
MINNESOTA STATE BOARD OF INVESTMENT

**MINNESOTA STATE BOARD
OF INVESTMENT
MEETING
June 14, 2018**



**Governor Mark Dayton
State Auditor Rebecca Otto
Secretary of State Steve Simon
Attorney General Lori Swanson**

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STATE BOARD OF INVESTMENT

AGENDA AND MINUTES

June 14, 2018

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AGENDA
STATE BOARD OF INVESTMENT MEETING
Thursday, June 14, 2018
10:00 A.M.
G23 Senate Committee Room
State Capitol
75 Rev. Dr. Martin Luther King Jr. Boulevard
St. Paul, MN

TAB

1. Approval of Minutes of March 1, 2018

2. Report from the Executive Director (Mansco Perry)

A. Quarterly Performance Summary **A**
(January 1, 2018 – March 31, 2018)

B. Administrative Report **B**
1. Reports on Budget and Travel
2. Legislative Update
3. Modification of SBI Investment Beliefs Statement
4. Reports on Board Requests to Staff
5. Sudan Update
6. Iran Update
7. Litigation Update

C. Investment Program Update **C**

3. Report from the SBI Administrative Committee (Mansco Perry) **D**

A. Review of Executive Director's Proposed Work Plan FY19
B. Review of Budget Plan for FY19 and FY20
C. Review of Continuing Fiduciary Education Plan
D. Review of Executive Director's Evaluation
E. Update on Business Continuity Plan

INVESTMENT ADVISORY COUNCIL REPORT

4. Proposed Private Markets Commitments (Gary Martin) **E**

5. Public Markets, Non-Retirement, and Participant Directed Investment Programs **F**

REPORTS

6. AON Market Environment **G**

7. PCA Investment Market Risk Metrics **H**

8. Comprehensive Performance Report **I**

9. Other Items

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**Minutes
State Board of Investment
March 1, 2018**

The State Board of Investment (SBI) met at 10:20 A.M. Thursday, March 1, 2018 in G23 Senate Committee Room of the State Capitol, St. Paul, Minnesota. Governor Mark Dayton, State Auditor Rebecca Otto, Secretary of State Steve Simon, and Attorney General Lori Swanson were present. The minutes of the December 5, 2017 meeting were approved.

Executive Director's Report

Executive Director Mansco 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 December 31, 2017 (Combined Funds 6.9% vs. Combined Funds-Composite Index 6.7%) and had provided a real rate of return of 5.1% above inflation over the latest 20 year period (Combined Funds 7.3% vs. CPI 2.2%).

Mr. Perry stated that assets increased over the quarter (Combined Funds ending value of \$68.4 versus a beginning value of \$66.1 billion). The Combined Funds underperformed the benchmark for the quarter (Combined Funds 4.4% vs. Combined Funds-Composite Index 4.5%) but outperformed the benchmark for the year (Combined Funds 18.3% vs. Combined Funds-Composite Index 17.8%). 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 private markets, is almost on target. He then reported that public equity underperformed the benchmark during the quarter (Public Equity 5.7% vs. Public Equity Benchmark 5.9%) but outperformed for the year (Public Equity 23.4% vs. Public Equity Benchmark 23.0%). Breaking public equity down between domestic and international equities, Mr. Perry said that the domestic equity manager group underperformed its benchmark for the quarter (Domestic Equity 6.2% vs. Domestic Equity Benchmark 6.3%) and outperformed for the year (Domestic Equity 21.4% vs. Domestic Equity Benchmark 21.1%), and underperformed over all other time periods. He stated that the international equity manager group underperformed its target for the quarter (International Equity 4.7% vs. International Equity Benchmark 5.0%) but outperformed for the year (International Equity 27.7% vs. International Equity Benchmark 27.2%) as well as over all remaining time periods shown. Mr. Perry indicated that the fixed income segment outperformed its benchmark for the quarter (Fixed Income 0.5% vs. Fixed Income Benchmark 0.4%) and the year (Fixed Income 4.2% vs. Fixed Income Benchmark 3.5%) and over all other time periods reported. He stated that the private market investments contributed to performance for the quarter and the year (Total Private Markets return of 4.3% and 18.5%, respectively) and also over longer time periods. He concluded his report noting that the fund is a top performer over the ten-year period in the Trust Universe Comparison Service and that, as of December 31, 2018, the SBI was responsible for managing over \$93.4 billion of assets.

Mr. Perry referred members to Tab B of the meeting materials for the Administrative Report and indicated that the report included the current administrative budget and staff travel for the last quarter of 2017. He stated that the SBI received a clean opinion from the Legislative Auditor for

FY 2017 and that the SBI's Annual Report was distributed to the Board members in early January 2018.

Mr. Perry then asked to modify the recently approved Investment Beliefs, to expand their application to all of the SBI's investment activities instead of only the Combined Funds. State Auditor Rebecca Otto moved approval of the recommendation in Tab B which reads: **"The Executive Director recommends that the SBI direct the Executive Director, in consultation with the SBI's Special Project Consultant, Pension Consulting Alliance, to modify the Investment Beliefs Statement to reflect the additional investment programs under the responsibility of the SBI, where appropriate."** The motion passed unanimously.

Mr. Perry summarized the fifth item in the Administrative Report, requesting that the Board authorize him to pursue legislation which would authorize mutual funds as an investment option for the Hennepin County Supplemental Plan. This would ensure that all Participant Directed Investment Plans (PDIP) under the SBI's control have the same authorized investments and would be unaffected by changes to the Combined Funds' asset allocation. State Auditor Rebecca Otto moved approval of the recommendation in Tab B which reads: **"The State Board of Investment authorizes the Executive Director to pursue appropriate legislation to make mutual funds an authorized investment for the Hennepin County Supplemental Plan."** The motion passed unanimously.

Mr. Perry added that Tab B included the quarterly updates on the legislative restrictions for Iran and Sudan.

Mr. Perry referred members to Tab C and indicated that at the end of calendar year 2017 the assets from the internal stock pool and the internal bond pool were transferred to external investment managers. Mr. Perry stated that nine of the ten contracts for private markets commitments approved last quarter were complete and that he expected the last contract to be completed by March 2018. He informed members that with respect to the Protection Category in the Strategic Allocation Category Framework, BlackRock Financial Management, Inc., Goldman Sachs Asset Management, and Neuberger Berman Investment Advisers LLC were funded in January 2018 with a combined amount of \$3 billion for the U.S. Treasury portfolio. Mr. Perry stated that he will add an additional \$3 billion to these portfolios, over the remainder of the fiscal year, and reminded Board members that the purpose of the Protection Category is to mitigate some of the risk of the fund's equity investments.

In Tab D, Mr. Perry stated that Pension Consulting Alliance, the fund's special project consultant who helped draft the SBI's Investment Beliefs, has recommended some new language to the SBI's Proxy Voting Guidelines to address environmental, social and governance (ESG) considerations. He stated that the Proxy Committee reviewed and modified the language and is recommending that the Board approve the revised Proxy Voting Guidelines to include the new ESG language. State Auditor Rebecca Otto moved approval of the recommendation in Tab D which reads: **"The Proxy Committee recommends that the Board approve the revised Proxy Voting Guidelines to include new Environmental, Social and Governance (ESG) language that aligns the proxy voting practices with the SBI's ESG Investment Belief."** The motion passed unanimously.

Mr. Martin, Chairperson of the Investment Advisory Council referred members to Tab E and reviewed the eight private markets proposals, the first five of which are existing managers and

three of which are new managers: Banc Fund X (Private Equity), CVI Credit Value Fund IV (Distress/Opp.), Court Square Capital Partners IV (Private Equity), Hellman & Friedman IX (Private Equity), Lexington Capital Partners IX (Private Equity), Bridgepoint Europe VI (Private Equity), KKR Global Infrastructure III (Real Assets), and TSSP Adjacent Opps; Contingent Commitment to TAO; and TPG Opp Partners IV (Private Credit). Board member questions were answered. State Auditor Rebecca Otto moved approval of all eight of the recommendations in Tab E which read: **"The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.**

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of 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.” The motion passed unanimously.

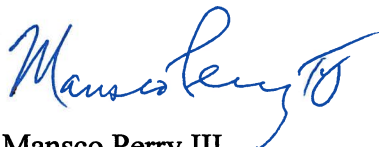
Mr. Perry referred members to Tab F of the meeting materials, a recommendation to hire one or more private markets consultant(s). He stated that the SBI is unique with respect to pension funds of similar size in not having a dedicated private markets consultant(s). He acknowledged that SBI staff has been very adept at sourcing, accessing and performing investment due diligence for the program since inception. However, Mr. Perry acknowledged that it would be desirable to have additional assistance with operational due diligence, benchmarking, post-investment monitoring, performance analytics, background checks, technology due diligence, cash flow and liquidity analysis, and non-U.S. investment monitoring. He also stated that the SBI would rely on the consultant to assist in strategic planning, research, and portfolio construction activities. In response to questions, Mr. Perry indicated that these services could cost up to two million dollars per year and that they would be paid for out of the pension assets. Mr. Perry responded to Board member questions. State Auditor Rebecca Otto moved approval of the recommendation in Tab F which reads: **“The Investment Advisory Council and Executive Director recommend that the Board authorize the Executive Director to issue an RFP for one or more private markets consultant(s).”** The motion passed unanimously.

Mr. Perry indicated that the report regarding Public Markets, Non-Retirement, and Participant Directed Investment Programs was included in Tab G. He stated that Tab H contained a Market Environment summary prepared by AON. Mr. Perry then referred members to Tab I, which contained an Investment Market Risk Metrics report prepared by PCA. Lastly, Mr. Perry referred members to Tab J containing the SBI’s Comprehensive Performance Report.

State Auditor Rebecca Otto requested that Mr. Perry explore the use of a coal-free policy benchmark and asked for a report on how other institutional investors are handling this issue. Auditor Otto also asked for a report on the SBI’s holdings in firearms and asked for a report on what other institutional peers are doing with respect to investments in firearms manufacturers. Mr. Perry indicated that he would look at these issues and report back to the Board at the next meeting.

The meeting adjourned at 10:50 a.m.

Respectfully submitted,



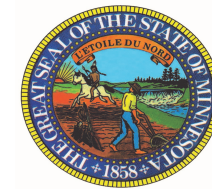
Mansco Perry III
Executive Director and
Chief Investment Officer

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TAB

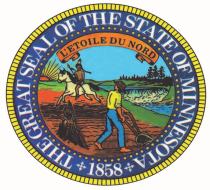
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Performance Summary

March 31, 2018

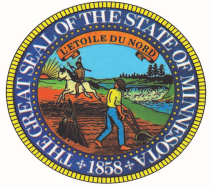


Combined Funds Long Term Objectives

		<u>Comparison to Objective</u>
		<u>10 Year</u>
Match or Exceed Composite Index (10 yr.)	COMBINED FUNDS	7.6%
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.	COMBINED FUNDS - COMPOSITE INDEX	7.2
	Excess	0.4
		<u>20 Year</u>
Provide Real Return (20 yr.)	COMBINED FUNDS	6.8%
Provide returns that are 3-5 percentage points greater than inflation over the latest 20 year period.	CPI-U	2.2
	Excess	4.6

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	\$68,377
Net Contributions	-613
Investment Return	55
Ending Market Value	67,819

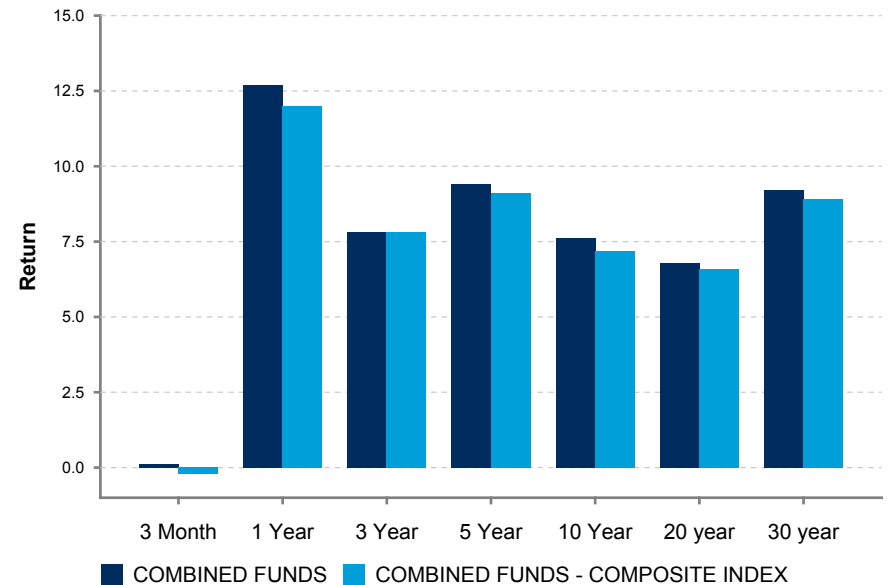
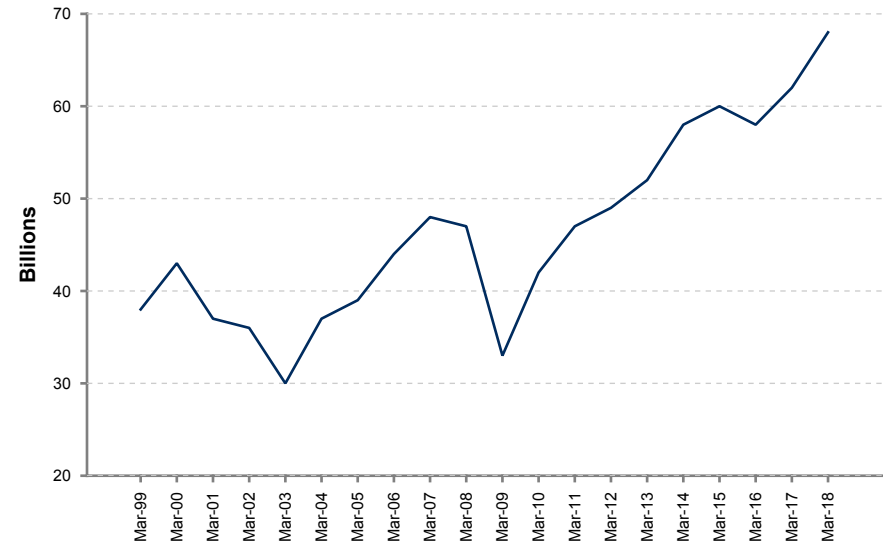
The change in market value of the Combined Funds since the end of last quarter is due to net contributions and investment returns.

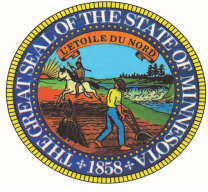
Performance (Net of Fees)

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	0.1%	8.7%	12.7%	7.8%	9.4%	7.6%	6.8%	9.2%
COMBINED FUNDS - COMPOSITE INDEX	-0.2	8.2	12.0	7.8	9.1	7.2	6.6	8.9
Excess	0.3	0.4	0.8	0.0	0.3	0.4	0.1	0.3

Asset Growth



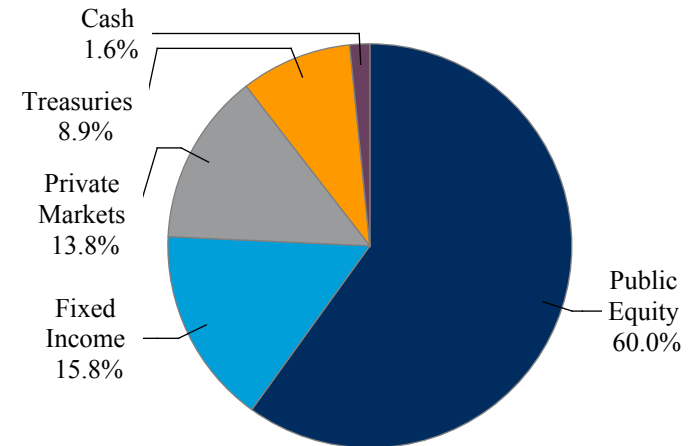


Combined Funds Summary

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.

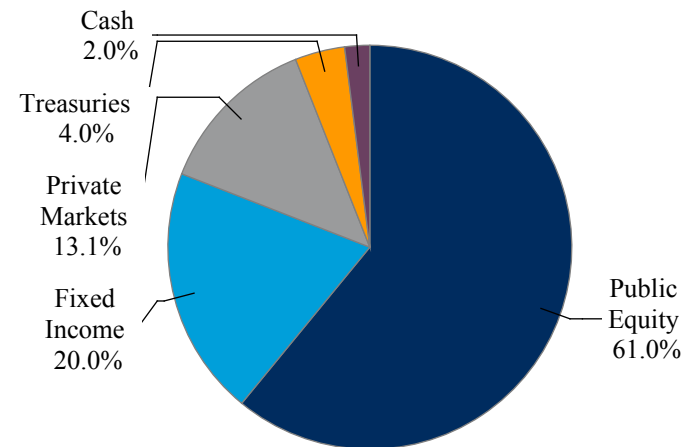
	<u>(Millions)</u>	<u>Actual Mix</u>	<u>Policy Target</u>
Public Equity	\$40,675	60.0%	47.0%
Fixed Income	10,713	15.8	18.0
Private Markets	9,326	13.8	25.0
Treasuries	6,047	8.9	8.0
Cash	1,058	1.6	2.0
TOTAL	67,819	100.0	

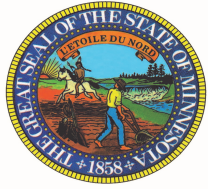


Composite Index Comparison

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>Policy Weight</u>	<u>Market Index</u>
Public Equity	61.0%	67% Russell 3000/33% MSCI ACWI ex US
Fixed Income	20.0	BB Barclays U.S. Aggregate
Private Markets	13.1	Private Markets
Treasuries	4.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills





Combined Funds Asset Class Performance Summary

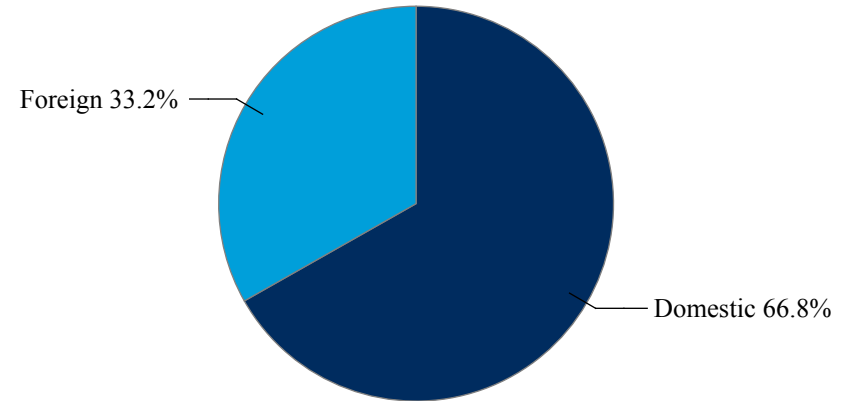
Public Equity

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.

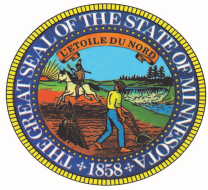
The Morgan Stanley Capital International All Country World Index ex U.S. (net) is a free float-adjusted market capitalization index that is designed to measure equity market performance in developed and emerging markets other than the United States.



	<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>	<u>30 year</u>
Public Equity	-0.6%	10.6%	15.2%	9.1%	11.5%	8.1%	6.1%	9.7%
Public Equity Benchmark	-0.8	10.4	14.7					
Excess	0.2	0.2	0.6					
Domestic Equity	-0.3	10.8	14.3	9.8	13.1	9.6	6.4	10.0
Domestic Equity Benchmark	-0.6	10.5	13.8	10.2	13.0	9.6	6.5	10.2
Excess	0.4	0.3	0.5	-0.4	0.0	0.0	-0.2	-0.2
International Equity	-1.2	10.1	17.4	6.6	6.4	3.2	5.3	
International Equity Benchmark	-1.2	10.2	16.5	6.2	5.9	2.7	4.9	
Excess	0.0	-0.0	0.8	0.4	0.5	0.5	0.4	

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>	<u>30 year</u>
Fixed Income	-1.4%	0.1%	1.7%	1.7%	2.3%	4.4%	5.2%	6.5%
Fixed Income Benchmark	-1.5	-0.2	1.2	1.2	1.8	3.6	4.8	6.2
Excess	0.1	0.3	0.5	0.5	0.5	0.7	0.3	0.3

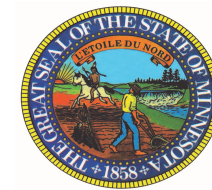
Cash

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.

	<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>30 year</u>
Cash	0.4%	0.9%	1.2%	0.7%	0.5%	0.8%	2.5%	4.0%
90 DAY T-BILL	0.4	0.9	1.1	0.5	0.3	0.3	2.0	3.3

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	4.6%	12.2%	17.7%	11.7%	12.5%	8.9%	12.5%	13.5%	12.2%
Private Equity	5.5%	16.8%	23.1%	16.2%	16.0%	11.3%	13.7%	15.6%	
Private Credit	1.8	7.4	13.0	12.0	14.5	10.8	12.6		
Resources	4.1	3.6	7.6	-1.2	1.8	5.2	13.4	14.8	
Real Estate	3.3	9.1	12.9	11.7	13.1	4.6	8.7	9.0	

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.

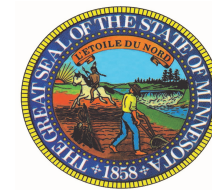
Resource Investments

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.



Combined Funds Summary

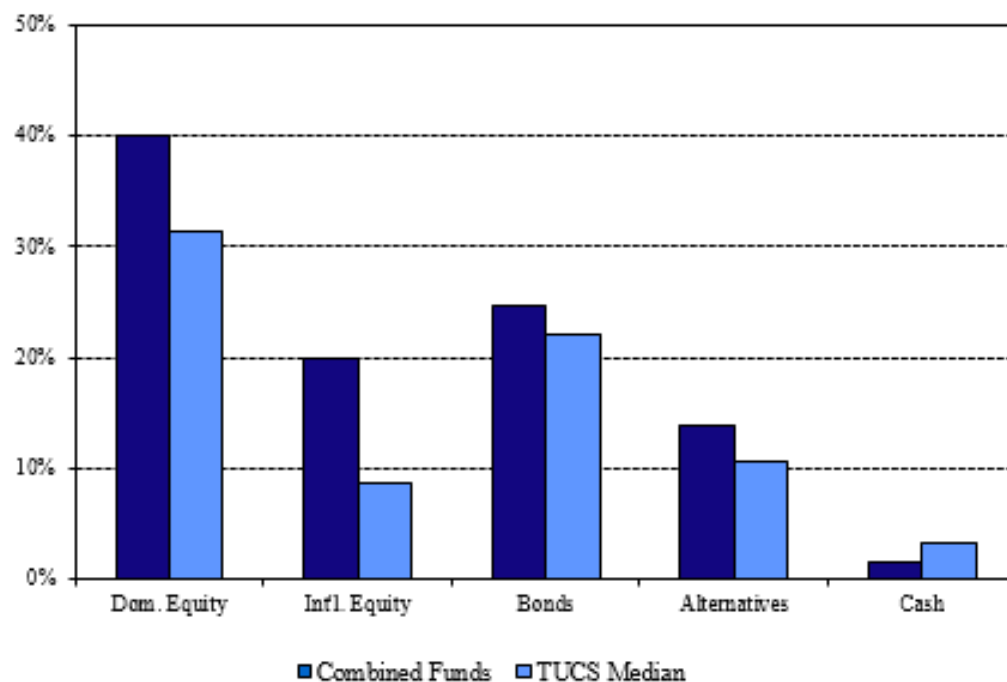
Asset Mix Compared to Other Pension Funds

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	40,675	60.0
Fixed Income	10,713	15.8
Treasuries	6,047	8.9
Private Markets	9,326	13.8
Cash	1,058	1.6
TOTAL	67,819	100.0



	<u>Domestic Equity</u>	<u>International Equity</u>	<u>Bonds</u>	<u>Alternatives</u>	<u>Cash</u>
Combined Funds	40.1%	19.9%	24.7%	13.8%	1.6%
Median in TUCS	31.4%	8.7%	22.0%	10.6%	3.2%



Combined Funds Summary

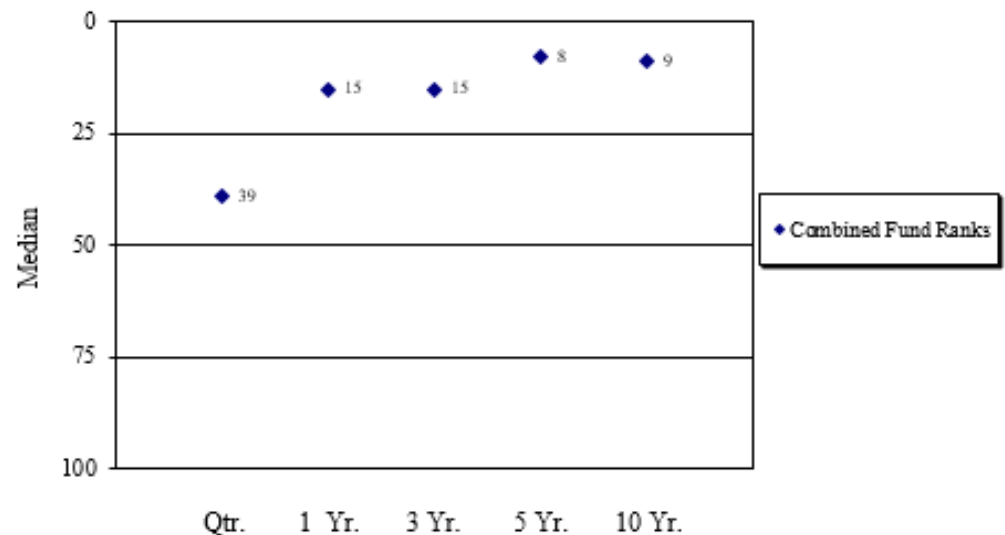
Performance Compared to Other Pension Funds

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:

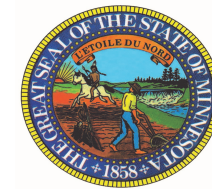
- Differing Allocations. Asset allocation will have a dominant effect on return. The allocation to stocks among the funds in TUCS typically ranges from 20-90%, a very wide range for meaningful comparison. In addition, it appears that many funds do not include alternative asset holdings in their reports 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 03/31/2018				
	<u>Quarter</u>	<u>1 Year</u>	<u>3 Years</u>	<u>5 Years</u>	<u>10 Years</u>
Combined Funds	39th	15th	15th	8th	9th
Percentile Rank in TUCS					



Description of SBI Investment Programs

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

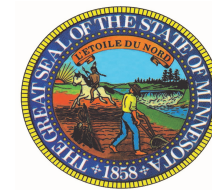
The Participant Directed Investment Program (PDIP) provides investment vehicles for a variety of retirement or other tax-advantaged savings plans. Investment goals among the PDIP's many participants are varied. In order to meet the variety of goals, participants may allocate their investments among one 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.

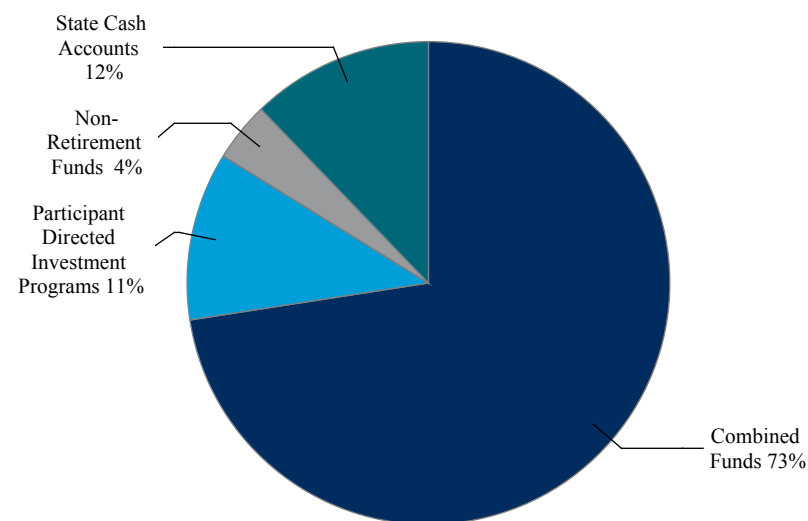
State Cash

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>
COMBINED FUNDS	
Combined Funds	\$67,819
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	3,684
State Deferred Compensation Plan**	5,472
Minnesota College Savings Plan	1,389
Achieve a Better Life Experience	2
NON-RETIREMENT FUNDS	
Assigned Risk Account	317
Permanent School Fund	1,371
Environmental Trust Fund	1,093
Closed Landfill Investment Fund	87
Miscellaneous Trust	227
Other Post Employment Benefits	622
STATE CASH ACCOUNTS	
Treasurer's Cash	11,236
Other State Cash Accounts	164
TOTAL	
SBI AUM	93,480



* 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

DATE: June 7, 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 March 31, 2018 is included as **Attachment A**.

A report on travel for the period from January 1, 2018 – March 31, 2018 is included as **Attachment B**.

2. Legislative Update

I will present an update on legislative matters. A summary is included in **Attachment C**.

3. Modification of SBI Investment Beliefs Statement

When the Board approved the SBI Investment Beliefs at the September 2017 SBI meeting, the focus of the Beliefs was the Combined Funds. At the March 2018 SBI meeting, the Executive Director recommended that the Beliefs Statement be modified to reflect the additional investment programs under the responsibility of the SBI, where appropriate.

After a review and in consultation with Pension Consulting Alliance, the Executive Director is recommending that a modest change be made and added at the end of the first paragraph of the SBI Beliefs Statement. The addition simply states:

“When relevant, the SBI also uses these Beliefs as a guide when investing the assets of the other investment programs that it manages, as deemed appropriate.”

RECOMMENDATION:

The Executive Director recommends that the Board adopt the SBI Investment Beliefs modified to include the following sentence which will be added at the end of the first paragraph of the SBI Investment Beliefs Statement:

“When relevant, the SBI also uses these Beliefs as a guide when investing the assets of the other investment programs that it manages, as deemed appropriate.”

A copy of the proposed modified SBI Investment Beliefs Statement is included as **Attachment D**.

4. Reports on Board Requests to Staff

At the March 2018 SBI meeting, Staff was asked to report back to the Board regarding **Coal Free Policy Benchmarks** and their use by our institutional peers. A copy of the report is included as **Attachment E**.

The Board also requested that Staff report on the SBI’s investment in firearm manufacturers. Staff was also asked to review how other institutional peers are handling the issues pertaining to investments in firearm manufacturers. A copy of the report is included as **Attachment F**.

5. 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 first quarter, SBI managers sold 473,559 shares in four companies on the divestment list.

Attachment G is a copy of the March 27, 2018 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.

6. 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 first quarter, SBI managers sold 126,433 shares in three companies on the divestment list.

Attachment H is a copy of the March 27, 2018 letter sent to each international equity manager, domestic equity manager and fixed income manager containing the most recent restricted list and the list of companies to be divested.

7. 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 MARCH 31, 2018**

ITEM	FISCAL YEAR 2018 BUDGET	FISCAL YEAR 2018 3/31/2018
PERSONNEL SERVICES		
FULL TIME EMPLOYEES	\$ 4,827,900	\$ 2,966,825
PART TIME EMPLOYEES	0	0
MISCELLANEOUS PAYROLL	100,000	1,857
SUBTOTAL	\$ 4,927,900	\$ 2,968,682
STATE OPERATIONS		
RENTS & LEASES	285,000	233,471
REPAIRS/ALTERATIONS/MAINTENANCE	14,000	4,616
PRINTING & BINDING	9,000	8,369
PROFESSIONAL/TECHNICAL SERVICES	175,000	3,666
COMPUTER SYSTEMS SERVICES	83,000	10,782
COMMUNICATIONS	36,000	17,680
TRAVEL, IN-STATE	1,000	160
TRAVEL, OUT-STATE	125,000	56,449
SUPPLIES	28,000	19,211
EQUIPMENT	25,000	1,356
EMPLOYEE DEVELOPMENT	105,000	87,749
OTHER OPERATING COSTS	140,000	94,074
INDIRECT COSTS	250,000	152,664
SUBTOTAL	\$ 1,276,000	\$ 690,247
TOTAL ADMINISTRATIVE BUDGET	\$ 6,203,900	\$ 3,658,929

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ATTACHMENT B

STATE BOARD OF INVESTMENT

Travel Summary by Date SBI Travel January 1, 2018 - March 31, 2018

Purpose	Name(s)	Destination and Date	Total Cost
Conference: Emerging Markets Forum sponsored by Elkind Economics, Inc.	M. Perry	Dallas, TX 1/10-1/11	\$ 1,018.97
Manager Search Private Markets Managers: Platinum Equity; Freeman Spogli & Company Conference: IREI Visions, Insights & Perspectives Americas Conference sponsored by Institutional Real Estate, Inc.	J. Stacy	Los Angeles, CA 1/23-1/26	2,169.50
Manager Monitoring Private Markets Managers: KKR; Silver Lake Manager Search Private Markets Managers: TSSP	A. Krech	San Francisco, CA 2/7-2/9	1,361.43
Manager Monitoring Private Markets Manager: Wellspring Capital Conference: 2018 General Partners - Limited Partners Roundtable sponsored by Institutional Limited Partners Association (ILPA)	A. Krech	New York, NY 2/20-2/22	672.09

STATE BOARD OF INVESTMENT

Travel Summary by Date SBI Travel January 1, 2018 - March 31, 2018

Purpose	Name(s)	Destination and Date	Total Cost
Manager Monitoring Private Markets Managers: Oak Hill Capital Partners; Thoma Bravo Annual Meeting; TPG	J. Stacy	San Francisco, CA 3/5-3/7	\$ 1,723.52
Conference: Council of Institutional Investors (CII)	J. Mulé	Washington, DC 3/12-3/14	1,414.78
Manager Monitoring Private Markets Manager: Canyon Capital Advisors LLC Conference: Oaktree Conference 2018	C. Boll	Los Angeles, CA 3/13-3/15	1,772.58
Conference: Government Investment Officers Association (GIOA)	S. Kuettel	Las Vegas, NV 3/20-3/23	1,304.99
Manager Monitoring Private Markets Manager: Rockwood Capital	J. Stacy	New York, NY 3/27-3/29	1,473.29

BILLS OF INTEREST TO THE MINNESOTA STATE BOARD OF INVESTMENT

Bill No.	Author	Name of Bill	Current Status	Notes
SF2620	Rosen Pappas Jasinski	Omnibus Retirement Bill	05/31: SF2620: Governor Dayton signed the bill into law after the House and Senate unanimously approved passage of the bill.	The bill reduces the assumed rate of return for all MSRS, PERA, and TRA administered plans to 7.5% and enact various financial sustainability measures including contribution increases, COLA reductions, and direct state aid payments. The bill also contains administrative provisions, including the SBI's proposed amendment authorizing mutual funds as investment options for the Hennepin County Supplemental Retirement Plan.
HF3053	O'Driscoll			
HF3660	Fenton, et al.	Terms of settlement between the state and 3M company implemented...	05/29: HF3660: Governor Dayton signed the bill into law after the House and Senate approved passage of the bill	The bill creates a special account within the environmental remediation fund to hold settlement funds from the State's settlement with 3M. The funds may be invested through the SBI.
SF3202	Housley			

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SBI Investment Beliefs

In September 2017, the State Board of Investment adopted a set of Investment Beliefs for managing the assets of the Combined Funds (those funds utilized to support the defined benefit plans of the State's employees). The primary purpose of these Beliefs is to guide the SBI toward sound investing principles related to investing on behalf of the Combined Funds. In this respect, the Beliefs help provide context for SBI's actions, reflect SBI's investment values, and acknowledge SBI's role in supporting the State's broader retirement systems. When relevant, the SBI also uses these Beliefs as a guide when investing the assets of the other investment programs that it manages, as deemed appropriate.

The SBI is a long-term investor whose primary mission is to maintain the viability of the retirement systems it supports.

When determining an appropriate level of risk that the systems' assets should bear the SBI must reflect the nature of those systems' liabilities and funding policy.

The SBI's strategic allocation policy is the primary determinant of (i) the asset portfolio's long-term investment return and (ii) asset portfolio's risk.

While the SBI can sacrifice some short-term liquidity to pursue a greater long-term return, the investment portfolio's net cash flows and ability to pay benefits on a year-by-year basis are key risk considerations.

Diversification improves the risk-adjusted return profile of the SBI investment portfolio.

Diversification of the SBI investment portfolio takes place across several critical dimensions, such as allocation across global regions and country markets (e.g., U.S. versus Europe, Asia, emerging markets, etc.), allocation among different types of assets (equities, bonds, real estate, etc.), spreading assets across various sectors and industries (e.g., technology, financials, consumer-oriented, etc.), and weighting of different risk factor premiums (e.g., value vs. growth, small companies vs. big companies, carry, illiquidity, etc.). If the correlation (i.e., relationship) among the returns generated by these factors is less than perfect (i.e., less than 1.0), then diversification is beneficial.

There are long-term benefits to SBI managing investment costs.

The equity risk premium is significantly positive over a long-term investment horizon although it can vary over time.

The equity risk premium is also pervasive across several asset classes and its overall exposure should be managed accordingly.

Private market investments have an illiquidity premium that the SBI can capture.

This risk premium can increase the portfolio's long-term compound return and help diversify the portfolio's risk.

It is extremely challenging for a large institutional investor to add significant value over market-representative benchmarks, particularly in the highly-competitive public global equity markets.

Passive management should be utilized when there is low confidence that active management can add value. Active management can have potential to add value where information processing is difficult and challenging, allowing for market inefficiencies that are potentially exploitable.

The SBI benefits significantly when roles and levels of authority are clearly defined and followed.

The role of the members of the State Board of Investment (Board) is to establish investment policies that are in compliance with state statute and guide the ongoing management of the funds. The Board delegates implementation of that policy to the Executive Director/CIO, and exercises oversight with respect to the Executive Director/CIO's implementation activities and the portfolio's active risk level in the context of the portfolio's strategic allocation policy. The Board also ensures adequate resources are available to the SBI staff to perform their work;

The Investment Advisory Council (IAC) key role is advising the Board and Executive Director/CIO on general policy matters and methods to enhance the management of the investment portfolio;

The Executive Director's/CIO's key role is implementing SBI investment policies and setting the portfolio's active risk level in a prudent manner to achieve value-added over policy benchmarks.

Utilizing engagement initiatives to address environmental, social, and governance-related (ESG) issues can lead to positive portfolio and governance outcomes.

In addition to specific engagement strategies the SBI might apply, proxy rights attached to shareholder interests in public companies are also "plan assets" of the SBI and represent a key mechanism for expressing SBI's positions relating to specific ESG issues. By taking a leadership role in promoting responsible corporate governance through the proxy voting process, SBI can contribute significantly to implementing ESG best practices which should, in turn, add long-term value to SBI's investments.

Approved by State Board of Investment: September 12, 2017

~~Date: September 12, 2017~~

Modified by State Board of Investment: June 14, 2018

EXECUTIVE DIRECTOR'S REPORT

DATE: June 7, 2018

TO: Members, State Board of Investment

FROM: Mansco Perry III

SUBJECT: Response to Board's Request Regarding Coal Free Policy Benchmarks

At the March 2018 SBI Board meeting, Staff was asked to report back to the Board about the use of “coal free policy benchmarks” by our institutional peers. Implicit in the use of a coal free policy benchmark is the potential divestment of coal from one's portfolio. A coal free policy benchmark, or coal free index, is simply a benchmark or index whereby coal stocks have been eliminated. For example, our equity indices, the Russell 3000 (for domestic equities) and the MSCI ACWI ex USA Index (for the combined Developed International and Emerging Markets equities) would be screened to exclude the constituent coal companies in each index to become coal free. Currently, we have negotiated very economic friendly fees for the management of our passive equity index funds versus the standard indices. There may be a slight increase in fees to manage to an index which has been altered from the standard index.

Generally, institutional investors address the topic of coal free policy benchmarks in concert with a discussion of the potential divestment of coal from an investment portfolio. When an investor is considering divestment, those concerned about proper portfolio evaluation point out that it is unfair to include prohibited, or divested, securities in the benchmark since the investor is not allowed to invest in those securities. Some might make the argument that the use of a coal free policy benchmark eliminates coal company stocks from the investable universe, accomplishing a similar result.

Staff reached out to PCA, who has done significant work in this area, to help us better address the question. PCA indicated that coal holdings typically represent an insignificant portion of an institution's overall investment holdings. Even though coal may be an insignificant portion of its holdings, PCA indicated that the majority of their public plan clients are not looking to implement a coal divestment strategy at this time. Instead, they have opted for an engagement strategy which is consistent with PCA's preferred position which allows the public pension plan to continue to have a voice in the governance of these companies.

PCA noted that both CalPERS and CalSTERS have divested of thermal coal producers per 2015 statutory requirements and simultaneously adopted benchmarks that excluded thermal coal producers. In addition, NYCERS and NYCTRS have also recently announced that they are divesting of all fossil fuel producers. Finally, PCA noted that the District of

Columbia Retirement Board (DCRB) and the City of Providence, Rhode Island, have both announced plans to divest of fossil fuels, either in whole or in part.

PCA indicated that while there has been significant coal divestment activity outside of the U.S., the majority of the coal divestment activity in the U.S. has been in the endowment/foundation space.

EXECUTIVE DIRECTOR'S REPORT

DATE: June 7, 2018

TO: Members, State Board of Investment

FROM: Mansco Perry III

SUBJECT: Response to Board's Request Regarding Firearm Manufacturers

At the March 2018 SBI meeting, Staff was asked to report on the SBI's investment in firearm manufacturers. Staff was also asked to review how other institutional peers are handling the issues pertaining to investments in firearm manufacturers. Shortly after the March SBI meeting, Staff provided the Board with information regarding its investments in civilian firearm manufacturers and are including that information again as part of this memo. Also, Staff reached out to AON to better address the question regarding how large public pension plan clients are responding to the civilian firearms issue. A summary of those findings is also included below.

SBI – Civilian Firearms manufacturing related holdings

In order to identify civilian firearms manufacturers globally, the SBI Staff sought the services of Institutional Shareholder Services (ISS). ISS provides a screening tool to help identify global Civilian Firearms manufacturing companies. These companies have been identified as being involved in the manufacture of civilian firearms or ammunition. Please note that the sales of firearms or related may represent a very small percentage of a company's business. The ISS Civilian Firearms screen specifically identifies domestic and international, public manufacturing companies that are involved the following areas: Automatic Firearms, Semi-Automatic Firearms, Repeating Firearms, Single-Shot Firearms, Ammunition, and High-Capacity Magazines.

Based on this screening tool, the SBI does hold a very small percentage of assets in six of these companies identified in the Civilian Firearms manufacturer's screen. The companies identified are as follows:

American Outdoor Brands
Daicel Corporation
Olin Corporation
Orbital ATK Inc.
Sturm Ruger
Vista Outdoor Inc.

As of December 31, 2017, the SBI managers held approximately **\$76 billion** in Combined Funds (pension) and other Non-Retirement assets, and held approximately **\$19.2 million** of these civilian firearms manufacturing securities in the portfolios, or about **0.0253%**.

It is important to note that the majority of these assets were held by passively managed index funds, that do not select specific securities to buy, but rather purchase every security in an index (for example, the Russell 3000 Index or the S&P 500 Index), in order to match the returns of a specific index fund.

Institutional Public Pension Plans and Civilian Firearms

In response to the Board's request for information about how large, public pension plan clients were responding to the civilian firearms issue, the SBI staff reached out to AON, and its large public pension plan client base, to help it better address the question.

AON indicated that most of their public plans are not looking to implement a divestment strategy at this time. Instead, most plans are working to appropriately quantify their exposure to civilian firearms and considering various options available to them. For the most part, civilian firearm holdings typically represent a very small portion of an institution's investments.

Plans that have decided not to divest cite the following reasons for their decision: 1) divestment would not allow the plan to have a voice on governance of these companies; 2) divestment may present fiduciary concerns since the cost in lost returns may negatively impact the plan and thereby the beneficiaries; and, 3) screening, of any type, leads to higher overall administrative costs for the plan.

Legislation for civilian firearm divestment has been brought forward in a few states including Massachusetts, New Jersey and Florida but, to date, no divestment legislation has passed in any of these states. The CalPERS Board will consider whether or not to additionally divest of wholesale and retail sellers of military style assault rifles and bump stocks later in 2018. (Note that in 2013, after Sandy Hook, CalPERS divested of manufacturers of assault weapons and high-capacity ammunition which are illegal in the state of California.)

At the time of this writing, Michigan was AON's only state plan that had decided to divest of one company, Olin Corporation, which has been classified as a civilian firearm manufacturer.

ATTACHMENT G

Letter to SBI Domestic and International Equity Managers

March 27, 2018

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 December 27, 2017 letter you received. **This new list is effective March 31, 2018.**

Changes to Attachment 1:

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

- | | |
|---|-----------------------|
| • Energold Drilling Corp | Canada |
| • Aviation Industry Corp of China (primary) | China |
| ○ AVIC International Holdings LTD | China |
| ○ AVIC International Maritime | China |
| ○ AVIC China Industry & Technology Co LTD | China |
| ○ China Avionics Systems Co LTD | China |
| ○ FACC AG | Austria |
| ○ KHD Humboldt Wedag International AG | Germany |
| ○ Nexteer Automotive Group LTD | Cayman Islands |
| ○ Sichuan Chengfei Integration Technology Corp | China |

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.

The following companies have been added to the Divestment List:

- | | |
|---|----------------|
| • Wartsila OYJ ABP | Finland |
| • Engie Brasil Energia SA | Brazil |
| • Siemens Gamesa Renewable Energy SA | Spain |

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
FACC AG	Austria
Orca Gold Inc.	Canada
ENERGOLD Drilling Corp	Canada
NEXTEER Automotive Group LTD	Cayman Islands
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
Aviation Industry Corp of China	China
AVIC International Holdings LTD	China
AVIC International Maritime	China
AVICHINA Industry & Technology Co LTD	China
CHINA AVIONICS Systems Co LTD	China
Sichuan Chengfei Integration Technology CORP	China
Egypt Kuwait Holding Company	Egypt
Wartsila OYJ ABP	Finland
ENGIE	France
Engie Brasil Energia SA	Brazil
Engie Energia Chile SA	France
Engie Energia Peru SA	France
Etablissements Maurel et Prom	France
Parisienne Chauffage Urbain	France
KHD Humboldt Wedag Int AG	Germany
MAN SE	Germany

Restricted Sudan Stocks

Company Name	Country
Renk AG	Germany
Siemens AG	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
Mangalore Refinery and Petrochemicals Limited	India
Oil & Natural Gas Corp. Ltd.	India
Oil India Limited	India
Siemens LTD	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
Yaroslavsky Diesel Equipment Plant OAO	Russia
LS Industrial Systems	South Korea
Siemens Gamesa Renewable Energy SA	Spain
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: March 31, 2018

ATTACHMENT 2

Sudan Stocks Requiring Divestment

Company Name	Country of Origin	Divest 50 Percent by this Date	Divest 100 Percent by this Date
Atlas Copco AB	Sweden	9/30/2017	3/31/2018
Siemens AG	Germany	3/31/2018	9/30/2018
Siemens LTD	India	3/31/2018	9/30/2018
Engie Brasil Energia SA	Brazil	9/30/2018	3/31/2019
Siemens Gamesa Renewable Energy SA	Spain	9/30/2018	3/31/2019
Wartsila OYJ ABP	Finland	9/30/2018	3/31/2019

Effective Date: March 31, 2018

ATTACHMENT 3

Security Identifiers for "Scrutinized" Stocks

The following security identifiers correlate with the First Quarter 2018 Sudan Company Report and are current as of February 5, 2018.

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	B1WVF68 AT		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	BATS Europe (BATE)	Common Stock	ANDRITZ AG	ANDR EB	632305	B1WVF68 AT		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Chi-X Europe (CHIX)	Common Stock	ANDRITZ AG	ANDR IX	632305	B1WVF68 AT		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Turquoise (TROX)	Common Stock	ANDRITZ AG	ANDR TO	632305	B1WVF68 AT		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GD	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GF	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GH	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GM	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GR	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GS	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Xetra (XETR)	Common Stock	ANDRITZ AG	A22 GY	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Quotrix Exch (XQTX)	Common Stock	ANDRITZ AG	A22 OT	632305	B1X9FH2 DE		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Tradegate (XGAT)	Common Stock	ANDRITZ AG	A22 TH	632305	B1X9FH2 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 XD	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	BHXL8M4 CH		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	BX Worldcaps (XBRN)	Common Stock	ANDRITZ AG	ANDR SW	632305	BHXL8M4 CH		AT0000730007	013042748	
ANDRITZ AG	ANDRITZ AG	Blockmatch (BLOX)	Common Stock	ANDRITZ AG	ANDRV B3	632305			AT0000730007		
ANDRITZ AG	ANDRITZ AG	Liquidnet (LIQU)	Common Stock	ANDRITZ AG	ANDRV L3	632305			AT0000730007		
ANDRITZ AG	ANDRITZ AG	ITG Post (XPOS)	Common Stock	ANDRITZ AG	ANDRV S2	632305			AT0000730007		
ANDRITZ AG	ANDRITZ AG	UBS MTF (XUBS)	Common Stock	ANDRITZ AG	ANDRV S2	632305			AT0000730007		
ANDRITZ AG	ANDRITZ AG	Gettex (MUND)	Common Stock	ANDRITZ AG	A22 GZ	632305			AT0000730007		
ANDRITZ AG	ANDRITZ AG	OTC US (OOTC)	ADR	ANDRITZ AG-UNSPON ADR	ADRYZ PQ		B3DY4P2 US	034522102	US0345221024		
ANDRITZ AG	ANDRITZ AG	OTC US (OOTC)	ADR	ANDRITZ AG-UNSPON ADR	ADRYZ US		B3DY4P2 US	034522102	US0345221024		
ANDRITZ AG	ANDRITZ AG	OTC US (OOTC)	ADR	ANDRITZ AG-UNSPON ADR	ADRYZ UV		B3DY4P2 US	034522102	US0345221024		
SCHULER AG	SCHULER AG	Munch (XMUN)	Common Stock	Schuler AG	SCUN GM	A1W8D1			DE000A0V9A22	ZAR 96,194,871.00	
SCHULER AG	SCHULER AG	Munch (XMUN)	Common Stock	Schuler AG	SCUN GR	A0V9A2			DE000A0V9A22	037251356	
SCHULER AG	SCHULER AG	Euro OTC (XLON)	Common Stock	Schuler AG	SCUN EU	A0V9A2			DE000A0V9A22	037251356	
ATLAS COPCO AB	ATLAS COPCO AB	BATS Europe (BATE)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA EB	A14S17	BXC8BS7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Aquis Exchng (AOXE)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA QX	A14S17	BXC8BS7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Stockholm (XSTO)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XS	A14S17	BXC8BS7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Equiduct (XEQT)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS BQ	A14S17	BXC8BS7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Chi-X Europe (CHIX)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS IX	A14S17	BXC8BS7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Turquoise (TROX)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS TO	A14S17	BXC8BS7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	Common Stock	ATLAS COPCO AB-A SHS	ATLKF PQ	A14S17	BXDZJP0		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	Common Stock	ATLAS COPCO AB-A SHS	ATLKF US	A14S17	BXDZJP0		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	Common Stock	ATLAS COPCO AB-A SHS	ATLKF UV	A14S17	BXDZJP0		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	BX Worldcaps (XBRN)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA BV	A14S17	BXV1GV5		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	BX Worldcaps (XBRN)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA SW	A14S17	BXV1GV5		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GB	A14S17	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GR	A14S17	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GS	A14S17	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Frankfurt (XFRA)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GT	A14S17	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Quotrix Exch (XQTX)	Common Stock	ATLAS COPCO AB-A SHS	ACOF TH	A14S17	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Tradegate (XGAT)	Common Stock	ATLAS COPCO AB-A SHS	ACOF MM	A14S17	BXV1GX7		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Mexico (XMEX)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA LM	A14S17	BXVMB02		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	LSE Europe QS (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA LO	A14S17	BXVMB02		SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Gettex (MUND)	Common Stock	ATLAS COPCO AB-A SHS	ACOF GZ	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro Comp (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA EU	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XD	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XE	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XL	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XO	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XV	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOA XW	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro Comp (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOEUR EU	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-A SHS	ATCOEUR XD	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Blockmatch (BLOX)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS B3	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Liquidnet (LIQU)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS L3	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	ITG Post (XPOS)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS PO	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	UBS MTF (XUBS)	Common Stock	ATLAS COPCO AB-A SHS	ATCOAS S2	A14S17			SE0006886750		
ATLAS COPCO AB	ATLAS COPCO AB	Quotrix Exch (XQTX)	Common Stock	ATLAS COPCO AB-B SHS	ACOB QT	A14S18	B1XHM19		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GB	A14S18	BW4X5D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GD	A14S18	BW4X5D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GF	A14S18	BW4X5D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GM	A14S18	BW4X5D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GR	A14S18	BW4X5D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Berlin (XBER)	Common Stock	ATLAS COPCO AB-B SHS	ACOG GS	A14S18	BW4X5D0		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Chi-X Europe (CHIX)	Common Stock	ATLAS COPCO AB-B SHS	ATCB IX	A14S18	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	BATS Europe (BATE)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB EB	A14S18	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Aquis Exchng (AOXE)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB QX	A14S18	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Stockholm (XSTO)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB SS	A14S18	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Equiduct (XEQT)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBS BQ	A14S18	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Turquoise (TROX)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBS TO	A14S18	BXC8BW1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	Common Stock	ATLAS COPCO AB-B SHS	ATTLF US	A14S18	BXRTT14		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	Common Stock	ATLAS COPCO AB-B SHS	ATTLF UV	A14S18	BXRTT14		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	BX Worldcaps (XBRN)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB BW	A14S18	BXV1FG3		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	BX Worldcaps (XBRN)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB SW	A14S18	BXV1FG3		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	LSE EuropeQS (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB LI	A14S18	BXVM9X1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	LSE EuropeQS (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB LO	A14S18	BXVM9X1		SE0006886768		
ATLAS COPCO AB	ATLAS COPCO AB	Euro Comp (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB EU	A14S18			SE0006886768		

ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB XE	A14S18	SE0006886768	
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB XL	A14S18	SE0006886768	123363159
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB XO	A14S18	SE0006886768	
ATLAS COPCO AB	ATLAS COPCO AB	Euro OTC (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOB XV	A14S18	SE0006886768	
ATLAS COPCO AB	ATLAS COPCO AB	Euro Comp (XLON)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBEUR EU	A14S18	SE0006886768	
ATLAS COPCO AB	ATLAS COPCO AB	Blockmatch (BLOX)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBS B3	A14S18	SE0006886768	
ATLAS COPCO AB	ATLAS COPCO AB	Liquidnet (LIQU)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBS L3	A14S18	SE0006886768	123363159
ATLAS COPCO AB	ATLAS COPCO AB	ITG Posit (XPDS)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBS PO	A14S18	SE0006886768	
ATLAS COPCO AB	ATLAS COPCO AB	UBS MTF (XUBS)	Common Stock	ATLAS COPCO AB-B SHS	ATCOBS S2	A14S18	SE0006886768	
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	ADR	ATLAS COPCO AB-SPONS ADR A	ATLKY PQ	920783	US0492557063	
ATLAS COPCO AB	ATLAS COPCO AB	ADR	Common Stock	ATLAS COPCO AB-SPONS ADR A	ATLKY US	920783	US0492557063	
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	ADR	ATLAS COPCO AB-SPONS ADR A	ATLKY UV	920783	US0492557063	
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	ADR	ATLAS COPCO AB-SPON ADR B SH	ATLKY PQ	920784	US0492558053	
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	ADR	ATLAS COPCO AB-SPON ADR B SH	ATLKY US	920784	US0492558053	
ATLAS COPCO AB	ATLAS COPCO AB	OTC US (OOTC)	ADR	ATLAS COPCO AB-SPON ADR B SH	ATLKY UV	920784	US0492558053	
AVIC INTERNATIONAL HOLDINGS LTD	AVIATION INDUSTRY CORPORATION OF	Hong Kong (XHKG)	Common Stock	AVIC INTERNATIONAL HOLDING-H	161 HK	A0M4XA	CNE100000284	018280604
AVIC INTERNATIONAL HOLDINGS LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVIC INTERNATIONAL HOLDING-H	CTS GR	A0M4XA	B1HKDC2	018280604
AVIC INTERNATIONAL HOLDINGS LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVIC INTERNATIONAL HOLDING-H	CTS GR	A0M4XA	B1HKDC2	018280604
AVIC INTERNATIONAL HOLDINGS LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVIC INTERNATIONAL HOLDING-H	CTS GR	A0M4XA	B1HKDC2	018280604
AVIC INTERNATIONAL MARITIME	AVIATION INDUSTRY CORPORATION OF	Singapore (XSES)	Common Stock	AVIC INTERNATIONAL MARITIME	AVIC SP	A1JLKL	BEZ3MD2	
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Hong Kong (XHKG)	Common Stock	AVICHINA INDUS-H	2357 HK	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	OTC US (OOTC)	Common Stock	AVICHINA INDUS-H	AVUF US	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	OTC US (OOTC)	Common Stock	AVICHINA INDUS-H	AVUF UV	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVICHINA INDUS-H	AVT GM	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVICHINA INDUS-H	AVT GF	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVICHINA INDUS-H	AVT GM	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVICHINA INDUS-H	AVT GR	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVICHINA INDUS-H	AVT GS	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Quotrix Exch (XQTX)	Common Stock	AVICHINA INDUS-H	AVT QT	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Sth SZ-SEHK (SZSC)	Common Stock	AVICHINA INDUS-H	2357 H2	A0M4WY	B08NLL9	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Sth SSE-SEHK (SHSC)	Common Stock	AVICHINA INDUS-H	2357 H1	A0M4WY	BX1D6S8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Euro Comp (XLON)	Common Stock	AVICHINA INDUS-H	2357EUR EU	A0M4WY	CNE1000001Y8	017971972
AVICHINA INDUSTRY & TECHNOLOGY CO LTD	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	AVICHINA INDUS-H	2357HKD US	A0M4WY	CNE1000001Y8	017971972
CHINA AVIONICS SYSTEMS CO LTD	AVIATION INDUSTRY CORPORATION OF	Shanghai (XSHG)	Common Stock	CHINA AVIONICS-A	600372 CG	A0M4G1	6371896	
CHINA AVIONICS SYSTEMS CO LTD	AVIATION INDUSTRY CORPORATION OF	Shanghai (XSHG)	Common Stock	CHINA AVIONICS-A	600372 CH	A0M4G1	6371896	
CHINA AVIONICS SYSTEMS CO LTD	AVIATION INDUSTRY CORPORATION OF	Nth SSE-SEHK (XSXC)	Common Stock	CHINA AVIONICS-A	600372 C1	A0M4G1	BP3R3Y7	
FACC AG	AVIATION INDUSTRY CORPORATION OF	Vienna (XWBO)	Common Stock	FACC AG	A1147K	FACC AV	AT00000FACC2	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	BATS Europe (BATE)	Common Stock	FACC AG	FACC EB	A1147K	BN796M4	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Chi-X Europe (CHIX)	Common Stock	FACC AG	FACCV L3	A1147K	BN796M4	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	FACC AG	1FC GR	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	FACC AG	1FC GF	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	FACC AG	1FC GM	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	FACC AG	1FC GR	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	FACC AG	1FC GS	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Frankfurt (XFRA)	Common Stock	FACC AG	1FC GY	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Quotrix Exch (XQTX)	Common Stock	FACC AG	1FC QT	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Tradegate (XGAT)	Common Stock	FACC AG	1FC TQ	A1147K	BNJZWV0	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	London (XLON)	Common Stock	FACC AG	FACC LN	A1147K	BPBFKR5	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Euro Comp (XLON)	Common Stock	FACC AG	FACCCEUR EU	A1147K	AT00000FACC2	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Euro OTC (XLON)	Common Stock	FACC AG	FACCCEUR XD	A1147K	AT00000FACC2	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Euro OTC (XLON)	Common Stock	FACC AG	FACCCEUR XL	A1147K	AT00000FACC2	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Euro OTC (XLON)	Common Stock	FACC AG	FACCCEUR UV	A1147K	AT00000FACC2	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	Liquidnet (LIQU)	Common Stock	FACC AG	FACCV L3	A1147K	AT00000FACC2	107619399
FACC AG	AVIATION INDUSTRY CORPORATION OF	UBS MTF (XUBS)	Common Stock	FACC AG	FACCV S2	A1147K	AT00000FACC2	107619399
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Xetra (XETR)	Common Stock	KHD HUMBOLDT WED	KWVG GB	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Xetra (XETR)	Common Stock	KHD HUMBOLDT WED	KWVG GD	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Xetra (XETR)	Common Stock	KHD HUMBOLDT WED	KWVG GF	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Xetra (XETR)	Common Stock	KHD HUMBOLDT WED	KWVG GR	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Xetra (XETR)	Common Stock	KHD HUMBOLDT WED	KWVG GY	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Quotrix Exch (XQTX)	Common Stock	KHD HUMBOLDT WED	KWVG QT	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Tradegate (XGAT)	Common Stock	KHD HUMBOLDT WED	KWVG TH	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Turquoise (XTQX)	Common Stock	KHD HUMBOLDT WED	KWVG XG	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	BATS Europe (BATE)	Common Stock	KHD HUMBOLDT WED	KWGD EB	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Chi-X Europe (CHIX)	Common Stock	KHD HUMBOLDT WED	KWGD IX	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	OTC US (OOTC)	Common Stock	KHD HUMBOLDT WED	KHDHFP PQ	657800	B60LH14	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	OTC US (OOTC)	Common Stock	KHD HUMBOLDT WED	KHDHFP US	657800	B60LH14	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	OTC US (OOTC)	Common Stock	KHD HUMBOLDT WED	KHDHFP UV	657800	B60LH14	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Euro Comp (XLON)	Common Stock	KHD HUMBOLDT WED	KWVG EU	657800	DE0006578008	014023330
KHD HUMBOLDT WEDAG INTERNATIONAL AG	AVIATION INDUSTRY CORPORATION OF	Euro OTC (XLON)	Common Stock	KHD HUMBOLDT WED	KWVG XV	657800	DE0006578008	014023330
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Hong Kong (XHKG)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	1316 HK	A1W6CU	KYG6501M1050	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Sth SSE-SEHK (SHSC)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	1316 H2	A1W6CU	BD8NQU0	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Berlin (XBER)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	8NX GB	A1W6CU	BFTCQ14	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Berlin (XBER)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	8NX GF	A1W6CU	BFTCQ14	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Berlin (XBER)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	8NX GR	A1W6CU	BFTCQ14	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Berlin (XBER)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	8NX GS	A1W6CU	BFTCQ14	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	OTC US (OOTC)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	NTXVF US	A1W6CU	B05ZF9X	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	OTC US (OOTC)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	NTXVF UV	A1W6CU	B05ZF9X	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Sth SSE-SEHK (SHSC)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	1316 H1	A1W6CU	BYQ9536	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Euro Comp (XLON)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	1316EUR EU	A1W6CU	KYG6501M1050	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Euro OTC (XLON)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	1316EUR XD	A1W6CU	KYG6501M1050	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Euro Comp (XLON)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	1316HKD EU	A1W6CU	KYG6501M1050	097853851
NEXTEER AUTOMOTIVE GROUP LTD	AVIATION INDUSTRY CORPORATION OF	Euro OTC (XLON)	Common Stock	NEXTEER AUTOMOTIVE GROUP LTD	1316HKD US	A1W6CU	KYG6501M1050	097853851
SICHUAN CHENGFEI INTEGRATION TECHNOLOGY CORP	AVIATION INDUSTRY CORPORATION OF	Shenzhen (XSHE)	Common Stock	SICHUAN CHENG-A	002190 CH	AORPDF	B292205	
SICHUAN CHENGFEI INTEGRATION TECHNOLOGY CORP	AVIATION INDUSTRY CORPORATION OF	Shenzhen (XSHE)	Common Stock	SICHUAN CHENG-A	002190 CS	AORPDF	B292205	
SICHUAN CHENGFEI INTEGRATION TECHNOLOGY CORP	AVIATION INDUSTRY CORPORATION OF	Nth SZ-SEHK (XSXC)	Common Stock	SICHUAN CHENG-A	002190 C2	AORPDF	B05CCH2	
BHARAT ELECTRONICS LTD	BHARAT ELECTRONICS LTD	Natl India (XNSE)	Common Stock	BHARAT ELECTRONICS LIMITED	BHE IB	A2DNMR	BF1THH6	
BHARAT ELECTRONICS LTD	BHARAT ELECTRONICS LTD	Natl India (XNSE)	Common Stock	BHARAT ELECTRONICS LIMITED	BHE IN	A2DNMR	BF1THH6	
BHARAT ELECTRONICS LTD	BHARAT ELECTRONICS LTD	Natl India (XNSE)	Common Stock	BHARAT ELECTRONICS LIMITED	BHE IS	A2DNMR	BF1THH6	
BHARAT ELECTRONICS LTD	BHARAT ELECTRONICS LTD	Natl India (XNSE)	Common Stock	BHARAT ELECTRONICS LIMITED	BHE IS	A2DNMR	BF1THH6	
CHINA GEZHOUBA GROUP CO LTD	CHINA GEZHOUBA GROUP CO LTD	Shanghai (XSHG)	Common Stock	CHINA GEZHOUBA GROUP CO LT-A	600068 CG	A0M31Z	6377214 CN	
CHINA GEZHOUBA GROUP CO LTD	CHINA GEZHOUBA GROUP CO LTD	Shanghai (XSHG)	Common Stock	CHINA GEZHOUBA GROUP CO LT-A	600068 CH	A0M31Z	6377214 CN	
CHINA GEZHOUBA GROUP CO LTD	CHINA GEZHOUBA GROUP CO LTD	Nth SSE-SEHK (XSXC)	Common Stock	CHINA GEZHOUBA GROUP CO LT-A	600068 C1	A0M31Z	BP3R693 CN	
CHINA PETROLEUM ENGINEERING CORP	CHINA NATIONAL PETROLEUM CORP	Shanghai (XSHG)	Common Stock	CHINA PETROLEUM ENGINEERING	600339 CG	A0M4E0	6312947 CN	
CHINA PETROLEUM ENGINEERING CORP	CHINA NATIONAL PETROLEUM CORP	Shanghai (XSHG)	Common Stock	CHINA PETROLEUM ENGINEERING	600339 CH	A0M4E1	6312947 CN	
CHINA CAPITAL CO LTD	CHINA NATIONAL PETROLEUM CORP	Shenzhen (XSHE)	Common Stock	CNPC CAPITAL CO LTD-A	000617 CS	A0M4ZT	6486109 CN	
CNPC CAPITAL CO LTD	CHINA NATIONAL PETROLEUM CORP	Shenzhen (XSHE)	Common Stock	CNPC CAPITAL CO LTD-A	000617 CS	A0M4ZT	6486109 CN	
CNPC CAPITAL CO LTD	CHINA NATIONAL PETROLEUM CORP	Nth SZ-SEHK (XSXC)	Common Stock	CNPC CAPITAL CO LTD-A	000617 C2	A0M4ZT	B06QTV6 CN	
DAQING HUAKE CO LTD	CHINA NATIONAL PETROLEUM CORP	Shenzhen (XSHE)	Common Stock	DAQING HUAKE GROUP CO-A	000985 CH	A0M4C2	6277949 CN	
DAQING HUAKE CO LTD	CHINA NATIONAL PETROLEUM CORP	Shenzhen (XSHE)	Common Stock	DAQING HUAKE GROUP CO-A	000985 CS	A0M4C2	6277949 CN	
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP	Frankfurt (XFRA)	Common Stock	KUNLUN ENERGY CO LTD	CTJ1 GB	A1CV3E	5387753 DE	50092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP	Frankfurt (XFRA)	Common Stock	KUNLUN ENERGY CO LTD	CTJ1 GD	A1CV3E	5387753 DE	50092003
KUNLUN ENERGY CO LTD	CHINA NATIONAL PETROLEUM CORP	Frankfurt (XFRA)	Common Stock	KUNLUN ENERGY CO LTD	CTJ1 GF	A1CV3E	5387753 DE	50092003

