

**AGENDA**  
**INVESTMENT ADVISORY COUNCIL MEETING**  
**Monday, February 12, 2018**  
**12:00 P.M.**  
**State Board of Investment**  
**Retirement Systems Building**  
**Room 106 – Main Floor**  
**60 Empire Drive, St. Paul, MN**

- |   |            |
|---|------------|
| <b>1. Approval of Minutes of November 20, 2017</b>                        | <b>TAB</b> |
| <b>2. Report from the Executive Director</b>                              |            |
| A. Quarterly Performance Summary<br>(October 1, 2017 – December 31, 2017) | <b>A</b>   |
| B. Administrative Report  | <b>B</b>   |
| C. Investment Manager Update  | <b>C</b>   |
| <b>3. Proposed Private Markets Commitments</b>                            | <b>D</b>   |
| <b>4. Public Markets, Non-Retirement, and Defined Contribution Report</b> | <b>E</b>   |
| <b>5. AON Market Environment Report</b>                                   | <b>F</b>   |
| <b>6. Comprehensive Performance Report</b>                                | <b>G</b>   |
| <b>7. Portfolio Discussion</b>  |            |
| <b>8. Other Items</b>   |            |

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**INVESTMENT ADVISORY COUNCIL**

**MINUTES**

**February 12, 2018**

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**Minutes  
Investment Advisory Council  
November 20, 2017**

The Investment Advisory Council (IAC) met at 12:00 P.M. on Monday, November 20, 2017 in the Retirement Systems Building, Room 106 – Main Floor, 60 Empire Drive, St. Paul, Minnesota.

**MEMBERS PRESENT:** Doug Anderson, Kerry Brick, Dennis Duerst, Susanna Gibbons, Morris Goodwin Jr., Jennifer Hassemer (for Myron Frans), Erin Leonard, Gary Martin, Malcolm McDonald, Jay Stoffel, and Shawn Wischmeier.

**MEMBERS ABSENT:** Denise Anderson, Kim Faust, Peggy Ingison and Carol Peterfeso.

**SBI STAFF:** Mansco Perry, LeaAnn Stagg, Patricia Ammann, Nate Blumenshine, Cassie Boll, Tammy Brusehaver, Aaron Griga, Ryan Hill, Andrew Krech, Steve Kuettel, Mike Menssen, John Mulé, Jonathan Stacy, Charlene Olson and Melissa Mader.

**OTHERS ATTENDING:** Chris Tucek and Steve Cummings, Aon Hewitt Investment Consulting, Inc.; Allan Emkin and Neil Rue, Pension Consulting Alliance; Bert Black, Secretary of State's Office; Christie Eller, Attorney General's Office; Kim Holmes, Office of the Governor; Ramona Advani, State Auditor's Office; Rick Baert, Pensions & Investments.

The minutes of the August 14, 2017 meeting were approved.

Mr. Perry introduced Jay Stoffel, the new Executive Director of the Teachers Retirement Association who replaced Laurie Hacking.

**Executive Director's Report**

Mr. Perry referred members to Tab A of the meeting materials. Mr. Perry reported that the Combined Funds had outperformed its Composite Index over the ten-year period ending September 30, 2017 (Combined Funds 6.4% vs. Combined Funds-Composite Index 6.1%) and had provided a real rate of return of 5.0 percentage points above inflation over the latest 20 year period (Combined Funds 7.1% vs. CPI 2.1%).

Mr. Perry stated that assets increased over the quarter (Combined Funds ending value of \$66.1 billion versus a beginning value of \$64.1 billion). The Combined Funds exceeded the benchmark for the quarter (Combined Funds 4.0% vs. Combined Funds-Composite Index 3.8%) and were ahead of the benchmark for the year (Combined Funds 15.1% vs. Combined Funds-Composite Index 14.4%). The Combined Funds matched the benchmark over the three-year period and outperformed in all other time periods reported.

Mr. Perry reported that the asset mix, adjusting for the private markets, was on target. He then reported that public equity outperformed its benchmark during the quarter (Public Equity 5.3% vs. Public Equity Benchmark 5.1%). Breaking it down between domestic and international equities, Mr. Perry said that the domestic equity manager group outperformed its benchmark for the quarter (Domestic Equity 4.7% vs. Domestic Equity Benchmark 4.6%) and for the year (Domestic Equity 19.2% vs. Domestic Equity Benchmark 18.7%), but underperformed or matched the benchmark over all other time periods. He stated that the international equity manager group outperformed its target for the quarter (International Equity 6.4% vs. International Equity Benchmark 6.2%) and for the year (International Equity 19.9% vs. International Equity Benchmark 19.6%) and over all remaining time periods shown. Mr. Perry indicated that the fixed income segment outperformed its benchmark for the quarter (Fixed Income 1.0% vs. Fixed Income Benchmark 0.8%) and the year (Fixed Income 1.0% vs. Fixed Income Benchmark 0.1%) and over all other time periods reported. He stated that the private markets investments contributed to performance for the quarter and the year (total Private Markets return of 2.8% and 17.1%, respectively) and also over the longer time periods. Mr. Perry noted that the Combined Funds' return was in the top quartile of the TUCS universe over all time periods. He concluded his report noting that, as of September 30, 2017, the SBI was responsible for managing over \$89.1 billion of assets.

Mr. Perry referred members to Tab B of the meeting materials for the Administrative Report and indicated that the SBI came in below budget for the quarter. Mr. Perry provided an update on the Legislative Auditor's progress. He noted that they had no significant findings and that the final audit letter will be provided to IAC members. Mr. Perry stated that the SBI anticipates distributing its Annual Report in January 2018. He indicated that meeting dates for 2018 for the IAC and the SBI were listed. Mr. Perry then stated that Tab B included the Sudan and Iran legislative updates, and that the SBI was not in any litigation.

Mr. Perry referred members to Tab C and indicated that the annual review of the Public Markets Investment Manager Guidelines was complete. He then stated that the contracts with Mellon Capital Management and Prudential Global Investment Management, for the previously internally managed non-retirement equity and bond pools, respectively, were complete. Mr. Perry informed members that the funding of both managers was scheduled for December 1, 2017, and that prospectuses, notifying participating funds of the change in investment management, had been distributed. Lastly, he stated that all other contracts for outstanding private markets commitments had been negotiated.

Mr. Perry referred members to Tab D, a review of the RFP process and recommendations for Master Custodian Services and for Foreign Tax Advisory Services. Mr. Perry informed members that the master custodian contract expires in April 2018, and that an RFP was issued in July 2017. He noted that staff received bids from State Street Corporation, the incumbent, and Bank of New York (BNY) Mellon. Mr. Perry stated that staff reviewed the two RFP responses and presented the Master Custody Review Committee with their recommendation to retain State Street Corporation. Mr. Perry added that State Street's RFP response contained improved SBI economics, especially in securities lending. The Committee agreed with staff's recommendation. He responded to members' questions and asked for the IAC's endorsement of the recommendation. Mr. Goodwin moved approval of the recommendation and Mr. McDonald seconded the motion. The motion passed.

Mr. Perry referred members to the second item under Tab D, a recommendation for Foreign Tax Advisory Services. Mr. Perry explained that in some of the emerging markets, the SBI must hire a foreign tax advisor. He continued by saying that rather than issuing contracts with multiple organizations, the SBI was seeking the services of one tax advisory firm to consolidate all foreign tax services work. Mr. Perry stated that an RFP was issued and four firms responded. Staff brought two finalists in for interviews and KPMG was selected for the services. Mr. Perry requested authority to negotiate a contract with KPMG. Mr. Duerst moved approval of the recommendation and Ms. Gibbons seconded the motion. The motion passed.

Mr. Perry referred members to Tab E, a memo from Mr. Perry regarding proposed category weights for the new Strategic Allocation Category Framework which was approved by the IAC and Board at their last meetings. He stated that rather than specific target weights, target ranges were being recommended for each strategic category. Mr. Perry explained that AON performed an analysis of five scenarios with sample allocations within each strategic category that would provide expected returns close to the current rate. He reviewed the results of the analysis in terms of expected return, standard deviation and Sharpe Ratios of the five scenarios with the IAC. Mr. Perry stated that the data shows that the SBI could reduce the volatility in the fund with minimal impact on returns by decreasing the weight of assets in the Growth – Appreciation Category and adding to U.S. Treasuries in the Protection Category. He said that across the five scenarios, the standard deviation of 30-year returns was reduced by one hundred to three hundred basis points with a higher Sharpe ratio in each case relative to the current policy weights. He pointed out that the analysis was done with mean variance optimization, which is subject to the validity of the input data. Mr. Perry stated that the resulting recommended ranges for each Strategic Allocation Category was indicated in his report. He recommended funding the Protection Category portfolio first, with an allocation of up to 8% to 10% of the Combined Funds, from publicly-traded equities and Growth-Income assets.

Mr. Perry responded to IAC member questions related to how the fund asset mix was determined, the downside protection of the absolute return strategies within the Protection Category, and the establishment of static weights for each of the strategic allocation categories. Both consultants confirmed that while they see clients using just ranges most clients will also establish a target weight. Mr. Perry also reminded IAC members that there is a statutory maximum of 35% (measured on market value) in private markets investments for the fund and that the SBI's recommendation would be to target a maximum of 30%, again measured on market value, in private markets investments across the Fund. He stated that the goal would be to build the fund up to this allocation over time averaging in on a vintage year basis.

Mr. Perry referred the members' attention to his proposed name changes, as follows, to a few of the strategic allocation categories from his recommendation last quarter: the former "Growth" category to be renamed "Growth – Appreciation", the former "Income" category to be renamed "Growth – Income-oriented", and the former "Real Return" category to be divided into two categories to be named "Real Assets" and "Inflation Protection". In response to questions, Mr. Perry indicated that he expected the weight of each Strategic Allocation Category to be within the proposed ranges and that he anticipates that the Liquidity and Protection buckets combined will have a minimum 10% weight of the fund. Mr. Goodwin noted that the analysis, and its focus on protection and reducing volatility, lowers the probability of achieving the expected return for

the fund. Mr. Perry responded by saying that the fund has as much growth risk in public and private equity as it could ever want to take. He also stated that core bond portfolios do not provide a lot of protection and that the fund has placed too much focus on return and not enough focus on the risk inherent in achieving that return. Mr. Perry stated that U.S. Government bonds are the only real diversifier in the event of an equity market decline.

Mr. Wischmeier asked Mr. Perry what benchmark(s) will be reported for the fund in the Executive Director's report in the quarterly book distributed to the IAC members. Mr. Perry stated that he will additionally introduce a volatility-weighted benchmark. This approach takes the longer term (5 years and longer) standard deviation of the portfolio and solves for the weights of an equity/bond portfolio with the same standard deviation. The similar term (e.g., length in years) return for the equity/bond benchmark becomes the benchmark for comparison to the portfolio. Mr. Goodwin asked a final question about how the "Equity Insurance Risk Premium" under the "Growth-Appreciation" category works. Mr. Perry responded by saying that it is an option writing strategy that some of AON's clients have used but that is not currently used by the SBI. After a discussion, Mr. Goodwin moved approval of the recommendation and Mr. McDonald seconded the motion. The motion passed.

Mr. Perry referred members to the Private Markets Report in Tab F. He commented on the large number of deals (ten) totaling \$1.5 billion being proposed by saying that staff had completed its due diligence and was trying to get ahead of the funding cycle. This will enable the SBI to not miss out on deals, which Mr. Perry indicated had occurred in the past. Mr. Krech and his team appeared before the members. The ten proposed private markets investments were listed in the report, the first eight of which are with existing managers and two of which are new managers: Oaktree Special Situations Fund II (Distress/Opp.), Neuberger Berman Dyal Capital Partners IV (Private Equity), Public Pension Capital (Private Equity), Thomas H. Lee Equity VIII (Private Equity), Warburg Pincus Financial (Private Equity), Windjammer Sr. Equity V (Private Equity), Energy Capital Partners IV (Real Assets), NGP Natural Resources XII (Real Assets), Blackrock Middle Market Senior Fund (Private Credit), and Carlyle Partners VII (Private Equity). Mr. Krech and staff responded to questions from committee members. After discussion, Mr. McDonald moved approval of the ten recommendations and Mr. Wischmeier seconded the motion. The motion passed.

Mr. Perry referred members to the Public Markets Report in Tab G of the meeting materials and noted that it provided an update of the public market managers.

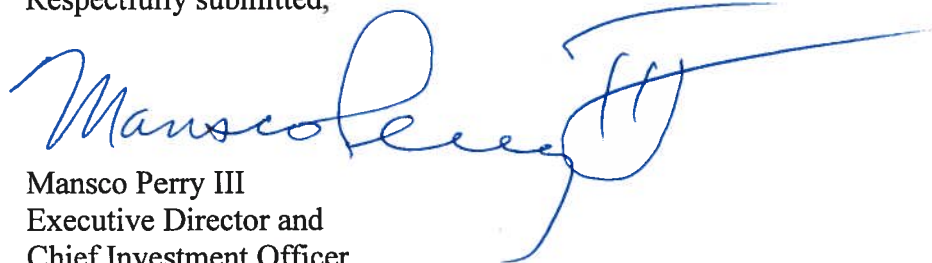
Mr. Perry referred members to Tab H, which contained a new Aon Hewitt Market Environment Summary Report that will be included going forward.



Mr. Perry referred members to Tab I, containing the fund's Comprehensive Performance Report. Lastly, he drew member's attention to the schedule of IAC and Board meetings for calendar year 2018.

The meeting adjourned at 1:48 p.m.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "Mansco Perry III". The signature is stylized and includes a long horizontal flourish extending to the right.

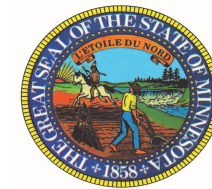
Mansco Perry III  
Executive Director and  
Chief Investment Officer

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TAB

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# Performance Summary

## December 31, 2017



## Combined Funds Long Term Objectives

### Comparison to Objective

#### Match or Exceed Composite Index (10 yr.)

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.

	<u>10 Year</u>
COMBINED FUNDS	6.9%
COMBINED FUNDS - COMPOSITE INDEX	6.7
Excess	0.2

#### Provide Real Return (20 yr.)

Provide returns that are 3-5 percentage points greater than inflation over the latest 20 year period.

	<u>20 Year</u>
COMBINED FUNDS	7.3%
CPI-U	2.2
Excess	5.1

Note:

Throughout this report performance is calculated net of investment management fees, differentials within column amounts may occur due to rounding, and returns for all periods greater than one year are annualized.



## Combined Funds Summary

### Combined Funds Change in Market Value (\$Millions)

	<u>One Quarter</u>
COMBINED FUNDS	
Beginning Market Value	\$66,083
Net Contributions	-597
Investment Return	2,891
Ending Market Value	68,377

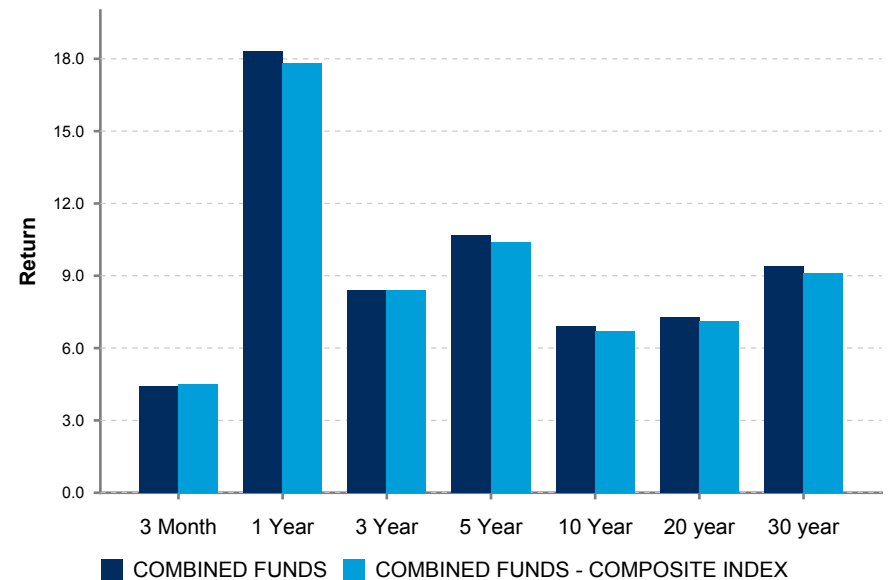
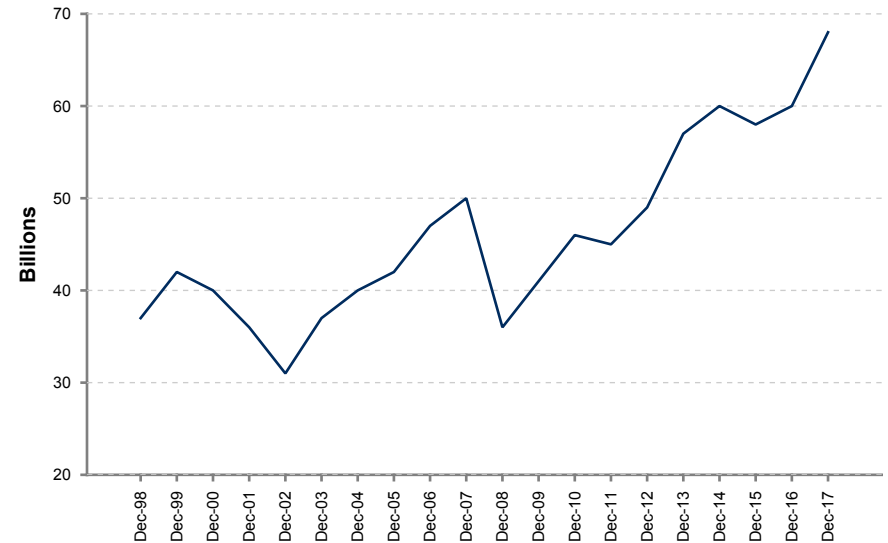
The change in market value of the Combined Funds since the end of last quarter is due to net contributions and investment returns.

### Performance (Net of Fees)

The Combined Funds' performance is evaluated relative to a composite of public market index and private market investment returns. The Composite performance is calculated by multiplying the beginning of month Composite weights and the monthly returns of the asset class benchmarks.

	<u>Qtr</u>	<u>FYTD</u>	<u>1 Yr</u>	<u>3 Yr</u>	<u>5 Yr</u>	<u>10 Yr</u>	<u>20 Yr</u>	<u>30 Yr</u>
COMBINED FUNDS	4.4%	8.6%	18.3%	8.4%	10.7%	6.9%	7.3%	9.4%
COMBINED FUNDS - COMPOSITE INDEX	4.5	8.5	17.8	8.4	10.4	6.7	7.1	9.1
Excess	-0.1	0.1	0.5	-0.0	0.3	0.2	0.1	0.3

### Asset Growth



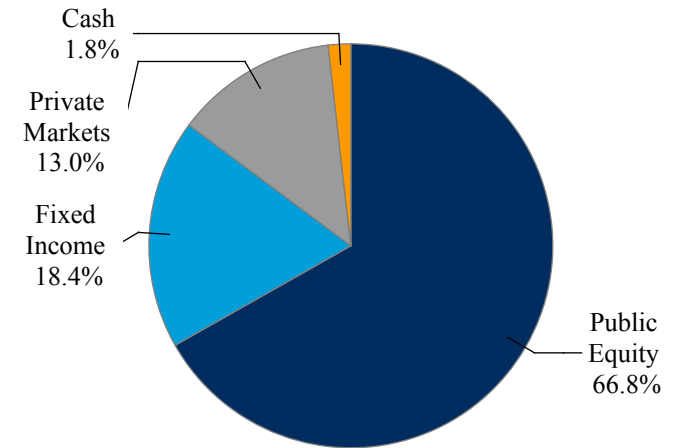


## Combined Funds Summary

### Asset Mix

The Combined Funds actual asset mix relative to the Strategic Asset Allocation Policy Target is shown below. Any uninvested portion of the Private Markets allocation is held in Public Equity.

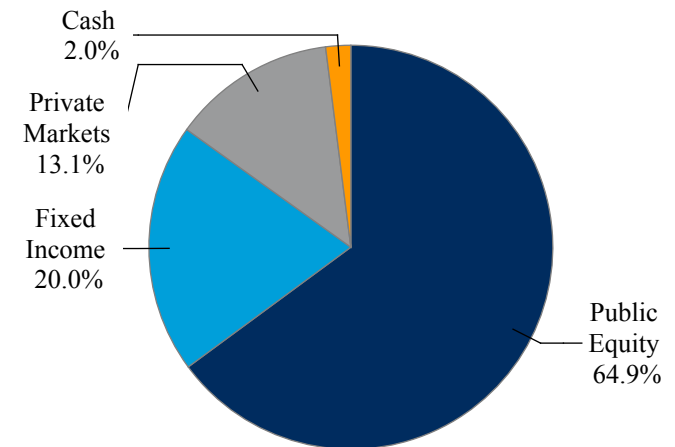
	<u>(Millions)</u>	<u>Actual Mix</u>	<u>Policy Target</u>
Public Equity	\$45,672	66.8%	58.0%
Fixed Income	12,581	18.4	20.0
Private Markets	8,922	13.0	20.0
Cash	1,203	1.8	2.0
<b>TOTAL</b>	<b>68,377</b>	<b>100.0</b>	



### Composite Index Comparison

The Combined Funds Composite is set as the Strategic Asset Allocation Policy Target with the uninvested portion of Private Markets allocated to Public Equity. Asset class weights for Public Equity and Private Markets are reset at the start of each month. The Combined Funds Composite weighting shown below is as of the first day of the quarter.

	<u>Target Weight</u>	<u>Market Index</u>
Public Equity	64.9%	67% Russell 3000/33% MSCI ACWI ex US
Fixed Income	20.0	BB Barclays U.S. Aggregate
Private Markets	13.1	Private Markets
Cash	2.0	3 Month T-Bills







## Combined Funds Asset Class Performance Summary

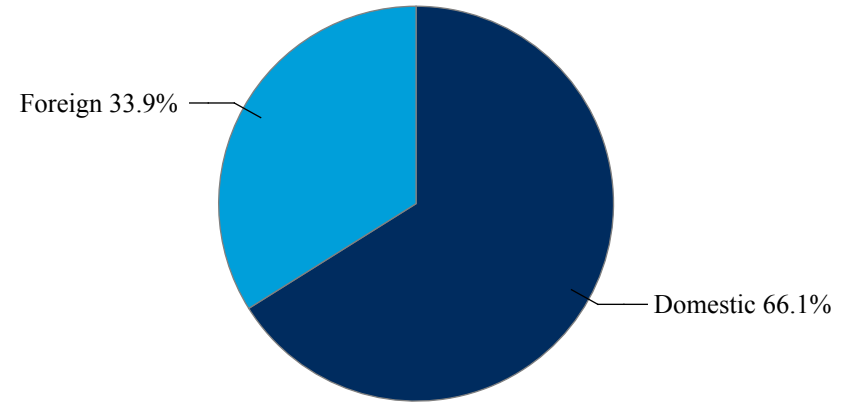
### Public Equity

The Combined Funds Public Equity includes Domestic Equity and International Equity.

The Public Equity benchmark is 67% Russell 3000 and 33% MSCI ACWI ex USA.

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

The Morgan Stanley Capital International All Country World Index ex U.S. (net) is a free float-adjusted market capitalization index that is designed to measure equity market performance in developed and emerging markets other than the United States.



	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>
Public Equity	5.7%	11.2%	23.4%	10.2%	13.6%	7.1%	6.8%
Public Equity Benchmark	5.9	11.3	23.0				
Excess	-0.2	-0.1	0.4				
Domestic Equity	6.2	11.1	21.4	10.7	15.5	8.5	7.0
Domestic Equity Benchmark	6.3	11.2	21.1	11.1	15.6	8.6	7.2
Excess	-0.2	-0.1	0.3	-0.4	-0.0	-0.1	-0.2
International Equity	4.7	11.4	27.7	8.4	7.5	2.3	6.0
International Equity Benchmark	5.0	11.5	27.2	7.8	6.8	1.8	5.6
Excess	-0.3	-0.1	0.5	0.5	0.7	0.5	0.3

Note:

Prior to 6/30/16 the returns of Domestic and International Equity were not reported as a total Public Equity return. For additional information regarding historical asset class performance and benchmarks, please refer to the Combined Funds Performance Report.



## Combined Funds Asset Class Performance Summary

### Fixed Income

The Combined Funds Fixed Income performance is shown here.

The Fixed Income benchmark is the Bloomberg Barclays U.S. Aggregate Index. This 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.

	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>
Fixed Income	0.5%	1.5%	4.2%	2.8%	2.6%	4.5%	5.3%
Fixed Income Benchmark	0.4	1.2	3.5	2.2	2.1	4.0	5.0
Excess	0.1	0.3	0.7	0.6	0.5	0.5	0.3

### Cash

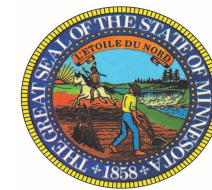
The Combined Funds Cash performance is shown here. Cash is held by the Combined Funds to meet the liquidity needs of the retirement systems to pay benefits.

The Combined Funds Cash benchmark is the iMoneyNet, All Taxable Money Fund Report Average.

	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>
Cash	0.3%	0.6%	1.1%	0.6%	0.5%	0.8%	2.6%
90 DAY T-BILL	0.3	0.5	0.9	0.4	0.3	0.4	2.1
iMoneyNet Money Fund Average-All Taxable	0.2	0.4	0.5	0.2	0.1	0.3	1.8

Note:

For additional information regarding historical asset class performance and benchmarks, please refer to the Combined Funds Performance Report.



## Combined Funds Asset Class Performance Summary

### Private Markets

	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>	<u>25 year</u>	<u>30 year</u>
Private Markets	4.3%	7.2%	18.5%	9.0%	12.1%	8.8%	12.4%	13.3%	12.1%
Private Equity	5.6%	10.7%	22.2%	14.6%	15.4%	10.8%	13.8%	15.5%	
Private Credit	6.0	5.5	17.6	12.5	14.7	10.8	13.1		
Resources	0.5	-0.6	11.8	-8.2	1.7	6.2	12.1	14.6	
Real Estate	3.1	5.6	10.2	10.9	12.6	4.6	8.6	8.8	

### Private Markets

The time-weighted rates of return for the Private Markets portfolio are shown here. Private Markets included Private Equity, Private Credit, Resources, and Real Estate. Some of the existing investments are relatively immature and returns may not be indicative of future results.

### Private Equity Investments

The objectives of the Private Equity portfolio, which may include leveraged buyouts, growth equity, venture capital and special situations, are to achieve attractive returns and to provide overall portfolio diversification to the total plan.

### Private Credit Investments

The objectives of the Private Credit portfolio, which may include mezzanine debt, direct lending, and other forms of non-investment grade fixed income instruments, are to achieve a high total return over a full market cycle and to provide some degree of downside protection and typically provide current income in the form of a coupon. In certain situations, investments in the Private Credit portfolio also provide an equity component of return in the form of warrants or re-organized equity.

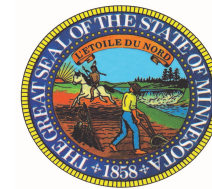
### Resource Investments

The objectives of the Resources portfolio, which may include energy, infrastructure, and other hard assets, are to provide protection against the risks associated with inflation and to provide overall portfolio diversification to the total plan.

### Real Estate Investments

The objectives of the Real Estate portfolio, which may include core and non-core real estate investments, are to achieve attractive returns, preserve capital, provide protection against risks associated with inflation, and provide overall portfolio diversification to the total plan.

The SBI also monitors Private Markets performance using money-weighted return metrics such as Internal Rate of Return and Multiple of Invested Capital. For money-weighted return metrics please refer to the Combined Funds Performance Report.



## Description of SBI Investment Programs

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The Minnesota State Board of Investment is responsible for the investment management of various retirement funds, trust funds and cash accounts.

### **Combined Funds**

The Combined Funds represent the assets for both the active and retired public employees in the statewide retirement systems, the biggest of which are the Public Employees Retirement Association (PERA), the Teachers Retirement Association (TRA), and the Minnesota State Retirement System (MSRS). The SBI commingles the assets of these plans into the Combined Funds to capture investment efficiencies. All assets in the Combined Funds are managed externally by investment management firms retained by contract.

### **Participant Directed Investment Program**

The Participant Directed Investment Program (PDIP) provides investment vehicles for a variety of retirement or other tax-advantaged savings plans. Investment goals among the PDIP's many participants are varied. In order to meet the variety of goals, participants may allocate their investments among one or more accounts that are appropriate for their needs within statutory requirements and rules established by the participating organizations. At this time, the assets of various retirement programs, including local firefighter groups, are included here.

### **Non-Retirement**

The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

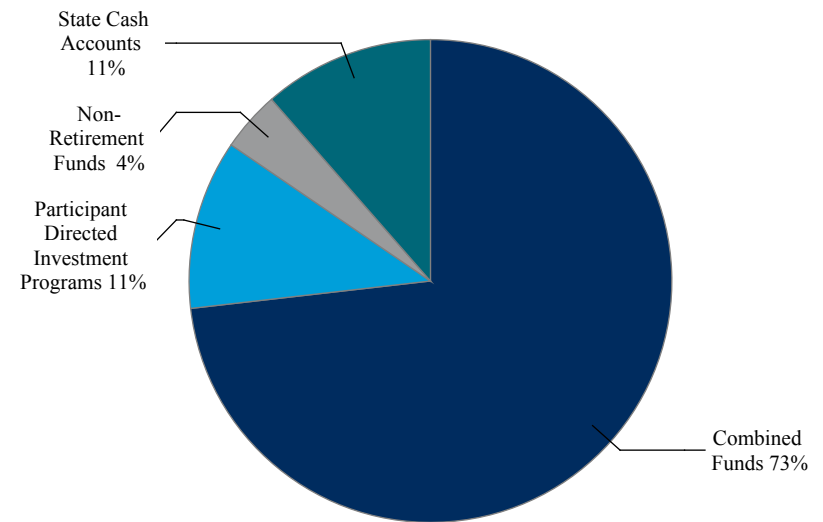
### **State Cash**

The State Cash accounts are cash balances of state government funds including the State General Fund. 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. Because of special legal restrictions, a small number of cash accounts cannot be commingled.



## Funds Under Management

	<u>\$ Millions</u>
<b>COMBINED FUNDS</b>	
Combined Funds	\$68,377
<b>PARTICIPANT DIRECTED INVESTMENT PROGRAMS</b>	
Supplemental Investment Fund*	3,692
State Deferred Compensation Plan**	5,515
Minnesota College Savings Plan	1,398
Achieve a Better Life Experience	2
<b>NON-RETIREMENT FUNDS</b>	
Assigned Risk Account	319
Permanent School Fund	1,390
Environmental Trust Fund	1,106
Closed Landfill Investment Fund	88
Miscellaneous Trust	230
Other Post Employment Benefits	629
<b>STATE CASH ACCOUNTS</b>	
Treasurer's Cash	10,550
Other State Cash Accounts	138
<b>TOTAL</b>	
SBI AUM	93,431



\* Includes assets of smaller retirement funds which are invested with the SBI but are not included in the Combined Funds

\*\* Does not include the Stable Value and Money Market accounts that are used by Deferred Compensation and Supplemental Investment Fund

Note: Differentials within column amounts may occur due to rounding

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

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DATE: February 5, 2018

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 fiscal year to date through December 31, 2017 is included as **Attachment A**.

A report on travel for the period from October 1, 2017 – December 31, 2017 is included as **Attachment B**.

### **2. FY17 Audit Report**

The Legislative Auditor letter related to the financial audit of the State Board of Investment financial operations for Fiscal Year 2017 is included as **Attachment C**. The Office of the Legislative Auditor (OLA) issued an unqualified (clean) opinion.

### **3. FY17 Annual Report**

The SBI's Annual Report for FY17 was distributed to the Board members/designees and IAC members in January 2018.

### **4. 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 scrutinized list; and
- 100% shall be sold within fifteen months after the company appeared on the list.

In the fourth quarter, SBI managers sold 246,783 shares in two companies on the divestment list.

**Attachment D** is a copy of the December 27, 2017 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.

## 5. 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 Institutional Shareholder Services, Inc. (ISS), 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 fourth quarter, SBI managers sold 336,332 shares in two companies on the divestment list.

**Attachment E** is a copy of the December 27, 2017 letter sent to each international equity manager, domestic equity manager and fixed income manager containing the most restricted list and the list of companies to be divested.

## **6. Litigation Update**

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

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**ATTACHMENT A**

**STATE BOARD OF INVESTMENT  
FISCAL YEAR 2018 ADMINISTRATIVE BUDGET REPORT  
FISCAL YEAR TO DATE THROUGH DECEMBER 31, 2017**

<b>ITEM</b>	<b>FISCAL YEAR 2018 BUDGET</b>	<b>FISCAL YEAR 2018 12/31/2017</b>
<b>PERSONNEL SERVICES</b>		
FULL TIME EMPLOYEES	\$ 4,827,900	\$ 2,053,690
PART TIME EMPLOYEES	0	0
MISCELLANEOUS PAYROLL	100,000	0
<b>SUBTOTAL</b>	<b>\$ 4,927,900</b>	<b>\$ 2,053,690</b>
<b>STATE OPERATIONS</b>		
RENTS & LEASES	285,000	163,395
REPAIRS/ALTERATIONS/MAINTENANCE	14,000	2,808
PRINTING & BINDING	9,000	4,982
PROFESSIONAL/TECHNICAL SERVICES	175,000	1,067
COMPUTER SYSTEMS SERVICES	83,000	6,894
COMMUNICATIONS	36,000	9,899
TRAVEL, IN-STATE	1,000	144
TRAVEL, OUT-STATE	125,000	39,166
SUPPLIES	28,000	12,436
EQUIPMENT	25,000	1,356
EMPLOYEE DEVELOPMENT	105,000	68,539
OTHER OPERATING COSTS	140,000	57,617
INDIRECT COSTS	250,000	106,405
<b>SUBTOTAL</b>	<b>\$ 1,276,000</b>	<b>\$ 474,708</b>
<b>TOTAL ADMINISTRATIVE BUDGET</b>	<b>\$ 6,203,900</b>	<b>\$ 2,528,399</b>

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**ATTACHMENT B**

**STATE BOARD OF INVESTMENT**

**Travel Summary by Date  
SBI Travel October 1, 2017 - December 31, 2017**

<b>Purpose</b>	<b>Name</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Manager Monitoring Private Markets Manager: KKR's 2017 CIO Symposium</b>	M. Perry	Washington, DC 10/2-10/3	\$ 1,029.27
<b>Manager Monitoring Private Markets Managers: Banc Funds; Merit Capital; Prudential Capital Annual Meeting</b>	R. Hill	Chicago, IL 10/4-10/6	994.85
<b>Manager Monitoring Private Markets Managers: Banc Funds; Merit Capital; Prudential Capital Annual Meeting</b>	C. Boll	Chicago, IL 10/4-10/6	859.02
<b>Manager Monitoring Private Markets Manager: Oaktree Capital Management L.P.</b>	M. Perry	Los Angeles, CA 10/16-10/17	789.23
<b>Manager Search Private Markets Managers: Edgewater Growth Capital Partners; Walton Street Capital, LLC Conference: Pension Real Estate Association (PREA) Institutional Investor</b>	J. Stacy	Chicago, IL 10/16-10/18	1,203.31
<b>In-State Travel: Wayzata Fire Relief Presentation</b>	S. Baribeau	Wayzata, MN	28.89
<b>In-State Travel: Wayzata Fire Relief Presentation</b>	P. Ammann	Wayzata, MN	31.03

**STATE BOARD OF INVESTMENT**

**Travel Summary by Date  
SBI Travel October 1, 2017 - December 31, 2017**

<b>Purpose</b>	<b>Name</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Conference:</b> P2F2 - Public Pension Financial Forum	S. Baribeau	Albuquerque, NM 10/21-10/26	\$ 2,101.98
<b>Conference:</b> P2F2 - Public Pension Financial Forum	P. Anderson	Albuquerque, NM 10/21-10/25	1,780.64
<b>Manager Monitoring Private Markets Managers:</b> Encap; NGP	N. Blumenshine	Dallas, TX 10/23-10/24	591.84
<b>Manager Monitoring Fixed Income Managers:</b> PIMCO; Western <b>Manager Search Fixed Income Managers:</b> Oaktree Capital; TCW Canyon Capital; Doubleline	A. Griga	Newport Beach, CA Pasadena, CA Los Angeles, CA 10/23-10/26	1,689.13
<b>Manager Monitoring Fixed Income Managers:</b> PIMCO; Western <b>Manager Search Fixed Income Managers:</b> Oaktree Capital; TCW Canyon Capital; Doubleline	R. Hill	Newport Beach, CA Pasadena, CA Los Angeles, CA 10/23-10/26	1,825.63
<b>Manager Monitoring Private Markets Managers:</b> MHR Fund Management LLC Annual Meeting; Vestar Capital Partners Annual Meeting; Lexington Partners L.P.	P. Ammann	New York, NY 10/24-10-26	1,584.58



**STATE BOARD OF INVESTMENT**

**Travel Summary by Date  
SBI Travel October 1, 2017 - December 31, 2017**

<b>Purpose</b>	<b>Name</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Manager Monitoring Private Markets Managers:</b> Advent; Thomas H. Lee	A. Krech	Boston, MA 11/6-11/8	\$ 617.52
<b>Conference:</b> Institutional Limited Partners Association (ILPA) Summit	N. Blumenshine	New York, NY 11/6-11/9	691.33
<b>Conference:</b> Institutional Limited Partners Association (ILPA) Summit	C. Boll	New York, NY 11/7-11/9	1,292.81
<b>Manager Monitoring Private Markets Managers:</b> Blackstone Capital Partners; Blackstone Real Estate Global Limited Partners; Lexington Partners Co-Investment Partners Annual Meeting	J. Stacy	New York, NY 11/7-11/9	1,488.69
<b>Manager Monitoring Private Markets Managers:</b> LBC; Lubert-Adler	C. Boll	Philadelphia, PA 11/13-11/14	893.90
<b>Manager Monitoring Private Markets Managers:</b> Apax Partners; Brookfield; Energy Capital Partners; WCAS	A. Krech	New York, NY 11/14-11/17	1,740.16
<b>Manager Monitoring Private Markets Managers:</b> EMG; EIG	A. Krech	Houston, TX 12/4-12/6	1,126.84

**STATE BOARD OF INVESTMENT**

**Travel Summary by Date  
SBI Travel October 1, 2017 - December 31, 2017**

<b>Purpose</b>	<b>Name</b>	<b>Destination and Date</b>	<b>Total Cost</b>
<b>Manager Monitoring</b> <b>Private Markets Managers:</b> Carlyle; Angelo Gordon; BlackRock <b>Manager Search</b> <b>Private Markets Managers:</b> Apollo Investment Corporation; Ares Capital Corporation; HPS Partners <b>Conference:</b> Wells Fargo Thought Leadership Forum	C. Boll	New York, NY 12/5-12/8	\$ 1,705.25
<b>Manager Monitoring</b> <b>Private Markets Managers:</b> Carlyle; Angelo Gordon; BlackRock <b>Manager Search</b> <b>Private Markets Managers:</b> Apollo Investment Corporation; Ares Capital Corporation; HPS Partners <b>Conference:</b> Wells Fargo Thought Leadership Forum	R. Hill	New York, NY 12/5-12/8	1,747.05

## ATTACHMENT C



## OFFICE OF THE LEGISLATIVE AUDITOR

STATE OF MINNESOTA • James Nobles, Legislative Auditor

January 12, 2018

Mr. Mansco Perry III, Executive Director and Chief Investment Officer  
Minnesota State Board of Investment  
60 Empire Drive, Suite 355  
Saint Paul, MN 55103

Dear Mr. Perry:

The financial activity of the State Board of Investment, including the assets under investment, is included as part of the primary government in the State of Minnesota's annual comprehensive annual financial report (CAFR). The Office of the Legislative Auditor (OLA) audits this report and provides an independent auditor's report (audit opinion) on the accuracy and fairness of the presentation of various financial statements, footnote disclosures, and other information in the CAFR to the Department of Management and Budget. We issued an unqualified (clean) opinion on the CAFR for the fiscal year ended June 30, 2017. Your financial activity is included in the scope of that audit opinion.

In the state's CAFR, you will find the investments included in the Fiduciary Fund financial statements (pages 47-49), which summarizes the detailed financial activity presented in the Pension Trust Fund and the Investment Trust Fund financial statements (pages 220-233). There are also two footnote disclosures in the CAFR, which relate specifically to investments and pensions: Footnote 2 – Cash, Investments, and Derivative Instruments; and Footnote 8 – Pension and Investment Trust Funds. Any financial activity of the State Board of Investment recorded in the General Fund would be indistinguishable from the state's other General Fund financial activity.

In addition, OLA audits the three statewide pension plans administered by the state of Minnesota: Minnesota State Retirement System (MSRS), Public Employees Retirement Association (PERA), and Teachers Retirement Association (TRA). Each retirement plan prepares and issues its own individual comprehensive annual financial report for its respective pension funds. Those reports include the same investment information that rolls into the state's CAFR. The OLA provides an independent auditor's report (audit opinion) on each pension plan's financial report. The scope of those unqualified (clean) opinions includes the investment assets administered by the State Board of Investment.

We also provide the state and each retirement plan with a report on the Internal Controls over Financial Reporting. For the fiscal year ending June 30, 2017, we had no written findings for any of the pension plans and no written findings or recommendations directed toward the State Board of Investment in the report to the Department of Management and Budget. When those reports are issued by OLA, they will be published on our website.

Mr. Mansco Perry III, Executive Director and Chief Investment Officer

January 12, 2018

Page 2

Due to the significance and material nature of the financial activity administered by the State Board of Investment to the pension plans and the state as a whole, we devote significant audit resources to specifically test, verify, and confirm investment balances and other investment related financial activity.

The OLA audit opinions for the year ended June 30, 2017, for the state's CAFR and the three statewide pension plans are available at the following links:

State of MN: [https://mn.gov/mmb/assets/2017-cafr-accessible\\_tcm1059-321449.pdf](https://mn.gov/mmb/assets/2017-cafr-accessible_tcm1059-321449.pdf)

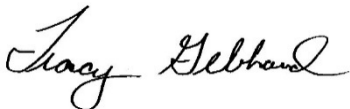
MSRS: <https://www.msrs.state.mn.us/documents/10179/38014/2017+CAFR/66921864-0f4e-4636-9846-6268aed0d416>

PERA: [http://www.mnpera.org/vertical/sites/%7BCB6D4845-437C-4F52-969E-51305385F40B%7D/uploads/CAFR2017\\_R.pdf](http://www.mnpera.org/vertical/sites/%7BCB6D4845-437C-4F52-969E-51305385F40B%7D/uploads/CAFR2017_R.pdf)

TRA: <https://www.minnesotatra.org/images/pdf/2017%20CAFR.pdf>

We appreciate the cooperation and assistance provided by the staff and administration of the State Board of Investment throughout our audit process.

Sincerely,



Tracy Gebhard, CPA  
Audit Director

Cc: Paul Anderson, Chief Financial Officer  
LeaAnn Stagg, Chief Operating Officer

## ATTACHMENT D

### Letter to SBI Domestic and International Equity Managers

December 27, 2017

#### Regarding: Sudan Companies

Dear Manager:

The Minnesota State Board of Investment (SBI) sent you prior communication concerning holdings in companies doing business in Sudan. **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.243 requires the SBI to implement a Sudan restriction.

**Attachment 1** is the List of Restricted Sudan Stocks. 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 Sudan Companies that was attached to the September 26, 2017 letter you received. **This new list is effective December 31, 2017.**

#### Changes to Attachment 1:

The following companies **have been removed** from the Restricted List:

- **North Huajin Chemical Industries Co. China**
- **North Navigation Control Technology Co. Ltd China**
- **NORINCO International Cooperation Ltd China**

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

- **Schuler AG Austria**
- **CNPC Capital Co Ltd. China**
- **China Petroleum Engineering Corp. China**
- **Poly Culture Group Corp. Ltd. China**
- **Shanghai Prime Machinery Co. Ltd. China**
- **Wartsila OYJ ABP Finland**
- **Engie Brasil Energia SA France**
- **Engie Energia Chile SA France**
- **Engie Energia Peru SA France**
- **Etablissements Maurel et Prom France**
- **Siemens Gamesa Renewable Energy Germany**
- **Tuimazinsky Zavod Avtobetonovozov OJSC Russia**
- **Yaroclavsky Diesel Equipment Plant OAO Russia**

**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.

**No changes to Attachment 2.**

**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  
Assistant Executive Director & Chief Operating Officer

Enclosures

cc: Michael J. Menssen, Director, Debt Management  
Tammy Brusehaver, Investment Officer, Public Equity  
Stephanie Gleeson, Investment Officer, Public Equity  
Aaron Griga, Investment Officer, Public Equity

## ATTACHMENT 1

### Restricted Sudan Stocks

Company Name	Country
Andritz AG	Austria
Schuler AG	Austria
Orca Gold Inc.	Canada
China Gezhouba Group Company Limited	China
China North Industries Group Corporation AKA CNGC/NORINCO	China
China Petrochemical Corporation	China
China Petroleum and Chemical Corporation AKA Sinopec Corp.	China
China Petroleum Engineering Corp.	China
China Poly Group Corporation	China
CNPC Capital Co Ltd.	China
Daqing Huake Group Company Limited	China
Dongfeng Motor Group Company Limited	China
Harbin Electric Company Ltd.	China
Jiangxi Hongdu Aviation	China
Petrochina Co. Ltd AKA China National Petroleum Corporation (CNPC)	China
Poly Culture Group Corp Ltd.	China
Poly Property Group Co. Ltd.	China
Power Construction Corporation of China (PowerChina)	China
Power Construction Corporation of China Ltd.	China
Shanghai Electric Group Co. Ltd.	China
Shanghai Prime Machinery Co. Ltd.	China
Sinopec Engineering Group Co. Ltd.	China
Sinopec Oilfield Service Corp	China
Sinopec Shanghai Petrochemicals Ltd	China
Egypt Kuwait Holding Company	Egypt
Wartsila OYJ ABP	Finland
ENGIE	France
Engie Brasil Energia SA	France
Engie Energia Chile SA	France
Engie Energia Peru SA	France
Etablissements Maurel et Prom	France
Parisienne Chauffage Urbain	France
MAN SE	Germany
Renk AG	Germany
Siemens AG	Germany
Siemens Gamesa Renewable Energy SA	Germany
Volkswagen AG	Germany
Kunlun Energy Co. Ltd	Hong Kong
Sinopec Kanton Holdings Limited	Hong Kong
Bharat Electronics Limited	India
Chennai Petroleum Corporation Ltd. AKA CPCL	India
Indian Oil Corporation Ltd.	India
Lanka IOC Limited	India

### Restricted Sudan Stocks

Company Name	Country
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
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 Group	Russia
GAZ PJSC	Russia
Kamaz PJSC	Russia
Neftekamsky Avtozavod (aka NEFAZ)	Russia
Pavlovo Bus PJSC	Russia
Tuimazinsky Zavod Avtobetonovozov OJSC	Russia
Yaroclavsky Diesel Equipment Plant OAO	Russia
LS Industrial Systems	South Korea
Atlas Copco AB	Sweden

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

Source: EIRIS Conflict Risk Network

Effective Date: December 31, 2017



## 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>
ENGIE	France	6/30/2017	12/31/2017
Atlas Copco AB	Sweden	9/30/2017	3/31/2018
Siemens AG	Germany	3/31/2018	9/30/2018

Effective Date: December 31, 2017

Security Identifiers for "Scrutinized" Stocks

The following security identifiers correlate with the Fourth Quarter 2017 Sudan Company Report and are current as of November 1, 2017.

ALL DATA IS FROM BLOOMBERG LP UNLESS OTHERWISE NOTED.

