M

Returns as of June 30, 2016

	<b>Last Quarter</b>	<b>One Year</b>	<b>Three Years</b>	<b>Five Years</b>	<b>Ten Years</b>	<b>Since Inception (7/1/2001)</b>
<b>Wellington</b>	6.2	-7.1	10.7	11.3	9.6	8.3
<b>Russell 2000 Growth</b>	<b>3.2</b>	<b>-10.8</b>	<b>7.7</b>	<b>8.5</b>	<b>7.1</b>	<b>5.9</b>
<i>Difference</i>	2.9	3.7	3.0	2.8	2.5	2.4

	<b>Year ending December 2015</b>	<b>Year ending December 2014</b>	<b>Year ending December 2013</b>	<b>Year ending December 2012</b>	<b>Year ending December 2011</b>
<b>Wellington</b>	0.9	9.1	47.9	17.7	3.2
<b>Russell 2000 Growth</b>	<b>-1.4</b>	<b>5.6</b>	<b>43.3</b>	<b>14.6</b>	<b>-2.9</b>
<i>Difference</i>	2.3	3.5	4.6	3.1	6.1

Wlghtn:Disc US Sm Cap Growth  
Cumulative VAM Relative To Russell:2000 Growth  
Since Inception Ended June 30, 2016