CHINA PETROLEUM & CHEMICAL CORP AKA SINOPEC CORP	CHINA PETROCHEMICAL CORP AKA	Euro OTC (XLON)	ADR	CHINA PETROLEUM & CHEMICAL-ADR	SNPUSD XL	578971		16941R108	US16941R1086	011899374	
CHINA PETROLEUM & CHEMICAL CORP AKA SINOPEC CORP	CHINA PETROCHEMICAL CORP AKA	Euro OTC (XLON)	ADR	CHINA PETROLEUM & CHEMICAL-ADR	SNPUSD XV	578971		16941R108	US16941R1086	011899374	
CHINA PETROLEUM & CHEMICAL CORP AKA SINOPEC CORP	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	CHINA PETROLEUM & CHEM-ADR	SNP UM	578972	2639189 US				
CHINA PETROLEUM & CHEMICAL CORP AKA SINOPEC CORP	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	CHINA PETROLEUM & CHEM-ADR	SNP UM	578972	2639189 US	16941R108			
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Sth SSE-SEHK (SHSXC)	Common Stock	SINOPEC ENGINEERING GROUP-H	2386 H1	A1T97T	B92NYC9		CNE100001NV2	093502256	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Hong Kong (XHKHG)	Common Stock	SINOPEC ENGINEERING GROUP-H	2386 HK	A1T97T	B92NYC9		CNE100001NV2	093502258	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GF	A1T97T	B96WKB3		CNE100001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GM	A1T97T	B96WKB3		CNE100001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GR	A1T97T	B96WKB3		CNE100001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Munich (XMUN)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS GS	A1T97T	B96WKB3		CNE100001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Quetrux Exch (XQTX)	Common Stock	SINOPEC ENGINEERING GROUP-H	1NS OT	A1T97T	B96WKB3		CNE100001NV2		
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Sth SSE-SEHK (SHSXC)	Common Stock	SINOPEC ENGINEERING GROUP-H	2386 H1	A1T97T	B08NLF3 HK		CNE100001NV2	093502257	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Euro Comp (XLON)	Common Stock	SINOPEC ENGINEERING GROUP-H	2386EUR EU	A1T97T			CNE100001NV2	093502256	Y80359105
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Euro Comp (XLON)	Common Stock	SINOPEC ENGINEERING GROUP-H	2386HKD EU	A1T97T			CNE100001NV2	093502256	
SINOPEC ENGINEERING GROUP CO LTD	CHINA PETROCHEMICAL CORP AKA	Euro Comp (XLON)	Common Stock	SINOPEC ENGINEERING GROUP-H	2386HKD XV	A1T97T			CNE100001NV2	093502256	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GB	923923	4601197 DE		BMG8165U1009	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GF	923923	4601197 DE		BMG8165U1009	011563385	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GR	923923	4601197 DE		BMG8165U1009	011563386	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC KANTONS HOLDINGS	SAK GS	923923	4601197 DE		BMG8165U1009	011563387	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Hong Kong (XHKHG)	Common Stock	SINOPEC KANTONS HOLDINGS	934 HK	923923	6162692 HK		BMG8165U1009	011563388	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Sth SZ-SEHK (SZSC)	Common Stock	SINOPEC KANTONS HOLDINGS	934 H2	923923	B08NH33 HK		BMG8165U1009	011563389	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Hong Kong (XHKHG)	Common Stock	SINOPEC KANTONS HOLDINGS	934 H1	923923	BP3RXQ9 HK		BMG8165U1009	011563389	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	Euro Comp (XLON)	Common Stock	SINOPEC KANTONS HOLDINGS	934HKD EU	923923			BMG8165U1009	011563384	
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	OTC US (OOTC)	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY PQ		B3KRT80 US	82934W207	US82934W2070		
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	OTC US (OOTC)	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY US		B3KRT80 US	82934W207	US82934W2070		
SINOPEC KANTON HOLDINGS LTD	CHINA PETROCHEMICAL CORP AKA	OTC US (OOTC)	ADR	SINOPEC KANTONS-UNSPON ADR	SPKOY UV		B3KRT80 US	82934W207	US82934W2070		
SINOPEC OILFIELD EQUIPMENT	CHINA PETROCHEMICAL CORP AKA	Shenzhen (XSHE)	Common Stock	SINOPEC OILFIELD EQUIPMENT-A	000852 CH	A0M37A	6136385		CNE000000XK7		Y4446M108
SINOPEC OILFIELD EQUIPMENT	CHINA PETROCHEMICAL CORP AKA	Shenzhen (XSHE)	Common Stock	SINOPEC OILFIELD EQUIPMENT-A	000852 CS	A0M37A	6136385		CNE000000XK7		Y4446M108
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP AKA	Nth SZ-SEHK (SZSC)	Common Stock	SINOPEC OILFIELD EQUIPMENT-A	000852 CZ	A0M37A	BD5LXZ4		CNE000000XK7		
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP AKA	Shanghai (XSHG)	Common Stock	SINOPEC OILFIELD SERVICE C-A	600871 CG	A0M3V6	6986740 CN		CNE000000HS3		
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP AKA	Shanghai (XSHG)	Common Stock	SINOPEC OILFIELD SERVICE C-A	600871 CH	A0M3V6	6986740 CN		CNE000000HS3		
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP AKA	Nth SSE-SEHK (SZSC)	Common Stock	SINOPEC OILFIELD SERVICE C-A	600871 C1	A0M3V6	BW1T511 CN		CNE000000HS3		
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP AKA	Hong Kong (XHKHG)	Common Stock	SINOPEC OILFIELD SERVICE -H	1033 HK	A0M4Y6	6086698 HK		CNE1000004D6	008096962	
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP AKA	Sth SSE-SEHK (SHSXC)	Common Stock	SINOPEC OILFIELD SERVICE -H	1033 H2	A0M4Y6	B08NHJ9 HK		CNE1000004D6	008096962	
SINOPEC OILFIELD SERVICE CORP	CHINA PETROCHEMICAL CORP AKA	Sth SSE-SEHK (SHSXC)	Common Stock	SINOPEC OILFIELD SERVICE -H	1033 H1	A0M4Y6	BP3RXS1 HK		CNE1000004D6	008096962	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Shanghai (XSHG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-A	600688 CG	A0M3RA	6802794		CNE000000B82		
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Shanghai (XSHG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-A	600688 CH	A0M3RA	6802794		CNE000000B82		
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Nth SSE-SEHK (SZSC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-A	600688 C1	A0M3RA	BP3RS96 CN		CNE000000B82		
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GB	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GD	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GF	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GH	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GM	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GR	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GS	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Tradegate (XGAT)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH QT	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Tradegate (XGAT)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH QD	A0M4Y5	5888632 DE		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Hong Kong (XHKHG)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338 HK	A0M4Y5	6797458 HK		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	OTC US (OOTC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SPTJF US	A0M4Y5	B01XTG6 US		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	OTC US (OOTC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SPTJF UV	A0M4Y5	B01XTG6 US		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Sth SZ-SEHK (SZSC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338 H2	A0M4Y5	B08NDN5 HK		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Sth SZ-SEHK (SHSXC)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338 H1	A0M4Y5	BP3RXR0 HK		CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Euro Comp (XLON)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338EUR EU	A0M4Y5			CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Euro OTC (XLON)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	338HKD XV	A0M4Y5			CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Gatex (MUND)	Common Stock	SINOPEC SHANGHAI PETROCHEM-H	SGJH GZ	A0M4Y5			CNE1000004C8	005096162	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UA	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UB	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UD	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UE	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UN	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UP	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UQ	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UT	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI UX	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI VF	887169	2800059 US	82935M109	US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI VJ	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI VK	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	New York (XNYS)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI VY	887169	2800059 US		US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI GB	887169	5734638 DE	82935M109	US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI GF	887169	5734638 DE	82935M109	US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI GM	887169	5734638 DE	82935M109	US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI GR	887169	5734638 DE	82935M109	US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Frankfurt (XFFRA)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI GS	887169	5734638 DE	82935M109	US82935M1099	012248750	
SINOPEC SHANGHAI PETROCHEMICAL CO LTD	CHINA PETROCHEMICAL CORP AKA	Euro OTC (XLON)	ADR	SINOPEC SHANGHAI-SPONS ADR	SHI USD XL	887169			US82935M1099	012248750	
POLY CULTURE GROUP CORP LTD	CHINA POLY GROUP CORPORATION	Berlin (XBER)	Common Stock	POLY CULTURE GROUP CORP-H	0P4 GB	A1XE4L	BKJ9665 DE		CNE100001S81	104485421	
POLY CULTURE GROUP CORP LTD	CHINA POLY GROUP CORPORATION	Berlin (XBER)	Common Stock	POLY CULTURE GROUP CORP-H	0P4 GF	A1XE4L	BKJ9665 DE		CNE100001S81	104485421	
POLY CULTURE GROUP CORP LTD	CHINA POLY GROUP CORPORATION	Berlin (XBER)	Common Stock	POLY CULTURE GROUP CORP-H	0P4 GR	A1XE4L	BKJ9665 DE		CNE100001S81	104485422	
POLY CULTURE GROUP CORP LTD	CHINA POLY GROUP CORPORATION	Hong Kong (XHKHG)	Common Stock	POLY CULTURE GROUP CORP-H	3636 HK	A1XE4L	BK3K320 HK		CNE100001S83	104485423	
POLY PROPERTY GROUP CO LTD	Hong Kong (XHKHG)	Common Stock	Common Stock	POLY PROPERTY GROUP CO LTD	119 HK	885546	6220987 HK		HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GB	885546	B1HJJS7 DE		HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GF	885546	B1HJJS7 DE		HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GR	885546	B1HJJS7 DE		HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Frankfurt (XFFRA)	Common Stock	POLY PROPERTY GROUP CO LTD	CMJ GS	885546	B1HJJS7 DE		HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOTC)	Common Stock	POLY PROPERTY GROUP CO LTD	PHKIF US	885546	B23CS1T US		HK0119000674	004580702	Y70645105
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Sth SZ-SEHK (SZSC)	Common Stock	POLY PROPERTY GROUP CO LTD	119 H2	885546	B08NCD8 HK		HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Sth SSE-SEHK (SHSXC)	Common Stock	POLY PROPERTY GROUP CO LTD	119 H1	885546	BP3RQJ3 HK		HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Euro Comp (XLON)	Common Stock	POLY PROPERTY GROUP CO LTD	119HKD EU	885546			HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	Euro OTC (XLON)	Common Stock	POLY PROPERTY GROUP CO LTD	119HKD XV	885546			HK0119000674	004580702	
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOTC)	ADR	POLY PROPERTY GROUP CO LTD-H	PHKIQ PQ		BJTXRN4 US	731654109	US7316541090		
POLY PROPERTY GROUP CO LTD	CHINA POLY GROUP CORPORATION	OTC US (OOTC)	ADR	POLY PROPERTY GROUP CO LTD-H	PHKIQ US		BJTXRN4 US	731654109	US7316541090		
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOTC)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	DNFNG PQ	A0M4XY	BOXZY65 US		CNE100000312	023857456	Y21042109
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DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Euro OTC (XLON)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	489HKD XL	A0M4XY		CNE10000312	023857456	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Euro OTC (XLON)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	489HKD XV	A0M4XY		CNE10000312	023857456	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	Gettex (MUND)	Common Stock	DONGFENG MOTOR GRP CO LTD-H	D4D GZ	A0M4XY		CNE10000312	023857463	
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOTC)	ADR	DONGFENG MOTOR GRP-H-UNS ADR	DNFGY US	B3SOPT4 US	257738203	US2577382037		
DONGFENG MOTOR GROUP COMPANY LIMITED	DONGFENG MOTOR GROUP COMPANY	OTC US (OOTC)	ADR	DONGFENG MOTOR GRP-H-UNS ADR	DNFGY US	B3SOPT4 US	257738203	US2577382037		
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	Kuwait (XKUW)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHO EC	A0H1G7	B08H15 KW	EGS6982C013		
EGYPT KUWAIT HOLDING CO	EGYPT KUWAIT HOLDING CO	EGX (XCAJ)	Common Stock	EGYPT KUWAIT HOLDING CO SAE	EKHO EC	A0H1G7	B0QMD00 EG	EGS6982C013		
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD CJ	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD CN	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD CV	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD DS	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD DV	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD FQ	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD GH	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD TG	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Venture (XTSX)	Common Stock	ENERGOLD DRILLING CORP.	EGD TN	A0HF5Q	2302823	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	OTC US (OOTC)	Common Stock	ENERGOLD DRILLING CORP.	EGDFF PQ	A0HF5Q	B0LSTM7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	OTC US (OOTC)	Common Stock	ENERGOLD DRILLING CORP.	EGDFF US	A0HF5Q	B0LSTM7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Frankfurt (XFRA)	Common Stock	ENERGOLD DRILLING CORP.	X9X GB	A0HF5Q	B1Q3TZ7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Frankfurt (XFRA)	Common Stock	ENERGOLD DRILLING CORP.	X9X GF	A0HF5Q	B1Q3TZ7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Frankfurt (XFRA)	Common Stock	ENERGOLD DRILLING CORP.	X9X GM	A0HF5Q	B1Q3TZ7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Frankfurt (XFRA)	Common Stock	ENERGOLD DRILLING CORP.	X9X GR	A0HF5Q	B1Q3TZ7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Quotrix Exch (XQTX)	Common Stock	ENERGOLD DRILLING CORP.	X9X OT	A0HF5Q	B1Q3TZ7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Tradegate (XGAT)	Common Stock	ENERGOLD DRILLING CORP.	X9X TH	A0HF5Q	B1Q3TZ7	CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Euro Comp (XLON)	Common Stock	ENERGOLD DRILLING CORP.	EGDEUR EU	A0HF5Q		CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Euro OTC (XLON)	Common Stock	ENERGOLD DRILLING CORP.	EGDEUR EU	A0HF5Q		CA29268A1030	023205572	
ENERGOLD DRILLING CORP	ENERGOLD DRILLING CORP	Kuwait (XKUW)	Common Stock	ENERGOLD DRILLING CORP.	EGDGBP XL	A0HF5Q		CA29268A1030	023205572	
ENERGY HOUSE HOLDING CO KSCPT/HE	ENERGY HOUSE HOLDING CO	Kuwait (XKUW)	Common Stock	ENERGY HOUSE HOLDING CO KSCPT/HE	ENHOLDIN KK	A0H1G7	B13BW99 KW	KWJCE00181		
KUWAIT FINANCE HOUSE KSCP	ENERGY HOUSE HOLDING CO	Kuwait (XKUW)	Common Stock	KUWAIT FINANCE HOUSE	KFIN KK	A0J7C0	6503138 KW	KWJCE0010085		
ENGIE	ENGIE	EN Paris (XPAR)	Common Stock	Engie SA	ENGI FP	A0ER6Q	B0C2CQ3	FR0010208488	022341469	F42768105
ENGIE	ENGIE	Equiduct (XEQT)	Common Stock	Engie SA	ENGIP BQ	A0ER6Q	B0C2CQ3	FR0010208488	022341469	F42768105
ENGIE	ENGIE	BATS Europe (BATE)	Common Stock	Engie SA	ENGIP EB	A0ER6Q	B0C2CQ3	FR0010208488	022341470	F42768105
ENGIE	ENGIE	Chi-X Europe (CHIX)	Common Stock	Engie SA	ENGIP IX	A0ER6Q	B0C2CQ3	FR0010208488	022341471	F42768105
ENGIE	ENGIE	Aquis Exch (AQXE)	Common Stock	Engie SA	ENGIP OX	A0ER6Q	B0C2CQ3	FR0010208488	022341472	F42768105
ENGIE	ENGIE	Turquoise (TROQ)	Common Stock	Engie SA	ENGIP 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 GS	A0ER6Q	B0CYN33	FR0010208488	022341482	
ENGIE	ENGIE	Xtra EU Strs (XETR)	Common Stock	Engie SA	GZF GT	A0ER6Q	B0CYN33	FR0010208488	022341483	
ENGIE	ENGIE	Quotrix Exch (XQTX)	Common Stock	Engie SA	GZF OT	A0ER6Q	B0CYN33	FR0010208488	022341485	
ENGIE	ENGIE	Tradegate (XGAT)	Common Stock	Engie SA	GZF TH	A0ER6Q	B0CYN33	FR0010208488	022341486	
ENGIE	ENGIE	OTC US (OOTC)	Common Stock	Engie SA	ENGOF PQ	A0ER6Q	B0211C6	FR0010208488	022341487	F7629A107
ENGIE	ENGIE	OTC US (OOTC)	Common Stock	Engie SA	ENGOF QS	A0ER6Q	B0211C6	FR0010208488	022341488	F7629A107
ENGIE	ENGIE	OTC US (OOTC)	Common Stock	Engie SA	ENGOF UV	A0ER6Q	B0211C6	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	Brsaltaliana (MTAA)	Common Stock	Engie SA	ENGI IF	A0ER6Q	B3BQVC6	FR0010208488	022341492	F42768105
ENGIE	ENGIE	Brsaltaliana (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 LX	A0ER6Q	B3BVQW6	FR0010208488	022341495	
ENGIE	ENGIE	Vienna (XVBO)	Common Stock	Engie SA	AGL4452	A0ER6Q	B1XAV	FR0010208488	022341496	
ENGIE	ENGIE	SIX Swiss Ex (XSIX)	Common Stock	Engie SA	ENGI SE	A0ER6Q	BRTMD7	FR0010208488	022341496	F42768105
ENGIE	ENGIE	SIX Swiss Ex (XSIX)	Common Stock	Engie SA	ENGI SW	A0ER6Q	BRTMD7	FR0010208488	022341497	F42768105
ENGIE	ENGIE	Euro Comp (XLON)	Common Stock	Engie SA	ENG1EUR EU	A0ER6Q		FR0010208488	022341498	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENG1EUR XD	A0ER6Q		FR0010208488	022341501	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENG1EUR XE	A0ER6Q		FR0010208488	022341502	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENG1EUR XL	A0ER6Q		FR0010208488	022341503	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENG1EUR XV	A0ER6Q		FR0010208488	022341505	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENG1EUR XW	A0ER6Q		FR0010208488	022341499	
ENGIE	ENGIE	Euro Comp (XLON)	Common Stock	Engie SA	ENG1CHF EU	A0ER6Q		FR0010208488	022341506	F42768105
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENG1CHF XW	A0ER6Q		FR0010208488	022341507	
ENGIE	ENGIE	Liquidnet (LIQU)	Common Stock	Engie SA	ENGIP L3	A0ER6Q		FR0010208488		
ENGIE	ENGIE	ITG Posit (XPDS)	Common Stock	Engie SA	ENGIP PO	A0ER6Q		FR0010208488	022341507	
ENGIE	ENGIE	UBS MTF (XUBS)	Common Stock	Engie SA	ENGIP S2	A0ER6Q		FR0010208488		
ENGIE	ENGIE	EURO OTC (XLON)	Common Stock	Engie SA	ENGIP XV	A0ER6Q		FR0010208488	022341499	
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	Berlin (XBER)	ADR	Engie SA	GZFB GS	A14XKC	BYX0167	US29286D1054	126845286	
ENGIE	ENGIE	OTC US (OOTC)	ADR	Engie SA	ENGIP PQ	A14XKC	BY19W15	US29286D1054	126845286	
ENGIE	ENGIE	OTC US (OOTC)	ADR	Engie SA	ENGIP QS	A14XKC	BY19W15	US29286D1054	126845286	
ENGIE	ENGIE	OTC US (OOTC)	ADR	Engie SA	ENGIP UV	A14XKC	BY19W15	US29286D1054	126845286	
ENGIE BRASIL ENERGIA SA	ENGIE	BM&FBOVESPA (BVMF)	Common Stock	ENGIE BR ENER SA	EGIE3 BN	A2AN8V	BD1WX84	BREGIEACNOR9	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	BM&FBOVESPA (BVMF)	Common Stock	ENGIE BR ENER SA	EGIE3 BS	A2AN8V	BD1WX84	BREGIEACNOR9	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	BM&FBOVESPA (BVMF)	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	Stuttgart (XSTU)	ADR	ENGIE BRASIL-ADR	7TE1 GS	A2ASWZ	BD3VL29	US29286U1079	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	OTC US (OOTC)	ADR	ENGIE BRASIL-ADR	EGEY PQ	A2ASWZ	B2ZCDF6	US29286U1079	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	OTC US (OOTC)	ADR	ENGIE BRASIL-ADR	EGIEY US	A2ASWZ	B2ZCDF6	US29286U1079	150060478	
ENGIE BRASIL ENERGIA SA	ENGIE	OTC US (OOTC)	ADR	ENGIE BRASIL-ADR	EGIEY UV	A2ASWZ	B2ZCDF6	US29286U1079	150060478	
ENGIE ENERGIA CHILE SA	ENGIE	Sant. Comerç (XSGO)	Common Stock	ENGIE ENERGIA CHILE SA	ECL CC	A14SFY	BWXTK30 CL	CL0001583070	150060478	
ENGIE ENERGIA CHILE SA	ENGIE	Sant. Comerç (XSGO)	Common Stock	ENGIE ENERGIA CHILE SA	ECL CE	A14SFY	BWXTK30 CL	CL0001583070	150060478	
ENGIE ENERGIA CHILE SA	ENGIE	Sant. Comerç (XSGO)	Common Stock	ENGIE ENERGIA CHILE SA	ECL CI	A14SFY	BWXTK30 CL	CL0001583070	150060478	
ENGIE ENERGIA CHILE SA	ENGIE	Lima (XLM)	Common Stock	ENGIE ENERGIA CHILE SA	ENH1PE	A0H1G7	B0M702101002	FR0000052896	11389066	
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 Paris (XPAR)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU FP	919453	4189165 FR	FR0000052896	11389066	
PARISIENNE DE CHAUFFAGE URBAIN CO	ENGIE	Chi-X Europe (CHIX)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU IU	919453	4189165 FR	FR0000052896	11389066	
PARISIENNE DE CHAUFFAGE URBAIN CO	ENGIE	London (XLON)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU LN	919453	B28FRB0 GB	FR0000052896	11389066	
PARISIENNE DE CHAUFFAGE URBAIN CO	ENGIE	Euro Comp (XLON)	Common Stock	PARISIENNE CHAUFFAGE URBAIN	CHAU EU	919453		FR0000052896	11389066	
GAZ PJSC	GAZ PJSC	MICEX Main (MISX)	Common Stock	GAZ PJSC	GAZA RM	903426	B5BKBJ9 RU	RU0009034268	34991693	
GAZ PJSC	GAZ PJSC	MICEX Main (MISX)	Common Stock	GAZ PJSC	GAZA RX	903426	B5BKBJ9 RU	RU0009034268	34991693	

PAVLOVO BUS PJSC	GAZ PJSC	MICEX Main (MISX)	Common Stock	PAVLOVO BUS PJSC	PAZA RM	908324	B57MPG4 RU	RU0009083240	
PAVLOVO BUS PJSC	GAZ PJSC	MICEX Main (MISX)	Common Stock	PAVLOVO BUS PJSC	PAZA RX	908324	B57MPG4 RU	RU0009083240	
YAROCLAVSKY DIESEL EQUIPMENT PLANT OAO	GAZ PJSC	MOEX (RTSX)	Common Stock	YAROCLAVSKY DIESEL EQUIP-BRD	YZDA RR		B3CJL68 RU	RU0009848360	
YAROCLAVSKY DIESEL EQUIPMENT PLANT OAO	GAZ PJSC	MOEX (RTSX)	Common Stock	YAROCLAVSKY DIESEL EQUIP-BRD	YZDA RX		B3CJL68 RU	RU0009848360	
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Hong Kong (XHKG)	Common Stock	HARBIN ELECTRIC CO LTD-H	1133 HK	A0M4X8	6422761 HK	CNE10000030C0	011043780
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Frankfurt (XFRA)	Common Stock	HARBIN ELECTRIC CO LTD-H	HP6H GB	A0M4X8	B1HJDX0 DE	CNE10000030C0	011043783
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Frankfurt (XFRA)	Common Stock	HARBIN ELECTRIC CO LTD-H	HP6H GF	A0M4X8	B1HJDX0 DE	CNE10000030C0	011043784
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	Frankfurt (XFRA)	Common Stock	HARBIN ELECTRIC CO LTD-H	HP6H GR	A0M4X8	B1HJDX0 DE	CNE10000030C0	011043785
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	OTC US (OOTC)	Common Stock	HARBIN ELECTRIC CO LTD-H	HPBW US	A0M4X8	B3BHHK0 US	CNE10000030C0	011043781
HARBIN ELECTRIC CO LTD	HARBIN ELECTRIC CO LTD	OTC US (OOTC)	Common Stock	HARBIN ELECTRIC CO LTD-H	HPBWF UV	A0M4X8	B3BHHK0 US	CNE10000030C0	011043782
CHENNAI PETROLEUM CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Mumbai (XBOM)	Common Stock	CHENNAI PETROLEUM CORP LTD	MRL IB	A0B968	6121563 IN	INE178A01016	
CHENNAI PETROLEUM CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Mumbai (XBOM)	Common Stock	CHENNAI PETROLEUM CORP LTD	MRL IN	A0B968	6121563 IN	INE178A01016	
CHENNAI PETROLEUM CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Mumbai (XBOM)	Common Stock	CHENNAI PETROLEUM CORP LTD	MRL IS	A0B968	6121563 IN	INE178A01016	
CHENNAI PETROLEUM CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Natl India (XNSE)	Sec Lending	CHENNAI PETROLEUM CORP-SLB	MRL/S IN				
CHENNAI PETROLEUM CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Natl India (XNSE)	Sec Lending	CHENNAI PETROLEUM CORP-SLB	MRL/S IS				
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Natl India (XNSE)	Common Stock	INDIAN OIL CORPORATION LTD	IOCL IB	A0B9FM	6253767 IN	INE242A01010	
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Natl India (XNSE)	Common Stock	INDIAN OIL CORPORATION LTD	IOCL IN	A0B9FM	6253767 IN	INE242A01010	
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Natl India (XNSE)	Common Stock	INDIAN OIL CORPORATION LTD	IOCL IS	A0B9FM	6253767 IN	INE242A01010	
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Natl India (XNSE)	Sec Lending	INDIAN OIL CORP LTD-SLB	IOCL/S IN				
INDIAN OIL CORP LTD	INDIAN OIL CORP LTD AKA IOCL	Natl India (XNSE)	Sec Lending	INDIAN OIL CORP LTD-SLB	IOCL/S IS				
LANKA IOC PLC	INDIAN OIL CORP LTD AKA IOCL	Colombo (XCOL)	Common Stock	LANKA IOC PLC	LIOC SL	A0D83L	B0591G4 LK	LK0345N00005	
JIANGXI HONGDU AVIATION INDUSTRY CO LTD	JIANGXI HONGDU AVIATION INDUSTRY	Shanghai (XSHG)	Common Stock	JIANGXI HONGDU AVIATION-A	600316 CG	A0M4EK	6304375 CN	CNE0000015N3	
JIANGXI HONGDU AVIATION INDUSTRY CO LTD	JIANGXI HONGDU AVIATION INDUSTRY	Shanghai (XSHG)	Common Stock	JIANGXI HONGDU AVIATION-A	600316 CH	A0M4EK	6304375 CN	CNE0000015N3	
JIANGXI HONGDU AVIATION INDUSTRY CO LTD	JIANGXI HONGDU AVIATION INDUSTRY	Nih SSE-SSEHK (XSXC)	Common Stock	JIANGXI HONGDU AVIATION-A	600316 C1	A0M4EK	BP3R8J7 CN	CNE0000015N3	
KAMAZ PJSC	KAMAZ PJSC	MICEX Main (XMIC)	Common Stock	KAMAZ PJSC	KMAZ RM	895958	B55XC08 RU	RU0008959580	006692125
KAMAZ PJSC	KAMAZ PJSC	MICEX Main (XMIC)	Common Stock	KAMAZ PJSC	KMAZ RF	895958	B55XC08 RU	RU0008959580	006692126
KAMAZ PJSC	KAMAZ PJSC	MICEX Main (XMIC)	Common Stock	KAMAZ PJSC	KMAZ RX	895958	B55XC08 RU	RU0008959580	006692127
NEFTEKAMSKY AVTOZAVOD AKA NEFAZ	KAMAZ PJSC	MICEX Main (XMIC)	Common Stock	NEFAZ PJSC	NEFAZ RM		B5637D9 RU	RUJ009115604	
NEFTEKAMSKY AVTOZAVOD AKA NEFAZ	KAMAZ PJSC	MICEX Main (XMIC)	Common Stock	NEFAZ PJSC	NEFAZ RX		B5637D9 RU	RUJ009115604	
TUIMAZINSKY ZAVOD AVTOBETONOVOZOV OJSC	KAMAZ PJSC	MICEX Main (XMIC)	Common Stock	TUIMAZY CONCRETE DELIVERY TR	TAZA RM	A0HL7A	B5BK750 RU	RU000A0HL7A2	
TUIMAZINSKY ZAVOD AVTOBETONOVOZOV OJSC	KAMAZ PJSC	MICEX Main (XMIC)	Common Stock	TUIMAZY CONCRETE DELIVERY TR	TAZA RX	A0HL7A	B5BK750 RU	RU000A0HL7A2	
LS INDUSTRIAL SYSTEMS CO LTD	LS INDUSTRIAL SYSTEMS CO LTD	Korea (KRXR)	Common Stock	LS INDUSTRIAL SYSTEMS	010120 KP	895497	6378217 KR	KR7010120004	
LS INDUSTRIAL SYSTEMS CO LTD	LS INDUSTRIAL SYSTEMS CO LTD	Korea (KRXR)	Common Stock	LS INDUSTRIAL SYSTEMS	010120 KS	895497	6378217 KR	KR7010120004	
MAN SE	MAN SE	Equiduct (XEOT)	Common Stock	MAN SE	MAN BQ	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	BX Worldcaps (XBRN)	Common Stock	MAN SE	MAN BW	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	BATS Europe (BATE)	Common Stock	MAN SE	MAN EB	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GB	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GD	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GF	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GH	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GI	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GM	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GR	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GS	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Common Stock	MAN SE	MAN GY	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Quotrix Exch (XQTX)	Common Stock	MAN SE	MAN QT	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Sigma X MTF (SGMX)	Common Stock	MAN SE	MAN S1	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	BX Worldcaps (XBRN)	Common Stock	MAN SE	MAN SW	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Tradegate (XGAT)	Common Stock	MAN SE	MAN TH	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Turquoise (TRQX)	Common Stock	MAN SE	MAN TQ	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Aquis Exchg (AQXE)	Common Stock	MAN SE	MAND QX	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	Chi-X Europe (CHIX)	Common Stock	MAN SE	MANG IX	593700	5563520 DE	DE0005937007	001117254
MAN SE	MAN SE	SIX Swiss Ex (XSWX)	Common Stock	MAN SE	MAN SE	593700	5628883 CH	DE0005937007	001117254
MAN SE	MAN SE	OTC US (OOTC)	Common Stock	MAN SE	MAGOF US	593700	B0318P0 US	DE0005937007	001117254
MAN SE	MAN SE	OTC US (OOTC)	Common Stock	MAN SE	MAGOF UV	593700	B0318P0 US	DE0005937007	001117254
MAN SE	MAN SE	Euro Comp (XLON)	Common Stock	MAN SE	MAN EU	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	LSE EuropeQS (XLON)	Common Stock	MAN SE	MAN LI	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	LSE EuropeQS (XLON)	Common Stock	MAN SE	MAN LO	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Euro OTC (XLON)	Common Stock	MAN SE	MAN XE	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Euro OTC (XLON)	Common Stock	MAN SE	MAN XV	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Euro TLX (ETLX)	Common Stock	MAN SE	MAN TE	593700	B88FOL3 IT	DE0005937007	001117254
MAN SE	MAN SE	Gettex (MUND)	Common Stock	MAN SE	MAN TQ	593700	B88FOL3 IT	DE0005937007	001117254
MAN SE	MAN SE	Euro OTC (XLON)	Common Stock	MAN SE	MAN XD	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Euro OTC (XLON)	Common Stock	MAN SE	MAN XL	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Euro Comp (XLON)	Common Stock	MAN SE	MANCH EU	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Blackmatch (BLOX)	Common Stock	MAN SE	MAND B3	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	ITG Posit (XPOS)	Common Stock	MAN SE	MAND P0	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	UBS MTF (XUBS)	Common Stock	MAN SE	MAND SZ	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Euro OTC (XLON)	Common Stock	MAN SE	MAN SZ	593700	B10LRX1 GB	DE0005937007	001117254
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 XV	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GD	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GF	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GH	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GI	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GM	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GU	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GS	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Xetra (XETR)	Preference	MAN SE-PFD	MAN3 GY	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Quotrix Exch (XQTX)	Preference	MAN SE-PFD	MAN3 QT	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Turquoise (TRQX)	Preference	MAN SE-PFD	MAN3 TQ	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	BATS Europe (BATE)	Preference	MAN SE-PFD	MAN3 EB	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Chi-X Europe (CHIX)	Preference	MAN SE-PFD	MAN3 IX	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Euro Comp (XLON)	Preference	MAN SE-PFD	MAN3 EU	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	LSE EuropeQS (XLON)	Preference	MAN SE-PFD	MAN3 LI	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	LSE EuropeQS (XLON)	Preference	MAN SE-PFD	MAN3 LO	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Tradegate (XGAT)	Preference	MAN SE-PFD	MAN3 TH	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Euro OTC (XLON)	Preference	MAN SE-PFD	MAN3 XD	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	Euro OTC (XLON)	Preference	MAN SE-PFD	MAN3 XL	593703	5563531 DE	DE0005937031	001114816
MAN SE	MAN SE	OTC US (OOTC)	ADR	MAN SE-ADR	MAGOF PQ	A0YF6N	B3DY656 US	US5616411014	054361637
MAN SE	MAN SE	OTC US (OOTC)	ADR	MAN SE-ADR	MAGOF US	A0YF6N	B3DY656 US	US5616411014	054361637
MAN SE	MAN SE	OTC US (OOTC)	ADR	MAN SE-ADR	MAGOF UV	A0YF6N	B3DY656 US	US5616411014	054361637
MAN SE	MAN SE	Frankfurt (XFRA)	ADR	MAN SE-ADR	MANC GF	A0YF6N	B5900P0 DE	US5616411014	054361637
MAN SE	MAN SE	Frankfurt (XFRA)	ADR	MAN SE-ADR	MANC GR	A0YF6N	B5900P0 DE	US5616411014	054361637
MAN SE	MAN SE	Frankfurt (XFRA)	ADR	MAN SE-ADR	MANC GS	A0YF6N	B5900P0 DE	US5616411014	054361637
RENK AG	RENK AG	Frankfurt (XFRA)	Common Stock	RENK AG	ZAR GB	785000	5555969 DE	DE0007850000	001121936
RENK AG	RENK AG	Frankfurt (XFRA)	Common Stock	RENK AG	ZAR GR	785000	5555969 DE	DE0007850000	001121936
RENK AG	RENK AG	Frankfurt (XFRA)	Common Stock	RENK AG	ZAR GR	785000	5555969 DE	DE0007850000	001121936
RENK AG	RENK AG	Frankfurt (XFRA)	Common Stock	RENK AG	ZAR GS	785000	5555969 DE	DE0007850000	001121936
RENK AG	RENK AG	Tradegate (XGAT)	Common Stock	RENK AG	ZAR TH	785000	5555969 DE	DE0007850000	001121936
RENK AG	MAN SE	Euro Comp (XLON)	Common Stock	RENK AG	ZAR EU	785000	B28LK31 GB	DE0007850000	001121936
RENK AG	MAN SE	Gettex (MUND)	Common Stock	RENK AG	ZAR GZ	785000	B28LK31 GB	DE0007850000	001121936
RENK AG	MAN SE	Euro OTC (XLON)	Common Stock	RENK AG	ZAR XV	785000	B28LK31 GB	DE0007850000	001121936
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	001115308	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW XE	766400	0308908 GB	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW XV	766400	0308908 GB	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Common Stock	VOLKSWAGEN AG	VOW BW	766400	5496994 CH	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Common Stock	VOLKSWAGEN AG	VOW SE	766400	5496994 CH	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Common Stock	VOLKSWAGEN AG	VOW SW	766400	5496994 CH	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	BATS Europe (BATE)	Common Stock	VOLKSWAGEN AG	VW EB	766400	5496994 CH	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Chi-X Europe (CHIX)	Common Stock	VOLKSWAGEN AG	VW IX	766400	5496994 CH	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Luxembourg (XLUX)	Common Stock	VOLKSWAGEN AG	VOW LX	766400	5497061 LU	DE0007664005	001115308	D94523145
VOLKSWAGEN AG	MAN SE	EN Brussels (XBRU)	Common Stock	VOLKSWAGEN AG	VWA BB	766400	5497072 BE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Equiduct (XEQT)	Common Stock	VOLKSWAGEN AG	VOW BQ	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	BATS Europe (BATE)	Common Stock	VOLKSWAGEN AG	VOW EB	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GB	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GD	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GF	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GH	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GI	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GM	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GR	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GS	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Xetra (XETR)	Common Stock	VOLKSWAGEN AG	VOW GY	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Quotrix Exch (XQTX)	Common Stock	VOLKSWAGEN AG	VOW QT	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Tradegate (XGAT)	Common Stock	VOLKSWAGEN AG	VOW TH	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Turquoise (TROQ)	Common Stock	VOLKSWAGEN AG	VOW TQ	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Chi-X Europe (CHIX)	Common Stock	VOLKSWAGEN AG	VOWG IX	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Sigma X MTF (SGMX)	Common Stock	VOLKSWAGEN AG	VOW S1	766400	5497102 DE	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	Common Stock	VOLKSWAGEN AG	VLKAF PQ	766400	B01DRL7 US	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	Common Stock	VOLKSWAGEN AG	VLKAF US	766400	B01DRL7 US	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	Common Stock	VOLKSWAGEN AG	VLKAF UV	766400	B01DRL7 US	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	EuroTLX (ETLX)	Common Stock	VOLKSWAGEN AG	VOW TE	766400	B7N7B69 IT	DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Euro Comp (XLON)	Common Stock	VOLKSWAGEN AG	VOW EU	766400		DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Gettex (MUND)	Common Stock	VOLKSWAGEN AG	VOW GZ	766400		DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW LX	766400		DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOW LX	766400		DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Euro Comp (XLON)	Common Stock	VOLKSWAGEN AG	VOWCHF EU	766400		DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	Blockmatch (BLOX)	Common Stock	VOLKSWAGEN AG	VOVW B3	766400		DE0007664005		
VOLKSWAGEN AG	MAN SE	ITG Posit (XPOS)	Common Stock	VOLKSWAGEN AG	VOVW PO	766400		DE0007664005	001115308	D94523145
VOLKSWAGEN AG	MAN SE	Aquis Exchg (AOXE)	Common Stock	VOLKSWAGEN AG	VOVW QX	766400		DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	UBS MTF (XUBS)	Common Stock	VOLKSWAGEN AG	VOVW S2	766400		DE0007664005		
VOLKSWAGEN AG	MAN SE	EURO OTC (XLON)	Common Stock	VOLKSWAGEN AG	VOVWRUB XL	766400		DE0007664005	001115308	
VOLKSWAGEN AG	MAN SE	LSE EuropeQS (XLON)	Preference	VOLKSWAGEN AG-PREF	50IT L1	766403	0309291 GB	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	LSE EuropeQS (XLON)	Preference	VOLKSWAGEN AG-PREF	50IT L0	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 XL	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 BW	766403	5497146 CH	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Preference	VOLKSWAGEN AG-PREF	VWV SE	766403	5497146 CH	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	SIX Swiss Ex (XSWX)	Preference	VOLKSWAGEN AG-PREF	VWV/S SW	766403	5497146 CH	DE0007664039	001117432	
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	D94523103
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 JN	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 GM	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 GY	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 (AOXE)	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	Turquoise (TROQ)	Preference	VOLKSWAGEN AG-PREF	VOW3 TQ	766403	5497168 DE	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Luxembourg (XLUX)	Preference	VOLKSWAGEN AG-PREF	VOVW LX	766403	5497221 LU	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	Preference	VOLKSWAGEN AG-PREF	VLKPF PQ	766403	B1GXSC7 US	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	Preference	VOLKSWAGEN AG-PREF	VLKPF US	766403	B1GXSC7 US	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	Preference	VOLKSWAGEN AG-PREF	VLKPF UV	766403	B1GXSC7 US	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Brsaltaliana (MTAA)	Preference	VOLKSWAGEN AG-PREF	VOW3 IF	766403	BD3VRN2 IT	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Brsaltaliana (MTAA)	Preference	VOLKSWAGEN AG-PREF	VOW3 IM	766403	BD3VRN2 IT	DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Vienna (XWBO)	Preference	VOLKSWAGEN AG-PREF	VOW AV	766403	BF02F8D AT	DE0007664039	1117432	
VOLKSWAGEN AG	MAN SE	Mexico (XMEX)	Preference	VOLKSWAGEN AG-PREF	VOW3N 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 Comp (XLON)	Preference	VOLKSWAGEN AG-PREF	VOW3CHF EU	766403		DE0007664039	001117432	
VOLKSWAGEN AG	MAN SE	Blockmatch (BLOX)	Preference	VOLKSWAGEN AG-PREF	VOW3D B3	766403		DE0007664039		
VOLKSWAGEN AG	MAN SE	Liquidnet (LIQU)	Preference	VOLKSWAGEN AG-PREF	VOW3D L3	766403		DE0007664039		
VOLKSWAGEN AG	MAN SE	ITG Posit (XPOS)	Preference	VOLKSWAGEN AG-PREF	VOW3D PQ	766403		DE0007664039		
VOLKSWAGEN AG	MAN SE	UBS MTF (XUBS)	Preference	VOLKSWAGEN AG-PREF	VOW3D S2	766403		DE0007664039	1117432	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	ADR	VOLKSWAGEN AG-SPONS ADR	VLKAY PQ	879511	2930484 US	US9286623031	11526233	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	ADR	VOLKSWAGEN AG-SPONS ADR	VLKAY US	879511	2930484 US	US9286623031	11526233	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	ADR	VOLKSWAGEN AG-SPONS ADR	VLKAY UV	879511	2930484 US	US9286623031	11526233	
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 GB	879511	B62VB77	US9286623031	11526233	
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 GM	879511	B62VB77	US9286623031	11526233	
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 HF	879511	B62VB77 DE	US9286623031	11526233	
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR	VOW4 GR	879511	B62VB77 DE	US9286623031	11526233	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPY PQ	A0DPR2	2265960 US	US9286624021	42872202	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPY US	A0DPR2	2265960 US	US9286624021	42872202	
VOLKSWAGEN AG	MAN SE	OTC US (OOTC)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPY UV	A0DPR2	2265960 US	US9286624021	42872202	
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VOW5 GB	A0DPR2	B603118 DE	US9286624021	42872202	
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VOW5 GF	A0DPR2	B603118 DE	US9286624021	42872202	
VOLKSWAGEN AG	MAN SE	Frankfurt (XFRA)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VOW5 GR	A0DPR2	B603118 DE	US9286624021	42872202	
VOLKSWAGEN AG	MAN SE	Euro Comp (XLON)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPYEUR EU	A0DPR2		US9286624021	42872202	
VOLKSWAGEN AG	MAN SE	Euro OTC (XLON)	ADR	VOLKSWAGEN AG-SPONS ADR PREF	VLKPYEUR XD	A0DPR2		US9286624021	42872202	
MANAGEM SA	MANAGEM	Casablanca (XCAS)	Common Stock	MANAGEM	MNG MC	165414	6287454 MA	MA0000011058		
SOCIETE METALLURGIQUE D'IMITER	MANAGEM	Casablanca (XCAS)	Common Stock	SMI	SMI MC	256307	6007759 MA	MA0000010068		
MANGALORE REFINERY & PETROCHEMICALS LTD	OIL & NATURAL GAS CORP	Mumbai (XBOM)	Common Stock	MANGALORE REFINERY & PETRO	MRPL IB	A0NANW	6121530 IN	INE 103A01014		
MANGALORE REFINERY & PETROCHEMICALS LTD	OIL & NATURAL GAS CORP	Mumbai (XBOM)	Common Stock	MANGALORE REFINERY & PETRO	MRPL IN	A0NANW	6121530 IN	INE 103A01014		
MANGALORE REFINERY & PETROCHEMICALS LTD	OIL & NATURAL GAS CORP	Mumbai (XBOM)	Common Stock	MANGALORE REFINERY & PETRO	MRPL IS	A0NANW	6121530 IN	INE 103A01014		

MANGALORE REFINERY & PETROCHEMICALS LTD	OIL & NATURAL GAS CORP	Natl India (XNSE)	Sec Lending	MANGALORE REFINERY & PET-SLB	MRPL/S IN				
MANGALORE REFINERY & PETROCHEMICALS LTD	OIL & NATURAL GAS CORP	Natl India (XNSE)	Sec Lending	MANGALORE REFINERY & PET-SLB	MRPL/S IS				
OIL & NATURAL GAS CORP LTD	OIL & NATURAL GAS CORP	Natl India (XNSE)	Common Stock	OIL & NATURAL GAS CORP LTD	ONGC IN	A1H6P4	6139362 IN	INE213A01029	
OIL & NATURAL GAS CORP LTD	OIL & NATURAL GAS CORP	Natl India (XNSE)	Common Stock	OIL & NATURAL GAS CORP LTD	ONGC IS	A1H6P4	6139362 IS	INE213A01029	
OIL & NATURAL GAS CORP LTD	OIL & NATURAL GAS CORP	Natl India (XNSE)	Common Stock	OIL & NATURAL GAS CORP LTD	ONGC/S IN	A1H6P4	6139362 IS	INE213A01029	
OIL & NATURAL GAS CORP LTD	OIL & NATURAL GAS CORP	Natl India (XNSE)	Sec Lending	OIL & NATURAL GAS CORP-SLB	ONGC/S IN				
OIL & NATURAL GAS CORP LTD	OIL & NATURAL GAS CORP	Natl India (XNSE)	Sec Lending	OIL & NATURAL GAS CORP-SLB	ONGC/S IS				
OIL INDIA LTD	OIL INDIA LTD	Natl India (XNSE)	Common Stock	OIL INDIA LTD	OINL IB	A0X9PF	B409HQ9 IN	INE274J01014	
OIL INDIA LTD	OIL INDIA LTD	Natl India (XNSE)	Common Stock	OIL INDIA LTD	OINL IN	A0X9PF	B409HQ9 IN	INE274J01014	
OIL INDIA LTD	OIL INDIA LTD	Natl India (XNSE)	Common Stock	OIL INDIA LTD	OINL IS	A0X9PF	B409HQ9 IN	INE274J01014	
OIL INDIA LTD	OIL INDIA LTD	Natl India (XNSE)	Sec Lending	OIL INDIA LTD-SLB	OINL/S IN				
OIL INDIA LTD	OIL INDIA LTD	Natl India (XNSE)	Sec Lending	OIL INDIA LTD-SLB	OINL/S IS				
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG DS	A1T8LS	B84J7Q3	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG CJ	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG CN	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG CV	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG DV	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG QF	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG QH	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG TG	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG TN	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Venture (XTSX)	Common Stock	ORCA GOLD INC	ORG TV	A1T8LS	B84J7Q3 CA	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	OTC US (OOTC)	Common Stock	ORCA GOLD INC	CANWF PQ	A1T8LS	B8JVMF7 US	68558N104	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	OTC US (OOTC)	Common Stock	ORCA GOLD INC	CANWF US	A1T8LS	B8JVMF7 US	68558N103	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	OTC US (OOTC)	Common Stock	ORCA GOLD INC	CANWF UV	A1T8LS	B8JVMF7 US	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Frankfurt (XFFR)	Common Stock	ORCA GOLD INC	HJ6A GR	A1T8LS	B9L5559 DE	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Frankfurt (XFFR)	Common Stock	ORCA GOLD INC	HJ6A GF	A1T8LS	B9L5559 DE	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Frankfurt (XFFR)	Common Stock	ORCA GOLD INC	HJ6A GR	A1T8LS	B9L5559 DE	68558N102	CA68558N1024
ORCA GOLD INC	ORCA GOLD INC	Frankfurt (XFFR)	Common Stock	ORCA GOLD INC	HJ6A GS	A1T8LS	B9L5559 DE	68558N102	CA68558N1024
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	EN Paris (XPAR)	Common Stock	MAUREL ET PROM	MAU FP	853155	B05DY78	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	BATS Europe (BATE)	Common Stock	MAUREL ET PROM	MAUP EB	853155	B05DY78	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Chi-X Europe (CHIX)	Common Stock	MAUREL ET PROM	MAUP IX	853155	B05DY78	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Aquis Europe (AQEU)	Common Stock	MAUREL ET PROM	MAUP QX	853155	B05DY78	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	SIGMA X MTF (SGMX)	Common Stock	MAUREL ET PROM	MAUP S1	853155	B05DY78	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Turquoise (TROX)	Common Stock	MAUREL ET PROM	MAUP TQ	853155	B05DY78	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Equiduct (XEOT)	Common Stock	MAUREL ET PROM	MAUTP BQ	853155	B05DY78	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Frankfurt (XFFR)	Common Stock	MAUREL ET PROM	ETX GB	853155	B06LRZ0	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Frankfurt (XFFR)	Common Stock	MAUREL ET PROM	ETX GD	853155	B06LRZ0	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Frankfurt (XFFR)	Common Stock	MAUREL ET PROM	ETX GF	853155	B06LRZ0	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Frankfurt (XFFR)	Common Stock	MAUREL ET PROM	ETX GH	853155	B06LRZ0	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Frankfurt (XFFR)	Common Stock	MAUREL ET PROM	ETX GS	853155	B06LRZ0	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Quotrix Exch (XQTX)	Common Stock	MAUREL ET PROM	ETX QT	853155	B06LRZ0	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Tradegate (XGAT)	Common Stock	MAUREL ET PROM	ETX TH	853155	B06LRZ0	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	OTC US (OOTC)	Common Stock	MAUREL ET PROM	MRELX US	853155	B06MN99	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	OTC US (OOTC)	Common Stock	MAUREL ET PROM	MRELX UV	853155	B06MN99	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	LONDON (XLON)	Common Stock	MAUREL ET PROM	MAUEUR LN	853155	B28K469	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	EURO OTC (XLON)	Common Stock	MAUREL ET PROM	MAU XE	853155	BDGJ120	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	EURO OTC (XLON)	Common Stock	MAUREL ET PROM	MAU XL	853155	BDGJ120	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	EURO OTC (XLON)	Common Stock	MAUREL ET PROM	MAU XV	853155	BDGJ120	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	Euro Comp (XLON)	Common Stock	MAUREL ET PROM	MAU EU	853155	BDGJ120	FR0000051070	003285910
ETABLISSEMENTS MAUREL ET PROM	PERTAMINA PERSERO PT	UBS MTF (XUBS)	Common Stock	MAUREL ET PROM	MAUP S2	853155	BDGJ120	FR0000051070	003285910
ENGEN BOTSWANA LTD	PETROLIAM NASIONAL BHD AKA	Gaborone (XBOT)	Common Stock	ENGEN	ENGN BG	546632	B06G304	BY0000000058	
KLCCP STAPLED GROUP	PETROLIAM NASIONAL BHD AKA	Bursa Malaysia (XKLS)	Common Stock	KLCCP STAPLED GROUP	KLCSS MK	A1T91X	B92NSW7 MY	MYL5236500008	
MALAYSIA INTERNATIONAL SHIPPING COMPANY AKA MISC BHD	PETROLIAM NASIONAL BHD AKA	Bursa Malaysia (XKLS)	Common Stock	MISC MK	6557797 MY	880604	MYL3616000005	003527283	
MALAYSIA MARINE AND HEAVY ENGINEERING HOLDINGS BHD	PETROLIAM NASIONAL BHD AKA	Bursa Malaysia (XKLS)	Common Stock	MALAYSIA MARINE AND HEAVY EN	MMHE MK	A1CTUB	B3V5NN7 MY	MYL5186000000	055049394
PETRONAS CHEMICALS GROUP BHD	PETROLIAM NASIONAL BHD AKA	Bursa Malaysia (XKLS)	Common Stock	PETRONAS CHEMICALS GROUP BHD	PMHE MK	A1CB91	BSKGGT3 MY	MYL5183000008	055800235
PETRONAS CHEMICALS GROUP BHD	PETROLIAM NASIONAL BHD AKA	EURO OTC (XLON)	Common Stock	PETRONAS CHEMICALS GROUP BHD	PCHHEMYR XL	A1CB91		MYL5183000008	055800235
PETRONAS DAGANGAN BHD	PETROLIAM NASIONAL BHD AKA	Bursa Malaysia (XKLS)	Common Stock	PETRONAS DAGANGAN BHD	PETD MK	895131	6695938 MY	MYL5681000001	
PETRONAS GAS BHD	PETROLIAM NASIONAL BHD AKA	Bursa Malaysia (XKLS)	Common Stock	PETRONAS GAS BHD	PTG MK	896633	6703972 MY	MYL6033000004	007076959
PETRONAS GAS BHD	PETROLIAM NASIONAL BHD AKA	OTC US (OOTC)	Common Stock	PETRONAS GAS BHD	PNAGF US	896633	B02H3P4 US	MYL6033000004	Y6885J116
PETRONAS GAS BHD	PETROLIAM NASIONAL BHD AKA	OTC US (OOTC)	Common Stock	PETRONAS GAS BHD	PNAGF UV	896633	B02H3P4 US	MYL6033000004	Y6885J116
POWER CONSTRUCTION CORP OF CHINA LTD	POWER CONSTRUCTION	Shanghai (XSHG)	Common Stock	POWER CONSTRUCTION CORP OF-A	601669 C0	A1JNLE	B4TH680 CN	CNE100001761	
POWER CONSTRUCTION CORP OF CHINA LTD	POWER CONSTRUCTION	Shanghai (XSHG)	Common Stock	POWER CONSTRUCTION CORP OF-A	601669 CH	A1JNLE	B4TH680 CN	CNE100001761	
POWER CONSTRUCTION CORP OF CHINA LTD	POWER CONSTRUCTION	Nih SSE-SEHK (XSSE)	Common Stock	POWER CONSTRUCTION CORP OF-A	601669 C1	A1JNLE	BP3R4M2 CN	CNE100001761	
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Hong Kong (XHKG)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	2727 HK	A0M4YX	B07J656 HK	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Frankfurt (XFFR)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR GB	A0M4YX	B07ZG10 DE	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Frankfurt (XFFR)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR GF	A0M4YX	B07ZG10 DE	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Frankfurt (XFFR)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR GM	A0M4YX	B07ZG10 DE	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Frankfurt (XFFR)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR GR	A0M4YX	B07ZG10 DE	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Frankfurt (XFFR)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR GS	A0M4YX	B07ZG10 DE	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Quotrix Exch (XQTX)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR QT	A0M4YX	B07ZG10 DE	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Sth SZ-SEHK (SZSC)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	2727 H2	A0M4YX	B08NLZ3 HK	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	OTC US (OOTC)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	SIELF US	A0M4YX	BOXNV50 US	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	OTC US (OOTC)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	SIELF UV	A0M4YX	BOXNV50 US	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Sth SSE-SEHK (XSSE)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	2727 H1	A0M4YX	BP3RX69 HK	CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	EURO OTC (XLON)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	2727 HKD	A0M4YX	BP3RX69 HK	CNE100000437	Y76824104
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Gettex (MUND)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR GZ	A0M4YX		CNE100000437	021854387
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Shanghai (XSHG)	Common Stock	SHANGHAI ELECTRIC GRP CO L-A	601727 CG	A0YAVL	B3FJ9X8 CN	CNE100000555	
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Shanghai (XSHG)	Common Stock	SHANGHAI ELECTRIC GRP CO L-A	601727 CH	A0YAVL	B3FJ9X8 CN	CNE100000555	
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Nih SSE-SEHK (XSSE)	Common Stock	SHANGHAI ELECTRIC GRP CO L-A	601727 C1	A0YAVL	BP3R372 CN	CNE100000555	
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	OTC US (OOTC)	Common Stock	SHANGHAI ELECTRIC-UNSP ADR	SIELQ PQ	A1H8PU	B3L2823 US	81943J108	US81943J1088
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	OTC US (OOTC)	Common Stock	SHANGHAI ELECTRIC-UNSP ADR	SIELQ QV	A1H8PU	B3L2823 US	81943J108	US81943J1088
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	OTC US (OOTC)	Common Stock	SHANGHAI ELECTRIC-UNSP ADR	SIELQ UV	A1H8PU	B3L2823 US	81943J108	US81943J1088
SHANGHAI ELECTRIC GROUP CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Tradegate (XGAT)	Common Stock	SHANGHAI ELECTRIC GRP CO L-H	USR TH	A0M4YX	B07ZG10 DE	CNE100000445	21854387
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI PRIME MACHINERY CO LTD	Hong Kong (XHKG)	Common Stock	SHANGHAI PRIME MACHINERY-H	2345 HK	A0M4YY	B12L8H1 HK	CNE100000445	025198484
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI PRIME MACHINERY CO LTD	Stuttgart (XSTU)	Common Stock	SHANGHAI PRIME MACHINERY-H	R4P GB	A0M4YY	B13TCV5 DE	CNE100000445	025198484
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI PRIME MACHINERY CO LTD	Stuttgart (XSTU)	Common Stock	SHANGHAI PRIME MACHINERY-H	R4P GF	A0M4YY	B13TCV5 DE	CNE100000445	025198484
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI PRIME MACHINERY CO LTD	Stuttgart (XSTU)	Common Stock	SHANGHAI PRIME MACHINERY-H	R4P GM	A0M4YY	B13TCV5 DE	CNE100000445	025198484
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI PRIME MACHINERY CO LTD	Stuttgart (XSTU)	Common Stock	SHANGHAI PRIME MACHINERY-H	R4P GR	A0M4YY	B13TCV5 DE	CNE100000445	025198484
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI PRIME MACHINERY CO LTD	Gettex (MUND)	Common Stock	SHANGHAI PRIME MACHINERY-H	R4P GZ	A0M4YY	B13TCV5 DE	CNE100000445	025198484
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI PRIME MACHINERY CO LTD	Quotrix Exch (XQTX)	Common Stock	SHANGHAI PRIME MACHINERY-H	R4P QT	A0M4YY	B13TCV5 DE	CNE100000445	025198484
SHANGHAI PRIME MACHINERY CO LTD	SHANGHAI ELECTRIC GROUP CO LTD	Euro Comp (XLON)	Common Stock	SHANGHAI PRIME MACHINERY-H	2345EUR EU	A0M4YY		CNE100000445	025198484
SIEMENS AG	SIEMENS AG	Buenos Floor (XBUE)	Common Stock	SIEMENS AG-CEDEAR	SIEGY AF		2691264 AR	ARDEU112372	
SIEMENS AG	SIEMENS AG	Buenos Floor (XBUE)	Common Stock	SIEMENS AG-CEDEAR	SIEGY AF		2691264 AR	ARDEU112372	
SIEMENS AG	SIEMENS AG	Buenos Floor (XBUE)	Common Stock	SIEMENS AG-CEDEAR	SIEGY AR		2691264 AR	ARDEU112372	
SIEMENS AG	SIEMENS AG	LSE EuropeQ (XLOE)	Common Stock	SIEMENS AG-REG	SIE1 LI	723610	798725	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	LSE EuropeQ (XLOE)	Common Stock	SIEMENS AG-REG	SIE1 LO	723610	798725	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Equiduct (XEOT)	Common Stock	SIEMENS AG-REG	SIE BQ	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	BATS Europe (BATE)	Common Stock	SIEMENS AG-REG	SIE EB	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GB	723610	5727973	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-REG	SIE GD	723610	5727973	DE0007236101	009974687
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 Exchq (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 (TROX)	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 (XSWX)	Common Stock	SIEMENS AG-REG	SIN BW	723610	5735233	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSWX)	Common Stock	SIEMENS AG-REG	SIN SE	723610	5735233	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSWX)	Common Stock	SIEMENS AG-REG	SIN SW	723610	5735233	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 (OOTC)	Common Stock	SIEMENS AG-REG	SMAWF PQ	723610	B0395G4	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	OTC US (OOTC)	Common Stock	SIEMENS AG-REG	SMAWF US	723610	B0395G4	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	OTC US (OOTC)	Common Stock	SIEMENS AG-REG	SMAWF UV	723610	B0395G4	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Brasaltalana (MTAA)	Common Stock	SIEMENS AG-REG	SIE IF	723610	B19GK05	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Brasaltalana (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	B5NMZR9	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Budapest (XBUD)	Common Stock	SIEMENS AG-REG	SIEMENS HB	723610	B87FOH0	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Bucharest (XBSE)	Common Stock	SIEMENS AG-REG	SIE RE	723610	B87FOH0	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Bucharest (XBSE)	Common Stock	SIEMENS AG-REG	SIE RO	723610	B87FOH0	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Vienna (XVBO)	Common Stock	SIEMENS AG-REG	SIE AV	723610	BF0Z8C7 AT	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EN Brussels (XBSE BR)	Common Stock	SIEMENS AG-REG	SIA BR	723610	BFNW0Z8 BE	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Mexico (XMEX)	Common Stock	SIEMENS AG-REG	SIEN MM	723610	BN7ZCDE	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSWX)	Common Stock	SIEMENS AG-REG	SINEUR SE	723610	BYL6SL1	DE0007236101	009974687
SIEMENS AG	SIEMENS AG	SIX Swiss Ex (XSWX)	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 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 XL	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 EU	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Blockmatch (BLOX)	Common Stock	SIEMENS AG-REG	SIED B3	723610		DE0007236101	
SIEMENS AG	SIEMENS AG	Liquidnet (LIQU)	Common Stock	SIEMENS AG-REG	SIED L3	723610		DE0007236101	
SIEMENS AG	SIEMENS AG	ITG Post (XPOD)	Common Stock	SIEMENS AG-REG	SIED PO	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	UBS MTF (XUBS)	Common Stock	SIEMENS AG-REG	SIED SZ	723610		DE0007236101	
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIERUB XL	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS AG-REG	SIEUSD EU	723610		DE0007236101	009974687
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-NEW REG	SIEN GF	A2GSW8	BFBFV92 DE	DE000A2GSW81	
SIEMENS AG	SIEMENS AG	Xetra (XETR)	Common Stock	SIEMENS AG-NEW REG	SIEN GR	A2GSW8	BFBFV92 DE	DE000A2GSW81	
SIEMENS AG	SIEMENS AG	Euro Comp (XLON)	Common Stock	SIEMENS AG-NEW REG	SIENIEUR EU	A2GSW8		DE000A2GSW81	
SIEMENS AG	SIEMENS AG	OTC US (OOTC)	ADR	SIEMENS AG-ADR	SIEGY DQ	632748	2742689	826197501	012654812
SIEMENS AG	SIEMENS AG	OTC US (OOTC)	ADR	SIEMENS AG-ADR	SIEGY US	632748	2742689	826197501	012654812
SIEMENS AG	SIEMENS AG	OTC US (OOTC)	ADR	SIEMENS AG-ADR	SIEGY UV	632748	2742689	826197501	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GD	632748	B1C58Q1	826197501	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GF	632748	B1C58Q1	826197501	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GR	632748	B1C58Q1	826197501	012654812
SIEMENS AG	SIEMENS AG	Xetra (XETR)	ADR	SIEMENS AG-ADR	SIEB GS	632748	B1C58Q1	826197501	012654812
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE S1	853181	B01CP21	ES0143416115	003285936
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE SM	853183	B01CP21	ES0143416115	003285938
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE SQ	853184	B01CP21	ES0143416115	003285939
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE BQ	853159	B01CP21	ES0143416115	003285914
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE EB	853160	B01CP21	ES0143416115	003285915
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE IX	853171	B01CP21	ES0143416115	003285926
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE QX	853180	B01CP21	ES0143416115	003285935
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREE TQ	853186	B01CP21	ES0143416115	003285941
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GB	853162	B01D7H3	ES0143416115	003285916
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GD	853163	B01D7H3	ES0143416115	003285918
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GF	853164	B01D7H3	ES0143416115	003285919
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GI	853165	B01D7H3	ES0143416115	003285920
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GM	853166	B01D7H3	ES0143416115	003285921
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GR	853167	B01D7H3	ES0143416115	003285922
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GS	853168	B01D7H3	ES0143416115	003285923
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GY	853169	B01D7H3	ES0143416115	003285924
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 GZ	853170	B01D7H3	ES0143416115	003285925
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 QT	853179	B01D7H3	ES0143416115	003285934
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GTQ1 TH	853185	B01D7H3	ES0143416115	003285940
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GCTAF PQ	853177	B01QLN6	ES0143416115	003285932
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GCTAF US	853187	B01QLN6	ES0143416115	003285942
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GCTAF UV	853189	B01QLN6	ES0143416115	003285944
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GCTAY LI	853173	B01D7H3	ES0143416115	003285928
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM LO	853174	B02YQK8	ES0143416115	003285929
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGRE AV	853157	BF447S9	ES0143416115	003285912
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	SGREN MM	853175	BQSVKV7	ES0143416115	003285930
SIEMENS AG	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM EU	853161		ES0143416115	003285916
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	EURO OTC (XLON)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM XD	A0B5Z8		ES0143416115	019430286
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	003285928
SIEMENS GAMESA RENEWABLE ENERGY SA	SIEMENS AG	Equiduct (XEQT)	Common Stock	SIEMENS GAMESA RENEWABLE ENE	GAM YV	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	853198	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	AQJ3F4	B15T569	INE003A01024	
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Common Stock	Siemens Ltd	SIEM IN	AQJ3F4	B15T569	INE003A01024	
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Common Stock	Siemens Ltd	SIEM IS	AQJ3F4	B15T569	INE003A01024	
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Sec Lending	Siemens Ltd	SIEM'S IN				
SIEMENS LTD	SIEMENS AG	Natl India (XNSE)	Sec Lending	Siemens Ltd	SIEM'S IS				
SIEMENS PAKISTAN ENGINEERING CO LTD	SIEMENS AG	Pakistan (XKAP)	Common Stock	SIEMENS PAKISTAN ENGINE CO	SIEM PA	A1W5U3	6907539	PK0022701012	
SIEMENS PAKISTAN ENGINEERING CO LTD	SIEMENS AG	Pakistan (XKAP)	Common Stock	SIEMENS PAKISTAN ENGINE CO	SIEM PK	A1W5U3	6907539	PK0022701012	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Chi-X All TS (CHIX)	Common Stock	WARTSILA OYJ ABP	WRTB IX	881050	452189 FI	F1009003727	004174488
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Equiduct (XEQT)	Common Stock	WARTSILA OYJ ABP	WRTV1 BQ	881044	4525189 FI	F1009003727	004174488
WARTSILA OYJ ABP	WARTSILA OYJ ABP	BATS Europe (BATE)	Common Stock	WARTSILA OYJ ABP	WRTV1 EB	881045	4525189 FI	F1009003727	004174488
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Helsinki (XHEL)	Common Stock	WARTSILA OYJ ABP	WRTV1 FH	881046	4525189 FI	F1009003727	004174488
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Aquis Exchq (AQXE)	Common Stock	WARTSILA OYJ ABP	WRTV1 QX	881047	4525189 FI	F1009003727	004174488
WARTSILA OYJ ABP	WARTSILA OYJ ABP	SIGMA X MTF (SGMX)	Common Stock	WARTSILA OYJ ABP	WRTV1 S1	881050	4525189 FI	F1009003727	004174488