STOCKS ADDED SINCE LAST REPORT ARE HIGHLIGHTED

Company	Primary Company (Affiliate/Parent)	Exchange	Security Type	Security Name	Ticker	WPK Number	SEDOL	CUSIP	ISIN	COMMON	CINS
ANDRITZ AG	ANDRITZ AG	Vienna (WBAH)	Common Stock	ANDRITZ AG	ANDR AV	632305	B1WV68 AT		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	BATS Europe (BATE)	Common Stock	ANDRITZ AG	ANDR EB	632305	B1WV68 AT		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Chi-X Europe (CHIX)	Common Stock	ANDRITZ AG	ANDR IX	632305	B1WV68 AT		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Turquoise (TRQX)	Common Stock	ANDRITZ AG	ANDR TO	632305	B1WV68 AT		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GB	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GB	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GF	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GM	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GS	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GS	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GT	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Quotrix Exch (XQTX)	Common Stock	ANDRITZ AG	A22 QY	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Tradegate (XGAT)	Common Stock	ANDRITZ AG	A22 TH	632305	B1X9FHZ DE		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro Comp (XLON)	Common Stock	ANDRITZ AG	ANDR EU	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	LSE EuropeQS (XLON)	Common Stock	ANDRITZ AG	ANDR LI	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	LSE EuropeQS (XLON)	Common Stock	ANDRITZ AG	ANDR LO	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	ANDRITZ AG	ANDR XA	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	ANDRITZ AG	ANDR XB	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	ANDRITZ AG	ANDR XD	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	ANDRITZ AG	ANDR XE	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	ANDRITZ AG	ANDR XL	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	ANDRITZ AG	ANDR XV	632305	B28F3F6 GB		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	BX Worldcaps (XBRN)	Common Stock	ANDRITZ AG	ANDR BW	632305	BHZL8M4 CH		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	SIX Swiss Ex (SXWX)	Common Stock	ANDRITZ AG	ANDR SE	632305	BHZL8M4 CH		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	BX Worldcaps (XBRN)	Common Stock	ANDRITZ AG	ANDR SW	632305	BHZL8M4 CH		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	ANDRITZ AG	ANDR XS	632305	BHZL8M4 CH		AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Euro Comp (XLON)	Common Stock	ANDRITZ AG	ANDRCH EU	632305			AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Blockmatch (BLOX)	Common Stock	ANDRITZ AG	ANDRV B3	632305			AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Liquidnet (LIQU)	Common Stock	ANDRITZ AG	ANDRV L3	632305			AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	ITG Posit (XPOS)	Common Stock	ANDRITZ AG	ANDRV PO	632305			AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	UBS MTF (XUBS)	Common Stock	ANDRITZ AG	ANDRV S2	632305			AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	Gettex (MUND)	Common Stock	ANDRITZ AG	A22 GZ	632305			AT0000730007		013042748
ANDRITZ AG	ANDRITZ AG	OTC US (OOC)	ADR	ANDRITZ AG-UNSPON ADR	ADRZY PQ		B3D4P2 US	034522102	US0345221024		
ANDRITZ AG	ANDRITZ AG	OTC US (OOC)	ADR	ANDRITZ AG-UNSPON ADR	ADRZY US		B3D4P2 US	034522102	US0345221024		
ANDRITZ AG	ANDRITZ AG	OTC US (OOC)	ADR	ANDRITZ AG-UNSPON ADR	ADRZY UV	A1W8D1	B3D4P2 US	034522102	US0345221024	ZAR 96.194.871.00	
SCHULER AG	ANDRITZ AG	Munich (XMUN)	Common Stock	Schuler AG	SCUN GM	A0V9A2	B3B2867 DE		DE000A0V9A22	037251356	
SCHULER AG	ANDRITZ AG	Munich (XMUN)	Common Stock	Schuler AG	SCUN GR	A0V9A2	B3B2867 DE		DE000A0V9A22	037251356	
SCHULER AG	ANDRITZ AG	Euro OTC (XLON)	Common Stock	Schuler AG	SCUN EU	A0V9A2	B3B2867 DE		DE000A0V9A22	037251356	
ATLAS COPCO AB	ATLAS COPCO AB	BATS Europe (BATE)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA EB	A14517	BXC8B87		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Aquis Exchg (AQXE)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA QX	A14517	BXC8B87		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Stockholm (XSTO)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA SS	A14517	BXC8B87		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Equiduct (XEQT)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS BQ	A14517	BXC8B87		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Chi-X Europe (CHIX)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS IX	A14517	BXC8B87		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Turquoise (TRQX)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS TQ	A14517	BXC8B87		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOC)	Common Stock	ATLAS COPCO AB-A SHS	ATLKF PQ	A14517	BXDZJPO		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOC)	Common Stock	ATLAS COPCO AB-A SHS	ATLKF US	A14517	BXDZJPO		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOC)	Common Stock	ATLAS COPCO AB-A SHS	ATLKF UV	A14517	BXDZJPO		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	BX Worldcaps (XBRN)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA BW	A14517	BXV1GV5		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	BX Worldcaps (XBRN)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA SW	A14517	BXV1GV5		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GB	A14517	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GD	A14517	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GF	A14517	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GI	A14517	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GR	A14517	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GS	A14517	BXV1GX7		SE0006886750		123361946
ATLAS COPCO AB	ATLAS COPCO AB	Quotrix Exch (XQTX)	Common Stock	ATLAS COPCO AB-A SHS	ACOF QT	A14517	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Tradegate (XGAT)	Common Stock	ATLAS COPCO AB-A SHS	ACOF TH	A14517	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Mexico (XMEX)	Common Stock	ATLAS COPCO AB-A SHS	ACOF MM	A14517	BXVK549		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	LSE Europe QS (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA LI	A14517	BXVMB02		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	LSE Europe QS (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA LO	A14517	BXVMB02		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Gettex (MUND)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GZ	A14517			SE0006886750		123361946
ATLAS COPCO AB	ATLAS COPCO AB	Euro Comp (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA EU	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XE	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XD	A14517			SE0006886750		123361946
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XE	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XL	A14517			SE0006886750		123361946
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XO	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XS	A14517			SE0006886750		123361946
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XV	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro Comp (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAER EU	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAER XS	A14517			SE0006886750		123361946
ATLAS COPCO AB	ATLAS COPCO AB	Blockmatch (BLOX)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA B3	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Liquidnet (LIQU)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS L3	A14517			SE0006886750		123361946
ATLAS COPCO AB	ATLAS COPCO AB	ITG Posit (XPOS)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS PO	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	UBS MTF (XUBS)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS S2	A14517			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Quotrix Exch (XQTX)	Common Stock	ATLAS COPCO AB-B SHS	ACOB QT	A14518	B1XHM19		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GB	A14518	BW X45D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GD	A14518	BW X45D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GF	A14518	BW X45D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GR	A14518	BW X45D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GS	A14518	BW X45D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GP	A14518	BW X45D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GS	A14518	BW X45D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Chi-X Europe (CHIX)	Common Stock	ATLAS COPCO AB-B SHS	ATCB IX	A14518	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	BATS Europe (BATE)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB EB	A14518	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Aquis Exchg (AQXE)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB QX	A14518	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Stockholm (XSTO)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB SS	A14518	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Equiduct (XEQT)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBS BQ	A14518	BXC8BW1		SE0006886768		





POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Hong Kong (XHKG)	Common Stock	POLY PROPERTY GROUP CO LTD	119 HK	885546	6220987 HK	HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GB	885546	B1HJUS7 DE	HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GF	885546	B1HJUS7 DE	HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GS	885546	B1HJUS7 DE	HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOC)	Common Stock	POLY PROPERTY GROUP CO LTD	PHKIF US	885546	B23C231 US	HK0119000674	004580702	Y7064G105
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Sth SZ-SEHK (SZSC)	Common Stock	POLY PROPERTY GROUP CO LTD	119 H2	885546	BD8NCD8 HK	HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Sth SSE-SEHK (SHSC)	Common Stock	POLY PROPERTY GROUP CO LTD	119 H1	885546	BP3RQJ3 HK	HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOC)	ADR	POLY PROPERTY GROUP CO-ADR	PHKIIY PQ			731654109	US7316541090	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOC)	ADR	POLY PROPERTY GROUP CO-ADR	PHKIIY US			731654109	US7316541090	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFPG PQ	A0M4XY	B0XZV65 US	CNE100000312	023857456	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Hong Kong (XHKG)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	489 HK	A0M4XY	B0PH5N3 HK	CNE100000312	023857457	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GB	A0M4XY	B0TB866 DE	CNE100000312	023857458	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GF	A0M4XY	B0TB866 DE	CNE100000312	023857459	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GM	A0M4XY	B0TB866 DE	CNE100000312	023857460	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GR	A0M4XY	B0TB866 DE	CNE100000312	023857461	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Frankfurt (XFRA)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GS	A0M4XY	B0TB866 DE	CNE100000312	023857462	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Quotrix Exch (XQTX)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GT	A0M4XY	B0TB866 DE	CNE100000312	023857464	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFPG US	A0M4XY	B0XZV65 US	CNE100000312	023857465	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFPG UV	A0M4XY	B0XZV65 US	CNE100000312	023857468	Y21042109
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Sth SZ-SEHK (SZSC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	489 H2	A0M4XY	BD8N477 HK	CNE100000312	023857467	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Hong Kong (XHKG)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	489 H1	A0M4XY	BP3RTP0 HK	CNE100000312	023857466	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Gettex (MUND)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GZ	A0M4XY		CNE100000312	023857463	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOC)	ADR	DONGFENG MOTOR GRP-H-UNS ADR	DNFPG PQ	A1W2SX	B3SOPT4 US	US257738203	US2577382037	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOC)	ADR	DONGFENG MOTOR GRP-H-UNS ADR	DNFPG US	A1W2SX	B3SOPT4 US	US257738203	US2577382037	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOC)	ADR	DONGFENG MOTOR GRP-H-UNS ADR	DNFPG UV	A1W2SX	B3SOPT4 US	US257738203	US2577382037	
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Kuwait (XKUW)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHDLDN KK	A0H1G7	B0S8H15 KW	EG69082C013		
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	EGX (XCAI)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHO EC	A0H1G7	B0QMD00 EG	EG69082C013		
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	EGX (XCAI)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHO EY	A0H1G7	B0QMD00 EG	EG69082C013		
ENERGY HOUSE HOLDING CO KSCP/THE KUWAIT FINANCE HOUSE KSCP	ENERGY HOUSE HOLDING CO	Kuwait (XKUW)	Common Stock	ENERGY HOLDING CO KSCP/THE KUWAIT FINANCE HOUSE	ENGYRHK KK	A0K34C	B138V98 KW	KW0EQ010085		
ENGIE	ENGIE	EN Paris (XPAR)	Common Stock	Engie SA	ENGIE FP	A0ER6Q	B0C2CQ3	FR0010208488	022341469	F42768105
ENGIE	ENGIE	Equiduct (XEQT)	Common Stock	Engie SA	ENGIE PB	A0ER6Q	B0C2CQ3	FR0010208488	022341469	F42768105
ENGIE	ENGIE	BATS Europe (BATE)	Common Stock	Engie SA	ENGIE EB	A0ER6Q	B0C2CQ3	FR0010208488	022341470	F42768105
ENGIE	ENGIE	Chi-X Europe (CHX)	Common Stock	Engie SA	ENGIE IX	A0ER6Q	B0C2CQ3	FR0010208488	022341471	F42768105
ENGIE	ENGIE	Aquis Exchq (AQXE)	Common Stock	Engie SA	ENGIE OX	A0ER6Q	B0C2CQ3	FR0010208488	022341472	F42768105
ENGIE	ENGIE	Turquoise (TRQX)	Common Stock	Engie SA	ENGIE TQ	A0ER6Q	B0C2CQ3	FR0010208488	022341473	F42768105
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GB	A0ER6Q	B0CYN33	FR0010208488	022341474	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GD	A0ER6Q	B0CYN33	FR0010208488	022341475	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GE	A0ER6Q	B0CYN33	FR0010208488	022341476	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GF	A0ER6Q	B0CYN33	FR0010208488	022341477	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GH	A0ER6Q	B0CYN33	FR0010208488	022341478	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GI	A0ER6Q	B0CYN33	FR0010208488	022341479	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GM	A0ER6Q	B0CYN33	FR0010208488	022341480	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GN	A0ER6Q	B0CYN33	FR0010208488	022341481	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GO	A0ER6Q	B0CYN33	FR0010208488	022341482	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GP	A0ER6Q	B0CYN33	FR0010208488	022341483	
ENGIE	ENGIE	Quotrix Exch (XQTX)	Common Stock	Engie SA	GZF GT	A0ER6Q	B0CYN33	FR0010208488	022341484	
ENGIE	ENGIE	Tradegate (XGAT)	Common Stock	Engie SA	GZF TH	A0ER6Q	B0CYN33	FR0010208488	022341486	
ENGIE	ENGIE	OTC US (OOC)	Common Stock	Engie SA	ENGOF PQ	A0ER6Q	B0Z11C6	FR0010208488	022341487	F7629A107
ENGIE	ENGIE	OTC US (OOC)	Common Stock	Engie SA	ENGOF US	A0ER6Q	B0Z11C6	FR0010208488	022341488	F7629A107
ENGIE	ENGIE	OTC US (OOC)	Common Stock	Engie SA	ENGOF UV	A0ER6Q	B0Z11C6	FR0010208488	022341489	F7629A107
ENGIE	ENGIE	LSE Europe QS (XLON)	Common Stock	Engie SA	GSZ LI	A0ER6Q	B28HB14	FR0010208488	022341490	
ENGIE	ENGIE	LSE Europe QS (XLON)	Common Stock	Engie SA	GSZ LO	A0ER6Q	B28HB14	FR0010208488	022341491	
ENGIE	ENGIE	Brsaltalana (MTAA)	Common Stock	Engie SA	ENGI IF	A0ER6Q	B3BQVC6	FR0010208488	022341492	F42768105
ENGIE	ENGIE	Brsaltalana (MTAA)	Common Stock	Engie SA	ENGI IM	A0ER6Q	B3BQVC6	FR0010208488	022341493	F42768105
ENGIE	ENGIE	Euro TLX (ETLX)	Common Stock	Engie SA	GSZ TE	A0ER6Q	B3BQVC6	FR0010208488	022341494	
ENGIE	ENGIE	Luxembourg (XLUX)	Common Stock	Engie SA	GSZ LV	A0ER6Q	B3BQVW6	FR0010208488	022341495	
ENGIE	ENGIE	Vienna (XVWI)	Common Stock	Engie SA	ENGI AV	A0ER6Q	BF445Q3	FR0010208488	022341469	
ENGIE	ENGIE	SIX Swiss Ex (XSWX)	Common Stock	Engie SA	ENGI SE	A0ER6Q	BRTM7D7	FR0010208488	022341496	F42768105
ENGIE	ENGIE	SIX Swiss Ex (XSWX)	Common Stock	Engie SA	ENGI SW	A0ER6Q	BRTM7D7	FR0010208488	022341497	F42768105
ENGIE	ENGIE	Euro Comp (XLON)	Common Stock	Engie SA	ENGI EUR EU	A0ER6Q	FR0010208488	022341498	022341498	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGI EUR EU	A0ER6Q	FR0010208488	022341498	022341498	
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGI EUR XB	A0ER6Q	FR0010208488	022341500	022341500	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGI EUR XD	A0ER6Q	FR0010208488	022341501	022341501	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGI EUR XE	A0ER6Q	FR0010208488	022341502	022341502	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGI EUR XL	A0ER6Q	FR0010208488	022341503	022341503	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGI EUR XS	A0ER6Q	FR0010208488	022341504	022341504	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGI EUR XV	A0ER6Q	FR0010208488	022341505	022341505	F42768105
ENGIE	ENGIE	Euro Comp (XLON)	Common Stock	Engie SA	ENGICHF EU	A0ER6Q	FR0010208488	022341506	022341506	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGICHF XW	A0ER6Q	FR0010208488	022341507	022341507	
ENGIE	ENGIE	Liquidnet (LIQU)	Common Stock	Engie SA	ENGIP L3	A0ER6Q	FR0010208488			
ENGIE	ENGIE	ITG Posit (XPOS)	Common Stock	Engie SA	ENGIP PO	A0ER6Q	FR0010208488			
ENGIE	ENGIE	UBS MTF (XUBS)	Common Stock	Engie SA	ENGIP S2	A0ER6Q	FR0010208488			
ENGIE	ENGIE	Gettex (MUND)	Common Stock	Engie SA	GZF GZ	A0ER6Q	FR0010208488	022341484		
ENGIE	ENGIE	Berlin (XBER)	ADR	Engie SA	GZFB GB	A14XKC	BYX0167	US29286D1054	126845286	
ENGIE	ENGIE	Berlin (XBER)	ADR	Engie SA	GZFB GF	A14XKC	BYX0167	US29286D1054	126845286	
ENGIE	ENGIE	Berlin (XBER)	ADR	Engie SA	GZFB GR	A14XKC	BYX0167	US29286D1054	126845286	
ENGIE	ENGIE	OTC US (OOC)	ADR	Engie SA	GZFB GS	A14XKC	BYX0167	US29286D1054	126845286	
ENGIE	ENGIE	OTC US (OOC)	ADR	Engie SA	ENGIY US	A14XKC	BY9W15	US29286D1054	126845286	
ENGIE	ENGIE	OTC US (OOC)	ADR	Engie SA	ENGIY UV	A14XKC	BY9W15	US29286D1054	126845286	
ENGIE BRASIL ENERGIA SA	ENGIE	BM&FBOVESPA (BMVF)	Common Stock	ENGIE BR ENER SA	EGIE3 BS	A2AN8V	BD1WX84	BREGIEACNOR9	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	BM&FBOVESPA (BMVF)	Common Stock	ENGIE BR ENER SA	EGIE3 BN	A2AN8V	BD1WX84	BREGIEACNOR9	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	BM&FBOVESPA (BMVF)	Common Stock	ENGIE BR ENER SA	EGIE3 BZ	A2AN8V	BD1WX84	BREGIEACNOR9	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	Stuttgart (XSTU)	ADR	ENGIE BRASIL-ADR	7TE1 GF	A2ASWZ	BD3VL29	US29286U1079	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	Stuttgart (XSTU)	ADR	ENGIE BRASIL-ADR	7TE1 GR	A2ASWZ	BD3VL29	US29286U1079	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	OTC US (OOC)	ADR	ENGIE BRASIL-ADR	7TE1 GS	A2ASWZ	BZ0CDF6	US29286U1079	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	OTC US (OOC)	ADR	ENGIE BRASIL-ADR	EGIEY US	A2ASWZ	BZ0CDF6	US29286U1079	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	OTC US (OOC)	ADR	ENGIE BRASIL-ADR	EGIEY UV	A2ASWZ	BZ0CDF6	US29286U1079	150060478	
ENGIE ENERGIA CHILE SA	ENGIE	Sant. Comerc (XSGO)	Common Stock	ENGIE ENERGIA CHILE SA	ECL CC	A14SFY	BWXTK30 CL	CL0001583070	150060478	
ENGIE ENERGIA CHILE SA	ENGIE	Sant. Comerc (XSGO)	Common Stock	ENGIE ENERGIA CHILE SA	ECL CE	A14SFY	BWXTK30 CL	CL0001583070	150060478	
ENGIE ENERGIA CHILE SA	ENGIE	Sant. Comerc (XSGO)	Common Stock	ENGIE ENERGIA CHILE SA	ECL CI	A14SFY	BWXTK30 CL	CL0001583070	150060478	
ENGIE ENERGIA PERU SA	ENGIE	Lima (XLM)	Common Stock	ENGIE ENERGIA PERU SA	ENGIETC1 PE	A0KEX8	B0M1457 PE	PEP702101002	150060478	
PARISIENNE DE CHAUFFAGE URBAIN CO	ENGIE	BATS Europe (BATE)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU EB	919453	4189165 FR	FR0000052896	11389066	
PARISIENNE DE CHAUFFAGE URBAIN CO	ENGIE	EN Europe (XPAR)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU FP	919453	4189165 FR	FR0000052896	11389066	
PARISIENNE DE CHAUFFAGE URBAIN CO	ENGIE	Chi-X Europe (CHX)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU IF	919453	4189165 FR	FR0000052896	11389066	
PARISIENNE DE CHAUFFAGE URBAIN CO	ENGIE	Euro Comp (XLON)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU IU	919453	4189165 FR	FR0000052896	11389066	
GAZ PJSC	GAZ PJSC	MICEX Main (MISX)	Common Stock	GAZ PJSC	GAZA RM	903426	B5BKBJ9 RU	RU0009034268	34991693	
GAZ PJSC	GAZ PJSC									



RENK AG	MAN SE	Gettex (MUND)	Common Stock	RENK AG	ZAR GZ	785000		DE0007850000	1121936	
VOLKSWAGEN AG	MAN SE	LSE EuropeQS (XLON)	Common Stock	VOLKSWAGEN AG	VOW LI	766400	0308908 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	LSE EuropeQS (XLON)	Common Stock	VOLKSWAGEN AG	VOW LO	766400	0308908 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW XE	766400	0308908 GB	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW XS	766400	0308908 GB	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Common Stock	VOLKSWAGEN AG	VOW BW	766400	5496994 CH	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Common Stock	VOLKSWAGEN AG	VOW SE	766400	5496994 CH	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Common Stock	VOLKSWAGEN AG	VOW SW	766400	5496994 CH	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	BATS Europe (BATE)	Common Stock	VOLKSWAGEN AG	VW EB	766400	5496994 CH	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Chi-X Europe (CHIX)	Common Stock	VOLKSWAGEN AG	VW IX	766400	5496994 CH	DE0007664005	00115308	D94523145
VOLKSWAGEN AG	MAN SE	EN Amsterdam (XAMS)	Common Stock	VOLKSWAGEN AG	VWA NA	766400	5497106 NL	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Luxembourg (XLUX)	Common Stock	VOLKSWAGEN AG	VOW LX	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Equiduct (XEQT)	Common Stock	VOLKSWAGEN AG	VOW BO	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	BATS Europe (BATE)	Common Stock	VOLKSWAGEN AG	VOW EB	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GB	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GD	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GF	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GH	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GI	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GR	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GS	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GY	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Quotrix Exch (XQTX)	Common Stock	VOLKSWAGEN AG	VOW QT	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Tradegate (XGAT)	Common Stock	VOLKSWAGEN AG	VOW TH	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Turquoise (TRQX)	Common Stock	VOLKSWAGEN AG	VOW TR	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Chi-X Europe (CHIX)	Common Stock	VOLKSWAGEN AG	VOW IX	766400	5497102 DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Sigma X MTF (SGMX)	Common Stock	VOLKSWAGEN AG	VOW S1	766400	5497102DE	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	Common Stock	VOLKSWAGEN AG	VLKAF PQ	766400	B01DRL7 US	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	Common Stock	VOLKSWAGEN AG	VLKAF US	766400	B01DRL7 US	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	Common Stock	VOLKSWAGEN AG	VLKAF UV	766400	B01DRL7 US	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	EuroTLX (ETLX)	Common Stock	VOLKSWAGEN AG	VOW TE	766400	B7N7B69 IT	DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Euro Comp (XLON)	Common Stock	VOLKSWAGEN AG	VOW EU	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Gettex (MUND)	Common Stock	VOLKSWAGEN AG	VOW GZ	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Euro OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW XB	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Euro OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW XL	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Euro Comp (XLON)	Common Stock	VOLKSWAGEN AG	VOW CH EU	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	Blockmatch (BLX)	Common Stock	VOLKSWAGEN AG	VOWD B3	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	ITG Posit (XPOS)	Common Stock	VOLKSWAGEN AG	VOWD PO	766400		DE0007664005	00115308	D94523145
VOLKSWAGEN AG	MAN SE	Aquis Exchg (AQXE)	Common Stock	VOLKSWAGEN AG	VOWD QX	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	UBS MTF (XUBS)	Common Stock	VOLKSWAGEN AG	VOWD S2	766400		DE0007664005	00115308	
VOLKSWAGEN AG	MAN SE	LSE EuropeQS (XLON)	Preference	VOLKSWAGEN AG-PREF	50IT LI	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	LSE EuropeQS (XLON)	Preference	VOLKSWAGEN AG-PREF	50IT LO	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XB	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XD	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XE	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XJ	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XS	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XV	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Preference	VOLKSWAGEN AG-PREF	VWV/B SE	766403	5497146 CH	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Preference	VOLKSWAGEN AG-PREF	VWV/S BW	766403	5497146 CH	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Preference	VOLKSWAGEN AG-PREF	VWV/V SW	766403	5497146 CH	DE0007664039	001117432	D84523103
VOLKSWAGEN AG	MAN SE	BATS Europe (BATE)	Preference	VOLKSWAGEN AG-PREF	VWV EB	766403	5497146 CH	DE0007664039	001117432	D94523103
VOLKSWAGEN AG	MAN SE	Chi-X Europe (CHIX)	Preference	VOLKSWAGEN AG-PREF	VWV IX	766403	5497146 CH	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Equiduct (XEQT)	Preference	VOLKSWAGEN AG-PREF	VOW3 BQ	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	BATS Europe (BATE)	Preference	VOLKSWAGEN AG-PREF	VOW3 EB	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GB	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GD	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GF	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GH	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GI	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GJ	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GK	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GL	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GM	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GN	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GO	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GP	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GQ	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GR	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GS	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Preference	VOLKSWAGEN AG-PREF	VOW3 GT	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Chi-X Europe (CHIX)	Preference	VOLKSWAGEN AG-PREF	VOW3 IX	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Quotrix Exch (XQTX)	Preference	VOLKSWAGEN AG-PREF	VOW3 QT	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Aquis Exchg (AQXE)	Preference	VOLKSWAGEN AG-PREF	VOW3 QX	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Sigma X MTF (SGMX)	Preference	VOLKSWAGEN AG-PREF	VOW3 S1	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Tradegate (XGAT)	Preference	VOLKSWAGEN AG-PREF	VOW3 TH	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Luxembourg (XLUX)	Preference	VOLKSWAGEN AG-PREF	VOW3 TO	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	Preference	VOLKSWAGEN AG-PREF	VOWP LX	766403	5497221 LU	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	Preference	VOLKSWAGEN AG-PREF	VLKPF PQ	766403	B1GXSC7 US	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	Preference	VOLKSWAGEN AG-PREF	VLKPF US	766403	B1GXSC7 US	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	Preference	VOLKSWAGEN AG-PREF	VLKPF UV	766403	B1GXSC7 US	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Brsaitaliana (MTAA)	Preference	VOLKSWAGEN AG-PREF	VOW3 IF	766403	BD3VRN2 IT	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Brsaitaliana (MTAA)	Preference	VOLKSWAGEN AG-PREF	VOW3 IM	766403	BD3VRN2 IT	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Vienna (XVBO)	Preference	VOLKSWAGEN AG-PREF	VOW AV	766403	BF028FO AT	DE0007664039	1117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOWP3 XF	766403	BF028FO AT	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Mexico (XMEX)	Preference	VOLKSWAGEN AG-PREF	VOW3M MM	766403	BYQT730	DE0007664039	001117432	D94523103
VOLKSWAGEN AG	MAN SE	Euro Comp (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 EU	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Gettex (MUND)	Preference	VOLKSWAGEN AG-PREF	VOW3 GZ	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EuroTLX (ETLX)	Preference	VOLKSWAGEN AG-PREF	VOW3 TE	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XA	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3 XI	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Euro Comp (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3CH EU	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Blockmatch (BLX)	Preference	VOLKSWAGEN AG-PREF	VOW3D B3	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Liquidnet (LUN)	Preference	VOLKSWAGEN AG-PREF	VOW3D S3	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	ITG Posit (XPOS)	Preference	VOLKSWAGEN AG-PREF	VOW3D PO	766403		DE0007664039	1117432	
VOLKSWAGEN AG	MAN SE	UBS MTF (XUBS)	Preference	VOLKSWAGEN AG-PREF	VOW3D S2	766403		DE0007664039	1117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	ADR	VOLKSWAGEN AG-SPONS ADR	VLKAY PQ	879511	2930484 US	928662303	US9286623031	11526233
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	ADR	VOLKSWAGEN AG-SPONS ADR	VLKAY US	879511	2930484 US	928662303	US9286623031	11526233
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	ADR	VOLKSWAGEN AG-SPONS ADR	VLKAY UV	879511	2930484 US	928662303	US9286623031	11526233
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 GB	879511	B62VB7T	928662303	US9286623031	11526233
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 GM	879511	B62VB7T	928662303	US9286623031	11526233
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 GF	879511	B62VB7T DE	928662303	US9286623031	11526233
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 GR	879511	B62VB7T DE	928662303	US9286623031	11526233
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPY PQ	AODPR2	2265960 US	928662402	US9286624021	42872202
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPY US	AODPR2	2265960 US	928662402	US9286624021	42872202
VOLKSWAGEN AG	MAN SE	OTC US (OOC)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPY UV	AODPR2	2265960 US	928662402	US9286624021	42872202
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VOW5 GB	AODPR2	B603118 DE	928662402	US9286624021	4287





SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GF	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GH	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GI	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GM	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GR	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GS	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GY	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Quotrix Exch (XQTX)	Common Stock	SIEMENS AG-REG	SIE QT	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Aquis Exchg (AQXE)	Common Stock	SIEMENS AG-REG	SIE QX	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Tradegate (XGAT)	Common Stock	SIEMENS AG-REG	SIE TH	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Turquoise (TRQX)	Common Stock	SIEMENS AG-REG	SIE TQ	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Chi-X Europe (CHIX)	Common Stock	SIEMENS AG-REG	SIED IX	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSXW)	Common Stock	SIEMENS AG-REG	SIN BWJ	723610	5735233	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSXW)	Common Stock	SIEMENS AG-REG	SIN SE	723610	5735233	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSXW)	Common Stock	SIEMENS AG-REG	SIN SW	723610	5735233	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EN Amsterdam (XAMS)	Common Stock	SIEMENS AG-REG	SIA NA	723610	5735288	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Sigma X MTF (SGMX)	Common Stock	SIEMENS AG-REG	SIE S1	723610	5727973 DE	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	OTC US (OOC)	Common Stock	SIEMENS AG-REG	SMARF PQ	723610	B0395G4	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	OTC US (OOC)	Common Stock	SIEMENS AG-REG	SMARF US	723610	B0395G4	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	OTC US (OOC)	Common Stock	SIEMENS AG-REG	SMARF UV	723610	B0395G4	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Brsatlifans (MTAA)	Common Stock	SIEMENS AG-REG	SIE IF	723610	B19GK05	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Brsatlifans (MTAA)	Common Stock	SIEMENS AG-REG	SIE IM	723610	B19GK05	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EuroTLX (ETLX)	Common Stock	SIEMENS AG-REG	SIE TE	723610	B19GK05	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Budapest (XBUD)	Common Stock	SIEMENS AG-REG	SIEMENS HB	723610	B5NMZR9	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Bucharest (XBSE)	Common Stock	SIEMENS AG-REG	SIE RE	723610	B87FOHO	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Bucharest (XBSE)	Common Stock	SIEMENS AG-REG	SIE RO	723610	B87FOHO	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Vienna (XWBO)	Common Stock	SIEMENS AG-REG	SIE AV	723610	BF028C7 AT	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Mexico (XMEX)	Common Stock	SIEMENS AG-REG	SIE M	723610	BNTZCDS	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSXW)	Common Stock	SIEMENS AG-REG	SINEUR SE	723610	BYL6SL1	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSXW)	Common Stock	SIEMENS AG-REG	SINEUR SW	723610	BYL6SL1	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Euro Comp (XLON)	Common Stock	SIEMENS AG-REG	SIE EU	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Gettex (MUND)	Common Stock	SIEMENS AG-REG	SIE GZ	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE YA	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XB	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XD	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XE	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XI	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XL	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XS	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XV	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIE XW	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Euro Comp (XLON)	Common Stock	SIEMENS AG-REG	SIECHF U	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Blockmatch (BLOX)	Common Stock	SIEMENS AG-REG	SIED B3	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Liquidnet (LIQU)	Common Stock	SIEMENS AG-REG	SIED L3	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	ITG Posit (XPOS)	Common Stock	SIEMENS AG-REG	SIED P0	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	UBS MTF (XUBS)	Common Stock	SIEMENS AG-REG	SIED S2	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-NEW REG	SIE N GF	A2GSW8	BFBF9V2 DE	DE000A2GSW81	
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-NEW REG	SIE N GR	A2GSW8	BFBF9V2 DE	DE000A2GSW81	
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-NEW REG	SIE N GY	A2GSW9	BFBF9V2 DE	DE000A2GSW81	
SIEMENS AG	SIEMENS AG	Euro Comp (XLON)	Common Stock	SIEMENS AG-NEW REG	SIE N EUR EU	A2GSW8		DE000A2GSW81	
SIEMENS AG	SIEMENS AG	OTC US (OOC)	ADR	SIEMENS AG-ADR	SIEGY PQ	632748	2742689	US8261975010	012654812
SIEMENS AG	SIEMENS AG	OTC US (OOC)	ADR	SIEMENS AG-ADR	SIEGY US	632748	2742689	US8261975010	012654812
SIEMENS AG	SIEMENS AG	OTC US (OOC)	ADR	SIEMENS AG-ADR	SIEGY UV	632748	2742689	US8261975010	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GD	632748	B1C58Q1	US8261975010	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GF	632748	B1C58Q1	US8261975010	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GR	632748	B1C58Q1	US8261975010	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GS	632748	B1C58Q1	US8261975010	012654812
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE S1	853181	B01CP21	ES0143416115	003285938
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE SM	853183	B01CP21	ES0143416115	003285938
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE SQ	853184	B01CP21	ES0143416115	003285938
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE BQ	853159	B01CP21	ES0143416115	003285914
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE EB	853180	B01CP21	ES0143416115	003285914
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE BX	853171	B01CP21	ES0143416115	003285926
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE OX	853180	B01CP21	ES0143416115	003285938
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE TO	853186	B01CP21	ES0143416115	003285941
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GB	853162	B01D7H3	ES0143416115	003285917
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GD	853163	B01D7H3	ES0143416115	003285918
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GF	853164	B01D7H3	ES0143416115	003285919
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GI	853165	B01D7H3	ES0143416115	003285920
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GM	853186	B01D7H3	ES0143416115	003285921
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GR	853167	B01D7H3	ES0143416115	003285922
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GS	853168	B01D7H3	ES0143416115	003285923
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GY	853169	B01D7H3	ES0143416115	003285924
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GZ	853170	B01D7H3	ES0143416115	003285925
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GT	853179	B01D7H3	ES0143416115	003285934
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 TH	853185	B01D7H3	ES0143416115	003285940
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GCTAF PQ	853177	B01QLN6	ES0143416115	003285932
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GCTAF US	853187	B01QLN6	ES0143416115	003285942
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GCTAF UV	853189	B01QLN6	ES0143416115	003285944
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM AV	853173	B02YQK8	ES0143416115	003285928
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM LO	853174	B02YQK8	ES0143416115	003285929
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE AV	853157	BF447S9	ES0143416115	003285912
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREN MM	853175	BQ5VKV7	ES0143416115	003285930
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM EU	853161		ES0143416115	003285916
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM XB	853191		ES0143416115	003285946
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM XE	853192		ES0143416115	003285947
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM XL	853193		ES0143416115	003285948
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM XN	853194		ES0143416115	003285949
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM XV	853195		ES0143416115	003285950
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE B3	853158		ES0143416115	003285913
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE L3	853172		ES0143416115	003285927
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE PO	853176		ES0143416115	003285931
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE S2	853182		ES0143416115	003285937
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	ADR	SIEMENS GAMESA RENEWABLE ENE	GCTAY PQ	853178	BF7LB85	US82621P1012	003285933
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	ADR	SIEMENS GAMESA RENEWABLE ENE	GCTAY US	853188	BF7LB85	US82621P1012	003285943
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	ADR	SIEMENS GAMESA RENEWABLE ENE	GCTAY UV	853190	BF7LB85	US82621P1012	003285945
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Common Stock	Siemens Ltd	SIEM IB		B15T569	INE03A01024	
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Common Stock	Siemens Ltd	SIEM IN		AOJ3F4	INE03A01024	
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Common Stock	Siemens Ltd	SIEM IS		B15T569	INE03A01024	
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Sec Lending	Siemens Ltd	SIEM'S IN		B15T569	INE03A01024	
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Sec Lending	Siemens Ltd	SIEM'S IS		B15T569	INE03A01024	
SIEMENS PAKISTAN ENGINEERING CO LTD	SIEMENS AG	Pakistan (XKAR)	Common Stock	SIEMENS PAKISTAN ENGIN CO	SIEM PA	A1W5U3	6807539	PK0022701012	

SIEMENS PAKISTAN ENGINEERING CO LTD	SIEMENS AG	Pakistan (XKAR)	Common Stock	SIEMENS PAKISTAN ENGIN CO	SIEM PK	A1W5U3	6807539	PK0022701012		
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Chi-X Alt TS (CHIX)	Common Stock	WARTSILA OYJ ABP	WRTB IX	881050	452189 FI	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Equiduct (XEQT)	Common Stock	WARTSILA OYJ ABP	WRT1V BQ	881044	4525189 FI	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	BATS Europe (BATE)	Common Stock	WARTSILA OYJ ABP	WRT1V EB	881045	4525189 FI	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Helsinki (XHEL)	Common Stock	WARTSILA OYJ ABP	WRT1V FH	881046	4525189 FI	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Aquis Exchg (AQXE)	Common Stock	WARTSILA OYJ ABP	WRT1V QX	881047	4525189 FI	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	SIGMA X MTF (SGMX)	Common Stock	WARTSILA OYJ ABP	WRT1V S1	881050	4525189 FI	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Turquoise (TROX)	Common Stock	WARTSILA OYJ ABP	WRT1V TQ	881049	4525189 FI	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GB	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GD	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GF	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GM	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GN	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GO	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GS	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GT	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Quotrix Exch (XQTX)	Common Stock	WARTSILA OYJ ABP	MTA GT	881050	B06KRC4 DE	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro Comp (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V EU	881042	B28N651 GB	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	LSE EuropeQS (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V LI	881043	B28N651 GB	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	LSE EuropeQS (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V LO	881044	B28N651 GB	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	BX Worldcaps (XB RN)	Common Stock	WARTSILA OYJ ABP	WRT1V BW	881045	BHZKRB3 CH	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	BX Worldcaps (XB RN)	Common Stock	WARTSILA OYJ ABP	WRT1V SW	881046	BHZKRB3 CH	F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Gettex (MUND)	Common Stock	WARTSILA OYJ ABP	MTA GZ	881041		F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro OTC (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V XL	881048		F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro OTC (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V XV	881047		F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro OTC (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V XW	881050		F10009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Blockmatch (BLOX)	Common Stock	WARTSILA OYJ ABP	WRT1VH B3	881048		F10009003727		
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Liquidnet (LIQU)	Common Stock	WARTSILA OYJ ABP	WRT1VH L3	881049		F10009003727		
WARTSILA OYJ ABP	WARTSILA OYJ ABP	ITG Posit (XPOS)	Common Stock	WARTSILA OYJ ABP	WRT1VH PO	881050		F10009003727	004174488	X98155116
WARTSILA OYJ ABP	WARTSILA OYJ ABP	UBS MTF (XUBS)	Common Stock	WARTSILA OYJ ABP	WRT1VH S2	881050		F10009003727		
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	ADR	WARTSILA OYJ-UNSPON ADR	WRTBY PQ		B3FOCN2 US	936544105	US9365441057	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	ADR	WARTSILA OYJ-UNSPON ADR	WRTBY US		B3FOCN2 US	936544105	US9365441057	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	ADR	WARTSILA OYJ-UNSPON ADR	WRTBY UV		B3FOCN2 US	936544105	US9365441057	

## ATTACHMENT E

### Letter to SBI Domestic and International Equity Managers

December 27, 2017

#### 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 may differ from the List of Restricted Iran Companies that was attached to the September 26, 2017 letter you received. **This new list is effective December 31, 2017.**

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

- **Hyundai Engineering & Construction**      **South Korea**
- **Hyundai Motor**      **South Korea**

**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
- A 100 percent of a company's holdings must be sold by the date indicated.

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

- **Total S.A.**      **France**

**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. 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  
Assistant Executive Director & Chief Operating Officer

Enclosures

cc:

Michael J. Menssen, Director, Debt Management  
Tammy Brusehaver, Investment Officer, Public Equity  
Stephanie Gleeson, Investment Officer, Public Equity  
Aaron Griga, Investment Officer, Fixed Income

## Letter to SBI Fixed Income Managers

December 27, 2017

### Regarding: Iran Companies

Dear Manager:

The Minnesota State Board of Investment (SBI) has 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 could differ from the List of Restricted Iran Companies that was attached to the September 26, 2017 letter you received. **This new list is effective December 31, 2017.**

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

- **Hyundai Engineering & Construction**      **South Korea**
- **Hyundai Motor**      **South Korea**

**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
- A 100 percent of a company's holdings must be sold by the date indicated.

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

- **Total S.A.**      **France**

**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. 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  
Assistant Executive Director & Chief Operating Officer

Enclosures

cc:

Michael J. Menssen, Director, Debt Management  
Aaron Griga, Investment Officer, Fixed Income  
Cassandra Boll, Investment Officer, Private Markets  
Steve Kuettel, Investment Officer, Cash Mgmt. Services  
Patricia Ammann, Investment Officer, DC & Private Markets

## ATTACHMENT 1

### RESTRICTED IRAN COMPANIES

Securities of Companies May not be Purchased for Portfolio

COMPANY NAME	COUNTRY
China Petroleum & Chemical Corp	China
PetroChina Co. Ltd.	China
Total S.A.	France
Linde AG	Germany
Bharat Petroleum Corporation Ltd.	India
Indian Oil Corporation Ltd.	India
Oil & Natural Gas Corporation Ltd.	India
Eni Spa	Italy
Maire Tecnimont S.p.A.	Italy
Mitsui & Co. Ltd	Japan
Toyo Engineering Corporation	Japan
Toyota Tsusho Corporation	Japan
Gazprom OAO	Russia
PJSC Lukoil	Russia
Daelim Industrial	South Korea
Daewoo Engineering & Construction	South Korea
GS Engineering & Construction Corp	South Korea
Hyundai Engineering & Construction	South Korea
Hyundai Motor	South Korea
L G International	South Korea
Gubre Fabrikalari T.A.S.	Turkey

Effective Date: December 31, 2017

**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>
Eni Spa	Italy	6/30/2017	12/31/2017
Daewoo Engineering & Construction	South Korea	12/31/2017	6/30/2018
Total S.A.	France	6/30/2018	12/31/2018

Effective Date: December 31, 2017



## ATTACHMENT 3

### IRAN RESTRICTED COMPANIES Security Identifiers

ISIN	COMPANY NAME	SYMBOL	COUNTRY	CUSIP
CNE1000002Q2	China Petroleum & Chemical Corp	386	China	16941R108
US16941R1086	China Petroleum & Chemical Corp	386	China	16941R108
CNE0000018G1	China Petroleum & Chemical Corp	386	China	16941R108
ARDEUT114071	China Petroleum & Chemical Corp	386	China	16941R108
CNE1000003W8	PetroChina Co. Ltd.	857	China	71646E100
US71646E1001	PetroChina Co. Ltd.	857	China	71646E100
CNE1000007Q1	PetroChina Co. Ltd.	857	China	71646E100
ARDEUT113958	PetroChina Co. Ltd.	857	China	71646E100
FR0000120271	Total S.A.	FP	France	89151E109
US89151E1091	Total S.A.	FP	France	89151E109
ARDEUT112075	Total S.A.	FP	France	89151E109
DE0006483001	Linde AG	LIN	Germany	535223200
DE000A2E4L75	Linde AG	LIN	Germany	535223200
INE029A01011	Bharat Petroleum Corporation Ltd.	500547	India	
INE242A01010	Indian Oil Corporation Ltd.	530965	India	
INE213A01029	Oil & Natural Gas Corporation Ltd.	500312	India	
IT0003132476	Eni Spa	ENI	Italy	26874R108
US26874R1086	Eni Spa	ENI	Italy	26874R108
ARDEUT112612	Eni Spa	ENI	Italy	26874R108
IT0004931058	Maire Tecnimont S.p.A.	MT	Italy	56064T101
US56064T1016	Maire Tecnimont S.p.A.	MT	Italy	56064T101
JP3893600001	Mitsui & Co. Ltd	8031	Japan	606827202
US6068272029	Mitsui & Co. Ltd	8031	Japan	606827202
JP3607800004	Toyo Engineering Corporation	6330	Japan	
JP3635000007	Toyota Tsusho Corporation	8015	Japan	
KR7000210005	Daelim Industrial	210	Korea South	
KR7000211003	Daelim Industrial	210	Korea South	
KR7047040001	Daewoo Engineering & Construction	A047040	Korea South	
KR7006360002	GS Engineering & Construction Corp	6360	Korea South	
KR7000720003	Hyundai Engineering & Construction	720	Korea South	
KR7000721001	Hyundai Engineering & Construction	720	Korea South	
KR7005380001	Hyundai Motor	5380	Korea South	449187707
USY384721251	Hyundai Motor	5380	Korea South	449187707
US4491877076	Hyundai Motor	5380	Korea South	449187707
US4491875096	Hyundai Motor	5380	Korea South	449187707
US4491871038	Hyundai Motor	5380	Korea South	449187707
KR7005383005	Hyundai Motor	5380	Korea South	449187707
KR7005382007	Hyundai Motor	5380	Korea South	449187707
KR7005381009	Hyundai Motor	5380	Korea South	449187707
KR7001120005	L G International	1120	Korea South	
RU0007661625	Gazprom OAO	GAZP	Russia	368287207

ISIN	COMPANY NAME	SYMBOL	COUNTRY	CUSIP
US3682872078	Gazprom OAO	GAZP	Russia	368287207
US3682871088	Gazprom OAO	GAZP	Russia	368287207
ARDEUT114261	Gazprom OAO	GAZP	Russia	368287207
RU0009024277	PJSC Lukoil	LKOH	Russia	677862104
US69343P2048	PJSC Lukoil	LKOH	Russia	677862104
US69343P1057	PJSC Lukoil	LKOH	Russia	677862104
US5498741058	PJSC Lukoil	LKOH	Russia	677862104
ARDEUT114253	PJSC Lukoil	LKOH	Russia	677862104
TRAGUBRF91E2	Gubre Fabrikalari T.A.S.	GUBRF	Turkey	

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

Source: IW Financial

Effective Date: December 31, 2017

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## **EXECUTIVE DIRECTOR'S REPORT**

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DATE: February 5, 2018

TO: Members, State Board of Investment

FROM: Mansco Perry III

**SUBJECT: Investment Manager Update**

### **Non-Retirement Funds**

The transfer of assets for the internal S&P 500 and fixed income accounts to Mellon Capital Management Corporation (S&P 500 Index account) and Prudential Global Investment Management (fixed income), respectively, was completed.

### **Combined Funds - Private Markets**

Contracts for seven commitments from fourth quarter 2017 have been negotiated and executed. Contracts for three commitments are currently under negotiation and staff expects they will be executed in February 2018.

### **Combined Funds - Public Markets**

During the fourth quarter of 2017, the following three managers were selected to manage a U.S. Treasury portfolio in the Protection Category of the Strategic Allocation Category Framework approved by the Board at the December 5, 2017 meeting:

- Blackrock Financial Management, Inc.
- Goldman Sachs Asset Management
- Neuberger Berman Investment Advisers LLC

During the fourth quarter contracts were negotiated and signed with all three firms and the Barclay's Treasury 5+ Years Total Return Index was selected as the benchmark.

### **Combined Funds – Portfolio Update**

The initial funding was \$3 billion (\$1 billion per manager), occurred early in January 2018, and was generated by liquidating assets from the Russell 3000 equity index account. We plan on transferring an additional \$3 billion to the U.S. Treasury Bond portfolio during the remainder of Fiscal Year 2018. This transfer is anticipated to come from the core fixed income managers.

We have attached a sample of the Strategic Allocation Category Framework to illustrate the impact the transfer of \$6 billion from the Public Equity and Core Fixed Income portfolios to the U.S. Treasury Bond portfolios (see **Attachment A**). This assumes the transfers took place at the end of December 2017, and is intended only as an example to indicate the impact. We will not include

a table denoting an actual Strategic Allocation Category Framework Report until the First Quarter 2018 (ending March 31, 2018) reporting period.

Also included is the Volatility Weighted Benchmark introduced at the last meeting (see **Attachment B**). This approach takes the longer term (5 years or longer) standard deviation of the portfolio and solves for the weights of an equity/bond portfolio with the same standard deviation. The similar term (e.g., length in years) return for the equity/bond benchmark becomes the benchmark for comparison to the portfolio. Here we can see that on this basis, the SBI has experienced positive value added over the longer term.

Lastly, due to timing, we have also included the Trust Universe Comparison Service (TUCS) information for the quarter ending December 31, 2017 (see **Attachment C**). (Note, this is normally included in the Performance Summary. In those instances where the information is not received in time, it will be included in this section or we will distribute the information at the Investment Advisory Council meeting).

## ATTACHMENT A

### Sample Illustration Impact of Adding Treasuries to SBI Combined Funds

	12/31/17 \$	12/31/17 Weights	Asset Transfer	12/31/17 \$ w/Treasuries	12/31/17 Weights w/Treasuries
<b><u>Growth - Appreciation</u></b>					
Public Equity	\$ 45,671,739,657	66.79%	\$ (3,000,000,000)	\$ 42,671,739,657	62.41%
Private Equity	\$ 4,665,032,447	6.82%		\$ 4,665,032,447	6.82%
Non-Core Real Assets	\$ 1,992,017,721	2.91%		\$ 1,992,017,721	2.91%
Distressed/Opportunistic	\$ 1,103,750,412	1.61%		\$ 1,103,750,412	1.61%
	<b>\$ 53,432,540,237</b>	<b>78.14%</b>		<b>\$ 50,432,540,237</b>	<b>73.76%</b>
<b><u>Growth - Income-oriented</u></b>					
Core Fixed Income	\$ 12,580,881,034	18.40%	\$ (3,000,000,000)	\$ 9,580,881,034	14.01%
Private Credit	\$ 503,140,937	0.74%		\$ 503,140,937	0.74%
Return-Seeking Fixed Income	\$ -	0.00%		\$ -	0.00%
	<b>\$ 13,084,021,971</b>	<b>19.14%</b>		<b>\$ 10,084,021,971</b>	<b>14.75%</b>
<b><u>Real Assets</u></b>					
Core Real Estate	\$ -	0.00%		\$ -	0.00%
Real Assets	\$ 620,658,042	0.91%		\$ 620,658,042	0.91%
	<b>\$ 620,658,042</b>	<b>0.91%</b>		<b>\$ 620,658,042</b>	<b>0.91%</b>
<b><u>Inflation Protection</u></b>					
TIPS	\$ -	0.00%		\$ -	0.00%
Commodities	\$ -	0.00%		\$ -	0.00%
	<b>\$ -</b>	<b>0.00%</b>		<b>\$ -</b>	<b>0.00%</b>
<b><u>Protection</u></b>					
U.S. Treasuries	\$ -	0.00%	\$ 6,000,000,000	\$ 6,000,000,000	8.77%
	<b>\$ -</b>	<b>0.00%</b>		<b>\$ 6,000,000,000</b>	<b>8.77%</b>
<b><u>Liquidity</u></b>					
Cash	\$ 1,240,180,431	1.81%		\$ 1,240,180,431	1.81%
	<b>\$ 1,240,180,431</b>	<b>1.81%</b>		<b>\$ 1,240,180,431</b>	<b>1.81%</b>
<b>Total</b>	<b>\$ 68,377,400,681</b>	<b>100.00%</b>		<b>\$ 68,377,400,681</b>	<b>100.00%</b>
<b>Illiquid Asset Exposure</b>	<b>\$ 8,884,599,559</b>	12.99%		<b>\$ 8,884,599,559</b>	12.99%

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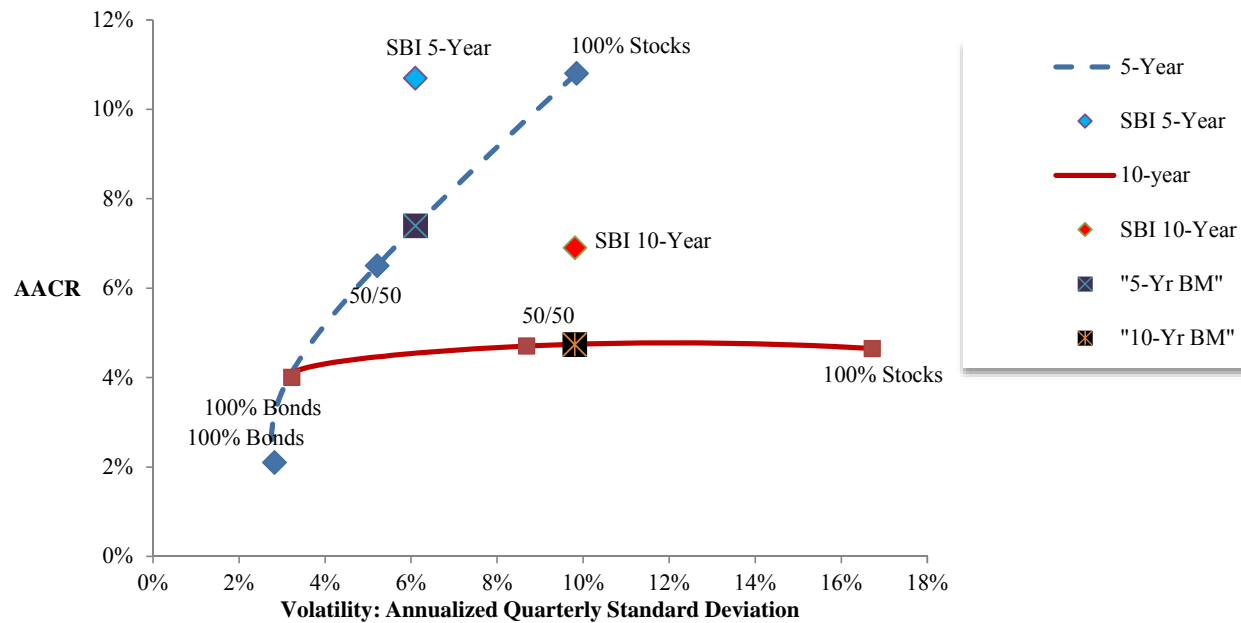
## ATTACHMENT B

<b>As of (Date):</b>		<b>12/31/2017</b>							
<b>SBI Combined Funds</b>									
		<i>1-year</i>	<i>3-year</i>	<i>5-year</i>	<i>10-year</i>	<i>15-year</i>	<i>20-year</i>	<i>25-year</i>	<i>30-year</i>
<i>SBI</i>	<b>Return</b>	18.3%	8.4%	10.7%	6.9%	9.2%	7.3%	8.7%	9.4%
	<b>Stdev</b>	-	-	6.1%	9.8%	8.8%	9.6%	9.5%	9.1%
<b>Vol. Equivalent Benchmark</b>									
<i>Benchmark</i>	<b>Return</b>	15.5%	6.6%	7.4%	4.7%	7.2%	6.0%	5.6%	4.7%
	<b>Stdev</b>			6.1%	9.8%	8.8%	9.6%	9.5%	9.1%
	<b>Value Added</b>	2.9%	1.8%	3.3%	2.2%	2.0%	1.3%	3.1%	4.7%
	<b>Stock Weight</b>	60%	60%	60%	57%	58%	62%	61%	61%
	<b>Bond Weight</b>	40%	40%	40%	43%	42%	39%	39%	39%

The Volatility Equivalent Benchmark stock and bond weights are adjusted to equal the standard deviation of the SBI Combined Funds portfolio. Then a return is calculated.

### AACR and Volatility of Returns for "Simple" Benchmark Portfolios

-from All Bonds (Left) to All Stocks (Right)-



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## Combined Funds Summary

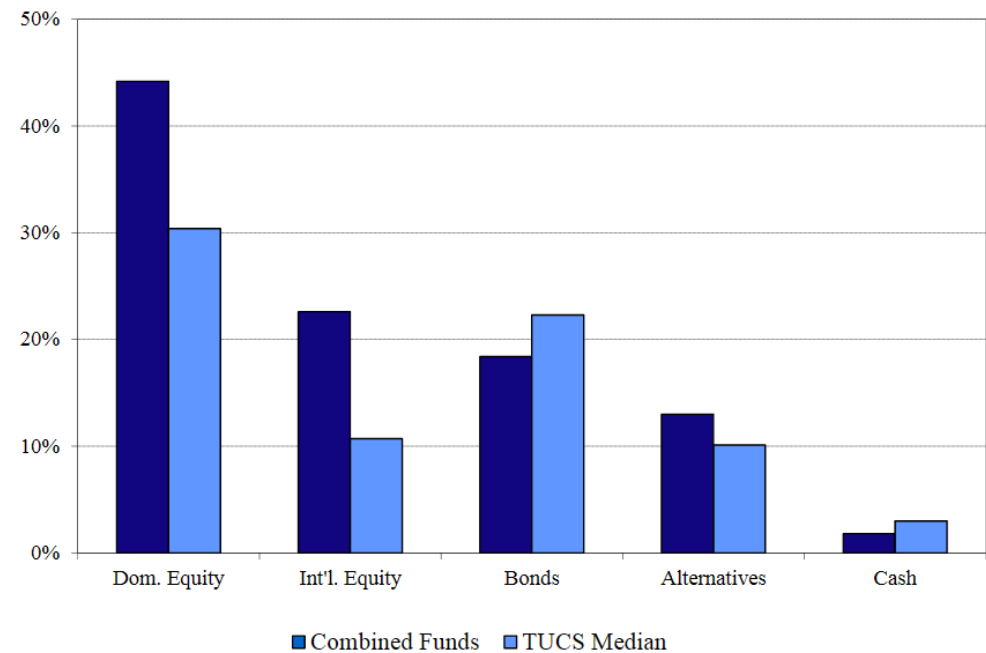
### Asset Mix Compared to Other Pension Funds

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.

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:

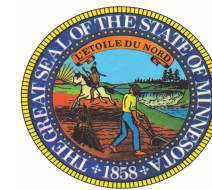
#### Combined Funds Asset Mix

	<u>(\$Millions)</u>	<u>Actual Mix</u>
Public Equity	45,672	66.8
Fixed Income	12,581	18.4
Private Markets	8,922	13.0
Cash	1,203	1.8
<b>TOTAL</b>	<b>68,377</b>	<b>100.0</b>



	<u>Domestic Equity</u>	<u>International Equity</u>	<u>Bonds</u>	<u>Alternatives</u>	<u>Cash</u>
Combined Funds	44.2%	22.6%	18.4%	13.0%	1.8%
Median in TUCS	30.4%	10.7%	22.3%	10.1%	3.0%

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## Combined Funds Summary

### Performance Compared to Other Pension Funds

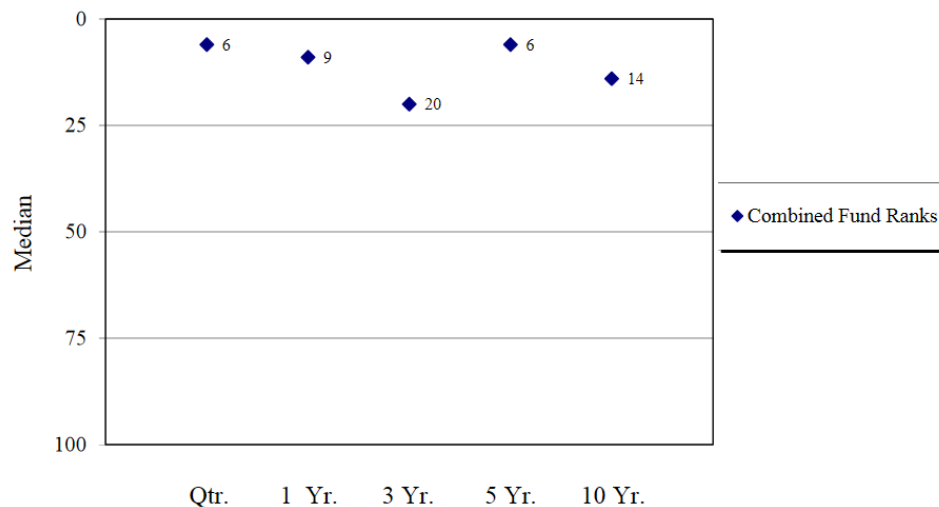
While the SBI is concerned with how its returns compare to other pension investors, universe comparisons should be used with great care. There are several reasons why such comparisons will provide an "apples to oranges" look at performance:

- **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 12/31/2017				
	<u>Quarter</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>10 Years</u>
Combined Funds	6th	9th	20th	6th	14th
Percentile Rank in TUCS					

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DATE: February 5, 2018

TO: Members, Investment Advisory Council

FROM: SBI Staff

**SUBJECT: Private Markets Commitments for Consideration**

Staff has reviewed the following action agenda item:

- A. Status of SBI Current Private Markets Commitments
- B. Consideration of new commitments

**Existing Managers:**

Private Equity	The Banc Funds Company	Banc Fund X	\$150 Million
Distress/Opp.	CarVal Investors	CVI Credit Value Fund IV	\$150 Million
Private Equity	Court Square	Court Square Capital Partners IV	\$150 Million
Private Equity	Hellman & Friedman LLC	Hellman & Friedman IX	\$200 Million
Private Equity	Lexington Partners	Lexington Capital Partners IX	\$150 Million

**New Managers:**

Private Equity	Bridgepoint Advisers Ltd.	Bridgepoint Europe VI	€150 Million
Real Assets	KKR	KKR Global Infrastructure III	\$150 Million
Private Credit	TPG Sixth Street Partners	TSSP Adjacent Opps; Contingent Commit. to TAO; and TPG Opp Partners IV	\$200 Million

**IAC action is required on item B.**

**A. Status of SBI Current Private Markets Commitments**

**Minnesota State Board of Investment**  
*Combined Funds*  
*December 31, 2017*

Combined Funds Market Value \$68,377,400,398

Amount Available for Investment **\$8,288,558,079**

	<b>Current Level</b>	<b>Target Level</b>	<b>Difference</b>
Market Value (MV)	\$8,805,792,020	\$17,094,350,099	\$8,288,558,079
MV +Unfunded	\$15,217,535,064	\$23,932,090,139	\$8,714,555,075

<b>Asset Class</b>	<b>Market Value</b>	<b>Unfunded Commitment</b>	<b>Total</b>
Private Equity	\$4,598,425,366	\$3,565,381,835	\$8,163,807,201
Private Credit	\$496,804,351	\$640,901,511	\$1,137,705,862
Real Assets	\$1,964,190,491	\$878,284,885	\$2,842,475,376
Real Estate	\$635,763,542	\$787,273,364	\$1,423,036,906
Distressed/Opportunistic	\$1,110,608,270	\$539,901,449	\$1,650,509,719
<b>Total</b>	<b>\$8,805,792,020</b>	<b>\$6,411,743,044</b>	<b>\$15,217,535,064</b>

*Cash Flows*  
*December 31, 2017*

<b>Calendar Year</b>	<b>Capital Calls</b>	<b>Distributions</b>	<b>Net Invested</b>
2017	\$2,021,595,780	(\$2,383,863,711)	(\$362,267,931)
2016	\$1,874,320,138	(\$1,728,367,357)	\$145,952,781
2015	\$1,541,161,769	(\$2,128,301,645)	(\$587,139,876)
2014	\$1,378,984,263	(\$2,133,698,037)	(\$754,713,774)

## **B. Consideration of New Investment Commitments**

### **ACTION ITEMS:**

#### **1) Investment with an existing Private Equity manager, The Banc Funds Company (“Banc Funds”), in Banc Fund X (“Fund X”).**

Banc Funds is seeking investors for a new fund for the purpose of investing in well-managed banks, thrifts, and other companies that will either generate strong growth or become acquisition targets of the industry consolidation process, or both. Fund X expects to invest \$1 - \$10 million, each, in the majority of its portfolio companies. Most will be in community banks with assets of under \$1 billion, which are generally commercial banks making commercial loans to small businesses.

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

More information on Banc Fund X is included as **Attachment A beginning on page 9**.

### **RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff’s recommendation to commit up to \$150 million, or 20% of Banc Fund X, 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 Banc Funds 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 Banc Funds or reduction or termination of the commitment.**

#### **2) Investment with an existing distressed/opportunistic manager, CarVal Investors (“CarVal”), in CVI Credit Value Fund IV, L.P. (“Fund IV”).**

CarVal is seeking investors for a fund being formed to capitalize on investment opportunities in distressed and credit-intensive assets within its four strategies of loan portfolios, corporate securities, liquidations and structured credit, as well as other special opportunities. CarVal believes there are four key themes that underpin the current market opportunity and position the Firm to take advantage of these conditions: re-regulation of banks, deleveraging in Europe, shifts in publicly listed credit market structure, and the dislocation in energy and emerging markets.

In addition to reviewing the attractiveness of the CVI Credit Value Fund IV 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 CVI Credit Value Fund IV is included as **Attachment B beginning on page 13.**

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff's recommendation to commit up to \$150 million, or 20% of CVI Credit Value Fund IV, 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 CarVal 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 CarVal or reduction or termination of the commitment.**

**3) Investment with an existing private equity manager, Court Square Capital Management ("Court Square"), in Court Square Capital Partners IV, LLC ("Fund IV").**

Court Square is seeking investors to continue their history of making control investments in North American, middle market, growth companies. The Firm focuses on companies with an enterprise value of between \$150 million and \$1.5 billion. Court Square believes that middle market businesses can achieve significant value creation by combining strong management with a disciplined business plan. They seek to invest in companies which are positioned to benefit from favorable market dynamics that can lead to compelling earnings growth.

In addition to reviewing the attractiveness of the Court Square Capital Partners IV 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 Court Square Capital Partners IV is included as **Attachment C beginning on page 17.**

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff's recommendation to commit up to \$150 million, or 20% of Court Square Capital Partners IV, 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 Court Square 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 Court Square or reduction or termination of the commitment.**

**4) Investment with an existing private equity manager, Hellman & Friedman LLC (“H&F” or the “Firm”), in Hellman & Friedman Capital Partners IX (“Fund IX”).**

H&F is seeking investors to continue the Firm’s history of making large-scale private equity investments in high quality, growing businesses in the developed markets. Fund IX will focus on making equity-related investments generally between \$500 million and \$2 billion, and primarily in the U.S. and developed countries outside the U.S. The Firm targets investments in mid to large-cap companies, depending on where it believes it can find the most compelling opportunities. H&F prefers to make fewer, larger investments to concentrate resources on the Firm’s best ideas.

In addition to reviewing the attractiveness of the Hellman & Friedman Capital Partners IX 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 Hellman & Friedman Capital Partners IX is included as **Attachment D beginning on page 19**.

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff’s recommendation to commit up to \$200 million, or 20% of Hellman & Friedman Capital Partners IX, 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 Hellman & Friedman 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 Hellman & Friedman LLC or reduction or termination of the commitment.**

**5) Investment with an existing private equity manager, Lexington Partners (“Lexington”), in Lexington Capital Partners IX (“LCP IX”).**

Lexington is seeking investors for a new fund to invest across the spectrum of secondary transactions, from complex, multi-billion dollar portfolio transactions to the purchase of individual fund interests. Lexington believes that the firm’s broad, opportunistic investment strategy will allow LCP IX to deploy capital to the segments of the secondary market offering the most attractive risk-adjusted returns. Lexington will seek to capitalize on the experience of its principals, its substantial expertise in secondary market transactions, its proprietary

database of information, and its extensive global sourcing networks to seek superior investment returns for LCP IX.

In addition to reviewing the attractiveness of the Lexington Capital Partners IX 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 Lexington Capital Partners IX is included as **Attachment E beginning on page 23**.

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff's recommendation to commit up to \$150 million, or 20% of Lexington Capital Partners IX, 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 Lexington Partners 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 Lexington Partners or reduction or termination of the commitment.**

**6) Investment with a new private equity manager, Bridgepoint Advisers Limited ("Bridgepoint"), in Bridgepoint Europe VI ("BE VI").**

Bridgepoint is seeking investors for a new fund create a portfolio of middle market companies headquartered, or with significant operations, in Europe. The BE VI will continue Bridgepoint Europe's strategy of investing in European middle market buyouts (established businesses with enterprise values typically between €200m and €1bn), with a particular focus on businesses with an EV of between €200m and €600m. As with Bridgepoint's existing funds, there will be no prescriptive country allocations, thus providing BE VI flexibility in its deployment of capital within Europe to exploit regional volatility and capture 'best value' and relative return opportunities.

In addition to reviewing the attractiveness of the Bridgepoint Europe VI 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 Bridgepoint Europe VI is included as **Attachment F beginning on page 27**.

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff's recommendation to commit up to €150 million, or 20% of Bridgepoint Europe 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 Bridgepoint 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 Bridgepoint or reduction or termination of the commitment.**

**7) Investment with a new real assets manager, KKR Associates Infrastructure III (“KKR”), in KKR Global Infrastructure Investors III (“Fund III”).**

KKR is forming Fund III to generate attractive risk-adjusted returns by focusing on critical infrastructure investments with low volatility and strong downside protection where the Firm believes it can tackle complexity in sourcing, structuring, operations and execution. Fund III will seek to generate returns through both long-term capital appreciation and current income generation from a portfolio that is broadly diversified across a number of different infrastructure sub-sectors, geographies and asset types, with an emphasis on investments in existing assets and businesses located in Organisation for Economic Co-operation and Development (OECD) countries.

In addition to reviewing the attractiveness of the KKR Global Infrastructure Investors 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 KKR Global Infrastructure Investors III is included as **Attachment G beginning on page 31.**

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff’s recommendation to commit up to \$150 million, or 20% of KKR Global Infrastructure Investors 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 KKR 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 KKR or reduction or termination of the commitment.**

**8) Investment with a new private credit manager, TPG Sixth Street Partners (“TSSP”), in TSSP Adjacent Opportunities Partners (“TAO”), Contingent Commitment to TAO (“TAO Contingent) and TPG Opportunities Partners IV (“TOP IV”).**

TSSP is forming three vehicles to take advantage of various global investment themes. The TSSP platform is managed as one large, coordinated team to nurture a culture where cross-sourcing is prevalent and intended to be a key differentiator. Ultimately, the nature of an investment will dictate which TSSP fund(s) will execute the transaction.

The TAO vehicle represents a single portfolio of investments which spans the various TSSP strategies and themes. TSSP expects to build TAO’s portfolio across three core components: (i) adjacent opportunities, (ii) direct lending crossover opportunities and (iii) special situations crossover opportunities. As a result, an investor in the Partnership will have exposure across the TSSP platform and TSSP sourcing.

TAO Contingent is a parallel vehicle with a finite life and will only become active in a distressed / dislocated scenario. If activated, TAO Contingent will generally participate in all future TAO investments during the TAO Contingent commitment period alongside other TAO vehicles pro-rata based on relative unfunded commitments.

TOP IV is being formed to generate attractive returns through the purchase or origination of special situations and distressed investments across the credit cycle. TSSP expects TOP IV to invest across the following: corporate distressed-for-control, asset special situations, and corporate dislocations.

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

More information on TAO, TAO Contingent, and TOP IV is included as **Attachment H beginning on page 35.**

**RECOMMENDATION:**

**Staff is requesting that the Investment Advisory Council concur with Staff’s recommendation to commit up to \$200 million in aggregate, or 20% of each of TAO, TAO Contingent, and TOP IV, 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 TSSP 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 TSSP or reduction or termination of the commitment.**



## ATTACHMENT A

### PRIVATE EQUITY MANAGER SUMMARY PROFILE

#### ***I. Background Data***

<b><i>Name of Fund:</i></b>	Banc Fund X L.P.
<b><i>Type of Fund:</i></b>	Private Equity Limited Partnership
<b><i>Target Fund Size:</i></b>	\$650 million (Target), \$800 million (cap)
<b><i>Fund Manager:</i></b>	The Banc Funds Company, L.L.C.
<b><i>Administrative Contact:</i></b>	Charles J. Moore The Banc Funds Company 20 North Wacker Drive, Suite 3300 Chicago, IL 60606

#### ***II. Organization and Staff***

Banc Fund X will invest in U.S. – based, sub-regional, financial service companies, primarily community banks. The Fund will be managed by a seasoned team that has invested nine predecessor funds over the 1986-2017 period. These nine predecessor funds raised committed capital of \$2.5 billion and have made investments of nearly \$5 billion.

The key personnel involved in managing Fund X are all employees of The Banc Fund Company and will be the same individuals who have managed Funds I through IX, augmented by additional hires in 2014-16. These individuals are Charles J. Moore, John M. Baker, Richard H. Hein, Jean T. Riggs, Thomas Ronczy, Gerald R. King, Ronald J. Peterson, Mary P. Quinn, Cheryl A. Cortez, and Stella Sun.

The Banc Funds Company investment personnel share several qualities. All but one analyst had at least 10 years of financial industry experience before joining the Bank Funds. Most of the staff have worked another 10 years for The Banc Funds. The staff has experience working for either a bank or a Wall Street firm serving a banking clientele, or as bank regulators.

#### ***III. Investment Strategy***

Banc Fund X's goal is to generate superior investment returns by investing in well-managed banks, thrifts, and other companies that will either generate strong growth or become acquisition targets of the industry consolidation process, or both. Fund X intends to make private placement investments and to purchase in various markets small blocks of shares in these companies at favorable book value and price/earnings multiples. Banc Funds also provides value-added counsel to its portfolio companies to improve growth, profitability, and enhance franchise value.

Fund X may eventually have investments of 1-2 dozen or more companies in each of eight regions of the U.S. In banking, there are lending concentration risks by geography and by

borrower. Investors want the benefit of detailed local knowledge at the portfolio company level, but do not want compound risks from concentrating investment exposure in a handful of banks. Spreading capital across companies has the added benefit of gaining investment access to more M&A events which occur on a discrete basis.

Fund X will invest \$1-10 million in most of its portfolio companies. Larger investments in the best franchises may be as much as \$25 million. Many will be in community banks with assets of under \$1 billion. These are generally commercial banks making commercial loans to small businesses. These companies are providing financing to small businesses which are at the core of the U.S. economy. The bulk of what they do is specialized, small-scale business finance on a direct basis to customers requiring substantial account servicing. Fund X portfolio companies are at the opposite end of the business spectrum from the U.S.'s largest banks.

Banc Funds will help their portfolio companies create value and drive returns in several ways. First, they assess the prospects for each company, their competitive positions, and how they can add value to their franchises. Most importantly, they discuss with management the strategic issue of how they are going to grow in a technologically driven 21<sup>st</sup> century. Second, they do not pay a large premium to invest initially. Third, these companies are small, so it is much easier to grow from a very small asset base. Fourth, because they are located in growth areas, they can build their customer bases and books of business. Fifth, as they grow, they become more efficient and more profitable, which translates to higher valuation multiples. Sixth, their franchises have value to acquirers who will pay significant control premiums to add their books of business while reducing duplicative costs. Seventh, as a non-control investor Banc Funds limits the risk of regulators requiring that they recapitalize a company while also avoiding other control-person liabilities.

While U.S. financial services today are largely removed from the collapse of 2008, the industry remains a long distance from full recovery. Therein lies the opportunity as discussed below:

**Banks being better capitalized:** The U.S. banking industry is holding high levels of capital. With balance sheets repaired, companies now have the resources to make loans, increase dividends, buy back stock, and make acquisitions.

**Valuations at Attractive Levels:** Investment multiples have recovered from absolute lows but are nowhere near the highs of 2007. Valuations for community banks, S&Ls, and other financial institutions are measurably lower than most other private equity transactions.

**Improved Growth Prospects:** Since 2008, U.S. banks and households have rebuilt capital. A combination of deleveraging, a prolonged period of slow GDP growth, lackluster housing sales and starts, the delay by millennials in forming households, and improvements in regulations have left the U.S. economy in a position where there are supports in place to sustain economic growth for some time into the future. Banking is poised at the beginning of a longer, more promising runway of better profitability, less regulation, more manageable costs, and opportunity for increased small business lending.

**Merger & Acquisition Activity Is Recovering:** From 2008 to 2013, the banking industry recycled failed banks, troubled real estate, problem loans, and other impaired assets. From 3Q13 to 2016, failed bank recycling at the start of the period gave way to open-bank transactions whereby banks started acquiring companies that had either (a) not failed and were just starting to demonstrate growth or (b) had not failed but were still wrestling with impaired assets. By 2017, this early merger phase evolved to where there was more aggressive bidding for banks. This has put upward pressure on M&A pricing. Since inception of Banc Fund I in 1986, there have been 891 portfolio company holdings acquired for premiums by strategic buyers. Banc Funds expects bank acquisitions to continue at a steady pace over the life of Fund X.

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

Previous fund performance and the SBI's investment in those fund, where applicable, is listed in the table below. Performance is reported as of September 30, 2017.

<b>Fund</b>	<b>Vintage Date</b>	<b>Total Committed Capital</b>	<b>SBI Investment</b>	<b>Net IRR*</b>	<b>Net MOIC*</b>
Banc Fund I	1986	\$51 million	\$0	15.4%	2.3x
Banc Fund II	1989	\$60 million	\$0	20.6%	2.6x
Banc Fund III	1992	\$125 million	\$20 million	19.1%	2.6x
Banc Fund IV	1996	\$150 million	\$25 million	15.6%	2.3x
Banc Fund V	1998	\$300 million	\$48 million	15.6%	2.3x
Banc Fund VI	2002	\$320 million	\$0	2.2%	1.2x
Banc Fund VII	2005	\$450 million	\$45 million	3.8%	1.5x
Banc Fund VIII	2008	\$650 million	\$98 million	16%	2.2x
Banc Fund IX	2014	\$536 million	\$107 million	20.9%	1.3x

\* 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 The Banc Funds.

#### **VIII. Investment Period and Term**

The Fund will be established with a life of about 9.5 years and is scheduled to wind up by December 31, 2027. If necessary to liquidate investments, the Partnership Agreement will provide for extensions under certain circumstances Fund X will make investments during the first 8.5 years of its existence. The term of the partnership may be extended (a) for up to two additional one- year periods at the sole discretion of the General Partner, and then (b) for one additional two-year period upon the recommendation of the General Partner with the consent of the Limited Partners whose combined Equity Capital is equal to at least a majority of the total Equity Capital of all Limited Partners.

\* *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 supplement thereto.*

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## ATTACHMENT B

### DISTRESSED/OPPORTUNISTIC MANAGER SUMMARY PROFILE

#### I. Background Data

<b>Name of Fund:</b>	CVI Credit Value Fund IV L.P.
<b>Type of Fund:</b>	Distressed/Opportunistic
<b>Target Fund Size:</b>	\$2 billion
<b>Fund Manager:</b>	CarVal Investors, LLC
<b>Manager Contact:</b>	Ryan M. Savell 9320 Excelsior Boulevard Hopkins, MN 55343

#### II. Organization and Staff

CarVal Investors, LLC (“CarVal” or the “Firm”) was founded by Cargill in 1987 and became an independent wholly-owned subsidiary of Cargill in 2006. CarVal has invested approximately \$101 billion in over 5,300 transactions, including opportunistic investments in corporate securities, liquidations, whole loan portfolios, real estate and real estate loans, and special opportunities (including structured credit).

CarVal is headquartered in Minneapolis, with operations in London, Luxembourg, New York, and Singapore. CarVal employs approximately 160 people worldwide, including approximately 75 investment professionals and approximately 85 professionals dedicated to legal, tax, operational, accounting and administrative functions. The investment activities of CarVal Investors are overseen by the Managing Principals, Lucas Detor, James Ganley and Jody Gunderson (the “Senior Leadership Team”). The Senior Leadership Team average over 11 years of service with CarVal Investors and its predecessor, 22 years in the industry and are assisted by 23 investment principals and managing directors who collectively lead the investment strategies and geographic locations for the Firm.

CarVal has had a consistent and active presence in Europe since 1993, and currently has a team of approximately 40 employees based in its London office. CarVal’s longstanding presence in Europe has allowed the Firm to pursue negotiated deal opportunities at attractive prices.

CarVal believes that its experience in alternative investment management and global presence will afford investors opportunities for attractive returns.

### **III. Investment Strategy**

CVI Credit Value Fund IV LP (the "Fund") is being formed to capitalize on investment opportunities in distressed and credit-intensive assets within its four strategies of loan portfolios, corporate securities, liquidations and structured credit, as well as other special opportunities. CarVal believes there are four key themes that underpin the current market opportunity and position the Firm to take advantage of these conditions:

- Re-regulation of banks: Following the crisis, there has been extensive “re-regulation” of the financial sector, including Basel III, Solvency II, Dodd-Frank and the Volcker Rule. The result has been a reformation of global lending away from a bank-led market, as banks have been forced to decide which businesses they will continue and which businesses they will abandon. Even if re-regulation is relaxed in the U.S. as a result of the most recent presidential election, global banking changes have been systemic and CarVal believes they are deeply entrenched.
- Deleveraging in Europe: Banks in Europe continue to divest assets. They are under pressure driven by increased regulation, governmental reforms and higher capital requirements. The market experienced a slowdown around the uncertainty of the Brexit vote in June 2016, but CarVal believes there is significant deleveraging still to come and is finding the pace of asset sales picking up again in 2017. European banks, with balance sheets that CarVal believes are still over-weighted, are selling into this recovery resulting in over €3 trillion in assets sold so far, with another €2 trillion still expected.
- Shifts in publicly listed credit market structure: CarVal believes today’s liquid, traded credit markets are technically strong but structurally vulnerable. The technical strength continues to be driven by both the intense search for yield and the dearth of investment opportunities in a world still solidly in QE mode. CarVal is selectively identifying dislocations in the market created by this structural vulnerability. Further, CarVal has seen a significant change in the market structure driven by the reduction in dealer’s balance sheets.
- Dislocation in energy and emerging markets: CarVal believes volatile commodity prices are creating headwinds in emerging economies, causing many over-levered corporate borrowers to struggle. Additionally, commodity relationships are experiencing violent change.

The changing landscape from dislocations globally has created what CarVal believes to be compelling credit investment opportunities. CarVal believes it is well positioned to capitalize on this uncertainty, as volatility creates entry points and uncorrelated opportunities within the Firm’s four core strategies (loan portfolios, structured credit, liquidations and corporate securities).

CarVal believes the opportunity created by the dislocation in the market today is attractive across the Firm’s four boxes. The Firm will seek to construct a portfolio that CarVal believes creates an optimal mix of risk, return and volatility across asset classes, yet anticipates that the Fund’s opportunities may be more heavily weighted in developed-market loan portfolios

and other illiquid credit and hard asset opportunities. CarVal believes the wave of liquidations, which began with Lehman Brothers and which has been an area of focus for the Firm in recent years, is likely at its tail at this point in the cycle. However, as we enter the later stages of the economic recovery cycle, the Firm anticipates that the Fund will be well positioned for the next wave of corporate distress, restructuring, and bankruptcies.

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

Previous fund performance as of September 30, 2017 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>
CVI Credit Value Fund I	2011	\$844 million	\$100 million	19.7%	2.2x
CVI Credit Value Fund II	2013	\$2.2 billion	\$150 million	9.0%	1.4x
CVI Credit Value Fund III	2015	\$3.0 billion	\$150 million	14.8%	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 the manager.

#### **V. Investment Period and Term**

The Investment Period will last for a period of three years from final closing, subject to an extension with approval of the Investor Advisory Committee.

The Fund will terminate six years from final closing, subject to two, one-year extensions at the sole discretion of the general partner. Thereafter, any extensions require consent of two-thirds majority at the interest of investors.

*\* 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 C

### PRIVATE EQUITY MANAGER SUMMARY PROFILE

#### I. **Background Data**

<b>Name of Fund:</b>	Court Square Capital Partners IV, L.P.
<b>Type of Fund:</b>	Private Equity – Buyout
<b>Target Fund Size:</b>	TBD
<b>Fund Manager:</b>	Court Square Capital Management, L.P.
<b>Manager Contact:</b>	Rick Walsh 55 East 52 <sup>nd</sup> Street, 34 <sup>th</sup> Floor New York, NY 10055

#### II. **Organization and Staff**

Court Square Capital Management (the “Firm” or “Court Square”) will soon form Court Square Capital Partners IV (the “Fund” or “CSC IV”) to continue Court Square’s history of investing in North American middle market growth companies in the Business Services, Healthcare, Industrial, and Technology & Telecommunications sectors.

Court Square was established in 2001 when the entire Citigroup Venture Capital team first took outside capital. Senior members of the team trace their roots back to 1979 when they operated as part of Citigroup. Currently, Court Square has 26 investment professionals and 44 total employees all in their New York office. Across their three funds, Court Square has made 50 platform investments totaling \$6.7 billion and generated \$14.2 billion in total value.

#### III. **Investment Strategy**

Court Square will soon form CSC IV to continue their history of making control investments in North American middle market growth companies. The Firm focuses on companies with an enterprise value of \$150 million - \$1.5 billion. Typically, Court Square will make an equity investment of between \$75 million and \$350 million. Currently, deal fundamentals that are attractive to Court Square are strong growth, active founder(s), management equity rollover, strong free cash flow generation, and the opportunity for additive acquisitions. Court Square investment professionals have a strong alignment of interest with portfolio company management and limited partners as Firm investment professionals have invested more than 5% in each of the CSC funds.

Court Square believes that middle market businesses can achieve significant value creation by combining strong management with a disciplined business plan. They seek to invest in companies which are positioned to benefit from favorable market dynamics that can lead to compelling earnings growth. This growth can be driven by (a) favorable sector trends; (b)

disruptive business models, products, or services; or (c) platform companies within fragmented industries where consolidation can lead to significant cost or competitive advantages. In addition to favorable market dynamics, the Firm also looks for situations where significant growth potential is unrecognized or untapped due to limited capital or operational resources, lack of proper incentives, or the current owner’s insufficient risk tolerance to pursue an opportunity. Corporate divestitures or entrepreneurially-managed businesses can frequently benefit from their financial, strategic, and managerial expertise and experience.

Once Court Square purchases a company, an accretive value creation approach historically has been achieved through mergers and acquisitions. Court Square deal team members and Resource Partners (the Firm’s operating partners) assist portfolio company management in sourcing, evaluating and executing acquisitions, and developing and executing post-acquisition integration plans. Each M&A plan delineates clear responsibility and accountability for the various activities around sourcing, executing, and integrating acquisitions.

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

Previous fund performance as of September 30, 2017 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>
Court Square Capital Partners	2001	\$2.6 billion	\$100 million	27.8%	2.2x
Court Square Capital Partners II	2006	\$3.1 billion	\$175 million	13.0%	1.9x
Court Square Capital Partners III	2012	\$3.2 billion	\$175 million	12.4%	1.2x

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Performance data was provided by the General Partner.

#### **V. Investment Period and Term**

The investment period will most likely be five years with a ten-year term, subject to potential one-year extensions.

*\* 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**

<b>Name of Fund:</b>	Hellman & Friedman Capital Partners IX, L.P.
<b>Type of Fund:</b>	Private Equity – Buyout
<b>Target Fund Size:</b>	TBD
<b>Fund Manager:</b>	Hellman & Friedman LLC
<b>Manager Contact:</b>	Suzanne Kim One Maritime Plaza, 12th Floor San Francisco, CA 94111

#### II. **Organization and Staff**

Hellman & Friedman (the “Firm” or “H&F”) will be raising Hellman & Friedman Capital Partners IX (“HFCP IX” or the “Fund”) to continue H&F’s history of making large-scale private equity investments in high quality, growing businesses in the developed markets. Since inception, H&F has raised over \$35 billion of committed capital and have invested in over 80 companies.

Hellman & Friedman was founded in 1984 by Warren Hellman and Tully Friedman. Since the firm’s inception, H&F has always been exclusively focused on private equity, with no other products, and invests one fund at a time. The firm has 60 investment professionals and 120 employees in total across three offices – San Francisco, New York, and London.

#### III. **Investment Strategy**

H&F’s strategy is to focus all of its resources on the private equity market. The firm concentrates its people in small teams on what it believes are the best companies and industries that meet the Firm’s investment criteria. The Firm believes its disciplined investment philosophy and process give it a competitive advantage. H&F’s well-articulated and analytical investment philosophy is applied rigorously and embraced by its investment professionals.

In Fund VIII, H&F focused on making equity-related investments mainly in the \$300 million - \$1 billion equity check range, and primarily in the U.S. and developed countries outside the U.S. The Firm targets investments in mid to large-cap companies, depending on where it believes it can find the most compelling opportunities. The Firm operates in the following sectors: Software, Financial Services, Internet and Media, Business and Information Services, Healthcare, Insurance, Retail and Consumer, and Energy and Industrials. H&F prefers to make fewer, larger investments to concentrate resources on the Firm’s best ideas.

H&F specifically targets already outstanding businesses where they believe deep sector expertise and bespoke value creation plans can make a significant difference to the trajectory of the company. These are businesses that typically have leading and defensible competitive market positions resulting typically from one or more of the following attributes: strong brand names; long-standing customer relationships; high market share; structural low-cost position; barriers to entry; and/or superior distribution systems. Further, the Firm seeks to identify businesses with predictable revenue and earnings growth that generate high levels of free cash flow or attractive returns on the capital reinvested in the business.

Once H&F acquires a business, the Firm works to add value as a knowledgeable working business partner actively assisting portfolio company management with major strategic and financial initiatives. The first three months after an investment is made tend to be a particularly active period as the investment team works with portfolio company management to commence the implementation phase of operational improvements identified during due diligence. On-going oversight efforts typically focus on assessing the continuing validity of the original investment thesis, the operating performance of the business, and the performance of management.

The Firm believes that the appropriate timing of its exit from an investment also creates considerable value. As part of its continuous monitoring and oversight activities, the Firm has established a rigorous process to evaluate appropriate exits from investments. Investment professionals meet quarterly for an extensive review of a subset of portfolio companies; each portfolio company is reviewed at least twice per year and more often if appropriate. If the Firm believes that the original investment rationale is no longer valid, then the investment team creates a plan for a timely exit.

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

Previous fund performance as of September 30, 2017 for the prior H&F Capital Partners (HFCP) funds 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>
HFCP	1987	\$327 million	--	12%	2.1x
HFCP II	1991	\$877 million	--	22%	2.7x
HFCP III	1995	\$1.5 billion	\$40 million	34%	2.3x
HFCP IV	2000	\$2.2 billion	\$150 million	34%	2.8x
HFCP V	2004	\$3.5 billion	\$160 million	28%	2.7x
HFCP VI	2006	\$8.4 billion	\$175 million	13%	1.9x
HFCP VII	2011	\$8.9 billion	\$50 million	25%	2.1x
HFCP VIII	2016	\$11.1 billion	--	NM	1.2x

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Performance data was provided by the General Partner. "NM": not material.

## **V. Investment Period and Term**

Fund VIII had a six year investment period and a ten year term, subject to a two year extension with the approval of a majority in interest of the Limited Partners.

*\* 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 E

### PRIVATE EQUITY MANAGER SUMMARY PROFILE

#### I. Background Data

<i>Name of Fund:</i>	Lexington Capital Partners IX, L.P.
<i>Type of Fund:</i>	Private Equity Limited Partnership
<i>Target Fund Size:</i>	\$12 billion
<i>Fund Manager:</i>	Lexington Partners
<i>Administrative Contact:</i>	Jenny Kheng Lexington Partners 3000 Sand Hill Road, Ste 1-220 Menlo Park, CA 94025

#### II. Organization and Staff

Lexington is the largest independent manager of secondary acquisition and co-investment funds with more than \$38 billion in original committed capital. Lexington's funds pursue innovative strategies in two principal areas: (i) providing secondary liquidity to owners of private equity and alternative investments; and (ii) making co-investments alongside leading sponsors. In addition, since 1998, Lexington's secondary funds have made select commitments to new private investment funds during their initial formation to complement Lexington's secondary acquisition strategy. Lexington has been at the forefront of private equity innovation since principals of Lexington helped pioneer the development of the secondary market for private investment fund interests over 28 years ago and also created one of the first independent co-investment programs 20 years ago. Lexington's leadership position in the secondary and co-investment markets has attracted commitments from more than 700 investors in over 30 countries, including many of the largest global investors with alternative asset commitments.

Since 1990, principals of Lexington have successfully originated, analyzed, negotiated, and closed over 440 secondary transactions acquiring over 2,900 private investment fund interests managed by more than 650 sponsors. Lexington employs professionals skilled in all aspects of global secondary, co-investment, and primary origination, financial analysis, negotiation, monitoring, investor relations, fund accounting, and administration. Lexington currently employs 83 people and has offices located in major centers for private equity and alternative investing – New York, Boston, Menlo Park, London, Hong Kong, and Santiago—and three senior advisors located in Asia, Australia, and Latin America.

Lexington's secondary investment team is led by 25 partners and principals that are among the most experienced professionals in the secondary market today, having successfully invested and managed through varying economic cycles for 17 years on average.

### **III. Investment Strategy**

Lexington will seek to capitalize on the experience of its principals, its substantial expertise in secondary market transactions, its proprietary database of information, and its extensive global sourcing networks to seek superior investment returns for LCP IX. Lexington's investment strategy targets the entire spectrum of secondary transactions, from complex, multi-billion dollar portfolio transactions to the purchase of individual fund interests. While LCP IX is expected to concentrate on acquiring portfolios of interests in global private investment funds, LCP IX will also consider a full range of transaction types including direct secondary investments, hedge fund private equity assets, institutional equity co-investments, captive financial spin-outs, private investment fund recapitalizations, and other GP solution transactions. Lexington believes that the firm's broad, opportunistic investment strategy will allow LCP IX to deploy capital to the segments of the secondary market offering the most attractive risk-adjusted returns.

The private investment fund interests that may be available for purchase in the secondary market during the investment period of LCP IX are expected to be similar to those of its predecessor, LCP VIII. While the majority of LCP VIII's capital has been committed to private equity funds, LCP VIII has invested approximately 14% in venture capital, 14% in growth capital, and 6% in other alternative investments, mostly credit and energy. Also, 59% of LCP VIII's exposure is based in the United States, with 31% in Europe and the U.K., 9% in Asia, and 1% in other growth markets.



#### IV. Investment Performance

Previous funds' performance as of September 30, 2017 are shown below for Lexington's Capital Partner Secondary Funds (LCP), Middle Market Investors Funds (LMMI) and Co-Investment Funds (CIP IV). The SBI's investment is also listed where applicable.

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
LCP I	1996	\$242 million	--	13.1%	1.3
LCP II	1998	\$1,111 million	--	8.2%	1.3
LCP III	1999	\$656 million	--	8.7%	1.3
LCP IV	2000	\$606 million	--	19.3%	1.8
LCP V	2002	\$2,004 million	--	18.9%	1.7
LCP VI	2006	\$3,773 million	\$100 million	6.9%	1.4
LCP VII	2010	\$7,054 million	\$200 million	15.7%	1.6
LCP VIII	2014	\$10,119 million	\$150 million	29.8%	1.3
LMMI I	2005	\$556 million	--	11.5%	1.6
LMMI II	2009	\$650 million	--	14.7%	1.6
LMMI III	2013	\$1,070 million	--	17.7%	1.3
LMMI IV	2017	\$2,660 million	\$100 million	NM	NM
CIP IV	2016	\$2,358 million	\$200 million	NM	NM

\* Previous Fund investments, including those denoted NM, may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Net Multiple of Invested Capital (MOIC) were provided by the manager. Past performance is not necessarily indicative of future results, and there can be no assurance that LCP IX will achieve comparable results.

#### V. Investment Period and Term

The investment period will end following the earlier of (a) the date when all Commitments have been invested or committed for investment or (b) the fifth anniversary of the final Closing. The Partnership will terminate ten years from the Initial Closing, but may be extended for up to three consecutive one-year periods.

*\* 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.*

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## ATTACHMENT F

### PRIVATE EQUITY MANAGER SUMMARY PROFILE

#### I. Background Data

<b>Name of Fund:</b>	Bridgepoint Europe VI
<b>Type of Fund:</b>	Private Equity – Buyout
<b>Target Fund Size:</b>	€5 billion
<b>Fund Manager:</b>	Bridgepoint Advisers Limited
<b>Manager Contact:</b>	John Barber 95 Wigmore Street London, England, W1U 1FB

#### II. Organization and Staff

Bridgepoint Advisers Limited (the “Firm” or “Bridgepoint”) is forming Bridgepoint Europe VI (“BE VI” or the “Fund”) to continue Bridgepoint’s history of investing in middle-market, growth-oriented European businesses. Bridgepoint has invested across Europe since the early 1990s and has delivered strong and consistent investment performance over an extended period.

From its establishment in 1984 to 2000, Bridgepoint operated as a subsidiary of the European banking group, NatWest. During the 1990s, it gradually increased the proportion of external funds under management and in 1998 it raised Bridgepoint Europe I (“BE I”), its first external fund, with commitments of £1bn. In June 2000, the Bridgepoint Partners and employees completed the acquisition of the management company of the business from NatWest and the secondary sale of NatWest’s interests in the underlying portfolio. Since this point, the business has been owned by Bridgepoint Partners and employees.

Currently, Bridgepoint has 105 investment professionals, 75 of whom are focused solely on the Bridgepoint Europe (“BE”) fund series. Bridgepoint has offices globally with 8 investment offices in Europe (London, Amsterdam, Frankfurt, Istanbul, Madrid, Paris, Stockholm, and Warsaw), portfolio offices in Shanghai and New York, and a funds management office in Luxembourg. In addition to the flagship Bridgepoint Europe funds, Bridgepoint also manages three additional fund series: Bridgepoint Development Capital (companies with enterprise values up to €150 million), Bridgepoint Growth (early stage growth companies with enterprise values of less than £30 million), and Bridgepoint Credit (a senior-focused credit strategy).

### **III. Investment Strategy**

Bridgepoint is forming BE VI to create a portfolio of middle market companies headquartered or with significant operations in Europe. The Fund will continue Bridgepoint Europe's strategy of investing in European middle market buyouts (established businesses with enterprise values typically between €200m and €1bn), with a particular focus on businesses with an EV of between €200m and €600m. As with Bridgepoint's existing funds, there will be no prescriptive country allocations, thus providing the Fund flexibility in its deployment of capital within Europe to exploit regional volatility and capture 'best value' and relative return opportunities.

BE VI will focus on six sectors: Business Services, Consumer, Financial Services, Healthcare, Manufacturing & Industrials, and Technology & Media. Within these sectors, Bridgepoint focuses on companies with sustainable end market growth and high quality of earnings. Bridgepoint looks for assets in growth niches which have the potential to deliver premium returns irrespective of macroeconomic conditions. Bridgepoint targets market leaders with leading intellectual property and service provision, companies accessing growing global markets, and businesses with high levels of recurring revenues. In addition, BE VI will target market leading businesses operating in fragmented markets to use as platforms for consolidation at accretive valuations. Generating 'internal growth' through operational improvement will also be an important driver of value creation for the Fund.

Bridgepoint's investment process reflects the team's experience of over 25 years of transaction execution in Europe. An entrepreneurial, yet rigorous and focused process supports the Firm in its core function of identifying and executing the most attractive pan-European middle market buyouts. Each of Bridgepoint Europe's six sector teams identifies long-term investment themes within their target area and works to a rolling origination plan that identifies, monitors, and builds relationships with the target companies that have the potential over time to be fund investments. Once a potential investment materializes, the opportunity is assessed by the Operating Committee and the Initial Investment Advisory Committee. Bridgepoint believes that using a tailored team of investment professionals drawn from across their network allows the Firm to conduct full-scale due diligence quickly and efficiently, without compromising its rigorous standards of analysis. Once a prospective portfolio company receives Final Investment Advisory Committee approval, the BE investment team embarks on the value creation plan developed during due diligence. The plan will have clear benchmarks and key performance indicators against which performance can be measured. All investments are formally reviewed on a regular basis by the Portfolio Management Committee, which is chaired by the Firm's Managing Partner and typically consists of up to six senior Bridgepoint Europe Partners from the Investment Advisory and Operating Committees. Regarding value realization, the Firm carefully balances its priorities of returning material capital to investors regularly and maximizing overall returns. The selection of potential exit candidates is based on their performance to date and an assessment of their capacity to maintain growth in capital appreciation.

The Firm is well resourced to deliver far-reaching business transformation with its extensive team. Bridgepoint's investment professionals operate as a single, integrated, and flexible team across Europe, providing extensive market knowledge and significant depth of resources. The team is responsible for making investments and adding value to the portfolio.

The Bridgepoint Europe Investment Team is led by 20 Partners with an average of 21 years of private equity experience, of which 17 years have been with the Firm. Complementing the investment professionals is the Portfolio Support Group. This group of more than 20 professionals provides an operations-focused resource for adding value across the portfolio. The group comprises the Operational Support Group (“OSG”), Shanghai and New York offices, the Procurement Team, and the Capital Markets Team. The OSG is led by three Partners and is typically involved in portfolio companies where the investment case requires significant operational or management change, strategic expansion, or repositioning. The Shanghai and New York offices were established to accelerate the development of portfolio companies in China and the U.S. with market entry, add-on acquisitions, procurement, the establishment of facilities, and joint ventures with local partners. Bridgepoint’s Capital Markets Team has five dedicated investment professionals based in London and Paris who focus on raising debt finance and optimizing capital structures for portfolio companies. The Procurement Team has nine professionals based in London who focus on implementing savings and best practices across the Bridgepoint platform.

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

Previous fund performance as of June 30, 2017 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>
Bridgepoint Europe I	1998	£1.0 billion	--	10%	1.6x
Bridgepoint Europe II	2001	€2.0 billion	--	23%	1.7x
Bridgepoint Europe III	2005	€2.5 billion	--	4%	1.4x
Bridgepoint Europe IV	2008	€4.8 billion	--	15%	1.8x
Bridgepoint Europe V	2015	€4.0 billion	--	26%	1.2x

\* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Performance data was provided by the General Partner.

**V. Investment Period and Term**

The investment period is five years and the term is ten years from the final close, with one additional one-year period at the discretion of the Manager (after consultation with the LPAC) and up to two further one-year periods by the Manager with the approval of a majority in interest of the Limited Partners.

*\* 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.*

*\*\* All terms summarized in this document are subject to negotiation between the Minnesota State Board of Investment and the General Partner.*

## ATTACHMENT G

### REAL ASSETS MANAGER SUMMARY PROFILE

#### I. Background Data

<i>Name of Fund:</i>	KKR Global Infrastructure Investors III, L.P.
<i>Type of Fund:</i>	Infrastructure
<i>Target Fund Size:</i>	\$5-7 Billion
<i>Fund Manager:</i>	KKR Associates Infrastructure III, SCSp
<i>Manager Contact:</i>	Ari Barkan 9 West 57 <sup>th</sup> Street New York, NY, 10019

#### II. Organization and Staff

Kohlberg Kravis Roberts & Co. (“KKR” or the “General Partner”), one of the world’s oldest and most experienced private equity firms, is headquartered in New York, NY and has over twenty office locations around the world. Founded in 1976 by Jerome Kohlberg, Henry R. Kravis and George R. Roberts, KKR seeks to provide its investors with long-term capital appreciation through multiple business platforms. During the first two decades, KKR focused on building a leading private equity business. Throughout the 1990s, they remained an active private equity investor, expanding into new industries and geographies.

In 2008, KKR established a dedicated infrastructure team and strategy, distinct from private equity. KKR has been one of the more active infrastructure investors globally over the past several years as it has deployed capital from two prior Global Infrastructure Funds raised in 2011 and 2014. The Firm currently manages over \$5.7 billion in infrastructure assets through Fund I, Fund II and a separately managed account, and has deployed an additional \$4.1 billion of co-investment capital alongside Funds I and II<sup>1</sup>.

The KKR Infrastructure team is made up of 26 investment professionals and is led by Global Head of Infrastructure Raj Agrawal, Head of North American Infrastructure Brandon Freiman, and Head of European Infrastructure Tara Davies. The team also leverages the broader capabilities of the KKR platform, including the operational expertise of KKR Capstone, and KKR Capital Markets for deal financing and portfolio company capital structures.

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<sup>1</sup> As of September 30, 2017

### **III. Investment Strategy**

KKR is raising Global Infrastructure Investors III L.P. (“the Fund or “Fund III”) to generate attractive risk-adjusted returns by focusing on critical infrastructure investments with low volatility and strong downside protection where the Firm believes it can tackle complexity in sourcing, structuring, operations and execution. Fund III will seek to generate returns through both long-term capital appreciation and current income generation from a portfolio that is broadly diversified across a number of different infrastructure sub-sectors, geographies and asset types, with an emphasis on investments in existing assets and businesses located in OECD countries.

KKR utilizes a risk-based, rather than sector-based approach, when defining the universe of potential investments and seeks opportunities that possess some or all of the following characteristics:

- Lower downside risk due to intrinsic value of physical assets
- Assets that are central to a local economy
- Assets that are irreplaceable
- Limited sensitivity to economic cycles
- Some degree of inflation-hedging
- High visibility of cash flows

KKR utilizes the investing and analytical expertise of the Infrastructure Team, the Investment Committee, and the Firm’s network of Senior Advisors and Industry Advisors to critically evaluate investments, assess the risk-return profile of each investment, evaluate key value drivers, and develop a disciplined investment plan focused on value creation.

Consistent with Fund I and Fund II, Fund III’s potential investments will primarily fall within one of the following three categories:

***Regulated Investments.*** These assets and businesses may be subject to regulated tariffs or rate of return regulation. Examples may include water and wastewater, or renewable power generation.

***Contracted Investments.*** These investments typically involve contracts of 7-10 years or greater with high quality counterparties. Examples may include midstream energy assets, telecom, or power generation and utilities.

***Market or Structural Protection.*** These investments may involve irreplaceable assets, and/or assets and companies with significant structural or market protections that mitigate competitive dynamics and pricing pressure. Examples may include asset leasing or parking.

The Firm uses a number of different levers to mitigate risk in its infrastructure investment approach. First, KKR is focused on mitigating the risk of capital impairment through investing in predominately regulated or contracted assets but, where appropriate, structuring to maximize downside protection while still pursuing its targeted returns. For example, the Firm actively seeks investments that have modest competitive exposure, minimal volume or



pricing risk, low construction risk, and low leverage to commodity prices. Second, the Firm will use conservative capital structures to fit the underlying cash flow profiles of the individual assets or companies. Typical debt capitalization at entry is 50-60%, and is generally paid down out of cash flow over the Fund’s ownership period. Lastly, KKR seeks to mitigate risk and/or enhance returns by leveraging the Firm (a) distinctive sourcing capabilities, (b) navigating complexity in structuring, (c) stakeholder management and/or (d) driving operational improvements.

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

Previous fund performance as of September 30, 2017 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>
Global Infrastructure I	2011	\$1.04 Billion	--	12.5%	1.5x
Global Infrastructure II	2014	\$3.07 Billion	--	14.0%	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 the manager.

#### **V. Investment Period and Term**

The investment period for the Fund will be six years from the date of the first investment. The term of the Fund will be 12 years from the initial investment, subject to up to three additional one-year extensions.

*\* 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 H

### PRIVATE DEBT MANAGER SUMMARY PROFILE

#### I. Background Data

<b>Name of Fund:</b>	TSSP Adjacent Opportunities Partners, L.P. (“TAO”) Contingent Commitment to TAO (“TAO Contingent”) TPG Opportunities Partners IV, L.P. (“TOP IV”) <sup>1</sup>
<b>Type of Fund:</b>	Private Debt
<b>Target Fund Size:</b>	\$1.5 billion in TAO 4.0 \$4.0 billion TAO Contingent \$3.0 billion TOP IV <sup>2</sup>
<b>Fund Manager:</b>	TPG Sixth Street Partners
<b>Manager Contact:</b>	Brian D’Arcy 345 California St., Suite 3300 San Francisco, CA 94104

#### II. Organization and Staff<sup>3</sup>

TPG Sixth Street Partners (“TSSP”) is a global credit and credit-related investment platform with over \$20 billion in assets currently under management. TSSP was founded in 2009 by Chief Investment Officer, Alan Waxman, and is currently managed by 15 Partner Managing Directors and over 180 people with offices in San Francisco, New York, London, Boston, Houston, Dallas, Melbourne and Luxembourg. Prior to forming TSSP, Mr. Waxman was the Co-Head and Chairman of Americas Special Situations Group (“AmSSG”) at Goldman Sachs & Co. (“Goldman Sachs” or “GS”), where he also worked with eight of the other TSSP Partner Managing Directors. TSSP was formed in partnership with TPG, one of the largest alternative asset investment firms in the world. As a fully integrated platform and investment team within TPG, TSSP leverages the experience of the global TPG team and the sector intellectual property provided by TPG’s industry coverage groups. All business and investment decisions, including the capital committee are controlled and managed by the TSSP team.

The TSSP investment team is comprised of fifteen Partner Managing Directors, including Mr. Waxman (Managing Partner and Chief Investment Officer of TSSP), Brian D’Arcy (Head of TSSP Broker Dealer), Matt Dillard (TAO and TOP Corporate Special Situations), Josh Easterly (Head of TPG Specialty Lending), Jamie Gates (Head of Capital Formation & Strategy), Jennifer Gordon (Deputy Chief Operating Officer and Chief Compliance Officer), Clint Kollar (Head of Sourcing), Bornah Moghbel (Corporate Distressed), Vijay Mohan (TAO and TOP Corporate Special Situations), Michael Muscolino (TAO, Top Asset Special

<sup>1,2</sup>TOP IV has not yet been formed and the final terms, size and other fund features may differ materially from those presented herein.

<sup>3</sup> Headcount stats as of December 31, 2017.

Situations), Steven Pluss (Chief Risk Officer), Bo Stanley (President of TSLX), and David Stiepleman (TSSP Chief Operating Officer), and 95 other investment professionals focused on sourcing, analyzing and managing investments for TOP/TAO, TSLX, and TSLE teams. The senior leadership team is based in San Francisco, New York, London and Dallas, with additional team members located in Boston, Houston and Melbourne. TSSP works under a “one team” construct and thematically invests across different vehicles throughout TSSP.

### **III. Investment Strategy**

TSSP investment themes often span across multiple funds, and the TSSP platform is managed as one large, coordinated team to nurture a culture where cross-sourcing is prevalent and intended to be a key differentiator. Ultimately, the nature of an investment will dictate which TSSP fund(s) will execute the transaction.

#### **TAO and TAO Contingent**<sup>4</sup>

The TAO vehicle represents a single portfolio of investments which spans the various TSSP strategies and themes. The Fund is a continuation of the team’s strategy employed over 18 years at TSSP and Goldman Sachs. TSSP expects to build TAO’s portfolio across three core components: (i) Adjacent Opportunities, (ii) direct lending Crossover Opportunities and (iii) special situations Crossover Opportunities. As a result, an investor in the Partnership will have exposure across the TSSP platform and TSSP sourcing. TAO generally focuses on opportunities with significant downside protection (87% of TAO committed capital is invested at the top of the capital structure), cash yield (90% of TAO is cash yielding) and differentiated portfolio construction (70% of investments have no overlap / differentiated role with other GPs).

In addition to the TAO Global Portfolio, TSSP is raising the TAO Contingent fund, a parallel vehicle with a finite life which will only become active in a distressed / dislocated scenario. If activated, TAO Contingent will generally participate in all future TAO investments during the TAO Contingent commitment period alongside other TAO vehicles pro rata based on relative unfunded commitments. No fees are charged by TSSP until the vehicle becomes active, and upon activation, all investors in existing TAO vehicles will keep their existing fee structure.

As noted above, TSSP expects TAO and TAO Contingent to target opportunities in the following areas:

#### ***Adjacent Opportunities (60-70% of expected TAO portfolio, assuming a steady-state macroeconomic environment)***

Adjacent Opportunities are comprised of attractive risk-adjusted reward transactions that do not fit the mandate of TSSP’s direct lending or special situations platforms. These include but are not limited to the following situations: (i) non-control opportunities with attractive risk / reward profiles, (ii) high return but low multiple of money / shorter duration situations and (iii) selected longer duration opportunities with minimal macroeconomic correlations. TSSP

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<sup>4</sup> All data presented from TAO Global as of 12/7/2017 unless noted otherwise.

broadly categorizes the Adjacent Opportunities landscape in three categories: Defensive Yield, Stressed Opportunities, and Distressed Non-Control.

- Defensive Yield – These transactions are non-distressed situations where the outcome has minimal correlation to the macroeconomic environment, will generate current yield and have a relatively longer duration.
- Stressed Opportunities – Stressed Opportunities represent stressed asset and corporate situations where TSSP believes it has a differentiated angle.
- Distressed Non-Control – Distressed Non-Control transactions consist of opportunistic purchases of distressed non-control investments at a deep discount to fundamental value, where there is a low probability of gaining a control positions.

***Direct Lending Opportunities (10-20% of expected TAO portfolio, assuming a steady-state macroeconomic environment)***

The partnership will invest with direct lending platform in certain Crossover Opportunities. These will include investments with TPG Specialty Lending (“TSLX”) and with TPS Specialty Europe Lending (“TSLE”). TSLX is a publicly listed business development company which began investing in 2011. The primary focus of TSLX is U.S. based, middle market direct lending transitions. TSLE began investing in 2015 and is focused on European middle market direct lending transactions. Both TSLX and TSLE focus primarily on top of the capital structured, secured, floating rate investments.

***Special Situations Opportunities (15-25% of expected TAO portfolio, assuming a steady-state macroeconomic environment)***

The partnership will invest with the TPG Opportunities Partners funds (“TOP or the “TOP Funds”) in certain special situation Crossover Opportunities. The TOP Funds focus on control situations, or situations where there is a path to control in order to influence the outcome and where TSSP can add value by using their operational capabilities. The TOP Funds focus on three categories: Corporate Distressed-For-Control, Asset Special Situations and Corporate Dislocations.

**TOP IV**

TOP IV is being formed to generate attractive returns through the purchase or origination of special situations and distressed investments across the credit cycle. This strategy represents a continuation of the investment activities carried out through previous funds comprising TOP I, TOP II, and TOP III (collectively the “TOP Funds”).

As mentioned above in in the “special situations crossover” portion of TAO, TSSP expects the TOP Funds to invest across the following: Corporate Distressed-for-Control, Asset Special Situations, and Corporate Dislocations. While the relative proportion of these three categories will vary, depending on the opportunity set and timing of the credit cycle, these investments are made with the intention of delivering strong risk-adjusted returns.

- Corporate Distressed for Control – The focus of TOP’s distressed-for-control investments will be in instruments with a high probability of converting into equity following a restructuring. TOP seeks situations where it can enhance value creation by leading the restructuring process and improving operations post-restructuring.
- Asset Special Situations – Asset Special Situations involve the acquisition of non-or sub-performing loan portfolios directly from commercial banks or financial institutions at deep discounts to the current market value of the underlying assets, or the acquisition and development of asset management, servicing, and originations businesses.
- Corporate Dislocations – TOP seeks to be a solutions provider to companies undergoing some type of distress, dislocation or idiosyncratic issue. Dislocations may include, but are not limited to, excessive balance sheet leverage, lack of access to capital, company-specific operations problems, poor management, and structural changes in an industry caused by innovation, regulatory change, or other macroeconomic factors.