WARTSILA OYJ ABP	WARTSILA OYJ ABP	Turquoise (TRQX)	Common Stock	WARTSILA OYJ ABP	WRT1V TQ	881049	4525189 FI	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GB	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GD	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GF	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GM	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GM	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GM	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GR	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Stuttgart (XSTU)	Common Stock	WARTSILA OYJ ABP	MTA GS	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Quotrix Exch (XQTX)	Common Stock	WARTSILA OYJ ABP	MTA QT	881050	B06KRC4 DE	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	Common Stock	WARTSILA OYJ ABP	WRTBF US	881050	B06MMZ8 US	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	Common Stock	WARTSILA OYJ ABP	WRTBF UV	881050	B06MMZ8 US	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro Comp (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V EU	881042	B28N651 GB	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	LSE EuropeQS (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V LI	881043	B28N651 GB	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	LSE EuropeQS (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V LO	881044	B28N651 GB	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	BX Worldcaps (XBRN)	Common Stock	WARTSILA OYJ ABP	WRT1V BW	881045	BHZKRB3 CH	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	BX Worldcaps (XBRN)	Common Stock	WARTSILA OYJ ABP	WRT1V SW	881046	BHZKRB3 CH	FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Gettex (MUND)	Common Stock	WARTSILA OYJ ABP	MTA GZ	881041		FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro OTC (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V XL	881048		FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro OTC (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V XV	881047		FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Euro OTC (XLON)	Common Stock	WARTSILA OYJ ABP	WRT1V XW	881050		FI0009003727	004174488	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Blockmatch (BLOX)	Common Stock	WARTSILA OYJ ABP	WRT1VH B3	881048		FI0009003727		
WARTSILA OYJ ABP	WARTSILA OYJ ABP	Liquidnet (LIQU)	Common Stock	WARTSILA OYJ ABP	WRT1VH L3	881049		FI0009003727		
WARTSILA OYJ ABP	WARTSILA OYJ ABP	ITG Posit (XPOS)	Common Stock	WARTSILA OYJ ABP	WRT1VH PO	881050		FI0009003727	004174488	X98155116
WARTSILA OYJ ABP	WARTSILA OYJ ABP	UBS MTF (XUBS)	Common Stock	WARTSILA OYJ ABP	WRT1VH S2	881050		FI0009003727		
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	ADR	WARTSILA OYJ-UNSPON ADR	WRTBY PQ		B3F0CN2 US	936544105	US9365441057	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	ADR	WARTSILA OYJ-UNSPON ADR	WRTBY US		B3F0CN2 US	936544105	US9365441057	
WARTSILA OYJ ABP	WARTSILA OYJ ABP	OTC US (OOTC)	ADR	WARTSILA OYJ-UNSPON ADR	WRTBY UV		B3F0CN2 US	936544105	US9365441057	

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ATTACHMENT H

Letter to SBI Domestic and International Equity Managers

March 27, 2018

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 December 27, 2017 letter you received. **This new list is effective March 31, 2018.**

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 companies have been **added** to the Divestment List:

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

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

March 27, 2018

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 December 27, 2017 letter you received. **This new list is effective March 31, 2018.**

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 companies have been **added** to the Divestment List:

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

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: March 31, 2018

ATTACHMENT 2

LIST OF IRAN COMPANIES REQUIRING DIVESTMENT

Company Name	Country of Origin	Divest 50 Percent by this Date	Divest 100 Percent by this Date
Daewoo Engineering & Construction	South Korea	12/31/2017	6/30/2018
Total S.A.	France	6/30/2018	12/31/2018
Hyundai Engineering & Construction	South Korea	9/30/2018	3/31/2019
Hyundai Motor	South Korea	9/30/2018	3/31/2019

Effective Date: March 31, 2018

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
FR0013309069	Total S.A.	FP	France	89151E109
DE0006483001	Linde AG	LIN	Germany	535223200
DE000A2E4L75	Linde AG	LIN	Germany	535223200
US5352232004	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

ISIN	COMPANY NAME	SYMBOL	COUNTRY	CUSIP
KR7001120005	L G International	1120	Korea South	
RU0007661625	Gazprom OAO	GAZP	Russia	368287207
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: March 31, 2018

TAB

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EXECUTIVE DIRECTOR'S REPORT

DATE: June 7, 2018

TO: Members, State Board of Investment

FROM: Mansco Perry III

SUBJECT: Investment Program Update

Combined Funds – Public Markets Asset Transitions

During the first quarter, a number of portfolio adjustments were made to raise cash, rebalance the portfolio and fund new initiatives based on the new Strategic Allocation Category Framework approved by the Board at the December 5, 2017 meeting.

In January 2018, \$3 billion was moved from passive domestic equities (i.e. R3000) to the new Protection Category to implement part of the restructuring laid out in the new Strategic Allocation Category Framework.

In March 2018 four transitions occurred in which the following additional portfolio changes were made:

- Emerging markets equity was reduced by \$450 million to raise cash for benefit payments and simultaneously reduce its overweight exposure within public equity.
- Domestic small cap was reduced by \$300 million and moved to domestic, large-cap passive (i.e. R1000) to appropriately align the portfolio's small-cap / large-cap exposure within domestic equity. This involved the termination of one small-cap manager as noted below.
- \$1.4 billion was transitioned from developed international equity both to reduce its international equity overweight within public equities and reduce public equity exposure overall within the new Strategic Allocation Category Framework. Virtually all of these assets were used to continue funding of the new Protection Category. This transition involved asset reductions from several developed market managers as well as two developed international market manager terminations as noted below.
- \$1.7 billion was move from core fixed income to the Protection Category. This involved core fixed income reductions to BlackRock, Goldman Sachs, Neuberger Berman as well as PIMCO.

With the first quarter 2018 transfers noted above, the Protection Category is now funded within the targeted range noted in the new Strategic Allocation Category Framework approved by the Board at the December 5, 2017 meeting.

Manager Terminations

As part of the March 2018 portfolio rebalancing noted above, the following managers were terminated:

- McKinley Capital Management, LLC – small-cap growth, domestic equity (active)
- Fidelity Institutional Asset Management LLC - Select/developed international equity (semi-passive)
- State Street Global Advisors - Alpha/developed international equity (semi-passive)

Strategic Allocation Category Framework

The status of the Combined Funds portfolio viewed under the lens of the Strategic Allocation Category Framework appears as **Attachment A**.

As of March 31, 2018 all allocation categories resided within their approved ranges.

Volatility Equivalent Benchmark Comparison

The volatility Equivalent Benchmark Comparison appears as **Attachment B**. On this basis, one can see that the SBI Combined Funds portfolio has experienced positive value added over the long-term relative to a risk equivalent stock/bond portfolio. The SBI portfolio appears to consistently reflect similar volatility to a 60% public equity/40% core fixed income portfolio.

ATTACHMENT A

SBI Combined Funds Strategic Allocation Category Framework

	<u>3/31/18 \$</u>	<u>3/31/18 Weights</u>	<u>Category Ranges</u>	
			<u>Minimum</u>	<u>Maximum</u>
<u>Growth - Appreciation</u>				
Public Equity	\$ 40,674,745,134	60.0%		
Private Equity	\$ 4,803,188,803	7.1%		
Non-Core Real Assets	\$ 2,153,259,663	3.2%		
Distressed/Opportunistic	\$ 1,113,003,356	1.6%		
	\$ 48,744,196,955	71.9%	50%	75%
<u>Growth - Income-oriented</u>				
Core Fixed Income	\$ 10,712,771,684	15.8%		
Private Credit	\$ 525,574,171	0.8%		
Return-Seeking Fixed Income	\$ -	0.0%		
	\$ 11,238,345,855	16.6%	15%	30%
<u>Real Assets</u>				
Core Real Estate	\$ -	0.0%		
Real Assets	\$ 666,976,422	1.0%		
	\$ 666,976,422	1.0%	0%	10%
<u>Inflation Protection</u>				
TIPS	\$ -	0.0%		
Commodities	\$ -	0.0%		
	\$ -	0.0%	0%	10%
<u>Protection</u>				
U.S. Treasuries	\$ 6,046,735,823	8.9%		
	\$ 6,046,735,823	8.9%	5%	20%
<u>Liquidity</u>				
Cash	\$ 1,122,340,702	1.7%		
	\$ 1,122,340,702	1.7%	0%	5%
Total	\$ 67,818,595,758	100.0%		
Illiquid Asset Exposure	\$ 9,262,002,415	13.7%	0%	30%

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ATTACHMENT B

Volatility Equivalent Benchmark

Comparison Periods Ending 3/31/2018

As of (Date):	3/31/2018							
	1-year	3-year	5-year	10-year	15-year	20-year	25-year	30-year
SBI Combined Funds Return	12.7%	7.8%	9.4%	7.6%	9.3%	6.8%	8.5%	9.2%
Volatility Equivalent Benchmark Return	9.2%	5.4%	6.3%	5.1%	7.3%	5.5%	6.7%	7.8%
Value Added	3.5%	2.4%	3.1%	2.5%	2.0%	1.3%	1.8%	1.4%
Standard Deviation: Benchmark = Combined Funds			6.3%	9.8%	8.8%	9.6%	9.2%	9.2%
Benchmark Stock Weight	60%	60%	60%	57%	58%	62%	62%	61%
Benchmark Bond Weight	40%	40%	40%	43%	42%	38%	38%	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.

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SBI ADMINISTRATIVE COMMITTEE REPORT

DATE: June 7, 2018

TO: Members, State Board of Investment

FROM: **SBI Administrative Committee**

The Administrative Committee met on April 6, 2018 to consider the following agenda items:

- Review of Executive Director's Proposed Work Plan for FY19
- Review of Budget Plan for FY19 and FY20
- Review of Continuing Fiduciary Education Plan
- Review of Executive Director's Evaluation Process
- Update of Business Continuity Plan

Action is required by the SBI on the first four items.

1. Review of Executive Director's Proposed Work Plan for FY19.

The Executive Director's Proposed Work Plan for FY19 was presented. As in previous work plans, the FY19 plan follows the same category order found in the Executive Director's position description. The plan is a compilation of on-going responsibilities as well as the new initiatives the Executive Director will undertake during the next fiscal year.

A summary of the proposed plan is shown in **Attachment A** on **page 5** of this Tab. The Executive Director will review the work plan summary. Supporting information was sent to each Board member in March 2018 as part of the FY19 Management and Budget Plan document.

RECOMMENDATION:

The Committee recommends that the SBI approve the FY19 Executive Director's Work Plan. Further, the Committee recommends that the Work Plan serve as the basis for the Executive Director's performance evaluation for FY19.

2. Review of Budget Plan for FY19 and FY20.

The SBI's Administrative Budget is set annually by the Board. The budget is comprised of several portions:

Personnel Services
Operating Expenses
Investment Support Services
Directed Commission Services

The budget is funded by a combination of

- direct charge-backs to entities that invest with the SBI;
- an appropriation by the legislature from the general fund to support management of general fund assets;
- directed appropriations budget from the investment asset pool; and
- the directed commissions budget received from the SBI's use of active investment management.

An overview of the budget is shown in **Attachment B** on **page 13** of this Tab. Supporting information was sent to each Board member in March 2018 as part of the FY19 Management and Budget Plan.

RECOMMENDATION:

The Committee recommends that the SBI approve the FY19, and FY20 Administrative Budget Plan, as presented to the Committee, and that the Executive Director have the flexibility to reallocate funds between budget categories if the Executive Director deems necessary.

3. Review of Continuing Fiduciary Education Plan.

Minnesota Statutes, Chapter 356A requires each public pension plan to establish a continuing education plan for its fiduciaries. The plan approved by the Committee is in **Attachment C** on **page 19** of this Tab. Please note that the travel allocation policy for Board members and their designees is included in the plan.

RECOMMENDATION:

The Committee recommends that the SBI adopt the attached Continuing Fiduciary Education Plan.

4. Review of Executive Director's Evaluation and Salary Process.

The Committee discussed the process that will be used by the Board to evaluate the Executive Director for FY18. The Committee members agreed that the performance reviews should be completed by October 1st and should follow the process as discussed.

RECOMMENDATION:

The Committee recommends that the SBI adopt the following performance evaluation and salary process for the SBI Executive Director:

- **Evaluations by each Board member should be completed by October 1.**
- **The evaluations will be based on the results of the Executive Director's Work Plan for the fiscal year ending the previous June 30.**
- **The SBI Deputies/Board designees will develop an appropriate evaluation form for use by each member.**
- **As Chair of the Board, the Governor (or his/her Board designee) will coordinate distribution of the evaluation forms. Board members will forward completed evaluations to the Executive Director. Board members should also send a copy of the Overall Evaluation (summary page 1) to the Governor or the Governor's designee. Board members are encouraged to meet individually with the Executive Director to review their own evaluation.**
- **Upon satisfactory performance evaluations from a majority of responding Board Members, the Executive Director's annual salary adjustment will be any Cost-of-Living Adjustment (COLA)/Across the Board (ATB)/General Salary Increases and/or any Performance-Based Salary Increases contained in the Managerial Plan for a Fiscal Year as approved by the Legislature to the extent that it is within the Executive Director's salary range. The adjustment shall be effective January 1 of the next calendar year.**
- **The Governor (or his/her Board designee) will provide a letter to the Executive Director confirming the status of the Executive Director's evaluation results by November 1.**

5. Update of Business Continuity Plan

Staff noted that the annual SBI Business Continuity Plan update had been completed.

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ATTACHMENT A

STATE BOARD OF INVESTMENT Executive Director's Proposed Work Plan

FY19

(Categories A, B, C, D, E correspond to the position description)

A. DEVELOPMENT OF INVESTMENT POLICIES	Projected Time Frame
1. Complete Revision of SBI Investment Policies	Jul. – Jun.
2. Review of Investments for the Participant Directed Investment Program	Jul. – Mar.
B. IMPLEMENTATION OF INVESTMENT POLICIES APPROVED BY THE SBI	
1. Portfolio Rebalancing: Transition Management	Ongoing
2. Meet or Exceed the Performance Objectives	Ongoing
3. Investments with New and Existing Private Markets Managers	Ongoing
4. Manager Search Process	Ongoing
5. Conduct Investment Manager Portfolio and Compliance Review of Guidelines and Contracts	Ongoing
6. Implement State Law Concerning Iran	Ongoing
7. Implement State Law Concerning Sudan	Ongoing
C. REVIEW AND CONTROL OF INVESTMENT POLICIES	
1. Monitor and Evaluate Investment Manager Performance	Ongoing
2. Manager Guidelines	May – Sep.
3. Provide Staff Support to Proxy Committee	Jul. – Jun.
4. Monitor Implementation of Northern Ireland Mandate	Oct. – Mar.

- | | |
|---|-------------|
| 5. Provide Staff Support for Corporate Actions and Miscellaneous Legal Issues | Jul. – Jun. |
|---|-------------|

D. ADMINISTRATION AND MANAGEMENT

- | | |
|--|-------------|
| 1. RFP for Private Markets Investment Consultant(s) | Apr. – Sep. |
| 2. Coordinate Financial Audit by Legislative Auditor | Jul. – Dec. |
| 3. Legislative Package FY19 | Jul. – May |
| 4. Prepare Fiscal Year 2020 Management and Budget Plan | Mar. – Jun. |
| 5. Annual Update of Business Continuity Plan | Apr. – Jun. |
| 6. Prepare Annual SIF Investment Options Prospectus and Information Booklet for the Statewide Volunteer Firefighter Retirement Plan (SVFRP) | May – Sep. |
| 8. Prepare Annual Non-Retirement Prospectuses for the Trusts and Other Participating Entities; Other Postemployment Benefits (OPEBs); and Qualifying Governmental Entities | May – Sep. |
| 9. Respond to Minnesota Government Data Practices Act Requests | Ongoing |

E. COMMUNICATION AND REPORTING

- | | |
|---|--------------|
| 1. Prepare reports on investment results | Ongoing |
| 2. Prepare Status Reports | As requested |
| 3. Meet with SBI and IAC | Ongoing |
| 4. Meet with Board's designees | Ongoing |
| 5. Prepare Fiscal Year 2018 Annual Report | Jul. – Jan. |

- | | |
|---|----------|
| 6. Coordinate Public Pension Plan Performance | Ongoing |
| 7. Conduct Manager Roundtables | Periodic |

F. OTHER ITEMS

During the course of the year, the Executive Director may encounter other significant items which must be addressed that were not contemplated at the time the annual workplan was developed. Any such items will be reported in the Executive Director's Workplan Status Report.

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STATE BOARD OF INVESTMENT

Project Summary FY19

DEVELOPMENT OF INVESTMENT POLICIES Complete Revision of SBI Investment Policies

GOAL: Review and Revise SBI Investment Policies.

BACKGROUND: The Executive Director has begun a review of past SBI Investment policies. As contemplated in last year's management plan that the review of the investment policies would extend beyond Fiscal Year 2018.

Several investment practices have been revised over the past few years which will impact the investment policies. Additional revisions to the investment program are continuing to be reviewed. These will result in further policy changes.

The Executive Director expects that a statement of revised investment policies will be presented to the Board in Fiscal Year 2019.

Completion of Revised Investment Policy Manual.

Jul. – Jun.

STATE BOARD OF INVESTMENT

Project Summary FY19

DEVELOPMENT OF INVESTMENT POLICIES

Review of Investments for the Participant Directed Investment Program

GOAL: Review the investment structure of the SBI's Participant Directed Investment Program (PDIP) which includes the Deferred Compensation Plan, the Unclassified Employees Retirement Plan, the Health Care Savings Plan, Hennepin County Supplemental Plan, PERA-Defined Contribution Plan, the College Savings Plan, and the A Better Life Plan (ABLE). Staff will work with the appropriate agencies to determine if improvements to the investment structure and options within the various plans within PDIP should be made to help enhance participants' ability to achieve their retirement and other savings goals.

BACKGROUND: Currently, the SBI offers a variety of investment programs to designated participants to meet particular savings goals. The offerings include passive and actively managed investment options that span the risk-return spectrum and allow participants to create individualized, well-diversified portfolios.

In addition to reviewing the investment managers' performance, the investment structure of each of these programs should be reviewed regularly. The goal of this review is to determine if improvements could be made that would enhance participants' ability to achieve their goals for each program. Where possible, it is also desirable to offer the same investment options to similar programs in order to take advantage of scale and enhance operational efficiencies. The review will compare the investment structure of each program and seek to adopt best practices for all. SBI staff will work with the appropriate administrative agencies and our investment consultants and report any recommendations to the SBI in late Fiscal Year 2019 or early Fiscal Year 2020. Any implementation changes will then be coordinated with the appropriate administrative agencies.

Review investment structure.	Jul. – Mar.
Present recommendations, if any, PDIP Review Committee.	Mar. - May
Present recommendation, if any, to the Board for approval.	Jun. – Sep.
Develop implementation plan, if any.	After Board approval.

STATE BOARD OF INVESTMENT

Project Summary FY19

ADMINISTRATION AND MANAGEMENT RFP for Private Markets Investment Consultant(s)

GOAL: To review the SBI's on-going consulting needs and select one or more Private Markets consultants through a request for proposal (RFP) process.

BACKGROUND: The Executive Director has determined that private markets consulting assistance is desired in the management and oversight of the SBI's Private Markets Program. The SBI Board authorized the Executive Director to issue an RFP for one or more private markets consultants at the March 1, 2018 meeting.

The SBI will determine its consulting needs, develop and issue an RFP, and evaluate the capabilities of leading consulting organizations.

Develop and review RFP.	Apr. – May
Issue RFP and review responses.	Jun. – Jul.
Interview finalists.	Jul. – Aug.
Present recommendation to the SBI.	Sept.

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ATTACHMENT B

Administrative Budget Fiscal Year 2019 & 2020 Budget Plan Overview

The Fiscal Years 2019 and 2020 budget process is based on budget procedures instituted by Minnesota Management and Budget. The SBI receives a General Fund appropriation (currently \$139,000) to manage the General Fund portion of the Invested Treasurer's Cash (ITC) pool. The remaining budget revenues are generated from invoicing actual cost of services to plans that have funds under SBI management.

The Fiscal Year 2019 budget includes 30 Full Time Equivalent (FTE) positions. No new FTE's were added from the Fiscal Year 2018 budget request. The SBI has included a 3% projected salary increase in the budget for all staff in Fiscal Years 2019 and 2020. The 3% salary increase extends to the Executive Director in order to accommodate a salary increase that may be approved by the Board in the Executive Director annual evaluation process. The actual salary increases for non-investment staff will be determined by legislative negotiated contracts per bargaining unit. The investment staff salary increase, if any, will be determined in accordance with the SBI Salary Plan.

In Fiscal Years 2019 and 2020, the SBI anticipates an increase in the operating expense portion of the budget for computer system services. This increase is for investment computer subscription services like Moody's ratings, Bloomberg terminals and other services that historically were paid out of the directed commissions budget. As the SBI continues to move away from active management the SBI's directed commissions will be reduced, requiring the expenditures to be moved to the Administrative budget.

**Administrative Budget
Fiscal Year 2019 & 2020 Budget Plan**

	FY2018 Budget	FY2018 Projected	FY2019 Request	FY2020 Request
Personnel Services	\$4,927,900	\$4,077,900	\$5,131,000	\$5,282,000
Operating Expense	1,276,000	1,024,514	1,333,000	1,548,000
Total	\$6,203,900	\$5,102,414	\$6,464,000	\$6,830,000

Personnel Services: Personnel Services are estimated to account for 79% of the requested Fiscal Year 2019 budget and 77% of the requested Fiscal Year 2020 budget.

Personnel Services include salaries, retirement, insurance, FICA and severance.

Operating Expenses: Operating Expenses are estimated to account for 21% of the requested Fiscal Year 2019 budget, and 23% of the requested Fiscal Year 2020 budget.

Operating Expenses include rents, leases, printing, data processing, communications, travel, employee development, miscellaneous fees, office equipment, furnishings and supplies.

**Investment Support Services Budget
Fiscal Year 2019 & 2020 Budget Plan
Overview**

The SBI currently has three Investment Support Services contracts that are funded from the directed commissions budget. The SBI is planning on adding a Private Markets consultant(s) contract for FY19 that is estimated to be a contract value of two to three million per year. As a result the budget will increase to five million.

	FY2018 Budget	FY2018 Projected	FY2019 Request	FY2020 Request
Investment Support	\$2,000,000	\$1,150,000	\$5,000,000	\$5,000,000
Total	\$2,000,000	\$1,150,000	\$5,000,000	\$5,000,000

Investment Support: The Investment Support Services budget will cover the following contracts for FY19 and FY20: Aon Hewitt Investment Consulting Inc., Pension Consulting Alliance, LLC, Broadridge Financial Solutions, Inc. and a new Private Markets consultant(s).

**Directed Commissions Budget
Calendar 2018 Budget Plan
Overview**

Annually, the SBI goes through a rigorous process in the establishment of the Directed Commissions budget. The SBI monitors and reconciles active management and the trading costs to ensure SBI is receiving a portion of directed commissions, as appropriate, subject to best execution by its investment managers. SBI staff review the subscriptions/services they receive from active management to ensure it is a necessary expenditure. The budget and expenditures are on a calendar year basis to match the accounting time-frame of our managers and directed commissions brokers. The Directed Commissions budget is established on an annual basis.

	CY2017 Budget	CY2017 Actual	CY2018 Budget
Directed Commissions	\$1,042,150	\$870,008	\$992,500

**STATE BOARD OF INVESTMENT
ADMINISTRATIVE BUDGET PLAN
FISCAL YEARS 2019 AND 2020**

DESCRIPTION	FY2018 BUDGET	FY2018 PROJECTED	FY2019 PROPOSED	FY2020 PROPOSED
PERSONNEL SERVICES				
FULL TIME EMPLOYEES	\$ 4,827,900	4,051,600	\$ 5,031,000	\$ 5,182,000
OTHER BENEFITS	100,000	26,300	100,000	100,000
SUBTOTAL	\$ 4,927,900	\$ 4,077,900	\$ 5,131,000	\$ 5,282,000
STATE OPERATIONS				
RENTS & LEASES	285,000	280,135	285,000	285,000
REPAIRS/ALTERATIONS/MAINTENANCE	14,000	14,129	14,000	14,000
PRINTING & BINDING	9,000	12,457	12,000	12,000
PROFESSIONAL/TECHNICAL SERVICES	175,000	30,000	205,000 *	205,000
COMPUTER SYSTEMS SERVICES	83,000	80,495	95,000 *	295,000 *
COMMUNICATIONS	36,000	22,499	36,000	36,000
TRAVEL, IN-STATE	1,000	246	1,000	1,000
TRAVEL, OUT-STATE	125,000	83,962	125,000	130,000
SUPPLIES	28,000	28,000	30,000	30,000
EQUIPMENT	25,000	25,000	25,000	35,000
EMPLOYEE DEVELOPMENT	105,000	96,000	115,000 *	115,000 *
OTHER OPERATING COSTS	140,000	114,964	140,000	140,000
INDIRECT COSTS	250,000	236,627	250,000	250,000
SUBTOTAL	\$ 1,276,000	\$ 1,024,514	\$ 1,333,000	\$ 1,548,000
TOTAL MSBI OPERATING FUND	\$ 6,203,900	\$ 5,102,414	\$ 6,464,000	\$ 6,830,000

PERCENT INCREASE (DECREASE) OVER PRIOR YEAR BUDGET

4.2%

5.7%

* In Fiscal Year 2018, SBI began moving expenditures from the directed commissions budget to our internal budget due to the reduction of directed commissions from active management. In Fiscal Year 2019 SBI will add an additional \$30,000 to the Professional Technical budget line for a Foreign Tax Advisory Services contract, \$12,000 additional to computer system services and \$10,000 for membership fees. In Fiscal Year 2020, the SBI will be moving an additional \$200,000 in subscription services to the internal budget.

**STATE BOARD OF INVESTMENT
INVESTMENT SUPPORT SERVICES BUDGET PLAN
FISCAL YEARS 2019 AND 2020**

DESCRIPTION	FY2018 BUDGET	FY2018 PROJECTED	FY2019 PROPOSED	FY2020 PROPOSED
STATE OPERATIONS				
PROFESSIONAL/TECHNICAL SERVICES	1,500,000	800,000	4,500,000 *	4,500,000
COMPUTER SYSTEMS SERVICES	500,000	350,000	500,000	500,000
TOTAL	\$ 2,000,000	\$ 1,150,000	\$ 5,000,000	\$ 5,000,000

PERCENT INCREASE (DECREASE) OVER PRIOR YEAR BUDGET

150.0%

0.0%

*Increase is for new Private Markets Consultant(s) contract.

**STATE BOARD OF INVESTMENT
DIRECTED COMMISSIONS
CALENDAR YEAR 2018**

DESCRIPTION	CY2017 BUDGET	CY2017 PROJECTED	CY2018 PROPOSED
DIRECTED COMMISSIONS			
DIRECTED COMMISSIONS	1,042,150	870,008	992,500

PERCENT INCREASE (DECREASE) OVER PRIOR YEAR BUDGET

-4.76%

ATTACHMENT C

CONTINUING FIDUCIARY EDUCATION PLAN

REQUIRED BY MS 356A.13

The State Board of Investment (SBI) undertakes the following activities related to fiduciary education. Taken as a group, these activities shall constitute the plan for continuing fiduciary education required by Minnesota Statutes 356A.13. In addition, pursuant to statutory requirements of qualification, the SBI executive director and many members of the Board's Investment Advisory Council (IAC) can be reasonably considered to be experts with respect to their duties as fiduciaries.

1. Briefing for New Board/IAC Members

Shortly after election to the Board or appointment to the IAC, each new member is briefed on SBI operations and policies. As part of the briefing, SBI's legal counsel will review the member's fiduciary obligations and responsibilities as specified in Minnesota Statutes Chapters 11A and 356A.

2. Development and Review of Investment Policies

The SBI adopts comprehensive investment policies for each fund under its control. The policies cover investment objectives, asset allocation, management structure, and performance evaluation. Policy papers or reports on these topics are developed and written by SBI staff in conjunction with the IAC and consultants. Relevant research and analyses from the academic and professional investment fields are used to formulate these policy guidelines.

After the Board formally adopts them, these written policies guide the management of all assets under the SBI's control. The SBI intends to review its stated investment policies periodically. This review may occur within the framework of the SBI's regular quarterly meetings or may take place at special meetings or seminars specifically designated for this purpose.

3. Input from Board's Consultants

The SBI retains outside investment consultants to advise the Board members on a wide variety of investment management issues. As part of their contracts with the SBI, the consultants offer to meet with the Board members or their designees to discuss investment-related issues. These individual consultations occur throughout the year. In addition, the general consultant is available at each meeting of the Board and IAC. These meetings are supplemented by quarterly reports on investment performance prepared by the general consultant.

4. Manager Roundtables

The SBI intends to convene small groups of its external money managers to discuss issues related to investment management and the financial markets. These roundtable discussions will be held periodically throughout the year and will be open to Board members and their designees, IAC members and other interested parties.

5. Travel Allocation

The SBI allocates \$5,000 annually to each Board member (or their designee) for costs associated with attendance at investment-related seminars and conferences. This allocation is used at the discretion of each Board member.

2017 Minnesota Statutes

356A.13. CONTINUING FIDUCIARY EDUCATION.

Subdivision 1. **Obligation of fiduciaries.** A fiduciary of a covered pension plan shall make reasonable effort to obtain knowledge and skills sufficient to enable the fiduciary to perform fiduciary activities adequately. At a minimum, a fiduciary of a covered pension plan shall comply with the program established in accordance with subdivision 2.

Subd. 2. **Continuing fiduciary education program.** The governing boards covered pension plans shall each develop and periodically revise a program for the continuing education of any of their board members and any of their chief administrative officers who are not reasonably considered to be experts with respect to their activities as fiduciaries. The program must be designed to provide those persons with knowledge and skills sufficient to enable them to perform their fiduciary activities adequately.

TAB

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INVESTMENT ADVISORY COUNCIL REPORT

DATE: June 7, 2018

TO: Members, Investment Advisory Council

FROM: SBI Staff

SUBJECT: Private Markets Commitments for Consideration

A. Status of SBI Current Private Markets Commitments

Staff has reviewed the following action agenda items:

B. Consideration of new commitments

Existing Managers:

Real Estate	Angelo, Gordon & Co.	AG Realty X & AG Asia Realty IV	\$250 Million
Private Equity	Brookfield	Brookfield Capital Partners V	\$250 Million
Private Equity	Goldman Sachs	China-U.S. Industrial Partnership	\$100 Million
Private Equity	Goldner Hawn	Goldner Hawn Fund VII	\$75 Million
Private Equity	Paine Schwartz	Paine Schwartz Food Chain V	\$150 Million
Private Equity	Thoma Bravo	Thoma Bravo Fund XIII	\$150 Million
Private Equity	Warburg Pincus	Warburg Pincus Global Growth	\$250 Million
Private Equity	WCAS	WCAS XIII	\$250 Million

C. (After blue page) Consideration of BlackRock Long Term Private Capital Fund

SBI action is required on items B and C.

A. Status of SBI Current Private Markets Commitments

Minnesota State Board of Investment

Combined Funds

March 31, 2018

Combined Funds Market Value \$67,818,595,758

Amount Available for Investment **\$7,684,451,860**

	Current Level	Target Level	Difference
Market Value (MV)	\$9,262,002,416	\$16,954,648,940	\$7,692,646,524
MV +Unfunded	\$16,052,056,655	\$23,736,508,515	\$7,684,451,860

Asset Class	Market Value	Unfunded Commitment	Total
Private Equity	\$4,803,188,803	\$3,786,381,972	\$8,589,570,775
Private Credit	\$525,574,171	\$588,252,173	\$1,113,826,344
Real Assets	\$2,159,919,810	\$962,506,178	\$3,122,425,988
Real Estate	\$660,316,276	\$788,048,751	\$1,448,365,027
Distressed/Opportunistic	\$1,113,003,356	\$664,865,165	\$1,777,868,521
Total	\$9,262,002,416	\$6,790,054,239	\$16,052,056,655

Cash Flows

March 31, 2018

Calendar Year	Capital Calls	Distributions	Net Invested
2018 (thru March)	\$483,489,532	(\$413,676,242)	\$69,813,290
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 Real Estate manager, Angelo, Gordon & Co. (“Angelo, Gordon”), in AG Realty Fund X (“Fund X”) and AG Asia Realty Fund IV (“Fund IV”).**

Angelo, Gordon is seeking investors for a new fund for the purpose of investing in commercial real estate. Fund X will continue Angelo, Gordon’s tactical real estate investment activities which are focused on the acquisition of equity interests in sub-performing real estate properties, principally in the United States, across a broad range of geographical markets and product types, including office, hotel, retail, industrial, and multi-family. Asia Fund IV will have the same approach, but will be focused on China, Japan, Hong Kong, Singapore and South Korea. Fund X will take a minority share of each Asian and European real estate investment made in funds dedicated to those regions, subject to diversification and capital availability.

In addition to reviewing the attractiveness of the AG Realty Fund X and AG Asia Realty Fund IV investment offerings, staff has conducted on-site due diligence, reference checks, a literature database search, and reviewed the potential investor base for the funds.

More information on AG Realty Fund X and AG Asia Realty Fund IV is included as **Attachment A beginning on page 9.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to a combined \$250 million in the aggregate, or 20% of each of AG Realty Fund X or AG Asia Realty 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 Angelo, Gordon & Co. 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 Angelo, Gordon & Co. or reduction or termination of the commitment.

- 2) Investment with an existing private equity manager, Brookfield Asset Management Inc. (“Brookfield”), in Brookfield Capital Partners V (“Fund V”).**

Brookfield is seeking investors to continue the firm’s established investment strategy focused on acquiring high-quality, real-asset related businesses at attractive valuations and further enhancing value post-acquisition through operational improvements. As part of its value-base and contrarian approach, BCP V will look to source transactions in out-of-favor sectors or

businesses challenged by operational or financial improvements. The Fund will primarily target companies based in the geographies where the firm has deep investment expertise and operational capabilities, such as the United States, Canada, Western Europe, Australia, Brazil and India.

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

More information on Brookfield Capital Partners V is included as **Attachment B beginning on page 13.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$250 million, or 20% of Brookfield Capital Partners V, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Brookfield Asset Management Inc. 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 Brookfield Asset Management Inc. or reduction or termination of the commitment.

3) Investment with an existing private equity manager, Goldman, Sachs & Co. ("Goldman Sachs"), in China-U.S. Industrial Cooperation Partnership, LP ("the Fund").

Goldman Sachs is establishing the Fund to make private equity investments in companies (i) that are headquartered in the United States or (ii) that derive meaningful revenue in the United States. In either case, target companies will have, or can develop, a material business connection to the People's Republic of China. Target companies are expected to be in the manufacturing, industrial, services / distribution, consumer and healthcare industries among others. The Partnership is part of a differentiated, strategic partnership between the Merchant Banking Division of Goldman Sachs and China Investment Corporation ("CIC") focused on providing the above-described companies with access to commercial opportunities with China. Goldman Sachs & Co. LLC will serve as the investment manager, with investment discretion and control the general partner of the Partnership, and CIC will be a value-added partner in China.

In addition to reviewing the attractiveness of the China-U.S. Industrial Cooperation Partnership 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 China-U.S. Industrial Cooperation Partnership is included as **Attachment C beginning on page 17.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$100 million, or 20% of China-U.S. Industrial Cooperation Partnership, 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 Goldman, Sachs & Co. 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 Goldman, Sachs & Co. or reduction or termination of the commitment.

4) Investment with an existing private equity manager, Goldner Hawn Johnson & Morrison ("Goldner Hawn"), in Goldner Hawn Fund VII ("Fund VII").

Goldner Hawn is seeking investors for a new fund focused on making equity investments in lower middle market businesses with a strong regional focus on the Upper Midwest. Equity investments will typically total \$20-40 million per transaction with overall company enterprise values generally ranging from \$25-150 million. Goldner Hawn expects Fund VII to continue the firm's value-oriented approach to investing with an emphasis on sourcing investments by partnering with business owners and management, and creating portfolio company value through a variety of operational initiatives post-acquisition.

In addition to reviewing the attractiveness of the Goldner Hawn Fund VII 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 Goldner Hawn Fund VII is included as **Attachment D beginning on page 21.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$75 million, or 20% of Goldner Hawn Fund VII, whichever is less, contingent on the aggregate fund size being at least \$250 million. 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

Goldner Hawn Johnson & Morrison 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 Goldner Hawn Johnson & Morrison or reduction or termination of the commitment.

5) Investment with an existing private equity manager, Paine Schwartz Partners, LLC (“Paine Schwartz”), in Paine Schwartz Food Chain Fund V, L.P. (“Fund V”).

Paine Schwartz is seeking investors for a new fund to make investments in the global food and agribusiness sectors which, despite attractive industry fundamentals, are currently underserved by private equity firms. Fund V will follow an investment strategy consistent with the previous fund, which uses a thesis-driven approach to invest in proprietary and complex transactions, and leverages the investing and operating backgrounds of the Firm’s professionals to drive value creation. Fund V will target businesses headquartered in Organisation for Economic Cooperation and Development (OECD) countries, seeking to limit overall exposure to developing markets.

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

More information on Paine Schwartz Food Chain Fund V is included as **Attachment E beginning on page 25.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$150 million, or 20% of Paine Schwartz Food Chain Fund V, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Paine Schwartz 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 Paine Schwartz Partners or reduction or termination of the commitment.

6) Investment with an existing private equity manager, Thoma Bravo, LLC (“Thoma Bravo”) in Thoma Bravo Fund XIII, L.P. (“Fund XIII”).

Thoma Bravo is seeking investors for a new fund to make investments in software and technology-enabled services companies in North America. Fund XIII will seek to create value by transforming businesses in fragmented, consolidating industry sectors into larger, more profitable and more valuable businesses through rapid operational improvements, growth

initiatives, and strategic and accretive add-on acquisitions. Thoma Bravo expects to commit between \$500 million and \$1.5 billion over the life of each investment in Fund XIII.

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

More information on Thoma Bravo Fund XIII is included as **Attachment F beginning on page 29.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$150 million, or 20% of Thoma Bravo Fund XIII, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Thoma Bravo upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Thoma Bravo or reduction or termination of the commitment.

7) Investment with an existing private equity manager, Warburg Pincus LLC ("Warburg Pincus"), in Warburg Pincus Global Growth, L.P. ("WPGG").

Warburg Pincus is seeking investors for a new fund to invest in growth companies, as well as companies at other stages of development. From building early-stage and start-up companies, and to investing in later-stage buyout transactions and special situations, growth is typically a key aspect of the investment thesis. The firm expects the Partnership to have a diversified portfolio of approximately 60-90 portfolio companies, with an average equity commitment of approximately \$150 million. While the firm maintains the flexibility to invest across geographic regions, it anticipates that WPGG will be 50%-60% invested in North America, 10%-15% in Europe, and 20%-35% in Asia and other developing markets.

In addition to reviewing the attractiveness of the Warburg Pincus Global Growth 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 Warburg Pincus Global Growth is included as **Attachment G beginning on page 33.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$250 million, or 20% of Warburg Pincus Global Growth, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Warburg Pincus 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 Warburg Pincus or reduction or termination of the commitment.

8) Investment with an existing private equity manager, Welsh, Carson, Anderson & Stowe ("WCAS"), in WCAS XIII.

WCAS is seeking investors for a new fund to invest in privately negotiated equity and equity-related investments in its two target industries - technology and healthcare. WCAS's investment strategy is to buy growth businesses in its two core industries, partner with strong management teams and build value through a combination of operational improvements, internal growth initiatives and strategic acquisitions. WCAS XIII will seek to use a consistent and disciplined investment approach, domain industry knowledge, targeted deal flow, reliance on repeat management teams, improved operating techniques and conservative use of leverage to deliver high risk-adjusted returns.

In addition to reviewing the attractiveness of the WCAS XIII 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 WCAS XIII is included as **Attachment H beginning on page 37.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to \$250 million, or 20% of WCAS XIII 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 Welsh, Carson, Anderson & Stowe 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 Welsh, Carson, Anderson & Stowe or reduction or termination of the commitment.

ATTACHMENT A

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	AG Realty Fund X, L.P. AG Asia Realty Fund IV, L.P.
<i>Type of Fund:</i>	Private Real Estate
<i>Target Fund Size:</i>	\$2.5 billion for Realty X \$1 billion for Asia IV
<i>Fund Manager:</i>	Angelo, Gordon & Co., L.P.
<i>Manager Contact:</i>	Brigid Flanagan 245 Park Avenue New York, NY, 10167

II. Organization and Staff

Angelo, Gordon & Co., L.P. (“Angelo, Gordon” or the “Firm”) formed AG Realty Fund X, L.P. (“Fund X”) and plans to form AG Asia Realty Fund IV (“Asia Fund IV”) (together, the “Funds”) to make primarily equity investments in commercial real estate. Fund X will continue Angelo, Gordon’s tactical real estate investment activities which are focused on the acquisition of equity interests in sub-performing real estate properties, principally in the United States, across a broad range of geographical markets and product types, including office, hotel, retail, industrial, and multifamily. Asia Fund IV will have the same approach, but focused on China, Japan, Hong Kong, Singapore and South Korea.

Angelo, Gordon was founded in 1988 by the late John Angelo and Michael Gordon. The Firm is 100% owned by its founders, their related parties and certain senior employees, and has over 400 employees and approximately 170 investment professionals working across its three core disciplines – credit, real estate, and private equity. As of December 31, the Firm had approximately \$28 billion in assets under management. The U.S. real estate platform has offices in New York and Los Angeles.

Angelo, Gordon began making opportunistic investments in 1993 and has been an active investor in distressed real estate debt since 1990. Over the past 25 years, Angelo, Gordon has acquired over \$27 billion of real estate assets globally, representing over \$11 billion of equity in a series of opportunistic, value add, and core plus real estate funds.

III. Investment Strategy

Angelo, Gordon has structured Fund X to provide investors with access to a broad spectrum of value-add opportunities, from light value-add, where examples include executing a strategy to improve operations or addressing existing vacancy, to heavy value-add, where examples include repositioning a property or changing its use. In addition to these types of projects, Asia

Fund IV may also target high margin development opportunities that meet the growing needs of the region's large population. Across their platform, Angelo, Gordon typically purchases assets from owners who lack the capital, patience, or expertise to improve cash flow and value. Angelo, Gordon believes these assets are often attractively priced due to the lack of current cash flow, difficulty in obtaining debt financing, complexity of analysis, or inefficiency of the sale process.

The Firm has significant hands-on operating experience which Angelo, Gordon believes helps them avoid investing in situations where under-performance cannot be corrected. The Firm works with approximately 50 operating partners across the U.S. and 55 in Asia, which provide Angelo, Gordon with in-depth knowledge of the partners' respective local market. Operating partners provide Angelo, Gordon with the majority of their deal flow and are believed, by the Firm, to often be best positioned to identify off-market or poorly marketed deals. Operating partners are also able to "work the assets" daily, which Angelo, Gordon believes, improves execution of the value creation plan. The capital preservation principle is carried out with conservative underwriting, modest leverage use, and a focus on major markets.

The Funds will seek to invest in a portfolio of assets that, after stabilization, Angelo, Gordon believes will be highly sought after by traditional institutional real estate investors and will continue to appreciate even after underperformance has been corrected. Angelo, Gordon will, therefore, seek opportunities to purchase assets with all or some of the following fundamental strengths:

- Clearly identifiable reasons for underperformance and a well-defined and achievable plan for turnaround,
- Purchase price and forecasted stabilized value that are at discounts to replacement costs,
- Favorable long-term demand growth in the local market, and
- Barriers to new supply in the local market due to restrictions on land availability, zoning, or entitlement.

The Funds will be managed by a team of experienced real estate investment professionals with a long and successful history of working together. The U.S. and Asia senior team members have worked at Angelo, Gordon for an average of approximately twelve years. The team's experience includes significant operating experience encompassing all aspects of both real estate investment and management, including acquisition, financing, disposition, leasing, and construction management of a broad range of real estate product types in various geographic regions. Angelo, Gordon believes the purchase of assets which are out of favor and require repositioning demands a great deal of discipline and operating experience supported by fundamental research, a cornerstone of Angelo, Gordon's investment approach.

In the U.S., compared with when it last launched its opportunistic and core plus strategies, Angelo, Gordon has recently found a far less stark contrast between the two strategies and a narrowing of returns. As spreads have compressed since the global financial crisis, Angelo, Gordon expects to identify opportunities that arguably could be appropriate for either of the two strategies. Thus, Angelo, Gordon concluded that investors would be better served were it to remove the strategy delineation and instead be able to invest across the entire value-add spectrum. Doing so would enable it to consider multiple value creation strategies without the need to specifically identify the end of the spectrum into which they fit at acquisition.

Fund X, however, will still continue to have a portion of its allocation dedicated to investments outside of the U.S. Fund X will take a minority share of each Asian and European real estate investment made in funds dedicated to those regions, subject to diversification and capital availability. The piece of each non-U.S. deal added to the fund is determined by a formula. The portion of Fund X dedicated to investments outside the U.S. is capped at 20% of the fund.

In Asia, the Firm still expects to source and close on transactions that are more opportunistic in nature, combined with value-add transactions. Asia Fund IV plans to focus its investments in Japan, South Korea, Hong Kong and Singapore, the more economically mature countries in Asia, as well as China, the largest developing country in the region. This multi-country approach allows the Fund to pursue what Angelo, Gordon believes to be the best risk-adjusted returns among a wide array of opportunities. With rapidly changing regulations, growth rates, liquidity, and market cycles in Asia, Angelo, Gordon intends to respond flexibly as new opportunities arise or old opportunities become less attractive, as the Firm has done over its history of investing in the region.

IV. Investment Performance

Previous fund performance as of December 31, 2017 for Angelo, Gordon & Co.'s Opportunistic and Value-Add portfolios is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
Opportunistic Portfolio					
AG Realty Fund	1994	\$29 million	--	23%	1.9
AG Realty Fund II	1995	\$33 million	--	25%	2.1
AG Realty Fund III	1997	\$61 million	--	3%	1.3
AG Realty Fund IV	1999	\$255 million	--	8%	1.5
AG Realty Fund V	2001	\$333 million	--	26%	1.6
AG Realty Fund VI	2005	\$514 million	--	3%	1.1
AG Realty Fund VII	2007	\$1,257 million	--	13%	1.5
AG Realty Fund VIII	2011	\$1,265 million	--	15%	1.5
AG Realty Fund IX	2015	\$1,329 million	\$100 million	13%	1.2
Asia Opportunistic Portfolio					
AG Asia Realty Fund	2006	\$526 million	--	3%	1.1
AG Asia Realty Fund II	2010	\$616 million	--	17%	1.6
AG Asia Realty Fund III	2015	\$847 million	\$50 million	20%	1.3
Europe Value-Add Portfolio					
AG Europe Realty Fund	2014	\$570 million	--	15%	1.3
AG Europe Realty Fund II	2018	\$842 million	\$75 million	n/a	n/a

* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Performance data was provided by the General Partners of the relevant funds for informational purposes only and not in connection with the preparation of this document; net IRR and MOIC are based on liquidation at NAV and are provided by Angelo, Gordon & Co. for informational purposes only and not in connection with the preparation of this document. Performance data is net of expenses, management fees and performance allocations, if any. Data is unaudited and subject to change without notice. Past performance is not necessarily indicative of future results and there can be no assurance that the future funds will achieve comparable results.

V. Investment Period and Term

Fund X will have a four-year investment period and an eight-year term, unless extended at the discretion of the General Partner for up to two additional one-year periods. AG Asia Fund IV is expected to have a four-year investment period¹ and an eight-year term, unless extended at the discretion of the General Partner for up to two 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. Please note that this document was produced internally, not by Angelo, Gordon.

¹ The GP has not yet determined the investment period for Fund IV.

ATTACHMENT B

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	Brookfield Capital Partners V L.P.
<i>Type of Fund:</i>	Private Equity
<i>Target Fund Size:</i>	\$7 Billion
<i>Fund Manager:</i>	Brookfield Asset Management
<i>Manager Contact:</i>	Jeff Clarke 250 Vesey Street New York, NY 1281

II. Organization and Staff

Brookfield Asset Management Inc. (together with its affiliates, “the Firm” or “Brookfield”) is forming Brookfield Capital Partners V (“BCP V” or the “Fund”) to pursue value investments focused on opportunistic buyouts, platform opportunities, and underperforming businesses. The Fund intends to benefit from Brookfield’s real asset-related operating platforms by leveraging Brookfield’s deep operating experience to enhance transaction sourcing, execution, and post-acquisition value creation.

Brookfield Asset Management has a 115 year history as a global operator and leading asset manager of high quality real asset and related businesses. Brookfield believes the global reach and extensive expertise inherent in the platforms provides a significant competitive advantage in transaction sourcing and deal execution. Brookfield’s collaborative approach to investing helps facilitate this knowledge sharing across the Firm.

Over the past 18 years, Brookfield has transitioned its business into an asset management model with a pre-eminent position in the real asset space. It has established different platforms for institutional investment in private equity, property, infrastructure, timberlands and agriculture. The Firm has approximately 750 investment professionals and 80,000 operating employees in over 100 offices and operating locations around the world.

The Private Equity Group is led by Cyrus Madon, Senior Managing Partner and CEO Private Equity, with support from a 16-member senior leadership team that includes three sector Chief Investment Officers and eight Regional Heads as well as senior investment and operational professionals. The senior leadership team is supplemented by a group of senior Brookfield executives who make up the Investment Committee and provide oversight to the Private Equity Group. This leadership team has an average of 25 years of investment experience and has worked together at Brookfield for an average of 14 years. In all, the private equity platform is comprised of over 75 investment professionals, made up of both financial and operational professionals who work collaboratively as an integrated team.

III. Investment Strategy

BCP V will seek to make investments primarily in real asset-related industries and to continue the firm's established investment strategy focused on acquiring high-quality business at attractive valuations and further enhancing value post-acquisition through operational improvements. As part of its value-base and contrarian approach, BCP V will look to source transactions in out-of-favor sectors or businesses challenged by operational or financial improvements.

The Fund expects to benefit from the Firm's history and scale by leveraging the knowledge and resident expertise across the Firm's real assets and related operating platforms to identify investment opportunities up and down the real asset value chain. Throughout Brookfield's history, the Firm has owned and operated businesses across the real asset value-chain, from the long lived physical assets that form the backbone of the global economy to the essential services, raw materials and finished products necessary for their development or enabled by their existence. BCP V intends to use Brookfield's reputation and pedigree to position the Fund as the partner of choice in competitive acquisition processes. The Firm believes that it is especially well known in real assets related industries for being a capable leader in distressed investing and restructuring situations.

Post-acquisition, Brookfield will seek to use active management to implement strategic and operational initiative at the portfolio company level to create long-term value. These initiatives focus on profitability through sustainable operating, product, and cash-flow margins. In addition, BCP V will attempt to surface value from hidden assets, execute accretive add-on acquisitions and finance cash generative growth opportunities.

BCP V will target approximately 14-17 investments ranging from \$200 to \$600 million in equity value at acquisition and with add-ons, as well as one to two larger scale transactions on an opportunistic basis. Target investments include businesses that are low cost producers or businesses that operate in industries with high barriers to entry. The Fund will primarily target companies based in the geographies where the Firm has deep investment expertise and operational capabilities, such as the United States, Canada, Western Europe, Australia, Brazil and India.

IV. Investment Performance

Previous fund performance as of December 31, 2017 is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
Brookfield Capital Partners I	2001	C\$416 million	--	25%	1.9x
Brookfield Capital Partners II	2006	C\$1 billion	--	15%	2.4x
Brookfield Capital Partners III	2011	\$1 billion	--	3%	1.1x
Brookfield Capital Partners IV	2015	\$4 billion	\$100 million	86%	2.1x

* 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 Commitment Period for the Fund will terminate four (4) years from the Final Closing.

The Fund will terminate ten (10) years from the Initial Closing, subject to up to two (2) additional one-year extensions by the General Partner with the consent of the LP Advisory Committee.

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

<i>Name of Fund:</i>	China-U.S. Industrial Cooperation Partnership, LP
<i>Type of Fund:</i>	Private Equity - Buyout
<i>Target Fund Size:</i>	\$5 billion
<i>Fund Manager:</i>	Goldman, Sachs & Co.
<i>Administrative Contact:</i>	Amy Brown 200 West St, 37th Floor New York, NY 10282

II. Organization and Staff

Goldman Sachs is establishing China-U.S. Industrial Cooperation Partnership, L.P. (the “Partnership” or “the Fund”) to make private equity investments in companies (i) headquartered in the United States or (ii) that derive meaningful revenue in the United States. In either case, target companies will have, or can develop, a material business connection to the People’s Republic of China (“China”). Target companies are expected to be in the manufacturing, industrial, services / distribution, consumer and healthcare industries among others. The Partnership is part of a differentiated, strategic partnership between the Merchant Banking Division of Goldman Sachs (“MBD”) and China Investment Corporation (“CIC”) focused on providing the above-described companies with access to commercial opportunities with China. Goldman Sachs & Co. LLC will serve as the investment manager, with investment discretion and control the general partner of the Partnership, and CIC will be a value-added partner in China.

Goldman Sachs long history of investing its capital in a variety of businesses and transactions began in 1983, when the Firm started to invest in selected long-term equity investments. Many of the early investments proved successful and, in 1986, the Firm established investment partnerships that allowed the Firm’s clients to participate alongside Goldman Sachs. In 1991, Goldman Sachs formalized its private equity fund business through the creation of a distinct business unit with a mandate to manage the Firm’s private corporate equity investments. The GS Capital Partners (“GSCP”) Funds had a broad mandate to make private equity investments on a global basis in situations where the Firm perceived an attractive risk/return trade-off. From 1992 until 2012, the GSCP Funds served as the primary vehicles for Goldman Sachs’ direct private equity investing activities. From 2012 through 2016 private equity investments were funded through the Goldman Sachs balance sheet and/or separate accounts managed by MBD. In 2016, Goldman raised West Street Capital Partners VII, the successor to the GSCP Funds.

MBD's dedicated corporate private equity team consists of over 115 investment professionals, including over 35 partners and managing directors, in seven countries, with offices in New York, London, Hong Kong, Tokyo, Beijing, San Francisco, Mumbai and São Paulo. CIC is the sovereign wealth fund of China and was founded in 2007 as a vehicle to diversify China's foreign exchange holdings and seek maximum returns for its shareholder while taking appropriate risk. CIC is one of the world's largest sovereign wealth funds with \$930 billion of total assets as of December 31, 2017. CIC is expected to promote business activities for Portfolio Companies in China and leverage its unique position in China to provide support for "post-investment value creation." Such value creation opportunities are expected to include creation of a broad and deep network of stakeholder relationships with trusted dialogues.

III. Investment Strategy

The Fund will seek to make 8-12 investments of between \$250 million to \$1 billion each in U.S. domiciled or focused companies that have, or can develop, a meaningful business relationship with China. These investments are expected to focus on non-high-tech industries such as manufacturing/industrials, services & distribution, consumer, and healthcare. These investments are expected to be shared with West Street Capital Partners VII and its successor funds.

The Partnership will seek to leverage existing macro supply and demand trends in the U.S. and China by generating exports and driving value while also promoting supply side reform and meeting consumer and industrial demand in China and facilitating greater growth and corporate profits for U.S. companies. The U.S. and China are the world's two largest economies, and together are expected to contribute approximately 40% of global Gross Domestic Product (GDP) and nearly 50% of expected GDP growth from 2017-2019. In addition, China is undergoing a structural economic change from primarily an agricultural-based economy to a service-based economy. Recently China has experienced a meaningful upgrade of consumption since 2005, has built a "developed economy" e-commerce sector, is focused on continual upgrades to industrial efficiency, and is continuing its long term urbanization trend.

Goldman Sachs believes the United States provides the largest addressable market opportunity for attractive private equity investment, and also believes there is significant scope for U.S. companies to grow by increasing their commercial opportunities in China. There are over 600 U.S. companies with \$2.5 trillion of aggregate enterprise value in the manufacturing, industrial, services/distribution, consumer and healthcare industries which could potentially be in the mandate of the Cooperation Partnership.

The China-U.S. Cooperation fund will seek to add value to investments through several tenets that have been consistent across Goldman Sachs's private equity platform:

- **Value Orientation:** identifying investments with significant embedded growth opportunities, complex situations, out-of-favor situations, and/or industry consolidation potential.
- **Domain Expertise:** bringing to bear industry-specific expertise from across Goldman's extensive on-the-ground resources and long-standing presence in key markets.
- **Company Building:** focusing on operating improvements, cultivating entrepreneurialism, organic growth initiatives, growth and acquisition capital, and talent & human capital management.
- **MBD as Preferred Partner:** generating proprietary deal flow from the Goldman Sachs network of executives, entrepreneurs, shareholders, and other key stakeholders. In addition, MBD is able to source deals from other divisions of Goldman Sachs including Investment Banking and Private Wealth Management.

In addition, the Fund expects to benefit from a strategic relationship with CIC. Goldman believes CIC is positioned as China's premiere value-add partner. CIC is expected to leverage its unique position in China to provide support for post-investment value-creation. Specifically, CIC will seek to add value to the Partnership through:

- efficient sourcing of commercial partners and customers for portfolio companies;
- navigation of local and regional markets;
- recognized influence and power within China; and
- experience in Chinese capital markets.

IV. Investment Performance

Previous fund performance as of December 31, 2017 for the MBD's primary corporate equity investment vehicles is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR	Net MOIC
GSCP I	1992	\$1.04 billion	--	27%	3.3x
GSCP II	1995	\$1.75 billion	--	5%	1.2x
GSCP III	1998	\$2.78 billion	--	--	1.0x
GSCP 2000	2000	\$5.25 billion	\$50 million	22%	2.2x
GSCP V	2005	\$8.51 billion	\$100 million	19%	2.7x
GSCP VI	2007	\$20.30 billion	\$100 million	8%	1.4x
WSEP	2013	\$1.10 billion	--	7%	1.2x
Balance Sheet & Managed Account	2012-2016	\$4.38 billion	--	17%	1.6x
WSCP VII	2016	\$7.05 billion	\$150 million	n/a	n/a

V. Investment Period and Term

The commitment period will commence on the initial admission date and will continue until the fifth anniversary of the final admission date. The term of the Partnership will be ten years from the final admission date, subject to the General Partner's right, in its discretion, to extend the term of the Partnership for one additional year and, with the consent of the Investment Advisory Committee, for up to two additional one-year periods thereafter.

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

ATTACHMENT D

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	Goldner Hawn Fund VII
<i>Type of Fund:</i>	Private Equity
<i>Target Fund Size:</i>	\$250 million
<i>Fund Manager:</i>	Goldner Hawn Johnson & Morrison
<i>Manager Contact:</i>	Teresa Mohr Goldner Hawn Johnson & Morrison Incorporated 90 South Seventh Street, Suite 3700 Minneapolis, MN 55402

II. Organization and Staff

Goldner Hawn Johnson & Morrison (“Goldner Hawn” or “the Firm”) is organizing Goldner Hawn Fund VII (“Fund VII”) to make equity investments in lower middle market businesses with a strong regional focus on the Upper Midwest. The firm was founded in 1989, is based in Minneapolis and is one of the longest tenured private equity firms in the Midwest. The Firm has invested over \$780 million in 41 platform investments and 22 add-on acquisitions.

Fund VII will be managed by Jason Brass, Chadwick Cornell, Joseph Heinen, Timothy Johnson, Peter Settle, Joseph Helms and Andrew Tomashek. Including Fund VI, Messrs. Johnson, Heinen and Brass have worked together at Goldner Hawn for more than 15 years. Timothy Johnson is the sole remaining member of the Firm’s four founders. The team has experience outside of private equity investing in such areas as C-suite operating roles, transaction diligence advisory, corporate development, senior lending, legal counsel and investment banking.

III. Investment Strategy

Consistent with the investment strategy of the Firm’s prior funds, Fund VII will make control-oriented private equity investments in lower-middle market companies primarily based in the upper Midwest. In the past, approximately 80% of Goldner Hawn’s portfolio companies have been located in the Midwest. Equity investments will typically total \$20-40 million per transaction with overall company enterprise values generally ranging from \$25-\$150 million. The Firm expects that Fund VII’s investments will be diversified across a number of industries. These industries include: food manufacturers and distributors, transportation and logistics, outsourced business service providers and manufacturers of industrial and consumer products.

Goldner Hawn has consistently organized its investment efforts around a number of core investment disciplines and believes that Fund VII will benefit from the Firm's continued adherence to these tenets:

- An emphasis on sourcing investments in which they partner with business owners and management on an “advantaged” basis, thereby facilitating positive transaction dynamics.
- A value-oriented approach to investing, which they believe is increasingly essential to maximizing risk-adjusted investment returns.
- Creating portfolio company value through a variety of means, including: improving or augmenting management teams when needed; identifying and executing add-on acquisitions; facilitating new strategic initiatives; solving internal company issues that previously detracted from company value; and timing and managing the exits of the Firm's portfolio company investments.

Unlike Fund VI, Fund VII will not be a licensed small business investment company (SBIC). As a licensed SBIC, Fund VI was able to borrow up to \$150 million in debentures from the Small Business Administration (SBA) and pursued a strategy that included subordinated debt positions in its portfolio companies. Fund VII will not have the ability to borrow through the SBA's debenture program and is not expected to invest in subordinated debt to the same extent as Fund VI.

IV. Investment Performance

Previous fund performance as of December 31, 2017 for Goldner Hawn and the SBI's investments with previous funds, where applicable, is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
Fund I/II	1990	\$33.4 million	\$0	21.3%	2.9
Fund III	1996	\$85.7 million	\$0	13%	1.9
Fund IV	1999	\$200 million	\$40 million	8.4%	1.4
Fund V	2005	\$254.25 million	\$50 million	12.2%	1.9
Fund VI	2012	\$250 million**	\$20 million	17.9%	1.6

* 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 Goldner Hawn.

** Includes SBA debentures.

V. Investment Period and Term

The investment period begins on the first closing date and ends on the fifth anniversary of the final closing date. The term of the Fund will be ten years, subject to a one-year extension at the discretion of the General Partner and two additional one-year extensions with the consent 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>	Paine Schwartz Food Chain Fund V, L.P.
<i>Type of Fund:</i>	Private Equity Limited Partnership
<i>Target Fund Size:</i>	\$1.2 billion
<i>Fund Manager:</i>	Paine Schwartz Partners, LLC
<i>Manager Contact:</i>	Matthew Hershenson 475 Fifth Ave 17 th Floor New York, NY 10017

II. Organization and Staff

Paine Schwartz Food Chain Fund V, L.P. (“Fund V”) is being established by Paine Schwartz Partners, LLC (“the Firm”) to make investments in the global food and agribusiness sectors, which, despite attractive industry fundamentals, are currently underserved by private equity firms. Fund V will follow an investment strategy consistent with that of Paine Schwartz Food Chain Fund IV, which uses a thesis-driven approach to invest in proprietary and complex transactions, and leverages the investing and operating backgrounds of the Firm’s professionals to drive value creation. To date, Paine Schwartz Partners, together with the Predecessor Firm, has made 16 platform investments in the food and agribusiness sectors along with 26 add-on transactions.

The Fund will be led by Dexter Paine, Chairman, and Kevin Schwartz, CEO. Messrs. Paine and Schwartz are joined at the senior level by Partners David Buckridge and Angelos Dassios. The Executive Team has collaborated on investments for over 13 years. Paine Schwartz Partners was co-founded in 2006 by Messrs. Paine and Schwartz. The Predecessor Firm¹ was co-founded by Mr. Paine in 1997. The Paine Schwartz Partners team includes 40 investment, operations and finance professionals representing over 500 combined years of experience in the food and agribusiness industries.

The Firm has partnered with McKinsey & Company to complete two proprietary industry analysis projects. The Firm believes that Fund V will benefit from this partnership both in terms of identifying attractive investments and ongoing advisory services throughout the investment process. Fund V will also utilize the Firm’s Food Chain Advisory Board (FCAB) as an additional resource. The FCAB is made up of six independent executives with extensive experience in the food and agribusiness industries.

¹ In 1997 W. Dexter Paine, III co-founded a private equity firm known as Fox Paine & Company (the “Predecessor Firm”). Kevin Schwartz was a Managing Director at the Predecessor Firm before co-founding Paine Schwartz Partners with Dexter Paine.

III. Investment Strategy

Fund V will focus on investment opportunities in the global food and agribusiness sectors. Consistent with the Fund IV strategy, Fund V will focus on sustainable food chain investing, adopting a proactive, thesis-driven approach to identify value-added and differentiated companies primarily in the upstream segments of the value chain. Fund V will target businesses headquartered in Organisation for Economic Cooperation and Development (OECD) countries, seeking to limit overall exposure to developing markets. Once the Fund makes an investment, the Firm will leverage its extensive domain expertise to create value and position each investment for exit by recruiting experienced senior talent, expanding into new geographic markets, broadening customer bases, and executing on M&A opportunities.

There are several key aspects to the Paine Schwartz Partners investment strategy:

Focus on Attractive, Underserved Food and Agribusiness Sectors

The Firm believes these sectors provide attractive investment opportunities as global demand for food is rising due to population growth, rising wealth, and changing diets, while at the same time supply is increasingly challenged. Limitations to productivity, climate change, degradation of land and stressed water supplies are all factors that contribute to a supply-demand imbalance that is expected to widen in the future. Furthermore, the food and agriculture sectors have relatively low private equity participation and analyst coverage relative to their size in the overall economy.

Proactive, Thesis-Driven Approach to Idea Generation and Sourcing

Paine Schwartz Partners seeks to identify attractive investment opportunities in the food and agribusiness sectors through several different avenues, including: extensive primary research in identifying macro trends and conducting “deep dives” on specific industry segments; hosting industry conferences as well as staff off-sites; building upon the experience of the Firm’s existing operating director network and Food Chain Advisory Board; capitalizing on the Firm’s unique partnership with McKinsey & Company; and leveraging a deep network of industry companies and CEOs.

Hands-On and Active Ownership Approach

The Investment Team expects to take a hands-on approach with each investment, seeking to add value through active board seat participation and leadership on critical decision-making. The Investment Team, along with the Food Chain Advisory Board, believes that it has the integrated experience and networks to effectuate this strategy, possessing significant, combined expertise in areas such as R&D, intellectual property, regulatory, product commercialization, strategic planning and business development, among others. Further, the Fund will employ its Portfolio Excellence Platform (“PEP”) to strategically seek to add value at the portfolio company level. PEP is an in-house team that provides a broad range of operational services to portfolio companies, from management team to IT systems enhancements.

IV. Investment Performance

Performance for prior funds is presented as of 12/31/17 below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
Fund I **	1998	\$509 million	\$40 million	7%	1.4x
Fund II **	2000	\$1.0 billion	\$50 million	19% ***	2.0x ***
Fund III	2006	\$1.2 billion	N/A	4%	1.3x
Fund IV	2015	\$893 million	\$75 million	8%	1.1x

* Net IRR and Multiple of Invested Capital (MOIC) were provided by the General Partner as of the aforementioned dates. All information excludes co-investments.

** Funds I and II were managed by the Predecessor Firm.

*** Although Paine & Partners professionals ceased management of Fund II as of 12/31/2007, the fund is still active and has been managed by members of the Predecessor Firm from 2008 forward. Performance is presented through 12/31/2017 based on valuations provided by State Street..

Performance for food and agribusiness investments, aggregated across Funds II-IV is presented below:

Fund	Number of Investments	Total Invested Capital	Gross IRR*	Gross MOIC*
Funds II-IV	16 platforms w/ 26 add-ons	\$1.9 billion	39%	1.8x

* Net IRR and Multiple of Invested Capital (MOIC) cannot be provided for the aggregate of food and agribusiness investments because the fees and expenses associated with individual investments and other activities are applied at the fund level.

V. Investment Period and Term

The investment period of the Fund will end five years from the initial closing. The term of the Fund will terminate on the tenth anniversary of the date of the final closing but may be extended for up to a maximum of two consecutive one year periods with the approval of the Advisory Board.

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 F

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	Thoma Bravo Fund XIII, L.P.
<i>Type of Fund:</i>	Private Equity - Buyout
<i>Target Fund Size:</i>	\$9.0 billion
<i>Fund Manager:</i>	Thoma Bravo, LLC
<i>Manager Contact:</i>	Jennifer James 600 Montgomery Street, 20 th Floor San Francisco, CA 94111

II. Organization and Staff

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

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

With offices in San Francisco and Chicago, the Firm employs 38 investment professionals, including 21 senior investment professionals. The Firm also utilizes the services of 13 operating partners and operating advisors. All six Managing Partners have been with Thoma Bravo for a minimum of thirteen years.

III. Investment Strategy

Fund XIII is expected to build upon the investment strategy and process originally created by Carl Thoma and his partners more than 30 years ago, and more recently refined by Orlando Bravo and the other current Thoma Bravo partners. This strategy seeks to create value by transforming businesses in fragmented, consolidating industry sectors into larger, more profitable and more valuable businesses through rapid operational improvements, growth initiatives, and strategic and accretive add-on acquisitions. The application and infrastructure

software and technology enabled services industry sectors on which Thoma Bravo focuses today are fragmented and consolidating, which lend themselves particularly well to this strategy. Fund XIII is expected to target roughly 12-15 platform investments and typically commit between \$500 million and \$1.5 billion over the life of each investment.

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

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

Thoma Bravo and its predecessor firms have invested in many consolidating sectors over the years, including distribution, education, insurance, finance, communications, media, marketing, consulting, asset management, and security services. As early as 2001, the Firm's research identified the software industry as an area of opportunity. Many software industry sectors were fragmented and consolidating. Formerly rapidly growing companies were becoming mature, growing less rapidly than in earlier years and had not yet adjusted their cost structures to current growth opportunities. A high proportion of their revenue was derived from predictable, recurring maintenance revenue. Since then, the funds managed by Thoma Bravo have made investments in about 56 software and technology enabled services platforms, representing about \$41 billion of enterprise value. These platform portfolio companies have invested in approximately 125 add-ons, representing an approximate additional \$8 billion of value, making Thoma Bravo one of the leading private equity investors in the software sector.

IV. Investment Performance

Previous fund performance as of December 31, 2017 for Thoma Bravo is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
Fund VII**	2000	\$554 million	\$50 million	24.8%	2.1
Fund VIII**	2005	\$765 million	\$70 million	18.3%	2.9
Fund IX	2008	\$823 million	--	44.8%	3.8
Fund X	2011	\$1,275 million	--	38.7%	2.4
SOFI	2013	\$418 million	--	32.5%	2.0
Fund XI	2014	\$3,662 million	--	22.3%	1.6
SOFII	2015	\$1,065 million	--	21.5%	1.5
Discover Fund	2015	\$1,074 million	--	18.7%	1.2
Fund XII	2016	\$7,604 million	\$75 million	10.8%	1.1

* Previous fund investments are not indicative of future results.

** Funds VII and VIII include investments in sectors other than software and technology enabled services. Net IRR and Net MOIC were provided by Thoma Bravo.

V. Investment Period and Term

The Fund will have a six-year investment period and a ten-year term. The Fund may be extended for an additional one-year period at the discretion of the General Partner and, thereafter, for two additional one-year periods at the discretion of the General Partner with the consent of the Fund's advisory committee.

This document for informational purposes only and is not intended, and should not be relied on in any manner, as legal, tax, investment, accounting or other advice or as an offer to sell or a solicitation of an offer to buy limited partner or other interests in any fund, any investment vehicle or any other security. Any offer or solicitation regarding a fund will be made only pursuant to the confidential private placement memorandum of the Fund (as may be amended or supplemented, a "PPM") and Fund's subscription documents and Agreement of Limited Partnership (an "LPA"), which will be furnished to qualified investors on a confidential basis at their request for their consideration in connection with such offering. This document is not a part of a PPM or subscription documents. The information contained in this document will be superseded by, and is qualified in its entirety by reference to, a PPM, which contains important information about the investment objectives, terms and conditions of an investment in the Fund, tax information and risk disclosures that should be read carefully prior to any investment in the Fund, and the applicable LPA.

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ATTACHMENT G

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	Warburg Pincus Global Growth, L.P.
<i>Type of Fund:</i>	Private Equity – Growth Equity
<i>Target Fund Size:</i>	\$13.5 Billion
<i>Fund Manager:</i>	Warburg Pincus LLC
<i>Manager Contact:</i>	James W. Wilson 450 Lexington Ave. New York, NY 10017

II. Organization and Staff

Warburg Pincus was founded in 1966 and raised its first institutional fund in 1971. Since that time, Warburg Pincus has raised 17 private equity funds which collectively represent \$73 billion in committed capital – twelve prior Global Funds, two International-only Funds and three companion funds that invest alongside the firm’s active Global Funds in Energy, China and Financial Services. The firm also established a \$1.2 billion global real estate fund in 2006 that is fully invested. Warburg Pincus was founded in New York where it remains headquartered today, in addition to a global presence with nine additional offices around the world.

Warburg Pincus successfully completed a leadership succession in 2000. At that time, the current Co-Chief Executive Officers—Charles R. Kaye and Joseph P. Landy—assumed the leadership of the firm succeeding the founders, Lionel Pincus and John Vogelstein. Messrs. Kaye and Landy, who are currently 52 and 55 years old, respectively, had each been at the firm for nearly 15 years when the succession took place. All of the firm’s investment activities are coordinated by a 16-person Executive Management Group (EMG) led by the firm’s Co-Chief Executive Officers. The members of the EMG have an average tenure of 15 years with the firm and an average age of 51. The current Co-Chief Executive Officers manage an ownership structure and carried interest pool for the firm that is spread broadly and deeply among certain employees. Over 170 professionals now participate in carried interest generated by all Warburg Pincus private equity funds through one common allocation program.

III. Investment Strategy

The Firm's predominant focus is on growth investing. Over the years, Warburg Pincus has successfully invested in growth companies as well as companies at other stages of development, from building early-stage and start-up companies, to providing capital to meet the needs of existing businesses, to investing in later-stage buyout transactions and special situations, typically in circumstances in which growth is a key aspect of the investment thesis. The firm's early stage and growth investing is often thesis-driven, pursuing extensively researched themes and ideas. The firm also prefers to invest with accomplished management teams who are investing in the transactions alongside the firm. When situations arise, Warburg Pincus can leverage its experience lifting out single business units or intellectual property to form new stand-alone companies with the backing of a management team.

The firm expects the Partnership to have a diversified portfolio of approximately 60-90 portfolio companies, with an average equity commitment of approximately \$150 million. The firm has no pre-determined, fixed allocation to any industry sector or geographic area, and the mix of investments in any one fund will reflect with the firm views as the best opportunities on a risk-adjusted basis at that time.

As is the case with prior Warburg Pincus funds, WPGG will focus on the firm's five core industry sectors:

- Energy
- Financial Services
- Healthcare & Consumer
- Industrial & Business Services
- Technology, Media & Telecommunications

While the firm maintains the flexibility to invest across geographic regions, it anticipates that WPGG will be 50%-60% invested in North America, 10%-15% in Europe, and 20%-35% in Asia and other developing markets. Investments in countries outside of North America and Developed Europe will not make up more than 49% of aggregate capital commitments without Advisory Committee approval.

There are two significant themes, apart from specific industries or geographies, that have guided the firm's investment approach in the past, and that the firm believes will continue to be significant areas of focus in the foreseeable future:

- **Innovation/Technology:** The firm believes the world is experiencing a technology revolution that is picking up speed and will create significant investment opportunities for many years across most sectors of the economy. The firm's investments in technology are particularly focused on technology applications that enable companies and individuals to do things they could not do before or increase efficiency (often at a lower cost). Given increased competition and tighter margins across many industries, Warburg Pincus believes that technology will be one of the key methods of increasing productivity and profitability for companies. For Warburg Pincus, investing in innovation includes investing in businesses that meet an unmet need as well as integrating and applying existing technology to traditional

businesses. This includes, for example, using the Internet and the cloud to deliver services and products more efficiently as well as using better information technology to drive logistics businesses. Innovation is also one of the key components of the firm's healthcare investing activities, from technology-driven medical devices to innovation and technology to deliver better healthcare services at lower costs. The majority of the portfolio companies in each of WP XI and WP XII, the firm's two most recent Global Funds, have innovative products or services underpinning the firm's investment thesis in innovation, and Warburg Pincus anticipates that innovation will remain a clear investment theme for the firm in the future.

- **Growth in Developing Markets:** Over the last 20 years, markets such as China, India, Southeast Asia, Brazil and other developing areas have seen remarkable growth in GDP, the creation of middle class consumers, the rise of technology and communications usage, and rapid urbanization. Warburg Pincus' investment focus in these markets has been particularly centered on consumer growth and spending trends (retail, healthcare, financial services, the Internet and housing), global supply chain (including services businesses and technology-enabled businesses) and earlier-stage infrastructure (consistent with the firm's focus on growth investing). Investing in the entrepreneurs who are building growth companies to meet these demands is expected to be one of the firm's principal areas of focus for years to come. The firm expanded, and continues to expand, its presence in China, India, Southeast Asia and other developing markets, including the opening of an office in Singapore in 2016.

While the firm's investments generally follow these themes, Warburg Pincus has – throughout its history – made selective opportunistic, even contrarian, investments. The firm expects that this will continue to be the case, particularly for the firm's Financial Services team which often pursues dislocations in the industry, as well as the Industrial and Business Services team and other areas of the firm that may also take advantage of market changes, episodic events and innovative investment structures.

IV. Investment Performance

Previous fund performance is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
EMW Ventures Inc.	1971	\$41 million	N/A	14.9%	3.3x
Warburg Pincus Associates	1980	\$101 million	N/A	19.0%	3.3x
Warburg Pincus Capital Partners	1983	\$341 million	N/A	14.6%	2.8x
Warburg Pincus Capital Company	1986	\$1.2 billion	N/A	18.4%	4.4x
Warburg Pincus Investors	1989	\$1.8 billion	N/A	14.8%	2.4x
Warburg Pincus Ventures	1994	\$2.0 billion	\$50 million	49.5%	5.3x
Warburg Pincus Equity Partners	1998	\$5.0 billion	\$100 million	10.3%	1.6x
Warburg Pincus VIII	2001	\$5.3 billion	\$100 million	14.7%	2.3x
Warburg Pincus IX	2005	\$8.0 billion	\$100 million	9.9%	1.8x
Warburg Pincus X	2007	\$15.1 billion	\$150 million	8.2%	1.5x
Warburg Pincus XI	2012	\$11.2 billion	\$200 million	13.9%	1.5x
Warburg Pincus Energy	2014	\$4.0 billion	N/A	0.7%	1.0x
Warburg Pincus XII	2015	\$13.4 billion	\$131 million	6.1%	1.0x
Warburg Pincus China	2016	\$2.2 billion	\$45 million	13.7%	1.1x
Warburg Pincus Financial Services	2017	\$2.4 billion	\$90 million	NM	NM

* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Net MOIC for all funds provided by the manager as of 12/31/2017.

V. Investment Period and Term

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

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 H

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	WCAS XIII, L.P.
<i>Type of Fund:</i>	Private Equity Limited Partnership
<i>Total Fund Size:</i>	\$3.75 billion
<i>Fund Manager:</i>	Welsh, Carson, Anderson & Stowe
<i>Manager Contact:</i>	Jonathan M. Rather 320 Park Avenue Suite 2500 New York, NY 10022-6815

II. Organization and Staff

Welsh, Carson, Anderson & Stowe (“WCAS” or the “Firm”) has formed WCAS XIII, (the “Partnership”) to invest in privately negotiated equity and equity-related investments in its two target industries: technology and healthcare. WCAS XIII is the 17th limited partnership formed by WCAS. Established in 1979 and based in New York, WCAS has organized 16 limited partnerships with total capital of over \$22.8 billion. The limited partnerships consist of twelve equity partnerships and four subordinated debt funds. The Partnership will be managed by affiliates of WCAS, and the general partner of the partnership will be WCAS XIII Associates, LLC (the “General Partner” or the “Manager”).

WCAS’s investment strategy is to buy growth businesses in its two core industries, partner with strong management teams and build value through a combination of operational improvements, internal growth initiatives and strategic acquisitions. WCAS seeks to use a consistent and disciplined investment approach, domain industry knowledge, targeted deal flow, reliance on repeat management teams, improved operating techniques and conservative use of leverage to deliver high risk-adjusted returns.

WCAS has 12 General Partners, located in New York and San Francisco. The General Partners have strategic, operational, and financial experience combined with extensive relationships and expertise in healthcare and technology. The General Partners average 18 years of experience in private equity and 14 years working together at WCAS. WCAS investment professionals consist of Principals, Vice Presidents and Associates who work closely with WCAS General Partners to identify, acquire and build businesses. WCAS Resource Group identifies and implements operating improvements and growth initiatives across the portfolio. The Resource Group is composed of approximately 20 Operating Partners, including generalist operating professionals, functional specialists, and senior industry professionals with deep subsector experience. Typically, each portfolio company investment is staffed with a minimum of two General Partners, a group of Investment Professionals and WCAS Resource Group professionals to provide the proper balance of experience and expertise.

III. Investment Strategy

The Partnership will invest primarily in equity and equity-related securities of companies selected by the General Partner. The Partnership's investment strategy is to build market-leading companies by (i) buying growth businesses in healthcare and technology industries, (ii) partnering with strong management teams and (iii) building value through a combination of operational improvements, internal growth initiatives and strategic operations. The eight building blocks of WCAS's investment strategy are listed below:

Focus on Operational Growth – WCAS relies on organic and acquisition-driven growth rather than financial engineering to drive returns. Through this approach, the Firm seeks to create sustainable business models and industry leaders. WCAS believes that the most proven method for increasing equity value is to grow the operating profits of its companies.

Disciplined Portfolio Construction – WCAS seeks to maintain a consistent and disciplined investment approach. The Firm diversifies its portfolios by time, industry, theme, stage of investment, and economic sensitivity. Over the last five years the Firm has invested approximately \$700 million annually and targets approximately 15-20 portfolio company investments per Partnership.

Strong Alignment of Interests – WCAS believes strongly in a high alignment of interests with its Limited Partners, which will be achieved through a significant financial commitment to WCAS XIII by the General Partners and other WCAS professionals, as well as proper alignment with the executives leading WCAS portfolio companies.

Industry Specialization – WCAS's two target industries, technology and healthcare, offer attractive opportunities for private equity given their (i) size, (ii) growth and (iii) fragmented nature. Combined, the two industries represent approximately 40% of the U.S. GDP and are growing much faster than the overall economy.

Control Investor Strategy – WCAS believes that its value-added investment strategy is best executed when it acquires operational and strategic control of companies. Since 1995, approximately 90% of WCAS's equity capital has been invested as a control investor.

Deal Size Agnostic – WCAS's strategy is to invest in companies of various sizes and stages and seeks to build a portfolio with exposure to (i) buyouts, (ii) growth equity investments, (iii) buy-and-build transactions and (iv) small alpha investments.

Repeat Management Teams – The Firm routinely uses proven management teams with prior WCAS portfolio company experience. Approximately 50% of WCAS XI's and 60% of WCAS XII portfolio companies benefit from repeat management. For example, the WCAS XI and WCAS XII investments with repeat management teams have generated gross internal rates of return of 24% and 38%, respectively.

Capital markets review – WCAS’s Director of Capital Markets works closely with the Firm’s portfolio companies to design appropriate capital structures. The Firm has significant experience financing its portfolio companies during various market environments. WCAS focuses on capitalizing its portfolio companies with relatively modest leverage levels for financial flexibility.

IV. Investment Performance

Previous fund performance as of December 31, 2017 for investments in WCAS’s Equity Partnerships is shown below. Performance for Funds I through IV is not provided, as those Partnerships were not focused exclusively on buyouts.

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*
WCAS V	1989	\$371 million	N/A	33%	3.5
WCAS VI	1993	\$604 million	N/A	14%	2.1
WCAS VII	1995	\$1.4 billion	N/A	18%	2.2
WCAS VIII	1998	\$3.0 billion	\$100 million	3%**	1.3**
WCAS IX	2000	\$3.8 billion	\$125 million	11%	1.7
WCAS X	2005	\$3.4 billion	\$100 million	8%	1.7
WCAS XI	2009	\$3.8 billion	\$100 million	13%	1.6
WCAS XII	2015	\$3.3 billion	\$150 million	20%	1.3

* 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) for Funds V-XII were provided by the General Partner.

** Excluding the communication investments (healthcare and technology only), Net IRR 8% and Net MOIC 2.1x.

V. General Partner’s Investment

The General Partner and other WCAS professionals will make aggregate Capital Commitments to the Fund equal to the lesser of 5% of the Partnership’s total capital commitment or \$200 million.

VI. Investment Period and Term

The investment period will be six years from the initial closing. The Partnership will terminate ten years from the initial closing, subject to extensions of up to three additional one-year periods with the consent of a majority 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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DATE: June 7, 2018

TO: Members, State Board of Investment

FROM: Mansco Perry III

SUBJECT: BlackRock Long Term Private Capital Fund

BlackRock is forming the BlackRock Long Term Private Capital Fund. The Fund is being organized to invest in a portfolio of established businesses with strong, recurring revenues, prudent capital structures, and stable growth potential over a long-term horizon. An example of this type of approach would be Warren Buffet's Berkshire Hathaway, Inc.

The Fund will have an evergreen structure, which will allow for long-term and potential indefinite hold periods of investments. Initially, the Fund is seeking several large institutional investors, such as the State Board of Investment. Staff has been in discussions with BlackRock as a potential initial cornerstone investor. These investors would each invest \$1–1.5 billion and will receive extremely attractive economic concessions relative to traditional private equity funds. Additionally, the Fund will operate on a budgeted fee basis similar to the Public Pension Capital Fund which the SBI participates. This Fund represents an opportunity to alter the traditional private equity model by affording limited partners lower fees and improved governance. The Fund is expected to be less risky than private equity and produce higher returns than public equity.

Limited partners will have the ability to sell their shares in the existing secondary market for private funds, or via a liquidity matching process that will be developed by BlackRock once the fund is invested. Unlike in traditional private funds, limited partners will be able to sell their shares without GP consent and BlackRock cannot raise additional capital until existing LP liquidity needs are met.

This is a potential investment that we believe makes a lot of sense for the SBI. The IAC gave considerable attention to this investment at their May 2018 meeting: Staff explained the special nature of this deal and the IAC agreed that the investment amount was warranted. At this time, the Executive Director believes that the favorable economic terms can be achieved at a lower investment level.

BlackRock intends on having a closing for the cornerstone investors in late July or early August. After this date, the SBI may still be able to participate in the Fund, but without receiving the favorable economic concessions that have been discussed with the initial cornerstone investors. Given the uniqueness of this investment, its attractive terms, and favorable economics and return potential, the IAC and Staff recommend that the SBI authorize the Executive Director to negotiate and execute the proposed commitment.

Following is **Attachment A1 beginning on page 42** which includes Staff's formal recommendation and additional information on the BlackRock Long Term Private Capital Fund.

ATTACHMENT A1

1) Investment with an existing private equity manager, BlackRock, in BlackRock Long Term Private Capital (“LTPC”).

BlackRock is seeking investors for a new fund to invest in a portfolio of established businesses with strong, recurring revenues, prudent capital structures, and stable growth potential over a long-term horizon. BlackRock aims to generate attractive risk-adjusted returns over multiple market cycles with relatively lower risk and greater focus on long-term themes. LTPC believes it will be able to generate attractive risk-adjusted returns while charging lower fees and avoiding excessive leverage. BlackRock expects deals to be originated primarily (though not exclusively) from family-owned or closely held businesses, private equity takeouts, asset recapitalizations, and friendly minority investments. LTPC will have an evergreen structure, which will allow for long-term and potential indefinite hold periods of investments.

In addition to reviewing the attractiveness of the BlackRock LTPC 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 BlackRock LTPC continues on the next page.

RECOMMENDATION:

The Investment Advisory Council concurs with Staff’s recommendation that the SBI authorize the Executive Director, with assistance from the SBI’s legal counsel, to negotiate and execute a commitment of up to \$2 billion, or 20% of BlackRock LTPC 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 BlackRock 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 BlackRock or reduction or termination of the commitment.

MANAGER SUMMARY PROFILE

I. Background Data

<i>Name of Fund:</i>	BlackRock Long Term Private Capital
<i>Type of Fund:</i>	Evergreen Private Capital
<i>Target Fund Size:</i>	\$12 billion
<i>Fund Manager:</i>	BlackRock
<i>Administrative Contact:</i>	Douglas McNeely 55 East 52 nd Street New York, NY 10022

II. Organization and Staff

BlackRock (the “Firm”) is forming Long Term Private Capital (“the Partnership” or “LTPC”) to generate attractive risk-adjusted returns over multiple market cycles with relatively lower risk and greater focus on long-term themes than traditional private equity investments. BlackRock will aim to achieve this objective by creating a portfolio of established businesses with strong, recurring revenues, prudent capital structures and stable growth potential over a long-term horizon.

The Partnership’s senior investment team will be comprised of experienced senior professionals from a diversity of backgrounds: private equity, direct pensions/sovereign wealth funds, investment banking, and corporate development. An Executive Investment Committee (the “IC”) will be responsible for final approval of the Partnership’s investments as well as for overall strategy oversight. At the time of the initial closing, the IC is expected to consist of: Mark Wiseman, Chairman of BlackRock Alternative Investors; Andre Bourbonnais, Head of LTPC; Rob Kapito, President and a Director of BlackRock, Inc.; David Blumer, Global Head of BlackRock Alternative Investors; and Kendrick Wilson, senior advisor to the IC.

III. Investment Strategy

BlackRock believes that there exists a gap in the market between public and private equity where companies are seeking long-term capital partners. The Fund will seek to invest in a concentrated portfolio of high-conviction later-stage assets with stable cash flows. Each investment is expected to require between \$500 million to \$2 billion in Partnership capital, with a “sweet spot” of \$1.5 billion. This portfolio will target lower risks and potential returns than traditional buyout strategies, but above the risk/return profile of public equities. Importantly, LTPC believes it will be able to pursue these opportunities without some of the key challenges of traditional private equity vehicles: high fees and expenses; excessive leverage; frictional costs as portfolio companies are sold from one private equity fund to

another; and improper incentives leading general partners to “sell winners and hold losers.” Overall, LTPC seeks to deliver risk-adjusted net performance to its investors that is superior to the market.

BlackRock believes its position as the world’s largest asset manager, with access to management of thousands of public companies, as well as a global network of professionals, advisors and clients, will give the Firm an important edge in sourcing transactions. The Firm expects deals to be originated primarily (though not exclusively) from four opportunity sets that are often unavailable to private equity investors:

- **Family-owned or Closely Held Business** that prefer transactions with counterparties that will maintain and build the business over a long period of time, as contrasted with a financial sponsor with a shorter-term focus or a strategic investor focused on achieving cost reductions.
- **Private Equity Takeouts.** Dispositions by private equity funds seeking to exit investments in “turned around” companies with stable revenue prior to the expiration of the fund. In particular, situations where a sale to a strategic acquirer or an initial public offering may not be practicable due to regulatory considerations or unattractive valuations.
- **Asset Recapitalization.** Partnerships with large corporations seeking to recapitalize non-core businesses or assets to strengthen the corporate parent’s balance sheet or to enable accelerated growth of such subsidiary business through capital infusion or enhanced governance. Companies often want a partner who can invest on an unlevered basis.
- **Friendly Minority Investments** in challenged industries where target companies are seeking to signal the strength and stability of their organizations by partnering with a long-term oriented fiduciary investor. These investments may take the form of preferred stock or warrants.

IV. Investment Structure

Long Term Private Capital intends to invest across a few long-term, global themes, with a sufficiently long time-horizon to see these themes come to fruition. In order to accomplish this objective, the Partnership structure will differ significantly from a traditional private equity fund. Some of the notable differences include:

- The Partnership will have an evergreen structure, which will allow for long-term and potential indefinite hold periods of investments.
- LTPC management fees will be determined using a “cost plus” model. The Partnership budget will be subject to annual approval by an Advisory Committee of Limited Partners. This structure will result in management fees that are significantly lower than in a traditional private equity fund, and which decrease as a percentage of assets as LTPC grows.

- Limited Partners may choose to have their entire commitment drawn in full at subscription and invested in low-cost public securities, which will be sold to fund investments. LPs may also choose to fund investments through capital drawdowns at the time of each investment. After 4 years of 75% invested, the two share classes will merge, and all of the units will be fully funded and fungible with one another.
- BlackRock will be paid a performance fee in the form of Partnership units, which will serve to further align the interest of the General Partner with LPs.
- Limited Partners will have the ability to sell their interests on the existing secondary market for private funds, or via a liquidity matching process that will be developed and administered by BlackRock once the fund is invested. Unlike traditional private investments, LPs holding fully-funded units will be able to sell their units without GP consent in whole or in part. LTPC cannot raise additional capital until the liquidity needs of existing investors are satisfied via the liquidity matching pool, and a full 75% of the vehicle is already invested.

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INVESTMENT ADVISORY COUNCIL REPORT

DATE: June 7, 2018

TO: Members, State Board of Investment

FROM: Members, Investment Advisory Council and SBI Staff

**SUBJECT: Public Markets, Non-Retirement, and Participant Directed
Investment Programs**

This section of the report provides a brief performance overview of the SBI portfolio. 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:

	Page
• Review of Public Markets Program	3
• Public Markets Managers' Organizational Update	5
• Non-Retirement Manager Update	8
• Deferred Compensation Manager Update	9

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Review of SBI Public Markets Program First Quarter 2018

SBI Portfolio – Quarter and Year Attribution

In the first quarter, the SBI's overall portfolio, the Combined Funds, outperformed the composite benchmark return (0.1% Combined Funds vs. -0.2% Composite Benchmark). Domestic equities exceeded the Russell 3000 Index return (-0.3% Domestic Equity vs. Domestic Equity Benchmark -0.6%), while international equities matched the MSCI ACWI ex USA Index net return (International Equity -1.2% vs. -1.2% International Equity Benchmark). The fixed income portfolio exceeded the Bloomberg Barclays U.S. Aggregate Index return (Fixed Income -1.4% vs. -1.5% Fixed Income Benchmark), while Alternatives contributed positively to absolute performance, returning 4.6%. For the quarter, Alternatives generated the largest positive contribution to the combined funds return. For the year ending March 31, domestic equity contributed 6.3% of the 12.7% net return, while international equity contributed 3.8% of the total portfolio net return.

Domestic Equity

The large-cap, growth managers exceeded the Russell 1000 Growth benchmark by 7.3 percentage points for the quarter. Stock selection in Consumer Discretionary led the outperformance. All three managers outperformed for the quarter.

The large-cap, value managers outperformed the Russell 1000 Value benchmark by 0.7 percentage points for the quarter. Overall stock selection in the Financial sector contributed to the outperformance. Both Earnest Partners and LSV outperformed for the quarter, while Barrow Hanley underperformed.

The small-cap, growth managers outperformed the Russell 2000 Growth benchmark by 1.4 percentage points for the quarter, with stock selection in the Consumer Discretionary sector driving the outperformance. With the exception of Hood River, all small-cap, growth managers outperformed for the quarter.

The small-cap, value managers exceeded the Russell 2000 Value benchmark by 0.6 percentage points for the quarter. Stock selection in the Financial Services sector contributed to the outperformance. With the exception of Hotchkis & Wiley, all small-cap, value managers outperformed for the quarter.

The semi-passive managers, in aggregate, outperformed the Russell 1000 index return by 0.1 percentage point. Stock selection overall contributed positively, especially in the Energy, Consumer Staples, and Utilities sectors. The passive Russell 3000 and Russell 1000 index managers tracked their respective indices within expectation.

Developed International Equity

The active developed markets managers outperformed the MSCI World ex USA Standard Index (net) by 0.6 percentage points over the quarter. From a country perspective, stock selection within the United Kingdom and Australia contributed to the outperformance, partially offset by stock selection in Japan. Stock selection within the Bank Financials sub-sector and Information Technology sector were the primary drivers of outperformance for the second consecutive quarter.

AQR, the semi-passive, developed markets equity manager, outperformed the MSCI World ex USA Standard Index (net) during the quarter by 0.5 percentage points for the quarter. Stock selection in the Financials, Consumer Staples and Energy sectors, as well as underweight positions in those sectors, contributed positively to performance. The passive developed markets manager experienced negative tracking error relative to its index due primarily to the Iran/Sudan restricted stocks not held in the portfolios and to the resulting mis-weights to securities held in lieu of the restricted names.

Emerging Markets Equity

The active, emerging markets equity composite returned 1.1% vs. MSCI Emerging Markets Index benchmark of 1.4% for the quarter. The overall emerging markets equity program, including passive, underperformed the benchmark by 0.2 percentage points over the same period. Stock selection and allocation to Brazil and South Africa contributed positively to returns, however these effects were outweighed by negative stock selection in Korea. Managers overall benefited from an underweight to South African based Naspers, as its large stake in Tencent weighed on returns for the quarter. From a sector point of view, stock selection in the Financials-banking sub-sector negatively impacted relative performance.

The passive emerging markets manager also experienced negative tracking error relative to its benchmark primarily due to the Iran/Sudan restricted stock not held in the portfolio and to the resulting mis-weights to securities held in lieu of the restricted names.

Fixed Income

Each of the four active fixed income managers supporting the fixed income pool outperformed the Bloomberg Barclays Aggregate benchmark this quarter (-1.2% Active Fixed Income Managers vs. -1.5% Benchmark). The three semi-passive managers' combined performance slightly exceeded the benchmark (-1.4% Semi-Passive Fixed Income Managers vs. -1.5% Benchmark). Although the Treasury yield curve continued to flatten during the quarter, yields in general rose across the curve (U.S. 10 year increased from 2.40% to 2.75%), which largely contributed to managers' negative absolute performance. Managers with shorter overall duration positions tended to outperform managers with longer positions. Exposure to investment grade corporate credit was also a negative contributor to absolute performance as spreads modestly widened during the quarter, although corporate security selection (including industry sector selection) contributed to positive relative performance. Lastly, security selection in ABS, CMBS and non-agency MBS were also positive contributors to relative performance.

Public Markets Managers' Organizational Update First Quarter 2018

Domestic Equity Managers

J.P. Morgan

During the first quarter, Laura Huang, who was covering Information Technology Services changed roles within the firm. Her coverage has been assumed by David Chan. In addition, Dr. Charles Silberstein, who was covering Pharmaceuticals & Biotech, has left the firm. Staff has no concerns with these changes.

McKinley

The domestic small-cap growth portfolio managed by McKinley was terminated on March 9, 2018.

Developed International Equity Managers

AQR

During the first quarter, AQR's ownership expanded to include five new principals from among existing employees. Hoon Kim, a portfolio manager for AQR's Global Stock Selection strategies and a principal of AQR, announced he would be leaving the firm. This is not expected to impact the SBI's portfolio.

Acadian

Ryan Stever and Wes Chan, Co-Directors of Research resigned in March 2018. Wes will stay with Acadian for an additional three months to assist with the transition. Temporarily, Co-CIO Brendan Bradley and other senior managers of the research team will oversee ongoing research projects until a replacement has been hired. Staff has no concerns at this time but will continue to monitor the situation.

Marathon

Joe Diment was hired as the firm's COO. This is a new position in the firm. Staff has no concerns with this addition.

McKinley Capital

Within their Quantitative Research Team, Miranda Chang and Stefanus Winarto were hired while Senior Quantitative Analyst M. Sundaram Chettiappan left the firm. In addition Gregory Samorajski, Director of Investments/Portfolio Manager, has retired from the firm as of March 2018. Staff is closely monitoring McKinley because they have been reducing Staff over the last nine months. Staff last met with McKinley on January 10, 2018, and will continue to monitor them closely to determine if there is any impact on their investment process or performance as a result of these departures.

Fidelity Institutional Asset Management

Specific to the International Growth team, lead portfolio manager Brian Hoesly has retired from the firm as of March 2018. He is being replaced by Camille Carlstrom who joined the team in 2012 and was previously an associate portfolio manager for the Japan portion of the portfolio.

In March 2018 Jim Carroll assumed the role of Head of Investment Client Strategy replacing Derek Young who has left the firm. Also Pam Holding and Tim Cohen were named as co-heads of the firm's Equity Division succeeding Brian Hogan. Pam previously was CIO of Fidelity Institutional Asset Management Equity (FIAM) group and Tim was head of Global Equity Research. A replacement for Pam will be named in the near future. Staff has no concerns at this time.

Fidelity Institutional Asset Management

The international equity, semi-passive portfolio managed by Fidelity was terminated on March 16, 2018.

Emerging Market Equity Managers

State Street Global Advisors (Semi-passive)

The international equity, semi-passive portfolio managed by SSgA was terminated on March 16, 2018.

State Street Global Advisors (Passive)

In January 2018, Mile O'Connor joined SSgA as the EMEA (Emerging Europe, Middle East, & Africa) Head of Institutional. He joined SSgA from Unigestion, where he held the role of Chairman & Non-Executive Director. Staff has no concerns with this change.

Morgan Stanley (Emerging Markets)

At quarter end, May Yu and Amay Hattangadi will be taking over as co-lead portfolio managers for the Asia region, following the departure of senior portfolio manager Munib Madni, who is leaving the firm to pursue academic interests. Amay will be leading Korea and Southeast Asia, and May will continue to cover China. Also, Jay Shin, analyst who covered Korea, will be leaving the firm for personal reasons. Staff will monitor the transition of Morgan Stanley's coverage of both China and Korea and any potential impacts to country performance.

Fixed Income Managers

Goldman Sachs Asset Management

Tom Teles, member of the Fixed Income Strategy Group (FISG) and co-head of GSAM Fixed Income cross-sector strategy, decided to retire from the firm at the end of March. Replacing Tom on the cross sector strategy team is Ashish Shah, who will join in June as a partner, FISG member and head of the global corporate credit team. He will co-head cross sector strategy with Jonathan Beininger. Ashish will report to Jonathan Beininger and Andrew Wilson, co-heads of GSAM Fixed Income. In addition, Chris Hogan, head of securitized strategy, Whitney Watson, head of global portfolio construction and risk, and Simon Dangoor, head of macro rates/country strategies, have joined the FISG. Staff has no concerns with these changes.

2018 Manager Meetings

The first quarter manager reviews are noted below.

Investment Manager

- Columbia Management Investment Advisers, LLC
- Earnest Partners, LLC
- J. P. Morgan Investment Management Inc.
- Macquarie Investment Management Advisers
- McKinley Capital Management, LLC
- Morgan Stanley Investment Management Inc.
- Neuberger Berman Investment Advisors LLC
- Pacific Investment Management Company LLC
- Pzena Investment Management, LLC
- State Street Global Advisors
- The Rock Creek Group, LP
- Winslow Capital Management, LLC

Asset Class

Fixed Income

International Equity

International Equity

International Equity

Domestic Equity

International Equity

International Equity

Fixed Income

International Equity

International Equity

International Equity

Domestic Equity

Non-Retirement Manager Update First Quarter 2018

Fixed Income

RBC Global Asset Management

The fixed income portfolio return of -0.7% for the quarter matched the benchmark return, the Bloomberg Barclays Intermediate Government Index. The portfolio derived excess yield from an overweight position in U.S. agency, municipal and securitized bonds.

Prudential Fixed Income

Prudential was funded on December 1, 2017. Its first quarter on record resulted in performance meeting the Bloomberg Barclays Aggregate benchmark (-1.5% Manager vs. -1.5% Benchmark). The portfolio's long duration positioning negatively impacted performance as rates rose across the curve, as did spread sector allocations as spreads widened during the quarter. Offsetting these impacts were positive security selection in MBS/ABS/CMBS and investment grade corporate sub-sectors such as upstream energy and electric utilities.

Equity

BNY Mellon

Mellon was funded on December 1, 2017. In its first full quarter of performance, Mellon tracked the benchmark for the quarter. In February 2018, BNY Mellon Asset Management North America (BNY Mellon AMNA) was formed when three BNY Mellon Investment Management boutiques (Mellon Capital, Standish and The Boston Company) combined.

Deferred Compensation Manager Update First Quarter 2018

Domestic Equities

Vanguard Dividend Growth Fund

The Fund returned -1.1% for the quarter, which underperformed its benchmark, the NASDAQ US Dividend Achievers Select Index. Stock selection in industrials and health care primarily drove the underperformance.

Vanguard Institutional Index Plus

The domestic equity portfolio tracked the return of the S&P 500 Index for the quarter with a -0.8% return.

Vanguard Mid-Cap Index

The mid-cap equity portfolio tracked the benchmark, CRSP US Mid Cap Index, for the quarter with a 0.0% return.

T. Rowe Price

The small cap equity portfolio outperformed the Russell 2000 for the quarter with a 1.9% return. Stock selection in Information Technology was the main driver of outperformance for the quarter.

International Equities

Fidelity Diversified International

The international equity portfolio reported a -1.7% return, which underperformed the MSCI EAFE Free for the quarter. Stock selection in the consumer and energy sectors detracted from performance. In addition, positioning in Japan and stock picks in the U.K. also detracted from performance.

Vanguard Total International Stock Index

The portfolio outperformed the benchmark, the FTSE Global All Cap ex US Index, for the quarter with a -0.4% return. 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 Aggregate, for the quarter with a -0.9% return. The portfolio benefited from shorter relative duration and positive security selection within credit.

Vanguard Total Bond Market Index

The fixed income portfolio matched the benchmark, the Bloomberg Barclays Aggregate Index, for the quarter with a -1.5% return. Small deviations in the fund's performance relative to the benchmark may occur given the fund's sampling approach to approximate the index.

Balanced and Conservative Options

Vanguard Balanced

The portfolio returned -0.9%, which matched the customized benchmark for the quarter. The benchmark is a combined return of 60% CRSP US Total Market and 40% Barclays Aggregate.

Galliard Capital Management

The stable value portfolio slightly underperformed the benchmark, the 3-Year Constant Maturity Treasury plus 0.45%, for the quarter with a 0.5% return. The underlying portfolios showed a negative return as rates increased across the yield curve.

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Market Environment

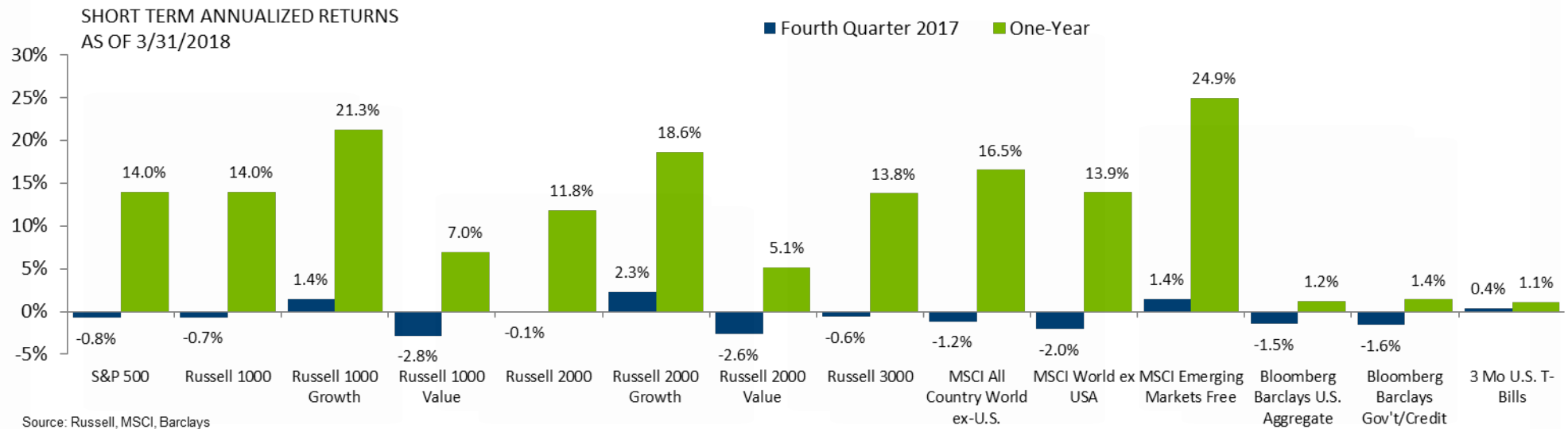
First Quarter 2018

Aon

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

AON
Empower Results®

Market Highlights



Aon

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

Aon
Empower Results®

Market Highlights

Returns of the Major Capital Markets

Periods Ending 3/31/2018

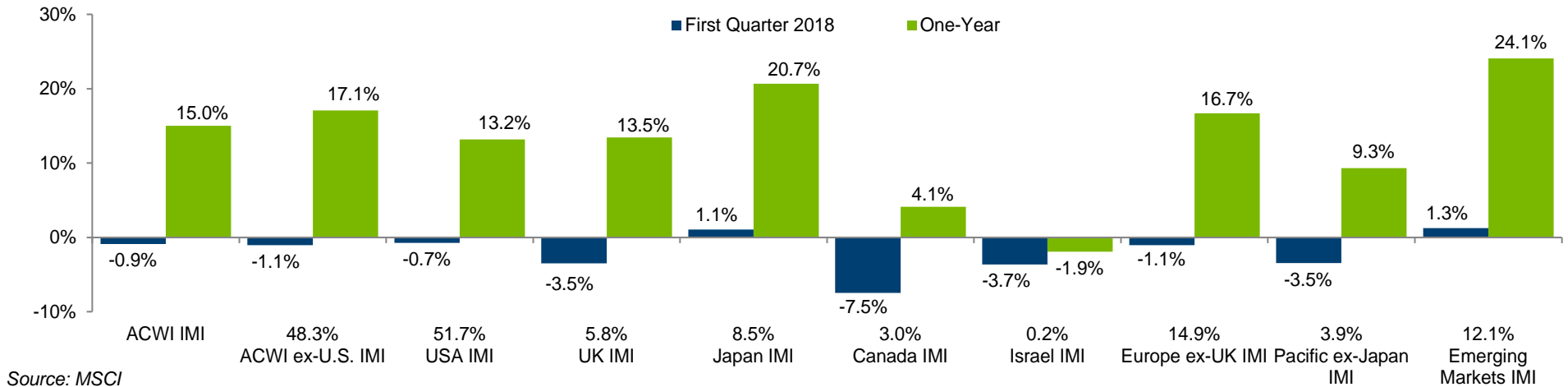
	First Quarter	1-Year	3-Year ¹	5-Year ¹	10-Year ¹
Domestic Equity					
S&P 500	-0.8%	14.0%	10.8%	13.3%	9.5%
Russell 1000	-0.7%	14.0%	10.4%	13.2%	9.6%
Russell 1000 Growth	1.4%	21.3%	12.9%	15.5%	11.3%
Russell 1000 Value	-2.8%	7.0%	7.9%	10.8%	7.8%
Russell 2000	-0.1%	11.8%	8.4%	11.5%	9.8%
Russell 2000 Growth	2.3%	18.6%	8.8%	12.9%	11.0%
Russell 2000 Value	-2.6%	5.1%	7.9%	10.0%	8.6%
Russell 3000	-0.6%	13.8%	10.2%	13.0%	9.6%
International Equity					
MSCI All Country World ex-U.S.	-1.2%	16.5%	6.2%	5.9%	2.7%
MSCI World ex USA	-2.0%	13.9%	5.3%	6.0%	2.6%
MSCI Emerging Markets Free	1.4%	24.9%	8.8%	5.0%	3.0%
Fixed Income					
Bloomberg Barclays U.S. Aggregate	-1.5%	1.2%	1.2%	1.8%	3.6%
Bloomberg Barclays Gov't/Credit	-1.6%	1.4%	1.2%	1.8%	3.7%
3 Mo U.S. T-Bills	0.4%	1.1%	0.5%	0.3%	0.3%
Inflation					
CPI-U	0.6%	2.4%	1.9%	1.4%	1.6%

MSCI Indices show net returns.

All other indices show total returns.

¹ Periods are annualized.

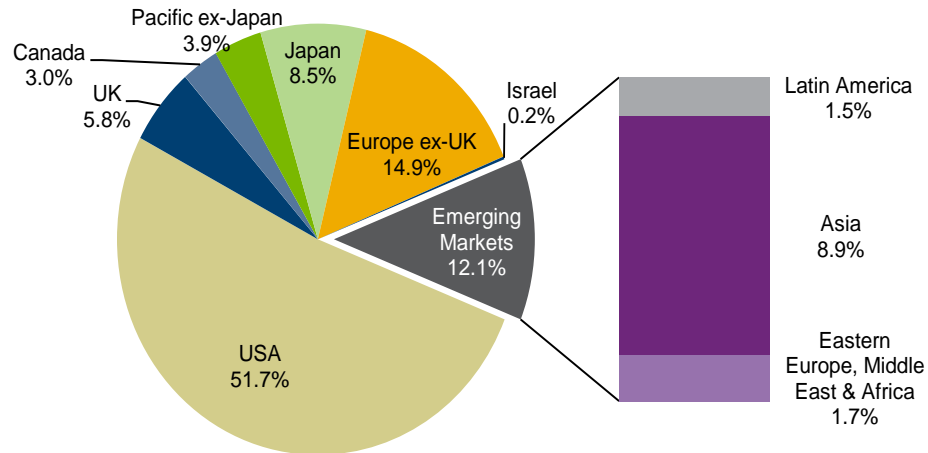
GLOBAL MSCI IMI INDEX RETURNS AS OF 03/31/2018



- Following a positive initial start to 2018, bouts of volatility later in the quarter saw global equities slip from their heady heights and even move into "correction" territory. February's sell-off, triggered by expectations of a pick-up in inflation and then later extended by growing fears over a possible trade war between the U.S. and China were key drivers of underperformance last quarter which resulted in global equities returning -0.9% in Q1 2018 in U.S. dollar terms. The weakening of the U.S. dollar (1.3% in trade-weighted terms) dragged down the returns further to -1.7% in local currency terms.
- With the exception of Emerging Markets and Japan, all regions shown above generated negative returns over the quarter. Emerging Markets was the strongest performer, returning 1.3% in the first quarter of 2018. A very strong start to the year (6.8% over January in local currency terms) provided a sufficient enough cushion to offset later market falls. Canadian equities were one of the worst performers over the quarter, returning -7.5% as economic momentum waned while an unscheduled halt in production detracted from energy sector performance.