TOP IV will generally seek investment opportunities between \$25 million and \$200 million in companies and assets globally.

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

Previous fund performance as of March 31, 2017 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>
TAO 1.0	2011	\$482 Million	-	17.2%	1.57x
TAO 2.0/3.0	2014	\$7.5 Billion	-	9.1%	1.13x
TOP I <sup>1</sup>	2009	\$2.1 Billion	--	26.4% (GROSS)	2.34x (GROSS)
TOP II	2011	\$2.1 Billion	--	17.4%	1.66x
TOP III	2014	\$3.3 Billion	--	10.1%	1.15x

1. TOP I was a carve-out of investments managed by the TSSP team out of TPG VI and TPG Financial Partners (“TFP”). As such, TOP I does not report net figures.

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

#### **V. Investment Period and Term**

##### TAO

Each Limited Partner will elect, upon its admission to a New TAO Fund, to be treated as a “Short-Term Limited Partner” or a “Long-Term Limited Partner.” Each Short-Term Limited Partner will be subject to a “Minimum Commitment Period” of three and one-half years and

each Long-Term Limited Partner will be subject to a Minimum Commitment Period of five and one-half years.

The commitment period with respect to each Capital Commitment of a Limited partner will commence upon the date such Capital Commitment is accepted by the General Partner and will continue until terminated in accordance with the following procedure:

- Each Limited Partner may elect, at any time after the expiration of its applicable Minimum Commitment Period, to become a “Liquidating Partner: with respect to all of its Capital Commitment or any portion thereof in increments of equal to or greater than \$5 million.
- An electing Limited Partner’s Termination Election will become effective (and such Limited Partner will be deemed a Liquidating Partner) as of the last day of the calendar quarter in which the twelve-month anniversary of its Termination Election falls, at which point the applicable Commitment Period will terminate. Such Limited Partner will remain a “Committed Partner” with respect to any portion of its interest not so terminated.

#### TAO Contingent

3 year initial activation period from final close; 2 year rolling extensions thereafter at LP and GP option.

Once activated, 3 year commitment period from initial activation date.

#### TOP III (TOP IV Not Yet Formed)

The commitment period ends three-and-one-half years from the final closing.

The Partnership’s term will end on December 31st following the seven-and-one-half year anniversary of the final closing (subject to early termination under certain circumstances as set forth in the Partnership Agreement), but may be extended by the General Partner with the consent of a majority in interest of the limited partners for up to two consecutive additional one-year periods.

*\* 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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DATE: February 5, 2018

TO: Members, Investment Advisory Council

FROM: SBI Staff

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

This section of the report provides a brief performance overview of the SBI portfolio. Also, included in this section is a summary of investment manager activity and performance summaries of the public equity and fixed income managers in the SBI portfolio.

Also, we have included commentary and performance for the non-retirement managers and deferred compensation plan mutual funds.

The report includes the following sections:

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• Review of Public Markets Program	3
• Public Markets Managers' Organizational Update	5
• Non-Retirement Manager Update	9
• Deferred Compensation Manager Update	10

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## **Review of SBI Public Markets Program Fourth Quarter 2017**

### **SBI Portfolio – Quarter and Year Attribution**

In the fourth quarter, the SBI's overall portfolio, the Combined Funds, underperformed the composite benchmark return, 4.4% versus 4.5%. Domestic equities were slightly behind the Russell 3000 Index return, 6.2% versus 6.3%, while international equities underperformed the MSCI ACWI ex USA Index return, 4.7% versus 5.0%. The fixed income portfolio exceeded the Bloomberg Barclays U.S. Aggregate Index return, 0.5% versus 0.4%. For the quarter, domestic equity generated the largest contribution to the combined funds return, contributing 2.7% of the 4.4% total, while international equity contributed 1.1% of the total return. For the year ending December 31, the Combined Funds outperformed the composite benchmark return, 18.3% versus 17.8% with domestic equity contributing 9.5% of the 18.3% net return, while international equity contributed 6.3% of total return.

### **Domestic Equity**

The large-cap growth managers trailed the Russell 1000 Growth benchmark by 3.6 percentage points for the quarter. Stock selection in health care led the underperformance, and all three large-cap growth managers underperformed for the quarter.

The large-cap value managers outperformed the Russell 1000 Value benchmark by 1.8 percentage points for the quarter. Overall stock selection helped the quarterly return, led by the health care and energy sectors. All three large-cap value managers outperformed for the quarter.

The small-cap growth managers underperformed the Russell 2000 Growth benchmark by 0.9 percentage points for the quarter. Stock selection in technology led the underperformance. Rice Hall James was the only small-cap growth manager to outperform for the quarter.

The small-cap value managers exceeded the Russell 2000 Value benchmark by 1.6 percentage points for the quarter. Stock selection was positive for the quarter, led by the financial services sector. Two of the four small-cap value managers, Goldman Sachs and Peregrine, outperformed for the quarter.

The semi-passive managers in aggregate exceeded the Russell 1000 benchmark by 0.2 percentage point for the quarter. Stock selection overall contributed positively, especially in the energy, consumer discretionary, and producer durables sectors. The passive Russell 3000 and Russell 1000 index managers tracked their respective indices within expectation.

### **International Equity**

The active developed markets managers outperformed the MSCI ACWI ex USA Index by 0.5 percentage point over the quarter. From a country perspective, stock selection and allocation within Spain contributed to the relative outperformance. Attribution was more pronounced from a sector perspective. Stock selection within the bank financials sub-sector and information technology were the primary drivers of outperformance for the quarter.

The semi-passive developed markets equity managers underperformed the MSCI World ex USA Index by 1.4 percentage points during the quarter. Stock selection overall was negative, especially

in the industrials, financials, health care and consumer staples sectors. Stock selection in Japan also contributed negatively to relative performance. Both the passive developed markets manager and the passive emerging markets manager performed within expectation.

### **Emerging Markets Equity**

The active emerging markets equity composite returned 5.9 % vs. MSCI Emerging Markets Index benchmark of 7.4 % for the quarter. The overall emerging markets equity program, including passive, underperformed the benchmark by 1.1 percentage points over the same period. While the mega-cap Asian BAT's (Baidu, Alibaba and Tencent) stocks remained a large portion of the index, their relative performance was neutral this quarter, which gave lesser weighted constituents the spotlight. Stock selection in Hong Kong contributed positively to returns, while an underweight to South Africa detracted from relative performance. From a sector point of view, stock selection in health care contributed to relative performance, while stock selection in consumer non-durables and technology services detracted.

### **Fixed Income**

Each of the four active SBI's fixed income managers outperformed the Bloomberg Barclays U.S. Aggregate benchmark this quarter, returning 0.6% in total vs. 0.4% for the benchmark. The three semi-passive managers' performance was roughly in-line with the benchmark. Exposure to credit, both corporate investment grade and high yield, was beneficial to relative performance as spreads narrowed during the quarter. U.S. agency MBS also performed well and was largely unaffected by initial Fed balance sheet reductions. Managers with curve flatteners also performed well, as short-term rates increased and long rates modestly declined. Lastly, managers with short duration positions benefited, as overall rates increased during the quarter.

## **Public Markets Managers' Organizational Update Fourth Quarter 2017**

### **Domestic Equity Managers**

#### **Sands**

In October, three research analysts left Sands and their responsibilities were re-assigned to existing staff. Sands promoted three people to fill those roles and hired four new research associates which resulted in a net gain of one to the investment staff. Sands plans to continue their search for a Consumer Analyst. Effective November 1, Tom Trentman joined Frank Sands, Mike Sramek and Wes Johnston as a Co-Portfolio Manager of the Select Growth strategy.

#### **Martingale**

At the end of December 2017, Rosemount Investment Partners, a private investment fund, acquired a 20% passive minority interest in Martingale which will help provide founders with liquidity for ownership distribution.

#### **McKinley**

The following staff changes occurred at McKinley: David Talbot, Director of Investments/Qualitative Research Analyst, retired; Paul Hanson, Portfolio Manager, left to pursue other opportunities; and Greg O'Keefe, Chief Financial Officer, retired September 30, 2017. Greg Samorajski, Director of Investments/Portfolio Manager plans to retire first quarter of 2018. Staff will monitor these changes.

#### **J.P. Morgan**

During the fourth quarter, James Brown, who has been a research analyst covering basic materials, moved to another team. His coverage was assumed by Lerone Vincent. In addition, Michael Leskinen, who was covering industrials, left the firm. His coverage was assumed by Lisa Sadioglu and Brent Gdula. Staff has no concerns with these changes.

### **International Equity Managers**

#### **Acadian**

Acadian announced that the appointments of John R. Chisholm and Ross A. Dowd as co-CEOs would be effective on January 1, 2018. John Chisholm has been with the firm since 1987, and served as Chief Investment Officer since 1992. Ross Dowd joined Acadian in 2004 and managed the firm's Global Client Group. The two will succeed Churchill Franklin, who is retiring as Chief Executive Officer and who will continue to have an ongoing role at the firm as Chairman. Replacing John Chisholm as CIO is Brendan Bradley who has been the Deputy CIO for the last 4.5 years.

Also, Maurico Karchmer, Senior Vice President, Director-Implementation, Portfolio Construction and Trading, left Acadian effective December 31, 2017. Staff will monitor this situation.

## **AQR**

Graeme Farrell joined AQR as a Managing Director and Head of Firmwide Operational Risk Management on November 6, 2017. He is responsible for the control identification and assessment process, for creation and monitoring of key risk indicators, and for proactive identification of emerging operational risks. He reports jointly to Principals, Steve Mellas, Head of Operations and Lars Nielsen, Head of Risk Management.

## **Fidelity Institutional Asset Management (FIAM)**

Effective October 2, 2017, Mike Durbin, previously head of Fidelity Institutional Investments and Technology Solutions, succeeded Jeff Lagarce as president of Fidelity Institutional. Jeff Lagarce has taken on a new role within Fidelity as a senior advisor.

## **J.P. Morgan**

James Fisher, Lead Portfolio Manager on the SBI's Developed Market product, retired on September 30, 2017. Tom Murray, who has been working as a Co-Portfolio Manager with James Fisher since 2007, will take over the Lead Portfolio Manager role. Staff has been anticipating this change and has no concerns at this time.

## **State Street Global Advisors (SSgA)**

In November 2017, it was announced that Jay Hooley will retire as CEO of State Street Corporation by the end of 2018, remaining in his role as Chairman through 2019. Ron O'Hanley has been appointed President and COO and will succeed Jay Hooley as CEO of State Street Corporation when he retires. Cyrus Taraporevala will replace Ron O'Hanley as President and CEO of State Street Global Advisors (SSgA).

## **Fixed Income Managers**

### **Western Asset Management**

Carl Eichstaedt, Portfolio Manager and member of the firm's Broad Market investment team, announced his plans to retire in March 2019, after 23 years of service at Western. Mr. Eichstaedt will continue to play a role in the management of the portfolios and will work to transition his responsibilities to the remaining Broad Market portfolio management team during the transition period.

Kenneth Winston, Chief Risk Officer (CRO) since October 2008, plans to retire effective December 31, 2018. Western announced the appointment of Ahmet Kocagil as successor. Mr. Kocagil joined Western in January 2017, as a member of the risk team focusing on credit risk. He has been working alongside Mr. Winston, the broader risk team, as well as investment and client service professionals to enhance risk tools and insights. Mr. Kocagil will assume full CRO responsibilities by June of 2018. Staff has no concerns with these changes.

### **Neuberger Berman**

Andy Johnson, Head of Global Investment Grade Fixed Income, decided to retire at the end of 2018, after a 28 year career at Neuberger Berman. Dave Brown, Global Head of Investment Grade Credit and Senior Portfolio Manager, who has worked with Mr. Johnson for 23 years, will serve as Co-Head with Mr. Johnson beginning December 2017. Mr. Brown will continue as head of the



business when Mr. Johnson retires. Staff has a portfolio review scheduled and will review this transition.

**Columbia Management Investment Advisers**

On Friday, November 10, two Boston based Core Bond Portfolio Managers, Carl Pappo and Stephen Sheehan, left the firm. They were part of a separate Boston team managing multi-sector, fixed income portfolios. In addition, two core bond analysts, two investment grade corporate analysts, one structured assets analysts and two fixed income traders also left the firm. Columbia Senior Portfolio Manager, Gene Tannuzzo, and Senior Portfolio Manager/Head of Structured Assets, Jason Callan, will now assume the responsibilities for all Core and Core Plus Fixed Income portfolios, reporting to Colin Lundgren, who continues as Head of Global Fixed Income. Columbia is in the process of rehiring all departing analyst and trader positions, and staff will monitor changes resulting from the consolidation of the Core Bond product to Minneapolis.

## 2017 Manager Meetings

The fourth quarter manager reviews are noted below.

### Investment Manager

- Acadian Asset Management LLC
- ArrowMark Colorado Holdings, LLC
- BlackRock Financial Management, Inc.
- Fidelity Institutional Asset Management LLC
- Goldman Sachs Asset Management
- Hood River Capital Management, LLC
- Hotchkis & Wiley Capital Management, LLC
- J. P. Morgan Investment Management Inc.
- Macquarie Investment Management Advisers
- Martin Currie Inc.
- McKinley Capital Management, LLC
- Morgan Stanley Investment Management Inc.
- Neuberger Berman Investment Advisers LLC
- Neuberger Berman Investment Advisers LLC
- Pzena Investment Management, LLC
- Peregrine Capital Management
- Rice Hall James & Associates, LLC
- The Rock Creek Group, LP
- Wellington Management Company LLP

### Asset Class

International Equity  
Domestic Equity  
Treasury Bond Manger  
International Equity  
Treasury Bond Manager  
Domestic Equity  
Domestic Equity  
Domestic Equity  
International Equity  
International Equity  
International Equity  
International Equity  
Treasury Bond Manager  
International Equity  
International Equity  
Domestic Equity  
Domestic Equity  
International Equity  
Domestic Equity

## **Non-Retirement Manager Update Fourth Quarter 2017**

### **Domestic Equities**

#### **Internal Stock Pool**

The performance in the domestic equity portfolio matched the S&P 500 for the quarter.

As of December 1, 2017, the internally managed, non-retirement S&P 500 equity portfolio was transitioned to Mellon Capital Management Corporation.

### **Fixed Income**

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

The fixed income portfolio return matched that of the benchmark, the Barclays Intermediate Government Index, for the quarter.

RBC Global Asset Management shifted the reporting lines for the U.S. Fixed Income investment team. The fixed income team now reports to Dagmara Fijalkowski who heads the Fixed Income and Currency investment teams at RBC Global Asset Management in Toronto and will no longer report to Mike Lee, Chief Executive Officer of RBC Global Asset Management (U.S.), located in Minneapolis. There is no change in the portfolio management for this mandate.

#### **Internal Bond Pool**

The bond portfolio outperformed its benchmark, the Bloomberg Barclays U.S. Aggregate, for the quarter.

As of December 1, 2017 the internally managed non-retirement fixed income portfolio was transitioned to Prudential Global Investment Management.

## **Deferred Compensation Manager Update Fourth Quarter 2017**

### **Domestic Equities**

#### **Vanguard Dividend Growth Fund**

The Fund underperformed its benchmark, the NASDAQ US Dividend Achievers Select Index, for the quarter. An underweight to Industrials and an overweight to Health Care and Energy drove the underperformance in addition to poor stock selection in Industrials and Health Care contributed to the relative underperformance.

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

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

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

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

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

The small-cap equity portfolio outperformed the Russell 2000 for the quarter.

### **International Equities**

#### **Fidelity Diversified International**

The international equity portfolio underperformed the MSCI EAFE Free for the quarter.

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

The portfolio underperformed the benchmark, the FTSE Global All Cap ex US Index, for the quarter. In the short term, the international portfolio will have higher tracking error because of fair value pricing, which tends to smooth out over time.

### **Fixed Income**

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

The fixed income portfolio outperformed the benchmark, the Bloomberg Barclays U.S. Aggregate, for the quarter. The portfolio benefited from security selection within credit as Bank of America, Citigroup, and Telecom Italia, performed well. The fund's overweight position to corporate bonds and underweight to U.S. Treasuries also added to relative returns for the quarter given the strong performance of credit.

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

The fixed income portfolio matched the benchmark, the Bloomberg Barclays U.S. Aggregate, for the quarter.

## **Balanced and Conservative Options**

### **Vanguard Balanced**

The portfolio outperformed the customized benchmark, 60% CRSP US total Market and 40% Bloomberg Barclays U.S. Aggregate, for the quarter.

### **Galliard Capital Management**

The stable value portfolio outperformed the benchmark, the 3 Year Constant Maturity Treasury plus 0.45%, for the quarter. Performance in the fourth quarter benefited from allocations to Corporates, ABS, CMBS, and Agency MBS, all of which outperformed like-maturity US Treasuries. An allocation to TIPS also continued to prove beneficial, as inflationary pressures increased towards year end. Additionally, a bias towards intermediate maturities added to returns as they outperformed short term bonds on the quarter.

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# Market Environment

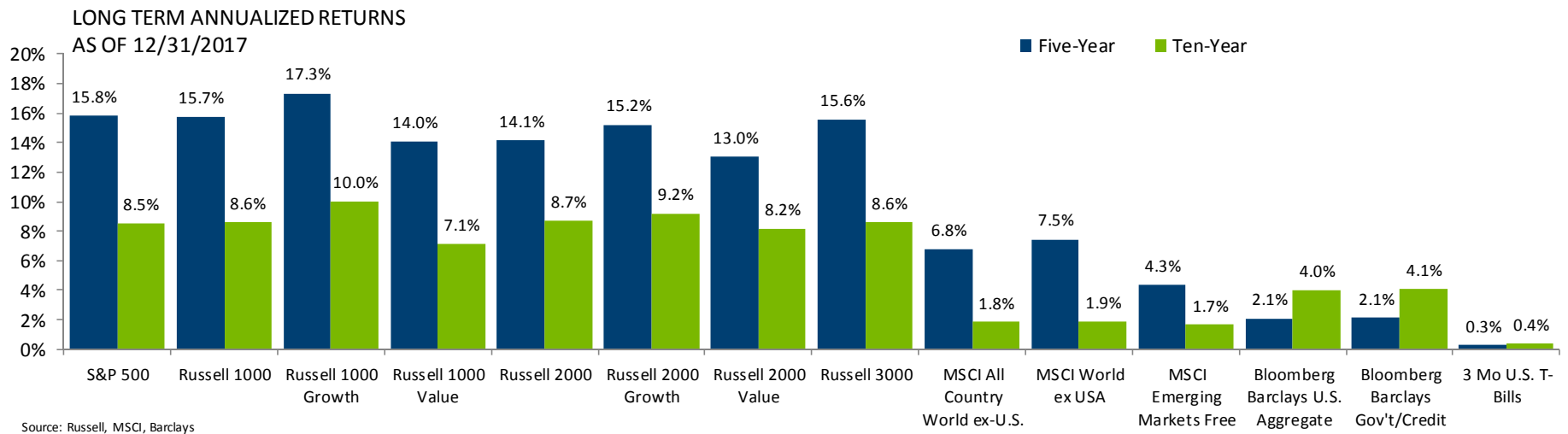
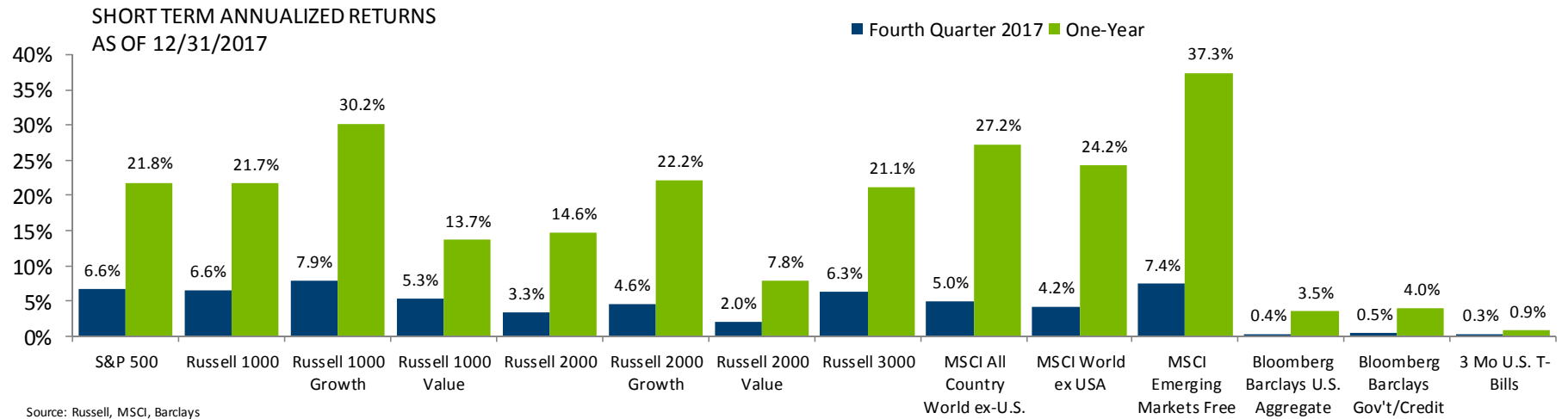
Fourth Quarter 2017

**Aon Hewitt**  
Retirement and Investment

Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc., an Aon Company.



# Market Highlights



# Market Highlights

## Returns of the Major Capital Markets

Periods Ending 12/31/2017

	Fourth Quarter	1-Year	3-Year <sup>1</sup>	5-Year <sup>1</sup>	10-Year <sup>1</sup>
<b>Domestic Equity</b>					
S&P 500	6.6%	21.8%	11.4%	15.8%	8.5%
Russell 1000	6.6%	21.7%	11.2%	15.7%	8.6%
Russell 1000 Growth	7.9%	30.2%	13.8%	17.3%	10.0%
Russell 1000 Value	5.3%	13.7%	8.7%	14.0%	7.1%
Russell 2000	3.3%	14.7%	10.0%	14.1%	8.7%
Russell 2000 Growth	4.6%	22.2%	10.3%	15.2%	9.2%
Russell 2000 Value	2.0%	7.8%	9.6%	13.0%	8.2%
Russell 3000	6.3%	21.1%	11.1%	15.6%	8.6%
<b>International Equity</b>					
MSCI All Country World ex-U.S.	5.0%	27.2%	7.8%	6.8%	1.8%
MSCI World ex USA	4.2%	24.2%	7.4%	7.5%	1.9%
MSCI Emerging Markets Free	7.4%	37.3%	9.1%	4.4%	1.7%
<b>Fixed Income</b>					
Bloomberg Barclays U.S. Aggregate	0.4%	3.5%	2.2%	2.1%	4.0%
Bloomberg Barclays Gov't/Credit	0.5%	4.0%	2.8%	2.1%	4.1%
3 Mo U.S. T-Bills	0.3%	0.9%	0.4%	0.3%	0.4%
<b>Inflation</b>					
CPI-U	0.7%	2.1%	1.6%	1.4%	1.6%

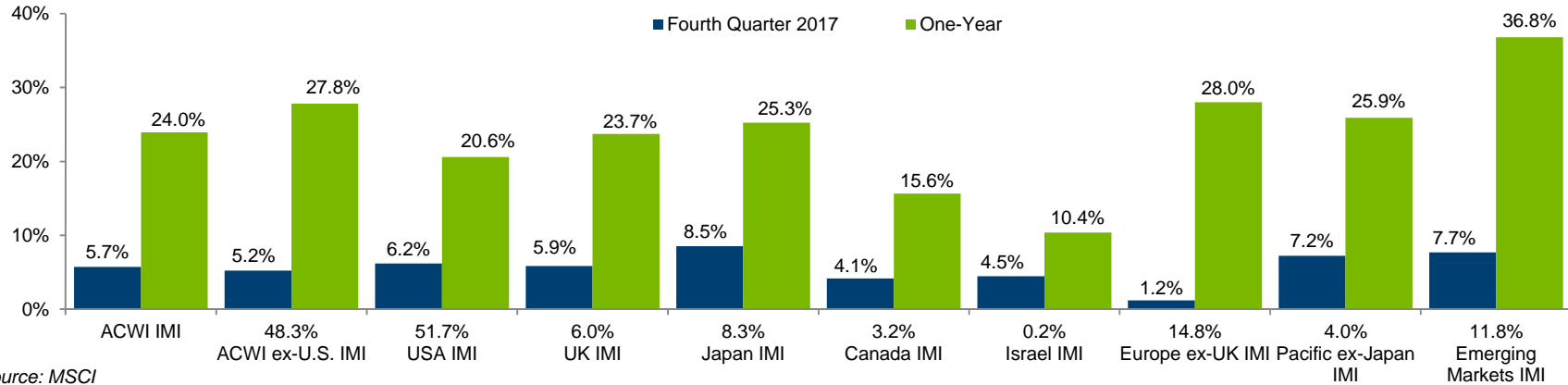
MSCI Indices show net returns.

All other indices show total returns.

<sup>1</sup> Periods are annualized.

# Global Equity Markets

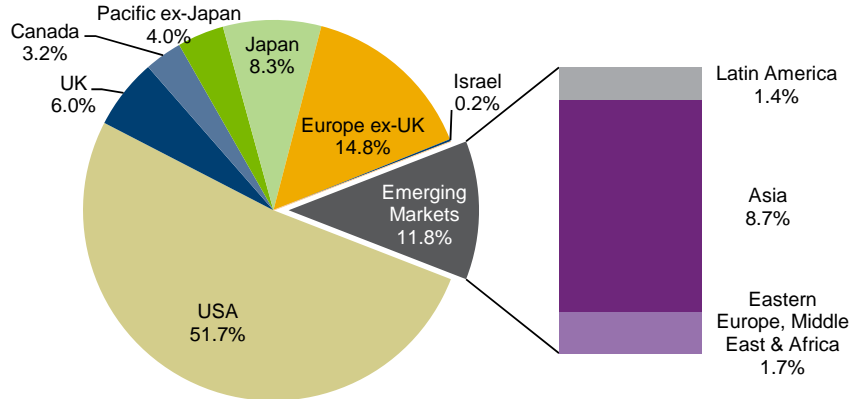
## GLOBAL MSCI IMI INDEX RETURNS AS OF 12/31/2017



- A strong earnings season for corporates combined with continued supportive monetary policy and synchronized pick-up in global growth helped global equities return 5.7% in Q4 2017 in U.S. dollar terms. The weakening of the U.S. dollar (0.4% in trade-weighted terms) led to a lower return of 5.3% in local currency terms.
- All regions shown above generated positive returns over the quarter. Japan was the strongest performer, returning 8.5% in the fourth quarter of 2017. The Japanese economy and equities ended 2017 in strong footing with a number of economic releases and corporate earnings exceeding analyst forecasts. A positive result in the snap Japanese election and expectations of continued easy monetary policy provided additional support to the strong performance over the quarter

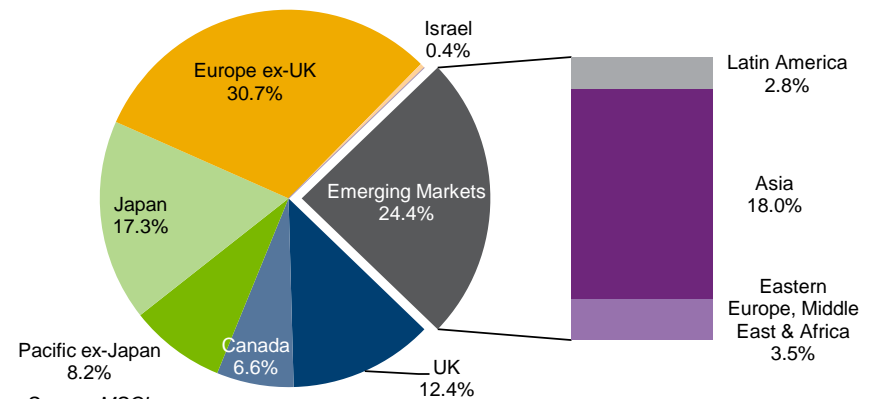
# Global Equity Markets

**MSCI ALL COUNTRY WORLD IMI INDEX  
GEOGRAPHIC ALLOCATION AS OF 12/31/2017**



Source: MSCI

**MSCI ALL COUNTRY WORLD EX-U.S. IMI INDEX  
GEOGRAPHIC ALLOCATION AS OF 12/31/2017**

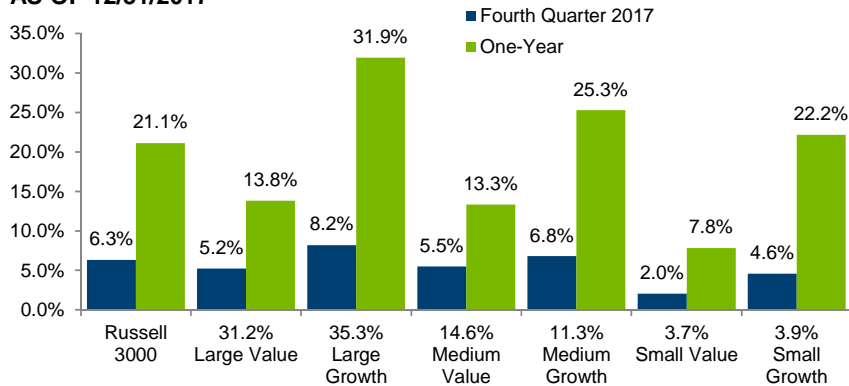


Source: MSCI

- The two exhibits on this slide illustrate the percentage that each country/region represents of the global and international equity markets as measured by the MSCI All Country World IMI Index and the MSCI All Country World ex-U.S. IMI Index, respectively.

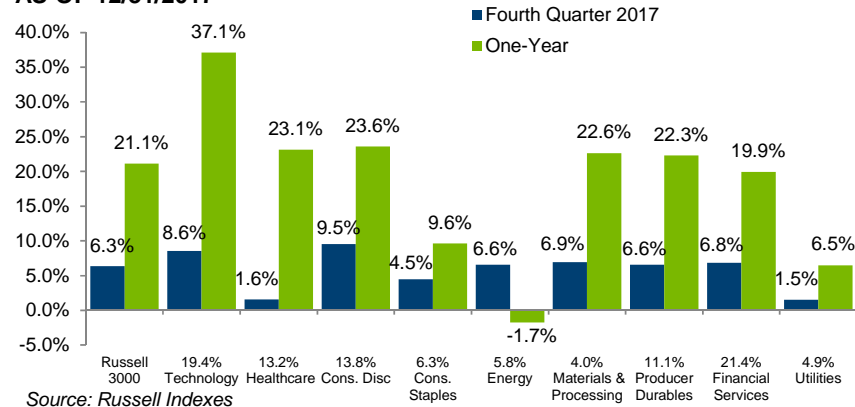
# U.S. Equity Markets

**RUSSELL STYLE RETURNS  
AS OF 12/31/2017**



Source: Russell Indexes

**RUSSELL GICS SECTOR RETURNS  
AS OF 12/31/2017**

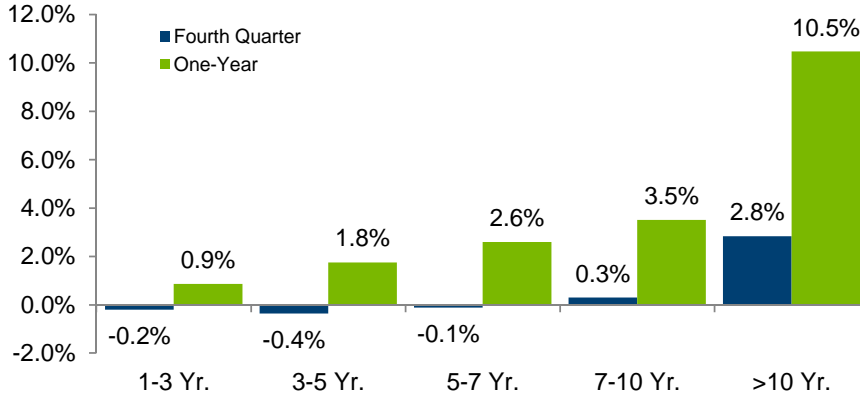


Source: Russell Indexes

- The Russell 3000 Index returned 6.3% during the fourth quarter and 21.1% over the one-year period.
- During the fourth quarter, the consumer discretionary sector continued to be the strongest performer, posting returns of 9.5%. More defensive sectors, which are not sensitive to economic activity, underperformed more cyclical sectors. In particular, utilities and healthcare were the weakest sectors, posting returns of 1.5% and 1.6% respectively in Q4 2017.
- Performance was positive across the market capitalization spectrum over the quarter. The impressive run for the US equities was sustained in the latter stages of 2017 as it became increasingly clear that the tax reform plan would be signed into law, entering 2018 with fourteen consecutive months of market gains. Large cap stocks outperformed small cap stocks on a one-year basis. In general, growth stocks outperformed value stocks.

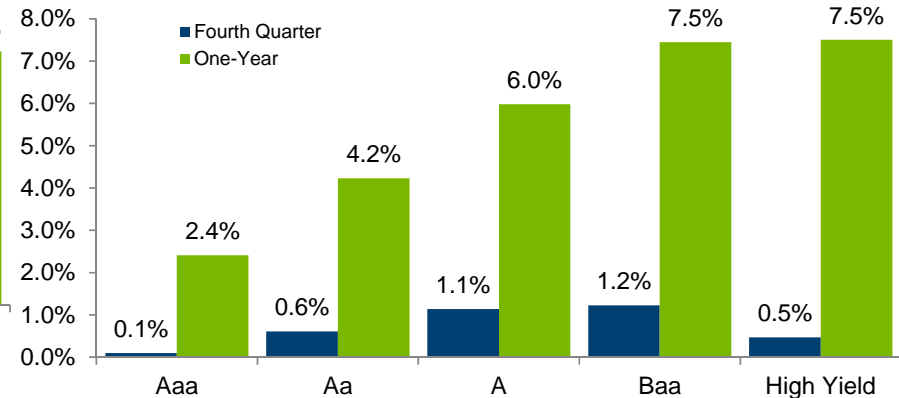
# U.S. Fixed Income Markets

**BLOOMBERG BARCLAYS U.S. AGGREGATE RETURNS BY MATURITY AS OF 12/31/2017**



Source: Bloomberg Barclays

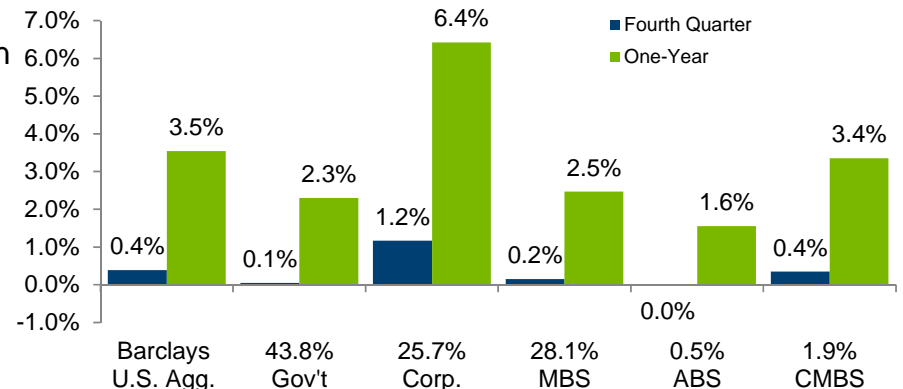
**BLOOMBERG BARCLAYS U.S. AGGREGATE RETURNS BY QUALITY AND HIGH YIELD RETURNS AS OF 12/31/2017**



Source: Bloomberg Barclays

- The Bloomberg Barclays U.S. Aggregate Bond Index returned 0.4% in the fourth quarter. Credit spreads narrowed over the quarter which supported corporate bond returns. Corporate bonds posted the highest return over the quarter at 1.2%, particularly outperforming securitized assets which broadly edged slightly up.
- Although performance was positive across all credit qualities, lower quality investment grade bonds outperformed with greater scope for spread tightening.
- The yield curve flattened over the quarter with short maturity bond yields moving higher while long maturity yields fell. This flattening led to long duration bonds outperformed intermediate and short duration bonds through the quarter.

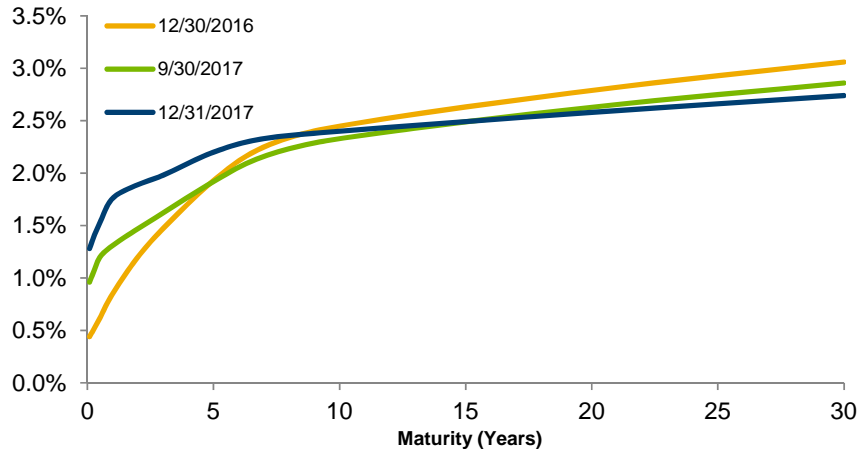
**BLOOMBERG BARCLAYS U.S. AGGREGATE RETURNS BY SECTOR AS OF 12/31/2017**



Source: Bloomberg Barclays

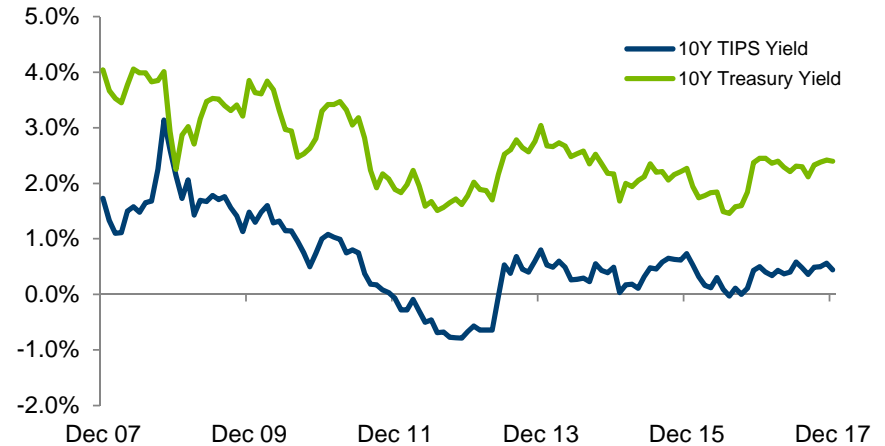
# U.S. Fixed Income Markets

**U.S. TREASURY YIELD CURVE**



Source: U.S. Department of Treasury

**U.S. 10-YEAR TREASURY AND TIPS YIELDS**



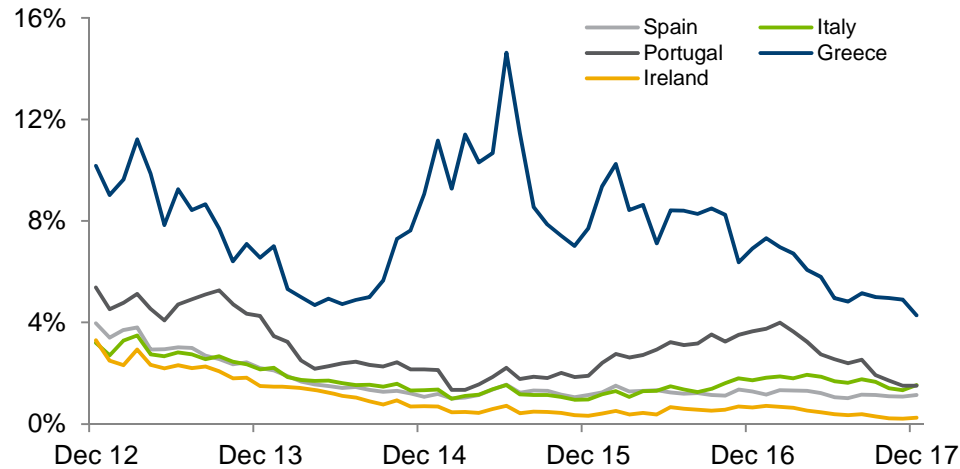
Source: U.S. Department of Treasury

- The Treasury yield curve flattened over the quarter, as yields of short to long term maturity bonds rose as expectations of greater monetary tightening grew while longer maturity bond yields fell.
- The 10-year U.S. Treasury yield ended the quarter at 2.4%, 7 basis points (bps) higher than at the start of the quarter. This was largely driven by higher breakeven inflation which moved 14 bps higher thereby offsetting the fall in real yields.
- The 10-year TIPS yield fell by 5 bps over the quarter and ended the period at 0.4%.



## European Fixed Income Markets

**EUROZONE PERIPHERAL BOND SPREADS  
(10-YEAR SPREADS OVER GERMAN BUNDS)**



Source: DataStream

- In the Eurozone, bond spreads over 10 year German bunds fell across peripheral region (except for Spain which remained flat). Spanish government bond yields fell by 4 bps with the majority of the fall being recovered towards end of the quarter as Spain pro-independence parties maintained a majority in the Catalan regional elections.
- Italian bond yields fell by 16bps, however, yields rose sharply towards end of the quarter as President Sergio Mattarella dissolved parliament ahead of elections in March 2018.
- Portuguese government bond yields fell sharply, moving 45 bps lower as Fitch (a major credit rating agency) followed S&P Global Ratings and upgraded the Portuguese bonds credit rating to investment grade.
- Greek government bond yields fell by 76bps to 4.70% due to upbeat economic data and the progress made on the bailout program; the spread between Greek bonds and German Bunds moved 73 bps lower over the same period.

## Credit Spreads

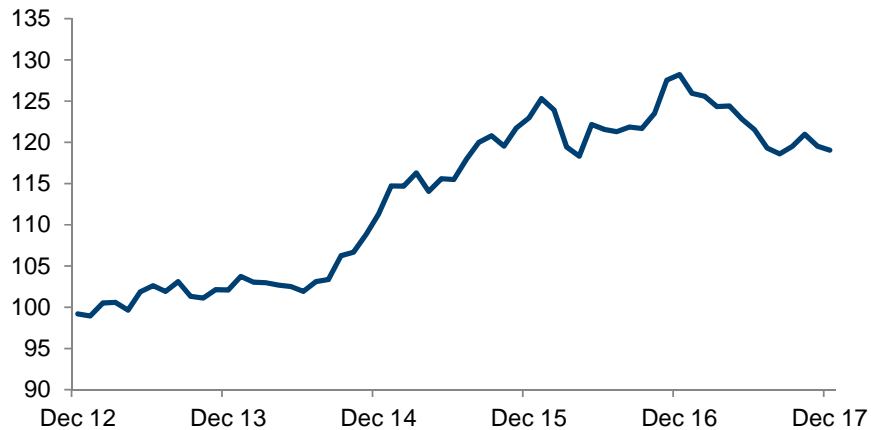
Spread (bps)	12/31/2017	9/30/2017	12/31/2016	Quarterly Change (bps)	1-Year Change (bps)
U.S. Aggregate	36	38	43	-2	-11
Gov't	1	1	2	0	-1
Credit	89	96	118	-7	-29
Gov't/Credit	40	43	54	-3	-14
MBS	25	22	15	3	11
CMBS	62	71	75	-9	-22
ABS	36	44	59	-8	-19
Corporate	93	101	123	-8	-45
High Yield	343	347	409	-4	-137
Global Emerging Markets	215	235	288	-20	-84

Source: Barclays Live

- During the fourth quarter, credit spreads fell across all the areas of the bond market except for MBS bonds which rose by 3 bps. Meanwhile, Government bonds remained flat.
- Global emerging market bond spreads fell by the most over the quarter, narrowing by 20 bps. They were followed by CMBS bonds which fell by 9 bps.

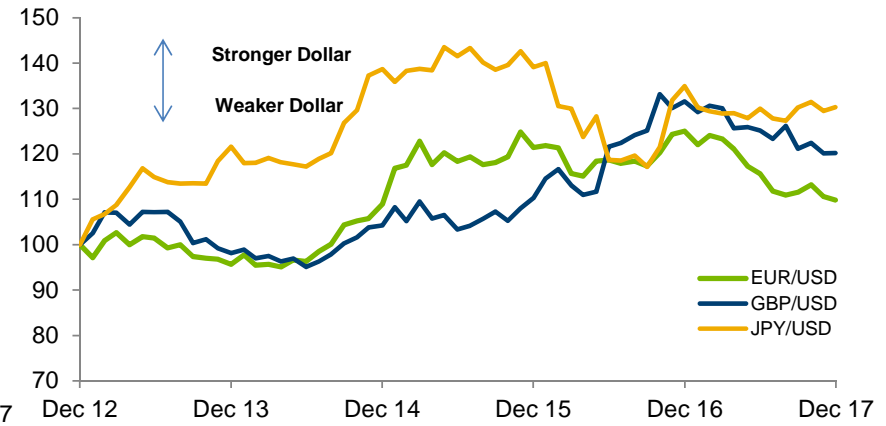
# Currency

**TRADE WEIGHTED U.S. DOLLAR INDEX  
(1997 = 100)**



Source: Federal Reserve

**U.S. DOLLAR RELATIVE TO EUR, GBP AND JPY  
REBASED TO 100 AT 12/31/2012**

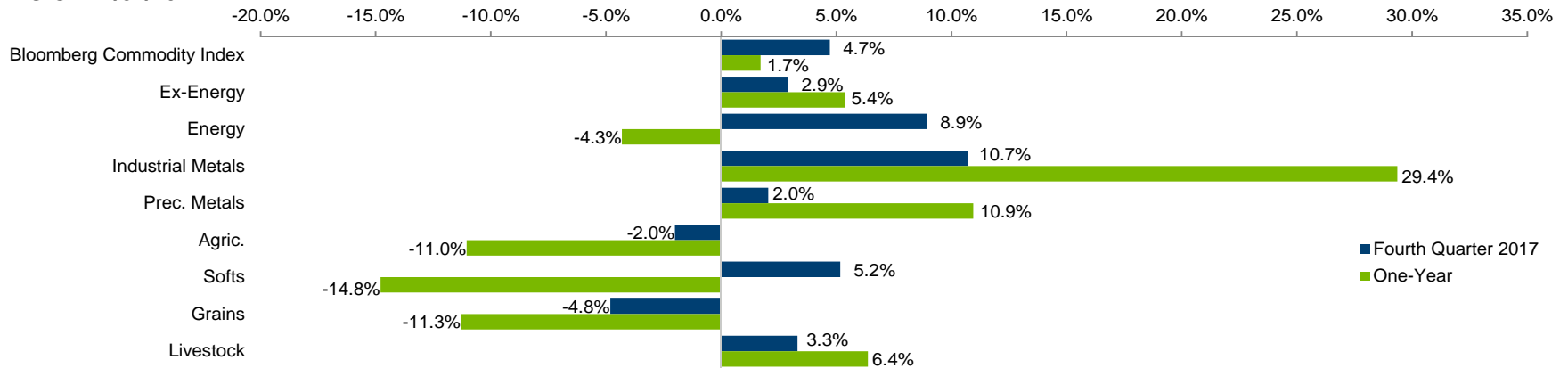


Source: DataStream

- The U.S. dollar weakened by 0.4% on a trade-weighted basis over the quarter which saw the US Federal Reserve (Fed) raising interest rates for third time in a year. The Fed raised their benchmark rates by 25 bps to a range of 1.25%-1.50%. Widening interest rate differentials and the passing of the stimulatory tax reform was not enough to stem the downward trend in the U.S. dollar.
- The U.S. dollar depreciated against all the major currencies with the exception of the Japanese yen. The Bank of England (BoE) hiked the base for first time in a decade, restoring the base rate back to the pre-Brexit level of 0.5%. Brexit talks showed signs of progress with the European Union and the UK agreeing a deal on the first stage of Brexit negotiations which sent sterling 0.8% higher against the U.S. dollar. The yen marginally fell by 0.1% against the U.S. dollar. Positive economic data emanating from the Eurozone supported the euro's 1.6% appreciation against the 'greenback'.

# Commodities

## COMMODITY RETURNS AS OF 12/31/2017

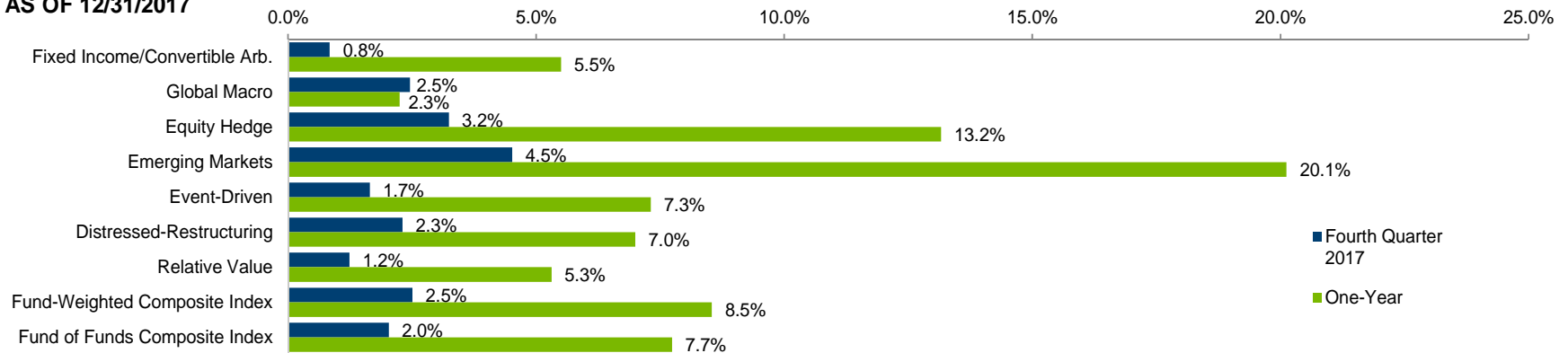


Source: Bloomberg

- A strong upturn in commodity prices over the quarter saw the Bloomberg Commodity Index return 4.7%, driven mainly by the increase in crude oil prices. The price of WTI crude oil rose 17.0% to over \$60/bbl.
- Over the quarter, the best performing segment was Industrial Metals with a return of 10.7%, followed by Energy (8.9%).
- Grains and agriculture were the worst performing sectors over the quarter, returning -4.8% and -2.0% respectively.

# Hedge Fund Markets Overview

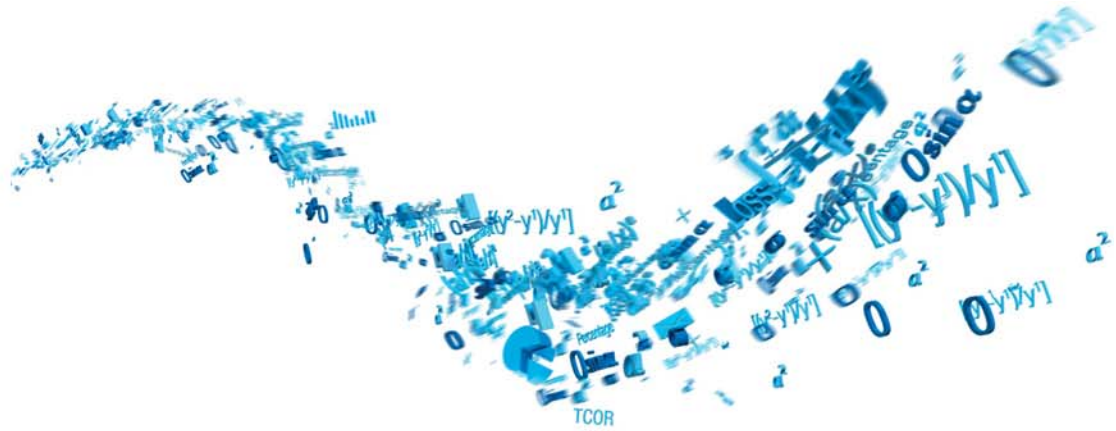
## HEDGE FUND PERFORMANCE AS OF 12/31/2017



*Note: Latest 5 months of HFR data are estimated by HFR and may change in the future.  
Source: HFR*

- Hedge fund performance was positive across all strategies in the fourth quarter.
- The HFRI Fund-Weighted Composite Index and the HFRI Fund of Funds Composite Index produced returns of 2.5% and 2.0%, respectively, during the quarter.
- Emerging market hedge funds continued to be the best performer, posting a return of 4.5% during the fourth quarter which brought the one-year return to 20.1%. Global macro strategies ended 2017 in positive fashion, returning 2.5% which brought the 12 month return back into the 'black'.

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## Appendix A:

# Global Private Equity Market Overview

3Q 2017

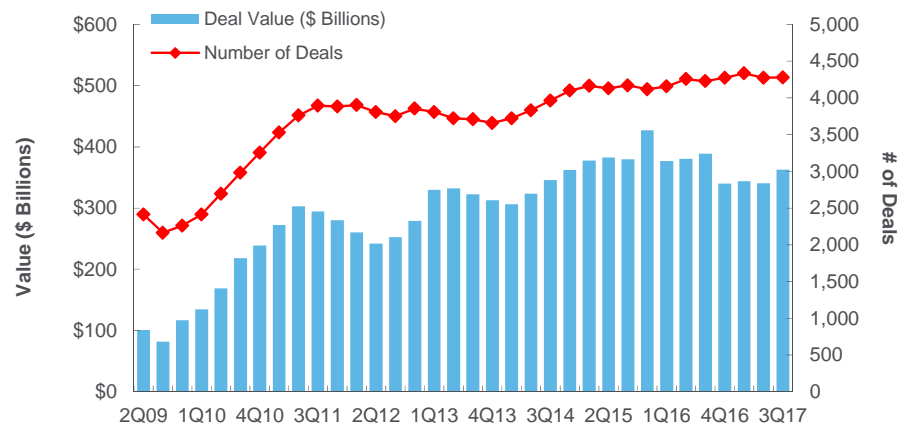
# Private Equity Overview

## Total Funds Raised



Source: Preqin

## LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

## Fundraising

- In 3Q 2017, \$149.2 billion was raised by 274 funds, which was a decline of 12.2% on a capital basis and 18.5% by number of deals from the prior quarter.<sup>1</sup>
  - The majority of 3Q 2017 capital was raised by funds with target geographies in North America, comprising 62.1% of the quarterly total. Capital targeted for Europe made up 26.8% of the total funds raised during the quarter, while the remainder was attributable to managers targeting Asia and other parts of the world.
  - Through three quarters, capital raised stood at 100.7%, 95.9%, and 81.3%, of the full year totals observed in 2014, 2015, and 2016, respectively.
- Dry powder stood at \$1.3 trillion at the end of the quarter, an increase of 0.3% and 28.4% compared to 2Q 2017 and the five year average, respectively.<sup>1</sup>

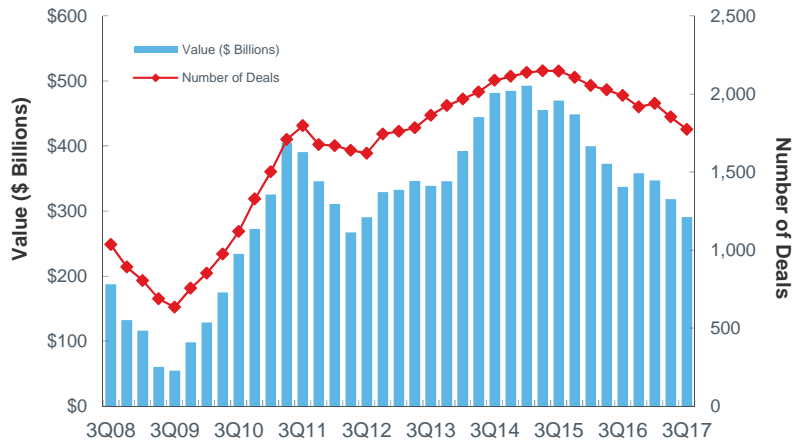
## Activity

- On an LTM basis, 4,277 deals were completed for an aggregate deal value of \$362.6 billion as of 3Q 2017 compared to 4,273 transactions totaling \$340.4 billion as of 2Q 2017.<sup>1</sup>
  - Average deal size was \$84.8 million on an LTM basis. This was up 6.4% compared to the prior quarter, but down 1.3% relative to the five year quarterly average.
- European LBO transaction volume totaled €18.2 billion in 3Q 2017 and €52.1 billion on an LTM basis, compared to 2Q 2017's quarterly and LTM totals of €12.9 billion and €40.1 billion, respectively. 3Q 2017's total was up significantly compared to the five year quarterly average level of \$11.6 billion.<sup>3</sup>
- At the end of 3Q 2017, the average purchase price multiple for all U.S. LBOs was 10.6x EBITDA, up from 10.3x as of the end of 2Q 2017.<sup>3</sup>
  - This was 1.1x and 1.5x turns (multiple of EBITDA) above the year-end five and ten year average levels, respectively.
- European multiples were up 0.2x quarter-over-quarter, averaging 11.0x EBITDA for all transaction sizes, with large and medium transactions each running at 12.0x and 10.8x, respectively.<sup>3</sup>
- Debt remained broadly available in the U.S.
  - U.S. average leverage levels through 3Q 2017 were 5.8x compared to the five and ten year averages of 5.4x and 5.1x, respectively.<sup>3</sup>
  - The amount of debt issued supporting new transactions increased compared to 2Q 2017 from 60.4% to 62.3% and remains above the 51.0% average level over the prior five years.<sup>3</sup>
  - In Europe, average senior debt/EBITDA through 3Q 2017 was 5.2x, up from the 5.1x observed through 1H 2017. This was also up over the five year and ten year average levels of 4.9x.



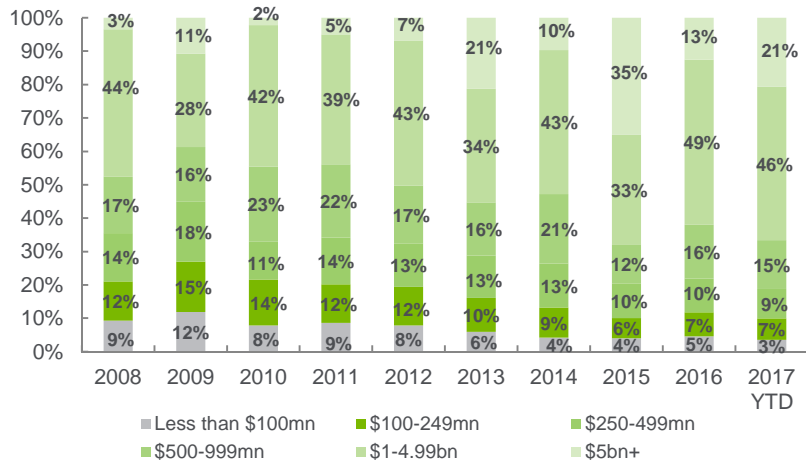
# Buyouts / Corporate Finance

## LTM PE Exit Volume and Value



Source: Preqin

## M&A Deal Value by Deal Size



Source: Preqin

## Fundraising

- \$85.7 billion was closed on by 96 buyout and growth funds in 3Q 2017, compared to \$108.2 billion raised by 111 funds the quarter before.<sup>1</sup>
  - This represented an increase compared to the five year quarterly average of \$59.2 billion.
  - Apollo Investment Fund IX was the largest fund raised during the quarter, closing on \$24.7 billion.<sup>1</sup> This marked a new record for the largest buyout fund ever raised, exceeding the \$21.7 billion aggregate pool raised by Blackstone from 2005 to 2007.<sup>12</sup>
- Buyout and growth equity dry powder was estimated at \$711.3 billion, which surpassed the record level of \$703.6 billion observed at the end of 2Q 2017.<sup>1</sup>
  - Aside from large cap funds, which decreased 5.2% quarter-over-quarter, buyout dry powder increased across all fund size categories. Mega fund dry powder exhibited the largest increase during the quarter (9.4%), setting a new record mark of \$270.3 billion. Middle and small market buyout dry powder finished the quarter up 1.4% and 0.7%, respectively, from 2Q 2017.<sup>1</sup>
  - An estimated 59.0% of buyout dry powder was targeted for North America, while European dry powder comprised 29.5% of the total.<sup>1</sup>

## Activity

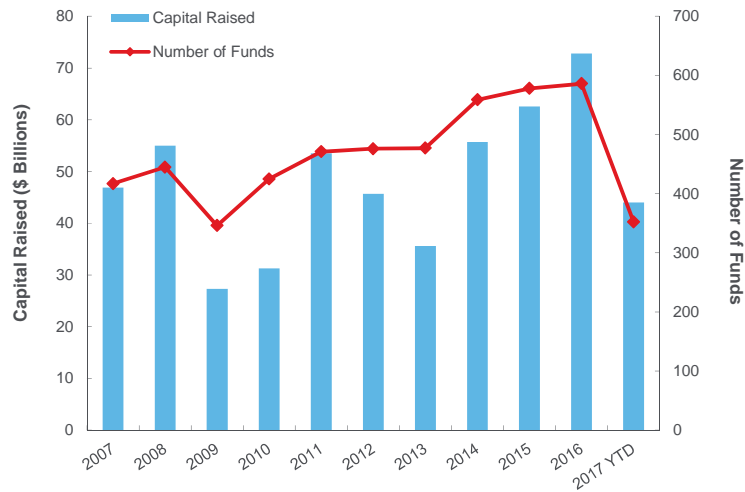
- Global private equity-backed buyout deals totaled \$118.0 billion in 3Q 2017, which was an increase of 22.3% and 34.2% from the prior quarter and five year average, respectively.<sup>1</sup>
  - 1,038 deals were completed during the quarter, which was down 3.3% from 2Q 2017, but up 2.7% compared to the five year quarterly average.
  - Through 3Q 2017, deals valued at \$5.0 billion or greater accounted for an estimated 20.6% of total deal value during the quarter compared to 12.6% in 2016 and 35.1% in 2015.<sup>1</sup>
- Entry multiples for all transaction sizes through the third quarter stood at 10.6x EBITDA, up from 2Q 2017 (10.3x).<sup>3</sup>
  - Large cap middle-market purchase price multiples stood at 10.5x, up compared to both 2Q 2017 and full year 2016 levels of 10.3x and 10.0x, respectively.<sup>3</sup>
  - The weighted average purchase price multiple across all European transaction sizes averaged 11.0x EBITDA on an LTM basis in 3Q 2017, up from 10.8x in 2Q 2017. Purchase prices for transactions of €1.0 billion or more decreased slightly from 12.1x in 2Q 2017 to 12.0x in the third quarter.
  - Transactions between €250.0 million and €500.0 million were up 0.6x from the end of 2Q 2017, and stood at 10.1x.<sup>3</sup>
  - The portion of average purchase prices financed by equity for U.S. deals was 45.1% in 3Q 2017, up from 43.6% through 1H 2017. This remained above the five and ten year full year averages of 41.7% and 42.3%, respectively.<sup>3</sup>
- Globally, exit value totaled \$68.1 billion on 421 deals in 3Q 2017 compared to \$69.2 billion on 443 deals in the prior quarter.<sup>1</sup>

## Opportunity

- Operationally focused managers targeting the middle and large markets with expertise in multiple sectors

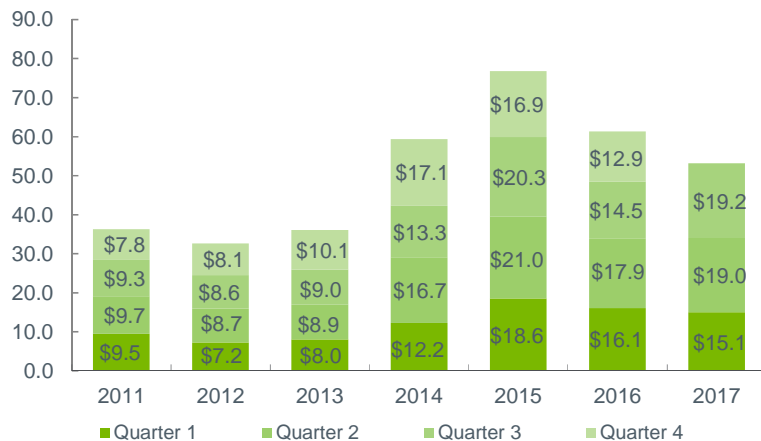
# Venture Capital

## Venture Capital Fundraising



Source: Preqin

## U.S. Venture Capital Investments by Quarter (\$B)



Source: PwC/CB Insights Report

### Fundraising

- \$11.8 billion of capital was raised by 95 funds in 3Q 2017, down from the prior quarter's total of \$19.4 billion by 129 managers.<sup>1</sup>
  - Compared to the five year quarterly average, 3Q 2017 fundraising was down 18.0% and 29.9% on a capital and deal basis, respectively.
  - Institutional Venture Partners XVI was the largest fund raised during the quarter, closing on \$1.5 billion.
- The average fund size raised during the quarter was approximately \$136.0 million. This represented a decrease compared to the prior quarter's average of 161.0 million, but remained above the five year quarterly average of \$124.9 million.
- At the end of 3Q 2017, there were an estimated 1,384 funds in market targeting \$149.7 billion. The vast majority of funds in market are seeking commitments of \$200.0 million or less.<sup>1</sup>
- Dry powder was estimated at \$182.7 billion at the end of 3Q 2017, which was up from 2Q 2017's total of \$177.2 billion. This was 48.9% higher than the five year average.<sup>1</sup>

### Activity

- During the third quarter, 1,299 venture backed transactions totaling \$19.2 billion were completed, which was an increase on a capital basis over the prior quarter's total of \$19.0 billion across 1,260 deals. This was 22.5% higher than the five-year quarterly average of \$15.7 billion.<sup>7</sup>
  - Unicorns, or companies with valuations of \$1.0 billion or more, accounted for 74.5% of deal value, which was down from 77.4% a quarter ago.<sup>8</sup>
- Median pre-money valuations increased across all transaction stages aside from seed series (-4.0%). Series D+ transactions exhibited the largest increase (200.0%) and reached \$750.0 million, a level not observed in over eight years. Series A, B, and Series C transactions were up 4.9%, 16.7%, and 38.0%, respectively.<sup>9</sup>
- Total U.S. venture backed exit activity totaled approximately \$11.2 billion across 144 completed transactions in 3Q 2017, up from \$10.5 billion across 156 exits in 2Q 2017.<sup>8</sup>
  - There were just seven venture-backed initial public offerings during the quarter, which was down from 18 in 2Q 2017. On a capital basis, IPOs raised just \$609.4 million, down significantly from 2Q 2017's total of \$1.8 billion.<sup>16</sup>
  - The number of M&A transactions totaled 129 deals in 3Q 2017, representing a decrease of 15.7% quarter-over-quarter.<sup>16</sup>

### Opportunity

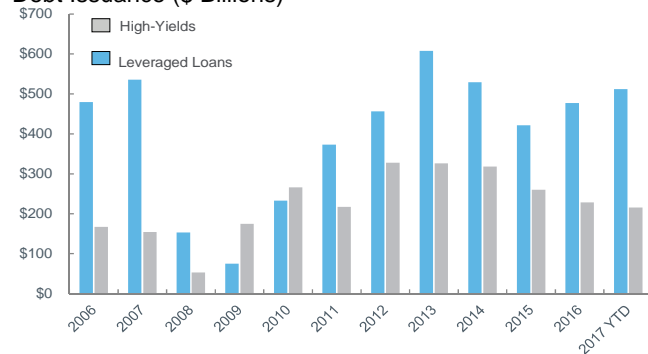
- Early stage continues to be attractive, although we are monitoring valuation increases
- Smaller end of growth equity
- Technology sector

# Leveraged Loans & Mezzanine

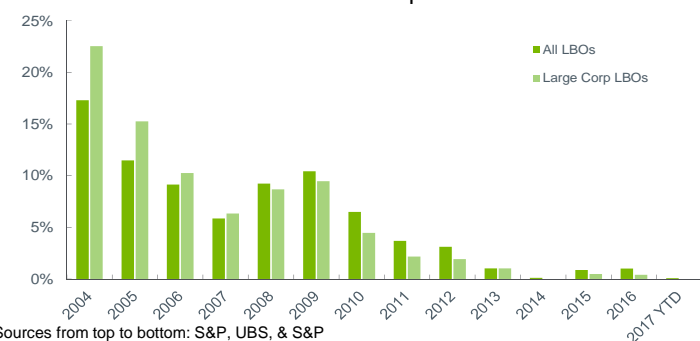
Average Leverage by Deal Size



Debt Issuance (\$ Billions)



Mezzanine % of Purchase Price Multiple



Sources from top to bottom: S&P, UBS, & S&P

## Leveraged Loans

### Fundraising

- New CLO issuance totaled \$82.2 billion through 3Q 2017, up 78.3% from the same period last year. <sup>2</sup>
- High-yield debt issuance totaled \$215.8 billion through the first three quarters of 2017, up from \$181.3 billion during the same period of 2016. <sup>2</sup>
- Mutual fund net inflows stood at \$13.6 billion through the end of 3Q 2017, compared to net inflows of \$11.4 billion through 2Q 2017. <sup>2</sup>

### Activity

- Leverage for all LBO transactions ended the quarter at 5.9x, flat with 2Q 2017 and continues to be comprised almost entirely of senior debt. The average leverage level for large cap LBOs was 6.0x during the quarter, up from 5.9x in 2Q 2017. <sup>3</sup>
- YTD institutional new leveraged loan issuances through 3Q totaled \$404.6 billion, up significantly from 2016's three quarter total of \$229.4 billion. <sup>2</sup>
- 62.3% of new leveraged loans were used to support M&A and growth activity during the first half of the year, up from 59.8% through 1H 2017. This was also above the prior five year average of 50.2%. <sup>3</sup>
- European leveraged loan issuance increased by 23.2% quarter-over-quarter to €22.2 billion. <sup>3</sup>
  - This was above the five year and ten year average levels of €12.2 billion and €9.8 billion, respectively.
- Leveraged loan spreads for B rated issues narrowed quarter-over-quarter, ending 3Q 2017 at L+360 bps compared to L+409 bps at 2Q 2017. BB- index spreads decreased to L+247 bps from L+260 bps during the quarter. <sup>2</sup>

### Opportunity

- Funds with the ability to source deals directly and the capacity to scale for large transactions
- Funds with an extensive track record and experience through prior credit cycles

## Mezzanine

### Fundraising

- Eight funds closed on \$3.6 billion during the quarter. This was an increase from the prior quarter's total of \$3.4 billion raised by nine funds, but represented a decline of 24.8% from the five year quarterly average of \$4.8 billion. <sup>1</sup>
- Estimated dry powder was \$50.0 billion at the end of 3Q 2017, which was flat compared to 2Q 2017. <sup>1</sup>
- Fundraising activity remains robust with an estimated 70 funds in market targeting \$25.8 billion of commitments. Goldman Sachs Mezzanine Partners VII is the largest fund in market, targeting commitments of \$10.0 billion. <sup>1</sup>

### Opportunity

- Funds with the capacity to scale for large sponsored deals

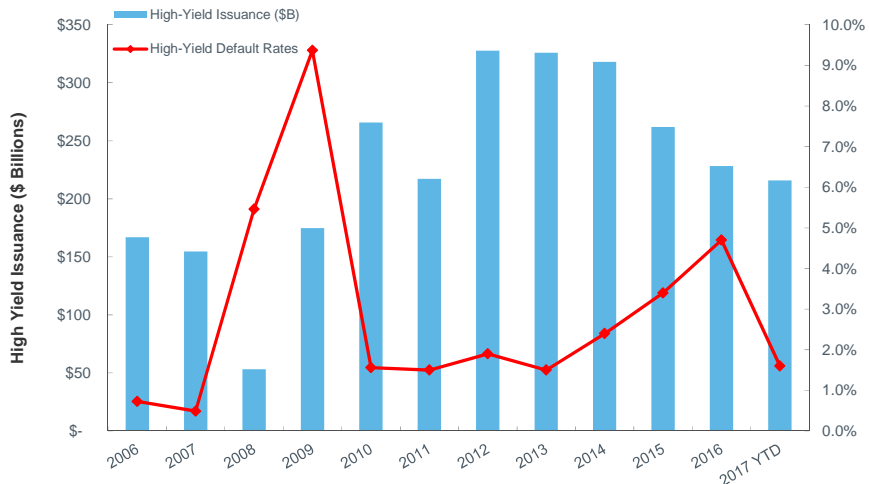
# Distressed Private Markets

## Distressed Debt, Turnaround, & Special Situations Fundraising



Source: Thomson Reuters

## High-Yield Bond Volume vs Default Rates



Source: UBS & Fitch Ratings

### Fundraising

- During the quarter, \$11.5 billion was raised by 14 funds compared to \$9.8 billion raised by 10 funds in 2Q 2017.<sup>1</sup>
  - This marked an increase of 13.1% over the five year quarterly average.
  - Castlelake V was the largest partnership raised during the quarter, closing on \$2.4 billion.
- Dry powder was estimated at \$106.2 billion at the end 3Q 2017. This was up from \$103.1 billion in 2Q 2017, but down compared to the record level of \$112.0 billion, which was observed in both 2015 and 2016. This remained above the five year quarterly average level of \$91.6 billion.<sup>1</sup>
- Roughly 99 funds were in the market at the end of 3Q 2017, seeking \$63.1 billion in capital commitments.<sup>1</sup>
  - Distressed debt managers were targeting the most capital, seeking an aggregate \$40.2 billion.
  - GSO Capital Solutions Fund III was the largest fund in market with a target fund size of \$6.5 billion.

### Activity

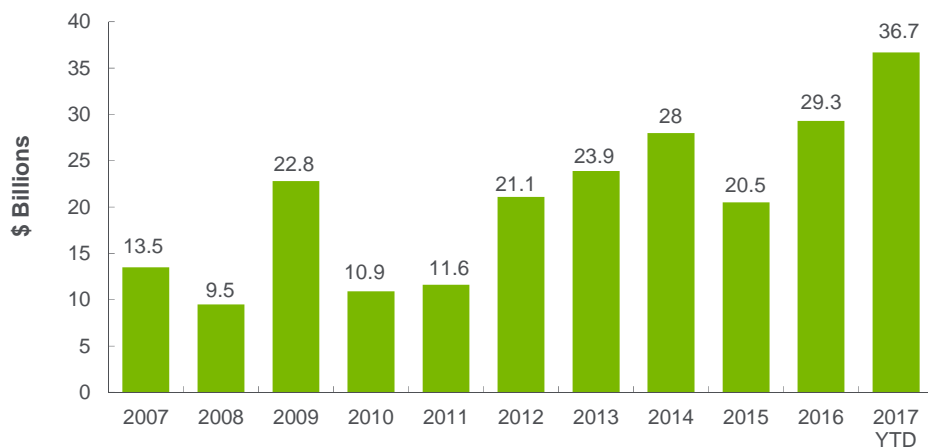
- Distressed debt and bankruptcy restructuring activity totaled \$156.4 billion during the first nine months of 2017, representing a decline of 17.0% from the same period in 2016.<sup>5</sup>
  - U.S. activity accounted for \$70.7 billion through September 2017 and was down 28.0% from the same period of the prior year.<sup>5</sup>
- The LTM U.S. high-yield default rate was 1.6% as of September 2017, which was down from March 2017's LTM rate of 2.2%.<sup>6</sup>
- Credit spreads are now modestly expensive, and yields are also low. The impact of rising interest rates is becoming more and more pertinent, and further positive returns driven by valuations will be limited.<sup>4</sup>
- Increasing purchase prices and elevated levels of leverage may result in an increase in distressed opportunities looking out over the next two to three years, or sooner if there is a stall in the economy.

### Opportunity

- Funds capable of performing operational turnarounds
- Funds with the flexibility to invest globally

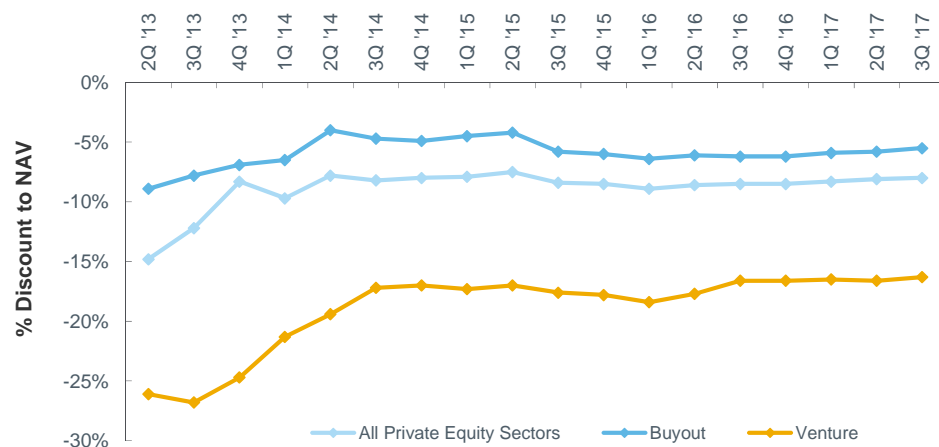
# Secondaries

## Secondary Fundraising



Source: Preqin

## Secondary Pricing



Source: UBS

## Fundraising

- Seven funds raised \$11.7 billion during the third quarter, up from \$5.6 billion by 12 funds in 2Q 2017.<sup>1</sup>
  - Total capital raised through 3Q 2017 represents 125.3% of 2016's full year total.
  - Goldman Sachs Vintage Fund VII was the largest fund raised during the quarter, closing on \$7.2 billion.
  - 88.0% of funds raised through 3Q 2017 met or exceeded their fundraising target.<sup>1</sup>
- Dry powder was estimated at \$94.0 billion as of 3Q 2017, surpassing December 2016's previous peak of \$77.0 billion.<sup>1</sup> The top 15 secondary buyers are estimated to command more than 75.0% of the market's capital reserves.<sup>2</sup>
- At the end of 3Q 2017, there were an estimated 49 secondary and direct secondary funds in market, targeting approximately \$18.3 billion. Landmark Equity Partners XVI was the largest fund in the market targeting \$4.0 billion.<sup>1</sup>

## Activity

- More than 900 potential buyers and 750 potential sellers of secondary interests have been identified.<sup>1</sup>
  - Secondary funds were the most active buyers in 1H 2017, accounting for 78.6% of total purchases<sup>13</sup>.
  - Fund of funds managers and public pension funds represent the largest proportion of potential sellers at 13.0% and 12.0%, respectively.<sup>1</sup>
- Transaction fund leverage and deferred payment structures continue to be prevalent and are used as a means to improve pricing and deal returns in an increasingly competitive environment.<sup>2</sup>
  - 35% of buyers reported that they used deal acquisition leverage.
  - The space now features more than 13 active leverage providers.
- The average discount rate for all private equity sectors declined 0.1% quarter-over-quarter to 8.0%. The average buyout pricing discount decreased 0.3% during the quarter, ending the quarter at 5.5%.<sup>2</sup>
- Pricing is expected to remain attractive given the strong competitive market dynamics and the widening supply/demand imbalance driven by the continued growth of dry powder.<sup>2</sup>

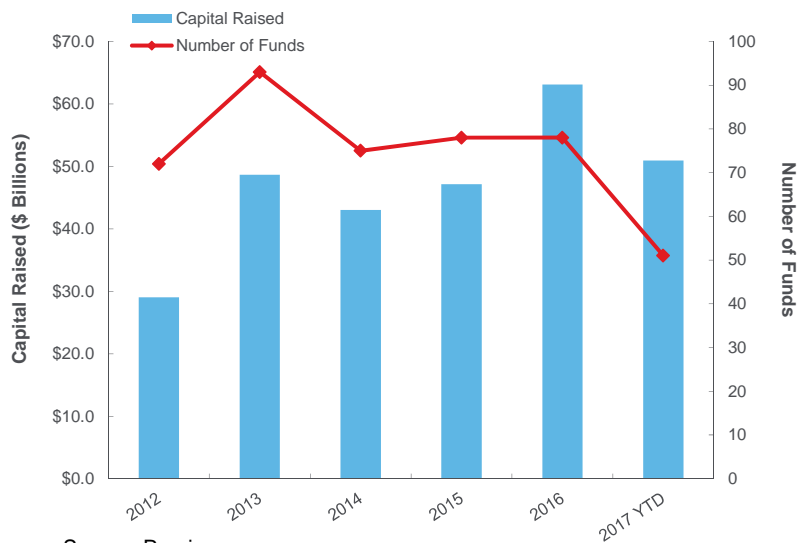
## Opportunity

- Funds that are able to execute complex and structured transactions
- Niche strategies



# Infrastructure

## Global Infrastructure Fundraising



Source: Preqin

## Number of Deals Completed



Source: Preqin

## Fundraising

- \$11.9 billion of capital was raised by 17 funds in 3Q 2017 compared to \$7.6 billion of capital raised by 14 partnerships in 2Q 2017.<sup>1</sup>
  - Funds raised through 3Q 2017 averaged 106.9% of their target size, which was up from the five year average level of 94.8%.<sup>1</sup>
  - AMP Capital Infrastructure Debt Fund III was the largest fund raised during the quarter, closing on \$2.5 billion.<sup>1</sup>
- As of the end of 3Q 2017, there were an estimated 170 funds in the market seeking roughly \$118.1 billion, down from \$149.0 billion sought by 171 managers a quarter ago.<sup>1</sup>
  - Funds focused on infrastructure assets in Europe were targeting an estimated \$39.5 billion in capital, followed by North American focused funds, which were targeting approximately \$34.1 billion.
  - Alinda Infrastructure Fund III was the largest fund in the market as of the end of 3Q 2017, targeting \$5.0 billion of commitments.
- At the end of the quarter, dry powder stood at \$154.0 billion, up from the prior quarter's record total of \$150.2 billion.<sup>1</sup>
  - 41.6% of the dry powder was targeted for North America, compared to 35.1% for Europe and 13.0% for Asia and the rest of the world.<sup>1</sup>
- Concerns surrounding the relative availability and pricing of assets remain. Fundraising continues to be very competitive given the number of funds and aggregate target level of funds in market. Investor appetite for the asset class persists despite the record levels of dry powder and increased investment activity from strategic and corporate buyers as well as institutional investors.

## Activity

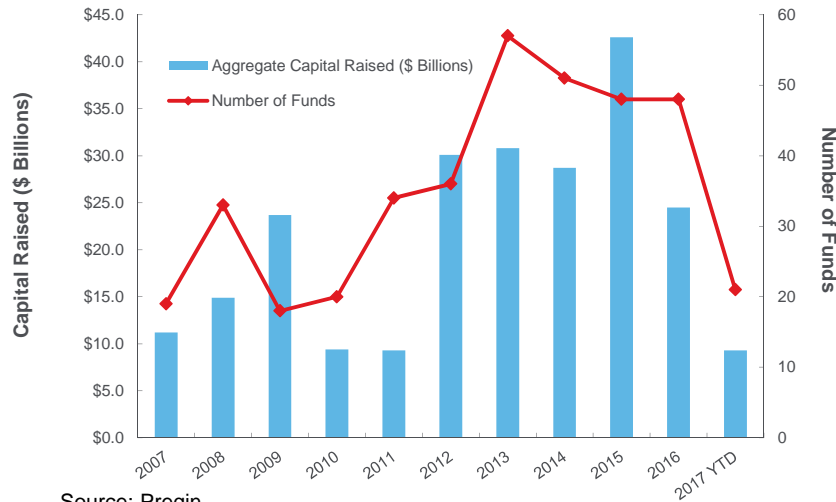
- Infrastructure managers completed 344 deals with an estimated aggregate deal value of \$123.2 billion in 3Q 2017 compared to 403 deals totaling \$147.4 billion a quarter ago. The average deal value during the quarter was \$358.2 million, down slightly compared to 2Q 2017's average of \$365.7 million, but above the prior five year average of \$337.1 million.<sup>1</sup>
  - Europe accounted for 46.0% of the deals in 3Q 2017, while 29.0% and 15.1% of deals were transacted in North America and Asia, respectively.<sup>1</sup>
  - Energy was the dominant industry during the quarter with 70.9% of transactions, followed by the transportation sector, which accounted for 11.1% of the quarter's deals. Social infrastructure represented 9.1% of transactions in 3Q 2017.<sup>1</sup>

## Opportunity

- Greenfield infrastructure is less competitive and offers a premium for managers willing to take on construction risk

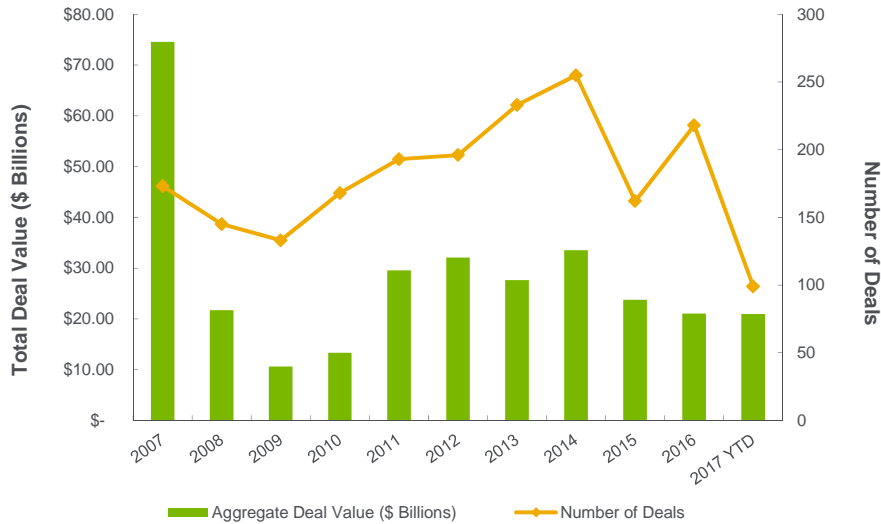
# Natural Resources

## Natural Resources Fundraising



Source: Preqin

## Energy & Utilities Deal Activity



Source: Preqin

Aon Hewitt | Retirement and Investment

Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc., an Aon Company.

### Fundraising

- During 3Q 2017, seven funds closed on \$2.6 billion compared to 10 funds totaling \$5.3 billion in 2Q 2017.<sup>1</sup>
  - Riverstone Pattern Energy II was the largest fund raised during the quarter, securing commitments of \$724.0 million.
- At the end of 3Q 2017, there were roughly 99 funds in the market targeting an estimated \$46.8 billion in capital, compared to 96 funds seeking an estimated \$47.6 billion in 2Q 2017.<sup>1</sup>
  - Five managers accounted for 47.6% of the total capital being raised.
  - EnCap Energy Capital Fund XI was seeking the most capital with a target fund size of \$6.5 billion.
- Dry powder was estimated at \$67.8 billion at the end of 3Q 2017, which was down 8.0% from 2Q 2017's level and remained below the record level of \$77.4 billion observed in 3Q 2016.<sup>1</sup>

### Activity

- Energy and utilities industry managers completed approximately 99 deals totaling an estimated \$21.0 billion through 3Q 2017, which represents 93.4% of the full year capital deployment in 2016.<sup>1</sup>
- Crude oil prices increased during the quarter.
  - WTI crude oil prices increased 10.3% during the quarter to \$49.82 bbl<sup>11</sup>.
  - Brent crude oil prices ended the quarter at \$56.15/bbl, up 21.1% from 2Q 2017.<sup>11</sup>
- Natural gas prices (Henry Hub) were flat during the third quarter, ending at \$2.98 per MMBtu.<sup>11</sup>
- A total of 940 crude oil and natural gas rotary rigs were in operation in the U.S. at the end of 3Q 2017, flat with the prior quarter.<sup>15</sup>
  - Crude oil rigs represented 79.8% of the total rigs in operation. 51.3% of the 750 active oil rigs were in the Permian basin.
  - 24.9% and 22.2% of natural gas rigs at the end of 3Q 2017 were operating in the Marcellus and Haynesville basins, respectively.
- The price of iron ore (Tianjin Port) ended the quarter at \$71.53 per dry metric ton, up 24.4% quarter-over-quarter.<sup>12</sup>

### Opportunity

- Acquire and exploit existing oil and gas strategies preferred over early stage exploration in core U.S. and Canadian basins
- Select midstream opportunities



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# Appendix B:

## Real Estate Market Update

3Q 2017

# U.S. Real Estate Market Update 3Q17

## General

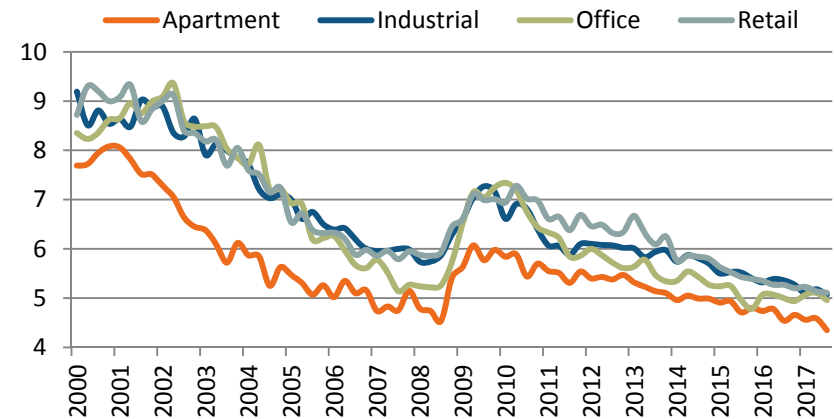
- The S&P 500 produced a gross total return of 4.5% during the Quarter, as markets have continued to rally to new heights. MSCI US REIT index produced a more moderate return of 1.3%, as REIT relative performance has continued to lag considerably the equity market year-to-date. Consumer Sentiment remained in line with the end of 2Q17, concluding 3Q17 at a composite 95.1 and remains elevated. US 10 year treasury bond yields expanded 3 bps during the Quarter.
- Macro indicators for U.S. real estate continue to gain momentum, as GDP growth in the 3Q accelerated to an annualized rate of 3.3%. With the conclusion of June, the economy has now experienced 84 consecutive months of job growth. Headline inflation remained healthy at 1.9%, near the Fed's 2% target. The Federal reserve is expected to raise rates in at the January 13<sup>th</sup> meeting; the futures market implied probabilities indicate that another rate hike is 98%.

## Commercial Real Estate

- In 2016, \$124.1bn of aggregate capital was raised by US real estate funds. 2017 (YTD), Private Equity Real Estate Funds have raised \$101.8bn. Continuing on trend since 2012, 2017 (YTD) has witnessed the largest average fund size at \$451m thus far.
- Transaction cap rates (5.82%) on average compressed during the 3rd Quarter of 2017. Multifamily, Industrial and Office experienced cap rate compression, while Retail cap rates remained flat.
- 10 year treasury bond yields compressed 3 bps to 2.33% during the Quarter and, subsequent to Quarter-end, have continued to expand. It appears now the pro-growth political agenda the market expected will eventually be achieved, as fiscal stimulus through tax cuts now appears imminent.

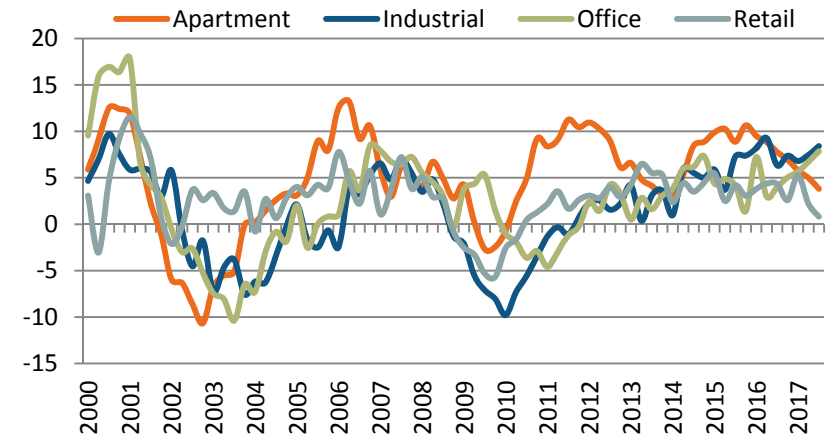
Sources: Bureau of Economic Analysis, U.S. Census Bureau, Federal Reserve Board, NCREIF, Cushman and Wakefield, Real Capital Analytics, Bloomberg LP., Prequin, University of Michigan, Townsend

Current Value Cap Rates by Property Type



Source: NCREIF

4-Qtr Rolling NOI Growth By Property Type



Source: NCREIF

# Property Type Reviews

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## *Apartments:*

- Construction deliveries increased 10 bps quarter-over-quarter to what is expected to be the cycle peak of 115,000 units., or 1.5% of supply
- The increased level of deliveries resulted in a national vacancy rate of 5.2%. This represents a 30 bps softening on a year-over-year basis.
- Despite the increased level of deliveries, net absorption increased 20 bps to 1.3% of supply.
- Annualized rent growth was 2.4%, representing 140 bps reduction when compared year-over-year.
- The Apartment sector delivered a 1.7% return during the Quarter, underperforming the NPI by 4 bps.

## *Office:*

- The Office sector returned 1.4% in 3Q17, 30 bps below the NPI.
- Leasing activity totaled 62.4 million SF, an increase of 11.1% when compared to the previous quarter. This can be attributed to leases in excess of 250,000 SF representing 17.5% of 3rd Quarter transactions.
- Rents are up 2.7% year-over-year, slower than the pace experienced in the previous quarter. High-quality new supply remains in high demand, commanding a 41.6% premium.
- As new supply continues to enter the market, vacancy rose for a fourth consecutive quarter to 15.0%. CBD and Class A Office vacancy stand at 12.5% and 14.8%, respectively.
- Completions are beginning to surpass groundbreakings, resulting in slowly declining development activity. Current activity stands at 101.4 million SF, remaining near cyclical highs. Year-to-date, 46.5 million SF has been delivered with 2017 totals estimated to reach 69.2 million SF.

*Sources: Real Capital Analytics, Bloomberg LP, Green Street, US Census Bureau, NCREIF, Jones Lang LaSalle, REIS, Cushman and Wakefield, Townsend*

## Property Type Reviews (cont'd)

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### *Retail:*

- Vacancy is continuing to show a widening margin when comparing quality of assets. Total vacancy stands at 4.2% with top-tier malls experiencing 2.7% vacancy, while second-tier malls standing at 6.0%.
- Despite the increased number of closure announcements, move-ins continue to exceed move-outs. Net absorption totaled 9.9 million SF in the 3rd Quarter, bringing the year-to-date figure to 40.1 million SF.
- Construction activity continues to decline, declining 14.4% year-over-year to 72.1 million SF. Total Retail deliveries also declined by 19.8% year-over-year to 14.5 million SF.
- As of 3Q17, the Retail sector delivered a Quarterly return of 1.2%, performing 49 bps below the NPI.

### *Industrial:*

- As of 3Q17, Industrial properties returned 3.3% and outperformed the NPI by 159 bps.
- Demand continues to outpace new supply as evident by year-to-date absorption. 165.6 million SF has been absorbed while 161.0 million SF of new product has been delivered to market over that same time period.
- With 221.2 million SF of new inventory currently under construction, preleasing has remained strong with a rate of 54.2% for new deliveries.
- Developer confidence remains robust illustrated by 70.0% of projects being developed on a speculative basis over the past several quarters.
- Rents increased 5.3% on an annualized basis to \$5.40 per SF, with 79% of US markets experiencing rental rate increases.

*Sources: Real Capital Analytics, Bloomberg LP, Green Street, US Census Bureau, NCREIF, Jones Lang LaSalle, REIS, Cushman and Wakefield, Townsend*

# Global Real Estate Market Update (3Q17)

## Global

- Global investment activity remained strong during 3Q 2017 totaling \$165 billion, unchanged from 3Q 2016 levels. Despite continued geopolitical tensions and potential rising interest rates, the global real estate market was stable. There will likely be volume growth constraints in 2018 due to late-cycle caution and challenges of deploying capital in a market short of product, which will drive investors to consider non-traditional channels to access real estate. London maintained its top global investment position, followed by Los Angeles and New York in second and third place, respectively.

Direct Commercial Real Estate Investment - Regional Volumes, 2016 - 2017

\$ US Billions	% Change			% Change			YTD 2016	YTD 2017	% Change YTD 16 - YTD 17
	Q2 2017	Q3 2017	Q2 17 - Q3 17	Q3 2016	Q3 16 - Q3 17	Q3 2016			
Americas	64	62	-3%	77	-19%	207	184	-11%	
EMEA	60	69	15%	56	23%	161	183	14%	
Asia Pacific	33	35	6%	33	6%	87	97	11%	
<b>Total</b>	<b>157</b>	<b>166</b>	<b>6%</b>	<b>166</b>	<b>0%</b>	<b>455</b>	<b>464</b>	<b>2%</b>	

Source: Jones Lang LaSalle, October 2017

## Europe

- European investment increased 24% y/y in 3Q 2017, for a total year-to-date volume of \$183 billion. German and Dutch markets continued to be strong with investment volumes increasing year-to-date by 9% and 115%, respectively. This performance was partially offset by y/y declines in France, Sweden, and Poland, with decreases of 17%, 17%, and 8%, respectively. The U.K. is demonstrating a recovery from a year with performance affected by the uncertainty regarding Brexit, with year-to-date volumes up 28%. The Nordic markets' investment volumes continued to increase, with a 76% rise in Q3 and 22% year-to-date increase as compared to the same period last year. Investment activity in Southern Europe was strong with a 21% year-to-date increase y/y, despite a 24% decrease in Spain in Q3.

## Asia

- Asia Pacific year-to-date investment volumes were \$97 billion, a 12% increase as compared to the same period last year. Japan's transactions came in at \$6.9 billion in Q3, a 20% decrease y/y due to fewer large deals. The domestic buyers continued to dominate the Japanese market, comprising 80% of total transactions. Australia demonstrated strong performance, with volumes increasing 18% y/y for a total of \$6.8 billion in Q3. While China contributed \$8.4 billion to investment volumes in Q3, this was a 14% decrease y/y, largely due to domestic investors showing caution before China's Party Congress in October 2017 and Chinese banks being more cautious with lending.

Sources: Jones Lang LaSalle Research, Bloomberg LP, Townsend

Global Outlook - GDP (Real) Growth % pa, 2016-2018

	2016	2017	2018
<b>Global</b>	<b>3.1</b>	<b>3.6</b>	<b>3.7</b>
<b>Asia Pacific</b>	<b>5.5</b>	<b>5.5</b>	<b>5.4</b>
Australia	2.5	2.2	2.3
China	6.7	6.8	6.2
India	7.9	6.5	7.5
Japan	1.0	1.7	1.6
<b>North America</b>	<b>0.7</b>	<b>1.9</b>	<b>2.4</b>
US	1.6	2.2	2.4
<b>MENA*</b>	<b>4.5</b>	<b>2.1</b>	<b>3.1</b>
<b>European Union</b>	<b>2.0</b>	<b>2.5</b>	<b>2.1</b>
France	1.1	1.7	1.8
Germany	1.8	2.1	2.0
UK	1.8	1.5	1.5

\*Middle East North Africa

Source: Jones Lang LaSalle (Oxford Economics), October 2017

# Notes

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1. Preqin
2. UBS
3. Standard & Poor's
4. Aon Hewitt Investment Consulting
5. Thomson Reuters
6. Fitch Ratings
7. PriceWaterhouseCoopers/National Venture Capital Association MoneyTree Report
8. PitchBook/National Venture Capital Association Venture Monitor
9. Cooley Venture Financing Report
10. Federal Reserve
11. U.S. Energy Information Administration
12. Bloomberg
13. Setter Capital Volume Report: Secondary Market FY 2016
14. KPMG and CB Insights
15. Baker Hughes
16. Dow Jones Venture Capital Report

## Notes:

FY: Fiscal year ended 12/31

YTD: Year to date

YE: Year end

LTM: Last twelve months (aka trailing twelve months or TTM)

PPM: Purchase Price Multiples: Total Purchase Price / EBITDA

/bbl: Price per barrel

MMBtu: Price per million British thermal units

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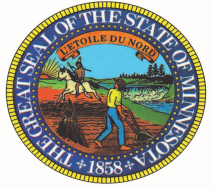


Quarterly Report

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# Comprehensive Performance Report

December 31, 2017



## Description of SBI Investment Programs

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The Minnesota State Board of Investment is responsible for the investment management of various retirement funds, trust funds and cash accounts.

### **Combined Funds**

The Combined Funds represent the assets for both the active and retired public employees in the statewide retirement systems, the biggest of which are the Public Employees Retirement Association (PERA), the Teachers Retirement Association (TRA), and the Minnesota State Retirement System (MSRS). The SBI commingles the assets of these plans into the Combined Funds to capture investment efficiencies. All assets in the Combined Funds are managed externally by investment management firms retained by contract.

### **Participant Directed Investment Program**

The Participant Directed Investment Program (PDIP) provides investment vehicles for a variety of retirement or other tax-advantaged savings plans. Investment goals among the PDIP's many participants are varied. In order to meet the variety of goals, participants may allocate their investments among one or more accounts that are appropriate for their needs within statutory requirements and rules established by the participating organizations. At this time, the assets of various retirement programs, including local firefighter groups, are included here.

### **Non-Retirement**

The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

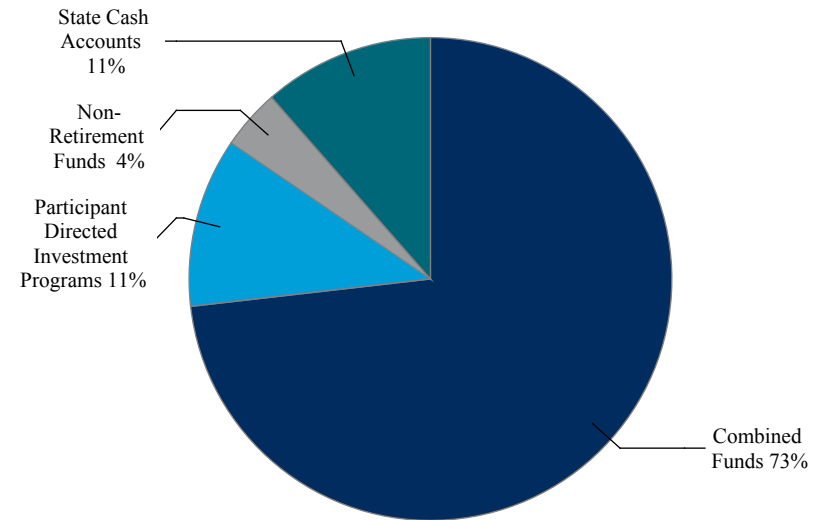
### **State Cash**

The State Cash accounts are cash balances of state government funds including the State General Fund. 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. Because of special legal restrictions, a small number of cash accounts cannot be commingled.



## Funds Under Management

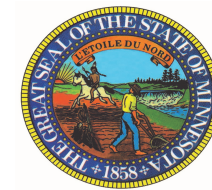
	<u>\$ Millions</u>
<b>COMBINED FUNDS</b>	
Combined Funds	\$68,377
<b>PARTICIPANT DIRECTED INVESTMENT PROGRAMS</b>	
Supplemental Investment Fund*	3,692
State Deferred Compensation Plan**	5,515
Minnesota College Savings Plan	1,398
Achieve a Better Life Experience	2
<b>NON-RETIREMENT FUNDS</b>	
Assigned Risk Plan	319
Permanent School Fund	1,390
Environmental Trust Fund	1,106
Closed Landfill Investment Fund	88
Miscellaneous Trust Accounts	230
Other Post Employment Benefits Accounts	629
<b>STATE CASH ACCOUNTS</b>	
Treasurers Cash	10,550
Other State Cash Accounts	138
<b>TOTAL</b>	
SBI AUM	93,431



\* Includes assets of smaller retirement funds which are invested with the SBI but are not included in the Combined Funds

\*\* Does not include the Stable Value and Money Market accounts that are used by Deferred Compensation and Supplemental Investment Fund

Note: Differentials within column amounts may occur due to rounding



Quarterly Report

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Supplemental Investment Fund	
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Achieve a Better Life Experience	
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Closed Landfill Investment Fund	
Non-Retirement Managers	
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Other State Cash Accounts	
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Performance Reporting Legend

Manager Level Data

Aggregate Level Data

Sub-Asset Class Level Data

Asset Class Level Data

Note:

Throughout this report performance is calculated net of investment management fees, aggregates include terminated managers, and returns for all periods greater than one year are annualized. Inception Date and Since Inception Returns refer to the date of retention by the SBI. FYTD refers to the return generated by an account since July 1 of the most recent year. For historical benchmark details, please refer to the addendum of this report. Inception to date return information is included for manager accounts and total asset class but not other aggregates because of portfolio management decisions to group managers in different aggregates over time.



# Combined Funds

December 31, 2017



## Combined Funds Summary

### Combined Funds Change in Market Value (\$Millions)

	<u>One Quarter</u>
COMBINED FUNDS	
Beginning Market Value	\$66,083
Net Contributions	-597
Investment Return	2,891
Ending Market Value	68,377

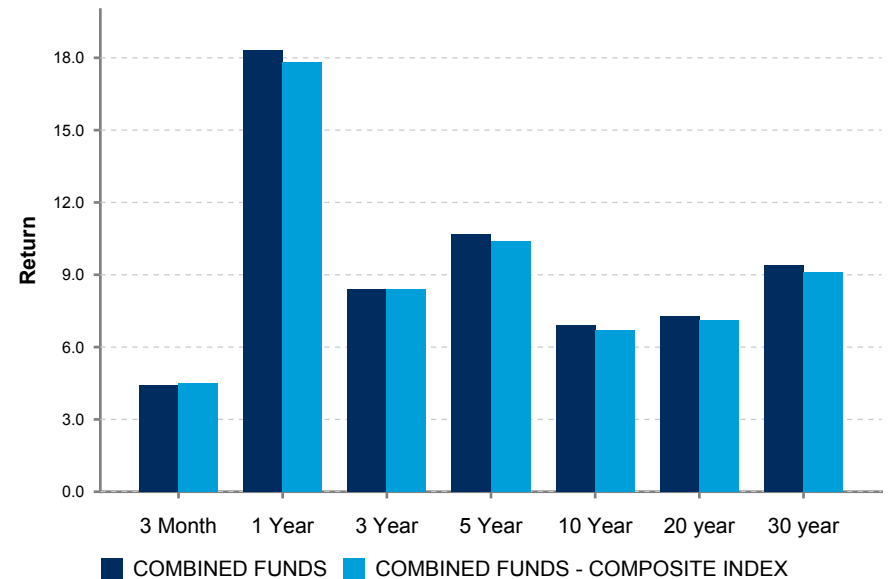
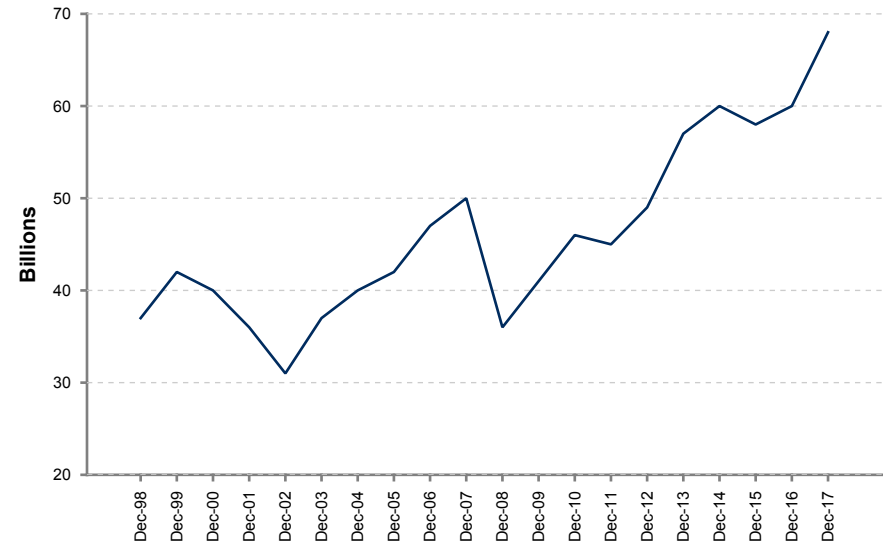
The change in market value of the Combined Funds since the end of last quarter is due to net contributions and investment returns.

### Performance (Net of Fees)

The Combined Funds' performance is evaluated relative to a composite of public market index and private market investment returns. The Composite performance is calculated by multiplying the beginning of month Composite weights and the monthly returns of the asset class benchmarks.