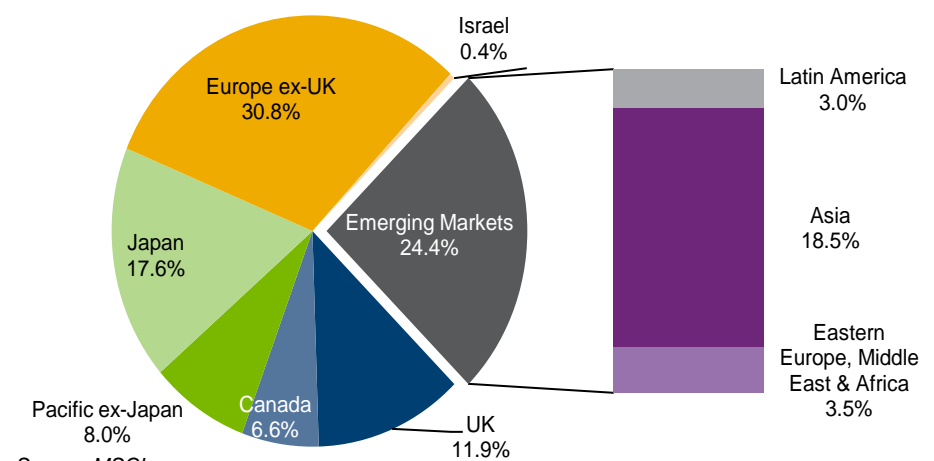
Global Equity Markets

**MSCI ALL COUNTRY WORLD IMI INDEX
GEOGRAPHIC ALLOCATION AS OF 03/31/2018**



Source: MSCI

**MSCI ALL COUNTRY WORLD EX-U.S. IMI INDEX
GEOGRAPHIC ALLOCATION AS OF 03/31/2018**

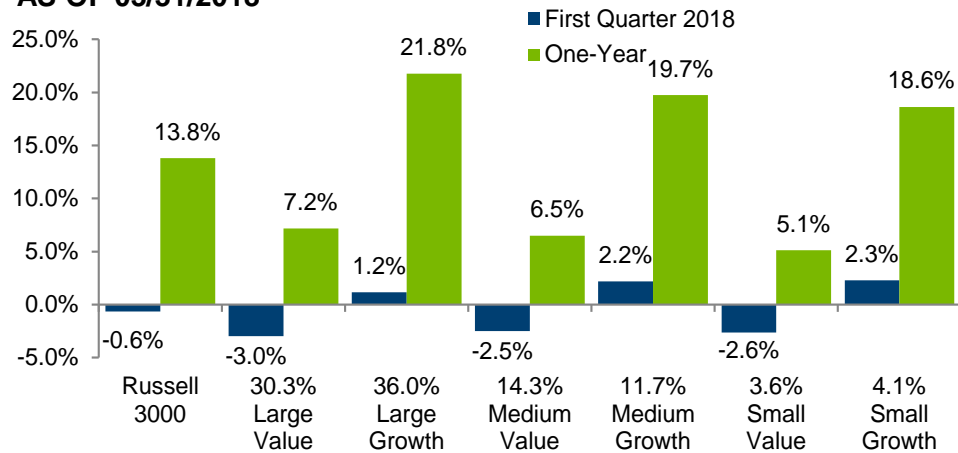


Source: MSCI

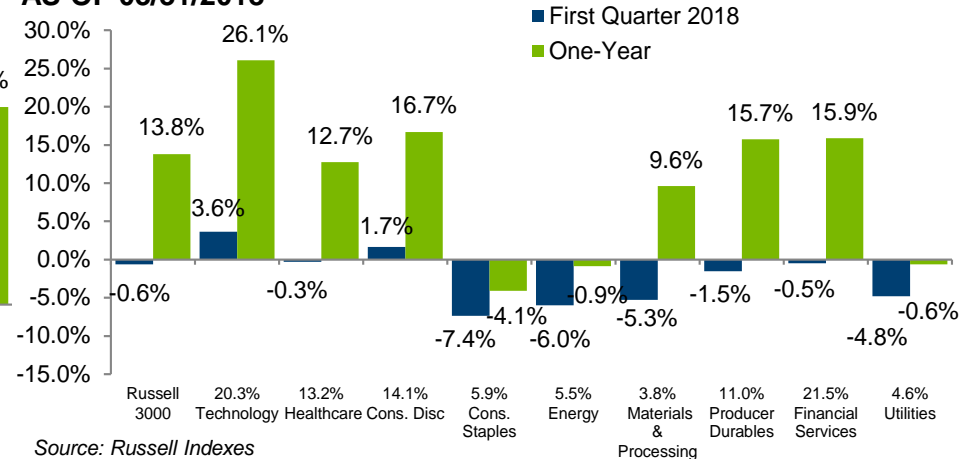
- The two exhibits on this slide illustrate the percentage that each country/region represents of the global and international equity markets as measured by the MSCI All Country World IMI Index and the MSCI All Country World ex-U.S. IMI Index, respectively.

U.S. Equity Markets

RUSSELL STYLE RETURNS AS OF 03/31/2018



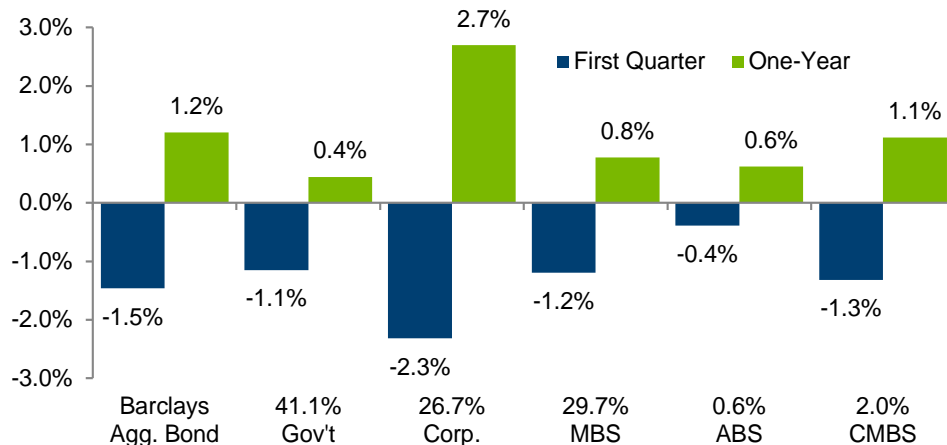
RUSSELL GICS SECTOR RETURNS AS OF 03/31/2018



- The Russell 3000 Index returned -0.6% during the first quarter and 13.8% over the one-year period.
- All sectors generated negative returns over the quarter with the exception of technology (3.6%) and consumer discretionary (1.7%) sectors; the former supported by a strong earnings season. Focusing on the sectors that detracted from returns, consumer staples and energy were the weakest performers with returns of -7.4% and -6.0% respectively in Q1 2018.
- In general, smaller cap and growth-oriented U.S. equities outperformed over the quarter. With the majority of their revenue generated domestically, small cap stocks were less affected by fears of rising protectionism while U.S. tax reform provided additional impetus. Over the last twelve months, value stocks continue to lag their growth stock equivalents significantly (double-digit underperformance across the market capitalization spectrum).

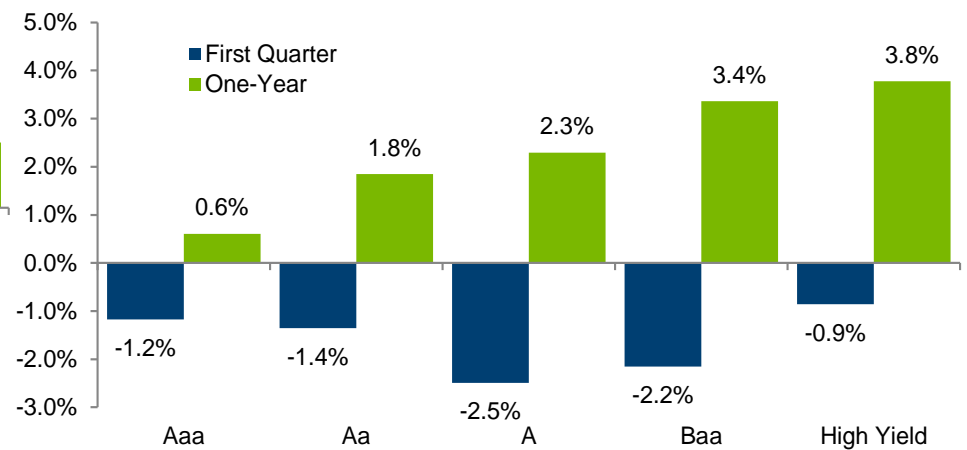
U.S. Fixed Income Markets

**BLOOMBERG BARCLAYS AGGREGATE RETURNS BY SECTOR
AS OF 03/31/2018**



Source: FactSet

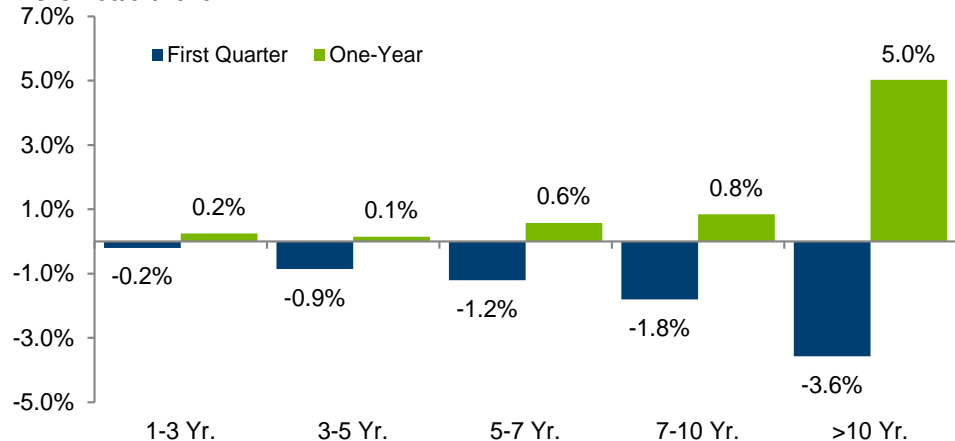
**BLOOMBERG BARCLAYS U.S. AGGREGATE RETURNS
BY QUALITY AND HIGH YIELD RETURNS AS OF 03/31/2018**



Source: FactSet

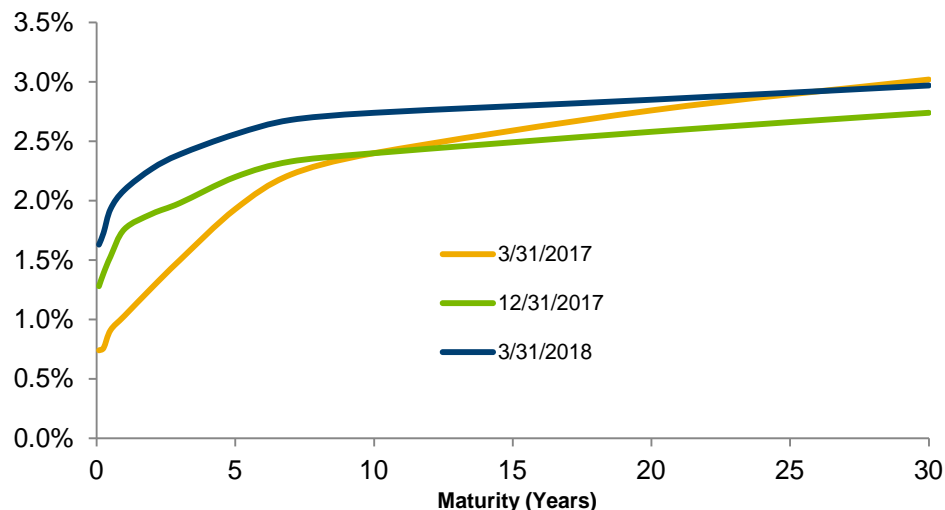
- The Bloomberg Barclays U.S. Aggregate Bond Index returned -1.5% in the first quarter. The turbulence in equity markets seeped into credit markets with credit spreads widening over the quarter. Investment grade corporate bonds fell the most over the quarter, returning -2.3%. ABS performed relatively well, returning -0.4%.
- Performance was negative across all credit qualities with A-rated bonds falling the most at -2.5%. Despite the increase in volatility, high yield bonds fared relatively well. The -0.9% return outperformed all investment grade qualities.
- Long maturity bonds underperformed intermediate and short maturity bonds through the quarter due to their greater interest rate sensitivity.

**BLOOMBERG BARCLAYS AGGREGATE RETURNS BY MATURITY
AS OF 03/31/2018**

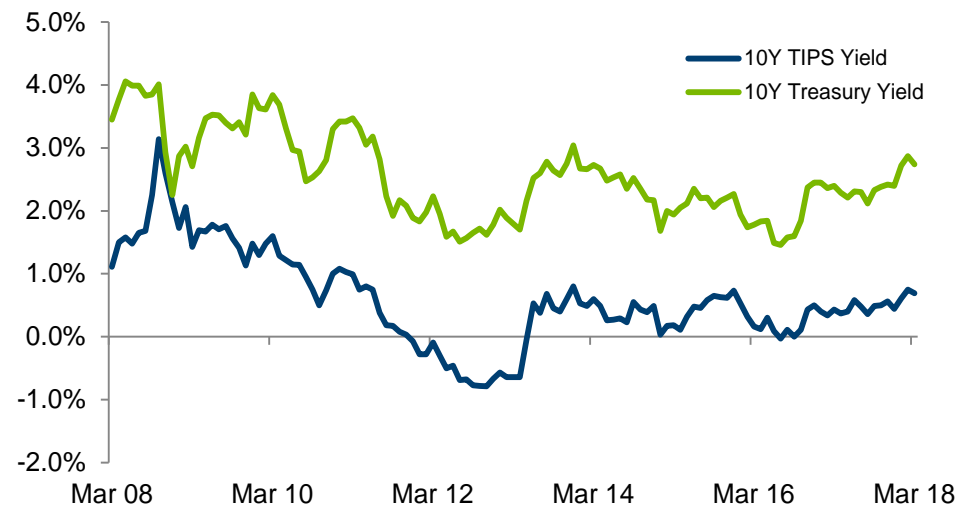


Source: FactSet

U.S. TREASURY YIELD CURVE

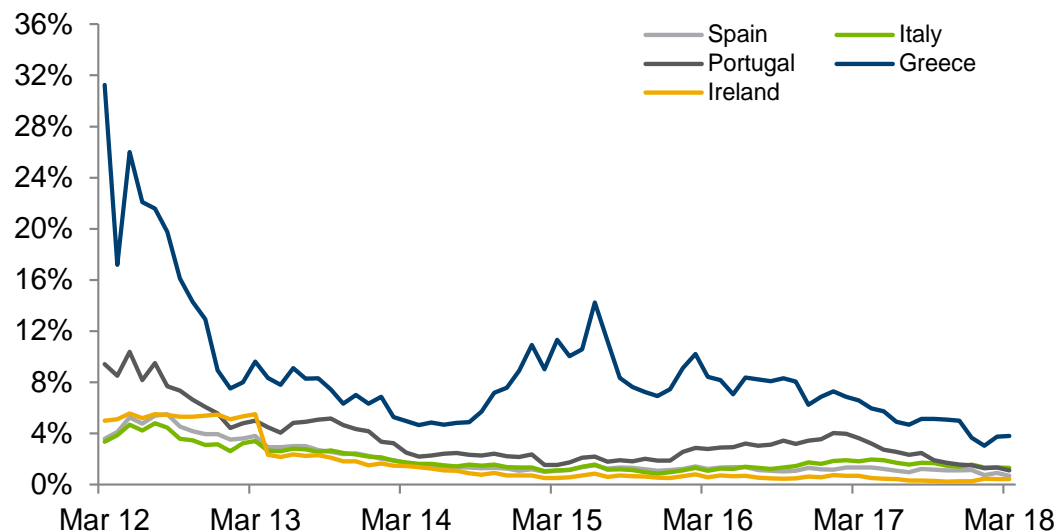


U.S. 10-YEAR TREASURY AND TIPS YIELDS



- The Treasury yield curve shifted upwards over the quarter with yields rising across maturities, but to a greater extent at shorter maturities
- The 10-year U.S. Treasury yield ended the quarter at 2.74%, 34bps higher than at the start of the quarter as expectations of robust growth and an acceleration in inflation drove yields higher. The U.S. Federal Reserve increased its Federal rate target to 1.50-1.75% in Jerome Powell's first meeting as the new Chairman of the U.S. Federal Reserve, taking a more hawkish stance while also noting an improvement in the economic outlook.
- Unlike previous quarters where the upward move in nominal yields was driven by higher inflation expectations, higher real yields were responsible for much of the quarterly change. The 10-year TIPS yield rose by 25bps over the quarter and ended the period at 0.69%.

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



Source: Factset

- In the Eurozone, bond spreads over 10 year German bunds were mixed across the region. Spanish government bond yields fell by 38bps to 1.16% over the quarter which saw Fitch (a ratings agency) upgrade Spain's sovereign credit rating, citing broad-based economic recovery and limited economic impact caused by Catalonia's declaration of independence.
- Italian bond yields fell by 20bps to 1.79%, despite the greater uncertainty surrounding Italian politics following March's general election. Portuguese government bond yields fell by 32bps to 1.59%.
- Greek government bond yields rose by 22bps to 4.29%, despite a credit rating upgrade by S&P, Fitch and Moody's. Nonetheless, Greece's credit rating remains several notches below investment grade quality. The spread between Greek bonds and German Bunds moved 15bps higher in the first three months of 2018.

Credit Spreads

Spread (bps)	3/31/2018	12/31/2017	3/31/2017	Quarterly Change (bps)	1-Year Change (bps)
U.S. Aggregate	41	36	44	5	-3
Gov't	0	1	1	-1	-1
Credit	103	89	112	14	-9
Gov't/Credit	45	40	50	5	-5
MBS	29	25	27	4	2
CMBS	67	62	77	5	-10
ABS	48	36	54	12	-6
Corporate	109	93	118	16	-9
High Yield	354	343	383	11	-29
Global Emerging Markets	230	215	257	15	-27

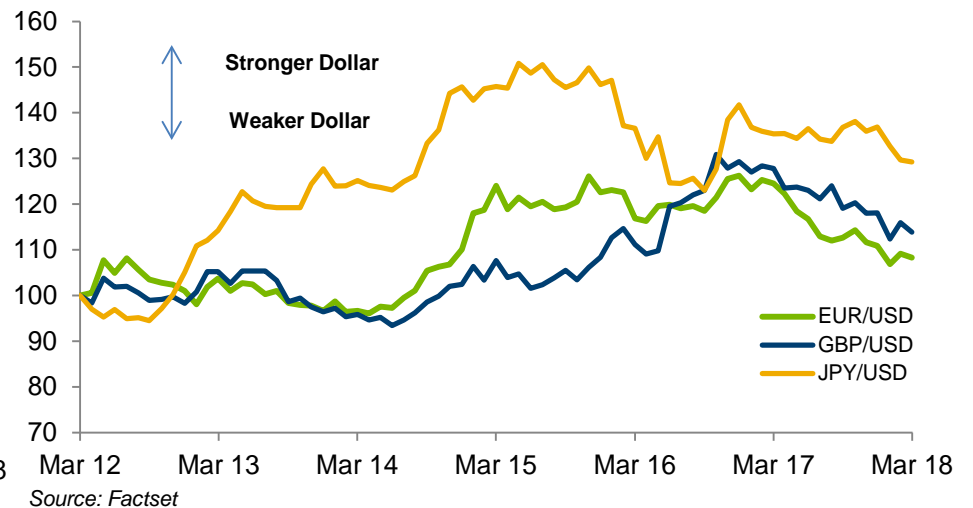
Source: Barclays Live

- During the fourth quarter, spreads over U.S. Treasuries increase across all the areas of the bond market except for long maturity U.S. government bonds which fell by 1bp.
- The increase in spreads was particularly felt within the U.S. investment grade corporate bond market where spreads widened by 16bps rose. Global Emerging Market and ABS credit spreads were not too far behind, by 15bps and 12bps respectively.

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



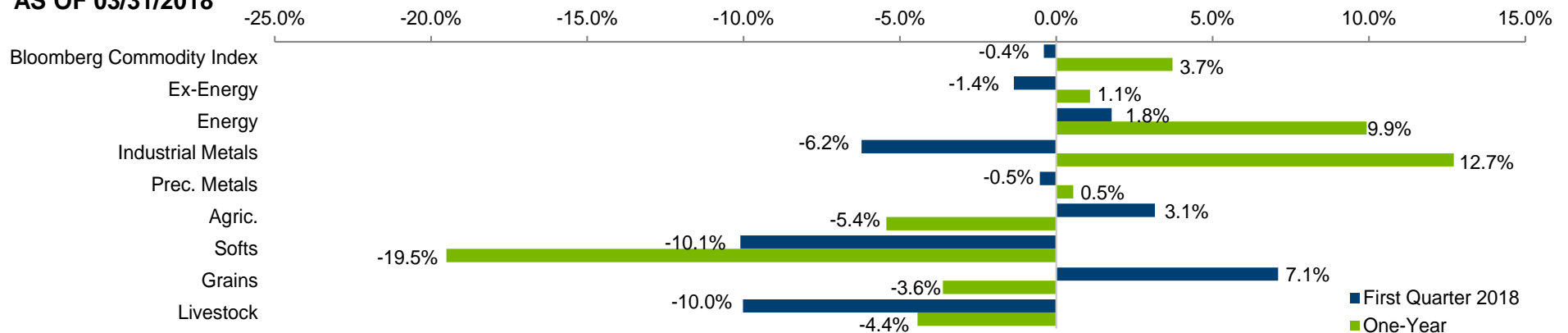
**U.S. DOLLAR RELATIVE TO EUR, GBP AND JPY
REBASED TO 100 AT 12/31/2012**



- The downward trend in the U.S. dollar that began early last year continued into 2018 with the U.S. dollar weakening by a further 1.3% on a trade-weighted basis over the quarter. Although the U.S. Federal Reserve hiked the Federal Funds rate in March, widening interest rate differentials were not enough to arrest the downward trend in the U.S. dollar. Instead, expectations of greater U.S. borrowing in order to finance the proposed fiscal stimulus has likely put pressure on the 'greenback'.
- The U.S. dollar depreciated against all the major currencies. Both the Bank of England (BoE) and the European Central Bank (ECB) left their respective policy rates unchanged at 0.5% and 0.0%. The former looks set to increase their base rate by 25bps in the second quarter of 2018 while a rate hike may be further away for the ECB. Tapering of the ECB's sizeable quantitative easing program, however, appears to be firmly on their agenda for later this year.

Commodities

COMMODITY RETURNS AS OF 03/31/2018



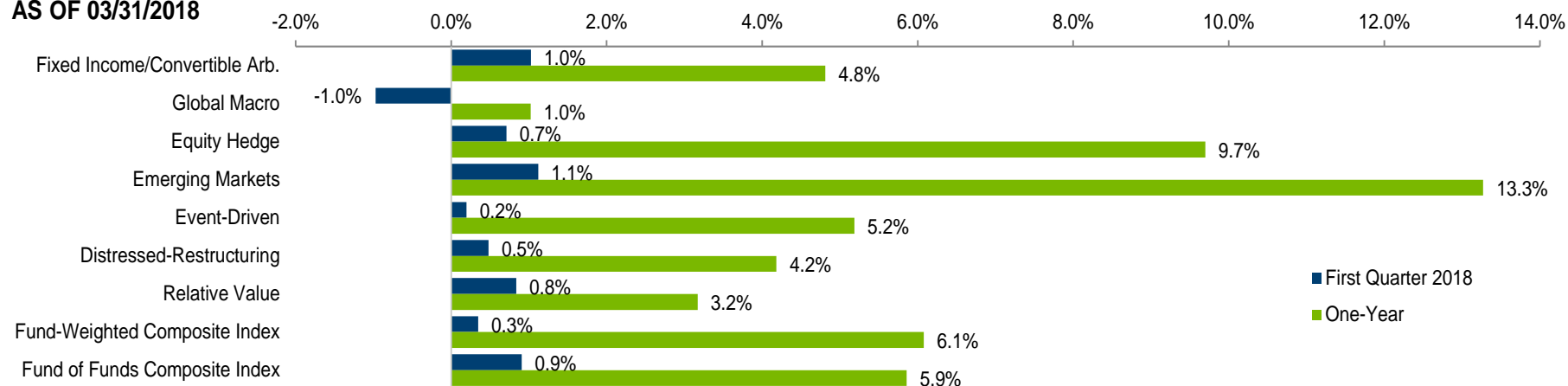
Source: Bloomberg

Note: Softs and Grains are part of the wider Agriculture sector

- Commodities had a mixed quarter which saw the Bloomberg Commodity Index return -0.4%, dragged down primarily by the Industrial Metals' poor performance. Higher energy prices on the back of prospects of OPEC maintaining oil production cuts throughout 2018 were not enough to mitigate the 6.2% fall for the Industrial Metals sector.
- The imposition of trade tariffs on Steel and Aluminum, as well as concerns that there could be further escalation in trade tensions which could stifle demand was attributable to the negative returns for Industrial Metals. In particular, the price of copper fell by 8.3% over the quarter.
- Over the quarter, the best performing segment was Agriculture with a return of 3.1%, followed by Energy (1.8%). Within the Agriculture sector, Grains was the best performer with a solid return of 7.1% which offset the sharp fall in the Softs segment.

Hedge Fund Markets Overview

HEDGE FUND PERFORMANCE AS OF 03/31/2018

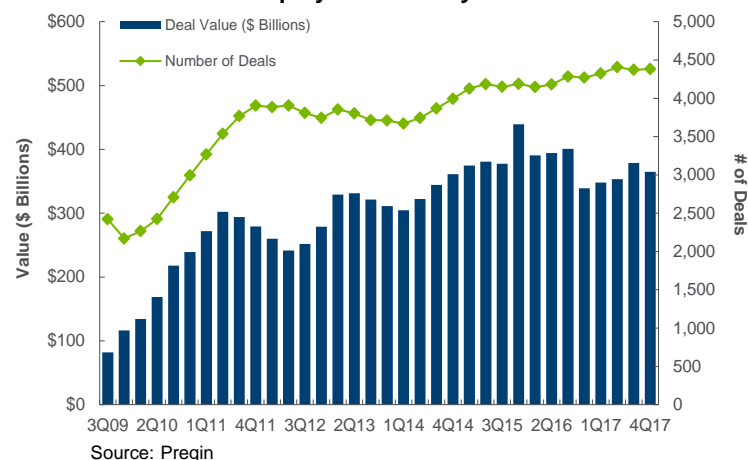


*Note: Latest 5 months of HFR data are estimated by HFR and may change in the future.
Source: HFR*

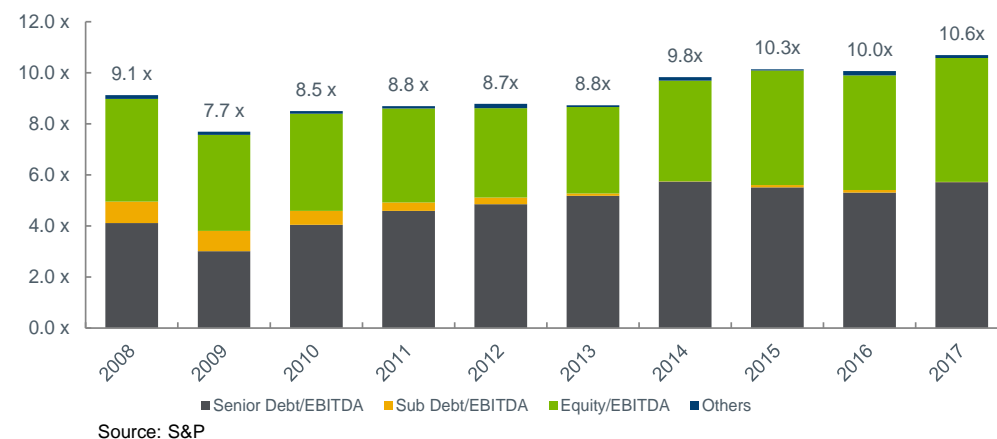
- Against a backdrop of higher equity market volatility, hedge fund performance was generally positive over the first quarter, except for Global Macro strategies. The latter ended the first quarter down 1.0%.
- In the first three months to March 2018, the HFRI Fund-Weighted Composite Index and the HFRI Fund of Funds Composite Index produced returns of 0.3% and 0.9% respectively.
- Emerging market hedge funds continued to be the best performer particularly over the last year with a return of 13.3%. The level of outperformance relative to other strategies was less marked over the three-month horizon; a return of 1.1% was marginally ahead of the 1.0% recorded by Fixed Income/Convertible Arbitrage strategies.

Private Equity Market Overview – Fourth Quarter 2017

LTM Global Private Equity-Backed Buyout Deal Volume



Purchase Price Multiples – All U.S. Transactions Sizes



- **Fundraising:** In 2017, \$630.6 billion was raised by 1,364 funds, which despite being down 20.9% on a deal basis, was up 3.5% on capital basis year-over-year. Dry powder stood at nearly \$1.4 trillion at the end of the year, an increase of 7.6% and 34.9% compared to 2016 and the five year average, respectively.¹
- **Buyout:** Global private equity-backed buyout deals totaled \$364.7 billion in 2017, which was an increase of 7.6% and 5.4% from 2016 and the five year average, respectively.¹ At the end of 2017, the average purchase price multiple for all U.S. LBOs was 10.6x EBITDA, up from both 2016 (10.0x) and the five year average (9.5x). Middle-market purchase price multiples stood at 11.6x, up compared to 10.2x in 2016. The weighted average purchase price multiple across all European transaction sizes averaged 10.7x EBITDA on a full year 2017 basis, up from 9.3x in 2016. Purchase prices for transactions of €1.0 billion or more increased slightly from 11.4x to 11.6x year-over-year. Transactions between €250.0 million and €500.0 million were up 0.5x from 2016, and stood at 9.7x.² Globally, exit value totaled \$294.7 billion on 1,796 deals in 2017 compared to \$361.5 billion on 1,950 deals in the prior year.¹
- **Venture:** During the year, 5,268 venture backed transactions totaling \$74.2 billion were completed, which was an increase on a capital basis over the prior year's total of \$61.7 billion across 5,343 deals. This was 39.0% higher than the five-year average of \$53.5 billion.³ Total U.S. venture backed exit activity totaled approximately \$51.0 billion across 769 completed transactions in 2017, down from \$52.9 billion across 857 exits in 2016.⁴
- **Mezzanine:** 35 funds closed on \$11.6 billion during the year. This was a decrease from the prior year's total of \$31.5 billion raised by 46 funds and represented a decline of 40.3% from the five year average of \$19.4 billion. Estimated dry powder was \$50.5 billion at the end of 2017, which was down 4.7% from year end 2016.¹
- **Distressed Debt:** The LTM U.S. high-yield default rate was 1.8% as of year end 2017, which was up from September 2017's LTM rate of 1.6%.⁵ Distressed debt and bankruptcy restructuring activity totaled \$282.2 billion during 2017, representing a decline of 18.0% from 2016. U.S. activity accounted for \$114.4 billion in 2017 and was down 38.0% from 2016.⁶
- **Secondaries:** 42 funds raised \$42.4 billion during the year, up from \$29.3 billion by 39 funds in 2016.¹ The average discount rate for all private equity sectors finished the year at 7.9%, down from 8.5% at the end of 2016.⁷
- **Infrastructure:** \$67.4 billion of capital was raised by 79 funds in 2017 compared to \$65.8 billion of capital raised by 81 partnerships in 2016. At the end of the year, dry powder stood at \$158.0 billion, up from the third quarter's record total of \$154.0 billion. Infrastructure managers completed 2,378 deals with an estimated aggregate deal value of \$916.0 billion in 2017 compared to 2,299 deals totaling \$809.7 billion in 2016.¹
- **Natural Resources:** During 2017, 31 funds closed on \$19.4 billion compared to 52 funds totaling \$24.9 billion in 2016. Energy and utilities industry managers completed approximately 130 deals totaling \$36.9 billion in 2017, compared to \$22.0 billion across 215 deals in 2016.¹

Sources: ¹ Preqin ² Standard & Poors ³ PWC / CB Insights MoneyTree Report ⁴ PitchBook/NVCA Venture Monitor ⁵ Fitch Ratings ⁶ Thomson Reuters ⁷ UBS

Notes: FY: Fiscal year ended 12/31; YTD: Year to date; LTM: Last twelve months (aka trailing twelve months); PPM: Purchase Price Multiples: Total Purchase Price / EBITDA.

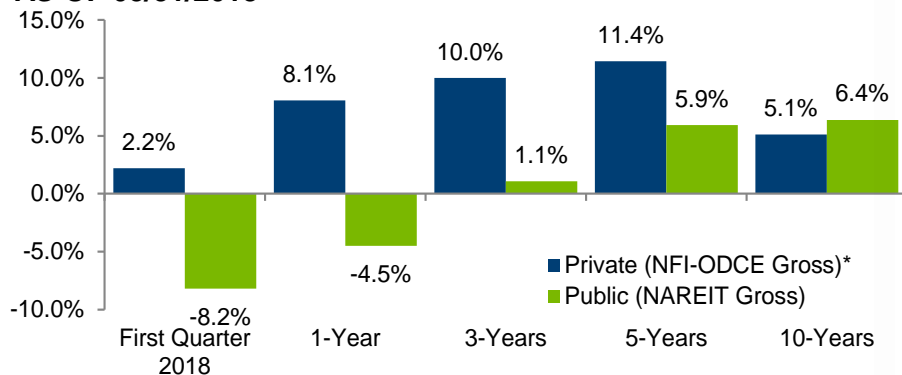
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U.S. Commercial Real Estate Markets

PRIVATE VS. PUBLIC REAL ESTATE RETURNS AS OF 03/31/2018



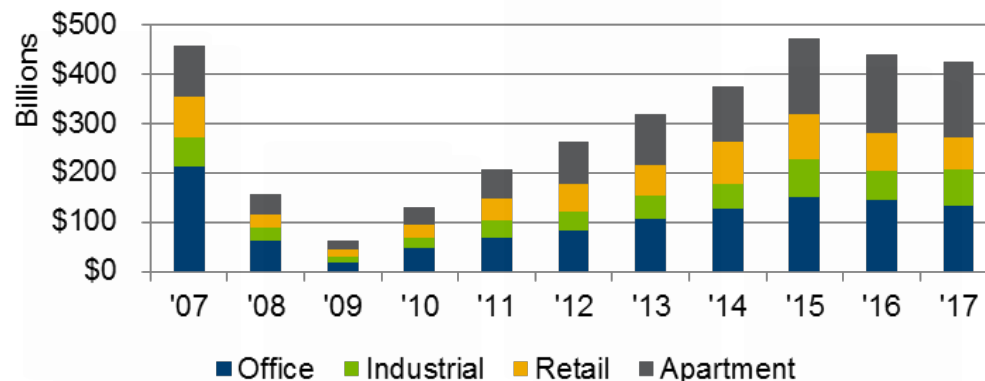
*First quarter returns are preliminary

Sources: NCREIF, NAREIT

- Core real estate returns generated 2.19%* in first quarter, which is 12 bps higher than 4Q 2017 and an decrease of 29 bps year-over-year ("YOY"). Asset appreciation accelerated during the quarter at a fairly robust 1.15%; surprising and outpacing the income return (1.04%). Investment returns are expected to continue to moderate over the medium term.
- Global property stocks (FTSE EPRA/NAREIT Developed Index) fell 4.3% during the first quarter, posting losses in each of the major regions in conjunction with rising bond yields and weakness in broader equity markets, with the most significant weakness in the U.S. The U.S. REIT market (FTSE NAREIT Equity REITs Index) declined 7.8% in 1Q after gaining 3.9% in the full year 2017. The sector experienced significant weakness through mid-February leading to share price declines in excess of 10% followed by a modest recovery in March. Share price weakness appeared to be largely related to concerns with regard to impact on REIT share prices in a higher interest rate environment. With asset values for high quality assets, on average, approximately 15-20% above 2007 valuations, the sector ended the quarter trading at a 6% discount to NAVs.
- U.S. transaction volume continued to demonstrate a declining trend in early 1Q, with February data marking a 10% drop in transaction volume YOY. Property sales remain subdued due to fewer entity and portfolio deals over the past year, as well as concern over a rising interest rate environment and a widening gap between buyers' and sellers' future return expectations.
- Despite the declining trend in sales, pricing is holding fairly firm or still growing, up 8% nationally YOY in February, with apartment and industrial leading these results. Cap rates, have remained low and sticky, sitting today at similar levels to Q1 2017.
- Dry powder for non core real estate investments currently stands at another all time peak for all regions. While this should help support current sector pricing for a bit longer, moderating trends in underlying fundamentals (e.g. rent growth, supply-demand balance), interest rates, and economic tailwinds raise investment risk levels at this mature point in the cycle. To-date, the U.S. continues to benefit as a global safe haven.
- The U.S. real estate cycle is mature, and thus more susceptible to bumps along the road. While still solid income returns are forecast to continue to support attractive relative returns versus many other asset classes, portfolio construction consideration is critical. At this point in the cycle, appropriate risk mitigation measures should be a staple in all investment portfolios as new investments will likely be required to ride out a cyclical downturn...though none is clearly on the horizon yet.

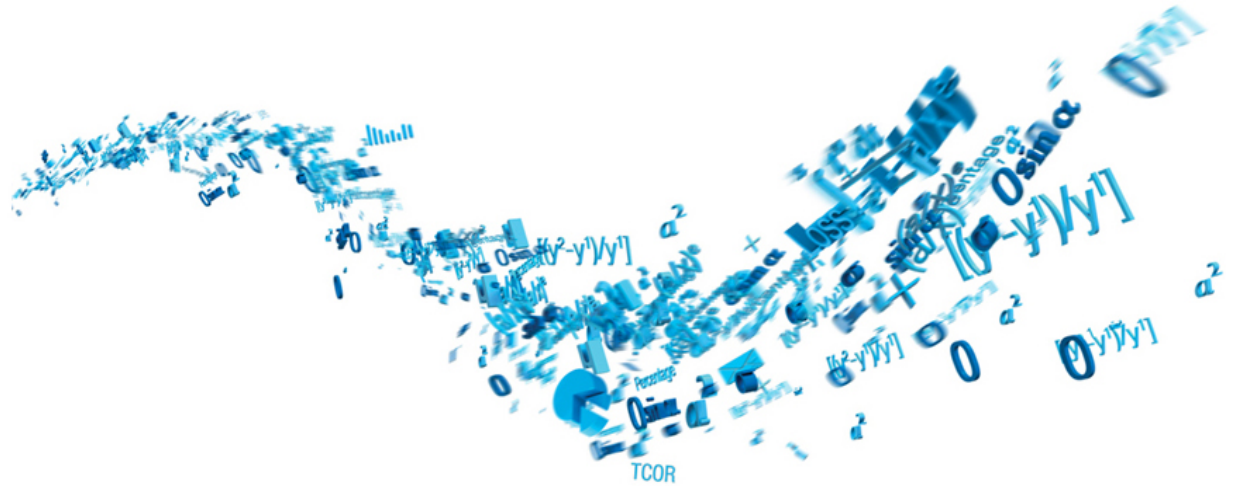
Sources: NCREIF, RCA, CBRE-EA, Aon Hewitt, *Indicates preliminary NFI-ODCE data (gross of fees)

Annual Transaction Volume



Source: RCA

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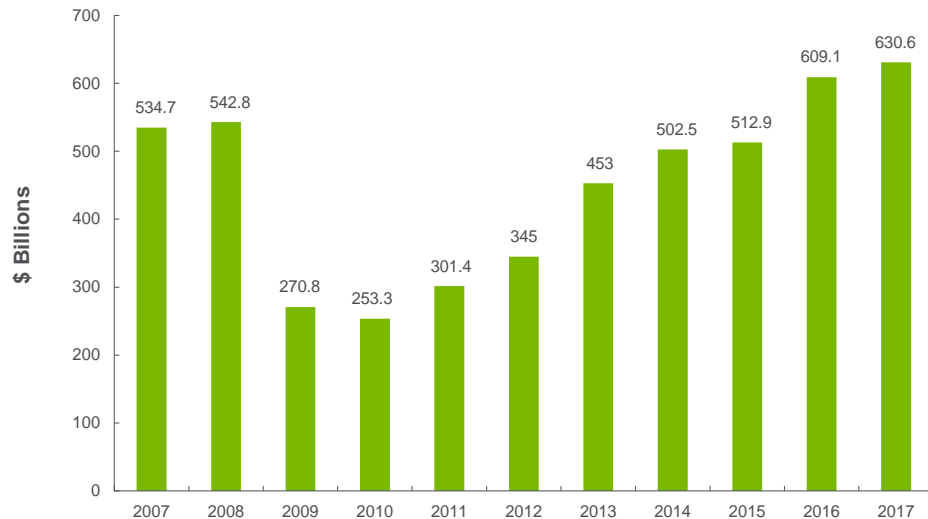
Appendix A:

Global Private Equity Market Overview

4Q 2017

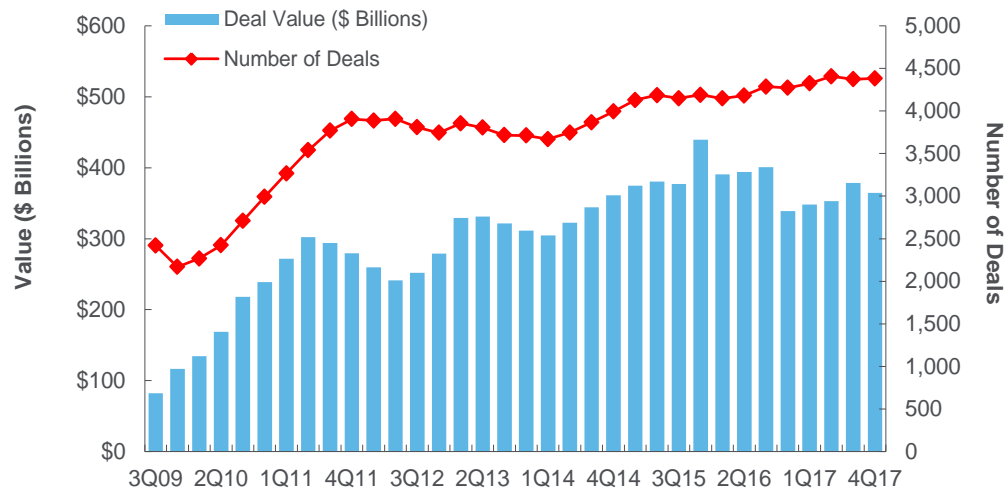
Private Equity Overview

Total Funds Raised



Source: Preqin

LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

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Fundraising

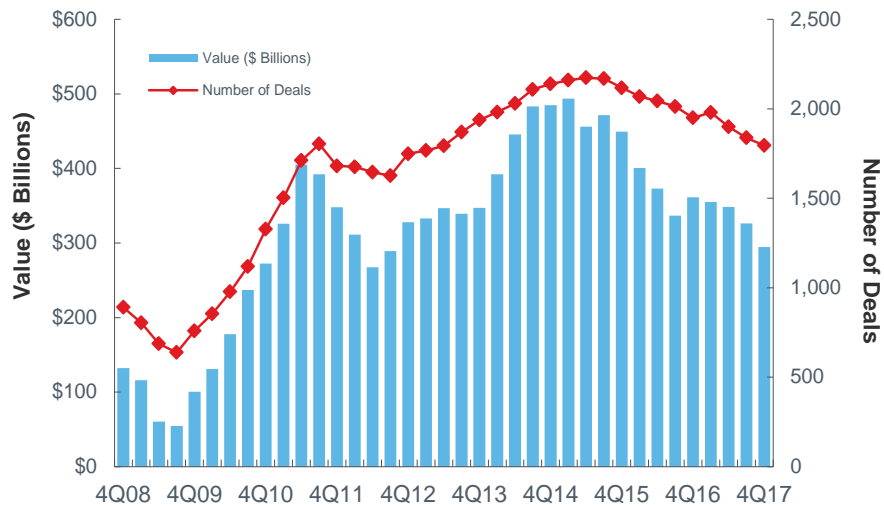
- In 2017, \$630.6 billion was raised by 1,364 funds, which despite being down 20.9% on a deal basis, was up 3.5% on a capital basis year-over-year.¹
 - 2017 fundraising was 30.2% higher than the five-year average.
 - The majority of 2017 capital was raised by funds with target geographies in North America, comprising 58.0% of the annual total. Capital targeted for Europe made up 23.4% of the total funds raised during the year, while the remainder was attributable to managers targeting Asia and other parts of the world.
- Dry powder stood at nearly \$1.4 trillion at the end of the year, an increase of 7.6% and 34.9% compared to 2016 and the five-year average, respectively.¹

Activity

- In 2017, 4,396 deals were completed for an aggregate deal value of \$364.7 billion as compared to 4,323 transactions totaling \$339.0 billion in 2016.¹
 - This was 5.4% higher than the five-year average deal volume of \$345.9 billion.
 - Average deal size was \$83.0 million in 2017. This was up 5.8% compared to the prior year, but down 3.3% relative to the five-year average.
- European LBO transaction volume totaled €64.7 billion in 2017, up 38.8% compared to 2016's total of €46.6 billion. 2017's total was also up significantly compared to the five-year average level of €44.9 billion.³
- At the end of 2017, the average purchase price multiple for all U.S. LBOs was 10.6x EBITDA, up from both 2016 (10.0x) and the five-year average (9.5x). Middle-market purchase price multiples stood at 11.6x, representing an increase compared to 10.2x in 2016.³
 - This was 1.1x and 1.5x turns (multiple of EBITDA) above the five and ten-year average levels, respectively.
- European multiples were up 0.9x year-over-year, averaging 10.7x EBITDA for all transaction sizes, with large and medium transactions each running at 11.6x and 10.5x, respectively.³
- Debt remained broadly available in the U.S.
 - U.S. average leverage levels in 2017 were 5.7x compared to the five and ten-year averages of 5.4x and 5.1x, respectively.³
 - The amount of debt issued supporting new transactions increased compared to 2016 from 58.6% to 62.3% and remains above the 51.0% average level over the prior five years.³
- In Europe, average senior debt/EBITDA in 2017 was 5.4x, up from the 5.1x observed 2016. This was also up over the five-year and ten-year average levels of 4.9x.

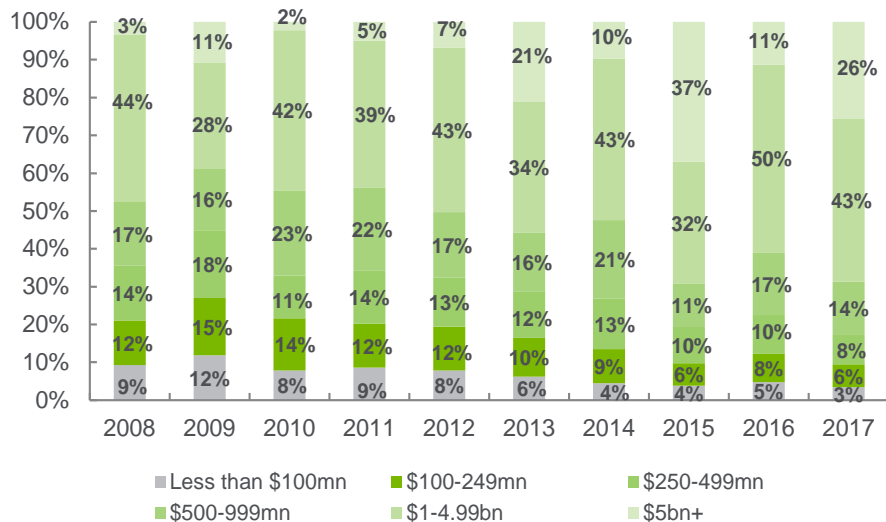
Buyouts / Corporate Finance

LTM PE Exit Volume and Value



Source: Preqin

M&A Deal Value by Deal Size



Source: Preqin

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Fundraising

- \$340.2 billion was closed on by 470 buyout and growth funds in 2017, compared to \$287.1 billion raised by 583 funds the year before.¹
 - This was significantly higher than the five-year average of \$226.4 billion.
 - Apollo Investment Fund IX was the largest fund raised during the quarter, closing on \$24.7 billion.¹ 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 2007.¹²
- Buyout and growth equity dry powder was estimated at \$765.1 billion, which surpassed the record level of \$711.3 billion observed at the end of 3Q 2017 and was substantially higher than the five-year average level of \$541.1 billion.¹
 - Aside from large cap funds, which decreased 9.3% year-over-year, buyout dry powder increased across all fund size categories in 2017. Mega fund dry powder exhibited the largest increase during the year (34.1%), setting a new record mark of \$287.9 billion. Middle and small market buyout dry powder finished the year up 9.1% and 4.6%, respectively, from 2016.¹
 - An estimated 58.9% of buyout dry powder was targeted for North America, while European dry powder comprised 29.4% of the total.¹

Activity

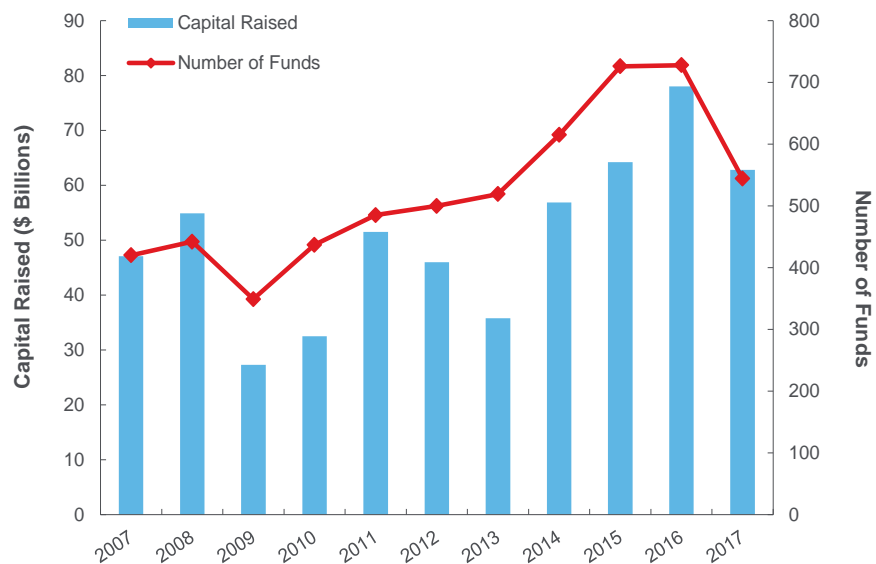
- Global private equity-backed buyout deals totaled \$364.7 billion in 2017, which was an increase of 7.6% and 5.4% from 2016 and the five-year average, respectively.¹
 - 1,145 deals were completed during the quarter, which was up 8.0% from 3Q 2017 and 11.4% compared to the five-year quarterly average.
 - In 2017, deals valued at \$5.0 billion or greater accounted for an estimated 25.7% of total deal value during the year compared to 11.3% in 2016 and 37.0% in 2015.¹
- Entry multiples for all transaction sizes in 2017 stood at 10.6x EBITDA, up from 2016's level (10.0x).³
 - Middle-market purchase price multiples stood at 11.6x, up compared to 10.2x in 2016.³
 - The weighted average purchase price multiple across all European transaction sizes averaged 10.7x EBITDA on a full-year 2017 basis, up from 9.8x in 2016. Purchase prices for transactions of €1.0 billion or more increased slightly from 11.4x to 11.6x year-over-year.
 - Transactions between €250.0 million and €500.0 million were up 0.5x from 2016, and stood at 9.7x.³
 - The portion of average purchase prices financed by equity for U.S. deals was 45.7% in 2017, up from 44.8% in 2016. This remained above the five and ten-year average levels of 41.7% and 42.3%, respectively.³
- Globally, exit value totaled \$294.7 billion on 1,796 deals in 2017 compared to \$361.5 billion on 1,950 deals in the prior year.¹

Opportunity

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

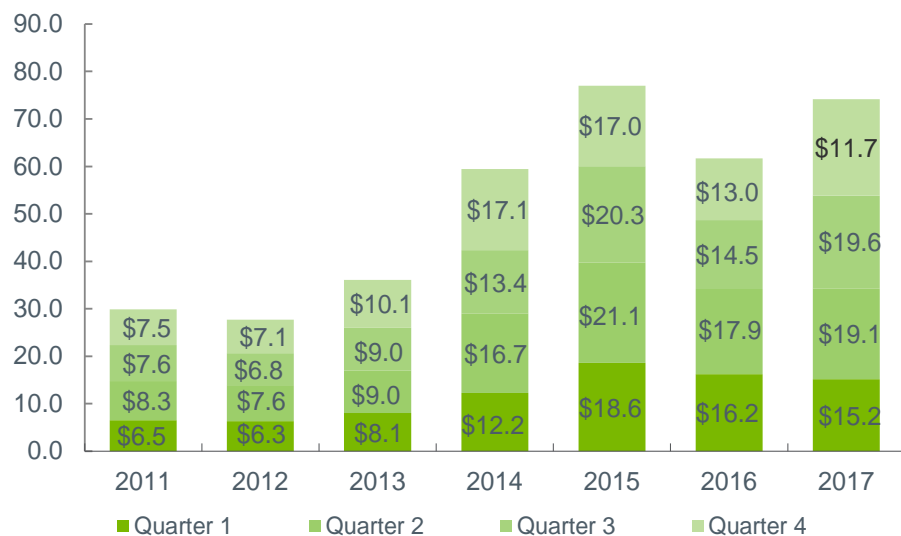
Venture Capital

Venture Capital Fundraising



Source: Preqin

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



Source: PwC/CB Insights Report

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Fundraising

- \$62.8 billion of capital was raised by 544 funds in 2017, down from the prior year's total of \$78.0 billion raised by 728 managers.¹
 - 2017 fundraising was up 11.8% on a capital compared to the five-year average.
 - New Enterprise Associates was the largest fund raised during the year, closing on \$3.3 billion.
- The average fund size raised during the year was approximately \$135.0 million. This represented a decrease compared to 2016's average of 140.0 million, but remained above the five-year average of \$113.4 million.
- At the end of 2017, there were an estimated 1,607 funds in market targeting \$169.1 billion.¹
 - China State-Owned Capital Venture Investment Fund was the largest fund in market, targeting 200,000 CNY or approximately \$30.1 billion.
 - The vast majority of funds in market are seeking commitments of \$200.0 million or less.
- Dry powder was estimated at \$179.4 billion at the end of 2017, which was up from 2016's total of \$160.2 billion. This was 46.4% higher than the five-year average.¹

Activity

- During the year, 5,268 venture-backed transactions totaling \$74.2 billion were completed, which was an increase on a capital basis over the prior year's total of \$61.7 billion across 5,343 deals. This was 38.7% higher than the five-year average of \$53.5 billion.⁷
 - In 2017, there were 73 U.S.-based unicorns, or companies with valuations of \$1.0 billion or more. This was up substantially by number compared to 2016, which saw just 49 unicorns.⁸
- During 2017, median pre-money valuations increased across all transaction stages aside from series D+ (-50.0%). Series C transactions exhibited the largest increase (88.5%) and reached \$122.5 million. Series A, B, and seed transactions were up 28.1%, 38.9%, and 16.7%, respectively, from year-end 2016 levels.⁹
- Total U.S. venture-backed exit activity totaled approximately \$51.0 billion across 769 completed transactions in 2017, down from \$52.9 billion across 857 exits in 2016.⁸
 - The number of venture-backed initial public offerings tripled quarter-over-quarter totaling 24. This brought the number of IPOs in 2017 to 57, up from 2016's total of 38.¹⁶
 - The number of M&A transactions totaled 600 deals in 2017, representing a decrease of 2.1% year-over-year.¹⁶

Opportunity

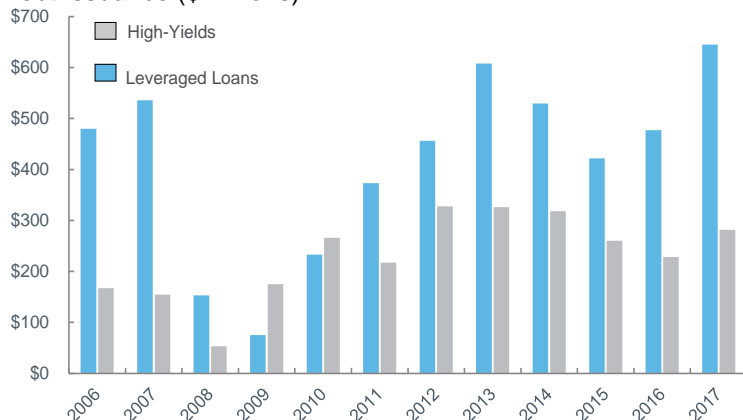
- Early stage continues to be attractive, although we are monitoring valuation increases
- Smaller end of growth equity
- Technology sector

Leveraged Loans & Mezzanine

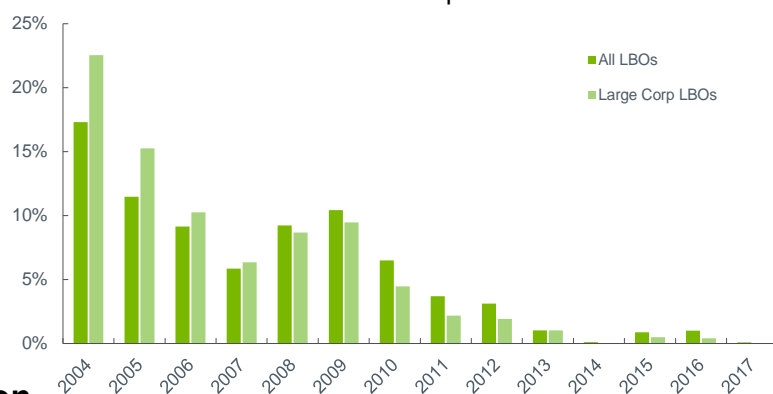
Average Leverage by Deal Size



Debt Issuance (\$ Billions)



Mezzanine % of Purchase Price Multiple



Leveraged Loans

Fundraising

- New CLO issuance totaled \$118.6 billion in 2017, up 64.0% from 2016. ²
- High-yield debt issuance totaled \$281.7 billion in 2017, up from \$228.2 billion in 2016. ²
- Mutual fund net flows ended 2017 with a net inflow of \$9.9 billion, compared to a net outflow of \$6.2 billion in 2016. ²

Activity

- Leverage for all LBO transactions ended the year at 5.7x, up from 2016's level of 5.4x. Leverage continues to be comprised almost entirely of senior debt. The average leverage level for large cap LBOs was 5.8x during the year, up from 5.5x in 2016. ³
- YTD institutional new leveraged loan issuances totaled \$503.1 billion in 2017, up significantly from 2016's total of \$336.6 billion. ²
- 60.3% of new leveraged loans were used to support M&A and growth activity in 2017, up from 58.6% in 2016. This was also above the prior five-year average of 50.2%. ³
- European leveraged loan issuance increased by 55.5% year-over-year to €78.6 billion. ³
 - This was above the five-year and ten-year average levels of €43.8 billion and €46.2 billion, respectively.
- Leveraged loan spreads for B rated issues ended the year at L+375 bps compared to L+412 bps at year-end 2016. BB- index spreads narrowed from L+247 bps to L+229 bps during the year, which also marked a decrease from the year-end 2016 level of L+278 bps. ²

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

- 35 funds closed on \$11.6 billion during the year. This was a decrease from the prior year's total of \$31.5 billion raised by 46 funds and represented a decline of 40.2% from the five-year average of \$19.4 billion. ¹
- Estimated dry powder was \$50.5 billion at the end of 2017, which was down 4.7% from year-end 2016. ¹
- Fundraising activity remains robust with an estimated 67 funds in market targeting \$25.6 billion of commitments. Goldman Sachs Mezzanine Partners VII is the largest fund in market, targeting commitments of \$10.0 billion. ¹

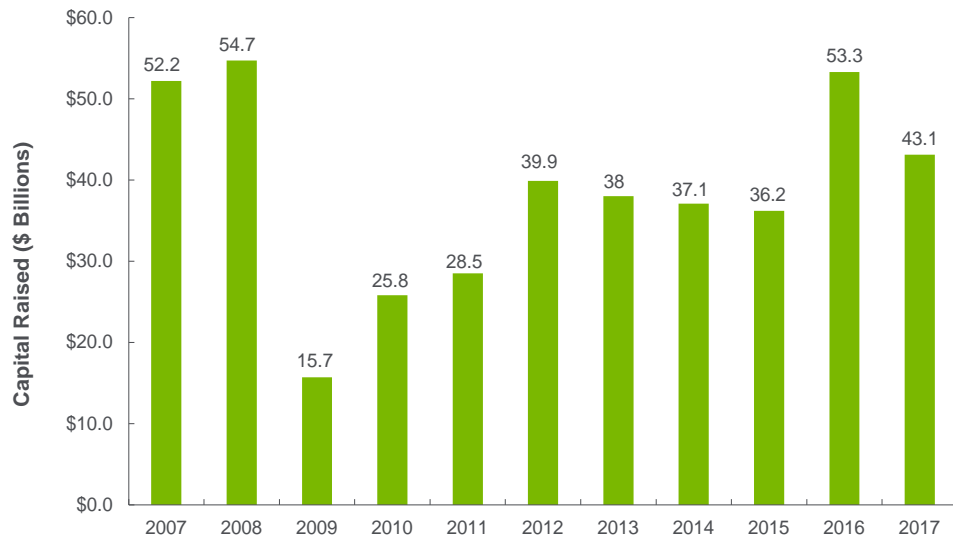
Opportunity

- Funds with the capacity to scale for large sponsored deals

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

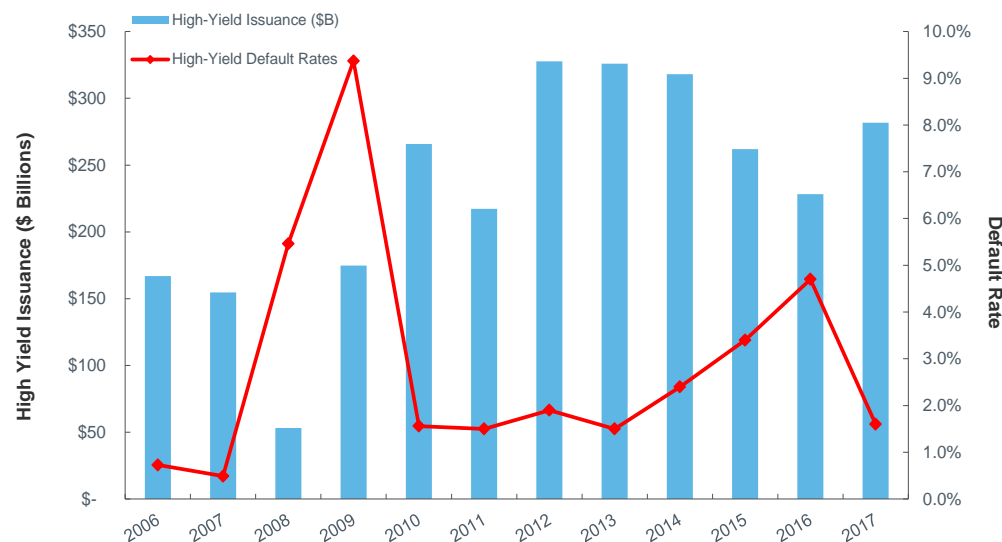
Distressed Private Markets

Distressed Debt, Turnaround, & Special Situations Fundraising



Source: Thomson Reuters

High-Yield Bond Volume vs Default Rates



Aon Source: UBS & Fitch Ratings

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Fundraising

- During the year, \$43.1 billion was raised by 48 funds compared to \$53.3 billion raised by 53 funds in 2016.¹
 - 2017 fundraising was 5.3% higher than the prior five-year average.
 - Apollo European Principal Fund III was the largest partnership raised during the year, closing on €3.8 billion.
- Dry powder was estimated at \$105.8 billion at the end 2017. This was down compared to both 3Q 2017 (\$106.2 billion) and the record level of \$112.0 billion, which was observed in both 2015 and 2016. This remained above the five-year average level of \$91.6 billion.¹
- Roughly 91 funds were in the market at the end of 2017, seeking \$58.9 billion in capital commitments.¹
 - Distressed debt managers were targeting the most capital, seeking an aggregate \$36.8 billion.
 - GSO Capital Solutions Fund III was the largest fund in market with a target fund size of \$6.5 billion.