	<u>Qtr</u>	<u>FYTD</u>	<u>1 Yr</u>	<u>3 Yr</u>	<u>5 Yr</u>	<u>10 Yr</u>	<u>20 Yr</u>	<u>30 Yr</u>
COMBINED FUNDS	4.4%	8.6%	18.3%	8.4%	10.7%	6.9%	7.3%	9.4%
COMBINED FUNDS - COMPOSITE INDEX	4.5	8.5	17.8	8.4	10.4	6.7	7.1	9.1
Excess	-0.1	0.1	0.5	-0.0	0.3	0.2	0.1	0.3

### Asset Growth



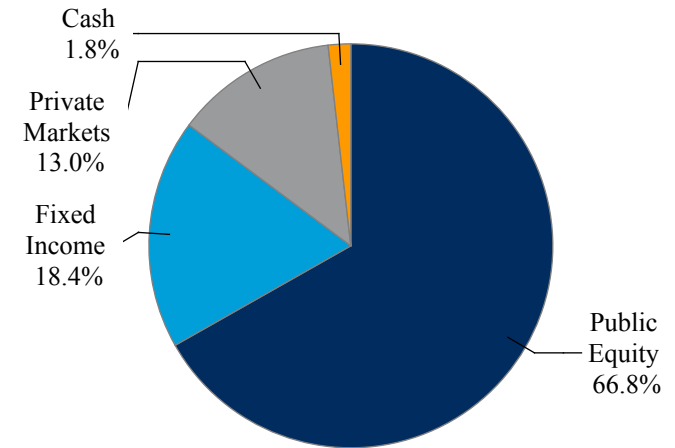


## Combined Funds Summary

### Asset Mix

The Combined Funds actual asset mix relative to the Strategic Asset Allocation Policy Target is shown below. Any uninvested portion of the Private Markets allocation is held in Public Equity.

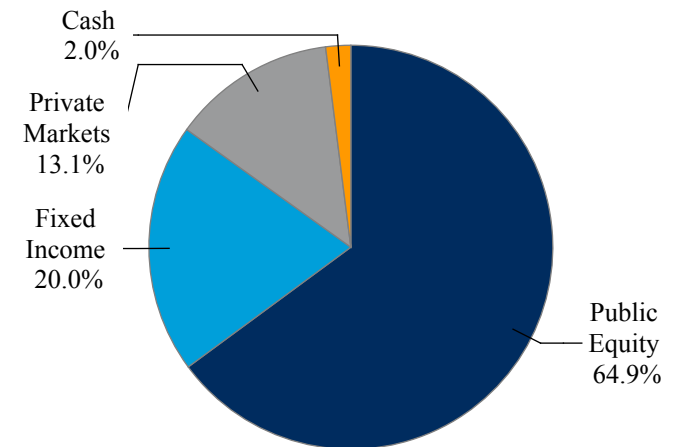
	<u>(Millions)</u>	<u>Actual Mix</u>	<u>Policy Target</u>
Public Equity	\$45,672	66.8%	58.0%
Fixed Income	12,581	18.4	20.0
Private Markets	8,922	13.0	20.0
Cash	1,203	1.8	2.0
<b>TOTAL</b>	<b>68,377</b>	<b>100.0</b>	



### Composite Index Comparison

The Combined Funds Composite is set as the Strategic Asset Allocation Policy Target with the uninvested portion of Private Markets allocated to Public Equity. Asset class weights for Public Equity and Private Markets are reset at the start of each month. The Combined Funds Composite weighting shown below is as of the first day of the quarter.

	<u>Target Weight</u>	<u>Market Index</u>
Public Equity	64.9%	67% Russell 3000/33% MSCI ACWI ex US
Fixed Income	20.0	BB Barclays U.S. Aggregate
Private Markets	13.1	Private Markets
Cash	2.0	3 Month T-Bills





## Combined Funds Asset Class Performance Summary

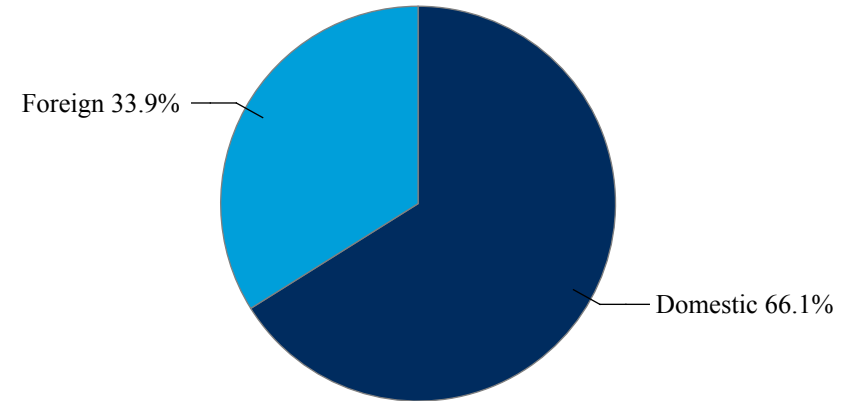
### Public Equity

The Combined Funds Public Equity includes Domestic Equity and International Equity.

The Public Equity benchmark is 67% Russell 3000 and 33% MSCI ACWI ex USA.

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

The Morgan Stanley Capital International All Country World Index ex U.S. (net) is a free float-adjusted market capitalization index that is designed to measure equity market performance in developed and emerging markets other than the United States.



	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>
Public Equity	5.7%	11.2%	23.4%	10.2%	13.6%	7.1%	6.8%
Public Equity Benchmark	5.9	11.3	23.0				
Excess	-0.2	-0.1	0.4				
Domestic Equity	6.2	11.1	21.4	10.7	15.5	8.5	7.0
Domestic Equity Benchmark	6.3	11.2	21.1	11.1	15.6	8.6	7.2
Excess	-0.2	-0.1	0.3	-0.4	-0.0	-0.1	-0.2
International Equity	4.7	11.4	27.7	8.4	7.5	2.3	6.0
International Equity Benchmark	5.0	11.5	27.2	7.8	6.8	1.8	5.6
Excess	-0.3	-0.1	0.5	0.5	0.7	0.5	0.3

Note:

Prior to 6/30/16 the returns of Domestic and International Equity were not reported as a total Public Equity return. For additional information regarding historical asset class performance and benchmarks, please refer to the Combined Funds Performance Report.





## Combined Funds Asset Class Performance Summary

### Fixed Income

The Combined Funds Fixed Income performance is shown here.

The Fixed Income benchmark is the Bloomberg Barclays U.S. Aggregate Index. This 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.

	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>
Fixed Income	0.5%	1.5%	4.2%	2.8%	2.6%	4.5%	5.3%
Fixed Income Benchmark	0.4	1.2	3.5	2.2	2.1	4.0	5.0
Excess	0.1	0.3	0.7	0.6	0.5	0.5	0.3

### Cash

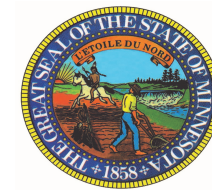
The Combined Funds Cash performance is shown here. Cash is held by the Combined Funds to meet the liquidity needs of the retirement systems to pay benefits.

The Combined Funds Cash benchmark is the iMoneyNet, All Taxable Money Fund Report Average.

	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>
Cash	0.3%	0.6%	1.1%	0.6%	0.5%	0.8%	2.6%
90 DAY T-BILL	0.3	0.5	0.9	0.4	0.3	0.4	2.1
iMoneyNet Money Fund Average-All Taxable	0.2	0.4	0.5	0.2	0.1	0.3	1.8

Note:

For additional information regarding historical asset class performance and benchmarks, please refer to the Combined Funds Performance Report.



## Combined Funds Asset Class Performance Summary

### Private Markets

	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>	<u>25 year</u>	<u>30 year</u>
Private Markets	4.3%	7.2%	18.5%	9.0%	12.1%	8.8%	12.4%	13.3%	12.1%
Private Equity	5.6%	10.7%	22.2%	14.6%	15.4%	10.8%	13.8%	15.5%	
Private Credit	6.0	5.5	17.6	12.5	14.7	10.8	13.1		
Resources	0.5	-0.6	11.8	-8.2	1.7	6.2	12.1	14.6	
Real Estate	3.1	5.6	10.2	10.9	12.6	4.6	8.6	8.8	

### Private Markets

The time-weighted rates of return for the Private Markets portfolio are shown here. Private Markets included Private Equity, Private Credit, Resources, and Real Estate. Some of the existing investments are relatively immature and returns may not be indicative of future results.

### Private Equity Investments

The objectives of the Private Equity portfolio, which may include leveraged buyouts, growth equity, venture capital and special situations, are to achieve attractive returns and to provide overall portfolio diversification to the total plan.

### Private Credit Investments

The objectives of the Private Credit portfolio, which may include mezzanine debt, direct lending, and other forms of non-investment grade fixed income instruments, are to achieve a high total return over a full market cycle and to provide some degree of downside protection and typically provide current income in the form of a coupon. In certain situations, investments in the Private Credit portfolio also provide an equity component of return in the form of warrants or re-organized equity.

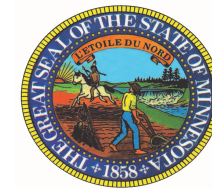
### Resource Investments

The objectives of the Resources portfolio, which may include energy, infrastructure, and other hard assets, are to provide protection against the risks associated with inflation and to provide overall portfolio diversification to the total plan.

### Real Estate Investments

The objectives of the Real Estate portfolio, which may include core and non-core real estate investments, are to achieve attractive returns, preserve capital, provide protection against risks associated with inflation, and provide overall portfolio diversification to the total plan.

The SBI also monitors Private Markets performance using money-weighted return metrics such as Internal Rate of Return and Multiple of Invested Capital. For money-weighted return metrics please refer to the Combined Funds Performance Report.



## Quarterly Report

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# Asset Class & Manager Performance

## December 31, 2017

The assets of the Combined Funds are allocated to public equity, fixed income, private markets, and cash. Each asset class may be further differentiated by geography, management style, and/or strategy. Managers are hired to manage the assets accordingly. This diversification is intended to reduce wide fluctuations in investment returns on a year-to-year basis and enhances the Funds' ability to meet or exceed the actuarial return target over the long-term.

The Combined Funds consist of the assets of active employees and retired members of the statewide retirement plans. The SBI commingles the assets of these plans into the Combined Funds to capture investment efficiencies. This sharing is accomplished by grouping managers by asset class, geography, and management style, into several Investment Pools. The individual funds participate in the Investment Pools by purchasing units which function much like the shares of a mutual fund.

While the vast majority of the units of these pools are owned by the Combined Funds, the Supplemental Investment Fund also owns units of these pools. The Supplemental Investment Funds are mutual fund-like investment vehicles which are used by investors in the Participant Directed Investment Program. Please refer to the Participant Directed Investment Program report for more information.

The performance information presented on the following pages for Public Equity and Fixed Income includes both the Combined Funds and Supplemental Investment Fund. The Private Markets is Combined Funds only. All assets in the Combined Funds are managed externally by investment management firms retained by contract.

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# Domestic Equity

## December 31, 2017

Minnesota State Board of Investment  
Quarter Ending December 31, 2017  
Domestic Equity Managers



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total Domestic Equity</b>										
<b>ACTIVE DOMESTIC EQUITY AGGREGATE (1)</b>	<b>\$4,759,786,378</b>	<b>15.2%</b>	<b>4.5%</b>	<b>9.9%</b>	<b>20.6%</b>	<b>10.0%</b>	<b>15.3%</b>	<b>8.0%</b>		
Active Domestic Equity Benchmark			4.8	10.2	18.3	10.8	15.3	8.5		
Excess			-0.3	-0.3	2.3	-0.8	0.1	-0.5		
<b>SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)</b>	<b>2,527,974,364</b>	<b>8.1</b>	<b>6.8</b>	<b>12.3</b>	<b>22.5</b>	<b>11.0</b>	<b>15.8</b>	<b>8.8</b>		
Semi Passive Domestic Equity Benchmark			6.6	11.4	21.7	11.2	15.7	8.6		
Excess			0.2	0.9	0.8	-0.2	0.1	0.2		
<b>PASSIVE DOMESTIC EQUITY AGGREGATE (3)</b>	<b>24,068,916,914</b>	<b>76.8</b>	<b>6.5</b>	<b>11.3</b>	<b>21.3</b>	<b>11.1</b>	<b>15.6</b>	<b>8.6</b>		
Passive Domestic Equity Benchmark			6.5	11.3	21.5	11.1	15.6	8.6		
Excess			-0.0	-0.0	-0.2	-0.0	-0.0	0.0		
TRANSITION AGGREGATE DOMESTIC EQUITY (4)	421,007	0.0								
<b>TOTAL DOMESTIC EQUITY (5)</b>	<b>31,357,098,663</b>	<b>100.0</b>	<b>6.2</b>	<b>11.1</b>	<b>21.4</b>	<b>10.7</b>	<b>15.5</b>	<b>8.5</b>	<b>10.5</b>	<b>01/1984</b>
Domestic Equity Benchmark			6.3	11.2	21.1	11.1	15.6	8.6	10.7	01/1984
Excess			-0.2	-0.1	0.2	-0.4	-0.0	-0.1	-0.2	

(1) The Active Domestic Equity Benchmark is a weighted composite each of the individual active domestic equity manager's benchmarks.

(2) The current Semi-Passive Domestic Equity Benchmark is the Russell 1000 index.

(3) The current Passive Domestic Equity Benchmark is a weighted average of the Russell 1000 and Russell 3000.

(4) The Transition Domestic Equity Aggregate contains Domestic Equity securities that are being transitioned to a different manager.

(5) The current Domestic Equity Benchmark is the Russell 3000.

Note: All aggregates include the performance of terminated managers. For historical benchmark details please refer to the addendum of this report.



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Total Domestic Equity</b>					
<b>ACTIVE DOMESTIC EQUITY AGGREGATE (1)</b>	<b>20.6%</b>	<b>10.9%</b>	<b>-0.4%</b>	<b>9.3%</b>	<b>40.2%</b>
Active Domestic Equity Benchmark	18.3	15.7	-0.6	11.0	34.7
Excess	2.3	-4.8	0.3	-1.7	5.5
<b>SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)</b>	<b>22.5</b>	<b>11.1</b>	<b>0.5</b>	<b>14.2</b>	<b>33.2</b>
Semi Passive Domestic Equity Benchmark	21.7	12.1	0.9	13.2	33.1
Excess	0.8	-1.0	-0.4	1.0	0.1
<b>PASSIVE DOMESTIC EQUITY AGGREGATE (3)</b>	<b>21.3</b>	<b>12.6</b>	<b>0.5</b>	<b>12.6</b>	<b>33.5</b>
Passive Domestic Equity Benchmark	21.5	12.5	0.5	12.6	33.6
Excess	-0.2	0.1	0.0	0.0	-0.0
<b>TRANSITION AGGREGATE DOMESTIC EQUITY (4)</b>					
<b>TOTAL DOMESTIC EQUITY (5)</b>	<b>21.4%</b>	<b>11.5</b>	<b>0.3</b>	<b>12.3</b>	<b>35.1</b>
Domestic Equity Benchmark	21.1%	12.7	0.5	12.6	33.6
Excess	0.2%	-1.3	-0.2	-0.2	1.6

(1) The Active Domestic Equity Benchmark is a weighted composite each of the individual active domestic equity manager's benchmarks.

(2) The current Semi-Passive Domestic Equity Benchmark is the Russell 1000 index.

(3) The current Passive Domestic Equity Benchmark is a weighted average of the Russell 1000 and Russell 3000.

(4) The Transition Domestic Equity Aggregate contains Domestic Equity securities that are being transitioned to a different manager.

(5) The current Domestic Equity Benchmark is the Russell 3000.

Note: All aggregates include the performance of terminated managers. For historical benchmark details please refer to the addendum of this report.



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Active Large Cap Growth</b>										
<b>SANDS</b>	<b>\$493,024,254</b>	<b>1.6%</b>	<b>3.8%</b>	<b>11.0%</b>	<b>35.3%</b>	<b>9.0%</b>	<b>15.0%</b>	<b>11.1%</b>	<b>10.3%</b>	<b>01/2005</b>
Russell 1000 Growth			7.9	14.2	30.2	13.8	17.3	10.0	9.7	01/2005
Excess			-4.1	-3.3	5.1	-4.7	-2.3	1.1	0.7	
<b>WINSLOW</b>	<b>210,243,038</b>	<b>0.7</b>	<b>5.9</b>	<b>12.2</b>	<b>33.2</b>	<b>11.7</b>	<b>16.3</b>	<b>9.3</b>	<b>10.2</b>	<b>01/2005</b>
Russell 1000 Growth			7.9	14.2	30.2	13.8	17.3	10.0	9.7	01/2005
Excess			-1.9	-2.0	3.0	-2.1	-1.0	-0.7	0.5	
<b>ZEVENBERGEN</b>	<b>455,648,217</b>	<b>1.5</b>	<b>4.1</b>	<b>7.8</b>	<b>35.1</b>	<b>11.8</b>	<b>18.3</b>	<b>9.5</b>	<b>10.5</b>	<b>04/1994</b>
Russell 1000 Growth			7.9	14.2	30.2	13.8	17.3	10.0	9.7	04/1994
Excess			-3.8	-6.4	4.9	-2.0	1.0	-0.5	0.8	
<b>RUSSELL 1000 GROWTH AGGREGATE</b>	<b>1,158,915,509</b>	<b>3.7</b>	<b>4.3</b>	<b>9.9</b>	<b>33.4</b>	<b>12.1</b>	<b>17.0</b>	<b>9.6</b>		
Russell 1000 Growth			7.9	14.2	30.2	13.8	17.3	10.0		
Excess			-3.6	-4.3	3.2	-1.7	-0.3	-0.4		





	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Active Large Cap Growth</b>					
<b>SANDS</b>	<b>35.3%</b>	<b>-6.9%</b>	<b>2.9%</b>	<b>9.1%</b>	<b>42.4%</b>
Russell 1000 Growth	30.2	7.1	5.7	13.0	33.5
Excess	5.1	-13.9	-2.8	-3.9	8.9
<b>WINSLOW</b>	<b>33.2</b>	<b>-1.9</b>	<b>6.7</b>	<b>11.0</b>	<b>37.4</b>
Russell 1000 Growth	30.2	7.1	5.7	13.0	33.5
Excess	3.0	-9.0	1.0	-2.0	3.9
<b>ZEVENBERGEN</b>	<b>35.1</b>	<b>-2.8</b>	<b>6.4</b>	<b>3.4</b>	<b>60.6</b>
Russell 1000 Growth	30.2	7.1	5.7	13.0	33.5
Excess	4.9	-9.9	0.7	-9.6	27.1
<b>RUSSELL 1000 GROWTH AGGREGATE</b>	<b>33.4%</b>	<b>1.0</b>	<b>4.6</b>	<b>9.6</b>	<b>42.0</b>
Russell 1000 Growth	30.2%	7.1	5.7	13.0	33.5
Excess	3.2%	-6.1	-1.1	-3.4	8.5



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Active Large Cap Value</b>										
<b>BARROW HANLEY</b>	<b>\$382,024,072</b>	<b>1.2%</b>	<b>6.0%</b>	<b>8.2%</b>	<b>14.6%</b>	<b>8.2%</b>	<b>14.1%</b>	<b>7.2%</b>	<b>8.3%</b>	<b>04/2004</b>
Russell 1000 Value			5.3	8.6	13.7	8.7	14.0	7.1	8.1	04/2004
Excess			0.6	-0.4	0.9	-0.5	0.1	0.1	0.2	
<b>EARNEST PARTNERS</b>	<b>273,196,405</b>	<b>0.9</b>	<b>8.3</b>	<b>13.0</b>	<b>19.9</b>	<b>10.7</b>	<b>15.3</b>	<b>7.3</b>	<b>7.2</b>	<b>07/2000</b>
Russell 1000 Value			5.3	8.6	13.7	8.7	14.0	7.1	7.4	07/2000
Excess			3.0	4.4	6.2	2.0	1.3	0.2	-0.2	
<b>LSV</b>	<b>425,465,104</b>	<b>1.4</b>	<b>7.4</b>	<b>13.6</b>	<b>18.6</b>	<b>10.7</b>	<b>16.9</b>	<b>8.4</b>	<b>9.7</b>	<b>04/2004</b>
Russell 1000 Value			5.3	8.6	13.7	8.7	14.0	7.1	8.1	04/2004
Excess			2.1	5.0	4.9	2.0	2.9	1.3	1.5	
<b>RUSSELL 1000 VALUE AGGREGATE</b>	<b>1,080,685,580</b>	<b>3.4</b>	<b>7.1</b>	<b>11.5</b>	<b>17.3</b>	<b>9.4</b>	<b>15.1</b>	<b>7.4</b>		
Russell 1000 Value			5.3	8.6	13.7	8.7	14.0	7.1		
Excess			1.8	2.9	3.7	0.7	1.1	0.3		



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Active Large Cap Value</b>					
<b>BARROW HANLEY</b>	<b>14.6%</b>	<b>12.8%</b>	<b>-2.1%</b>	<b>13.0%</b>	<b>35.5%</b>
Russell 1000 Value	13.7	17.3	-3.8	13.5	32.5
Excess	0.9	-4.5	1.7	-0.5	3.0
<b>EARNEST PARTNERS</b>					
<b>EARNEST PARTNERS</b>	<b>19.9</b>	<b>16.2</b>	<b>-2.7</b>	<b>14.0</b>	<b>32.0</b>
Russell 1000 Value	13.7	17.3	-3.8	13.5	32.5
Excess	6.2	-1.1	1.1	0.5	-0.5
<b>LSV</b>					
<b>LSV</b>	<b>18.6</b>	<b>17.0</b>	<b>-2.2</b>	<b>14.0</b>	<b>41.2</b>
Russell 1000 Value	13.7	17.3	-3.8	13.5	32.5
Excess	4.9	-0.4	1.6	0.6	8.7
<b>RUSSELL 1000 VALUE AGGREGATE</b>					
<b>RUSSELL 1000 VALUE AGGREGATE</b>	<b>17.3%</b>	<b>15.3</b>	<b>-3.2</b>	<b>13.1</b>	<b>36.5</b>
Russell 1000 Value	13.7%	17.3	-3.8	13.5	32.5
Excess	3.7%	-2.1	0.6	-0.4	3.9



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Semi-Passive Large Cap</b>										
<b>BLACKROCK</b>	<b>\$1,023,764,993</b>	<b>3.3%</b>	<b>7.0%</b>	<b>13.2%</b>	<b>24.6%</b>	<b>12.2%</b>	<b>16.6%</b>	<b>9.1%</b>	<b>10.1%</b>	<b>01/1995</b>
Semi Passive Domestic Equity Benchmark			6.6	11.4	21.7	11.2	15.7	8.6	9.6	01/1995
Excess			0.4	1.9	2.9	1.0	0.9	0.5	0.4	
<b>J.P. MORGAN</b>										
	<b>1,504,209,372</b>	<b>4.8</b>	<b>6.6</b>	<b>11.6</b>	<b>21.8</b>	<b>11.3</b>	<b>16.2</b>	<b>9.4</b>	<b>10.0</b>	<b>01/1995</b>
Semi Passive Domestic Equity Benchmark			6.6	11.4	21.7	11.2	15.7	8.6	9.6	01/1995
Excess			-0.0	0.3	0.1	0.1	0.5	0.8	0.3	
<b>SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE</b>										
	<b>2,527,974,364</b>	<b>8.1</b>	<b>6.8</b>	<b>12.3</b>	<b>22.5</b>	<b>11.0</b>	<b>15.8</b>	<b>8.8</b>		
Semi Passive Domestic Equity Benchmark			6.6	11.4	21.7	11.2	15.7	8.6		
Excess			0.2	0.9	0.8	-0.2	0.1	0.2		



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Semi-Passive Large Cap</b>					
<b>BLACKROCK</b>	<b>24.6%</b>	<b>12.5%</b>	<b>0.8%</b>	<b>14.2%</b>	<b>33.3%</b>
Semi Passive Domestic Equity Benchmark	21.7	12.1	0.9	13.2	33.1
Excess	2.9	0.5	-0.1	1.0	0.2
<b>J.P. MORGAN</b>					
<b>J.P. MORGAN</b>	<b>21.8</b>	<b>12.3</b>	<b>0.8</b>	<b>15.0</b>	<b>33.7</b>
Semi Passive Domestic Equity Benchmark	21.7	12.1	0.9	13.2	33.1
Excess	0.1	0.2	-0.1	1.8	0.6
<b>SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE</b>					
<b>SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE</b>	<b>22.5%</b>	<b>11.1</b>	<b>0.5</b>	<b>14.2</b>	<b>33.2</b>
Semi Passive Domestic Equity Benchmark	21.7%	12.1	0.9	13.2	33.1
Excess	0.8%	-1.0	-0.4	1.0	0.1



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Active Small Cap Growth</b>										
<b>ARROWMARK</b>	<b>\$207,191,582</b>	<b>0.7%</b>	<b>4.4%</b>	<b>11.8%</b>	<b>26.2%</b>				<b>31.5%</b>	<b>11/2016</b>
Russell 2000 Growth			4.6	11.1	22.2				29.2	11/2016
Excess			-0.2	0.7	4.1				2.2	
<b>HOOD RIVER</b>	<b>230,723,667</b>	<b>0.7</b>	<b>2.2</b>	<b>6.0</b>	<b>21.3</b>				<b>26.5</b>	<b>11/2016</b>
Russell 2000 Growth			4.6	11.1	22.2				29.2	11/2016
Excess			-2.4	-5.1	-0.9				-2.7	
<b>MCKINLEY</b>	<b>282,090,033</b>	<b>0.9</b>	<b>0.7</b>	<b>8.0</b>	<b>12.2</b>	<b>9.5%</b>	<b>15.2%</b>	<b>6.8%</b>	<b>7.7</b>	<b>01/2004</b>
Russell 2000 Growth			4.6	11.1	22.2	10.3	15.2	9.2	9.3	01/2004
Excess			-3.8	-3.1	-10.0	-0.8	0.0	-2.4	-1.6	
<b>RICE HALL JAMES</b>	<b>215,842,682</b>	<b>0.7</b>	<b>8.6</b>	<b>12.5</b>	<b>27.9</b>				<b>36.2</b>	<b>11/2016</b>
Russell 2000 Growth			4.6	11.1	22.2				29.2	11/2016
Excess			4.0	1.4	5.8				7.0	
<b>WELLINGTON</b>	<b>237,454,158</b>	<b>0.8</b>	<b>3.7</b>	<b>9.4</b>	<b>22.6</b>				<b>29.7</b>	<b>11/2016</b>
Russell 2000 Growth			4.6	11.1	22.2				29.2	11/2016
Excess			-0.9	-1.7	0.4				0.5	
<b>RUSSELL 2000 GROWTH AGGREGATE</b>	<b>1,173,302,122</b>	<b>3.7</b>	<b>3.7</b>	<b>9.3</b>	<b>22.0</b>	<b>8.9</b>	<b>12.9</b>	<b>5.9</b>		
Russell 2000 Growth			4.6	11.1	22.2	10.3	15.2	9.2		
Excess			-0.9	-1.7	-0.1	-1.4	-2.3	-3.3		



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Active Small Cap Growth</b>					
<b>ARROWMARK</b>	<b>26.2%</b>				
Russell 2000 Growth	22.2				
Excess	4.1				
<b>HOOD RIVER</b>	<b>21.3</b>				
Russell 2000 Growth	22.2				
Excess	-0.9				
<b>MCKINLEY</b>	<b>12.2</b>	<b>12.9%</b>	<b>3.6%</b>	<b>2.0%</b>	<b>51.6%</b>
Russell 2000 Growth	22.2	11.3	-1.4	5.6	43.3
Excess	-10.0	1.6	5.0	-3.6	8.3
<b>RICE HALL JAMES</b>	<b>27.9</b>				
Russell 2000 Growth	22.2				
Excess	5.8				
<b>WELLINGTON</b>	<b>22.6</b>				
Russell 2000 Growth	22.2				
Excess	0.4				
<b>RUSSELL 2000 GROWTH AGGREGATE</b>	<b>22.0%</b>	<b>4.7</b>	<b>1.0</b>	<b>-3.4</b>	<b>47.2</b>
Russell 2000 Growth	22.2%	11.3	-1.4	5.6	43.3
Excess	-0.1%	-6.6	2.4	-9.0	3.9



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Active Small Cap Value</b>										
<b>GOLDMAN SACHS</b>	<b>\$364,383,027</b>	<b>1.2%</b>	<b>4.1%</b>	<b>10.2%</b>	<b>12.6%</b>	<b>10.0%</b>	<b>14.7%</b>	<b>10.8%</b>	<b>10.2%</b>	<b>01/2004</b>
Russell 2000 Value			2.0	7.3	7.8	9.5	13.0	8.2	8.5	01/2004
Excess			2.0	2.9	4.7	0.4	1.7	2.6	1.7	
<b>HOTCHKIS AND WILEY</b>	<b>308,888,405</b>	<b>1.0</b>	<b>1.9</b>	<b>7.3</b>	<b>7.9</b>	<b>5.8</b>	<b>14.3</b>	<b>10.9</b>	<b>8.9</b>	<b>01/2004</b>
Russell 2000 Value			2.0	7.3	7.8	9.5	13.0	8.2	8.5	01/2004
Excess			-0.1	0.1	0.0	-3.8	1.3	2.7	0.4	
<b>MARTINGALE</b>	<b>297,213,482</b>	<b>0.9</b>	<b>1.9</b>	<b>8.2</b>	<b>6.9</b>	<b>10.8</b>	<b>15.9</b>	<b>9.1</b>	<b>8.6</b>	<b>01/2004</b>
Russell 2000 Value			2.0	7.3	7.8	9.5	13.0	8.2	8.5	01/2004
Excess			-0.2	0.9	-0.9	1.3	2.9	0.9	0.1	
<b>PEREGRINE</b>	<b>376,398,253</b>	<b>1.2</b>	<b>5.8</b>	<b>10.8</b>	<b>12.5</b>	<b>10.3</b>	<b>13.9</b>	<b>9.4</b>	<b>10.9</b>	<b>07/2000</b>
Russell 2000 Value			2.0	7.3	7.8	9.5	13.0	8.2	10.1	07/2000
Excess			3.8	3.5	4.7	0.8	0.9	1.2	0.8	
<b>RUSSELL 2000 VALUE AGGREGATE</b>	<b>1,346,883,167</b>	<b>4.3</b>	<b>3.6</b>	<b>9.2</b>	<b>10.2</b>	<b>9.2</b>	<b>14.6</b>	<b>9.9</b>		
Russell 2000 Value			2.0	7.3	7.8	9.5	13.0	8.2		
Excess			1.5	2.0	2.3	-0.3	1.6	1.7		





	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Active Small Cap Value</b>					
<b>GOLDMAN SACHS</b>	<b>12.6%</b>	<b>24.6%</b>	<b>-5.2%</b>	<b>7.4%</b>	<b>39.3%</b>
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	4.7	-7.1	2.3	3.1	4.8
<b>HOTCHKIS AND WILEY</b>	<b>7.9</b>	<b>19.9</b>	<b>-8.5</b>	<b>13.0</b>	<b>46.0</b>
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	0.0	-11.8	-1.0	8.8	11.5
<b>MARTINGALE</b>	<b>6.9</b>	<b>34.3</b>	<b>-5.2</b>	<b>7.3</b>	<b>43.1</b>
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	-0.9	2.5	2.3	3.1	8.5
<b>PEREGRINE</b>	<b>12.5</b>	<b>27.8</b>	<b>-6.7</b>	<b>4.1</b>	<b>37.3</b>
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	4.7	-3.9	0.8	-0.1	2.8
<b>RUSSELL 2000 VALUE AGGREGATE</b>	<b>10.2%</b>	<b>26.5</b>	<b>-6.5</b>	<b>7.5</b>	<b>40.8</b>
Russell 2000 Value	7.8%	31.7	-7.5	4.2	34.5
Excess	2.3%	-5.2	1.0	3.3	6.3



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total Passive Domestic Equity</b>										
<b>BLACKROCK RUSSELL 1000</b>	<b>\$11,961,738,244</b>	<b>38.1%</b>	<b>6.6%</b>	<b>11.3%</b>	<b>21.7%</b>				<b>24.2%</b>	<b>11/2016</b>
Russell 1000			6.6	11.4	21.7				24.3	11/2016
Excess			-0.0	-0.0	-0.0				-0.0	
<b>BLACKROCK RUSSELL 3000 (1)</b>	<b>12,107,178,669</b>	<b>38.6</b>	<b>6.3</b>	<b>11.2</b>	<b>21.1</b>	<b>11.1%</b>	<b>15.6%</b>	<b>8.6%</b>	<b>9.4</b>	<b>07/1995</b>
Passive Manager Benchmark			6.3	11.2	21.1	11.1	15.6	8.6	9.3	07/1995
Excess			0.0	0.0	0.0	0.0	0.0	0.0	0.1	
<b>PASSIVE DOMESTIC EQUITY AGGREGATE</b>	<b>24,068,916,914</b>	<b>76.8</b>	<b>6.5</b>	<b>11.3</b>	<b>21.3</b>	<b>11.1</b>	<b>15.6</b>	<b>8.6</b>		
Passive Domestic Equity Benchmark			6.5	11.3	21.5	11.1	15.6	8.6		
Excess			-0.0	-0.0	-0.2	-0.0	-0.0	0.0		

(1) The current Passive Manager Benchmark is the Russell 3000. For historical benchmark details please refer to the addendum of this report.



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Total Passive Domestic Equity</b>					
<b>BLACKROCK RUSSELL 1000</b>	<b>21.7%</b>				
Russell 1000	21.7				
Excess	-0.0				
<b>BLACKROCK RUSSELL 3000 (1)</b>	<b>21.1</b>	<b>12.7%</b>	<b>0.5%</b>	<b>12.6%</b>	<b>33.5%</b>
Passive Manager Benchmark	21.1	12.7	0.5	12.6	33.6
Excess	0.0	0.0	0.0	0.0	-0.0
<b>PASSIVE DOMESTIC EQUITY AGGREGATE</b>	<b>21.3%</b>	<b>12.6</b>	<b>0.5</b>	<b>12.6</b>	<b>33.5</b>
Passive Domestic Equity Benchmark	21.5%	12.5	0.5	12.6	33.6
Excess	-0.2%	0.1	0.0	0.0	-0.0

(1) The current Passive Manager Benchmark is the Russell 3000. For historical benchmark details please refer to the addendum of this report.

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# International Equity

## December 31, 2017



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total International Equity</b>										
<b>DEVELOPED MARKETS (1)</b>	<b>\$11,787,551,014</b>	<b>75.1%</b>	<b>4.2%</b>	<b>10.2%</b>	<b>24.9%</b>	<b>8.1%</b>	<b>8.3%</b>	<b>2.6%</b>		
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9		
Excess			-0.1	0.2	0.7	0.7	0.9	0.7		
<b>EMERGING MARKETS (2)</b>	<b>3,899,196,563</b>	<b>24.9</b>	<b>6.3</b>	<b>15.1</b>	<b>37.7</b>	<b>8.8</b>	<b>4.4</b>	<b>1.2</b>		
BENCHMARK EM			7.4	15.9	37.3	9.1	4.3	1.7		
Excess			-1.1	-0.8	0.4	-0.3	0.1	-0.5		
TRANSITION AGGREGATE INTERNATIONAL EQUITY (3)	3,362,140	0.0								
<b>TOTAL INTERNATIONAL EQUITY (4)</b>	<b>15,690,109,717</b>	<b>100.0</b>	<b>4.7</b>	<b>11.4</b>	<b>27.6</b>	<b>8.3</b>	<b>7.5</b>	<b>2.3</b>	<b>6.9</b>	<b>10/1992</b>
International Equity Benchmark			5.0	11.5	27.2	7.8	6.8	1.8	6.4	10/1992
Excess			-0.3	-0.1	0.4	0.5	0.7	0.5	0.5	

(1) The current benchmark for Developed Markets, Benchmark DM, is the Standard (large + mid) MSCI World ex USA (net).

(2) The current benchmark for Emerging Markets, Benchmark EM, is the Standard (large + mid) MSCI Emerging Markets Free (net).

(3) The Transition Aggregate International Equity contains International Equity securities that are being transitioned to a different manager.

(4) Does not include impact of currency overlay on the passive EAFE portfolio from 12/1/95-10/31/00. This impact is included in the return for the Combined Funds portion of the International Equity portfolio. The current International Equity Benchmark is the Standard (large + mid) MSCI ACWI ex U.S. (net).

Note: All aggregates include the performance of terminated managers. For historical benchmark details please refer to the addendum of this report.



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Total International Equity</b>					
<b>DEVELOPED MARKETS (1)</b>	<b>24.9%</b>	<b>1.3%</b>	<b>-0.3%</b>	<b>-4.1%</b>	<b>23.3%</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	0.7	-1.5	2.8	0.2	2.2
<b>EMERGING MARKETS (2)</b>	<b>37.7</b>	<b>7.5</b>	<b>-13.1</b>	<b>-3.8</b>	<b>0.2</b>
BENCHMARK EM	37.3	11.2	-14.9	-2.2	-2.6
Excess	0.4	-3.7	1.9	-1.6	2.9
TRANSITION AGGREGATE INTERNATIONAL EQUITY (3)					
<b>TOTAL INTERNATIONAL EQUITY (4)</b>	<b>27.6%</b>	<b>2.6</b>	<b>-2.9</b>	<b>-4.0</b>	<b>17.8</b>
International Equity Benchmark	27.2%	4.5	-5.7	-3.9	15.3
Excess	0.4%	-1.8	2.8	-0.2	2.5

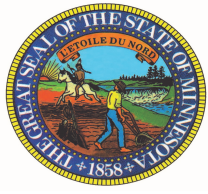
(1) The current benchmark for Developed Markets, Benchmark DM, is the Standard (large + mid) MSCI World ex USA (net).

(2) The current benchmark for Emerging Markets, Benchmark EM, is the Standard (large + mid) MSCI Emerging Markets Free (net).

(3) The Transition Aggregate International Equity contains International Equity securities that are being transitioned to a different manager.

(4) Does not include impact of currency overlay on the passive EAFE portfolio from 12/1/95-10/31/00. This impact is included in the return for the Combined Funds portion of the International Equity portfolio. The current International Equity Benchmark is the Standard (large + mid) MSCI ACWI ex U.S. (net).

Note: All aggregates include the performance of terminated managers. For historical benchmark details please refer to the addendum of this report.

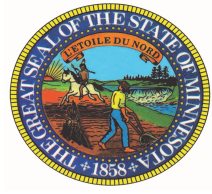


	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Active Developed Markets</b>										
<b>ACADIAN</b>	<b>\$548,997,634</b>	<b>3.5%</b>	<b>5.4%</b>	<b>12.9%</b>	<b>37.0%</b>	<b>14.9%</b>	<b>13.5%</b>	<b>3.4%</b>	<b>7.5%</b>	<b>07/2005</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.6	07/2005
Excess			1.2	2.9	12.8	7.5	6.0	1.5	1.9	
<b>COLUMBIA</b>	<b>450,544,633</b>	<b>2.9</b>	<b>6.5</b>	<b>14.2</b>	<b>32.7</b>	<b>10.1</b>	<b>9.3</b>	<b>3.7</b>	<b>3.2</b>	<b>03/2000</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	3.7	03/2000
Excess			2.3	4.1	8.5	2.7	1.9	1.8	-0.5	
<b>FIDELITY</b>	<b>437,675,344</b>	<b>2.8</b>	<b>4.6</b>	<b>10.8</b>	<b>25.9</b>	<b>8.5</b>	<b>8.8</b>	<b>3.4</b>	<b>7.1</b>	<b>07/2005</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.6	07/2005
Excess			0.3	0.7	1.7	1.1	1.4	1.5	1.5	
<b>JP MORGAN</b>	<b>369,748,463</b>	<b>2.4</b>	<b>5.3</b>	<b>12.6</b>	<b>28.3</b>	<b>8.4</b>	<b>7.6</b>	<b>2.9</b>	<b>5.8</b>	<b>07/2005</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.6	07/2005
Excess			1.1	2.5	4.1	1.0	0.2	1.0	0.3	
<b>MARATHON</b>	<b>938,741,799</b>	<b>6.0</b>	<b>3.5</b>	<b>8.1</b>	<b>23.1</b>	<b>9.1</b>	<b>9.9</b>	<b>4.7</b>	<b>8.5</b>	<b>11/1993</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.4	11/1993
Excess			-0.8	-2.0	-1.1	1.7	2.4	2.8	3.1	
<b>MCKINLEY</b>	<b>364,806,950</b>	<b>2.3</b>	<b>4.5</b>	<b>13.0</b>	<b>28.5</b>	<b>7.1</b>	<b>8.8</b>	<b>0.8</b>	<b>5.3</b>	<b>07/2005</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.6	07/2005
Excess			0.3	2.9	4.3	-0.3	1.4	-1.1	-0.2	
<b>ACTIVE DEVELOPED MARKETS AGGREGATE</b>	<b>3,110,514,824</b>	<b>19.8</b>	<b>4.7</b>	<b>11.3</b>	<b>28.4</b>	<b>9.7</b>	<b>9.7</b>	<b>3.4</b>		
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9		
Excess			0.5	1.2	4.2	2.4	2.3	1.5		

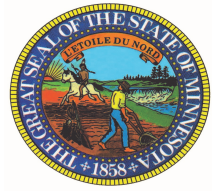




	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Active Developed Markets</b>					
<b>ACADIAN</b>	<b>37.0%</b>	<b>8.1%</b>	<b>2.4%</b>	<b>-1.7%</b>	<b>26.1%</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	12.8	5.4	5.4	2.6	5.1
<b>COLUMBIA</b>	<b>32.7</b>	<b>-5.6</b>	<b>6.4</b>	<b>-5.6</b>	<b>23.9</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	8.5	-8.3	9.4	-1.2	2.9
<b>FIDELITY</b>	<b>25.9</b>	<b>1.2</b>	<b>0.1</b>	<b>-5.6</b>	<b>26.7</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	1.7	-1.5	3.2	-1.3	5.7
<b>JP MORGAN</b>	<b>28.3</b>	<b>4.0</b>	<b>-4.7</b>	<b>-5.1</b>	<b>19.5</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	4.1	1.2	-1.6	-0.7	-1.5
<b>MARATHON</b>	<b>23.1</b>	<b>-1.1</b>	<b>6.7</b>	<b>-4.0</b>	<b>28.5</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	-1.1	-3.8	9.7	0.3	7.5
<b>MCKINLEY</b>	<b>28.5</b>	<b>-7.5</b>	<b>3.1</b>	<b>-2.7</b>	<b>28.0</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	4.3	-10.2	6.2	1.6	7.0
<b>ACTIVE DEVELOPED MARKETS AGGREGATE</b>	<b>28.4%</b>	<b>-0.2</b>	<b>3.2</b>	<b>-4.1</b>	<b>25.4</b>
BENCHMARK DM	24.2%	2.7	-3.0	-4.3	21.0
Excess	4.2%	-3.0	6.2	0.2	4.4



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Semi-Passive Developed Markets</b>										
<b>AQR</b>	<b>\$425,362,268</b>	<b>2.7%</b>	<b>3.1%</b>	<b>9.9%</b>	<b>25.1%</b>	<b>8.4%</b>	<b>8.6%</b>	<b>2.9%</b>	<b>6.2%</b>	<b>07/2005</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.6	07/2005
Excess			-1.1	-0.2	0.9	1.0	1.1	1.0	0.7	
<b>FIDELITY</b>	<b>598,801,298</b>	<b>3.8</b>	<b>3.0</b>	<b>8.5</b>	<b>22.5</b>	<b>6.1</b>	<b>7.2</b>	<b>1.8</b>	<b>6.0</b>	<b>07/2005</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.6	07/2005
Excess			-1.2	-1.6	-1.7	-1.2	-0.3	-0.0	0.5	
<b>SSgA</b>	<b>369,109,645</b>	<b>2.4</b>	<b>2.1</b>	<b>7.5</b>	<b>22.7</b>	<b>6.9</b>	<b>7.8</b>	<b>1.4</b>	<b>5.1</b>	<b>07/2005</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	5.6	07/2005
Excess			-2.2	-2.5	-1.5	-0.4	0.3	-0.4	-0.5	
<b>SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE</b>	<b>1,393,273,211</b>	<b>8.9</b>	<b>2.8</b>	<b>8.6</b>	<b>23.3</b>	<b>7.0</b>	<b>7.7</b>	<b>2.1</b>		
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9		
Excess			-1.4	-1.5	-0.9	-0.4	0.3	0.2		



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Semi-Passive Developed Markets</b>					
<b>AQR</b>	<b>25.1%</b>	<b>0.8%</b>	<b>0.9%</b>	<b>-4.4%</b>	<b>24.1%</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	0.9	-2.0	3.9	-0.1	3.1
<b>FIDELITY</b>					
<b>FIDELITY</b>	<b>22.5</b>	<b>-1.7</b>	<b>-0.7</b>	<b>-4.0</b>	<b>23.2</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	-1.7	-4.5	2.3	0.3	2.2
<b>SSgA</b>					
<b>SSgA</b>	<b>22.7</b>	<b>0.6</b>	<b>-0.9</b>	<b>-5.1</b>	<b>25.3</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	-1.5	-2.2	2.1	-0.8	4.2
<b>SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE</b>					
<b>SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE</b>	<b>23.3%</b>	<b>-0.4</b>	<b>-0.3</b>	<b>-4.4</b>	<b>24.0</b>
BENCHMARK DM	24.2%	2.7	-3.0	-4.3	21.0
Excess	-0.9%	-3.1	2.7	-0.1	3.0



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total Developed Markets</b>										
<b>ACTIVE DEVELOPED MARKETS AGGREGATE</b>	<b>\$3,110,514,824</b>	<b>19.8%</b>	<b>4.7%</b>	<b>11.3%</b>	<b>28.4%</b>	<b>9.7%</b>	<b>9.7%</b>	<b>3.4%</b>		
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9		
Excess			0.5	1.2	4.2	2.4	2.3	1.5		
<b>SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE</b>	<b>1,393,273,211</b>	<b>8.9</b>	<b>2.8</b>	<b>8.6</b>	<b>23.3</b>	<b>7.0</b>	<b>7.7</b>	<b>2.1</b>		
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9		
Excess			-1.4	-1.5	-0.9	-0.4	0.3	0.2		
<b>SSgA DEVELOPED MARKETS PASSIVE</b>	<b>7,283,762,979</b>	<b>46.4</b>	<b>4.2</b>	<b>10.1</b>	<b>24.7</b>	<b>7.8</b>	<b>7.9</b>	<b>2.3</b>	<b>6.6</b>	<b>10/1992</b>
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9	6.3	10/1992
Excess			-0.0	0.0	0.5	0.5	0.4	0.4	0.3	
<b>DEVELOPED MARKETS TOTAL</b>	<b>11,787,551,014</b>	<b>75.1</b>	<b>4.2</b>	<b>10.2</b>	<b>24.9</b>	<b>8.1</b>	<b>8.3</b>	<b>2.6</b>		
BENCHMARK DM			4.2	10.1	24.2	7.4	7.5	1.9		
Excess			-0.1	0.2	0.7	0.7	0.9	0.7		



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Total Developed Markets</b>					
<b>ACTIVE DEVELOPED MARKETS AGGREGATE</b>	<b>28.4%</b>	<b>-0.2%</b>	<b>3.2%</b>	<b>-4.1%</b>	<b>25.4%</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	4.2	-3.0	6.2	0.2	4.4
<b>SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE</b>	<b>23.3</b>	<b>-0.4</b>	<b>-0.3</b>	<b>-4.4</b>	<b>24.0</b>
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	-0.9	-3.1	2.7	-0.1	3.0
<b>SSgA DEVELOPED MARKETS PASSIVE</b>	<b>24.7%</b>	<b>3.2</b>	<b>-2.6</b>	<b>-3.9</b>	<b>21.4</b>
BENCHMARK DM	24.2%	2.7	-3.0	-4.3	21.0
Excess	0.5%	0.4	0.5	0.4	0.4
<b>DEVELOPED MARKETS TOTAL</b>	<b>24.9%</b>	<b>1.3</b>	<b>-0.3</b>	<b>-4.1</b>	<b>23.3</b>
BENCHMARK DM	24.2%	2.7	-3.0	-4.3	21.0
Excess	0.7%	-1.5	2.8	0.2	2.2



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Active Emerging Markets</b>										
<b>EARNEST PARTNERS</b>	<b>\$322,203,626</b>	<b>2.1%</b>	<b>7.1%</b>	<b>13.2%</b>					<b>22.3%</b>	<b>04/2017</b>
MSCI EMERGING MARKETS			7.4	15.9					23.2	04/2017
Excess			-0.3	-2.7					-0.9	
<b>MARTIN CURRIE</b>	<b>354,771,803</b>	<b>2.3</b>	<b>7.7</b>	<b>20.4</b>					<b>31.1</b>	<b>04/2017</b>
BENCHMARK EM			7.4	15.9					23.2	04/2017
Excess			0.2	4.5					7.9	
<b>MACQUARIE</b>	<b>334,392,586</b>	<b>2.1</b>	<b>2.8</b>	<b>14.9</b>					<b>23.2</b>	<b>04/2017</b>
BENCHMARK EM			7.4	15.9					23.2	04/2017
Excess			-4.6	-1.0					-0.0	
<b>MORGAN STANLEY</b>	<b>658,427,700</b>	<b>4.2</b>	<b>5.5</b>	<b>13.8</b>	<b>37.9%</b>	<b>9.8%</b>	<b>5.4%</b>	<b>1.8%</b>	<b>10.6</b>	<b>01/2001</b>
BENCHMARK EM			7.4	15.9	37.3	9.1	4.3	1.7	10.2	01/2001
Excess			-1.9	-2.1	0.6	0.7	1.0	0.1	0.4	
<b>NEUBERGER BERMAN</b>	<b>342,101,974</b>	<b>2.2</b>	<b>7.8</b>	<b>18.2</b>					<b>26.3</b>	<b>04/2017</b>
BENCHMARK EM			7.4	15.9					23.2	04/2017
Excess			0.4	2.3					3.1	
<b>PZENA</b>	<b>310,744,711</b>	<b>2.0</b>	<b>4.5</b>	<b>9.6</b>					<b>15.8</b>	<b>04/2017</b>
BENCHMARK EM			7.4	15.9					23.2	04/2017
Excess			-3.0	-6.3					-7.4	
<b>ROCK CREEK</b>	<b>320,701,983</b>	<b>2.0</b>	<b>5.8</b>	<b>13.3</b>					<b>19.3</b>	<b>04/2017</b>
BENCHMARK EM			7.4	15.9					23.2	04/2017
Excess			-1.7	-2.6					-3.9	



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Active Emerging Markets</b>					
<b>EARNEST PARTNERS</b>					
MSCI EMERGING MARKETS					
Excess					
<b>MARTIN CURRIE</b>					
BENCHMARK EM					
Excess					
<b>MACQUARIE</b>					
BENCHMARK EM					
Excess					
<b>MORGAN STANLEY</b>	<b>37.9%</b>	<b>6.1%</b>	<b>-9.4%</b>	<b>-2.5%</b>	<b>0.5%</b>
BENCHMARK EM	37.3	11.2	-14.9	-2.2	-2.6
Excess	0.6	-5.1	5.5	-0.3	3.1
<b>NEUBERGER BERMAN</b>					
BENCHMARK EM					
Excess					
<b>PZENA</b>					
BENCHMARK EM					
Excess					
<b>ROCK CREEK</b>					
BENCHMARK EM					
Excess					



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total Emerging Markets</b>										
<b>ACTIVE EMERGING MARKETS AGGREGATE</b>	\$2,643,344,383	16.8%	5.9%	14.7%	37.2%	8.0%	4.0%	1.0%		
BENCHMARK EM			7.4	15.9	37.3	9.1	4.3	1.7		
Excess			-1.6	-1.2	-0.1	-1.1	-0.4	-0.7		
<b>SSGA EMERGING MARKETS PASSIVE</b>	1,255,852,180	8.0	7.4	16.0	37.4	9.2	4.5		6.7	01/2012
BENCHMARK EM			7.4	15.9	37.3	9.1	4.3		6.5	01/2012
Excess			-0.0	0.1	0.1	0.1	0.1		0.1	
<b>EMERGING MARKETS TOTAL</b>	3,899,196,563	24.9	6.3	15.1	37.7	8.8	4.4	1.2		
BENCHMARK EM			7.4	15.9	37.3	9.1	4.3	1.7		
Excess			-1.1	-0.8	0.4	-0.3	0.1	-0.5		





	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Total Emerging Markets</b>					
<b>ACTIVE EMERGING MARKETS AGGREGATE</b>	<b>37.2%</b>	<b>5.3%</b>	<b>-12.7%</b>	<b>-4.1%</b>	<b>0.6%</b>
BENCHMARK EM	37.3	11.2	-14.9	-2.2	-2.6
Excess	-0.1	-5.9	2.2	-2.0	3.2
<b>SSGA EMERGING MARKETS PASSIVE</b>					
<b>SSGA EMERGING MARKETS PASSIVE</b>	<b>37.4%</b>	<b>11.1</b>	<b>-14.6</b>	<b>-2.1</b>	<b>-2.5</b>
BENCHMARK EM	37.3%	11.2	-14.9	-2.2	-2.6
Excess	0.1%	-0.1	0.3	0.1	0.1
<b>EMERGING MARKETS TOTAL</b>					
<b>EMERGING MARKETS TOTAL</b>	<b>37.7%</b>	<b>7.5</b>	<b>-13.1</b>	<b>-3.8</b>	<b>0.2</b>
BENCHMARK EM	37.3%	11.2	-14.9	-2.2	-2.6
Excess	0.4%	-3.7	1.9	-1.6	2.9

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# Fixed Income

## December 31, 2017



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Total Fixed Income</b>										
<b>ACTIVE FIXED INCOME AGGREGATE</b>	<b>\$6,074,016,709</b>	<b>46.9%</b>	<b>0.6%</b>	<b>1.7%</b>	<b>4.7%</b>	<b>3.2%</b>	<b>3.0%</b>	<b>4.7%</b>		
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0		
Excess			0.2	0.5	1.2	1.0	0.9	0.7		
<b>SEMI PASSIVE FIXED INCOME AGGREGATE</b>	<b>6,871,693,554</b>	<b>53.1</b>	<b>0.4</b>	<b>1.3</b>	<b>3.7</b>	<b>2.4</b>	<b>2.3</b>	<b>4.3</b>		
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0		
Excess			-0.0	0.0	0.2	0.2	0.2	0.2		
TRANSITION AGGREGATE FIXED INCOME (1)	143,572	0.0								
<b>TOTAL FIXED INCOME (2)</b>	<b>12,945,853,835</b>	<b>100.0</b>	<b>0.5</b>	<b>1.5</b>	<b>4.2</b>	<b>2.8</b>	<b>2.6</b>	<b>4.5</b>	<b>7.7</b>	<b>07/1984</b>
Fixed Income Benchmark			0.4	1.2	3.5	2.2	2.1	4.0	7.3	07/1984
Excess			0.1	0.3	0.7	0.6	0.5	0.5	0.4	

(1) The Transition Aggregate Fixed Income includes fixed income securities that are being transition to a different manager.