Activity

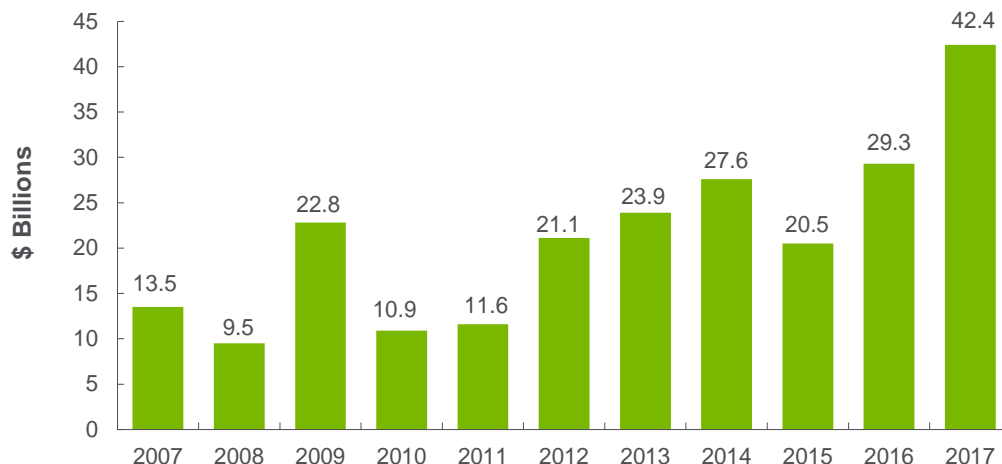
- Distressed debt and bankruptcy restructuring activity totaled \$282.2 billion during 2017, representing a decline of 18.0% from 2016.⁵
 - U.S. activity accounted for \$114.4 billion in 2017 and was down 38.0% from 2016.⁵
- The LTM U.S. high-yield default rate was 1.8% as of year-end 2017, which was down from year-end 2016's rate of 4.7%.⁶
- Credit spreads are now modestly expensive, and yields are also low. The credit risk environment remains benign, but the impact of rising interest rates is becoming more and more pertinent, and further positive returns driven by valuations will be limited.⁴
- 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

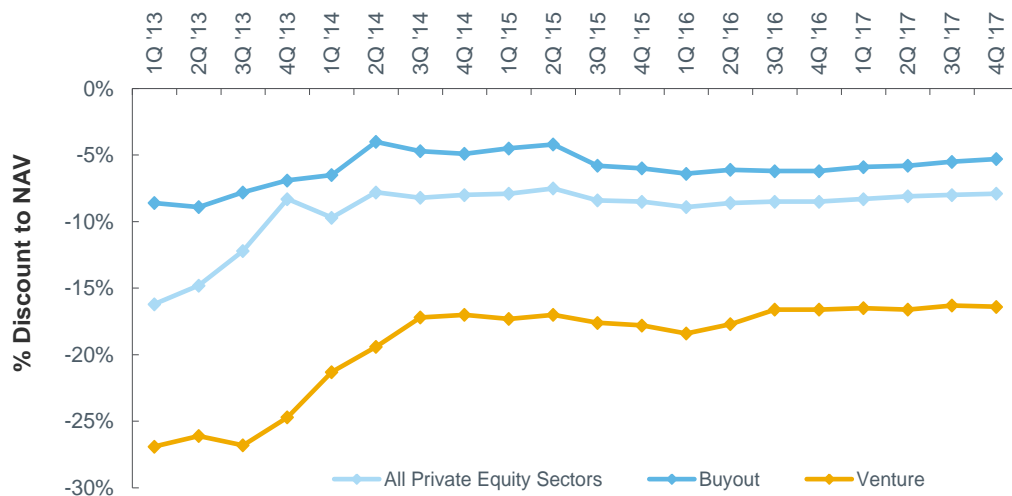
Secondaries

Secondary Fundraising



Source: Preqin

Secondary Pricing



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Source: UBS

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Fundraising

- 42 funds raised \$42.4 billion during the year, up from \$29.3 billion by 39 funds in 2016.¹
 - Strategic Partners VII was the largest fund raised during the year, closing on \$7.5 billion.
 - 83.3% of funds raised in 2017 met or exceeded their fundraising target, up from 60.0% in 2016.¹
- Dry powder was estimated at \$89.0 billion at the end of 2017. This was up from December 2016's previous peak of \$77.0 billion, but below 3Q 2017's record level of \$94.0 billion.¹ The top 15 secondary buyers are estimated to command more than 66.0% of the market's capital reserves. While this remains significant, it marks a decrease from the 75.0% of capital previously controlled by this group.²
- At the end of 2017, there were an estimated 48 secondary and direct secondary funds in market, targeting approximately \$39.7 billion.
 - Two funds accounted for 52.9% of all capital being raised: Lexington Capital Partners IX and Collier International Partners VIII were targeting \$12.0 billion and \$9.0 billion, respectively.¹

Activity

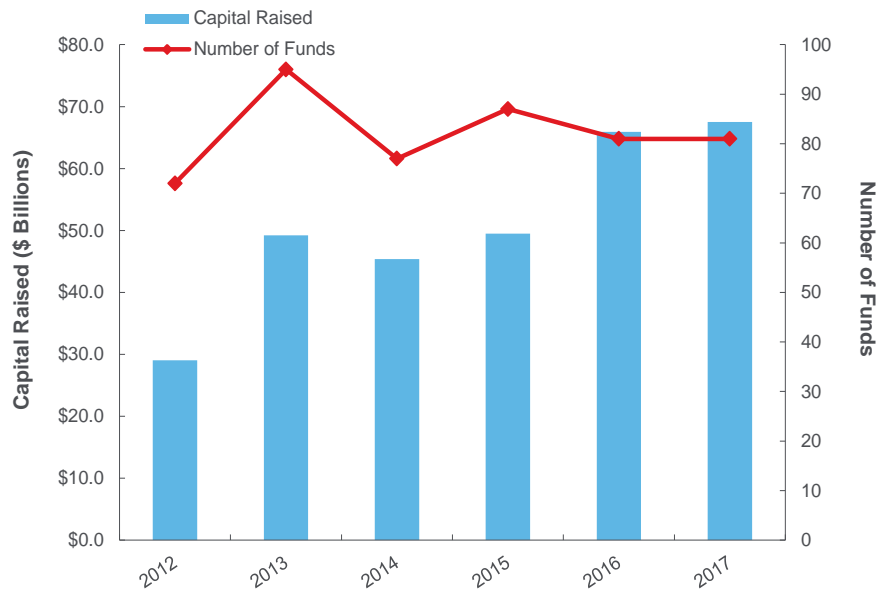
- More than 900 potential buyers and 750 potential sellers of secondary interests have been identified.¹
 - Secondary funds were the most active buyers in 2017, accounting for 81.4% of total purchases¹³.
 - Fund of funds managers and public pension funds represent the largest proportion of potential sellers at 13.0%, respectively.¹
- In 2017, private equity transaction volume totaled \$51.6 billion, representing an increase of 48.1% from the level observed in 2016. 70.3% of deal volume was traditional LP positions and the remainder were secondary direct transactions¹³.
 - Leveraged buyout funds continued to be the most purchased private equity funds during 2017, representing 79.0% of deal flow on a capital basis.¹³
- 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.²
- The average discount rate for all private equity sectors finished the year at 7.9%, down from 8.5% at the end of 2016. The average buyout pricing discount decreased 0.9% during the year, ending the year at 5.3%.²
- Pricing is expected to remain attractive for sellers given the strong competitive market dynamics and the widening supply/demand imbalance driven by the continued growth of dry powder.²

Opportunity

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

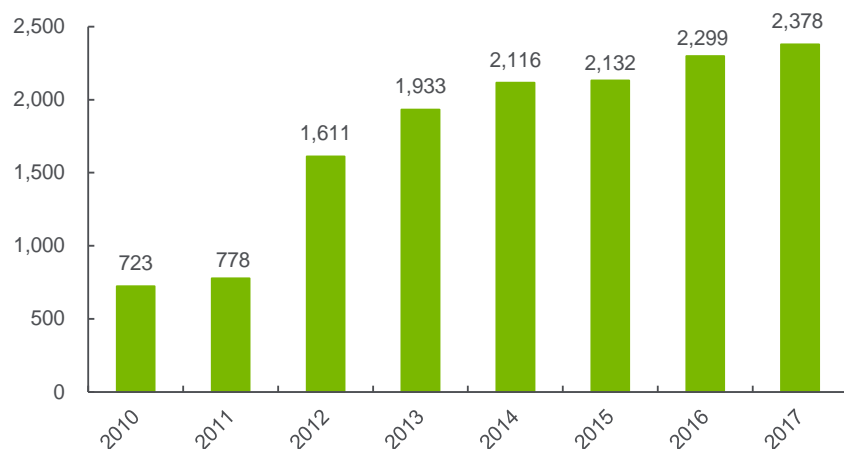
Infrastructure

Global Infrastructure Fundraising



Source: Preqin

Number of Deals Completed



Aon Source: Preqin

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

Fundraising

- \$67.4 billion of capital was raised by 79 funds in 2017 compared to \$65.8 billion of capital raised by 81 partnerships in 2016.¹
 - During the year, funds raised averaged 100.5% of their target size, which was up from the five-year average level of 94.8%.¹
 - Global Infrastructure Partners III was the largest fund raised during the year, closing on \$15.8 billion.¹
- As of the end of 2017, there were an estimated 136 funds in the market seeking roughly \$125.8 billion, up from \$118.1 billion sought by 180 managers a quarter ago.¹
 - Funds focused on infrastructure assets in North America were targeting an estimated \$54.5 billion in capital, followed by European focused funds, which were targeting approximately \$40.8 billion.
 - KKR Global Infrastructure Investors III was the largest fund in the market as of the end of 2017, targeting \$7.0 billion of commitments.
- At the end of the year, dry powder stood at \$159.0 billion, up from the third quarter's record total of \$154.0 billion.¹
- 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

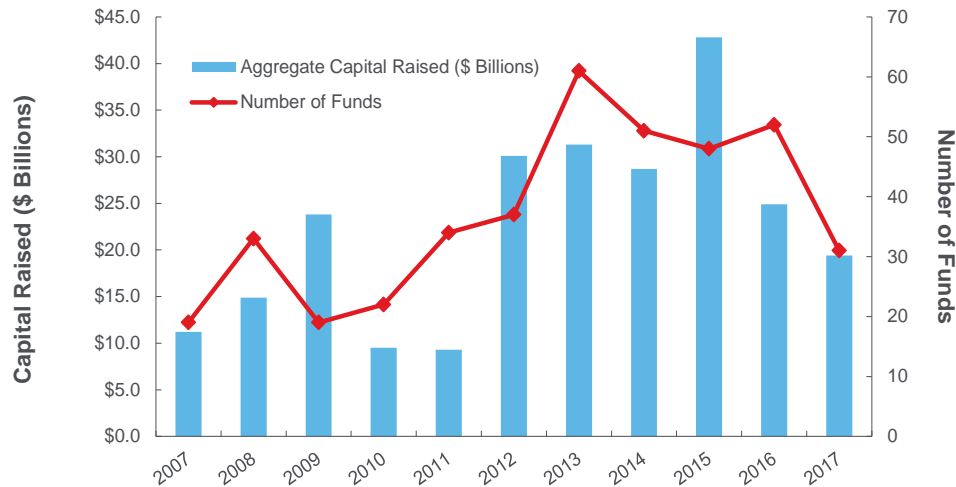
- Infrastructure managers completed 2,378 deals with an estimated aggregate deal value of \$916.0 billion in 2017 compared to 2,299 deals totaling \$809.7 billion in 2016. The average deal value during the year was \$385.2 million, up compared to 2016's average of \$352.2 million and the prior five-year average of \$337.1 million.¹
 - 48.8% of deals were completed at values of less than \$100.0 million. Transactions valued between \$100.0 million and \$500.0 million represented 30.6% of all deals executed in 2017.¹
 - Energy was the dominant industry during the year with 58.3% of transactions, followed by the transportation sector, which accounted for 9.8% of 2017's deals. Social infrastructure represented 20.2% of transactions in 2017, up from 13.9% in 2016.¹

Opportunity

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

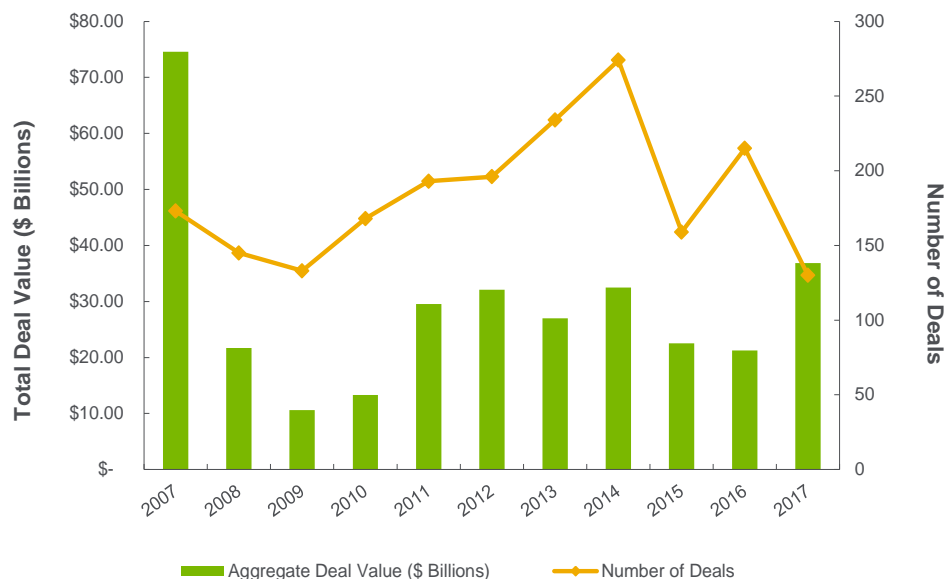
Natural Resources

Natural Resources Fundraising



Source: Preqin

Energy & Utilities Deal Activity



Aon

Source: Preqin

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

Fundraising

- During 2017, 31 funds closed on \$19.4 billion compared to 52 funds totaling \$24.9 billion in 2016.¹
 - EnCap Energy Capital Fund XI was the largest fund raised during the year, securing commitments of \$7.0 billion.
- At the end of 2017, there were roughly 100 funds in the market targeting an estimated \$39.4 billion in capital, compared to 99 funds seeking an estimated \$46.8 billion in 3Q 2017.¹
 - Five managers accounted for 45.2% of the total capital being raised.
 - NGP Natural Resources was seeking the most capital with a target fund size of \$5.3 billion.
- Dry powder stood at \$66.2 billion at the end of 2017, which was down 15.1% from 4Q 2016's record level of \$78.0 billion, but remained flat with the five-year average level.¹

Activity

- Energy and utilities industry managers completed 130 deals totaling \$36.9 billion in 2017, compared to \$22.0 billion across 215 deals in 2016.¹
- Crude oil prices increased during the quarter.
 - WTI crude oil prices increased 16.2% during the quarter to \$57.88/bbl. This was up 11.4% year-over-year.¹¹
 - Brent crude oil prices ended the quarter at \$64.37/bbl, up 14.6% and 20.7% from 3Q 2017 and 4Q 2016, respectively.¹¹
- Natural gas prices (Henry Hub) finished 2017 at \$2.82 per MMBtu, which was down 5.4% and 2.1% from 3Q 2017 and year-end 2016, respectively.¹¹
- A total of 929 crude oil and natural gas rotary rigs were in operation in the U.S. at the end of 2017. This was down 1.1% from the prior quarter, but up 41.4% year-over-year.¹⁵
 - Crude oil rigs represented 80.4% of the total rigs in operation. 53.8% of the 747 active oil rigs were in the Permian basin.
 - 26.4% and 24.7% of natural gas rigs at the end of 2017 were operating in the Marcellus and Haynesville basins, respectively.
- The price of iron ore (Tianjin Port) ended the year at \$72.25 per dry metric ton, down from \$79.43 at year-end 2016.¹²

Opportunity

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

Notes

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

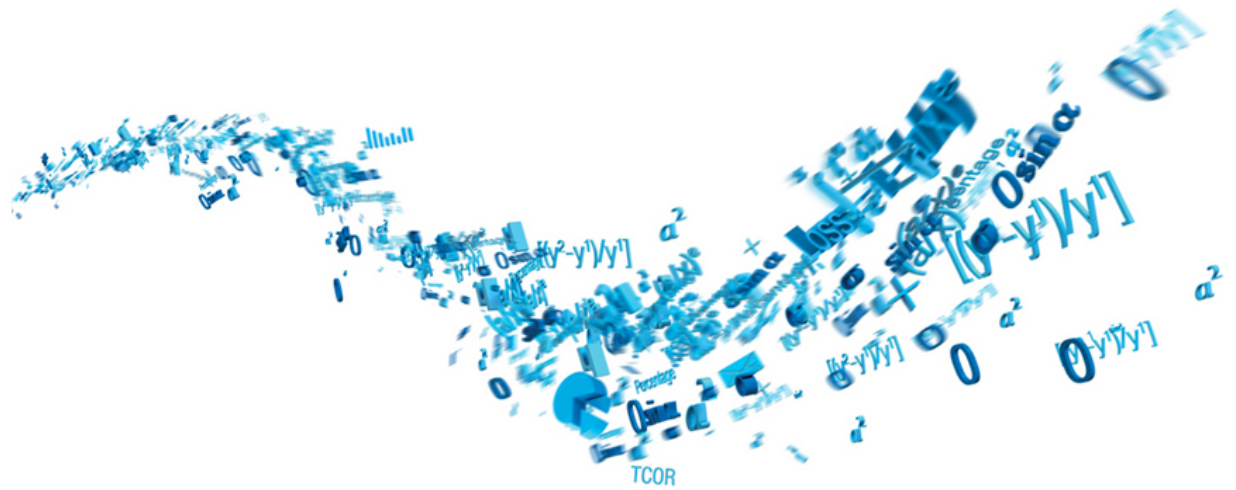
YE: Year end

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



Appendix B:

Real Estate Market Update

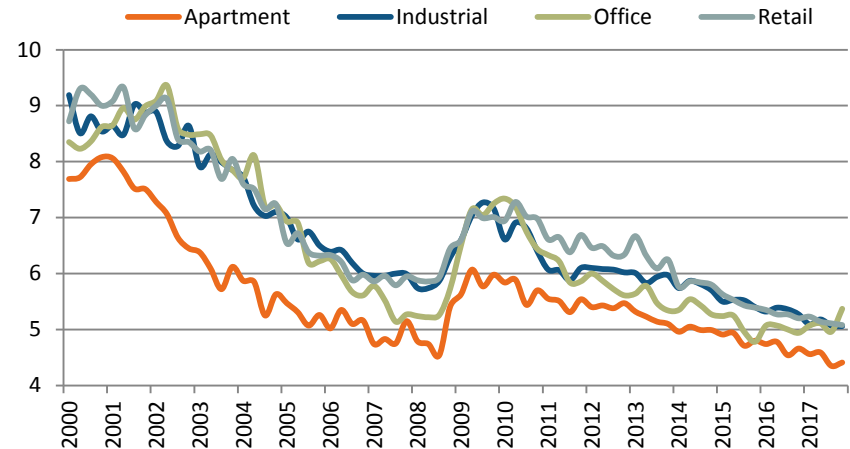
4Q 2017

U.S. Real Estate Market Update 4Q17

General

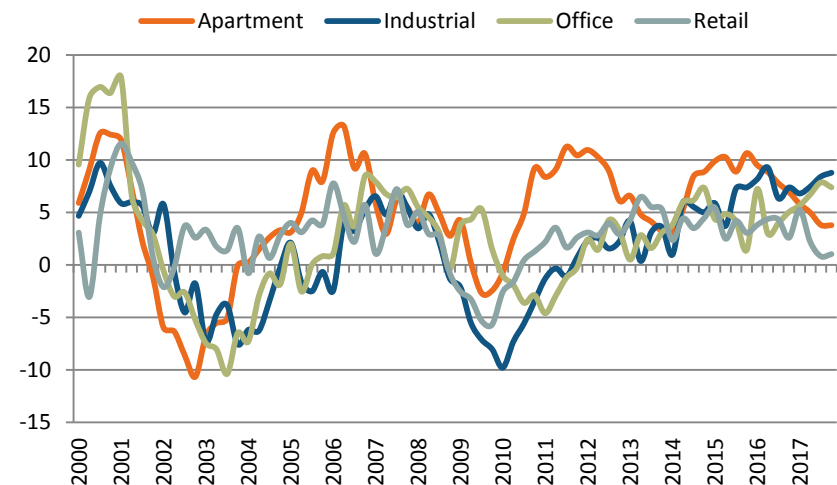
- The S&P 500 produced a gross total return of 6.6% during the Quarter, as markets have continued to rally on the back of tax cuts. MSCI US REIT index produced a more moderate return of 1.4%. REITS underperformed the broader equities market by 16.8%. Consumer Sentiment improved during the Quarter, concluding the year at 95.9. US 10 year treasury bond yields expanded 7 bps during the Quarter.
- Macro indicators for U.S. real estate continue to be positive; GDP grew at an annualized rate of 2.6% in the 4th Quarter. With the conclusion of December, the economy has now experienced 87 consecutive months of job growth. For 2017, headline inflation remained healthy at 2.1%, near the Fed's 2% target. The Federal Reserve has continued to tighten their policy, in light of improving economic data, and raised base rates to 1.25-1.5%. In 2018, the consensus expectation is three rate hikes.

Current Value Cap Rates by Property Type



Source: NCREIF

4-Qtr Rolling NOI Growth By Property Type



Source: NCREIF

Commercial Real Estate

- In 2016, \$124.1bn of aggregate capital was raised by US real estate funds. 2017, Private Equity Real Estate Funds have raised 111.6bn. Continuing on trend since 2012, 2017 has witnessed the largest average fund size at \$444m; this trend which has strengthened as capital has concentrated in a small group of established managers.
- Transaction cap rates (5.87%) on average expanded 5 bps during the 4th Quarter of 2017. Office experienced an expansion of current value cap rates of 40 bps; other sectors remained relatively flat.
- 10 year treasury bond yields compressed an expanded 7 bps to 2.4% during the quarter and, subsequent to quarter end, have continued to expand. A combination of fiscal stimulus and tightening from the fed has increased the investor's expectation of inflation.

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

Property Type Reviews

Apartments:

- Sales volumes decreased by 8.3% in 2017. Despite the slowdown, multifamily led all other property types in terms of transaction volume for the third straight year, speaking to the strong liquidity that remains in the market.
- Primary market transaction activity represented 40.3% of activity, down from 44.0% in 2016. New supply has continued to drive investors' cautious outlook on primary markets.
- Acquisitions by REITs decreased by 23%, as pricing has made it difficult to underwrite required return hurdles. Meanwhile, foreign investment increased 16%, with Canada and Singapore accounting for 66% of foreign investment.
- Annual rent growth ended the year at 2.3%. Concessions continue to increase in many markets nationally, a product of increased supply coming to market.
- The apartment sector delivered a 1.6% return during the Quarter, underperforming the NPI by 18 bps.

Office:

- The Office sector returned 1.7% in 4Q17, 15bps below the NPI.
- For the year, the office market recorded occupancy growth of 36.4 million square feet, 13% less than 2016 numbers, representing a third consecutive year of slowed occupancy growth.
- As a result of slowed expansion activity, vacancy has increased to 14.9%, with levels anticipated to increase through 2018 and 2019.
- Construction starts have dropped sharply in 2017 by 29%, with construction volumes dropping below the 100 million square feet level for the first time in three years.
- New supply has provided some upside for landlords with completions commanding a 43% premium to existing Class A space. Pricing discounts to Core product, as well as increased deliveries, has resulted in suburban office product being able to increase asking rents at a greater pace than urban assets.

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)

Retail:

- Transaction volumes totaled \$51.5 billion for 2017, a 22.5% decrease from the prior year. Secondary markets seeing strong population and job growth experienced growth, but not enough to offset the decline in gateway markets.
- Lifestyle centers and malls had transaction volume declines of 48.5% and 53.5%, respectively. One bright spot was general purpose centers, which experienced a 10.5% increase.
- Growth in rent for 2017 was 5.5%, marking a slowdown from that seen in 2016. Store closure announcements remain a headwind for rent growth going forward.
- Institutional retail investment declined 41.8% in 2017. REIT acquisitions increased by 12.0%, focused primarily on general purpose centers. Foreign investment declined by 56.7%, with core assets remaining the predominate component of activity.
- As of 4Q17, the retail sector delivered a quarterly return of 1.3%, which underperformed the NPI by 52 bps.

Industrial:

- As of 4Q17, Industrial properties returned 3.3% and outperformed the NPI by 149 bps.
- With nearly 82 million square feet of net absorption in 4Q17 (the highest fourth quarter number on record), 2017 demand reached 245 million square feet. This represents a 6.1% decline from 2016 totals.
- Midsized product (100,000 – 500,000 square feet) significantly increased from 2016 deal volumes, with 73% of transactions falling into this category.
- Construction levels remain elevated, with new deliveries reaching 232.7 million square feet in 2017, with many markets reaching historical highs in new deliveries. Speculative development was 75% of total deliveries for 2017 speaking to continued demand.
- A 20 bps reduction in vacancy has resulted in another all-time low of 5.0%. Strong demand has pushed asking rents up 5.4% year-over-year and now stand at \$5.50 PSF.

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 (4Q17)

Global

- Global investment activity during 4Q 2017 totaled \$228 billion, marking a 10% increase as compared to 4Q 2016 levels. This brings full-year 2017 volumes to \$698 billion, which is 6% higher than last year's total. The strong 4Q 2017 performance demonstrated investors' confidence in the real estate sector despite continued political uncertainty. Overall, 2017 produced record volumes for investment activity in the post-crisis era, driven by broad-based growth, low interest rates, and lack of inflationary pressure. Looking forward, global investment volumes in 2018 are expected to soften by 5% - 10% to around \$650 billion due to a relative lack of product combined with continued investor discipline. However, investors are still keen to access the sector and will look for new strategies as the prominence of single-asset transactions has started to decline.

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

Regional Volumes, 2016 - 2017								
\$ US Billions	Q3 2017	Q4 2017	% Change		% Change		% Change	
			Q3 17 - Q4 17	Q4 2016	Q4 16 - Q4 17	FY 2016	FY 2017	FY 16 - FY 17
Americas	61	66	8%	78	-15%	285	249	-13%
EMEA	73	110	51%	84	31%	245	300	22%
Asia Pacific	35	52	49%	45	16%	131	149	14%
Total	169	228	35%	207	10%	661	698	6%

Source: Jones Lang LaSalle, January 2018

Europe

- European investment increased 31% y/y in 4Q 2017, for a full-year volume of \$300 billion. This was a 22% increase over full-year 2016 volumes and was the strongest year since 2007. Growth was strong across all regions, with investment volumes up 57% in the Benelux region, 24% in Southern Europe, and 27% in the Nordics as compared to 2016. Central and Eastern Europe rose 3% to \$19 billion, surpassing the previous cyclical peak in 2006 by 29%. The U.K. showed continuous recovery following the impact of Brexit, with 4Q volumes up 80% y/y and totaling \$79 billion for the full-year, a 37% increase as compared to full-year 2016 volumes. Germany saw volumes rise 8% in 4Q with full-year volumes up 9% compared to 2016. The French market saw a reversal of the 2Q and 3Q slowdown with investment volumes up 61% y/y.

Asia

- Asia Pacific 4Q 2017 investment activity reached a record \$52 billion, up 16% y/y. Full-year volumes were \$249 billion, marking a 13% increase as compared to full-year 2016 volumes. Cross-border investment activity accounted for 40% of total transaction volumes, with Singaporeans being the largest cross-border buyers. Japan's transaction volumes totaled \$37 billion for 2017, up 10% y/y. Australia's full-year investment volume was \$21 billion, up 14% compared to 2016. Investor interest has been shifting towards secondary cities such as Brisbane. Chinese transaction activity marked an all-time record, reaching \$36 billion in 2017. This represents a 5% increase compared to 2016. Specifically, Hong Kong volumes came in at \$16.4 billion, up 58% y/y.

Global Outlook - GDP (Real) Growth % pa, 2017-2019

	2017	2018	2019
Global	3.6	3.9	3.6
Asia Pacific	5.5	5.5	5.2
Australia	2.2	2.5	2.4
China	6.8	6.4	6.0
India	6.1	7.4	7.1
Japan	1.8	1.7	0.9
North America	2.0	2.6	2.2
US	2.3	2.7	1.9
MENA*	2.0	3.2	3.8
European Union	2.8	2.5	2.0
France	1.8	1.9	1.7
Germany	2.5	2.4	1.8
UK	1.5	1.5	1.6

*Middle East North Africa

Source: Jones Lang LaSalle (Oxford Economics), January 2018

Sources: Jones Lang LaSalle Research, Bloomberg LP, Townsend

Aon

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PCA INVESTMENT MARKET RISK METRICS

Monthly Report

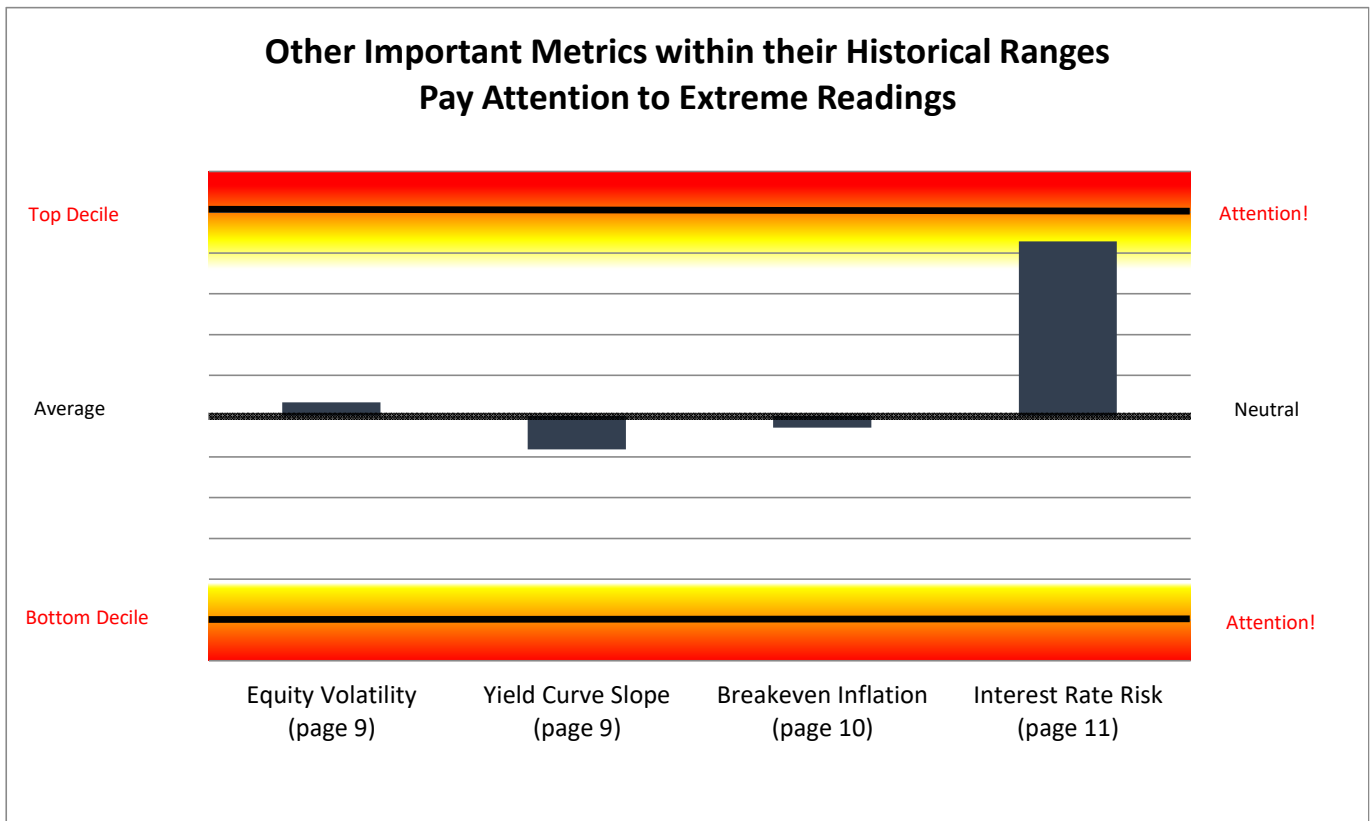
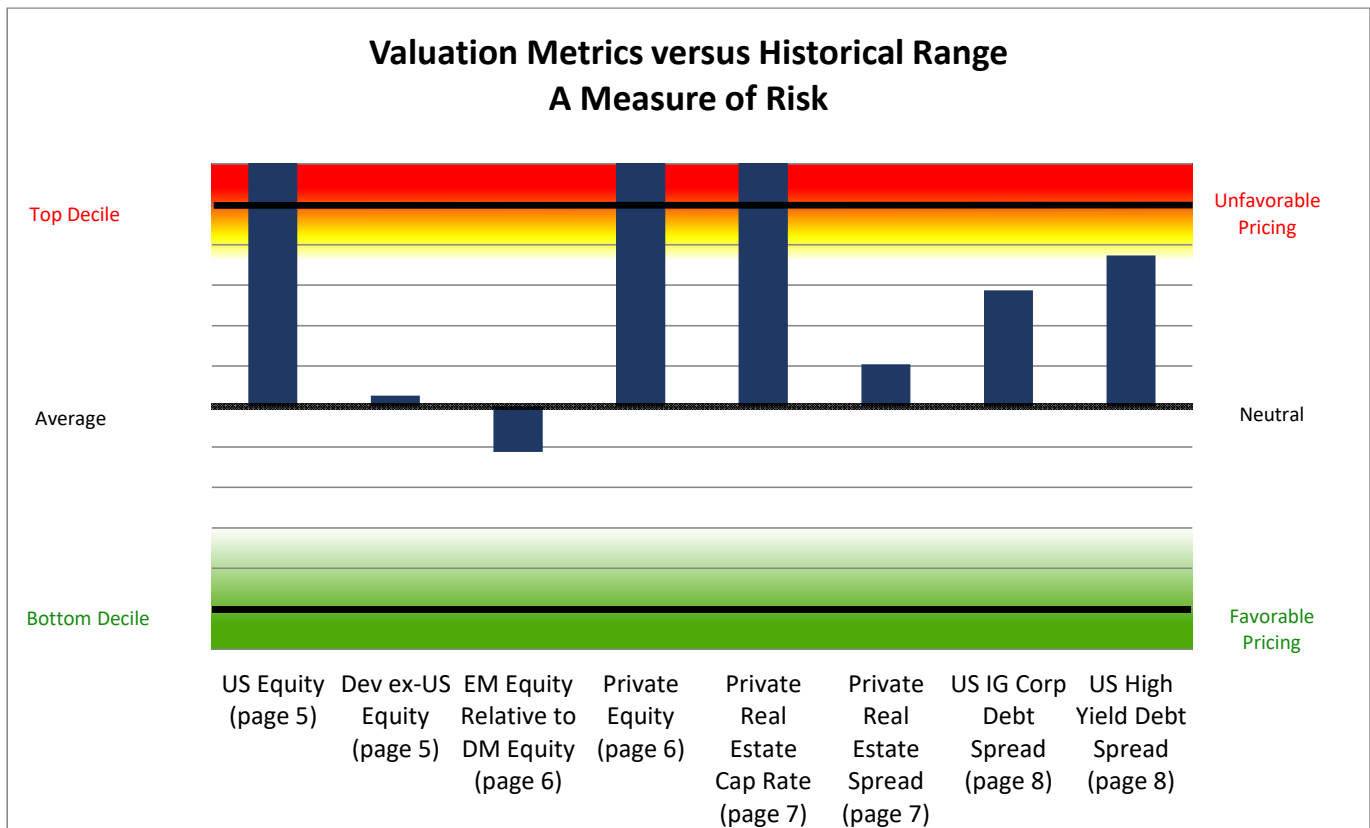


Takeaways

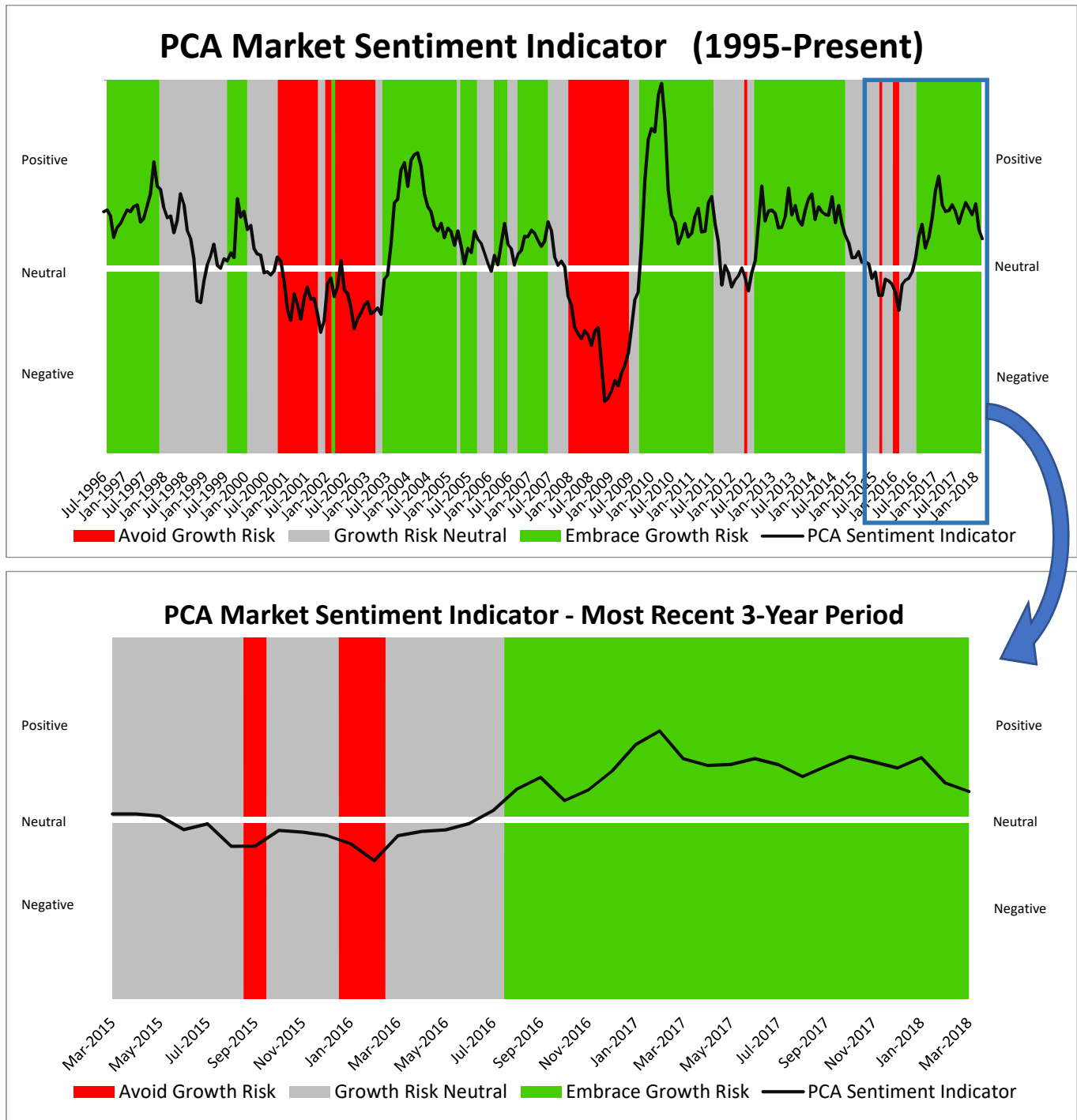
- March was the second down month in a row for most risk-oriented assets. Contrary to February, however, certain diversifying assets (e.g., U.S. Treasuries) produced positive returns for the month.
- The month of January (i.e., mid-to-high single digit returns) is the primary reason that YTD returns for most risk-oriented assets/indices are generally +/-2% (despite recent drawdowns).
- Several market themes from the last few years reversed in March, with small caps outperforming large caps, value beating growth, and material drawdowns in a handful of the strongest performing equities (e.g., FANG stocks).
- On a trailing one-year basis, certain risk assets (e.g., large cap growth stocks, EM equity, etc.) have outperformed other risk-oriented assets (e.g., MLPs, REITs, etc.) by upwards of 40%.
- March saw implied equity market volatility remain at levels closer to the historical averages, with VIX generally ranging between 15 and 25. PCA expects this environment (i.e., significantly higher implied and realized volatility than recent past) to persist over the near-term.
- U.S. Treasury interest rates were fairly stable during March, but the yield curve experienced a marginal flattening.
- Non-U.S. Developed and Emerging Market equity valuations are currently in-line with long-term averages, but they remain modestly cheap relative to U.S. levels.
- A prevailing market theme at the moment is the divergence of U.S. fiscal and monetary policies. Whereas fiscal policy is currently stimulative, monetary policy is generally tightening as economic growth, inflation, and unemployment are approaching late-cycle levels. PCA expects this to remain a topic of interest/concern throughout 2018.
- PCA's sentiment indicator (page 4) remains positive (**green**).

¹See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

Risk Overview



Market Sentiment



Information Behind Current Sentiment Reading

Bond Spread Momentum Trailing-Twelve Months

Equity Return Momentum Trailing-Twelve Months

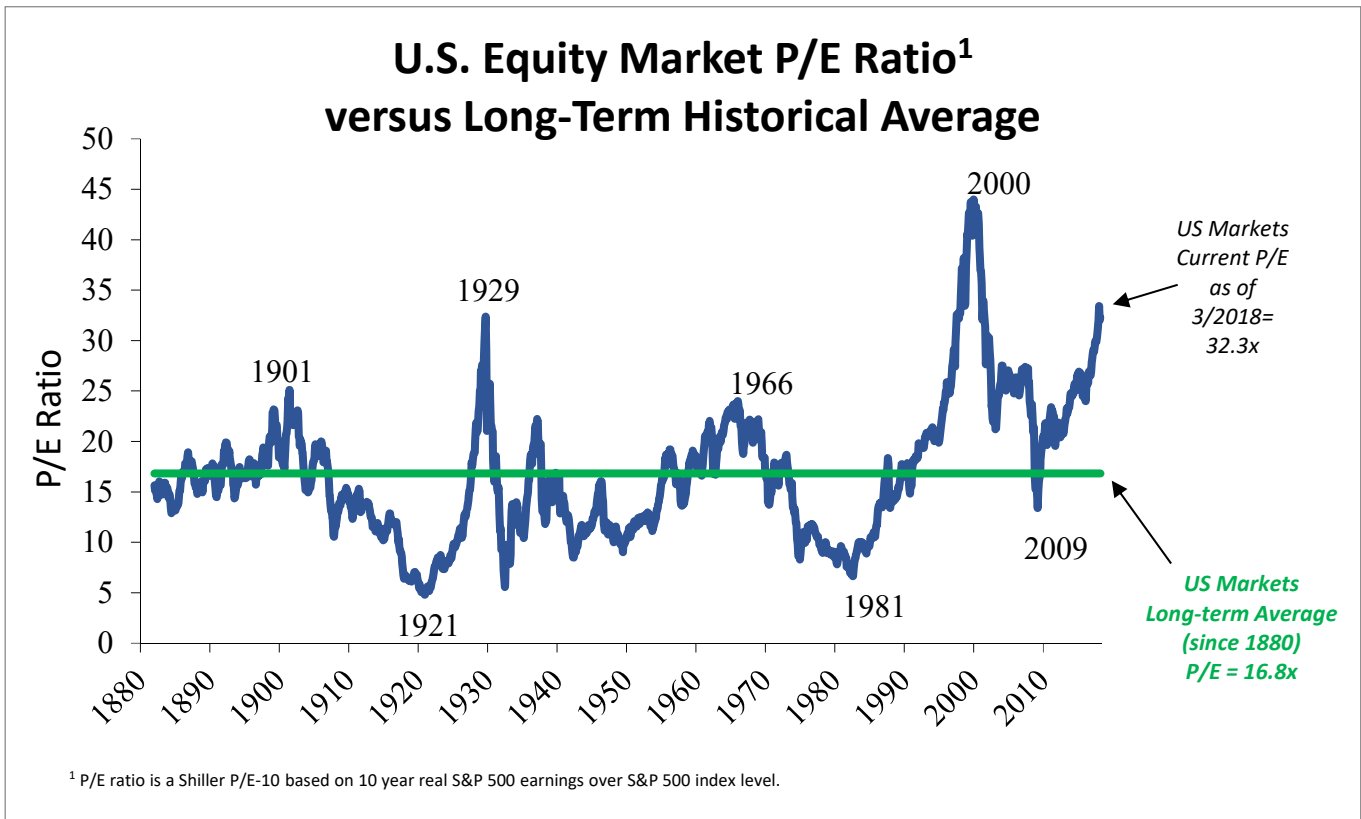
Agreement Between Bond Spread and Equity Spread Momentum Measures?

Positive	■
Positive	■
Agree	■

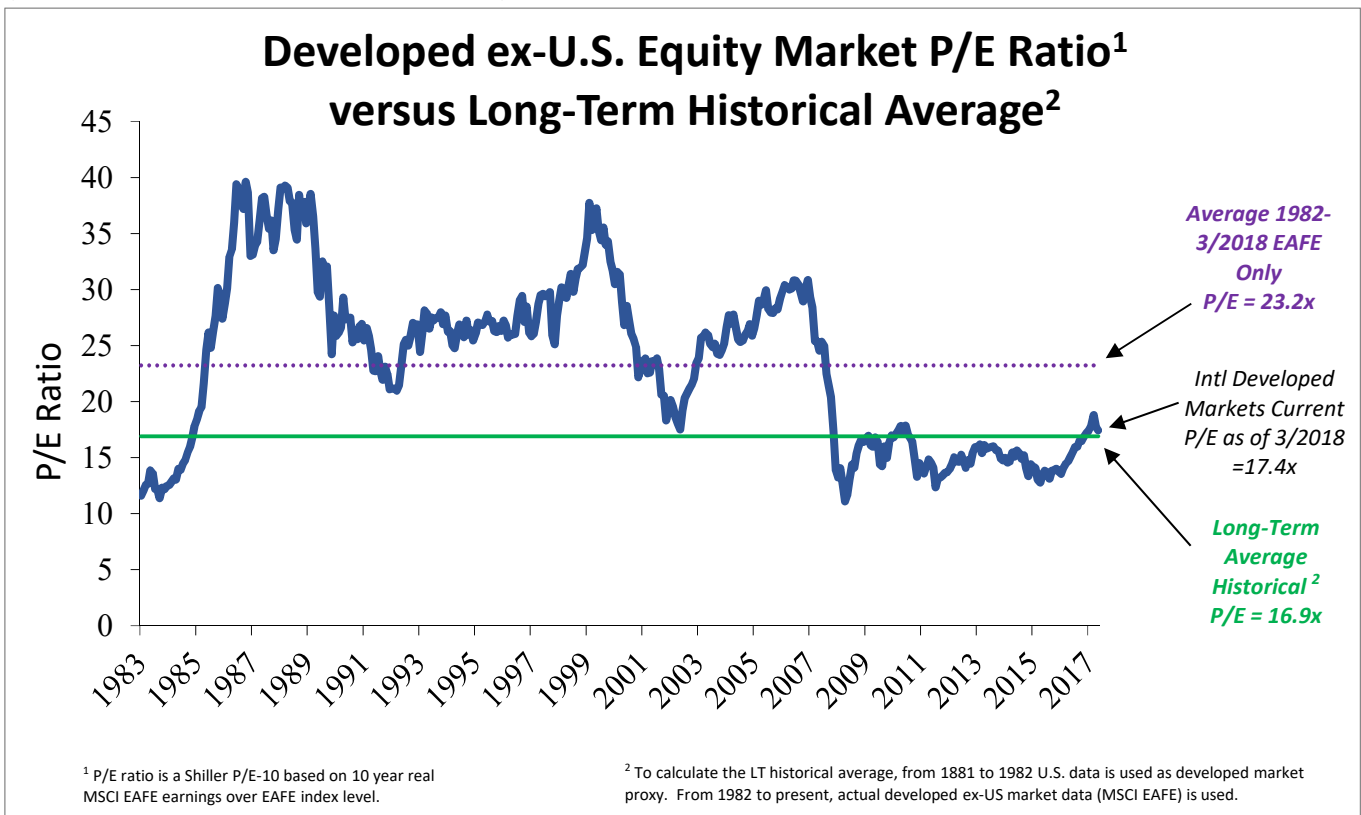
Growth Risk Visibility (Current Overall Sentiment)

Positive	■
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Developed Public Equity Markets

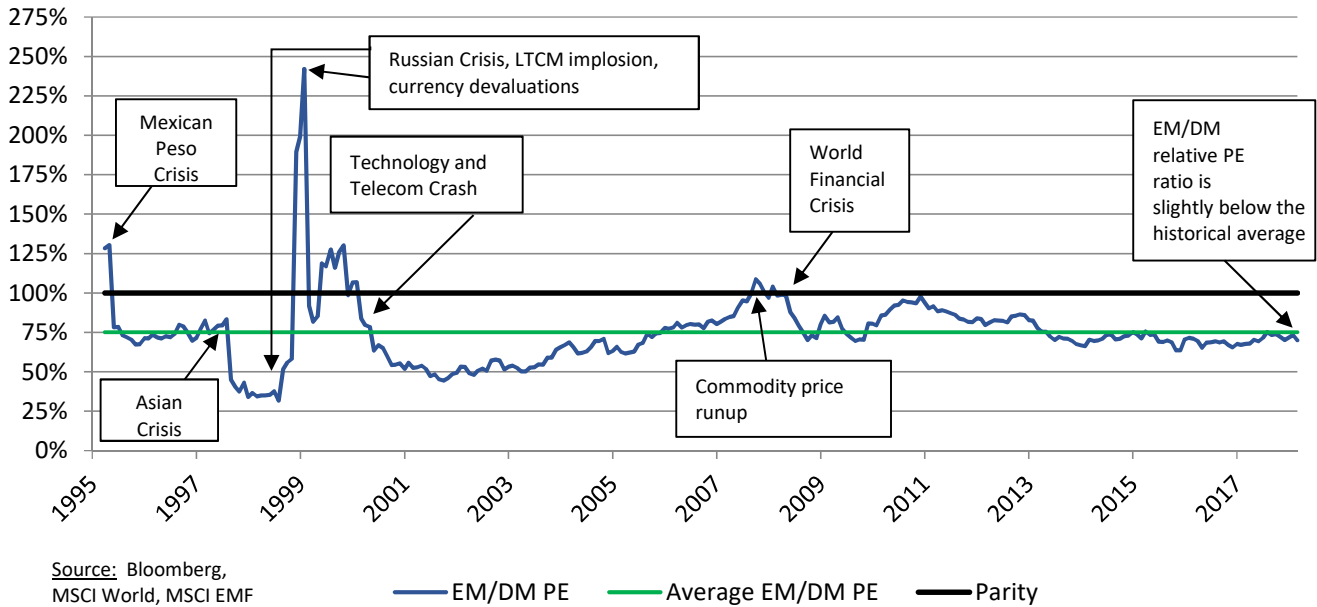


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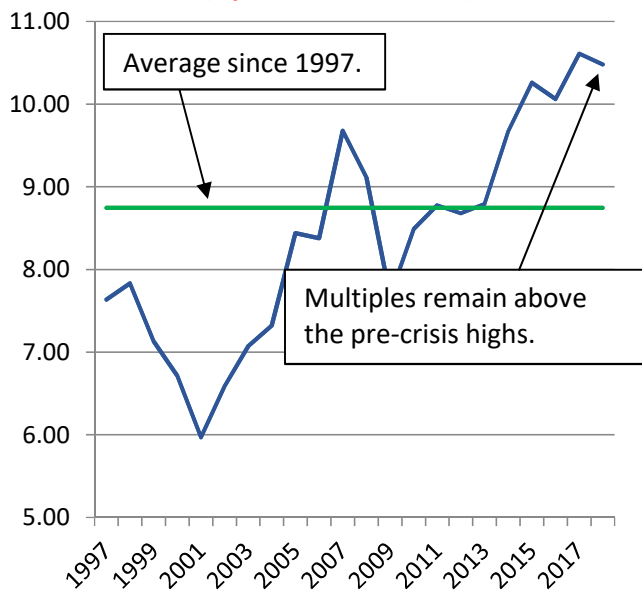
Emerging Market Public Equity Markets

Emerging Markets PE / Developed Markets PE (100% = Parity between PE Ratios)



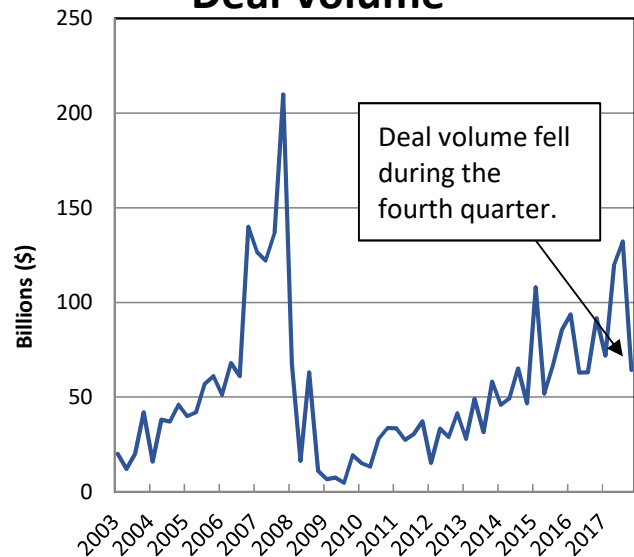
US Private Equity

Price to EBITDA Multiples Paid in LBOs (Updated to Feb 28th)



Quarterly Data, Updated to December 31st

Disclosed U.S. Quarterly Deal Volume*

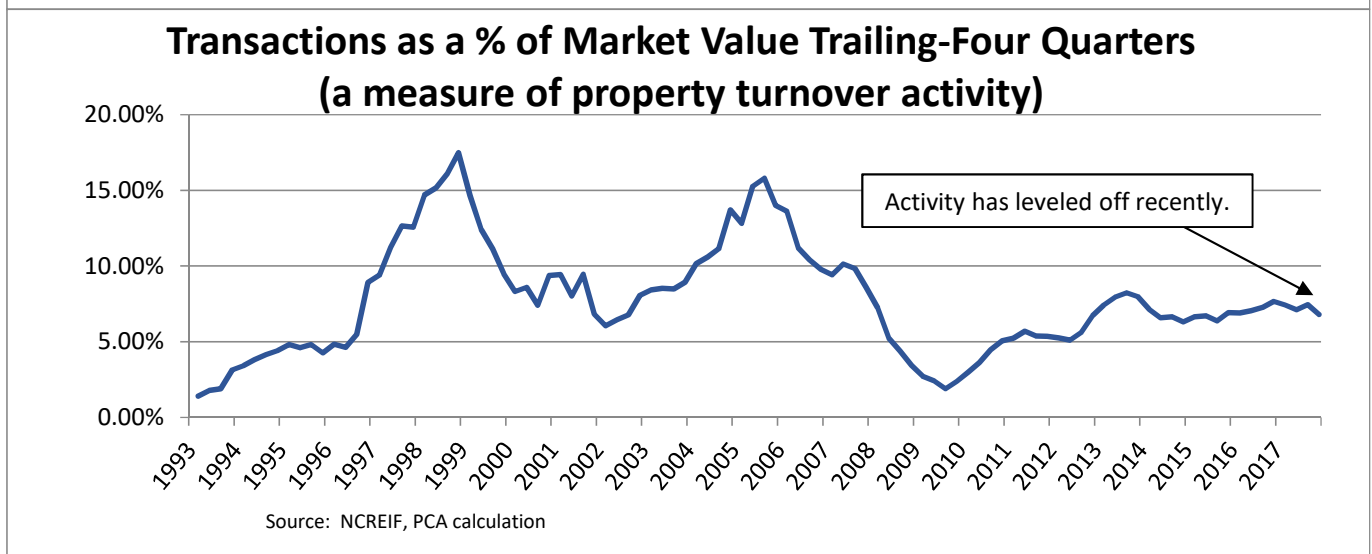
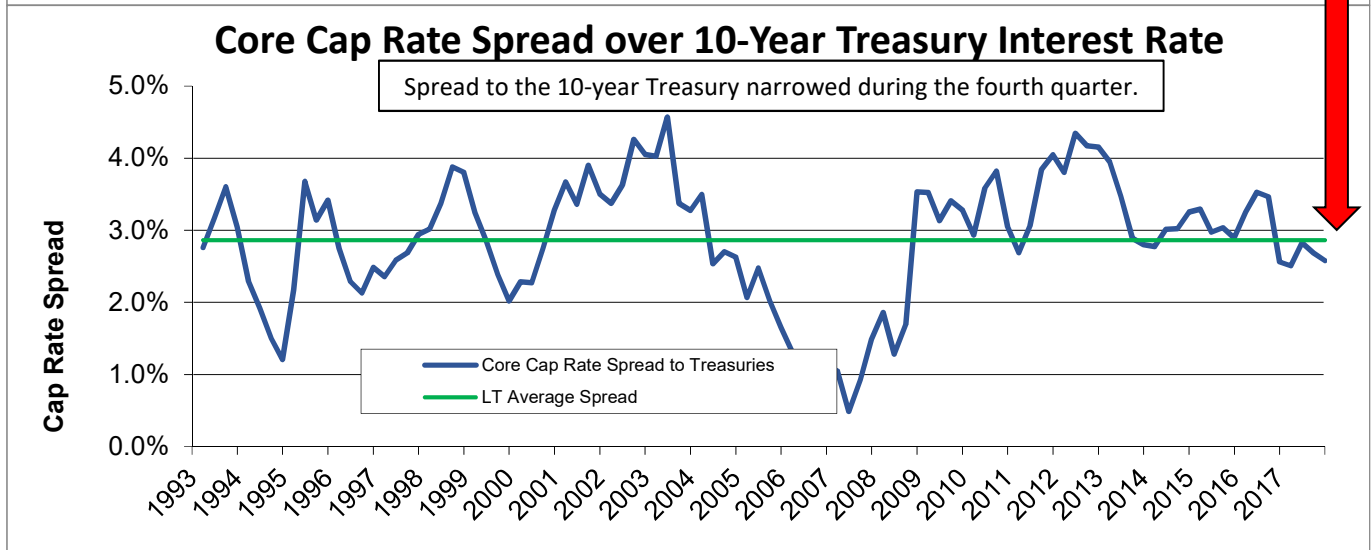
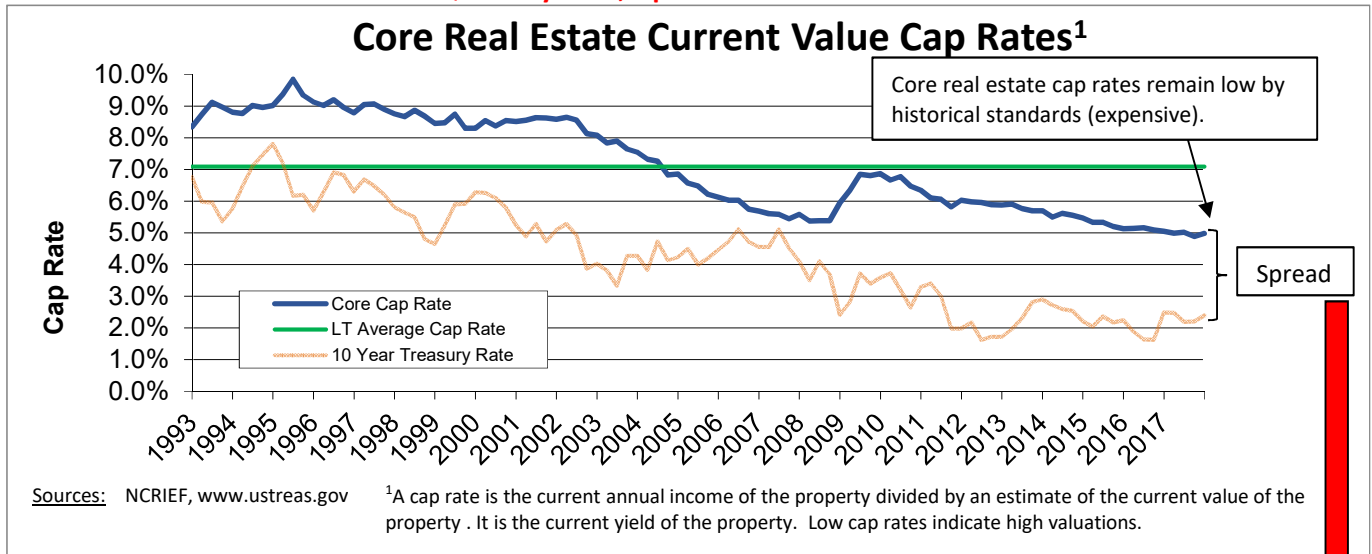


Source: Thomson Reuters Buyouts

* quarterly total deal size (both equity and debt)

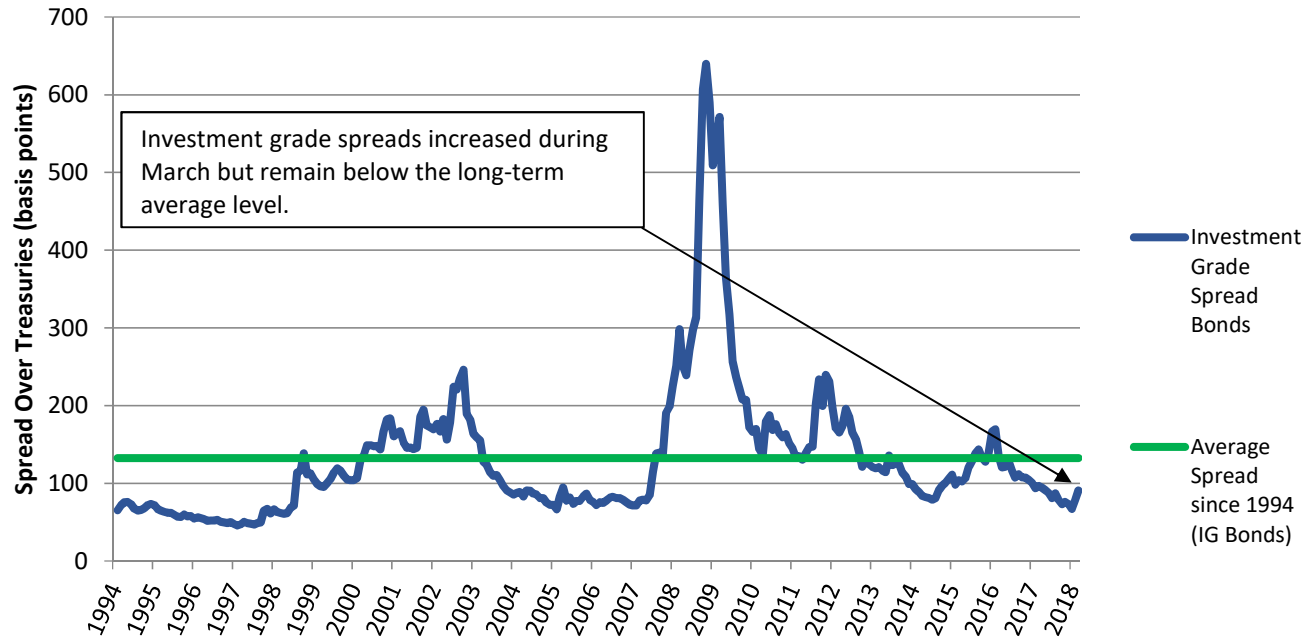
Private Real Estate

Quarterly Data, Updated to December 31st.