(2) The current Fixed Income Benchmark is the Bloomberg Barclays U.S. Aggregate calculated daily: BBG BARC Agg (Dly). For historical benchmark details please refer to the addendum of this report.

Note: All aggregates include the performance of terminated managers. Inception refers to the date of retention by the SBI.



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Total Fixed Income</b>					
<b>ACTIVE FIXED INCOME AGGREGATE</b>	<b>4.7%</b>	<b>4.4%</b>	<b>0.6%</b>	<b>6.2%</b>	<b>-0.8%</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	1.2	1.7	0.0	0.2	1.2
<b>SEMI PASSIVE FIXED INCOME AGGREGATE</b>	<b>3.7</b>	<b>2.8</b>	<b>0.8</b>	<b>6.1</b>	<b>-1.8</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	0.2	0.2	0.2	0.1	0.2
TRANSITION AGGREGATE FIXED INCOME (1)					
<b>TOTAL FIXED INCOME (2)</b>	<b>4.2%</b>	<b>3.6</b>	<b>0.7</b>	<b>6.1</b>	<b>-1.3</b>
Fixed Income Benchmark	3.5%	2.6	0.5	6.0	-2.0
Excess	0.7%	0.9	0.1	0.2	0.7

(1) The Transition Aggregate Fixed Income includes fixed income securities that are being transition to a different manager.

(2) The current Fixed Income Benchmark is the Bloomberg Barclays U.S. Aggregate calculated daily: BBG BARC Agg (Dly). For historical benchmark details please refer to the addendum of this report.

Note: All aggregates include the performance of terminated managers. Inception refers to the date of retention by the SBI.



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Active Fixed Income Managers</b>										
<b>COLUMBIA</b>	<b>\$1,182,161,072</b>	<b>9.1%</b>	<b>0.7%</b>	<b>1.9%</b>	<b>4.8%</b>	<b>3.4%</b>	<b>2.9%</b>	<b>4.6%</b>	<b>5.5%</b>	<b>07/1993</b>
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0	5.3	07/1993
Excess			0.3	0.6	1.2	1.1	0.8	0.6	0.2	
<b>DODGE &amp; COX</b>	<b>1,674,004,237</b>	<b>12.9</b>	<b>0.5</b>	<b>1.7</b>	<b>4.2</b>	<b>3.1</b>	<b>3.2</b>	<b>5.3</b>	<b>6.2</b>	<b>02/2000</b>
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0	5.2	02/2000
Excess			0.1	0.4	0.7	0.9	1.1	1.3	1.0	
<b>PIMCO</b>	<b>1,598,690,076</b>	<b>12.3</b>	<b>0.4</b>	<b>1.5</b>	<b>4.4</b>	<b>2.7</b>	<b>2.5</b>		<b>5.7</b>	<b>10/2008</b>
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1		4.3	10/2008
Excess			0.1	0.2	0.8	0.5	0.4		1.5	
<b>WESTERN</b>	<b>1,619,161,325</b>	<b>12.5</b>	<b>0.8</b>	<b>2.0</b>	<b>5.6</b>	<b>3.7</b>	<b>3.3</b>	<b>5.1</b>	<b>8.5</b>	<b>07/1984</b>
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0	7.4	07/1984
Excess			0.4	0.7	2.1	1.5	1.2	1.1	1.2	
<b>ACTIVE FIXED INCOME AGGREGATE</b>	<b>6,074,016,709</b>	<b>46.9</b>	<b>0.6</b>	<b>1.7</b>	<b>4.7</b>	<b>3.2</b>	<b>3.0</b>	<b>4.7</b>		
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0		
Excess			0.2	0.5	1.2	1.0	0.9	0.7		



	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Active Fixed Income Managers</b>					
<b>COLUMBIA</b>	<b>4.8%</b>	<b>5.2%</b>	<b>0.2%</b>	<b>5.8%</b>	<b>-1.0%</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	1.2	2.6	-0.4	-0.2	1.0
<b>DODGE &amp; COX</b>	<b>4.2</b>	<b>4.8</b>	<b>0.3</b>	<b>6.0</b>	<b>0.9</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	0.7	2.2	-0.3	0.0	3.0
<b>PIMCO</b>	<b>4.4</b>	<b>2.8</b>	<b>1.0</b>	<b>5.5</b>	<b>-1.3</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	0.8	0.2	0.4	-0.4	0.7
<b>WESTERN</b>	<b>5.6</b>	<b>4.9</b>	<b>0.7</b>	<b>7.0</b>	<b>-1.4</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	2.1	2.2	0.1	1.0	0.7
<b>ACTIVE FIXED INCOME AGGREGATE</b>	<b>4.7%</b>	<b>4.4</b>	<b>0.6</b>	<b>6.2</b>	<b>-0.8</b>
BBG BARC Agg (Dly)	3.5%	2.6	0.5	6.0	-2.0
Excess	1.2%	1.7	0.0	0.2	1.2



	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>Semi Passive Fixed Income Managers</b>										
<b>BLACKROCK</b>	<b>\$2,092,632,908</b>	<b>16.2%</b>	<b>0.4%</b>	<b>1.2%</b>	<b>3.7%</b>	<b>2.4%</b>	<b>2.3%</b>	<b>3.9%</b>	<b>5.3%</b>	<b>04/1996</b>
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0	5.3	04/1996
Excess			-0.0	0.0	0.1	0.2	0.2	-0.1	0.1	
<b>GOLDMAN SACHS</b>	<b>2,519,887,810</b>	<b>19.5</b>	<b>0.4</b>	<b>1.3</b>	<b>3.9</b>	<b>2.5</b>	<b>2.4</b>	<b>4.4</b>	<b>5.6</b>	<b>07/1993</b>
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0	5.3	07/1993
Excess			0.0	0.1	0.4	0.3	0.3	0.4	0.3	
<b>NEUBERGER</b>	<b>2,259,172,836</b>	<b>17.5</b>	<b>0.4</b>	<b>1.3</b>	<b>3.6</b>	<b>2.3</b>	<b>2.2</b>	<b>4.5</b>	<b>6.5</b>	<b>07/1988</b>
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0	6.3	07/1988
Excess			-0.0	0.0	0.0	0.1	0.1	0.5	0.2	
<b>SEMI PASSIVE FIXED INCOME</b>	<b>6,871,693,554</b>	<b>53.1</b>	<b>0.4</b>	<b>1.3</b>	<b>3.7</b>	<b>2.4</b>	<b>2.3</b>	<b>4.3</b>		
BBG BARC Agg (Dly)			0.4	1.2	3.5	2.2	2.1	4.0		
Excess			-0.0	0.0	0.2	0.2	0.2	0.2		





	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
<b>Semi Passive Fixed Income Managers</b>					
<b>BLACKROCK</b>	<b>3.7%</b>	<b>2.8%</b>	<b>0.9%</b>	<b>6.0%</b>	<b>-1.8%</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	0.1	0.1	0.3	0.0	0.2
<b>GOLDMAN SACHS</b>	<b>3.9</b>	<b>3.0</b>	<b>0.8</b>	<b>6.1</b>	<b>-1.7</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	0.4	0.3	0.2	0.1	0.3
<b>NEUBERGER</b>	<b>3.6</b>	<b>2.7</b>	<b>0.7</b>	<b>6.1</b>	<b>-2.0</b>
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	0.0	0.1	0.2	0.2	0.1
<b>SEMI PASSIVE FIXED INCOME</b>	<b>3.7%</b>	<b>2.8</b>	<b>0.8</b>	<b>6.1</b>	<b>-1.8</b>
BBG BARC Agg (Dly)	3.5%	2.6	0.5	6.0	-2.0
Excess	0.2%	0.2	0.2	0.1	0.2

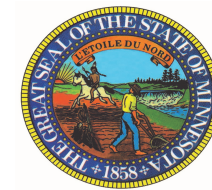
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# Private Markets

## December 31, 2017



## Combined Funds Asset Class Performance Summary

### Private Markets

	<u>Last Qtr</u>	<u>FYTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>20 Year</u>	<u>25 year</u>	<u>30 year</u>
Private Markets	4.3%	7.2%	18.5%	9.0%	12.1%	8.8%	12.4%	13.3%	12.1%
Private Equity	5.6%	10.7%	22.2%	14.6%	15.4%	10.8%	13.8%	15.5%	
Private Credit	6.0	5.5	17.6	12.5	14.7	10.8	13.1		
Resources	0.5	-0.6	11.8	-8.2	1.7	6.2	12.1	14.6	
Real Estate	3.1	5.6	10.2	10.9	12.6	4.6	8.6	8.8	

### Private Markets

The time-weighted rates of return for the Private Markets portfolio are shown here. Private Markets included Private Equity, Private Credit, Resources, and Real Estate. Some of the existing investments are relatively immature and returns may not be indicative of future results.

### Private Equity Investments

The objectives of the Private Equity portfolio, which may include leveraged buyouts, growth equity, venture capital and special situations, are to achieve attractive returns and to provide overall portfolio diversification to the total plan.

### Private Credit Investments

The objectives of the Private Credit portfolio, which may include mezzanine debt, direct lending, and other forms of non-investment grade fixed income instruments, are to achieve a high total return over a full market cycle and to provide some degree of downside protection and typically provide current income in the form of a coupon. In certain situations, investments in the Private Credit portfolio also provide an equity component of return in the form of warrants or re-organized equity.

### Resource Investments

The objectives of the Resources portfolio, which may include energy, infrastructure, and other hard assets, are to provide protection against the risks associated with inflation and to provide overall portfolio diversification to the total plan.

### Real Estate Investments

The objectives of the Real Estate portfolio, which may include core and non-core real estate investments, are to achieve attractive returns, preserve capital, provide protection against risks associated with inflation, and provide overall portfolio diversification to the total plan.

The SBI also monitors Private Markets performance using money-weighted return metrics such as Internal Rate of Return and Multiple of Invested Capital. For money-weighted return metrics please refer to the Combined Funds Performance Report.

**Minnesota State Board of Investment**  
**- Alternative Investments -**  
**As of December 31, 2017**

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b><i>I. PRIVATE EQUITY</i></b>								
<b>Adams Street Partners</b>								
<i>Adams Street Global Secondary Fund 5</i>	100,000,000	76,529,750	61,997,253	24,176,700	23,470,250	5.52	1.13	5.54
<i>Adams Street Global Secondary Fund 6</i>	48,148,500	0	0	0	48,148,500	0.00	0.00	0.75
<b>Advent International</b>								
<i>Advent International GPE VI</i>	50,000,000	50,000,000	23,300,396	84,135,574	0	17.34	2.15	9.76
<i>Advent International GPE VII</i>	90,000,000	83,475,000	105,492,913	34,200,083	6,525,000	18.61	1.67	5.29
<i>Advent International GPE VIII</i>	100,000,000	45,150,000	46,856,173	0	54,850,000	6.51	1.04	1.90
<b>Affinity Ventures</b>								
<i>Affinity Ventures IV</i>	4,000,000	4,000,000	589,390	1,541,970	0	-13.16	0.53	13.51
<i>Affinity Ventures V</i>	5,000,000	5,000,000	2,734,636	1,706,245	0	-2.43	0.89	9.50
<b>APAX Partners</b>								
<i>Apax VIII - USD</i>	200,000,000	207,506,059	214,932,820	59,533,581	18,490,653	12.25	1.32	4.82
<i>Apax IX - USD</i>	150,000,000	69,300,000	68,928,760	0	80,700,000	-1.60	0.99	1.62
<b>Asia Alternatives</b>								
<i>Asia Alternatives Capital Partners V</i>	99,000,000	2,385,421	1,942,052	75	96,614,579	-19.15	0.81	0.50
<b>Banc Fund</b>								
<i>Banc Fund VII</i>	45,000,000	45,000,000	34,503,218	30,944,725	0	3.59	1.45	12.76
<i>Banc Fund VIII</i>	98,250,000	98,250,000	143,627,695	68,969,973	0	15.16	2.16	9.69
<i>Banc Fund IX</i>	107,205,932	107,205,932	127,778,965	5,160,021	0	15.33	1.24	3.56
<b>Blackstone Capital Partners</b>								
<i>Blackstone Capital Partners IV</i>	70,000,000	72,354,340	8,217,816	192,717,027	1,916,968	37.06	2.78	15.48
<i>Blackstone Capital Partners V</i>	140,000,000	130,994,409	13,975,934	229,831,027	8,522,239	8.03	1.86	11.92
<i>Blackstone Capital Partners VI</i>	100,000,000	91,190,370	88,326,139	51,151,794	14,978,326	11.51	1.53	9.44
<i>Blackstone Capital Partners VII</i>	130,000,000	26,330,971	25,817,298	1,790,474	105,321,842	-8.63	1.05	2.50
<b>Blackstone Strategic Partners (CSFB/ DLJ)</b>								
<i>Strategic Partners II-B</i>	100,000,000	86,190,387	1,068	162,536,282	4,657,174	35.07	1.89	14.47
<i>Strategic Partners III VC</i>	25,000,000	24,851,658	5,707,201	28,791,976	1,105,559	6.41	1.39	12.59
<i>Strategic Partners III-B</i>	100,000,000	78,148,399	14,133,817	105,903,853	15,010,449	6.62	1.54	12.59
<i>Strategic Partners IV VC</i>	40,500,000	40,167,526	12,001,187	48,697,892	2,846,990	9.23	1.51	9.55
<i>Strategic Partners IV-B</i>	100,000,000	92,258,954	19,313,695	133,961,059	18,161,186	12.51	1.66	9.77
<i>Strategic Partners V</i>	100,000,000	79,374,743	31,127,129	100,591,658	39,842,739	20.23	1.66	6.38
<i>Strategic Partners VI</i>	150,000,000	85,619,171	73,597,284	51,987,705	67,279,050	20.27	1.47	3.71
<i>Strategic Partners VII</i>	150,000,000	50,937,270	57,492,360	4,354,121	103,393,743	71.57	1.21	1.02

**Minnesota State Board of Investment**  
**- Alternative Investments -**  
**As of December 31, 2017**

<b>Investment</b>	<b>Total Commitment</b>	<b>Funded Commitment</b>	<b>MarketValue</b>	<b>Distributions</b>	<b>Unfunded Commitment</b>	<b>IRR %</b>	<b>MOIC*</b>	<b>Period Years</b>
<b>Blum Capital Partners</b>								
<i>Blum Strategic Partners II</i>	50,000,000	40,185,889	131,809	89,708,870	2,127,584	22.42	<b>2.24</b>	<b>16.47</b>
<i>Blum Strategic Partners III</i>	75,000,000	78,121,020	0	83,524,046	471,064	0.26	<b>1.07</b>	<b>12.59</b>
<i>Blum Strategic Partners IV</i>	150,000,000	172,056,780	0	167,939,991	4,756,033	-0.89	<b>0.98</b>	<b>10.12</b>
<b>Brookfield Asset Management</b>								
<i>Brookfield Capital Partners Fund IV</i>	100,000,000	59,730,955	75,230,692	10,053,428	47,555,780	32.39	<b>1.43</b>	<b>2.31</b>
<b>Cardinal Partners</b>								
<i>DSV Partners IV</i>	10,000,000	10,000,000	31,085	39,196,082	0	10.61	<b>3.92</b>	<b>33.02</b>
<b>Carlyle Group</b>								
<i>Carlyle Partners VII, LP</i>	150,000,000	0	0	0	150,000,000	0.00	<b>0.00</b>	<b>0.04</b>
<b>Chicago Growth Partners (William Blair)</b>								
<i>William Blair Capital Partners VII</i>	50,000,000	48,150,000	68,355	67,985,017	1,650,000	8.26	<b>1.41</b>	<b>16.83</b>
<i>Chicago Growth Partners I</i>	50,000,000	52,441,998	3,364,830	54,532,745	300,000	2.28	<b>1.10</b>	<b>12.44</b>
<i>Chicago Growth Partners II</i>	60,000,000	58,095,626	6,434,118	116,513,720	1,652,374	19.59	<b>2.12</b>	<b>9.81</b>
<b>Court Square Capital Partners</b>								
<i>Court Square Capital Partners</i>	100,000,000	80,827,220	104,698	182,160,766	1,920,943	28.91	<b>2.26</b>	<b>16.07</b>
<i>Court Square Capital Partners II</i>	175,000,000	158,445,938	42,680,025	263,164,847	17,601,260	13.07	<b>1.93</b>	<b>11.33</b>
<i>Court Square Capital Partners III</i>	175,000,000	128,257,841	93,720,930	63,968,665	54,406,248	11.24	<b>1.23</b>	<b>5.59</b>
<b>Crescendo</b>								
<i>Crescendo IV</i>	101,500,000	101,500,000	11,618,105	42,303,255	0	-5.55	<b>0.53</b>	<b>17.82</b>
<b>CVC Capital Partners</b>								
<i>CVC European Equity Partners V</i>	134,022,714	132,667,980	39,145,026	219,390,929	1,454,586	14.99	<b>1.95</b>	<b>9.77</b>
<i>CVC Capital Partners VI</i>	259,588,178	230,659,054	237,334,064	29,760,386	34,929,250	12.24	<b>1.16</b>	<b>4.48</b>
<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>	<b>11.32</b>
<b>Elevation Partners</b>								
<i>Elevation Partners</i>	75,000,000	69,311,710	151,770	113,492,106	799,634	11.82	<b>1.64</b>	<b>12.63</b>
<b>Fox Paine &amp; Company</b>								
<i>Fox Paine Capital Fund II</i>	50,000,000	46,299,626	4,125,047	86,859,891	11,953,212	18.88	<b>1.97</b>	<b>17.51</b>
<b>GHJM Marathon Fund</b>								
<i>GHJM Marathon Fund V</i>	50,000,000	50,093,425	0	95,997,592	46,502	12.11	<b>1.92</b>	<b>13.26</b>
<i>TrailHead Fund</i>	20,000,000	15,414,187	23,591,911	2,406,955	4,585,813	14.24	<b>1.69</b>	<b>5.86</b>
<b>Glouston Capital Partners (fka Permal)**</b>								
<i>Glouston Private Equity Opportunities Fund IV</i>	5,337,098	4,247,098	1,829,376	2,765,487	1,090,000	3.32	<b>1.08</b>	<b>3.01</b>

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<b>GS Capital Partners</b>								
<i>GS Capital Partners 2000</i>	50,000,000	50,000,000	170,884	115,122,481	0	23.49	<b>2.31</b>	<b>17.35</b>
<i>GS Capital Partners V</i>	100,000,000	73,958,901	1,290,219	220,052,952	1,041,099	18.25	<b>2.99</b>	<b>12.76</b>
<i>GS Capital Partners VI</i>	100,000,000	80,215,619	17,714,218	121,570,984	3,388,669	6.97	<b>1.74</b>	<b>10.92</b>
<i>West Street Capital Partners</i>	150,000,000	22,500,000	19,860,908	0	127,500,000	-15.07	<b>0.88</b>	<b>1.03</b>
<i>GS Vintage VII</i>	100,000,000	28,988,899	25,624,691	5,272,019	71,134,226	42.63	<b>1.07</b>	<b>1.51</b>
<b>GTCR</b>								
<i>GTCR IX</i>	75,000,000	71,414,933	6,443,013	119,144,001	3,585,067	13.46	<b>1.76</b>	<b>11.51</b>
<i>GTCR X</i>	100,000,000	93,248,604	70,228,673	135,009,003	6,751,396	22.53	<b>2.20</b>	<b>7.06</b>
<i>GTCR Fund XI</i>	110,000,000	93,258,444	95,429,274	21,719,647	16,741,556	16.90	<b>1.26</b>	<b>4.13</b>
<b>HarbourVest**</b>								
<i>Dover Street VII Cayman Fund</i>	2,198,112	2,065,696	612,388	1,317,837	132,416	-4.20	<b>0.93</b>	<b>3.01</b>
<i>HarbourVest Intl PE Partners V-Cayman US</i>	3,532,733	3,340,605	1,318,037	2,867,908	192,128	13.82	<b>1.25</b>	<b>3.01</b>
<i>Harbourvest Intl PE Partners VI-Cayman</i>	4,253,005	3,916,781	3,986,451	1,479,202	336,224	17.44	<b>1.40</b>	<b>3.01</b>
<i>HarbourVest Partners VIII-Cayman Buyout</i>	4,506,711	4,272,711	2,302,162	3,188,644	234,000	14.49	<b>1.29</b>	<b>3.01</b>
<i>HarbourVest Partners VIII-Cayman Venture</i>	7,190,898	7,050,898	4,477,942	3,628,576	140,000	6.39	<b>1.15</b>	<b>3.01</b>
<b>Hellman &amp; Friedman</b>								
<i>Hellman &amp; Friedman Capital Partners V</i>	160,000,000	146,165,961	3,190,775	415,483,079	8,070,303	27.90	<b>2.86</b>	<b>13.09</b>
<i>Hellman &amp; Friedman Capital Partners VI</i>	175,000,000	171,037,755	42,220,581	311,889,122	5,084,864	13.19	<b>2.07</b>	<b>10.76</b>
<i>Hellman &amp; Friedman Capital Partners VII</i>	50,000,000	47,461,919	61,452,154	41,025,044	2,538,081	23.13	<b>2.16</b>	<b>8.70</b>
<b>IK Investment Partners</b>								
<i>IK Fund VII</i>	180,780,329	172,208,922	160,075,027	64,501,543	8,571,407	9.86	<b>1.30</b>	<b>4.30</b>
<i>IK Fund VIII</i>	176,970,042	61,797,320	64,329,927	2,213,957	117,318,625	11.70	<b>1.08</b>	<b>1.45</b>
<b>Kohlberg Kravis Roberts</b>								
<i>KKR Millennium Fund</i>	200,000,000	200,000,000	18,776,871	400,827,308	0	16.28	<b>2.10</b>	<b>15.07</b>
<i>KKR 2006 Fund</i>	200,000,000	211,063,288	67,420,840	290,278,563	3,360,223	8.57	<b>1.69</b>	<b>11.27</b>
<i>KKR Americas Fund XII</i>	150,000,000	2,274,687	1,179,427	0	147,725,313	-48.71	<b>0.52</b>	<b>1.83</b>
<i>KKR Asian Fund III</i>	100,000,000	0	0	0	100,000,000	0.00	<b>0.00</b>	<b>0.75</b>
<b>Leonard Green &amp; Partners</b>								
<i>Green Equity Investors VI</i>	200,000,000	213,778,395	197,271,147	104,311,000	20,999,508	14.51	<b>1.41</b>	<b>5.80</b>
<b>Lexington Capital Partners</b>								
<i>Lexington Capital Partners VI</i>	100,000,000	98,365,297	15,672,694	128,407,974	1,634,703	7.92	<b>1.46</b>	<b>12.02</b>
<i>Lexington Capital Partners VII</i>	200,000,000	170,296,470	72,607,580	191,163,725	38,224,269	15.26	<b>1.55</b>	<b>8.97</b>
<i>Lexington Capital Partners VIII</i>	150,000,000	77,519,960	70,998,249	27,462,869	81,765,263	24.64	<b>1.27</b>	<b>3.84</b>
<i>Lexington Middle Market Investors IV</i>	100,000,000	0	259,341	0	100,000,000	0.00	<b>0.00</b>	<b>1.03</b>
<i>Lexington Co-Investment Partners IV</i>	200,000,000	31,104,587	30,923,745	0	168,895,413	-0.59	<b>0.99</b>	<b>1.42</b>

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<b>Madison Dearborn Capital Partners</b>								
<i>Madison Dearborn Capital Partners VII</i>	100,000,000	32,305,748	30,569,810	1,105,151	68,742,206	-2.01	<b>0.98</b>	<b>2.04</b>
<b>Neuberger Berman</b>								
<i>Dyal Capital Partners III</i>	175,000,000	129,479,666	67,045,838	75,464,200	120,377,984	26.52	<b>1.10</b>	<b>2.70</b>
<b>Nordic Capital</b>								
<i>Nordic Capital Fund VIII</i>	180,981,117	133,205,933	142,280,310	58,635,734	63,116,699	17.81	<b>1.51</b>	<b>4.30</b>
<b>North Sky Capital**</b>								
<i>North Sky Capital LBO Fund III</i>	1,070,259	720,259	418,482	546,794	350,000	15.33	<b>1.34</b>	<b>3.01</b>
<i>North Sky Capital Venture Fund III</i>	1,384,080	1,277,830	538,638	952,354	106,250	8.82	<b>1.17</b>	<b>3.01</b>
<b>Oak Hill Capital Management, Inc.</b>								
<i>Oak Hill Capital Partners IV</i>	150,000,000	15,000,000	0	13,130,886	148,076,542	-17.78	<b>0.88</b>	<b>1.06</b>
<b>Paine &amp; Partners</b>								
<i>Paine &amp; Partners Capital Fund IV</i>	75,000,000	49,126,479	48,455,759	1,074,740	26,929,526	0.61	<b>1.01</b>	<b>3.06</b>
<b>Permira</b>								
<i>Permira V</i>	179,479,699	166,420,997	210,207,589	5,794,763	13,058,702	10.73	<b>1.30</b>	<b>4.00</b>
<i>Permira VI</i>	141,816,027	30,573,898	31,124,498	0	111,242,129	3.15	<b>1.02</b>	<b>1.44</b>
<b>Public Pension Capital Management</b>								
<i>Public Pension Capital</i>	100,000,000	53,470,728	69,625,830	2,510,909	47,166,185	18.88	<b>1.35</b>	<b>3.63</b>
<b>RWI Ventures</b>								
<i>RWI Ventures I</i>	7,603,265	7,603,265	483,052	6,094,262	0	-4.25	<b>0.87</b>	<b>11.51</b>
<b>Silver Lake Partners</b>								
<i>Silver Lake Partners II</i>	100,000,000	90,144,987	13,040,459	156,595,970	11,771,953	10.94	<b>1.88</b>	<b>13.51</b>
<i>Silver Lake Partners III</i>	100,000,000	91,564,385	45,093,773	158,486,770	10,559,311	18.54	<b>2.22</b>	<b>10.76</b>
<i>Silver Lake Partners IV</i>	100,000,000	96,645,531	106,565,968	33,124,810	15,746,239	24.98	<b>1.45</b>	<b>5.26</b>
<i>Silver Lake Partners V</i>	135,000,000	0	0	0	135,000,000	0.00	<b>0.00</b>	<b>0.75</b>
<b>Split Rock Partners</b>								
<i>Split Rock Partners</i>	50,000,000	47,890,906	15,986,912	43,656,715	2,109,094	2.78	<b>1.25</b>	<b>12.68</b>
<i>Split Rock Partners II</i>	60,000,000	58,845,000	39,031,454	34,863,729	1,155,000	5.64	<b>1.26</b>	<b>9.68</b>
<b>Summit Partners</b>								
<i>Summit Ventures V</i>	25,000,000	24,125,000	0	33,463,419	875,000	8.12	<b>1.39</b>	<b>19.76</b>
<i>Summit Partners Growth Equity Fund VIII</i>	100,000,000	106,489,649	81,262,415	95,113,904	17,232,062	20.42	<b>1.66</b>	<b>6.66</b>
<i>Summit Partners Growth Equity Fund IX</i>	100,000,000	18,300,000	13,059,852	9,973,626	81,700,000	44.60	<b>1.26</b>	<b>2.35</b>
<b>T. Rowe Price</b>	51,652,633	51,652,633	25,555,456	28,588,721	0	4.47	<b>1.05</b>	
<b>Thoma Bravo</b>								
<i>Thoma Bravo Fund XII</i>	75,000,000	38,226,600	35,971,786	2,298,018	39,071,418	-0.08	<b>1.00</b>	<b>1.31</b>
<b>Thoma Cressey</b>								
<i>Thoma Cressey Fund VII</i>	50,000,000	50,000,000	844,812	106,625,069	0	23.60	<b>2.15</b>	<b>17.36</b>
<i>Thoma Cressey Fund VIII</i>	70,000,000	68,932,574	1,515,060	233,860,926	770,000	18.26	<b>3.41</b>	<b>11.68</b>



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<b>Thomas H. Lee Partners</b>								
<i>Thomas H. Lee Equity Fund VII</i>	100,000,000	60,794,242	76,342,956	5,929,545	44,209,689	39.10	1.35	2.31
<b>Thomas, McNerney &amp; Partners</b>								
<i>Thomas, McNerney &amp; Partners I</i>	30,000,000	30,000,000	3,328,417	15,087,143	0	-8.15	0.61	15.16
<i>Thomas, McNerney &amp; Partners II</i>	50,000,000	48,125,000	14,174,330	95,314,704	1,875,000	16.73	2.28	11.51
<b>TPG Capital</b>								
<i>TPG Partners VII</i>	100,000,000	46,645,570	47,863,795	6,237,106	59,352,480	15.70	1.16	2.31
<b>Vestar Capital Partners</b>								
<i>Vestar Capital Partners IV</i>	55,000,000	53,635,969	637,677	102,249,550	57,313	14.65	1.92	18.06
<i>Vestar Capital Partners V</i>	75,000,000	74,936,812	19,265,527	82,866,015	63,188	4.30	1.36	12.04
<i>Vestar Capital Partners VI</i>	100,000,000	99,970,993	100,075,371	72,444,917	1,351,209	31.93	1.73	6.28
<b>Warburg Pincus</b>								
<i>Warburg Pincus Equity Partners</i>	100,000,000	100,000,000	603,204	163,222,253	0	10.03	1.64	19.53
<i>Warburg Pincus Private Equity VIII</i>	100,000,000	100,000,000	12,316,718	220,385,951	0	14.90	2.33	15.72
<i>Warburg Pincus Private Equity IX</i>	100,000,000	100,000,000	11,779,384	164,844,296	0	10.00	1.77	12.44
<i>Warburg Pincus Private Equity X</i>	150,000,000	150,000,000	70,013,127	159,880,302	0	8.14	1.53	10.19
<i>Warburg Pincus Private Equity XI</i>	200,000,000	194,200,000	176,999,053	99,770,286	5,800,000	13.05	1.43	5.03
<i>Warburg Pincus Private Equity XII</i>	131,000,000	63,469,500	62,998,900	1,008,700	67,530,500	1.05	1.01	2.12
<i>Warburg Pincus China</i>	45,000,000	16,020,000	14,003,870	1,935,000	30,915,000	-1.16	0.99	1.05
<i>Warburg Pincus Financial Sector</i>	90,000,000	0	0	0	90,000,000	0.00	0.00	0.05
<b>Wellspring Capital Partners</b>								
<i>Wellspring Capital Partners VI</i>	125,000,000	0	0	0	125,000,000	0.00	0.00	1.30
<b>Welsh, Carson, Anderson &amp; Stowe</b>								
<i>Welsh, Carson, Anderson &amp; Stowe X</i>	100,000,000	98,000,000	5,156,889	162,137,595	2,000,000	8.12	1.71	12.05
<i>Welsh, Carson, Anderson &amp; Stowe XI</i>	100,000,000	100,000,000	54,155,345	108,344,678	0	13.04	1.63	9.45
<i>Welsh, Carson, Anderson &amp; Stowe XII</i>	150,000,000	61,907,194	75,206,467	3,541,414	88,092,806	14.34	1.27	3.04
<b>Windjammer Capital Investors</b>								
<i>Windjammer Mezzanine &amp; Equity Fund II</i>	66,708,861	56,569,498	63,310	84,876,800	10,139,363	8.94	1.50	17.76
<i>Windjammer Senior Equity Fund III</i>	75,000,000	61,619,620	12,203,284	139,618,687	13,380,380	19.31	2.46	12.00
<i>Windjammer Senior Equity Fund IV</i>	100,000,000	78,087,703	84,765,734	7,347,571	24,581,218	6.56	1.18	5.85
<b>Private Equity Total</b>	<b>11,656,168,141</b>	<b>8,373,168,852</b>	<b>4,598,425,366</b>	<b>8,775,418,621</b>	<b>3,565,381,835</b>	<b>12.30</b>	<b>1.60</b>	

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<b>II. PRIVATE CREDIT</b>								
<b>Audax Group</b>								
<i>Audax Mezzanine Fund III</i>	100,000,000	92,424,480	36,129,117	82,926,331	9,040,161	9.94	1.29	7.75
<i>Audax Mezzanine Fund IV</i>	100,000,000	21,324,796	19,203,371	3,259,897	79,322,154	11.12	1.05	2.74
<b>Citicorp Mezzanine</b>								
<i>CM Liquidating Partnership</i>	100,000,000	88,029,296	1,186,265	149,642,633	0	16.45	1.71	18.18
<b>Crescent Capital Group</b>								
<i>TCW/Crescent Mezzanine Partners III</i>	75,000,000	68,835,269	2,408,452	156,868,939	29,733,852	35.88	2.31	16.77
<b>GS Mezzanine Partners</b>								
<i>GS Mezzanine Partners 2006</i>	100,000,000	74,999,888	1,288,950	134,136,541	9,858,563	4.99	1.81	11.74
<i>GS Mezzanine Partners V</i>	150,000,000	112,057,963	3,864,979	175,833,297	37,701,823	8.91	1.60	10.20
<b>Gold Hill Venture Lending</b>								
<i>Gold Hill Venture Lending</i>	40,000,000	40,000,000	621,789	64,391,012	0	10.63	1.63	13.27
<i>Gold Hill 2008</i>	25,852,584	25,852,584	7,558,380	33,841,601	0	11.85	1.60	9.51
<b>Kohlberg Kravis Roberts</b>								
<i>KKR Lending Partners II</i>	75,000,000	83,442,730	64,338,208	34,059,772	9,602,976	13.40	1.18	2.83
<i>KKR Lending Partners III</i>	159,000,000	7,155,000	8,186,644	0	151,845,000	14.57	1.14	0.73
<b>LBC Credit Partners</b>								
<i>LBC Credit Partners IV</i>	100,000,000	40,000,000	39,610,904	3,061,958	61,665,309	12.11	1.07	1.68
<b>Merit Capital Partners</b>								
<i>William Blair Mezzan. Cap. Fd. III</i>	60,000,000	57,243,241	184,620	113,323,763	2,756,759	15.51	1.98	18.01
<i>Merit Mezzanine Fund IV</i>	75,000,000	70,178,571	16,857,052	108,814,045	4,821,429	10.57	1.79	13.05
<i>Merit Mezzanine Fund V</i>	75,000,000	70,420,408	43,603,713	55,042,586	4,579,592	9.74	1.40	8.04
<i>Merit Mezzanine Fund VI</i>	77,853,125	34,700,000	36,577,818	0	43,153,125	8.30	1.05	1.77
<b>Portfolio Advisors</b>								
<i>DLJ Investment Partners II</i>	27,375,168	23,164,217	82,796	34,829,566	0	10.37	1.51	18.01
<i>DLJ Investment Partners III</i>	100,000,000	72,260,040	0	96,336,774	29,739,249	6.61	1.33	11.53
<b>Prudential Capital Partners</b>								
<i>Prudential Capital Partners II</i>	100,000,000	97,182,295	5,165,002	135,703,635	2,950,458	8.86	1.45	12.51
<i>Prudential Capital Partners III</i>	100,000,000	96,463,176	15,777,148	148,264,594	6,979,218	13.58	1.70	8.72
<i>Prudential Capital Partners IV</i>	100,000,000	96,664,671	71,445,602	49,036,519	3,901,443	10.62	1.25	5.95
<i>Prudential Capital Partners V</i>	150,000,000	37,959,085	37,161,486	2,442,765	112,040,915	10.34	1.04	1.37
<b>Summit Partners</b>								
<i>Summit Subordinated Debt Fund III</i>	45,000,000	42,750,000	6,843,590	58,922,343	2,250,000	9.45	1.54	13.88
<i>Summit Subordinated Debt Fund IV</i>	50,000,000	55,134,261	15,108,214	58,695,671	18,596,627	9.86	1.34	9.77
<b>TCW Asset Management</b>								
<i>TCW Direct Lending</i>	100,000,000	88,388,168	63,600,252	32,641,341	20,362,858	6.95	1.09	3.28
<b>Private Credit Total</b>	<b>2,085,080,877</b>	<b>1,496,630,141</b>	<b>496,804,351</b>	<b>1,732,075,584</b>	<b>640,901,511</b>	<b>13.09</b>	<b>1.49</b>	

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<b>III. REAL ASSETS</b>								
<b>BlackRock</b>								
<i>BlackRock Global Renewable Power Fund II</i>	98,500,000	24,819,154	23,985,057	537,604	74,098,979	-6.87	<b>0.99</b>	<b>2.10</b>
<b>EIG Global Energy Partners</b>								
<i>EIG Energy Fund XIV</i>	100,000,000	113,013,074	11,954,681	92,181,918	2,761,129	-3.10	<b>0.92</b>	<b>10.71</b>
<i>EIG Energy Fund XV</i>	150,000,000	151,824,733	91,441,213	93,476,633	24,307,985	5.43	<b>1.22</b>	<b>7.57</b>
<i>EIG Energy Fund XVI</i>	200,000,000	133,880,546	110,106,691	47,258,940	85,672,593	7.60	<b>1.18</b>	<b>4.30</b>
<b>EnCap Energy</b>								
<i>EnCap Energy Capital Fund VII</i>	100,000,000	97,492,592	9,033,952	132,528,983	0	15.08	<b>1.45</b>	<b>10.51</b>
<i>EnCap Energy Capital Fund VIII</i>	100,000,000	94,419,855	43,868,010	41,165,429	7,537,547	-3.44	<b>0.90</b>	<b>7.25</b>
<i>Encap Energy Capital Fund IX</i>	100,000,000	104,599,389	75,047,770	62,986,053	11,818,591	15.58	<b>1.32</b>	<b>5.07</b>
<i>EnCap Energy Capital Fund X</i>	100,000,000	69,229,785	62,252,808	15,477,128	38,556,958	13.58	<b>1.12</b>	<b>2.83</b>
<b>EnerVest Energy</b>								
<i>EnerVest Energy Institutional Fund XIV</i>	100,000,000	85,564,991	80,830,247	7,147,017	16,189,803	1.78	<b>1.03</b>	<b>2.56</b>
<b>Energy Capital Partners</b>								
<i>Energy Capital Partners II</i>	100,000,000	80,880,014	43,000,408	92,508,280	29,749,110	13.22	<b>1.68</b>	<b>7.46</b>
<i>Energy Capital Partners III</i>	200,000,000	111,864,021	120,738,015	8,889,828	91,636,549	7.65	<b>1.16</b>	<b>4.04</b>
<b>Energy &amp; Minerals Group</b>								
<i>NGP Midstream &amp; Resources</i>	100,000,000	100,090,315	62,411,623	129,728,655	230,871	14.91	<b>1.92</b>	<b>10.76</b>
<i>The Energy &amp; Minerals Group Fund II</i>	100,000,000	96,199,618	125,144,271	67,652,814	4,081,648	18.65	<b>2.00</b>	<b>6.28</b>
<i>The Energy &amp; Minerals Group Fund III</i>	200,000,000	188,234,770	157,130,243	11,237,815	13,511,285	-4.08	<b>0.89</b>	<b>3.82</b>
<i>The Energy &amp; Minerals Group Fund IV</i>	150,000,000	87,772,333	99,574,849	15,740,031	75,287,074	17.14	<b>1.31</b>	<b>2.18</b>
<b>First Reserve</b>								
<i>First Reserve Fund X</i>	100,000,000	100,000,000	421,230	182,429,002	0	31.05	<b>1.83</b>	<b>13.17</b>
<i>First Reserve Fund XI</i>	150,000,000	150,292,121	8,066,009	94,066,313	0	-8.52	<b>0.68</b>	<b>11.03</b>
<i>First Reserve Fund XII</i>	150,000,000	160,448,761	39,193,647	74,965,794	3,134,711	-8.40	<b>0.71</b>	<b>9.18</b>
<i>First Reserve Fund XIII</i>	200,000,000	92,442,258	79,803,942	21,947,422	107,557,742	5.88	<b>1.10</b>	<b>4.17</b>
<b>Merit Energy Partners</b>								
<i>Merit Energy Partners B</i>	24,000,000	24,000,000	8,627,500	182,321,687	0	24.29	<b>7.96</b>	<b>20.95</b>
<i>Merit Energy Partners C</i>	50,000,000	50,000,000	19,659,078	497,681,630	0	31.05	<b>10.35</b>	<b>19.19</b>
<i>Merit Energy Partners D</i>	88,000,000	70,938,303	30,250,605	311,288,474	0	23.07	<b>4.81</b>	<b>16.61</b>
<i>Merit Energy Partners E</i>	100,000,000	39,983,197	17,658,875	73,805,235	0	13.97	<b>2.29</b>	<b>13.26</b>
<i>Merit Energy Partners F</i>	100,000,000	59,522,861	19,676,861	27,251,921	0	-4.04	<b>0.79</b>	<b>11.78</b>
<i>Merit Energy Partners H</i>	100,000,000	100,000,000	69,608,687	18,410,723	0	-3.57	<b>0.88</b>	<b>6.92</b>
<i>Merit Energy Partners I</i>	169,721,518	146,099,999	194,212,482	4,296,319	23,621,519	23.58	<b>1.36</b>	<b>3.21</b>

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Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>NGP</b>								
<i>Natural Gas Partners IX</i>	150,000,000	161,702,525	8,455,351	235,442,290	1,473,974	11.78	<b>1.51</b>	<b>10.20</b>
<i>NGP Natural Resources X</i>	150,000,000	140,809,345	71,746,378	90,937,099	9,190,655	5.08	<b>1.16</b>	<b>6.23</b>
<i>Natural Gas Capital Resources XI</i>	150,000,000	116,945,845	124,446,973	17,344,708	39,216,161	20.55	<b>1.21</b>	<b>3.06</b>
<i>NGP Natural Resources XII</i>	149,500,000	0	0	0	149,500,000	0.00	<b>0.00</b>	<b>0.42</b>
<b>Sheridan</b>								
<i>Sheridan Production Partners I</i>	100,000,000	116,550,000	66,894,010	82,750,000	0	5.87	<b>1.28</b>	<b>10.76</b>
<i>Sheridan Production Partners II</i>	100,000,000	103,500,000	50,220,028	7,000,000	3,500,000	-12.74	<b>0.55</b>	<b>7.25</b>
<i>Sheridan Production Partners III</i>	100,000,000	34,350,000	38,728,994	13,675,000	65,650,000	34.31	<b>1.53</b>	<b>3.07</b>
<i>Real Assets Total</i>	<b>4,029,721,518</b>	<b>3,207,470,405</b>	<b>1,964,190,491</b>	<b>2,754,130,746</b>	<b>878,284,885</b>	<b>15.80</b>	<b>1.47</b>	

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Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b>IV. REAL ESTATE</b>								
<b>Angelo, Gordon &amp; Co.</b>								
<i>AG Realty Fund IX</i>	100,000,000	60,750,000	66,564,221	1,500,000	39,760,000	9.60	1.12	3.07
<i>AG Asia Realty Fund III</i>	50,000,000	28,250,000	27,822,126	5,000,000	24,558,750	16.31	1.16	1.25
<b>Blackstone Real Estate Partners</b>								
<i>Blackstone Real Estate Partners V</i>	100,000,000	97,030,342	27,906,800	179,140,540	4,174,052	10.95	2.13	11.68
<i>Blackstone Real Estate Partners VI</i>	100,000,000	99,320,387	15,958,757	201,178,595	4,907,906	13.12	2.19	10.76
<i>Blackstone Real Estate Partners VII</i>	100,000,000	95,357,438	81,849,383	94,443,704	15,126,809	17.86	1.85	6.10
<i>Blackstone Real Estate Partners VIII</i>	150,000,000	85,088,788	78,492,123	28,955,886	85,841,781	14.91	1.26	2.77
<i>Blackstone Real Estate Partners Asia II</i>	75,000,000	0	0	0	75,000,000	0.00	0.00	0.28
<b>Blackstone Strategic Partners (CSFB)</b>								
<i>Strategic Partners III RE</i>	25,000,000	25,752,810	2,919,620	12,275,431	9,006	-6.83	0.59	12.51
<i>Strategic Partners IV RE</i>	50,000,000	50,670,125	9,380,092	40,849,124	1,300,123	-0.34	0.99	9.55
<b>Carlyle Group</b>								
<i>Carlyle Realty Partners VIII</i>	150,000,000	630,910	115,534	0	149,369,090	-82.37	0.18	0.66
<b>Colony Capital</b>								
<i>Colony Investors III</i>	100,000,000	100,000,000	4,934,300	172,642,105	0	14.54	1.78	20.01
<b>Landmark Partners</b>								
<i>Landmark Real Estate Partners VIII</i>	149,500,000	16,765,979	16,765,979	67,715	132,734,021	-1.25	1.00	1.04
<b>Lubert Adler</b>								
<i>Lubert-Adler Real Estate Fund VII</i>	40,844,723	18,536,967	18,294,948	0	22,307,756	-10.15	0.99	1.23
<b>Rockpoint</b>								
<i>Rockpoint Real Estate Fund V</i>	100,000,000	47,038,733	48,632,051	5,586,764	58,548,031	8.08	1.15	2.98
<b>Rockwood</b>								
<i>Rockwood Capital RE Partners X</i>	100,000,000	30,342,875	29,093,022	772,727	69,657,125	-1.49	0.98	2.47
<b>Silverpeak Real Estate Partners</b>								
<i>Silverpeak Legacy Pension Partners II</i>	75,000,000	77,196,820	3,721,408	87,952,458	9,219,273	4.37	1.19	12.42
<i>Silverpeak Legacy Pension Partners III</i>	150,000,000	70,240,358	15,773,277	9,666,881	79,759,642	-12.35	0.36	9.67
<b>T.A. Associates Realty</b>								
<i>Realty Associates Fund VIII</i>	100,000,000	100,000,000	27,661,229	69,738,214	0	-0.31	0.97	11.51
<i>Realty Associates Fund IX</i>	100,000,000	100,000,000	4,092,921	156,109,810	0	10.44	1.60	9.36
<i>Realty Associates Fund X</i>	100,000,000	100,000,000	68,809,842	76,244,970	0	12.23	1.45	5.84
<i>Realty Associates Fund XI</i>	100,000,000	85,000,000	86,975,910	578,667	15,000,000	4.60	1.03	2.50
<b>Real Estate Total</b>	<b>2,015,344,723</b>	<b>1,287,972,532</b>	<b>635,763,542</b>	<b>1,142,703,591</b>	<b>787,273,364</b>	<b>7.81</b>	<b>1.38</b>	

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Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<b><i>V. DISTRESSED/ OPPORTUNISTIC</i></b>								
<b>Avenue Capital Partners</b>								
<i>Avenue Energy Opportunities Fund</i>	100,000,000	100,000,000	121,098,100	934,495	0	9.35	1.22	3.51
<i>Avenue Energy Opportunities Fund II</i>	100,000,000	25,000,000	25,048,725	0	75,000,000	0.30	1.00	0.66
<b>BlackRock**</b>								
<i>BlackRock Tempus Fund</i>	1,774,870	1,774,870	712,070	1,324,425	0	11.10	1.15	2.56
<b>Carlyle Group</b>								
<i>Carlyle Strategic Partners IV</i>	100,000,000	13,462,919	13,216,866	3,350,035	89,887,064	31.98	1.23	1.75
<b>Carval Investors</b>								
<i>CVI Global Value Fund</i>	200,000,000	190,000,000	30,335,550	290,286,276	10,000,000	9.64	1.69	10.98
<i>CVI Credit Value Fund I</i>	100,000,000	95,000,000	30,848,117	180,676,509	5,000,000	18.99	2.23	7.26
<i>CVI Credit Value Fund A II</i>	150,000,000	142,500,000	84,257,693	117,573,010	7,500,000	9.11	1.42	5.17
<i>CVI Credit Value Fund A III</i>	150,000,000	112,500,000	138,273,075	0	37,500,000	14.10	1.23	2.58
<b>Merced Capital</b>								
<i>Merced Partners II</i>	75,000,000	63,768,881	286,504	130,393,875	0	23.97	2.05	10.76
<i>Merced Partners III</i>	100,000,000	100,000,000	47,817,233	85,997,107	0	6.51	1.34	7.66
<i>Merced Partners IV</i>	125,000,000	125,000,000	109,050,674	44,372,049	0	6.95	1.23	4.48
<i>Merced Partners V</i>	53,737,500	48,363,750	51,614,761	0	5,373,750	6.80	1.07	0.50
<b>MHR Institutional Partners</b>								
<i>MHR Institutional Partners IV</i>	75,000,000	23,062,500	19,225,066	1,733,418	53,446,511	-6.61	0.91	3.53
<b>Oaktree Capital Management</b>								
<i>Oaktree Principal Fund VI</i>	100,000,000	49,395,781	45,795,888	13,606,490	63,811,849	23.83	1.20	3.01
<i>Oaktree Opportunities Fund X</i>	50,000,000	30,000,000	31,001,150	5,619,660	25,000,000	22.43	1.22	2.89
<i>Oaktree Opportunities Fund Xb</i>	100,000,000	0	0	0	100,000,000	0.00	0.00	2.89
<b>Pimco Bravo</b>								
<i>Pimco Bravo Fund OnShore Feeder I</i>	3,958,027	3,958,027	254,843	3,756,401	2,125,839	1.40	1.01	3.01
<i>Pimco Bravo Fund OnShore Feeder II</i>	5,243,670	4,618,670	5,028,832	716,624	1,336,436	6.92	1.24	3.01
<b>Varde Fund</b>								
<i>Varde Fund IX</i>	100,000,000	100,000,000	7,248,176	207,952,106	0	14.99	2.15	9.53
<i>Varde Fund X</i>	150,000,000	150,000,000	79,854,639	210,594,322	0	12.47	1.94	7.70
<i>Varde Fund XI</i>	200,000,000	200,000,000	220,238,483	51,183,477	0	8.01	1.36	4.48
<b>Wayzata</b>								
<i>Wayzata Opportunities Fund</i>	100,000,000	93,180,000	743,030	156,425,778	18,920,000	8.44	1.69	12.04
<i>Wayzata Opportunities Fund II</i>	150,000,000	174,750,000	12,269,677	316,890,359	30,000,000	16.54	1.88	10.20
<i>Wayzata Opportunities Fund III</i>	150,000,000	68,415,000	36,389,116	32,728,171	15,000,000	0.42	1.01	5.55
<b><i>Distressed/Opportunistic Total</i></b>	<b>2,439,714,067</b>	<b>1,914,750,398</b>	<b>1,110,608,270</b>	<b>1,856,114,586</b>	<b>539,901,449</b>		<b>1.55</b>	

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Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>Private Markets Total</i>	22,226,029,326	16,279,992,328	8,805,792,019	16,260,443,127	6,411,743,044	12.39	1.54	

<i>Private Markets Portfolio Status</i>	Investment Manager Count	Investments Count
PRIVATE EQUITY	52	126
PRIVATE CREDIT	12	24
REAL ASSETS	10	36
REAL ESTATE	11	21
DISTRESSED/ OPPORTUNISTIC	11	24
Total	96	231

**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.

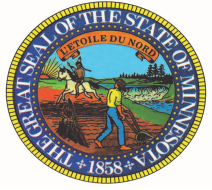
\* MOIC: Multiple of Invested Capital

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

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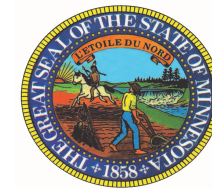
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# Participant Directed Investment Program

## December 31, 2017

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## Quarterly Report

# Participant Directed Investment Program

The Participant Directed Investment Program (PDIP) provides investment vehicles for a variety of retirement or other tax-advantaged savings plans. The objective of the Plan is to be competitive in the marketplace by providing quality investment options with low fees to its participants. Investment goals among the PDIP's many participants are varied.

- The Supplemental Investment Fund (SIF) is a program which provides individuals the opportunity to invest in many of the same investment pools as the Combined Funds. Participation in the SIF is accomplished through the purchase or sale of shares in each Fund. The SIF is 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 statutory requirements and rules established by the participating organizations. It provides some or all of the investment options for the Unclassified Employees Retirement Plan, Minnesota Deferred Compensation Plan, Public Employees Defined Contribution Plan, Hennepin County Supplemental Retirement Plan, and Health Care Savings Plan. All Funds in the SIF program, except the Stable Value Fund, are available to local volunteer fire relief associations who invest their assets with the SBI. The Volunteer Firefighter Account is available only for those local firefighter entities that participate in the Statewide Volunteer Firefighter Plan. Local entities that participate in this Plan must have all their assets invested in the Volunteer Firefighter Account.
- The Minnesota Deferred Compensation Plan offers plan participants three sets of investment options. The first is a set of actively and passively managed options that includes four mutual funds, a Money Market Fund, a Stable Value Fund and five passively managed mutual funds. The second is a set of target date funds called Minnesota Target Retirement Funds. The third is a self-directed brokerage account window which offers thousands of mutual funds. The SBI has no direct management responsibilities for funds within the self-directed brokerage account window. The Minnesota Deferred Compensation Plan uses two of the SIF investment options, the Stable Value Fund and the Money Market Fund, for its participants.
- The Minnesota College Savings Plan is an education savings plan designed to help families set aside funds for future college costs. It is established under the provisions of the Internal Revenue Code Section 529, which authorized these types of savings plans to help families meet the costs of qualified colleges nationwide. 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 have contracted jointly with TIAA-CREF Tuition Financing, Inc. to provide administrative, marketing, communication, recordkeeping and investment management services.
- The Minnesota Achieve a Better Life Experience Plan (ABLE) is a savings plan designed to help individuals save for qualified disability expenses without losing eligibility for certain assistance programs. The plan is administered by the Department of Human Services (DHS). The SBI and DHS have jointly contracted with Ascensus to provide recordkeeping, administrative, and investment management services for the plan.

The investment returns shown in this report are calculated using a time-weighted rate of return formula. These returns are net of investment management fees and transaction costs. They do not, however, reflect administrative expenses that may be deducted by the retirement systems or other agencies to defray administrative costs.



## Supplemental Investment Fund Summary

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.

### Investment Option Descriptions

- Balanced Fund - a balanced portfolio utilizing both common stocks and bonds.
- U.S. Stock Actively Managed Fund - an actively managed, U.S. common stock portfolio.
- U.S. Stock Index Fund - a passively managed, common stock portfolio designed to broadly track the performance of the U.S. stock market.
- Broad International Stock Fund - a portfolio of non-U.S. stocks that incorporates both active and passive management.
- Bond Fund - an actively managed, bond portfolio.
- Money Market Fund - a portfolio utilizing short-term, liquid debt securities.
- Stable Value Fund - a portfolio of stable value instruments, including security backed contracts and insurance company and bank investment contracts.
- Volunteer Firefighter Account - a balanced portfolio only used by the Voluntary Statewide Volunteer Firefighter Plan.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Option Since</u>
BALANCED FUND	\$438,080,020	4.0%	14.0%	7.8%	10.4%	7.3%	01/1980
U.S. ACTIVELY MANAGED FUND	244,217,244	5.9	22.7	10.7	15.7	8.5	07/1986
U.S. STOCK INDEX FUND	615,668,826	6.3	21.1	11.1	15.6	8.7	07/1986
BROAD INTERNATIONAL STOCK FUND	205,232,177	4.7	27.7	8.4	7.5	2.4	09/1994
BOND FUND	169,850,163	0.5	4.2	2.8	2.6	4.5	07/1986
MONEY MARKET FUND	393,873,761	0.3	1.1	0.6	0.4	0.6	07/1986
STABLE VALUE FUND	1,534,526,462	0.6	2.1	2.0	2.0	3.0	11/1994
VOLUNTEER FIREFIGHTER ACCOUNT	90,409,281	3.1	13.2	6.6	7.8		01/2010
TOTAL SUPPLEMENTAL INVESTMENT FUND	3,691,858,666						

Note:

The Market Values for the Money Market Fund, the Stable Value Fund, and the Total Supplemental Investment Fund also include assets held through the Deferred Compensation Plan.



## Supplemental Investment Fund Performance

### Balanced Fund

The primary investment objective of the Balanced Fund is to gain exposure to publicly traded U.S. equities, bond and cash in a diversified investment portfolio. The Fund seeks to maximize long-term real rates of return, while limiting short-run portfolio return volatility. 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. The benchmark is a blend of 60% Russell 3000/35% Barclays Aggregate Bond Index/5% T-Bills Composite.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>BALANCED FUND</b>	<b>\$438,080,020</b>	<b>4.0%</b>	<b>14.0%</b>	<b>7.8%</b>	<b>10.4%</b>	<b>7.3%</b>
SIF BALANCED FUND BENCHMARK		3.9	13.7	7.5	10.0	6.7
Excess		0.1	0.4	0.2	0.4	0.6

### U.S. Actively Managed Fund

The U.S. Stock Actively Managed Fund's investment objective is to generate above-average returns from capital appreciation on common stocks. The U.S. Stock Actively Managed Fund is invested primarily in the common stocks of U.S. companies. The managers in the account also hold varying levels of cash.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>U.S. ACTIVELY MANAGED FUND</b>	<b>244,217,244</b>	<b>5.9</b>	<b>22.7</b>	<b>10.7</b>	<b>15.7</b>	<b>8.5</b>
Russell 3000		6.3	21.1	11.1	15.6	8.6
Excess		-0.4	1.6	-0.4	0.1	-0.1



## Supplemental Investment Fund Performance

### U.S. Stock Index Fund

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 Index, a broad-based equity market indicator. The Fund is invested 100% in common stock.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>U.S. STOCK INDEX FUND</b>	<b>\$615,668,826</b>	<b>6.3%</b>	<b>21.1%</b>	<b>11.1%</b>	<b>15.6%</b>	<b>8.7%</b>
Russell 3000		6.3	21.1	11.1	15.6	8.6
Excess		0.0	0.0	0.0	0.0	0.1

### Broad International Stock Fund

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. Portions of the Fund are passively managed and semi-passively managed. These portions of the Fund are designed to track and modestly outperform, respectively, the return of developed markets included in the MSCI World ex USA Index. A portion 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. The International Equity Benchmark is currently the MSCI ACWI ex USA (net).

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>BROAD INTERNATIONAL STOCK FUND</b>	<b>205,232,177</b>	<b>4.7</b>	<b>27.7</b>	<b>8.4</b>	<b>7.5</b>	<b>2.4</b>
International Equity Benchmark		5.0	27.2	7.8	6.8	1.8
Excess		-0.3	0.5	0.5	0.7	0.5



## Supplemental Investment Fund Performance

### Bond Fund

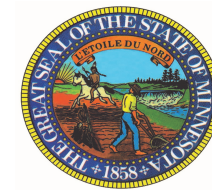
The investment objective of the Bond Fund is to exceed the return of the broad domestic bond market by investing in fixed income securities. The Bond Fund invests primarily in high-quality, government and corporate bonds that have intermediate to long-term maturities, usually 3 to 20 years. The Bond Fund benchmark is the Bloomberg Barclays U.S. Aggregate.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>BOND FUND</b>	<b>\$169,850,163</b>	<b>0.5%</b>	<b>4.2%</b>	<b>2.8%</b>	<b>2.6%</b>	<b>4.5%</b>
BBG BARC US Agg		0.4	3.5	2.2	2.1	4.0
Excess		0.1	0.7	0.6	0.5	0.5

### Money Market Fund

The investment objective of the Money Market Fund is to protect principal by investing in short-term, liquid U.S. Government securities. 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. Please note that the Market Value for the Money Market Fund reflects assets held through the Deferred Compensation Plan as well.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>MONEY MARKET FUND</b>	<b>393,873,761</b>	<b>0.3</b>	<b>1.1</b>	<b>0.6</b>	<b>0.4</b>	<b>0.6</b>
90 DAY T-BILL		0.3	0.9	0.4	0.3	0.4
Excess		0.0	0.2	0.2	0.2	0.2



## Supplemental Investment Fund Performance

### Stable Value Fund

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. 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. The Stable Value Fund Benchmark is the 3-year Constant Maturity Treasury Bill +45 basis points. Please note that the Market Value for the Stable Value Fund reflects assets held through the Deferred Compensation Plan as well.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>STABLE VALUE FUND</b>	<b>\$1,534,526,462</b>	<b>0.6%</b>	<b>2.1%</b>	<b>2.0%</b>	<b>2.0%</b>	<b>3.0%</b>
Fixed Interest Blended Benchmark		0.4	1.9	1.6	1.4	1.5
Excess		0.1	0.2	0.5	0.6	1.5

### Volunteer Firefighter Account

The Volunteer Firefighter Account is different than other SIF program options. It is available only to the local entities that participate in the Statewide Volunteer Firefighter Plan (administered by PERA) and have all of their assets invested in the Volunteer Firefighter Account. There are other volunteer firefighter plans that are not eligible to be consolidated that may invest their assets through other SIF program options. 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 of domestic equity, international equity, fixed income and cash. The benchmark for this account is 35% Russell 3000, 15% MSCI ACWI ex USA (net), 45% Bloomberg Barclays U.S. Aggregate, 5% 3 Month T-Bills.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
<b>VOLUNTEER FIREFIGHTER ACCOUNT</b>	<b>90,409,281</b>	<b>3.1</b>	<b>13.2</b>	<b>6.6</b>	<b>7.8</b>	
SIF Volunteer Firefighter Account BM		3.1	12.7	6.2	7.4	
Excess		0.0	0.5	0.4	0.4	





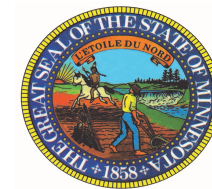
## Deferred Compensation Plan Summary

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 a set of 10 target date retirement fund options.

Deferred Compensation Plan participants may also invest in the money market option and stable value option in the Supplemental Investment Fund program. All provide for the daily pricing needs of the plan administrator. In addition, participants may also choose from hundreds of funds available through a mutual fund brokerage window. The current plan structure became effective July 1, 2011.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Option Since</u>
VANGUARD INSTITUTIONAL INDEX PLUS	\$1,250,793,844	6.6%	21.8%	11.4%	15.8%	8.5%	07/1999
VANGUARD DIVIDEND GROWTH	609,633,169	5.6	19.3				10/2016
VANGUARD MID CAP INDEX	542,778,955	5.6	19.3	9.4	15.0	9.0	01/2004
T. ROWE PRICE SMALL-CAP STOCK	691,451,147	3.4	15.5	10.0	14.8	11.4	04/2000
FIDELITY DIVERSIFIED INTERNATIONAL	320,579,636	3.7	26.7	7.9	8.8	2.2	07/1999
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	204,399,478	4.9	27.6	8.6	7.2		07/2011
VANGUARD BALANCED INDEX	789,623,566	4.0	13.9	7.6	10.1	7.2	12/2003
DODGE & COX INCOME	237,858,078	0.5	4.4	3.1	3.1	5.0	07/1999
VANGUARD TOTAL BOND MARKET INDEX	211,128,260	0.4	3.6	2.2	2.0	4.0	12/2003
2020 FUND	118,561,751	2.4	9.9	4.9	5.7		07/2011
2025 FUND	110,409,303	3.3	13.1	6.1	7.4		07/2011
2030 FUND	74,912,610	4.1	16.3	7.2	8.7		07/2011
2035 FUND	59,514,109	4.5	18.0	7.8	9.5		07/2011
2040 FUND	42,952,508	4.9	19.4	8.3	10.1		07/2011
2045 FUND	36,093,020	5.1	20.4	8.6	10.6		07/2011
2050 FUND	25,351,497	5.4	21.3	9.0	10.8		07/2011
2055 FUND	14,220,613	5.4	21.3	9.0	10.8		07/2011
2060 FUND	14,386,876	5.4	21.3	9.0	10.8		07/2011
INCOME FUND	84,021,752	2.0	8.3	4.2	4.2		07/2011
TD Ameritrade SDB	76,081,458						
TD Ameritrade SDB Roth	549,265						
Total Deferred Compensation Plan	5,515,300,895						



## Deferred Compensation Plan Options

### LARGE CAP EQUITY

#### **Vanguard Index Institutional Plus (passive)**

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

#### **Vanguard Dividend Growth (active) (1)**

A fund of large cap stocks which is expected to outperform the Nasdaq US Dividend Achievers Select Index, over time.

### MID CAP EQUITY

#### **Vanguard Mid Cap Index (passive) (2)**

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

### 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 Index.

### 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.

#### **Vanguard Total International Stock Index (passive) (3)**

A fund that seeks to track the investment performance of the FTSE Global All Cap ex US Index, an index designed to measure equity market performance in developed and emerging markets, excluding the United States.

**Ending Market Value Last Qtr 1 Year 3 Year 5 Year Option Since**

#### **Large Cap US Equity**

<b>VANGUARD INSTITUTIONAL INDEX PLUS</b>	<b>\$1,250,793,844</b>	<b>6.6%</b>	<b>21.8%</b>	<b>11.4%</b>	<b>15.8%</b>	<b>07/1999</b>
S&P 500		6.6	21.8	11.4	15.8	07/1999
Excess		-0.0	-0.0	-0.0	-0.0	

<b>VANGUARD DIVIDEND GROWTH</b>	<b>609,633,169</b>	<b>5.6</b>	<b>19.3</b>			<b>10/2016</b>
NASDAQ US Dividend Achievers Select		8.1	22.3			10/2016
Excess		-2.5	-3.0			

#### **Mid Cap US Equity**

<b>VANGUARD MID CAP INDEX</b>	<b>542,778,955</b>	<b>5.6</b>	<b>19.3</b>	<b>9.4</b>	<b>15.0</b>	<b>01/2004</b>
CRSP US Mid Cap Index		5.6	19.3	9.4	15.1	01/2004
Excess		0.0	-0.0	-0.0	-0.0	

#### **Small Cap US Equity**

<b>T. ROWE PRICE SMALL-CAP STOCK</b>	<b>691,451,147</b>	<b>3.4</b>	<b>15.5</b>	<b>10.0</b>	<b>14.8</b>	<b>04/2000</b>
Russell 2000		3.3	14.6	10.0	14.1	04/2000
Excess		0.0	0.8	0.1	0.7	

#### **International Equity**

<b>FIDELITY DIVERSIFIED INTERNATIONAL</b>	<b>320,579,636</b>	<b>3.7</b>	<b>26.7</b>	<b>7.9</b>	<b>8.8</b>	<b>07/1999</b>
MSCI EAFE FREE (NET)		4.2	25.0	7.8	7.9	07/1999
Excess		-0.6	1.6	0.1	0.9	

<b>VANGUARD TOTAL INTERNATIONAL STOCK INDEX</b>	<b>204,399,478</b>	<b>4.9</b>	<b>27.6</b>	<b>8.6</b>	<b>7.2</b>	<b>07/2011</b>
FTSE Global All Cap ex US Index Net		5.3	27.2	8.3	7.2	07/2011
Excess		-0.5	0.4	0.3	-0.0	



## Deferred Compensation Options

### BALANCED

#### **Vanguard Balanced Index (passive) (4)**

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% BB Barclays U.S. Aggregate.

### 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 BB Barclays U.S. Aggregate, over time.

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

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

#### **SIF Money Market Fund (5)**

A fund that invests in short-term debt instruments which is expected to outperform the return on 90-Day U.S. Treasury Bills.

### STABLE VALUE

#### **SIF Stable Value Fund (5)**

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.

(1) Vanguard Dividend Growth replaced the Janus Twenty Fund in the third quarter of 2016.

(2) Prior to 02/01/2013 the benchmark was the MSCI US Mid-Cap 450 Index

(3) Prior to 06/01/2013 the benchmark was MSCI ACWI ex USA IMI.

(4) Prior to 01/01/2013 the benchmark was 60% MSCI US Broad Market Index and 40% Bloomberg Barclays U.S. Aggregate.

(5) SIF Money Market and SIF Fixed Interest are Supplemental Investment Fund options which are also offered under the Deferred Compensation Plan.

**Ending Market Value** **Last Qtr** **1 Year** **3 Year** **5 Year** **Option Since**

#### **Balanced Funds**

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
<b>VANGUARD BALANCED INDEX</b>	<b>\$789,623,566</b>	<b>4.0%</b>	<b>13.9%</b>	<b>7.6%</b>	<b>10.1%</b>	<b>12/2003</b>
Vanguard Balanced Fund Benchmark		3.9	13.8	7.6	10.1	12/2003
Excess		0.0	0.0	-0.0	-0.0	

#### **Fixed Income**

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
<b>DODGE &amp; COX INCOME</b>	<b>237,858,078</b>	<b>0.5</b>	<b>4.4</b>	<b>3.1</b>	<b>3.1</b>	<b>07/1999</b>
BBG BARC Agg Bd		0.4	3.5	2.2	2.1	07/1999
Excess		0.1	0.8	0.9	1.0	

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
<b>VANGUARD TOTAL BOND MARKET INDEX</b>	<b>211,128,260</b>	<b>0.4</b>	<b>3.6</b>	<b>2.2</b>	<b>2.0</b>	<b>12/2003</b>
BBG BARC Agg Bd		0.4	3.5	2.2	2.1	12/2003
Excess		0.0	0.0	-0.1	-0.1	

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
<b>MONEY MARKET FUND</b>	<b>393,873,761</b>	<b>0.3</b>	<b>1.1</b>	<b>0.6</b>	<b>0.4</b>	<b>07/1986</b>
90 DAY T-BILL		0.3	0.9	0.4	0.3	07/1986
Excess		0.0	0.2	0.2	0.2	

#### **Stable Value**

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
<b>STABLE VALUE FUND</b>	<b>1,534,526,462</b>	<b>0.6</b>	<b>2.1</b>	<b>2.0</b>	<b>2.0</b>	<b>11/1994</b>
Fixed Interest Blended Benchmark		0.4	1.9	1.6	1.4	11/1994
Excess		0.1	0.2	0.5	0.6	



## Deferred Compensation Options

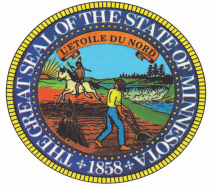
### MN TARGET RETIREMENT ACCOUNTS

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. A participant only needs to make one investment decision by investing their assets in the fund that is closest to their anticipated retirement date.

### Target Date Retirement Funds

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>Option Since</u>		<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>Option Since</u>
<b>SSgA</b>													
<b>2020 FUND</b>	<b>\$118,561,751</b>	<b>2.4%</b>	<b>9.9%</b>	<b>4.9%</b>	<b>5.7%</b>	<b>07/2011</b>	<b>2045 FUND</b>	<b>\$36,093,020</b>	<b>5.1%</b>	<b>20.4%</b>	<b>8.6%</b>	<b>10.6%</b>	<b>07/2011</b>
2020 FUND BENCHMARK		2.4	9.9	4.9	5.8	07/2011	2045 FUND BENCHMARK		5.1	20.4	8.6	10.7	07/2011
Excess		-0.0	-0.0	0.0	-0.1		Excess		-0.0	0.0	0.1	-0.1	
<b>2025 FUND</b>	<b>110,409,303</b>	<b>3.3</b>	<b>13.1</b>	<b>6.1</b>	<b>7.4</b>	<b>07/2011</b>	<b>2050 FUND</b>	<b>25,351,497</b>	<b>5.4</b>	<b>21.3</b>	<b>9.0</b>	<b>10.8</b>	<b>07/2011</b>
2025 FUND BENCHMARK		3.3	13.1	6.1	7.5	07/2011	2050 FUND BENCHMARK		5.4	21.3	8.9	10.9	07/2011
Excess		-0.0	-0.0	0.0	-0.1		Excess		-0.0	0.0	0.1	-0.1	
<b>2030 FUND</b>	<b>74,912,610</b>	<b>4.1</b>	<b>16.3</b>	<b>7.2</b>	<b>8.7</b>	<b>07/2011</b>	<b>2055 FUND</b>	<b>14,220,613</b>	<b>5.4</b>	<b>21.3</b>	<b>9.0</b>	<b>10.8</b>	<b>07/2011</b>
2030 FUND BENCHMARK		4.1	16.3	7.2	8.8	07/2011	2055 FUND BENCHMARK		5.4	21.3	8.9	10.9	07/2011
Excess		-0.0	-0.0	0.0	-0.1		Excess		-0.0	0.0	0.1	-0.1	
<b>2035 FUND</b>	<b>59,514,109</b>	<b>4.5</b>	<b>18.0</b>	<b>7.8</b>	<b>9.5</b>	<b>07/2011</b>	<b>2060 FUND</b>	<b>14,386,876</b>	<b>5.4</b>	<b>21.3</b>	<b>9.0</b>	<b>10.8</b>	<b>07/2011</b>
2035 FUND BENCHMARK		4.5	18.0	7.8	9.6	07/2011	2060 FUND BENCHMARK		5.4	21.3	8.9	10.9	07/2011
Excess		-0.0	-0.0	0.0	-0.1		Excess		-0.0	0.0	0.1	-0.1	
<b>2040 FUND</b>	<b>42,952,508</b>	<b>4.9</b>	<b>19.4</b>	<b>8.3</b>	<b>10.1</b>	<b>07/2011</b>	<b>INCOME FUND</b>	<b>84,021,752</b>	<b>2.0</b>	<b>8.3</b>	<b>4.2</b>	<b>4.2</b>	<b>07/2011</b>
2040 FUND BENCHMARK		4.9	19.4	8.2	10.2	07/2011	INCOME FUND BENCHMARK		2.1	8.4	4.2	4.3	07/2011
Excess		-0.0	0.0	0.0	-0.1		Excess		-0.0	-0.0	-0.0	-0.1	

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 College Savings Plan Options

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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. Please see the next page for the performance as reported by TIAA.

### **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.

### **RISK BASED ALLOCATIONS**

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

### **ASSET CLASS BASED ALLOCATIONS**

**U.S. LARGE CAP EQUITY INDEX** - A passive domestic stock portfolio that tracks the S&P 500.

**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% MSCI Emerging Markets Free Index.

**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.

**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.

**EQUITY AND INTEREST ACCUMULATION** - A fund that passively invests half of the portfolio in U.S. equities across all capitalization ranges and the other half in the same Funding Agreement issued by TIAA-CREF Life as described above. The fund is expected to track a weighted benchmark of 50% Russell 3000 and 50% 3-month T-Bill.

**100% FIXED INCOME** - A fund that passively invests in fixed income holdings that tracks the Bloomberg Barclays U.S. 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% BB Barclays Aggregate, 20% inflation-linked bond, and 10% high yield.

**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.

**MINNESOTA COLLEGE SAVINGS PLAN**  
**Performance Statistics for the Period Ending: December 29, 2017**

Fund Name	Ending Market	3 Months	1 Year	Annualized				Inception Date
				3 Years	5 Years	10 Years	Since Inception	
Managed Ages 0-4 BM: Managed Ages 0-4	\$28,628,271	4.56% 4.48%	18.30% 17.87%	8.38% 8.46%	- -	- -	8.20% 8.29%	8/12/2014
Managed Ages 5-8 BM: Managed Ages 5-8	\$72,619,669	3.91% 3.97%	16.33% 15.99%	7.58% 7.73%			7.44% 7.57%	8/12/2014
Managed Ages 9-10 BM: Managed Ages 9-10	\$70,055,254	3.49% 3.46%	14.42% 14.14%	6.86% 6.99%			6.71% 6.84%	8/12/2014
Managed Ages 11-12 BM: Managed Ages 11-12	\$103,731,903	2.97% 2.94%	12.50% 12.16%	6.07% 6.14%			5.92% 6.00%	8/12/2014
Managed Ages 13-14 BM: Managed Ages 13-14	\$141,861,212	2.51% 2.42%	10.64% 10.22%	5.26% 5.29%			5.14% 5.16%	8/12/2014
Managed Age 15 BM: Managed Age 15	\$79,524,695	2.04% 1.89%	8.39% 8.02%	4.32% 4.22%			4.21% 4.11%	8/12/2014
Managed Age 16 BM: Managed Age 16	\$78,433,941	1.80% 1.63%	7.39% 6.86%	3.87% 3.63%			3.76% 3.53%	8/12/2014
Managed Age 17 BM: Managed Age 17	\$73,877,626	1.55% 1.36%	6.38% 5.72%	3.41% 3.05%			3.32% 2.96%	8/12/2014
Managed Ages 18 & Over BM: Managed Ages 18 & Over	\$180,120,400	1.29% 1.10%	5.17% 4.58%	2.92% 2.46%			2.83% 2.38%	8/12/2014
U.S. and International Equity Option BM: U.S. and International Equity Option	\$310,206,668	5.43% 5.51%	21.71% 21.72%	9.75% 9.90%	12.32% 12.61%	6.20% 6.90%	7.19% 8.11%	10/ 1/2001

**MINNESOTA COLLEGE SAVINGS PLAN**

**Performance Statistics for the Period Ending: December 29, 2017**

Fund Name	Ending Market	3 Months	1 Year	Annualized				Inception Date
				3 Years	5 Years	10 Years	Since Inception	
Moderate Allocation Option BM: Moderate Allocation Option	\$65,292,518	3.52% 3.46%	14.37% 14.14%	6.83% 6.99%	8.01% 8.26%	5.48% 6.04%	5.43% 6.02%	8/ 2/2007
100% Fixed-Income Option BM: 100% Fixed-Income Option	\$13,978,820	0.35% 0.42%	3.20% 3.55%	2.16% 2.47%	1.33% 1.76%	3.35% 3.98%	3.65% 4.33%	8/16/2007
International Equity Index Option BM: International Equity Index Option	\$4,168,038	4.31% 4.87%	27.46% 27.44%	8.12% 8.14%			6.52% 6.92%	6/18/2013
Money Market Option BM: Money Market Option	\$11,058,483	0.19% 0.17%	0.58% 0.47%	0.23% 0.20%	0.14% 0.13%	0.26% 0.29%	0.32% 0.35%	11/ 1/2007
Principal Plus Interest Option Citigroup 3-Month U.S. Treasury Bill	\$113,514,662	0.40% 0.28%	1.48% 0.84%	1.39% 0.38%	1.35% 0.24%	1.99% 0.34%	2.56% 1.26%	10/10/2001
Aggressive Allocation Option BM: Aggressive Allocation Option	\$18,461,584	4.57% 4.48%	18.33% 17.87%	8.36% 8.46%			8.15% 8.29%	8/12/2014
Conservative Allocation Option BM: Conservative Allocation Option	\$8,173,194	1.97% 1.89%	8.37% 8.02%	4.29% 4.22%			3.96% 3.91%	8/18/2014
Equity and Interest Accumulation Option BM: Equity and Interest Accumulation Option	\$2,251,518	3.37% 3.28%	11.05% 10.58%	6.15% 5.76%			6.23% 5.85%	8/18/2014
U.S. Large Cap Equity Option BM: U.S. Large Cap Equity Option	\$19,899,489	6.58% 6.64%	21.62% 21.83%	11.20% 11.41%			12.14% 12.37%	8/12/2014
Matching Grant Citigroup 3-Month U.S. Treasury Bill	\$2,465,895	0.40% 0.28%	1.48% 0.84%	1.39% 0.38%	1.35% 0.24%	1.99% 0.34%	2.58% 1.24%	3/22/2002

# MINNESOTABLE *plan*

A member of The National ABLÉ Alliance

Performance as of  
12/31/17

Total Market Value: \$ 1,580,995

<u>Fund Name</u>	<u>Market Value</u>	<u>% of Plan</u>	<u>1 Month</u>	<u>3 Months</u>	<u>YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Inception</u>	<u>Inception Date</u>
Aggressive Option	\$ 180,328	11.41%	0.95	4.54	17.62	17.62				16.72	12/15/16
ABLE Aggressive Custom Benchmark			1.06	4.77	18.35	18.35					
<b>Variance</b>			<b>(0.11)</b>	<b>(0.23)</b>	<b>(0.73)</b>	<b>(0.73)</b>					
Moderately Aggressive Option	\$ 145,112	9.18%	0.88	3.89	14.90	14.90				14.24	12/15/16
ABLE Moderately Aggressive Custom Benchmark			0.91	4.00	15.47	15.47					
<b>Variance</b>			<b>(0.03)</b>	<b>(0.11)</b>	<b>(0.57)</b>	<b>(0.57)</b>					
Growth Option	\$ 244,945	15.49%	0.72	3.13	11.98	11.98				11.67	12/15/16
ABLE Growth Custom Benchmark			0.77	3.24	12.65	12.65					
<b>Variance</b>			<b>(0.05)</b>	<b>(0.11)</b>	<b>(0.67)</b>	<b>(0.67)</b>					
Moderate Option	\$ 230,317	14.57%	0.64	2.43	9.47	9.47				9.38	12/15/16
ABLE Moderate Custom Benchmark			0.63	2.49	9.89	9.89					
<b>Variance</b>			<b>0.01</b>	<b>(0.06)</b>	<b>(0.42)</b>	<b>(0.42)</b>					
Moderately Conservative Option	\$ 163,168	10.32%	0.38	1.62	6.48	6.48				6.51	12/15/16
ABLE Moderately Conservative Custom Benchmark			0.47	1.74	6.90	6.90					
<b>Variance</b>			<b>(0.09)</b>	<b>(0.12)</b>	<b>(0.42)</b>	<b>(0.42)</b>					
Conservative Option	\$ 265,148	16.77%	0.19	0.68	2.79	2.79				2.87	12/15/16
ABLE Conservative Custom Benchmark			0.24	0.76	3.00	3.00					
<b>Variance</b>			<b>(0.05)</b>	<b>(0.08)</b>	<b>(0.21)</b>	<b>(0.21)</b>					
Checking Option	\$ 351,977	22.26%									03/30/17

## MINNESOTA ACHIEVE A BETTER LIFE EXPERIENCE

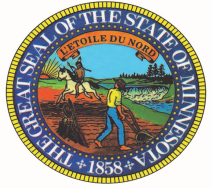
The Minnesota Achieve a Better Life Experience Plan (ABLE) is a savings plan designed to help individuals save for qualified disability expenses without losing eligibility for certain assistance programs. The plan is administered by the Department of Human Services (DHS).

The SBI and DHS have jointly contracted with Ascensus to provide recordkeeping, administrative, and investment management services for the plan.

## RISK BASED ALLOCATIONS

The plan offers seven different allocation investment options: Aggressive, Moderately Aggressive, Growth, Moderate, Moderately Conservative, Conservative, and Checking. Each allocation is based on a fixed risk level.





# Non-Retirement

## December 31, 2017



## Quarterly Report

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# Non-Retirement Funds

The SBI manages funds for trusts and programs created by the Minnesota State Constitution and Legislature.

- The Permanent School Fund is a trust established for the benefit of Minnesota public schools.
- The Environmental Trust Fund is a trust established for the protection and enhancement of Minnesota's environment. It is funded with a portion of the proceeds from the state's lottery.
- The Minnesota Workers Compensation Assigned Risk Plan provides worker compensation insurance for companies unable to obtain coverage through private carriers.
- The Closed Landfill Investment Fund is a trust created by the Legislature to invest money to pay for the long-term costs of maintaining the integrity of landfills in Minnesota once they are closed.
- Other Post-Employment Benefits Accounts (OPEB) are the assets set aside by local units of government for the payment of retiree benefits trusted by the Public Employees Retirement Association.
- Miscellaneous Trust Accounts are other small funds managed by the SBI for a variety of purposes.

All equity, fixed income, and cash assets for these accounts are managed externally by investment management firms retained by the SBI.



## Non-Retirement

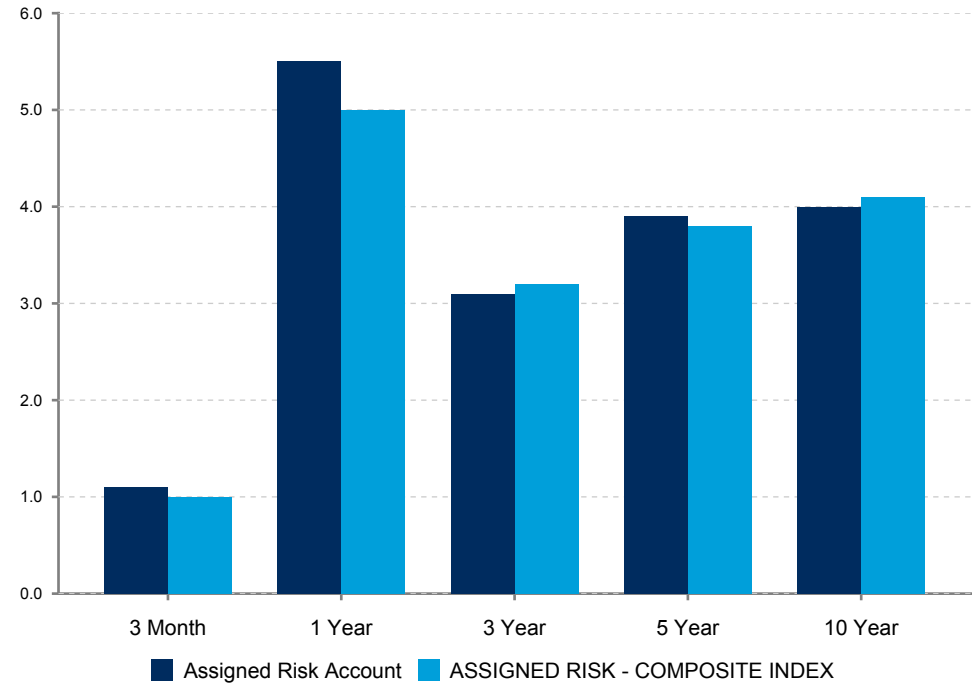
### Assigned Risk Plan

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.

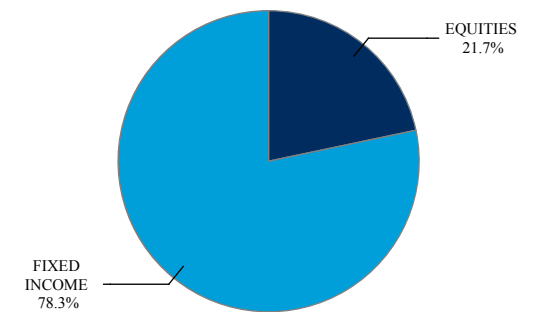
The Assigned Risk Plan is invested in a portfolio of common stocks and bonds

The equity segment is passively managed to track the performance of the S&P 500.

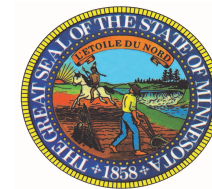
The fixed income benchmark is the Bloomberg Barclays Intermediate Government Index. The total fund benchmark is a combination of the fixed income and equity benchmarks, weighted according to the total fund asset allocation targets of 80% equities and 20% fixed income. The actual asset mix will fluctuate and is shown in the graph below.



	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
Assigned Risk Account	\$318,695,515	1.1%	5.5%	3.1%	3.9%	4.0%
EQUITIES	69,252,515	6.6	22.6	10.0	15.2	8.1
FIXED INCOME	249,443,000	-0.4	1.3	1.2	1.0	2.7
ASSIGNED RISK - COMPOSITE INDEX		1.0	5.0	3.2	3.8	4.1
Excess		0.1	0.5	-0.1	0.0	-0.1
S&P 500		6.6	21.8	11.4	15.8	8.5
BBG BARC US Gov: Int		-0.4	1.1	1.1	0.9	2.7



Note: Since 12/1/2017 the Assigned Risk equity segment has been managed by Mellon. From 1/17/2017-11/30/2017 it was managed internally by SBI staff. Prior to 1/17/2017 the equity segment was managed by SSgA (formerly GE Investment Mgmt.). RBC manages the fixed income segment of the Fund.



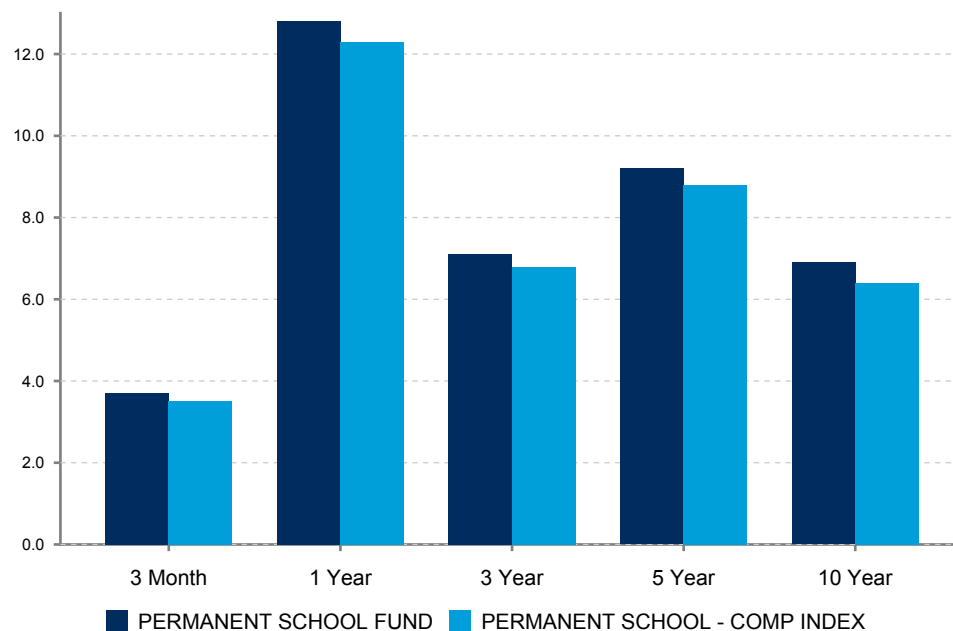
## Non-Retirement

### Permanent School Fund

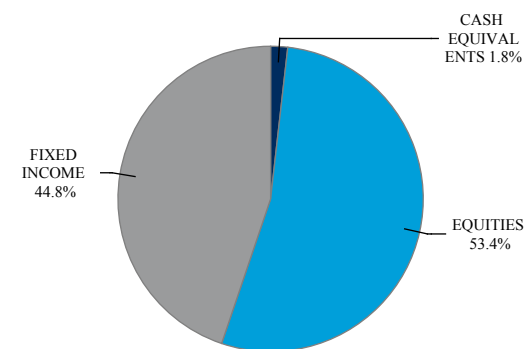
The investment objective of the Permanent School Fund is to produce a growing level of spendable income, within the constraints of maintaining adequate portfolio quality and liquidity. The income from the portfolio is transferred to the school endowment fund and distributed to Minnesota's public schools.

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.

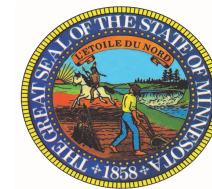
The stock segment is passively managed to track the performance of the S&P 500. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The fixed income benchmark is the Bloomberg Barclays U.S. Aggregate. The total fund benchmark is a combination of the fixed income and equity benchmarks, weighted according to the total fund asset allocation targets of 2% cash, 50% equity, and 48% fixed income. The actual asset mix will fluctuate and is shown in the graph below.



	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
PERMANENT SCHOOL FUND	\$1,389,727,448	3.7%	12.8%	7.1%	9.2%	6.9%
CASH EQUIVALENTS	25,106,914	0.3	1.0	0.5	0.4	0.6
EQUITIES	741,932,645	6.6	21.9	11.4	15.8	8.5
FIXED INCOME	622,687,888	0.5	4.0	2.7	2.8	4.6
PERMANENT SCHOOL - COMP INDEX		3.5	12.3	6.8	8.8	6.4
Excess		0.2	0.5	0.3	0.4	0.5
S&P 500		6.6	21.8	11.4	15.8	8.5
BBG BARC US Agg		0.4	3.5	2.2	2.1	4.0



Note: Since 12/1/2017 the equity segment has been managed by Mellon and the fixed income segment by Prudential. Prior to 12/1/2017 both segments were managed internally by SBI staff. Prior to 7/1/97 the Fund allocation was 100% fixed income.



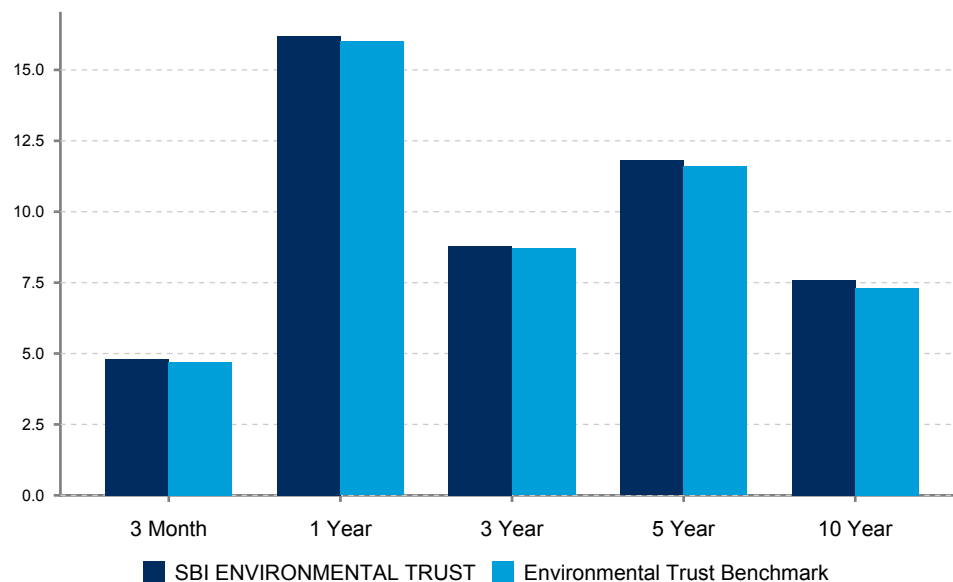
## Non-Retirement

### Environmental Trust Fund

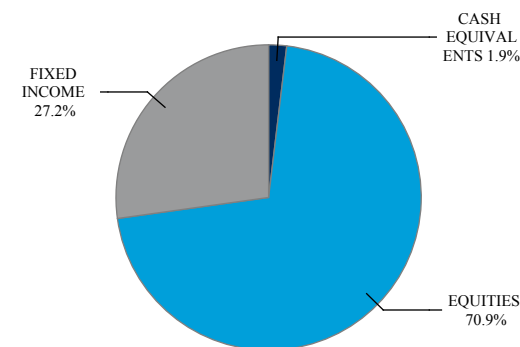
The objective of the Environmental Trust Fund is to increase the market value of the Fund over time in order to increase the annual amount made available for spending within the constraints of maintaining adequate portfolio quality and liquidity.

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.

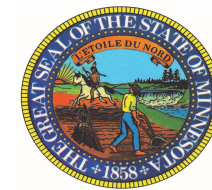
The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The stock segment is passively managed to track the performance of the S&P 500. The fixed income benchmark is the Bloomberg Barclays U.S. Aggregate. The total fund benchmark is a combination of the fixed income and equity benchmarks, weighted according to the total fund asset allocation targets of 2% cash, 70% equities, and 28% fixed income. The actual asset mix will fluctuate and is shown in the graph below.



	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
SBI ENVIRONMENTAL TRUST	\$1,105,713,317	4.8%	16.2%	8.8%	11.8%	7.6%
CASH EQUIVALENTS	21,107,343	0.3	1.0	0.5	0.4	0.6
EQUITIES	783,971,402	6.6	21.9	11.4	15.8	8.5
FIXED INCOME	300,634,573	0.5	4.0	2.7	2.8	4.6
Environmental Trust Benchmark		4.7	16.0	8.7	11.6	7.3
Excess		0.0	0.2	0.1	0.2	0.3
S&P 500		6.6	21.8	11.4	15.8	8.5
BBG BARC US Agg		0.4	3.5	2.2	2.1	4.0



Note: Since 12/1/2017 the equity segment has been managed by Mellon and the fixed income segment by Prudential. Prior to 12/1/2017 both segments were managed internally by SBI staff. From 7/1/94 to 7/1/99, the Fund's target allocation and benchmark was 50% fixed income and 50% stock. Prior to 7/1/94 the Fund was invested entirely in short-term instruments as part of the Invested Treasurer's Cash pool.

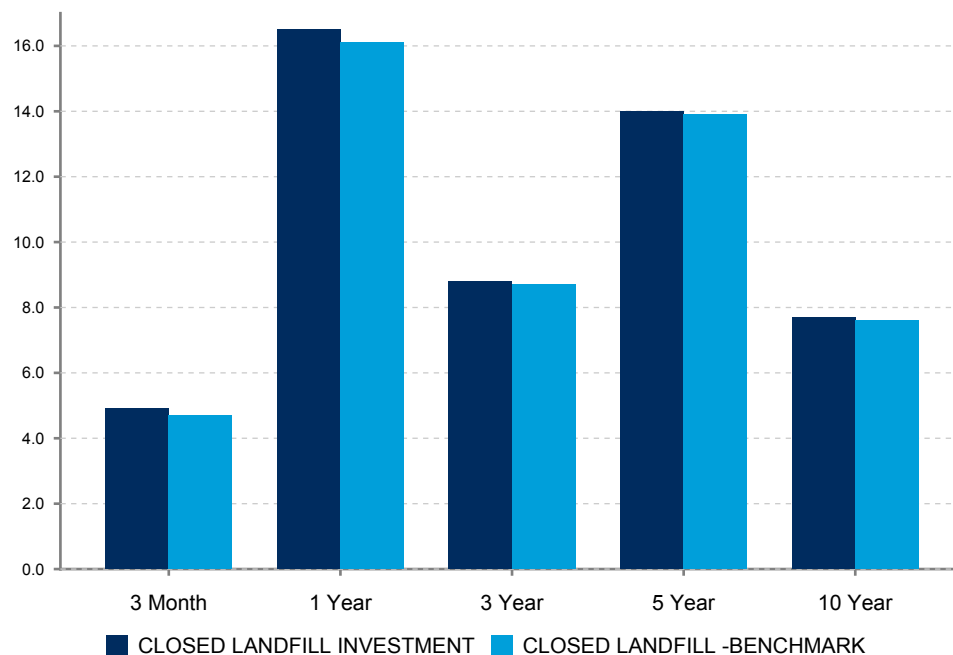


## Non-Retirement

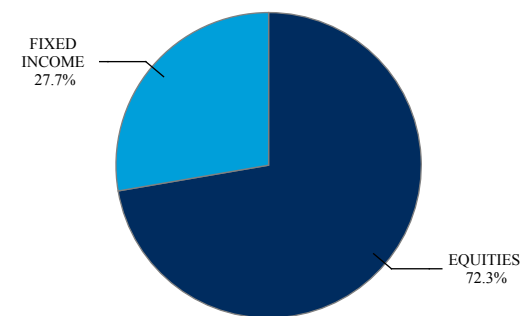
### Closed Landfill Investment Fund

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. 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 principal 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.

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. The fixed income benchmark is the Bloomberg Barclays U.S. Aggregate. The total fund benchmark is a combination of the fixed income and equity benchmarks, weighted according to the total fund asset allocation targets of 70% equities and 30% fixed income. The actual asset mix will fluctuate and is shown in the graph below.



	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
CLOSED LANDFILL INVESTMENT	\$88,000,417	4.9%	16.5%	8.8%	14.0%	7.7%
EQUITIES	63,652,377	6.6	21.9	11.4	15.8	8.5
FIXED INCOME	24,348,040	0.5	4.0	2.7		
CLOSED LANDFILL -BENCHMARK		4.7	16.1	8.7	13.9	7.6
Excess		0.1	0.4	0.1	0.1	0.1
S&P 500		6.6	21.8	11.4	15.8	8.5
BBG BARC US Agg		0.4	3.5	2.2	2.1	4.0



Note: Since 12/1/2017 the equity segment has been managed by Mellon and the fixed income segment by Prudential. Prior to 12/1/2017 both segments were managed internally by SBI staff. Prior to 9/10/14 the Fund's target allocation and benchmark was 100% domestic equity.



	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
<b>MELLON</b>	<b>2,307,528,478</b>								<b>12/2017</b>
S&P 500 INDEX (DAILY)									12/2017
Excess									
<b>SBI INTERNAL EQUITY INDEX</b>	<b>309,179</b>								
<b>NON RETIREMENT EQUITY INDEX</b>	<b>2,307,837,657</b>	<b>6.6</b>	<b>11.4</b>	<b>21.9</b>	<b>11.4</b>	<b>15.8</b>	<b>8.5</b>	<b>9.8</b>	<b>07/1993</b>
S&P 500 INDEX (DAILY)		6.6	11.4	21.8	11.4	15.8	8.5	9.7	07/1993
Excess		-0.0	-0.0	0.0	0.0	-0.0	0.0	0.1	
<b>PRUDENTIAL</b>	<b>1,108,657,418</b>								<b>12/2017</b>
BBG BARC Agg (Dly)									12/2017
Excess									
<b>NON RETIREMENT FIXED INCOME</b>	<b>1,108,657,418</b>	<b>0.5</b>	<b>1.2</b>	<b>4.0</b>	<b>2.7</b>	<b>2.8</b>	<b>4.6</b>	<b>6.1</b>	<b>07/1994</b>
BBG BARC Agg (Dly)		0.4	1.2	3.5	2.2	2.1	4.0	5.6	07/1994
Excess		0.1	0.0	0.4	0.5	0.7	0.6	0.5	
<b>RBC</b>	<b>249,442,933</b>	<b>-0.4</b>	<b>0.1</b>	<b>1.4</b>	<b>1.2</b>	<b>1.0</b>	<b>2.8</b>	<b>5.0</b>	<b>07/1991</b>
Voyageur Custom Index		-0.4	-0.1	1.1	1.1	0.9	2.8	5.1	07/1991
Excess		0.0	0.1	0.2	0.1	0.1	-0.0	-0.1	

Note:

RBC is the manager for the fixed income portion of the assigned risk account. RBC changed its name from Voyageur Asset Management on 1/1/2010. The current benchmark is the Bloomberg Barclays Intermediate Government Index. Prior to 7/1/11 the Voyageur Custom Index was 10% 90 day T-Bill, 25% Merrill 1-3 Government, 15% Merrill 3-5 Government, 25% Merrill 5-10 Government, 25% Merrill Mortgage Master.

Prior to 12/1/17 the Non Retirement Equity Index and Non Retirement Fixed Income accounts were managed internally by SBI staff.

In addition to the Non-Retirement Funds listed on the previous pages, the Non Retirement Equity Index and the Non Retirement Fixed Income accounts also include the assets of various smaller Miscellaneous Trust Accounts and Other Post Employment Benefits.

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Quarterly Report

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# State Cash

## December 31, 2017



## State Cash Accounts

### Invested Treasurer's Cash

The Invested Treasurer's Cash Pool (ITC) represents the balances in more than 400 separate accounts that flow through the Minnesota State Treasury. These accounts vary greatly in size. The ITC contains the cash balances of certain State agencies and non-dedicated cash in the State Treasury.

The investment objectives of the ITC, in order of priority, are as follows:

- 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.

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.

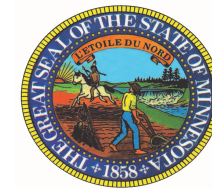
Beginning in January 2003, the Treasurer's Cash Pool is measured against the iMoneyNet, All Taxable Money Fund Report Average.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
Treasurer's Cash	10,549,598,662	0.3	1.1	0.8	0.7	1.1
iMoneyNet Money Fund Average-All Taxable		0.2	0.5	0.2	0.1	0.3

### Other State Cash Accounts

Due to differing investment objectives, strategies, and time horizons, some State agencies' accounts are invested separately. These agencies direct the investments or provide the SBI with investment guidelines and the SBI executes on their behalf. Consequently, returns are shown for informational purposes only and there are no benchmarks for these accounts.

	<u>Ending Market Value</u>	<u>Last Qtr</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>
Debt Service	75,378,407	0.4	3.7	2.3		
Housing Finance	48,008,645	0.0	1.0	1.3		
Public Facilities Authority	14,978,299	-0.1	3.0	2.1		



## Addendum

### Benchmark Definitions

#### **Active Domestic Equity Benchmark:**

A weighted composite each of the individual active domestic equity managers' benchmarks. Effective 3/1/2017 the calculation uses the average weight of the manager relative to the total group of active managers during the month. Prior to 3/1/2017 the beginning of the month weight relative to the total group was used.

#### **Benchmark DM:**

Since 6/1/08 the developed markets managers' benchmark, "Benchmark DM," 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). Prior to that date, it was the MSCI EAFE Free (net), including from 10/1/01 to 5/31/02 when it was the Provisional MSCI EAFE Free (net).

#### **Benchmark EM:**

Since 6/1/08 the emerging markets managers' benchmark, "Benchmark EM," 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 the MSCI Emerging Markets Free (net). Prior to that date, it was the MSCI Emerging Markets Free (gross), including from 10/1/01 to 5/31/02 when it was the Provisional MSCI Emerging Markets Free (net).

#### **Combined Funds Composite Index:**

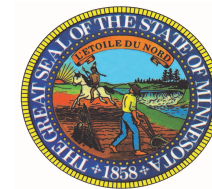
The Composite Index performance is calculated by multiplying the beginning of month Composite weights by the monthly returns of the asset class benchmarks. Effective 1/1/2017, the Combined Funds Composite weight is set as the Strategic Asset Allocation Policy Target with the uninvested portion of Private Markets allocated to Public Equity. Asset class weights for Public Equity and Private Markets are reset at the start of each month. From 7/1/2016-12/31/2016 the composite weights were set to match actual allocation as the portfolio was brought into line with the new Strategic Asset Allocation Policy Target. Prior to 7/1/2016 the uninvested portion of the Private Markets was invested in Fixed Income and the Composite Index was adjusted accordingly. When the Strategic Asset Allocation Policy Target changes, so does the Composite Index.

#### **Domestic Equity Benchmark:**

Russell 3000 effective 10/1/2003. From 7/1/1999 to 9/30/2003, it was the Wilshire 5000 Investable Index. From 11/1/1993 to 6/30/1999, the target was the Wilshire 5000 as reported with no adjustments. Prior to 11/1/1993, the Wilshire 5000 was adjusted to reflect SBI mandated restrictions, which included liquor and tobacco, American Home Products and South Africa.

#### **Fixed Income Benchmark:**

In 2016, the Barclays Agg was rebranded Bloomberg Barclays Agg to reflect an ownership change. Prior to 9/18/2008 this index was called the Lehman Brothers Aggregate Bond Index. From 7/1/84-6/30/94 the asset class benchmark was the Salomon Brothers Broad Investment Grade Index.



## Addendum

### Benchmark Definitions (continued)

#### **Fixed Interest Blended Benchmark:**

On 6/1/2002, the benchmark was set as the 3 Year Constant Maturity Treasury Yield + 45 bps. Prior to this change it was the 3 Year Constant Maturity Treasury Yield + 30 bps.

#### **International Equity Benchmark:**

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. Prior to 5/1/96 it was 100% the EAFE Free (net).

#### **Passive Domestic Equity Benchmark:**

A weighted average of the Russell 1000 and Russell 3000 effective 10/1/2016. From 10/1/2003 to 10/1/2016 it was equal to the Russell 3000. From 7/1/2000 to 9/30/2003, it was the Wilshire 5000 Investable Index. From 11/1/1993 to 6/30/2000, the target was the Wilshire 5000 as reported with no adjustments. Prior to 11/1/1993, the Wilshire 5000 was adjusted to reflect SBI mandated restrictions, which included liquor and tobacco, American Home Products and South Africa.

#### **Passive Manager Benchmark:**

Russell 3000 effective 10/1/2003. From 7/1/2000 to 9/30/2003, it was the Wilshire 5000 Investable Index. From 11/1/1993 to 6/30/2000, the target was the Wilshire 5000 as reported with no adjustments. Prior to 11/1/1993, the Wilshire 5000 was adjusted to reflect SBI mandated restrictions, which included liquor and tobacco, American Home Products and South Africa.

#### **Public Equity Benchmark:**

67% Russell 3000 and 33% MSCI ACWI ex USA effective 7/1/2017. Prior to 6/30/16 the returns of Domestic and International Equity were not reported as a total Public Equity return. From 6/30/16-6/30/17 the Public Equity benchmark adjusted by 2% each quarter from 75% Russell 3000 and 25% MSCI ACWI ex USA until it reached its current weighting.

#### **Semi-Passive Domestic Equity Benchmark:**

Russell 1000 index effective 1/1/2004. Prior to 1/1/2004 it was the Completeness Fund benchmark.