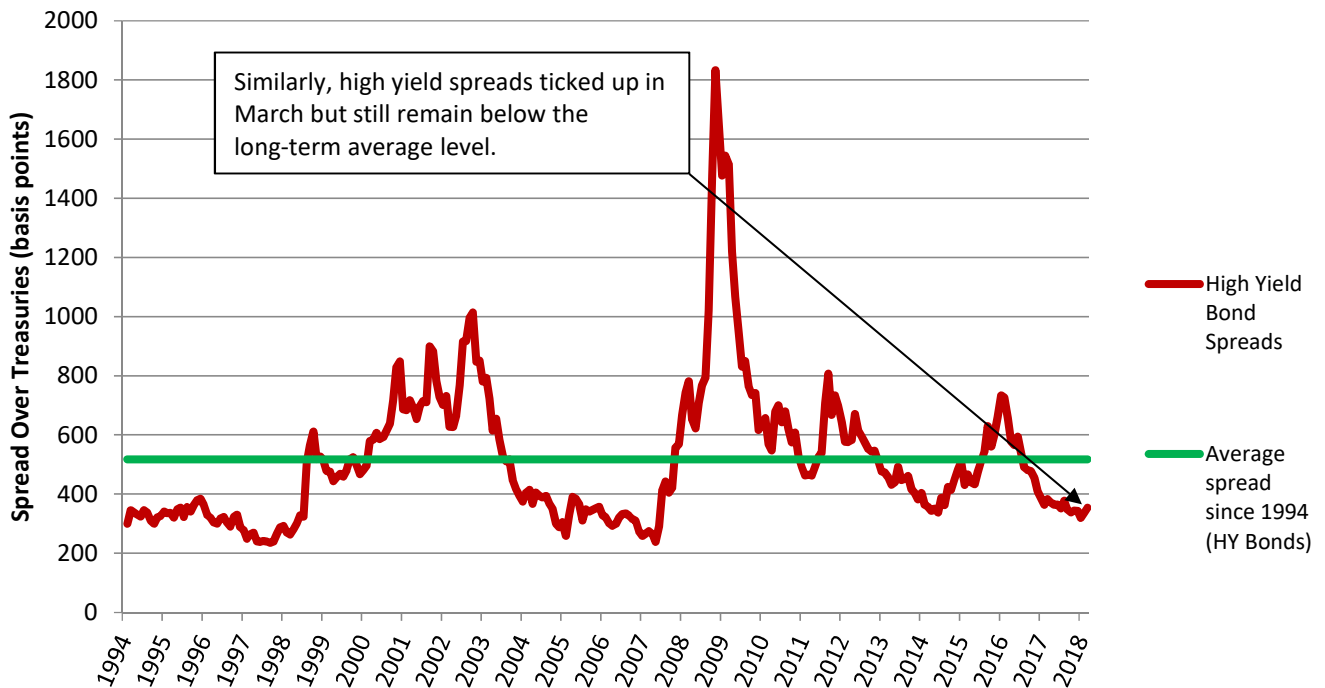
Credit Market US Fixed Income

Investment Grade Corporate Bond Spreads



Source: LehmanLive: Barclays Capital US Corporate Investment Grade Index Intermediate Component.

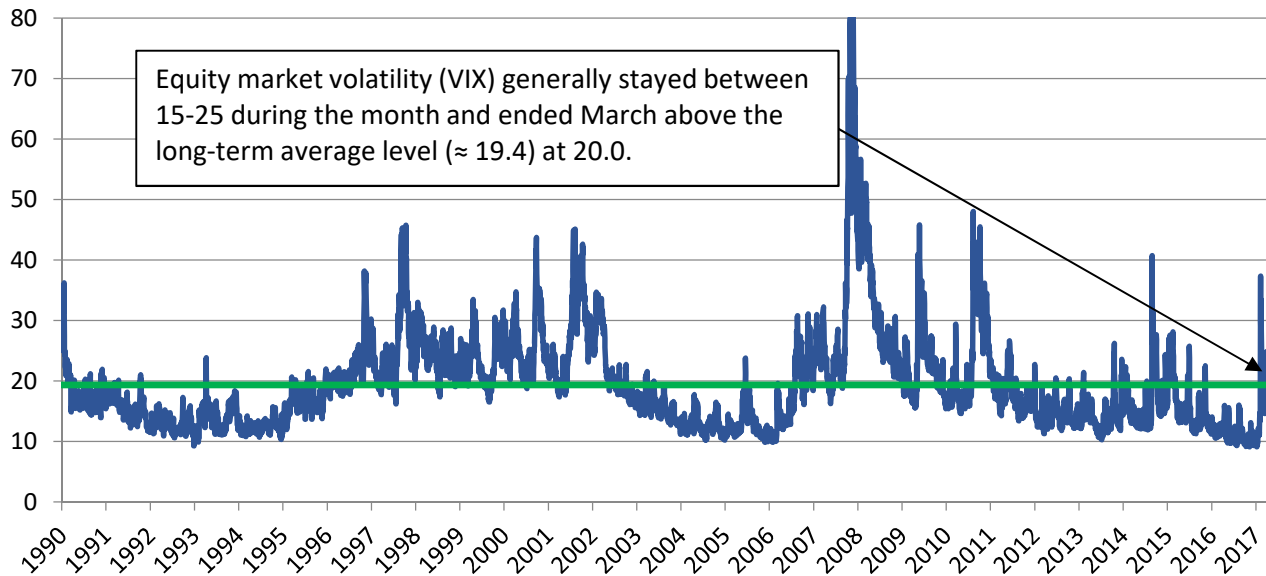
High Yield Corporate Bond Spreads



Source: LehmanLive: Barclays Capital U.S. Corporate High Yield Index.

Other Market Metrics

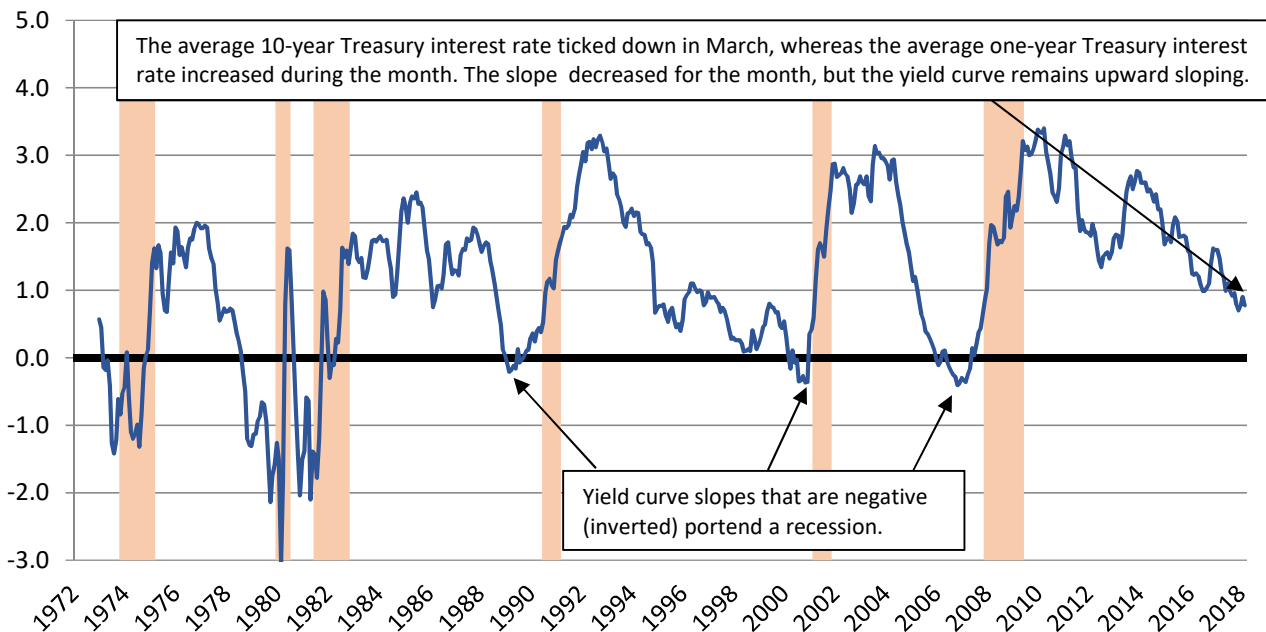
VIX - a measure of equity market fear / uncertainty



Source: <http://www.cboe.com/micro/vix/historical.aspx>

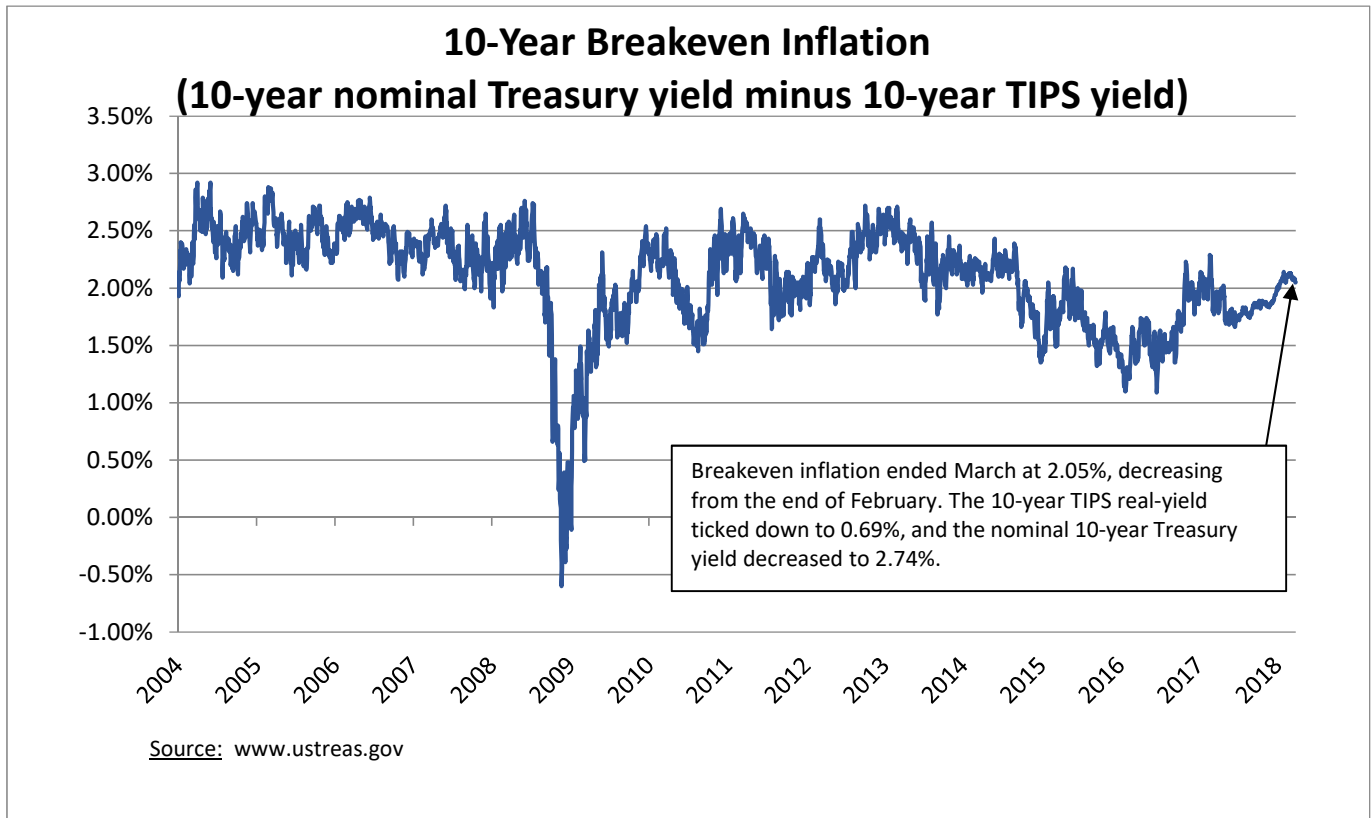
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Yield Curve Slope

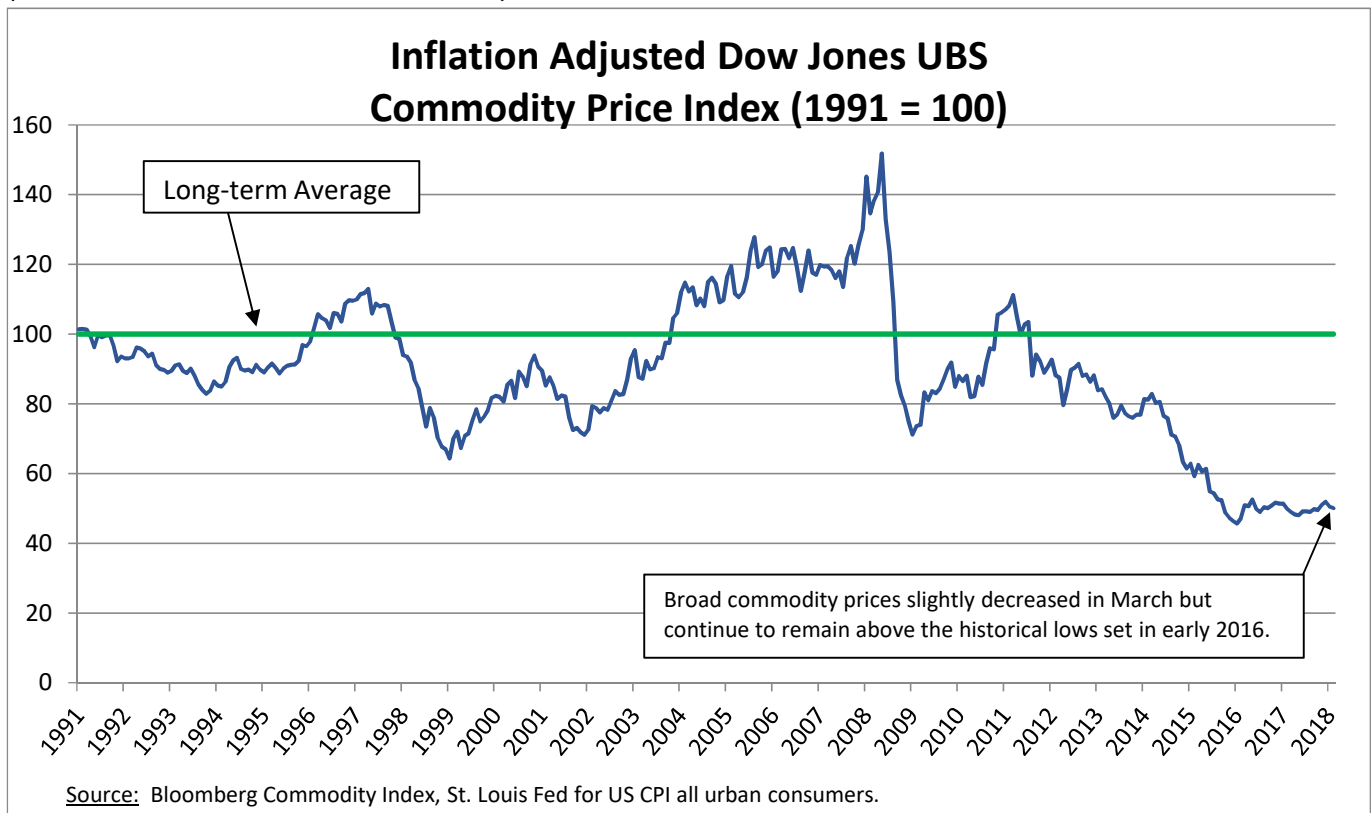


Source: www.ustreas.gov (10 yr treasury yield minus 1 year treasury yield)

Measures of Inflation Expectations

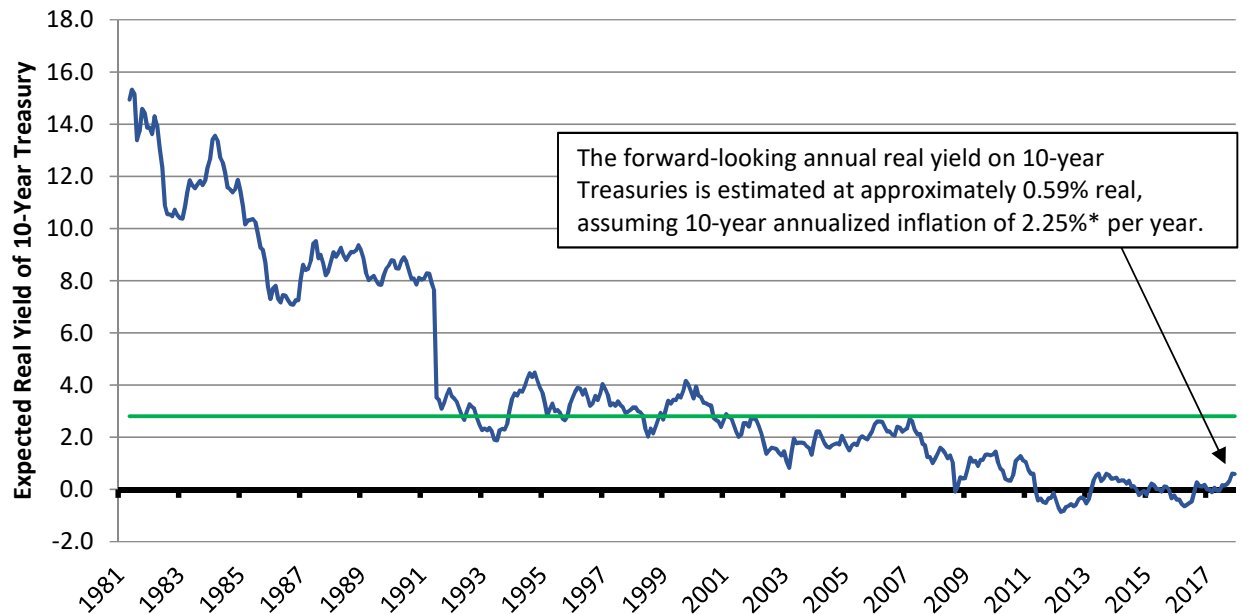


(Please note the difference in time scales)



Measures of U.S. Treasury Interest Rate Risk

Estimate of 10-Year Treasury Forward-Looking Real Yield

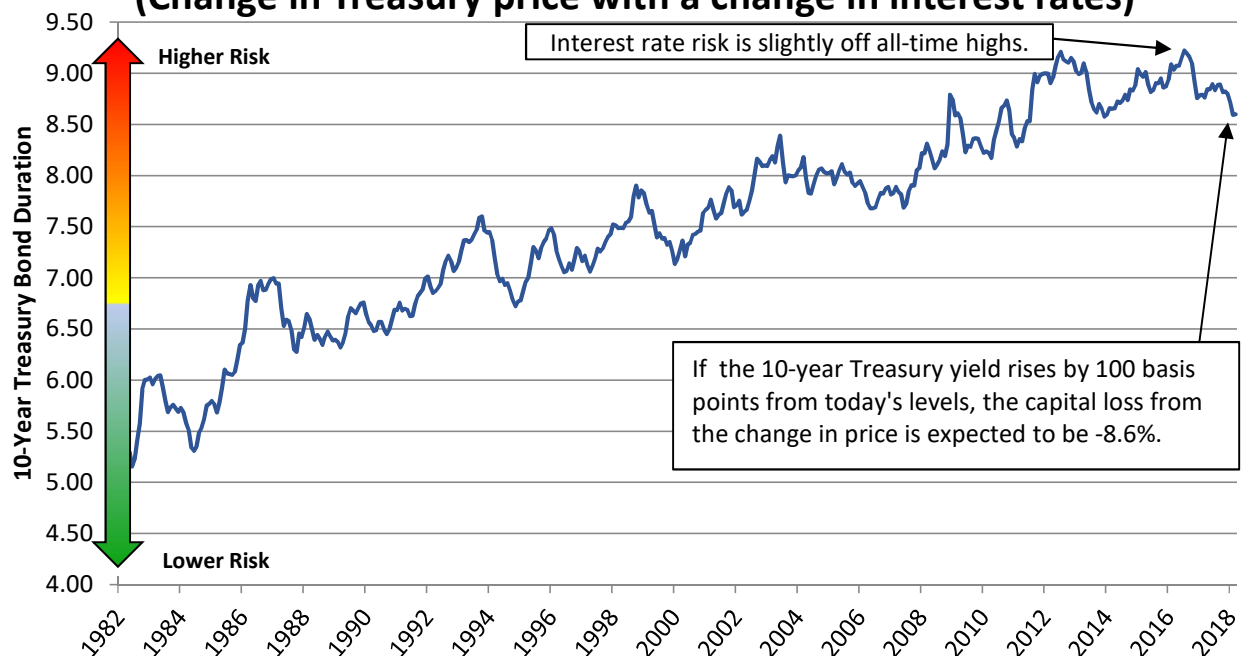


Sources: www.ustreas.gov for 10-year constant maturity rates

*Federal Reserve Bank of Philadelphia survey of professional forecasts for inflation estimates

10-Year Treasury Duration

(Change in Treasury price with a change in interest rates)



Source: www.ustreas.gov for 10-year constant maturity rates, calculation of duration

Appendix

Appendix

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

US Equity Markets:

Metric: P/E ratio = Price / "Normalized" earnings for the S&P 500 Index

To represent the price of US equity markets, we have chosen the S&P 500 index. This index has the longest published history of price, is well known, and also has reliable, long-term, published quarterly earnings. The price= P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the S&P 500 index). Equity markets are very volatile. Prices fluctuate significantly during normal times and extremely during periods of market stress or euphoria. Therefore, developing a measure of earnings power (E) which is stable is vitally important, if the measure is to provide insight. While equity prices can and do double, or get cut in half, real earnings power does not change nearly as much. Therefore, we have selected a well known measure of real, stable earnings power developed by Yale Professor Robert Shiller known as the Shiller E-10. The calculation of E-10 is simply the average real annual earnings over the past 10 years. Over 10 years, the earnings shenanigans and boom and bust levels of earnings tend to even out (and often times get restated). Therefore, this earnings statistic gives a reasonably stable, slow-to-change estimate of average real earnings power for the index. Professor Shiller's data and calculation of the E-10 are available on his website at <http://www.econ.yale.edu/~shiller/data.htm>. We have used his data as the base for our calculations. Details of the theoretical justification behind the measure can be found in his book *Irrational Exuberance* [Princeton University Press 2000, Broadway Books 2001, 2nd ed., 2005].

Developed Equity Markets Excluding the US:

Metric: P/E ratio = Price / "Normalized" earnings for the MSCI EAFE Index

To represent the price of non-US developed equity markets, we have chosen the MSCI EAFE index. This index has the longest published history of price for non-US developed equities. The price= P of the P/E ratio is the current price of the market index (the average daily price of the most recent full month for the MSCI EAFE index). The price level of this index is available starting in December 1969. Again, for the reasons described above, we elected to use the Shiller E-10 as our measure of earnings (E). Since 12/1972, a monthly price earnings ratio is available from MSCI. Using this quoted ratio, we have backed out the implied trailing-twelve month earnings of the EAFE index for each month from 12/1972 to the present. These annualized earnings are then inflation adjusted using CPI-U to represent real earnings in US dollar terms for each time period. The Shiller E-10 for the EAFE index (10 year average real earnings) is calculated in the same manner as detailed above.

However, we do not believe that the pricing and earnings history of the EAFE markets are long enough to be a reliable representation of pricing history for developed market equities outside of the US. Therefore, in constructing the Long-Term Average Historical P/E for developed ex-US equities for comparison purposes, we have elected to use the US equity market as a developed market proxy, from 1881 to 1982. This lowers the Long-Term Average Historical P/E considerably. We believe this methodology provides a more realistic historical comparison for a market with a relatively short history.

Appendix

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

Emerging Market Equity Markets:

Metric: Ratio of Emerging Market P/E Ratio to Developed Market P/E Ratio

To represent the Emerging Markets P/E Ratio, we have chosen the MSCI Emerging Market Free Index, which has P/E data back to January 1995 on Bloomberg. To represent the Developed Markets PE Ratio, we have chosen the MSCI World Index, which also has data back to January 1995 on Bloomberg. Although there are issues with published, single time period P/E ratios, in which the denominator effect can cause large movements, we feel that the information contained in such movements will alert investors to market activity that they will want to interpret.

US Private Equity Markets:

Metrics: S&P LCD Average EBITDA Multiples Paid in LBOs and US Quarterly Deal Volume

The Average Purchase Price to EBITDA multiples paid in LBOs is published quarterly by S&P in their LCD study. This is the total price paid (both equity and debt) over the trailing-twelve month EBITDA (earnings before interest, taxes, depreciation and amortization) as calculated by S&P LCD. This is the relevant, high-level pricing metric that private equity managers use in assessing deals. Data is published monthly.

US quarterly deal volume for private equity is the total deal volume in \$ billions (both equity and debt) reported in the quarter by Thomson Reuters Buyouts. This metric gives a measure of the level of activity in the market. Data is published quarterly.

U.S Private Real Estate Markets:

Metrics: US Cap Rates, Cap Rate Spreads, and Transactions as a % of Market Value

Real estate cap rates are a measure of the price paid in the market to acquire properties versus their annualized income generation before financing costs (NOI=net operating income). The data, published by NCREIF, describes completed and leased properties (core) on an unleveraged basis. We chose to use current value cap rates. These are capitalization rates from properties that were revalued during the quarter. This data relies on estimates of value and therefore tends to be lagging (estimated prices are slower to rise and slower to fall than transaction prices). The data is published quarterly.

Spreads between the cap rate (described above) and the 10-year nominal Treasury yield, indicate a measure of the cost of properties versus a current measure of the cost of financing.

Transactions as a % of Market Value Trailing-Four Quarters is a measure of property turnover activity in the NCREIF Universe. This quarterly metric is a measure of activity in the market.

Credit Markets US Fixed Income:

Metric: Spreads

The absolute level of spreads over treasuries and spread trends (widening / narrowing) are good indicators of credit risk in the fixed income markets. Spreads incorporate estimates of future default, but can also be driven by technical dislocations in the fixed income markets. Abnormally narrow spreads (relative to historical levels) indicate higher levels of valuation risk, wide spreads indicate lower levels of valuation risk and / or elevated default fears. Investment grade bond spreads are represented by the Barclays Capital US Corporate Investment Grade Index Intermediate Component. The high yield corporate bond spreads are represented by the Barclays Capital US Corporate High Yield Index.

Appendix

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

Measure of Equity Market Fear / Uncertainty

Metric: VIX – Measure of implied option volatility for U.S. equity markets

The VIX is a key measure of near-term volatility conveyed by implied volatility of S&P 500 index option prices. VIX increases with uncertainty and fear. Stocks and the VIX are negatively correlated. Volatility tends to spike when equity markets fall.

Measure of Monetary Policy

Metric: Yield Curve Slope

We calculate the yield curve slope as the 10 year treasury yield minus the 1 year treasury yield. When the yield curve slope is zero or negative, this is a signal to pay attention. A negative yield curve slope signals lower rates in the future, caused by a contraction in economic activity. Recessions are typically preceded by an inverted (negatively sloped) yield curve. A very steep yield curve (2 or greater) indicates a large difference between shorter-term interest rates (the 1 year rate) and longer-term rates (the 10 year rate). This can signal expansion in economic activity in the future, or merely higher future interest rates.

Measures of US Inflation Expectations

Metrics: Breakeven Inflation and Inflation Adjusted Commodity Prices

Inflation is a very important indicator impacting all assets and financial instruments. Breakeven inflation is calculated as the 10 year nominal treasury yield minus the 10 year real yield on US TIPS (treasury inflation protected securities). Abnormally low long-term inflation expectations are indicative of deflationary fears. A rapid rise in breakeven inflation indicates an acceleration in inflationary expectations as market participants sell nominal treasuries and buy TIPS. If breakeven inflation continues to rise quarter over quarter, this is a signal of inflationary worries rising, which may cause Fed action and / or dollar decline.

Commodity price movement (above the rate of inflation) is an indication of anticipated inflation caused by real global economic activity putting pressure on resource prices. We calculate this metric by adjusted in the Dow Jones UBS Commodity Index (formerly Dow Jones AIG Commodity Index) by US CPI-U. While rising commodity prices will not necessarily translate to higher US inflation, higher US inflation will likely show up in higher commodity prices, particularly if world economic activity is robust.

These two measures of anticipated inflation can, and often are, conflicting.

Measures of US Treasury Bond Interest Rate Risk

Metrics: 10-Year Treasury Forward-Looking Real Yield and 10-Year Treasury Duration

The expected annualized real yield of the 10 year U.S. Treasury Bond is a measure of valuation risk for U.S. Treasuries. A low real yield means investors will accept a low rate of expected return for the certainty of receiving their nominal cash flows. PCA estimates the expected annualized real yield by subtracting an estimate of expected 10 year inflation (produced by the Survey of Professional Forecasters as collected by the Federal Reserve Bank of Philadelphia), from the 10 year Treasury constant maturity interest rate.

Duration for the 10-Year Treasury Bond is calculated based on the current yield and a price of 100. This is a measure of expected percentage movements in the price of the bond based on small movements in percentage yield. We make no attempt to account for convexity.

Definition of “extreme” metric readings

A metric reading is defined as “extreme” if the metric reading is in the top or bottom decile of its historical readings. These “extreme” reading should cause the reader to pay attention. These metrics have reverted toward their mean values in the past.

PCA Market Sentiment Indicator

Explanation, Construction and Q&A

By:

Pension Consulting Alliance, LLC.

PCA has created the PCA Market Sentiment Indicator (PMSI) to complement our valuation-focused PCA Investment Market Risk Metrics. This measure of sentiment is meant to capture significant and persistent shifts in long-lived market trends of economic growth risk, either towards a risk-seeking trend or a risk-aversion trend.

This paper explores:

- What is the PCA Market Sentiment Indicator (PMSI)?
- How do I read the indicator graph?
- How is the PCA Market Sentiment Indicator (PMSI) constructed?
- What do changes in the indicator mean?



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PCA Market Sentiment Indicator

PCA has created a market sentiment indicator for monthly publication (the PMSI – see below) to complement PCA's Investment Market Risk Metrics.

PCA's Investment Market Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections take place. The PMSI helps to address this early-warning bias by measuring whether the markets are beginning to acknowledge key Risk Metrics trends, and / or indicating non-valuation based concerns. Once the PMSI indicates that the market sentiment has shifted, it is our belief that investors should consider significant action, particularly if confirmed by the Risk Metrics. Importantly, PCA believes the Risk Metrics and PMSI should always be used in conjunction with one another and never in isolation. The questions and answers below highlight and discuss the basic underpinnings of the PCA PMSI:

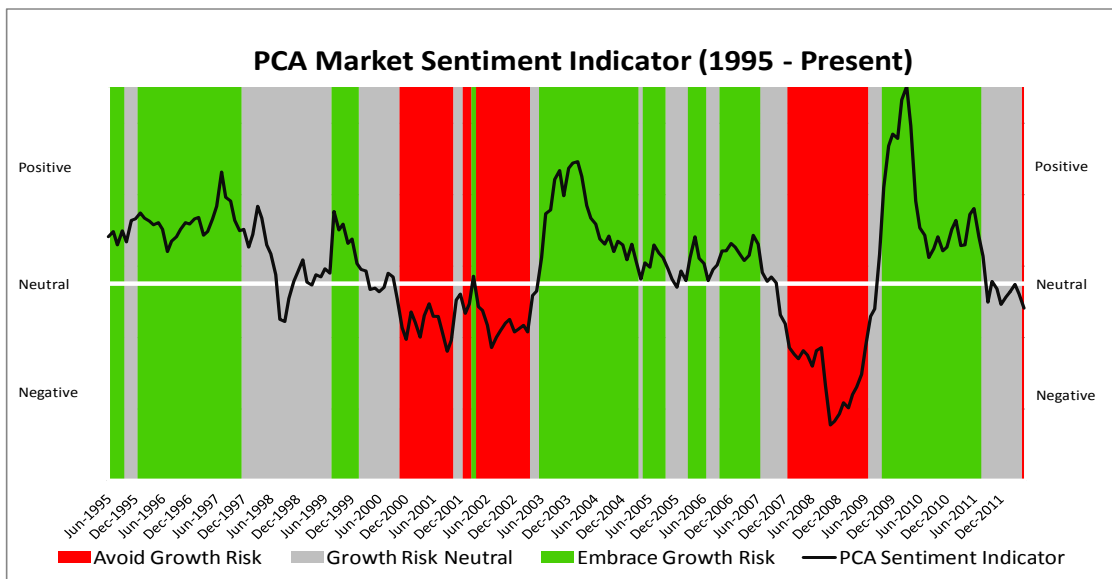
What is the PCA Market Sentiment Indicator (PMSI)?

The PMSI is a measure meant to gauge the market's sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The PMSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

How do I read the PCA Market Sentiment Indicator (PMSI) graph?

Simply put, the PMSI is a color coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the PMSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the PMSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.

Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.



PCA Market Sentiment Indicator

How is the PCA Market Sentiment Indicator (PMSI) Constructed?

The PMSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:

1. Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
2. Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration U.S. Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight). The scale of this measure is adjusted to match that of the stock return momentum measure.

The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure. The color reading on the graph is determined as follows:

1. If both stock return momentum and bond spread momentum are positive = GREEN (positive)
2. If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
3. If both stock return momentum and bond spread momentum are negative = RED (negative)

What does the PCA Market Sentiment Indicator (PMSI) mean? Why might it be useful?

There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12 month period. The PMSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

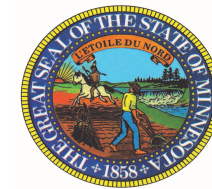
ⁱ Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.

ⁱⁱ "Time Series Momentum" Moskowitz, Ooi, Pedersen, August 2010
<http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf>

TAB

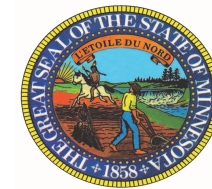
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Comprehensive Performance Report

March 31, 2018



Description of SBI Investment Programs

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

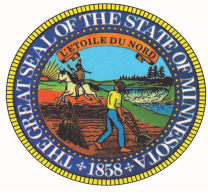
The Participant Directed Investment Program (PDIP) provides investment vehicles for a variety of retirement or other tax-advantaged savings plans. Investment goals among the PDIP's many participants are varied. In order to meet the variety of goals, participants may allocate their investments among one 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.

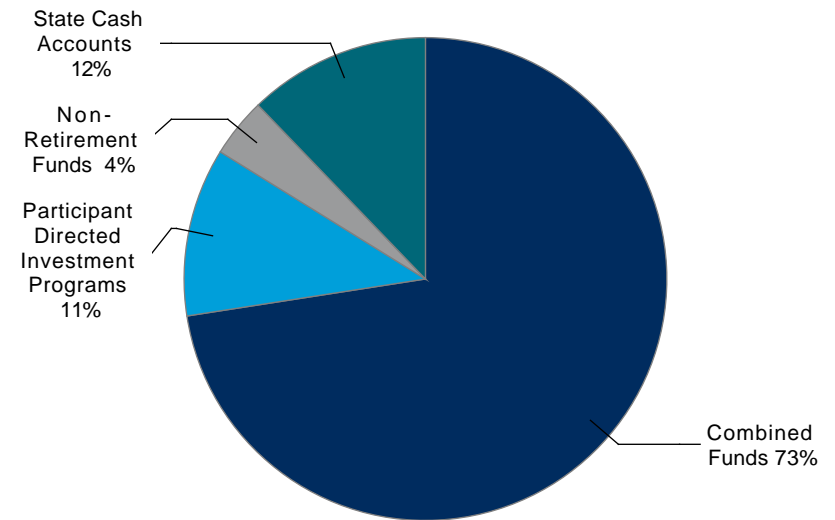
State Cash

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>
COMBINED FUNDS	
Combined Funds	\$67,819
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	3,684
State Deferred Compensation Plan**	5,472
Minnesota College Savings Plan	1,389
Achieve a Better Life Experience	2
NON-RETIREMENT FUNDS	
Assigned Risk Plan	317
Permanent School Fund	1,371
Environmental Trust Fund	1,093
Closed Landfill Investment Fund	87
Miscellaneous Trust Accounts	227
Other Post Employment Benefits Accounts	622
STATE CASH ACCOUNTS	
Treasurer's Cash	11,236
Other State Cash Accounts	164
TOTAL	
SBI AUM	93,480



* 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

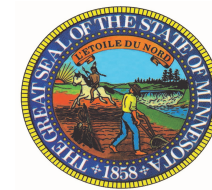


Table of Contents

Combined Funds	Page 5
Domestic Equity	
International Equity	
Fixed Income	
Private Markets	
Treasuries	
 Participant Directed Investment Program	 Page 69
Supplemental Investment Fund	
Deferred Compensation Program	
Minnesota College Savings Plan	
Achieve a Better Life Experience	
 Non-Retirement Funds	 Page 85
Assigned Risk Plan	
Permanent School Fund	
Environmental Trust Fund	
Closed Landfill Investment Fund	
Non-Retirement Managers	
 State Cash Accounts	 Page 93
Invested Treasurer's Cash	
Other State Cash Accounts	
 Addendum	 Page 95

Performance Reporting Legend

Manager Level Data

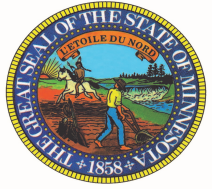
Aggregate Level Data

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

March 31, 2018



Combined Funds Summary

Combined Funds Change in Market Value (\$Millions)

	<u>One Quarter</u>
COMBINED FUNDS	
Beginning Market Value	\$68,377
Net Contributions	-613
Investment Return	55
Ending Market Value	67,819

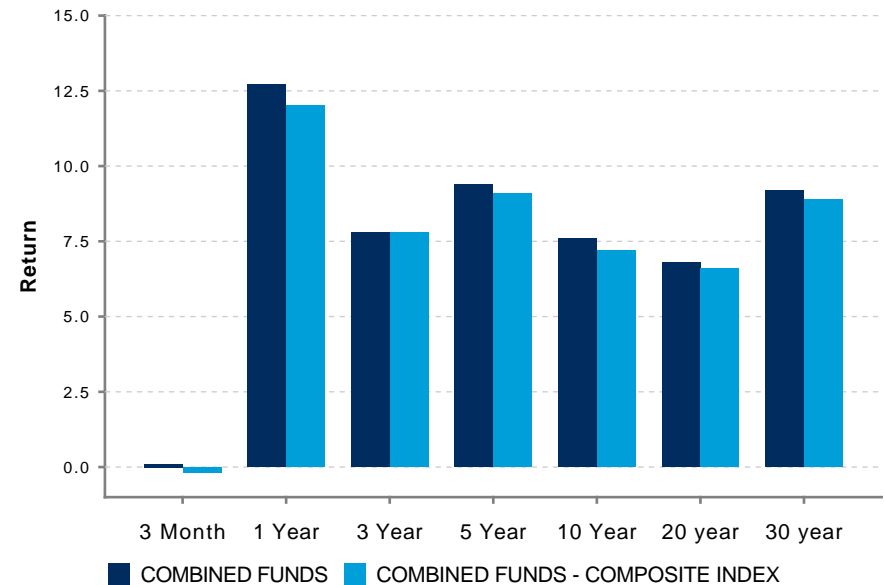
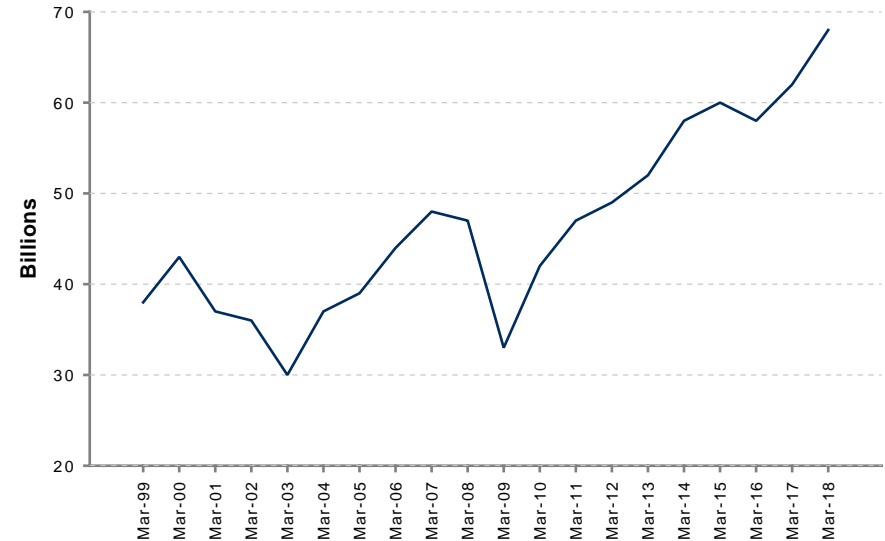
The change in market value of the Combined Funds since the end of last quarter is due to net contributions and investment returns.

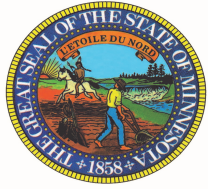
Performance (Net of Fees)

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	0.1%	8.7%	12.7%	7.8%	9.4%	7.6%	6.8%	9.2%
COMBINED FUNDS - COMPOSITE INDEX	-0.2	8.2	12.0	7.8	9.1	7.2	6.6	8.9
Excess	0.3	0.4	0.8	0.0	0.3	0.4	0.1	0.3

Asset Growth



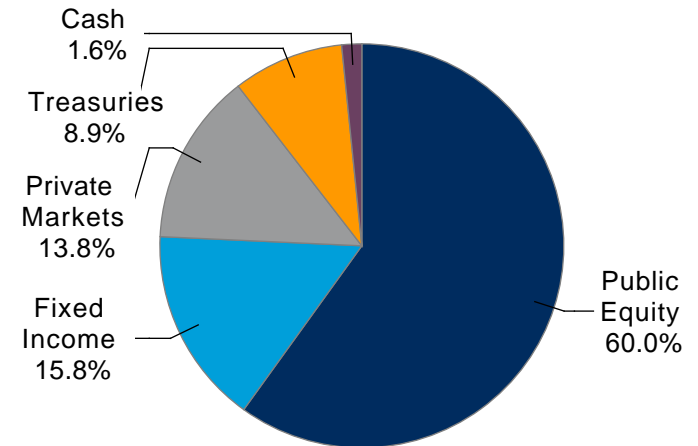


Combined Funds Summary

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.

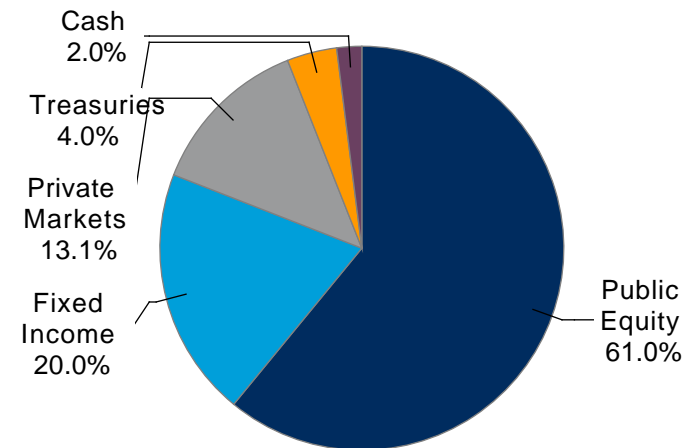
	<u>(Millions)</u>	<u>Actual Mix</u>	<u>Policy Target</u>
Public Equity	\$40,675	60.0%	47.0%
Fixed Income	10,713	15.8	18.0
Private Markets	9,326	13.8	25.0
Treasuries	6,047	8.9	8.0
Cash	1,058	1.6	2.0
TOTAL	67,819	100.0	

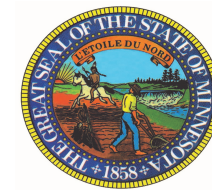


Composite Index Comparison

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>Policy Weight</u>	<u>Market Index</u>
Public Equity	61.0%	67% Russell 3000/33% MSCI ACWI ex US
Fixed Income	20.0	BB Barclays U.S. Aggregate
Private Markets	13.1	Private Markets
Treasuries	4.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills





Combined Funds Asset Class Performance Summary

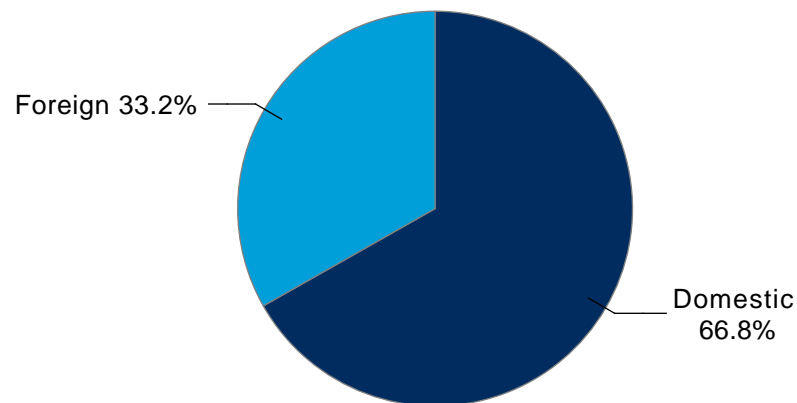
Public Equity

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.

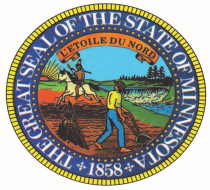
The Morgan Stanley Capital International All Country World Index ex U.S. (net) is a free float-adjusted market capitalization index that is designed to measure equity market performance in developed and emerging markets other than the United States.



	<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>	<u>30 year</u>
Public Equity	-0.6%	10.6%	15.2%	9.1%	11.5%	8.1%	6.1%	9.7%
Public Equity Benchmark	-0.8	10.4	14.7					
Excess	0.2	0.2	0.6					
Domestic Equity	-0.3	10.8	14.3	9.8	13.1	9.6	6.4	10.0
Domestic Equity Benchmark	-0.6	10.5	13.8	10.2	13.0	9.6	6.5	10.2
Excess	0.4	0.3	0.5	-0.4	0.0	0.0	-0.2	-0.2
International Equity	-1.2	10.1	17.4	6.6	6.4	3.2	5.3	
International Equity Benchmark	-1.2	10.2	16.5	6.2	5.9	2.7	4.9	
Excess	0.0	-0.0	0.8	0.4	0.5	0.5	0.4	

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>	<u>30 year</u>
Fixed Income	-1.4%	0.1%	1.7%	1.7%	2.3%	4.4%	5.2%	6.5%
Fixed Income Benchmark	-1.5	-0.2	1.2	1.2	1.8	3.6	4.8	6.2
Excess	0.1	0.3	0.5	0.5	0.5	0.7	0.3	0.3

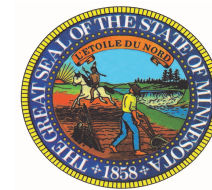
Cash

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.

	<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>30 year</u>
Cash	0.4%	0.9%	1.2%	0.7%	0.5%	0.8%	2.5%	4.0%
90 DAY T-BILL	0.4	0.9	1.1	0.5	0.3	0.3	2.0	3.3

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	4.6%	12.2%	17.7%	11.7%	12.5%	8.9%	12.5%	13.5%	12.2%
Private Equity	5.5%	16.8%	23.1%	16.2%	16.0%	11.3%	13.7%	15.6%	
Private Credit	1.8	7.4	13.0	12.0	14.5	10.8	12.6		
Resources	4.1	3.6	7.6	-1.2	1.8	5.2	13.4	14.8	
Real Estate	3.3	9.1	12.9	11.7	13.1	4.6	8.7	9.0	

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.

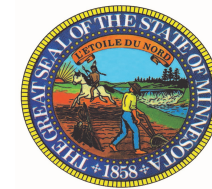
Resource Investments

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

Asset Class & Manager Performance

March 31, 2018

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

March 31, 2018



	<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>
Total Domestic Equity										
ACTIVE DOMESTIC EQUITY AGGREGATE (1)	\$4,560,477,170	16.1%	1.9%	12.0%	16.5%	9.7%	13.4%	9.6%		
Active Domestic Equity Benchmark			-0.6	9.6	12.5	9.8	12.7	9.5		
Excess			2.5	2.5	4.0	-0.2	0.7	0.0		
SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)	2,514,011,742	8.9	-0.6	11.7	14.6	10.1	13.3	9.8		
Semi Passive Domestic Equity Benchmark			-0.7	10.6	14.0	10.4	13.2	9.6		
Excess			0.1	1.1	0.6	-0.3	0.1	0.2		
PASSIVE DOMESTIC EQUITY AGGREGATE (3)	21,241,265,573	75.0	-0.7	10.5	13.9	10.2	13.0	9.7		
Passive Domestic Equity Benchmark			-0.6	10.6	14.0	10.3	13.0	9.6		
Excess			-0.0	-0.0	-0.1	-0.0	-0.0	0.0		
TRANSITION AGGREGATE DOMESTIC EQUITY (4)	4,108,219	0.0								
TOTAL DOMESTIC EQUITY (5)	28,319,862,704	100.0	-0.3	10.8	14.3	9.8	13.1	9.6	10.4	01/1984
Domestic Equity Benchmark			-0.6	10.5	13.8	10.2	13.0	9.6	10.6	01/1984
Excess			0.4	0.3	0.5	-0.4	0.0	-0.0	-0.2	

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

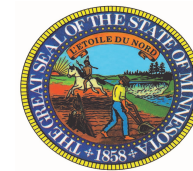
(2) The current Semi-Passive Domestic Equity Benchmark is the Russell 1000 index.

(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>
Total Domestic Equity					
ACTIVE DOMESTIC EQUITY AGGREGATE (1)	20.6%	10.9%	-0.4%	9.3%	40.2%
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
SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)	22.5	11.1	0.5	14.2	33.2
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
PASSIVE DOMESTIC EQUITY AGGREGATE (3)	21.3	12.6	0.5	12.6	33.5
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
TRANSITION AGGREGATE DOMESTIC EQUITY (4)					
TOTAL DOMESTIC EQUITY (5)	21.4%	11.5	0.3	12.3	35.1
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>
Active Large Cap Growth										
SANDS	\$540,466,355	1.9%	9.6%	21.6%	30.3%	12.2%	15.5%	14.0%	10.9%	01/2005
Russell 1000 Growth			1.4	15.8	21.3	12.9	15.5	11.3	9.6	01/2005
Excess			8.2	5.8	9.0	-0.7	0.0	2.7	1.3	
WINSLOW	223,354,905	0.8	6.2	19.2	27.8	12.8	15.6	11.2	10.5	01/2005
Russell 1000 Growth			1.4	15.8	21.3	12.9	15.5	11.3	9.6	01/2005
Excess			4.8	3.3	6.5	-0.1	0.1	-0.1	0.8	
ZEVENBERGEN	496,437,499	1.8	9.0	17.5	30.4	14.0	17.7	12.5	10.7	04/1994
Russell 1000 Growth			1.4	15.8	21.3	12.9	15.5	11.3	9.6	04/1994
Excess			7.5	1.6	9.2	1.1	2.2	1.1	1.1	
RUSSELL 1000 GROWTH AGGREGATE	1,260,258,758	4.5	8.7	19.5	30.0	14.1	16.9	12.1		
Russell 1000 Growth			1.4	15.8	21.3	12.9	15.5	11.3		
Excess			7.3	3.7	8.7	1.2	1.4	0.8		



	<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>
Active Large Cap Growth					
SANDS	35.3%	-6.9%	2.9%	9.1%	42.4%
Russell 1000 Growth	30.2	7.1	5.7	13.0	33.5
Excess	5.1	-13.9	-2.8	-3.9	8.9
WINSLOW	33.2	-1.9	6.7	11.0	37.4
Russell 1000 Growth	30.2	7.1	5.7	13.0	33.5
Excess	3.0	-9.0	1.0	-2.0	3.9
ZEVENBERGEN	35.1	-2.8	6.4	3.4	60.6
Russell 1000 Growth	30.2	7.1	5.7	13.0	33.5
Excess	4.9	-9.9	0.7	-9.6	27.1
RUSSELL 1000 GROWTH AGGREGATE	33.4%	1.0	4.6	9.6	42.0
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>
Active Large Cap Value										
BARROW HANLEY	\$370,077,156	1.3%	-3.1%	4.8%	7.6%	6.8%	11.0%	8.2%	7.9%	04/2004
Russell 1000 Value			-2.8	5.5	6.9	7.9	10.8	7.8	7.8	04/2004
Excess			-0.3	-0.7	0.7	-1.0	0.2	0.4	0.2	
EARNEST PARTNERS	269,278,323	1.0	-1.4	11.4	14.1	9.5	12.9	8.4	7.0	07/2000
Russell 1000 Value			-2.8	5.5	6.9	7.9	10.8	7.8	7.1	07/2000
Excess			1.4	5.8	7.2	1.6	2.1	0.6	-0.1	
LSV	419,040,571	1.5	-1.5	11.9	13.6	9.8	13.7	9.4	9.4	04/2004
Russell 1000 Value			-2.8	5.5	6.9	7.9	10.8	7.8	7.8	04/2004
Excess			1.3	6.4	6.6	1.9	2.9	1.6	1.6	
RUSSELL 1000 VALUE AGGREGATE	1,058,396,050	3.7	-2.1	9.2	11.6	8.3	12.1	8.4		
Russell 1000 Value			-2.8	5.5	6.9	7.9	10.8	7.8		
Excess			0.8	3.7	4.6	0.5	1.3	0.6		



	<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>
Active Large Cap Value					
BARROW HANLEY	14.6%	12.8%	-2.1%	13.0%	35.5%
Russell 1000 Value	13.7	17.3	-3.8	13.5	32.5
Excess	0.9	-4.5	1.7	-0.5	3.0
EARNEST PARTNERS	19.9	16.2	-2.7	14.0	32.0
Russell 1000 Value	13.7	17.3	-3.8	13.5	32.5
Excess	6.2	-1.1	1.1	0.5	-0.5
LSV	18.6	17.0	-2.2	14.0	41.2
Russell 1000 Value	13.7	17.3	-3.8	13.5	32.5
Excess	4.9	-0.4	1.6	0.6	8.7
RUSSELL 1000 VALUE AGGREGATE	17.3%	15.3	-3.2	13.1	36.5
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>
Semi-Passive Large Cap										
BLACKROCK	\$1,028,139,247	3.6%	0.4%	13.7%	17.2%	11.6%	14.3%	10.2%	10.0%	01/1995
Semi Passive Domestic Equity Benchmark			-0.7	10.6	14.0	10.4	13.2	9.6	9.5	01/1995
Excess			1.1	3.1	3.2	1.2	1.2	0.6	0.5	
J.P. MORGAN	1,485,872,496	5.2	-1.2	10.3	13.2	10.3	13.5	10.3	9.8	01/1995
Semi Passive Domestic Equity Benchmark			-0.7	10.6	14.0	10.4	13.2	9.6	9.5	01/1995
Excess			-0.5	-0.3	-0.8	-0.1	0.3	0.7	0.3	
SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE	2,514,011,742	8.9	-0.6	11.7	14.6	10.1	13.3	9.8		
Semi Passive Domestic Equity Benchmark			-0.7	10.6	14.0	10.4	13.2	9.6		
Excess			0.1	1.1	0.6	-0.3	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>
Semi-Passive Large Cap					
BLACKROCK	24.6%	12.5%	0.8%	14.2%	33.3%
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
J.P. MORGAN	21.8	12.3	0.8	15.0	33.7
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
SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE	22.5%	11.1	0.5	14.2	33.2
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>
Active Small Cap Growth										
ARROWMARK	\$213,265,438	0.8%	2.9%	15.1%	23.5%				27.9%	11/2016
Russell 2000 Growth			2.3	13.6	18.6				25.6	11/2016
Excess			0.6	1.4	4.8				2.3	
HOOD RIVER	234,423,494	0.8	1.6	7.7	15.8				22.8	11/2016
Russell 2000 Growth			2.3	13.6	18.6				25.6	11/2016
Excess			-0.7	-6.0	-2.8				-2.8	
RICE HALL JAMES	230,998,616	0.8	7.0	20.4	26.8				35.4	11/2016
Russell 2000 Growth			2.3	13.6	18.6				25.6	11/2016
Excess			4.7	6.8	8.2				9.8	
WELLINGTON	243,589,078	0.9	2.6	12.3	19.2				26.2	11/2016
Russell 2000 Growth			2.3	13.6	18.6				25.6	11/2016
Excess			0.3	-1.4	0.6				0.6	
RUSSELL 2000 GROWTH AGGREGATE	922,276,626	3.3	3.7	13.4	19.6	6.7	11.0	8.3		
Russell 2000 Growth			2.3	13.6	18.6	8.8	12.9	11.0		
Excess			1.4	-0.3	0.9	-2.1	-1.9	-2.6		



	<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>
Active Small Cap Growth					
ARROWMARK	26.2%				
Russell 2000 Growth	22.2				
Excess	4.1				
HOOD RIVER	21.3				
Russell 2000 Growth	22.2				
Excess	-0.9				
RICE HALL JAMES	27.9				
Russell 2000 Growth	22.2				
Excess	5.8				
WELLINGTON	22.6				
Russell 2000 Growth	22.2				
Excess	0.4				
RUSSELL 2000 GROWTH AGGREGATE	22.0%	4.7	1.0	-3.4	47.2
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>
Active Small Cap Value										
GOLDMAN SACHS	\$357,448,387	1.3%	-1.9%	8.1%	8.5%	8.2%	11.6%	11.0%	9.9%	01/2004
Russell 2000 Value			-2.6	4.4	5.1	7.9	10.0	8.6	8.1	01/2004
Excess			0.7	3.6	3.4	0.3	1.6	2.3	1.7	
HOTCHKIS AND WILEY	298,960,190	1.1	-3.2	3.9	3.3	3.9	10.3	11.0	8.5	01/2004
Russell 2000 Value			-2.6	4.4	5.1	7.9	10.0	8.6	8.1	01/2004
Excess			-0.6	-0.6	-1.9	-3.9	0.3	2.4	0.4	
MARTINGALE	291,662,736	1.0	-1.9	6.2	7.3	8.5	12.7	9.7	8.3	01/2004
Russell 2000 Value			-2.6	4.4	5.1	7.9	10.0	8.6	8.1	01/2004
Excess			0.8	1.8	2.1	0.6	2.7	1.0	0.2	
PEREGRINE	371,474,422	1.3	-1.3	9.3	10.6	8.7	11.1	10.2	10.6	07/2000
Russell 2000 Value			-2.6	4.4	5.1	7.9	10.0	8.6	9.7	07/2000
Excess			1.3	4.9	5.5	0.9	1.1	1.6	0.9	
RUSSELL 2000 VALUE AGGREGATE	1,319,545,736	4.7	-2.0	7.0	7.6	7.4	11.3	10.4		
Russell 2000 Value			-2.6	4.4	5.1	7.9	10.0	8.6		
Excess			0.6	2.6	2.5	-0.5	1.4	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>
Active Small Cap Value					
GOLDMAN SACHS	12.6%	24.6%	-5.2%	7.4%	39.3%
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	4.7	-7.1	2.3	3.1	4.8
HOTCHKIS AND WILEY	7.9	19.9	-8.5	13.0	46.0
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	0.0	-11.8	-1.0	8.8	11.5
MARTINGALE	6.9	34.3	-5.2	7.3	43.1
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	-0.9	2.5	2.3	3.1	8.5
PEREGRINE	12.5	27.8	-6.7	4.1	37.3
Russell 2000 Value	7.8	31.7	-7.5	4.2	34.5
Excess	4.7	-3.9	0.8	-0.1	2.8
RUSSELL 2000 VALUE AGGREGATE	10.2%	26.5	-6.5	7.5	40.8
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>
Total Passive Domestic Equity										
BLACKROCK RUSSELL 1000	\$12,167,972,487	43.0%	-0.7%	10.6%	13.9%				19.0%	11/2016
Russell 1000			-0.7	10.6	14.0				19.1	11/2016
Excess			-0.0	-0.0	-0.0				-0.0	
BLACKROCK RUSSELL 3000 (1)	9,073,293,086	32.0	-0.6	10.5	13.8	10.3%	13.0%	9.7%	9.2	07/1995
Passive Manager Benchmark			-0.6	10.5	13.8	10.2	13.0	9.6	9.2	07/1995
Excess			0.0	0.0	0.0	0.0	0.0	0.0	0.1	
PASSIVE DOMESTIC EQUITY AGGREGATE	21,241,265,573	75.0	-0.7	10.5	13.9	10.2	13.0	9.7		
Passive Domestic Equity Benchmark			-0.6	10.6	14.0	10.3	13.0	9.6		
Excess			-0.0	-0.0	-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.



	<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>
Total Passive Domestic Equity					
BLACKROCK RUSSELL 1000	21.7%				
Russell 1000	21.7				
Excess	-0.0				
BLACKROCK RUSSELL 3000 (1)	21.1	12.7%	0.5%	12.6%	33.5%
Passive Manager Benchmark	21.1	12.7	0.5	12.6	33.6
Excess	0.0	0.0	0.0	0.0	-0.0
PASSIVE DOMESTIC EQUITY AGGREGATE	21.3%	12.6	0.5	12.6	33.5
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

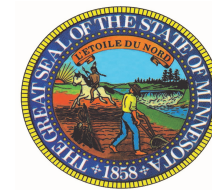
(1) The current Passive Manager Benchmark is the Russell 3000. For historical benchmark details please refer to the addendum of this report.

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International Equity

March 31, 2018



	<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>
Total International Equity										
DEVELOPED MARKETS (1)	\$10,127,571,707	73.9%	-1.9%	8.2%	15.0%	5.9%	6.8%	3.3%		
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6		
Excess			0.2	0.3	1.1	0.6	0.8	0.7		
EMERGING MARKETS (2)	3,509,486,896	25.6	1.2	16.5	24.6	8.5	4.6	2.6		
BENCHMARK EM			1.4	17.6	24.9	8.8	5.0	3.0		
Excess			-0.3	-1.1	-0.3	-0.3	-0.4	-0.5		
TRANSITION AGGREGATE INTERNATIONAL EQUITY (3)	67,893,495	0.5								
TOTAL INTERNATIONAL EQUITY (4)	13,704,952,097	100.0	-1.2	10.1	17.3	6.6	6.4	3.2	6.8	10/1992
International Equity Benchmark			-1.2	10.2	16.5	6.2	5.9	2.7	6.3	10/1992
Excess			0.0	-0.0	0.8	0.4	0.5	0.5	0.5	

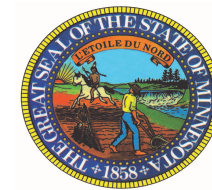
(1) The current benchmark for Developed Markets, Benchmark DM, is the Standard (large + mid) MSCI World ex USA (net).

(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>
Total International Equity					
DEVELOPED MARKETS (1)	24.9%	1.3%	-0.3%	-4.1%	23.3%
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	0.7	-1.5	2.8	0.2	2.2
EMERGING MARKETS (2)	37.7	7.5	-13.1	-3.8	0.2
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)					
TOTAL INTERNATIONAL EQUITY (4)	27.6%	2.6	-2.9	-4.0	17.8
International Equity Benchmark	27.2%	4.5	-5.7	-3.9	15.3
Excess	0.4%	-1.8	2.8	-0.2	2.5

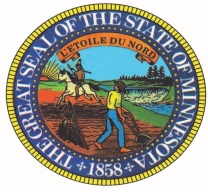
(1) The current benchmark for Developed Markets, Benchmark DM, is the Standard (large + mid) MSCI World ex USA (net).

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

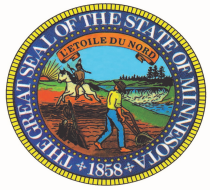
(3) The Transition Aggregate International Equity contains International Equity securities that are being transitioned to a different manager.

(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).

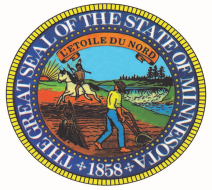
Note: All aggregates include the performance of terminated managers. For historical benchmark details please refer to the addendum of this report.



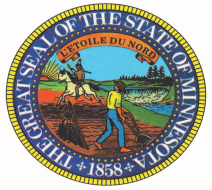
	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
Active Developed Markets										
ACADIAN	\$448,920,164	3.3%	-0.3%	12.6%	23.6%	13.6%	11.8%	4.4%	7.3%	07/2005
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	5.3	07/2005
Excess			1.7	4.7	9.7	8.3	5.8	1.8	2.0	
COLUMBIA	348,644,722	2.5	-0.8	13.3	23.6	7.6	7.8	4.6	3.1	03/2000
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	3.6	03/2000
Excess			1.2	5.4	9.7	2.3	1.8	2.0	-0.4	
FIDELITY	428,907,315	3.1	-2.0	8.6	16.2	6.1	7.2	4.2	6.8	07/2005
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	5.3	07/2005
Excess			0.0	0.7	2.3	0.8	1.1	1.6	1.5	
JP MORGAN	262,828,311	1.9	-2.5	9.8	16.5	6.2	6.3	3.6	5.5	07/2005
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	5.3	07/2005
Excess			-0.4	1.9	2.6	0.9	0.3	1.0	0.2	
MARATHON	822,961,570	6.0	-1.8	6.1	13.6	6.3	7.8	5.2	8.3	11/1993
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	5.2	11/1993
Excess			0.2	-1.7	-0.3	1.0	1.8	2.6	3.1	
MCKINLEY	264,226,789	1.9	-0.9	12.0	19.2	5.8	6.9	1.9	5.1	07/2005
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	5.3	07/2005
Excess			1.1	4.1	5.3	0.5	0.9	-0.7	-0.1	
ACTIVE DEVELOPED MARKETS AGGREGATE	2,576,488,871	18.8	-1.4	9.7	18.1	7.6	8.1	4.3		
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6		
Excess			0.6	1.9	4.2	2.3	2.0	1.7		



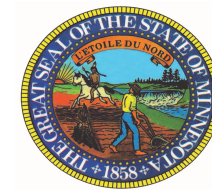
	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
Active Developed Markets					
ACADIAN	37.0%	8.1%	2.4%	-1.7%	26.1%
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	12.8	5.4	5.4	2.6	5.1
COLUMBIA	32.7	-5.6	6.4	-5.6	23.9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



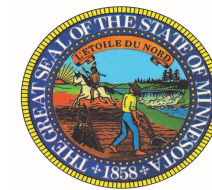
	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
Semi-Passive Developed Markets										
AQR	\$418,946,270	3.1%	-1.5%	8.2%	14.4%	6.3%	7.1%	3.8%	6.0%	07/2005
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	5.3	07/2005
Excess			0.5	0.3	0.5	1.0	1.0	1.2	0.7	
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	418,946,270	3.1	-2.0	6.4	12.9	4.8	6.3	2.8		
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6		
Excess			0.0	-1.4	-1.1	-0.5	0.3	0.2		



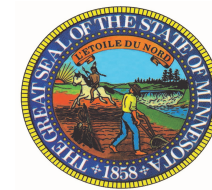
	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
Semi-Passive Developed Markets					
AQR	25.1%	0.8%	0.9%	-4.4%	24.1%
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	0.9	-2.0	3.9	-0.1	3.1
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE					
BENCHMARK DM	24.2%	2.7	-3.0	-4.3	21.0
Excess	-0.9%	-3.1	2.7	-0.1	3.0



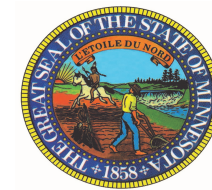
	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
Total Developed Markets										
ACTIVE DEVELOPED MARKETS AGGREGATE	\$2,576,488,871	18.8%	-1.4%	9.7%	18.1%	7.6%	8.1%	4.3%		
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6		
Excess			0.6	1.9	4.2	2.3	2.0	1.7		
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	418,946,270	3.1	-2.0	6.4	12.9	4.8	6.3	2.8		
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6		
Excess			0.0	-1.4	-1.1	-0.5	0.3	0.2		
SSgA DEVELOPED MARKETS PASSIVE	7,132,136,566	52.0	-2.1	7.8	14.1	5.7	6.4	3.0	6.4	10/1992
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6	6.1	10/1992
Excess			-0.0	-0.0	0.2	0.4	0.4	0.4	0.3	
DEVELOPED MARKETS TOTAL	10,127,571,707	73.9	-1.9	8.2	15.0	5.9	6.8	3.3		
BENCHMARK DM			-2.0	7.8	13.9	5.3	6.0	2.6		
Excess			0.2	0.3	1.1	0.6	0.8	0.7		



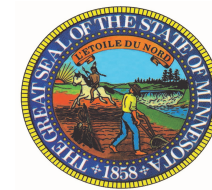
	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
Total Developed Markets					
ACTIVE DEVELOPED MARKETS AGGREGATE	28.4%	-0.2%	3.2%	-4.1%	25.4%
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	4.2	-3.0	6.2	0.2	4.4
SEMI-PASSIVE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



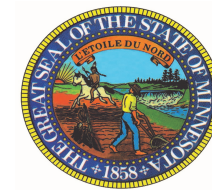
	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
Active Emerging Markets										
EARNEST PARTNERS	\$329,049,299	2.4%	2.1%	15.6%	24.9%				24.9%	04/2017
MSCI EMERGING MARKETS			1.4	17.6	24.9				24.9	04/2017
Excess			0.7	-2.0	-0.1				-0.1	
MARTIN CURRIE	359,645,133	2.6	1.4	22.1	32.9				32.9	04/2017
BENCHMARK EM			1.4	17.6	24.9				24.9	04/2017
Excess			-0.0	4.5	8.0				8.0	
MACQUARIE	336,301,514	2.5	0.6	15.6	23.9				23.9	04/2017
BENCHMARK EM			1.4	17.6	24.9				24.9	04/2017
Excess			-0.8	-2.0	-1.1				-1.1	
MORGAN STANLEY	666,369,874	4.9	1.2	15.2	24.6	9.2%	5.4%	3.6%	10.6	01/2001
BENCHMARK EM			1.4	17.6	24.9	8.8	5.0	3.0	10.2	01/2001
Excess			-0.2	-2.3	-0.3	0.4	0.4	0.6	0.4	
NEUBERGER BERMAN	345,480,156	2.5	1.0	19.3	27.5				27.5	04/2017
BENCHMARK EM			1.4	17.6	24.9				24.9	04/2017
Excess			-0.4	1.8	2.6				2.6	
PZENA	312,236,172	2.3	0.5	10.1	16.3				16.3	04/2017
BENCHMARK EM			1.4	17.6	24.9				24.9	04/2017
Excess			-0.9	-7.5	-8.6				-8.6	
ROCK CREEK	323,958,977	2.4	1.0	14.4	20.5				20.5	04/2017
BENCHMARK EM			1.4	17.6	24.9				24.9	04/2017
Excess			-0.4	-3.1	-4.4				-4.4	



	<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>
Active Emerging Markets					
EARNEST PARTNERS					
MSCI EMERGING MARKETS					
Excess					
MARTIN CURRIE					
BENCHMARK EM					
Excess					
MACQUARIE					
BENCHMARK EM					
Excess					
MORGAN STANLEY	37.9%	6.1%	-9.4%	-2.5%	0.5%
BENCHMARK EM	37.3	11.2	-14.9	-2.2	-2.6
Excess	0.6	-5.1	5.5	-0.3	3.1
NEUBERGER BERMAN					
BENCHMARK EM					
Excess					
PZENA					
BENCHMARK EM					
Excess					
ROCK CREEK					
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>
Total Emerging Markets										
ACTIVE EMERGING MARKETS AGGREGATE	\$2,673,041,125	19.5%	1.1%	16.0%	24.4%	7.7%	4.1%	2.4%		
BENCHMARK EM			1.4	17.6	24.9	8.8	5.0	3.0		
Excess			-0.3	-1.6	-0.6	-1.1	-0.9	-0.7		
SSGA EMERGING MARKETS PASSIVE	836,445,771	6.1	1.2	17.5	25.1	8.9	5.2		6.6	01/2012
BENCHMARK EM			1.4	17.6	24.9	8.8	5.0		6.5	01/2012
Excess			-0.2	-0.1	0.2	0.1	0.2		0.1	
EMERGING MARKETS TOTAL	3,509,486,896	25.6	1.2	16.5	24.6	8.5	4.6	2.6		
BENCHMARK EM			1.4	17.6	24.9	8.8	5.0	3.0		
Excess			-0.3	-1.1	-0.3	-0.3	-0.4	-0.5		



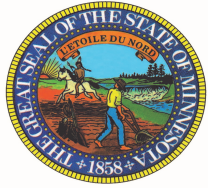
	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
Total Emerging Markets					
ACTIVE EMERGING MARKETS AGGREGATE	37.2%	5.3%	-12.7%	-4.1%	0.6%
BENCHMARK EM	37.3	11.2	-14.9	-2.2	-2.6
Excess	-0.1	-5.9	2.2	-2.0	3.2
SSGA EMERGING MARKETS PASSIVE	37.4%	11.1	-14.6	-2.1	-2.5
BENCHMARK EM	37.3%	11.2	-14.9	-2.2	-2.6
Excess	0.1%	-0.1	0.3	0.0	0.1
EMERGING MARKETS TOTAL	37.7%	7.5	-13.1	-3.8	0.2
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

March 31, 2018



	<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>
Total Fixed Income										
ACTIVE FIXED INCOME AGGREGATE	\$5,501,165,102	49.7%	-1.2%	0.5%	2.3%	2.2%	2.7%	4.7%		
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6		
Excess			0.3	0.8	1.1	1.0	0.8	1.0		
SEMI PASSIVE FIXED INCOME AGGREGATE	5,569,811,055	50.3	-1.4	-0.2	1.4	1.4	2.0	4.0		
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6		
Excess			0.0	0.1	0.2	0.2	0.2	0.4		
TRANSITION AGGREGATE FIXED INCOME (1)	18,398	0.0								
TOTAL FIXED INCOME (2)	11,070,994,555	100.0	-1.3	0.2	1.8	1.8	2.3	4.3	7.6	07/1984
Fixed Income Benchmark			-1.5	-0.2	1.2	1.2	1.8	3.6	7.2	07/1984
Excess			0.2	0.4	0.6	0.6	0.5	0.7	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.

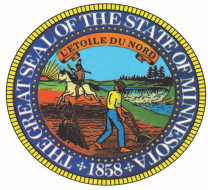


	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
Total Fixed Income					
ACTIVE FIXED INCOME AGGREGATE	4.7%	4.4%	0.6%	6.2%	-0.8%
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	1.2	1.7	0.0	0.2	1.2
SEMI PASSIVE FIXED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

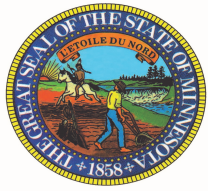
(1) The Transition Aggregate Fixed Income includes fixed income securities that are being transition to a different manager.

(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.

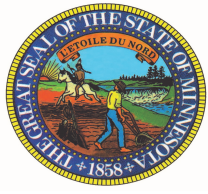
Note: All aggregates include the performance of terminated managers. Inception refers to the date of retention by the SBI.



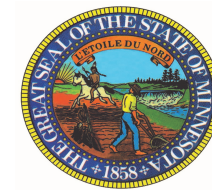
	<u>Ending Market Value</u>	<u>Portfolio Weight</u>	<u>Last Qtr</u>	<u>Fiscal YTD</u>	<u>1 Year</u>	<u>3 Year</u>	<u>5 Year</u>	<u>10 Year</u>	<u>Since Inception</u>	<u>Inception Date</u>
Active Fixed Income Managers										
COLUMBIA	\$1,167,570,652	10.5%	-1.2%	0.6%	2.4%	2.4%	2.6%	4.4%	5.4%	07/1993
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6	5.2	07/1993
Excess			0.2	0.8	1.2	1.2	0.8	0.8	0.2	
DODGE & COX	1,659,623,402	15.0	-0.9	0.8	2.3	2.3	2.9	5.1	6.0	02/2000
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6	5.0	02/2000
Excess			0.6	1.0	1.1	1.1	1.1	1.5	1.0	
PIMCO	1,075,176,660	9.7	-1.3	0.1	1.8	1.6	2.1		5.4	10/2008
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8		4.0	10/2008
Excess			0.1	0.4	0.6	0.4	0.2		1.4	
WESTERN	1,598,794,388	14.4	-1.3	0.7	2.9	2.6	3.0	5.0	8.4	07/1984
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6	7.3	07/1984
Excess			0.2	0.9	1.7	1.4	1.2	1.4	1.2	
ACTIVE FIXED INCOME AGGREGATE	5,501,165,102	49.7	-1.2	0.5	2.3	2.2	2.7	4.7		
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6		
Excess			0.3	0.8	1.1	1.0	0.8	1.0		



	<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>
Active Fixed Income Managers					
COLUMBIA	4.8%	5.2%	0.2%	5.8%	-1.0%
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
DODGE & COX	4.2	4.8	0.3	6.0	0.9
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
PIMCO	4.4	2.8	1.0	5.5	-1.3
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
WESTERN	5.6	4.9	0.7	7.0	-1.4
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
ACTIVE FIXED INCOME AGGREGATE	4.7%	4.4	0.6	6.2	-0.8
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>
Semi Passive Fixed Income Managers										
BLACKROCK	\$1,661,947,582	15.0%	-1.5%	-0.2%	1.2%	1.3%	2.0%	3.6%	5.2%	04/1996
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6	5.1	04/1996
Excess			-0.0	0.0	0.0	0.1	0.2	0.0	0.1	
GOLDMAN SACHS	2,083,799,569	18.8	-1.3	-0.0	1.5	1.5	2.1	4.2	5.5	07/1993
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6	5.2	07/1993
Excess			0.1	0.2	0.3	0.3	0.3	0.6	0.3	
NEUBERGER	1,824,063,904	16.5	-1.5	-0.2	1.3	1.2	1.9	4.3	6.4	07/1988
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6	6.2	07/1988
Excess			-0.0	-0.0	0.1	0.0	0.1	0.6	0.2	
SEMI PASSIVE FIXED INCOME	5,569,811,055	50.3	-1.4	-0.2	1.4	1.4	2.0	4.0		
BBG BARC Agg (Dly)			-1.5	-0.2	1.2	1.2	1.8	3.6		
Excess			0.0	0.1	0.2	0.2	0.2	0.4		



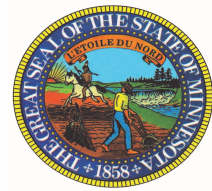
	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
Semi Passive Fixed Income Managers					
BLACKROCK	3.7%	2.8%	0.9%	6.0%	-1.8%
BBG BARC Agg (Dly)	3.5	2.6	0.5	6.0	-2.0
Excess	0.1	0.1	0.3	0.0	0.2
GOLDMAN SACHS	3.9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

March 31, 2018



	<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>
Treasuries Managers										
BLACKROCK	\$1,959,371,187	32.4%							0.1%	02/2018
BBG BARC 5Y + Us Tsy Idx									0.2	02/2018
Excess									-0.1	
GOLDMAN SACHS	1,946,255,276	32.2							0.1	02/2018
BBG BARC 5Y + Us Tsy Idx									0.2	02/2018
Excess									-0.0	
NEUBERGER	1,967,797,723	32.5							0.1%	02/2018
BBG BARC 5Y + Us Tsy Idx									0.2	02/2018
Excess									-0.1	
TREASURIES TRANSITION ACCOUNT	180,130,424	3.0								
TOTAL TREASURIES	6,053,554,611	100.0							0.0%	02/2018
BBG BARC 5Y + Us Tsy Idx									0.2	02/2018
Excess									-0.2	

Note: The Treasuries asset class was initially funded by transfers from other asset classes in January and March of 2018.



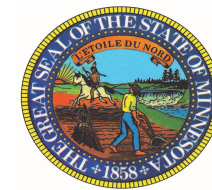
	<u>2017 Calendar Return</u>	<u>2016 Calendar Return</u>	<u>2015 Calendar Return</u>	<u>2014 Calendar Return</u>	<u>2013 Calendar Return</u>
Semi Passive Fixed Income Managers					
BLACKROCK					
BBG BARC 5Y + Us Tsy Idx					
Excess					
GOLDMAN SACHS					
BBG BARC 5Y + Us Tsy Idx					
Excess					
NEUBERGER					
BBG BARC 5Y + Us Tsy Idx					
Excess					
TOTAL TREASURIES					
BBG BARC 5Y + Us Tsy Idx					
Excess					

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Private Markets

March 31, 2018



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	4.6%	12.2%	17.7%	11.7%	12.5%	8.9%	12.5%	13.5%	12.2%
Private Equity	5.5%	16.8%	23.1%	16.2%	16.0%	11.3%	13.7%	15.6%	
Private Credit	1.8	7.4	13.0	12.0	14.5	10.8	12.6		
Resources	4.1	3.6	7.6	-1.2	1.8	5.2	13.4	14.8	
Real Estate	3.3	9.1	12.9	11.7	13.1	4.6	8.7	9.0	

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 March 31, 2018

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
I. PRIVATE EQUITY								
Adams Street Partners								
<i>Adams Street Global Secondary Fund 5</i>	100,000,000	76,529,750	61,074,576	26,434,531	23,470,250	5.77	1.14	5.79
<i>Adams Street Global Secondary Fund 6</i>	69,798,500	0	0	0	69,798,500	0.00	0.00	1.00
Advent International								
<i>Advent International GPE VI</i>	50,000,000	50,000,000	23,784,553	84,135,574	0	17.26	2.16	10.00
<i>Advent International GPE VII</i>	90,000,000	84,600,000	101,824,764	41,580,083	5,400,000	18.18	1.70	5.54
<i>Advent International GPE VIII</i>	100,000,000	49,150,000	52,472,491	0	50,850,000	8.85	1.07	2.15
Affinity Ventures								
<i>Affinity Ventures IV</i>	4,000,000	4,000,000	576,106	1,541,970	0	-13.05	0.53	13.76
<i>Affinity Ventures V</i>	5,000,000	5,000,000	2,323,398	1,706,245	0	-4.40	0.81	9.75
APAX Partners								
<i>Apax VIII - USD</i>	200,000,000	207,506,059	222,599,075	62,443,891	28,571,096	12.89	1.37	5.07
<i>Apax IX - USD</i>	150,000,000	66,417,205	69,400,479	746,702	84,329,497	10.79	1.06	1.86
Asia Alternatives								
<i>Asia Alternatives Capital Partners V</i>	99,000,000	4,138,052	3,694,685	75	94,861,948	-15.25	0.89	0.75
Banc Fund								
<i>Banc Fund VII</i>	45,000,000	45,000,000	23,117,097	42,851,725	0	3.63	1.47	13.01
<i>Banc Fund VIII</i>	98,250,000	98,250,000	125,827,313	89,405,973	0	14.98	2.19	9.94
<i>Banc Fund IX</i>	107,205,932	107,205,932	130,075,316	5,160,021	0	14.27	1.26	3.81
Blackstone Capital Partners								
<i>Blackstone Capital Partners IV</i>	70,000,000	72,354,340	7,213,761	193,288,642	1,916,968	37.04	2.77	15.73
<i>Blackstone Capital Partners V</i>	140,000,000	130,994,409	14,371,880	229,944,340	7,057,008	8.04	1.87	12.16
<i>Blackstone Capital Partners VI</i>	100,000,000	91,756,656	95,179,613	52,219,416	14,412,040	12.56	1.61	9.69
<i>Blackstone Capital Partners VII</i>	130,000,000	31,344,275	33,552,123	1,891,275	100,375,709	3.40	1.13	2.75
Blackstone Strategic Partners (CSFB/ DLJ)								
<i>Strategic Partners II B</i>	100,000,000	86,190,387	1,068	162,536,282	4,657,174	35.07	1.89	14.71
<i>Strategic Partners III B</i>	100,000,000	78,157,079	12,948,247	107,459,891	15,001,769	6.64	1.54	12.84
<i>Strategic Partners III VC</i>	25,000,000	24,854,706	5,343,196	29,113,976	1,102,511	6.35	1.39	12.84
<i>Strategic Partners IV B</i>	100,000,000	92,349,011	17,981,289	136,177,976	18,071,129	12.54	1.67	10.02
<i>Strategic Partners IV VC</i>	40,500,000	40,176,196	11,726,133	49,237,425	2,838,320	9.22	1.52	9.79
<i>Strategic Partners V</i>	100,000,000	79,380,586	29,487,739	102,879,422	39,836,896	20.04	1.67	6.62

**Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018**

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>Strategic Partners VI</i>	150,000,000	86,179,886	72,840,556	57,309,708	66,718,335	20.28	1.51	3.96
<i>Strategic Partners VII</i>	150,000,000	65,129,489	77,024,841	5,104,121	89,951,524	63.44	1.26	1.27
Blum Capital Partners								
<i>Blum Strategic Partners II</i>	50,000,000	40,238,050	0	90,142,155	2,127,584	22.43	2.24	16.71
<i>Blum Strategic Partners III</i>	75,000,000	78,121,020	0	83,524,046	471,064	0.26	1.07	12.84
<i>Blum Strategic Partners IV</i>	150,000,000	172,056,780	0	167,939,991	4,756,033	-0.89	0.98	10.37
Bridgepoint								
<i>Bridgepoint Europe VI</i>	184,477,562	0	0	0	184,477,562	0.00	0.00	0.03
Brookfield Asset Management								
<i>Brookfield Capital Partners Fund IV</i>	100,000,000	59,730,955	130,016,135	34,018,302	47,555,780	92.63	2.75	2.55
Cardinal Partners								
<i>DSV Partners IV</i>	10,000,000	10,000,000	31,085	39,196,082	0	10.61	3.92	33.27
Carlyle Group								
<i>Carlyle Partners VII</i>	150,000,000	0	0	0	150,000,000	0.00	0.00	0.29
Chicago Growth Partners (William Blair)								
<i>William Blair Capital Partners VII</i>	50,000,000	48,150,000	966,170	69,201,191	1,650,000	8.60	1.46	17.07
<i>Chicago Growth Partners I</i>	50,000,000	52,441,998	3,057,412	54,532,745	300,000	2.16	1.10	12.69
<i>Chicago Growth Partners II</i>	60,000,000	58,095,626	5,234,113	117,713,720	1,652,374	19.55	2.12	10.06
Court Square Capital Partners								
<i>Court Square Capital Partners</i>	100,000,000	80,827,220	360,386	182,160,766	185,289	28.92	2.26	16.31
<i>Court Square Capital Partners II</i>	175,000,000	158,445,938	42,498,053	263,555,092	17,601,260	13.00	1.93	11.58
<i>Court Square Capital Partners III</i>	175,000,000	128,700,378	89,794,031	68,344,272	53,963,711	10.45	1.23	5.83
Crescendo								
<i>Crescendo IV</i>	101,500,000	101,500,000	10,604,547	43,048,440	0	-5.57	0.53	18.07
CVC Capital Partners								
<i>CVC European Equity Partners V</i>	134,057,904	132,667,980	48,706,345	219,413,867	1,489,776	15.62	2.02	10.02
<i>CVC Capital Partners VI</i>	260,426,797	229,805,906	237,855,832	41,085,856	36,621,017	13.77	1.21	4.73
Elevation Partners								
<i>Elevation Partners</i>	75,000,000	69,311,710	151,770	113,492,106	799,634	11.82	1.64	12.88
Fox Paine & Company								
<i>Fox Paine Capital Fund II</i>	50,000,000	46,299,626	19,807	90,989,702	11,953,212	18.88	1.97	17.76

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
GHJM Marathon Fund								
<i>GHJM TrailHead Fund</i>	20,000,000	16,064,187	24,241,908	2,406,955	3,935,813	13.45	1.66	6.10
Glouston Capital Partners**								
<i>Glouston Private Equity Opportunities Fund IV</i>	5,337,098	4,247,098	1,735,706	2,840,487	1,090,000	2.93	1.08	3.25
GS Capital Partners								
<i>GS Capital Partners 2000</i>	50,000,000	50,000,000	1,018	115,308,929	0	23.49	2.31	17.59
<i>GS Capital Partners V</i>	100,000,000	73,958,901	685,350	220,823,529	1,041,099	18.25	3.00	13.01
<i>GS Capital Partners VI</i>	100,000,000	80,215,619	15,067,116	125,957,405	3,311,065	7.18	1.76	11.17
<i>West Street Capital Partners</i>	150,000,000	22,500,000	19,860,908	0	127,500,000	-11.60	0.88	1.28
<i>GS Vintage VII</i>	100,000,000	42,460,769	36,674,362	8,272,028	57,739,430	26.86	1.06	1.76
GTCR								
<i>GTCR IX</i>	75,000,000	71,414,933	7,528,197	119,144,001	3,585,067	13.56	1.77	11.76
<i>GTCR X</i>	100,000,000	93,248,604	69,664,099	138,151,010	6,751,396	22.37	2.23	7.31
<i>GTCR XI</i>	110,000,000	93,258,444	99,405,544	26,939,116	16,741,556	19.79	1.35	4.38
HarbourVest**								
<i>Dover Street VII Cayman Fund</i>	2,198,112	2,065,696	538,522	1,384,813	132,416	-4.22	0.93	3.25
<i>HarbourVest Intl PE Partners V Cayman</i>	3,537,381	3,340,605	1,183,201	3,023,064	196,776	13.54	1.26	3.25
<i>Harbourvest Intl PE Partners VI Cayman</i>	4,261,139	3,916,781	3,938,022	1,639,696	344,358	17.01	1.42	3.25
<i>HarbourVest Partners VIII Cayman Buyout</i>	4,506,711	4,272,711	2,199,552	3,354,529	234,000	14.36	1.30	3.25
<i>HarbourVest Partners VIII Cayman Venture</i>	7,190,898	7,050,898	4,198,832	3,991,234	140,000	6.48	1.16	3.25
Hellman & Friedman								
<i>Hellman & Friedman Capital Partners V</i>	160,000,000	146,165,961	2,555,884	415,483,079	8,070,303	27.89	2.86	13.34
<i>Hellman & Friedman Capital Partners VI</i>	175,000,000	171,037,755	42,844,321	311,889,122	5,084,864	13.16	2.07	11.01
<i>Hellman & Friedman Capital Partners VII</i>	50,000,000	47,528,206	63,691,072	44,206,872	2,471,794	23.70	2.27	8.95
IK Investment Partners								
<i>IK Fund VII</i>	180,987,692	172,208,922	166,234,136	64,501,543	8,778,770	10.24	1.30	4.55
<i>IK Fund VIII</i>	179,808,261	61,797,320	67,893,479	2,213,957	120,156,843	14.86	1.08	1.70
Kohlberg Kravis Roberts								
<i>KKR Millennium Fund</i>	200,000,000	200,000,000	22,741,268	400,827,308	0	16.35	2.12	15.32
<i>KKR 2006 Fund</i>	200,000,000	211,063,288	56,264,969	300,103,386	3,360,223	8.47	1.69	11.52
<i>KKR Americas Fund XII</i>	150,000,000	17,250,429	15,955,802	0	132,749,571	-32.34	0.92	2.08

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>KKR Asian Fund III</i>	100,000,000	7,021,357	5,753,209	0	92,978,643	-18.41	0.00	1.00
Leonard Green & Partners								
<i>Green Equity Investors VI</i>	200,000,000	214,469,506	202,258,073	106,835,075	21,248,883	14.53	1.44	6.05
Lexington Capital Partners								
<i>Lexington Capital Partners VI</i>	100,000,000	98,365,297	13,154,307	131,271,898	1,634,703	7.93	1.47	12.27
<i>Lexington Capital Partners VII</i>	200,000,000	170,296,470	69,305,155	196,211,934	38,275,710	15.18	1.56	9.22
<i>Lexington Capital Partners VIII</i>	150,000,000	80,802,860	72,745,021	32,347,739	79,422,985	24.05	1.30	4.08
<i>Lexington Middle Market Investors IV</i>	100,000,000	0	0	1,458,011	100,000,000	0.00	0.00	1.27
<i>Lexington Co-Investment Partners IV</i>	200,000,000	31,104,587	30,923,745	0	168,895,413	-0.59	0.99	1.66
Madison Dearborn Capital Partners								
<i>Madison Dearborn Capital Partners VII</i>	100,000,000	32,947,790	33,573,206	1,105,151	68,100,164	4.10	1.05	2.28
Neuberger Berman								
<i>Dyal Capital Partners III</i>	175,000,000	129,479,666	67,045,838	75,464,200	120,377,984	20.40	1.10	2.95
Nordic Capital								
<i>Nordic Capital Fund VIII</i>	182,607,935	183,416,790	198,855,303	58,635,734	14,532,660	17.74	1.40	4.55
North Sky Capital**								
<i>North Sky Capital LBO Fund III</i>	1,070,259	720,259	391,092	574,184	350,000	14.59	1.34	3.25
<i>North Sky Capital Venture Fund III</i>	1,384,080	1,277,830	442,444	1,048,548	106,250	8.45	1.17	3.25
Oak Hill Capital Management								
<i>Oak Hill Capital Partners IV</i>	150,000,000	26,896,000	19,464,725	13,130,886	136,180,542	50.97	1.21	1.31
Paine & Partners								
<i>Paine & Partners Capital Fund IV</i>	75,000,000	49,126,479	53,419,035	1,074,740	26,929,526	6.85	1.11	3.30
Permira								
<i>Permira V</i>	179,798,627	167,871,236	203,591,490	33,883,295	27,049,796	13.17	1.41	4.25
<i>Permira VI</i>	144,568,794	36,243,569	40,165,739	0	108,325,224	15.50	1.11	1.68
Public Pension Capital Management								
<i>Public Pension Capital</i>	100,000,000	54,466,399	70,621,468	2,971,953	46,170,514	15.66	1.35	3.88
RWI Ventures								
<i>RWI Ventures I</i>	7,603,265	7,603,265	483,008	6,094,262	0	-4.22	0.87	11.76
Silver Lake Partners								
<i>Silver Lake Partners II</i>	100,000,000	90,144,987	9,941,482	160,349,511	11,771,953	10.96	1.89	13.76
<i>Silver Lake Partners III</i>	100,000,000	91,610,613	46,121,915	160,633,636	10,559,311	18.64	2.26	11.01
<i>Silver Lake Partners IV</i>	100,000,000	96,645,531	109,720,961	33,124,810	15,746,239	23.77	1.48	5.51

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>Silver Lake Partners V</i>	135,000,000	0	0	0	135,000,000	0.00	0.00	1.00
Split Rock Partners								
<i>Split Rock Partners</i>	50,000,000	47,890,906	6,637,587	56,816,177	2,109,094	3.52	1.32	12.92
<i>Split Rock Partners II</i>	60,000,000	58,845,000	45,006,562	37,974,545	1,155,000	8.10	1.41	9.93
Summit Partners								
<i>Summit Ventures V</i>	25,000,000	24,125,000	0	33,463,419	875,000	8.12	1.39	20.01
<i>Summit Partners Growth Equity Fund VIII</i>	100,000,000	106,489,649	92,626,603	95,113,904	23,943,829	22.05	1.76	6.91
<i>Summit Partners Growth Equity Fund IX</i>	100,000,000	22,900,000	20,241,128	9,973,626	87,073,626	69.91	1.32	2.59
Thoma Bravo								
<i>Thoma Bravo Fund XII</i>	75,000,000	49,589,319	50,716,152	2,298,018	27,708,699	7.40	1.07	1.56
Thoma Cressey								
<i>Thoma Cressey Fund VII</i>	50,000,000	50,000,000	844,389	106,625,069	0	23.59	2.15	17.61
<i>Thoma Cressey Fund VIII</i>	70,000,000	68,932,574	1,541,901	233,860,926	770,000	18.26	3.41	11.92
Thomas H. Lee Partners								
<i>Thomas H. Lee Equity Fund VII</i>	100,000,000	66,236,399	75,227,739	12,486,945	39,192,144	30.46	1.32	2.56
Thomas, McNerney & Partners								
<i>Thomas, McNerney & Partners I</i>	30,000,000	30,000,000	2,950,991	15,087,143	0	-8.53	0.60	15.41
<i>Thomas, McNerney & Partners II</i>	50,000,000	48,125,000	12,903,721	95,314,704	1,875,000	16.51	2.25	11.76
TPG Capital								
<i>TPG Partners VII</i>	100,000,000	52,830,046	55,572,651	6,237,106	53,168,004	15.12	1.17	2.56
Vestar Capital Partners								
<i>Vestar Capital Partners IV</i>	55,000,000	53,635,969	637,677	102,249,550	57,313	14.65	1.92	18.30
<i>Vestar Capital Partners V</i>	75,000,000	75,011,502	19,340,222	82,940,705	-11,502	4.29	1.36	12.29
<i>Vestar Capital Partners VI</i>	100,000,000	99,970,993	100,075,371	72,444,917	960,325	29.98	1.73	6.52
<i>Vestar Capital Partners VII</i>	150,000,000	0	0	0	150,000,000	0.00	0.00	0.29
Warburg Pincus								
<i>Warburg Pincus Equity Partners</i>	100,000,000	100,000,000	614,957	163,222,253	0	10.03	1.64	19.78
<i>Warburg Pincus Private Equity VIII</i>	100,000,000	100,000,000	10,811,013	220,991,851	0	14.86	2.32	15.97
<i>Warburg Pincus Private Equity IX</i>	100,000,000	100,000,000	10,843,552	164,844,296	0	9.92	1.76	12.69
<i>Warburg Pincus Private Equity X</i>	150,000,000	150,000,000	71,259,687	159,880,302	0	8.14	1.54	10.44
<i>Warburg Pincus Private Equity XI</i>	200,000,000	194,200,000	174,182,442	109,258,086	5,800,000	13.22	1.46	5.28
<i>Warburg Pincus Private Equity XII</i>	131,000,000	69,757,500	71,890,689	1,008,700	61,242,500	4.65	1.05	2.36

**Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018**

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>Warburg Pincus China</i>	45,000,000	18,270,000	17,272,396	1,935,000	28,665,000	8.75	1.05	1.30
<i>Warburg Pincus Financial Sector</i>	90,000,000	14,310,000	14,064,712	0	75,690,000	-2.63	0.00	0.29
Wellspring Capital Partners								
<i>Wellspring Capital Partners VI</i>	125,000,000	0	0	0	125,000,000	0.00	0.00	1.55
Welsh, Carson, Anderson & Stowe								
<i>Welsh, Carson, Anderson & Stowe X</i>	100,000,000	98,000,000	5,431,853	162,137,595	2,000,000	8.13	1.71	12.30
<i>Welsh, Carson, Anderson & Stowe XI</i>	100,000,000	100,000,000	51,104,124	111,084,910	0	12.78	1.62	9.70
<i>Welsh, Carson, Anderson & Stowe XII</i>	150,000,000	61,907,194	69,338,922	14,140,409	88,092,806	15.94	1.35	3.28
Windjammer Capital Investors								
<i>Windjammer Mezzanine & Equity Fund II</i>	66,708,861	56,569,498	63,310	84,876,800	10,139,363	8.94	1.50	18.01
<i>Windjammer Senior Equity Fund III</i>	75,000,000	61,619,620	0	154,618,016	13,380,380	19.52	2.51	12.25
<i>Windjammer Senior Equity Fund IV</i>	100,000,000	78,493,952	85,171,983	7,347,571	24,174,969	6.03	1.18	6.10
<i>Private Equity Total</i>	11,826,785,807	8,366,344,944	4,803,188,803	8,808,437,771	3,784,958,362	12.49	1.62	

II. PRIVATE CREDIT

Audax Group

<i>Audax Mezzanine Fund III</i>	100,000,000	93,046,382	33,720,321	86,867,694	8,418,259	9.98	1.30	7.99
<i>Audax Mezzanine Fund IV</i>	100,000,000	21,699,973	19,578,554	4,085,813	78,946,977	13.36	1.09	2.98

Citicorp Mezzanine

<i>CM Liquidating Partnership</i>	100,000,000	88,029,296	1,186,265	149,642,633	0	16.45	1.71	18.42
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Crescent Capital Group

<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	17.01
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GS Mezzanine Partners

<i>GS Mezzanine Partners 2006</i>	100,000,000	74,999,888	1,332,320	134,136,541	9,858,563	4.99	1.81	11.99
<i>GS Mezzanine Partners V</i>	150,000,000	112,057,963	2,686,631	177,011,645	37,594,230	8.89	1.60	10.44

Gold Hill Venture Lending

<i>Gold Hill Venture Lending</i>	40,000,000	40,000,000	1,058,271	64,391,012	0	10.70	1.64	13.52
<i>Gold Hill 2008</i>	25,852,584	25,852,584	7,558,380	33,841,601	0	11.75	1.60	9.75

Kohlberg Kravis Roberts

<i>KKR Lending Partners II</i>	75,000,000	84,130,494	63,131,023	36,203,986	8,915,212	11.90	1.18	3.08
<i>KKR Lending Partners III</i>	159,000,000	38,955,000	40,514,563	0	120,045,000	12.12	1.04	0.98

LBC Credit Partners

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>LBC Credit Partners IV</i>	100,000,000	40,000,000	39,353,301	4,276,688	61,922,909	11.65	1.09	1.92
Merit Capital Partners								
<i>William Blair Mezzan. Cap. Fd. III</i>	60,000,000	57,243,241	184,591	113,323,763	2,756,759	15.51	1.98	18.26
<i>Merit Mezzanine Fund IV</i>	75,000,000	70,178,571	17,966,864	109,445,558	4,821,429	10.70	1.82	13.30
<i>Merit Mezzanine Fund V</i>	75,000,000	70,420,408	43,442,863	55,560,149	4,579,592	9.58	1.41	8.29
<i>Merit Mezzanine Fund VI</i>	86,340,625	34,700,000	34,131,716	2,446,092	51,640,625	5.91	1.05	2.02
Portfolio Advisors								
<i>DLJ Investment Partners II</i>	27,375,168	23,164,217	86,451	34,829,566	0	10.37	1.51	18.26
<i>DLJ Investment Partners III</i>	100,000,000	72,260,040	920,373	96,336,774	3,158,038	6.90	1.35	11.78
Prudential Capital Partners								
<i>Prudential Capital Partners II</i>	100,000,000	97,288,320	5,271,027	135,809,660	2,844,433	8.86	1.45	12.76
<i>Prudential Capital Partners III</i>	100,000,000	96,818,042	16,132,016	148,264,594	6,624,352	13.52	1.70	8.96
<i>Prudential Capital Partners IV</i>	100,000,000	97,040,005	71,501,008	50,550,389	3,526,110	10.31	1.26	6.20
<i>Prudential Capital Partners V</i>	150,000,000	44,551,274	43,753,678	3,333,676	105,448,726	11.96	1.06	1.62
Summit Partners								
<i>Summit Subordinated Debt Fund III</i>	45,000,000	42,750,000	7,050,908	58,922,343	2,250,000	9.46	1.54	14.13
<i>Summit Subordinated Debt Fund IV</i>	50,000,000	55,134,261	14,226,732	60,501,330	19,837,698	10.09	1.36	10.01
TCW Asset Management								
<i>TCW Direct Lending</i>	100,000,000	83,421,617	58,377,861	33,634,651	25,329,409	6.74	1.10	3.53
<i>Private Credit Total</i>	2,093,568,377	1,532,576,846	525,574,171	1,750,285,098	588,252,173	13.05	1.48	
 III. REAL ASSETS								
BlackRock								
<i>BlackRock Global Renewable Power Fund II</i>	98,500,000	43,635,235	42,801,147	537,604	55,282,898	-5.19	0.99	2.35
EIG Global Energy Partners								
<i>EIG Energy Fund XIV</i>	100,000,000	113,013,074	12,355,403	92,181,918	2,761,129	-2.90	0.93	10.96
<i>EIG Energy Fund XV</i>	150,000,000	151,824,733	88,790,271	94,926,804	24,307,985	5.00	1.21	7.82
<i>EIG Energy Fund XVI</i>	200,000,000	148,642,489	123,208,643	51,710,642	83,287,951	7.77	1.18	4.55
EnCap Energy								
<i>EnCap Energy Capital Fund VII</i>	100,000,000	97,492,592	7,183,955	132,528,983	0	14.69	1.43	10.76
<i>EnCap Energy Capital Fund VIII</i>	100,000,000	94,419,855	34,123,167	52,072,209	9,383,470	-2.87	0.91	7.50

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>Encap Energy Capital Fund IX</i>	100,000,000	105,299,729	75,659,876	66,395,587	11,118,251	15.82	1.35	5.32
<i>EnCap Energy Capital Fund X</i>	100,000,000	75,243,785	69,533,629	15,854,457	32,542,958	13.09	1.13	3.07
EnerVest Energy								
<i>EnerVest Energy Institutional Fund XIV</i>	100,000,000	92,403,263	89,002,079	7,899,254	9,351,531	2.87	1.05	2.81
Energy Capital Partners								
<i>Energy Capital Partners II</i>	100,000,000	80,880,014	44,433,824	92,508,280	29,749,110	13.24	1.69	7.70
<i>Energy Capital Partners III</i>	200,000,000	182,781,351	203,178,712	11,296,108	23,125,499	11.39	1.17	4.28
<i>Energy Capital Partners IV</i>	105,808,339	26,452,085	26,452,085	0	79,356,254	0.00	0.00	0.25
Energy & Minerals Group								
<i>NGP Midstream & Resources</i>	100,000,000	100,090,315	60,470,642	131,931,565	230,871	14.74	1.92	11.01
<i>The Energy & Minerals Group Fund II</i>	100,000,000	96,992,656	111,989,591	69,535,757	3,292,789	16.06	1.87	6.52
<i>The Energy & Minerals Group Fund III</i>	200,000,000	189,005,992	157,901,504	11,245,621	12,747,869	-3.76	0.89	4.07
<i>The Energy & Minerals Group Fund IV</i>	150,000,000	92,817,585	104,620,067	15,776,674	70,278,465	15.11	1.30	2.42
First Reserve								
<i>First Reserve Fund X</i>	100,000,000	100,000,000	421,230	182,429,002	0	31.05	1.83	13.42
<i>First Reserve Fund XI</i>	150,000,000	150,292,121	8,066,009	94,066,313	0	-8.47	0.68	11.28
<i>First Reserve Fund XII</i>	150,000,000	160,809,795	33,801,155	80,719,259	2,773,677	-8.20	0.71	9.42
<i>First Reserve Fund XIII</i>	200,000,000	98,062,140	85,423,794	21,947,422	101,937,860	5.07	1.09	4.41
Kohlberg, Kravis, Roberts & Co.								
<i>KKR Global Infrastructure Investors III</i>	149,850,000	0	0	0	149,850,000	0.00	0.00	0.01
Merit Energy Partners								
<i>Merit Energy Partners B</i>	24,000,000	24,000,000	8,811,045	183,415,358	0	24.30	8.01	21.20
<i>Merit Energy Partners C</i>	50,000,000	50,000,000	20,918,594	498,833,407	0	31.12	10.40	19.43
<i>Merit Energy Partners D</i>	88,000,000	70,938,303	32,780,884	312,878,750	0	23.42	4.87	16.86
<i>Merit Energy Partners E</i>	100,000,000	39,983,197	18,742,379	74,625,223	0	15.29	2.34	13.50
<i>Merit Energy Partners F</i>	100,000,000	59,522,861	20,559,140	27,251,921	0	-3.63	0.80	12.03
<i>Merit Energy Partners H</i>	100,000,000	100,000,000	74,784,776	24,238,423	0	-0.26	0.99	7.16
<i>Merit Energy Partners I</i>	169,721,518	146,099,999	203,358,342	24,839,059	23,621,519	30.20	1.56	3.45
NGP								
<i>Natural Gas Partners IX</i>	150,000,000	162,022,644	9,645,700	235,762,409	1,153,855	11.87	1.51	10.44
<i>NGP Natural Resources X</i>	150,000,000	141,804,796	74,355,005	94,628,121	8,195,204	5.95	1.19	6.48
<i>Natural Gas Capital Resources XI</i>	150,000,000	125,758,384	141,542,566	19,030,572	30,403,622	23.02	1.28	3.31

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>NGP Natural Resources XII</i>	149,500,000	20,896,589	19,786,562	0	128,603,411	-6.02	0.00	0.67
Sheridan								
<i>Sheridan Production Partners I</i>	100,000,000	116,550,000	66,894,010	82,750,000	0	5.75	1.28	11.01
<i>Sheridan Production Partners II</i>	100,000,000	103,500,000	50,220,028	7,000,000	3,500,000	-12.14	0.55	7.50
<i>Sheridan Production Partners III</i>	100,000,000	34,350,000	38,103,998	14,300,000	65,650,000	30.15	1.53	3.31
<i>Real Assets Total</i>	4,285,379,857	3,395,585,582	2,159,919,810	2,825,116,703	962,506,178	15.81	1.47	
IV. REAL ESTATE								
Angelo, Gordon & Co.								
<i>AG Realty Fund IX</i>	100,000,000	66,250,000	65,824,207	8,000,000	37,900,000	8.40	1.11	3.31
<i>AG Asia Realty Fund III</i>	50,000,000	35,625,000	35,197,131	5,000,000	17,446,250	12.43	1.13	1.50
Blackstone Real Estate Partners								
<i>Blackstone Real Estate Partners V</i>	100,000,000	97,030,342	27,646,904	179,360,511	4,174,052	10.91	2.13	11.93
<i>Blackstone Real Estate Partners VI</i>	100,000,000	99,320,387	16,159,412	201,802,160	4,907,906	13.14	2.19	11.01
<i>Blackstone Real Estate Partners VII</i>	100,000,000	95,357,438	81,471,421	98,662,221	15,126,809	17.90	1.89	6.34
<i>Blackstone Real Estate Partners VIII</i>	150,000,000	89,131,696	82,483,161	32,285,077	83,537,949	14.87	1.29	3.01
<i>Blackstone Real Estate Partners Asia II</i>	75,000,000	0	0	0	75,000,000	0.00	0.00	0.52
Blackstone Strategic Partners (CSFB)								
<i>Strategic Partners III RE</i>	25,000,000	25,752,810	2,893,903	12,513,526	9,006	-6.58	0.60	12.76
<i>Strategic Partners IV RE</i>	50,000,000	50,713,953	8,555,440	42,133,039	1,256,295	-0.20	1.00	9.79
Carlyle Group								
<i>Carlyle Realty Partners VIII</i>	150,000,000	1,383,826	222,265	0	148,616,174	-94.56	0.16	0.90
Colony Capital								
<i>Colony Investors III</i>	100,000,000	100,000,000	4,818,600	172,642,105	0	14.54	1.77	20.26
Landmark Partners								
<i>Landmark Real Estate Partners VIII</i>	149,500,000	16,765,979	24,226,488	67,715	132,734,021	42.10	1.45	1.29
Lubert Adler								
<i>Lubert-Adler Real Estate Fund VII</i>	74,147,868	18,536,967	18,687,061	1,250,230	55,610,901	4.01	1.08	1.48
Rockpoint								
<i>Rockpoint Real Estate Fund V</i>	100,000,000	47,038,733	48,632,051	5,586,764	58,548,031	5.80	1.15	3.22
Rockwood								
<i>Rockwood Capital RE Partners X</i>	100,000,000	35,797,421	34,767,350	772,727	64,202,579	-0.54	0.99	2.71

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
Silverpeak Real Estate Partners								
<i>Silverpeak Legacy Pension Partners II</i>	75,000,000	77,196,820	3,721,408	87,952,458	9,219,273	4.36	1.19	12.67
<i>Silverpeak Legacy Pension Partners III</i>	150,000,000	70,240,494	15,773,277	9,667,017	79,759,506	-12.10	0.36	9.92
T.A. Associates Realty								
<i>Realty Associates Fund VIII</i>	100,000,000	100,000,000	19,027,715	78,922,951	0	-0.24	0.98	11.76
<i>Realty Associates Fund IX</i>	100,000,000	100,000,000	1,450,252	159,608,332	0	10.53	1.61	9.60
<i>Realty Associates Fund X</i>	100,000,000	100,000,000	66,092,431	81,045,325	0	12.26	1.47	6.08
<i>Realty Associates Fund XI</i>	100,000,000	100,000,000	102,665,800	1,341,917	0	5.14	1.04	2.75
Real Estate Total	2,048,647,868	1,326,141,866	660,316,276	1,178,614,075	788,048,751	7.91	1.39	
 V. DISTRESSED/ OPPORTUNISTIC								
Avenue Capital Partners								
<i>Avenue Energy Opportunities Fund</i>	100,000,000	100,000,000	121,098,100	934,495	0	8.35	1.22	3.75
<i>Avenue Energy Opportunities Fund II</i>	100,000,000	35,000,000	35,048,720	0	65,000,000	0.22	1.00	0.91
BlackRock**								
<i>BlackRock Tempus Fund</i>	1,774,870	1,774,870	703,378	1,324,425	0	10.13	1.14	2.81
Carlyle Group								
<i>Carlyle Strategic Partners IV</i>	100,000,000	17,491,445	14,700,674	4,674,546	87,183,049	15.10	1.11	2.00
Carval Investors								
<i>CVI Global Value Fund</i>	200,000,000	190,000,000	29,653,826	290,286,276	10,000,000	9.59	1.68	11.22
<i>CVI Credit Value Fund I</i>	100,000,000	95,000,000	30,604,403	180,676,509	5,000,000	18.85	2.22	7.50
<i>CVI Credit Value Fund A II</i>	150,000,000	142,500,000	74,915,123	130,546,113	7,500,000	9.35	1.44	5.42
<i>CVI Credit Value Fund A III</i>	150,000,000	112,500,000	141,959,475	0	37,500,000	13.72	1.26	2.83
<i>CVI Credit Value Fund IV</i>	150,000,000	0	0	0	150,000,000	0.00	0.00	0.49
Merced Capital								
<i>Merced Partners II</i>	75,000,000	63,768,881	286,734	130,393,875	0	23.97	2.05	11.01
<i>Merced Partners III</i>	100,000,000	100,000,000	47,648,414	85,997,107	0	6.37	1.34	7.90
<i>Merced Partners IV</i>	125,000,000	125,000,000	98,418,131	56,247,049	0	6.85	1.24	4.72
<i>Merced Partners V</i>	53,737,500	48,363,750	52,531,883	0	5,373,750	8.63	1.09	0.75
MHR Institutional Partners								
<i>MHR Institutional Partners IV</i>	75,000,000	26,250,000	22,224,091	2,014,108	50,521,136	-5.50	0.92	3.78
Oaktree Capital Management								

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	Market Value	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
<i>Oaktree Principal Fund VI</i>	100,000,000	54,385,347	50,711,594	13,606,490	58,822,283	19.63	1.18	3.25
<i>Oaktree Opportunities Fund X</i>	50,000,000	35,000,000	36,757,590	5,619,660	20,000,000	19.85	1.21	3.13
<i>Oaktree Opportunities Fund Xb</i>	100,000,000	0	0	0	100,000,000	0.00	0.00	3.13
Pimco Brovo								
<i>Pimco Bravo Fund OnShore Feeder I</i>	3,958,027	3,958,027	182,935	3,830,753	2,200,191	1.44	1.01	3.25
<i>Pimco Bravo Fund OnShore Feeder II</i>	5,243,670	4,646,129	4,558,999	1,252,403	1,844,756	6.76	1.25	3.25
Varde Fund								
<i>Varde Fund IX</i>	100,000,000	100,000,000	7,546,305	212,271,530	0	15.24	2.20	9.78
<i>Varde Fund X</i>	150,000,000	150,000,000	74,461,254	213,696,730	0	12.19	1.92	7.95
<i>Varde Fund XI</i>	200,000,000	200,000,000	222,979,088	51,183,477	0	7.87	1.37	4.73
Wayzata								
<i>Wayzata Opportunities Fund</i>	100,000,000	93,180,000	709,262	156,425,778	18,920,000	8.44	1.69	12.28
<i>Wayzata Opportunities Fund II</i>	150,000,000	174,750,000	9,801,544	319,228,413	30,000,000	16.52	1.88	10.44
<i>Wayzata Opportunities Fund III</i>	150,000,000	68,415,000	35,501,834	32,728,171	15,000,000	-0.11	1.00	5.79
<i>Distressed/Opportunistic Total</i>	2,589,714,067	1,941,983,449	1,113,003,356	1,892,937,907	664,865,165		1.55	
<i>Private Markets Total</i>	22,844,095,976	16,562,632,687	9,262,002,415	16,455,391,554	6,788,630,629	12.50	1.55	

Private Markets Portfolio Status	Investment Manager Count	Investments Count
PRIVATE EQUITY	51	119
PRIVATE CREDIT	12	24
REAL ASSETS	11	35
REAL ESTATE	11	21
DISTRESSED/ OPPORTUNISTIC	10	25
Total	95	224

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.

Minnesota State Board of Investment
- Alternative Investments -
As of March 31, 2018

Investment	Total Commitment	Funded Commitment	MarketValue	Distributions	Unfunded Commitment	IRR %	MOIC*	Period Years
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* MOIC: Multiple of Invested Capital

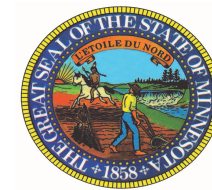
** Partnership interests transferred to the MSBI during 1Q2015. All data presented as of the transfer date.



Participant Directed Investment Program

March 31, 2018

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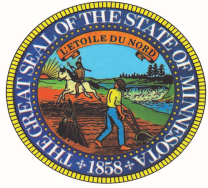
Quarterly Report

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.

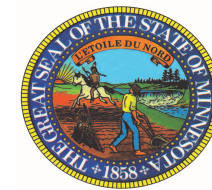
Investment Option Descriptions

- 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	\$434,069,686	-0.8%	8.9%	6.9%	8.7%	7.8%	01/1980
U.S. ACTIVELY MANAGED FUND	246,178,940	1.0	16.5	10.2	13.5	9.8	07/1986
U.S. STOCK INDEX FUND	598,046,689	-0.6	13.8	10.2	13.0	9.7	07/1986
BROAD INTERNATIONAL STOCK FUND	202,715,775	-1.2	17.4	6.6	6.4	3.3	09/1994
BOND FUND	171,804,658	-1.4	1.7	1.7	2.3	4.4	07/1986
MONEY MARKET FUND	396,914,208	0.4	1.3	0.7	0.5	0.5	07/1986
STABLE VALUE FUND	1,545,287,094	0.5	2.2	2.1	2.0	2.9	11/1994
VOLUNTEER FIREFIGHTER ACCOUNT	88,641,073	-1.0	8.2	5.5	6.7		01/2010
TOTAL SUPPLEMENTAL INVESTMENT FUND	3,683,658,123						

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

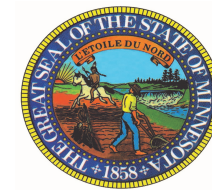
The primary investment objective of the Balanced Fund is to gain exposure to publicly traded U.S. equities, bond and cash in a diversified investment portfolio. The Fund seeks to maximize long-term real rates of return, while limiting short-run portfolio return volatility. The Balanced Fund is invested 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>
BALANCED FUND	\$434,069,686	-0.8%	8.9%	6.9%	8.7%	7.8%
SIF BALANCED FUND BENCHMARK		-0.8	8.7	6.6	8.5	7.1
Excess		-0.0	0.3	0.2	0.3	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>
U.S. ACTIVELY MANAGED FUND	246,178,940	1.0	16.5	10.2	13.5	9.8
Russell 3000		-0.6	13.8	10.2	13.0	9.6
Excess		1.6	2.6	0.0	0.4	0.2



Supplemental Investment Fund Performance

U.S. Stock Index Fund

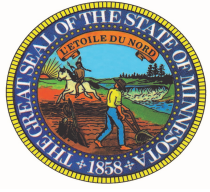
The investment objective of the U.S. Stock Index Fund is to generate returns that track those of the U.S. stock market as a whole. The Fund is designed to track the performance of the Russell 3000 Index, a broad-based equity market indicator. The Fund is invested 100% in common stock.

	<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>
U.S. STOCK INDEX FUND	\$598,046,689	-0.6%	13.8%	10.2%	13.0%	9.7%
Russell 3000		-0.6	13.8	10.2	13.0	9.6
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>
BROAD INTERNATIONAL STOCK FUND	202,715,775	-1.2	17.4	6.6	6.4	3.3
International Equity Benchmark		-1.2	16.5	6.2	5.9	2.7
Excess		0.0	0.8	0.4	0.5	0.6



Supplemental Investment Fund Performance

Bond Fund

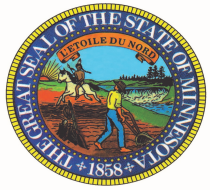
The investment objective of the Bond Fund is to exceed the return of the broad domestic bond market by investing in fixed income securities. The Bond Fund invests primarily in high-quality, government and corporate bonds that have intermediate to long-term maturities, usually 3 to 20 years. The Bond 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>
BOND FUND	\$171,804,658	-1.4%	1.7%	1.7%	2.3%	4.4%
BBG BARC US Agg		-1.5	1.2	1.2	1.8	3.6
Excess		0.1	0.5	0.5	0.5	0.7

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>
MONEY MARKET FUND	396,914,208	0.4	1.3	0.7	0.5	0.5
90 DAY T-BILL		0.4	1.1	0.5	0.3	0.3
Excess		0.0	0.1	0.2	0.2	0.2



Supplemental Investment Fund Performance

Stable Value Fund

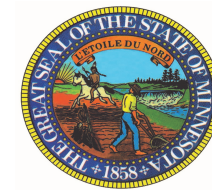
The investment objectives of the Stable Value Fund are to protect investors from loss of their original investment and to provide competitive interest rates using somewhat longer-term investments than typically found in a money market fund. The Fund is invested in a well-diversified portfolio of high-quality 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>
STABLE VALUE FUND	\$1,545,287,094	0.5%	2.2%	2.1%	2.0%	2.9%
Fixed Interest Blended Benchmark		0.7	2.1	1.7	1.5	1.5
Excess		-0.1	0.1	0.4	0.5	1.4

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>
VOLUNTEER FIREFIGHTER ACCOUNT	88,641,073	-1.0	8.2	5.5	6.7	
SIF Volunteer Firefighter Account BM		-1.0	7.8	5.2	6.3	
Excess		-0.0	0.4	0.4	0.3	



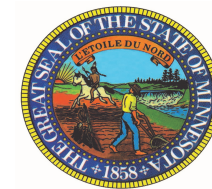
Deferred Compensation Plan Summary

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	\$1,224,794,029	-0.8%	14.0%	10.8%	13.3%	9.5%	07/1999
VANGUARD DIVIDEND GROWTH	596,626,890	-1.1	11.5				10/2016
VANGUARD MID CAP INDEX	536,101,444	0.0	12.3	7.9	12.3	10.2	01/2004
T. ROWE PRICE SMALL-CAP STOCK	687,947,275	1.9	13.6	9.3	12.5	12.9	04/2000
FIDELITY DIVERSIFIED INTERNATIONAL	315,152,431	-1.7	15.3	5.1	7.5	3.1	07/1999
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	205,006,676	-0.4	17.1	7.0	6.4		07/2011
VANGUARD BALANCED INDEX	773,917,950	-0.9	8.7	6.6	8.5	7.6	12/2003
DODGE & COX INCOME	240,150,858	-0.9	2.2	2.3	2.8	4.9	07/1999
VANGUARD TOTAL BOND MARKET INDEX	210,055,773	-1.5	1.1	1.1	1.7	3.6	12/2003
2020 FUND	118,229,323	-1.0	5.8	3.9	4.8		07/2011
2025 FUND	116,102,176	-1.1	7.9	5.0	6.2		07/2011
2030 FUND	81,344,190	-1.1	10.1	6.0	7.4		07/2011
2035 FUND	63,085,325	-1.0	11.3	6.6	8.0		07/2011
2040 FUND	46,031,561	-1.0	12.3	7.0	8.5		07/2011
2045 FUND	38,276,961	-0.9	13.0	7.3	8.9		07/2011
2050 FUND	28,239,779	-0.9	13.7	7.7	9.1		07/2011
2055 FUND	15,492,752	-0.9	13.7	7.7	9.1		07/2011
2060 FUND	14,524,748	-0.9	13.7	7.7	9.1		07/2011
INCOME FUND	86,507,373	-0.9	4.8	3.3	3.5		07/2011
TD Ameritrade SDB	74,197,786						
TD Ameritrade SDB Roth	633,351						
Total Deferred Compensation Plan	5,472,418,652						



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

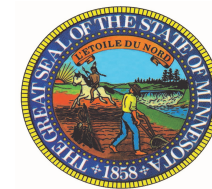
Fidelity Diversified International (active)

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						
VANGUARD INSTITUTIONAL INDEX PLUS	\$1,224,794,029	-0.8%	14.0%	10.8%	13.3%	07/1999
S&P 500		-0.8	14.0	10.8	13.3	07/1999
Excess		-0.0	-0.0	-0.0	-0.0	
VANGUARD DIVIDEND GROWTH	596,626,890	-1.1	11.5			10/2016
NASDAQ US Dividend Achievers Select		-0.5	14.6			10/2016
Excess		-0.6	-3.1			
Mid Cap US Equity						
VANGUARD MID CAP INDEX	536,101,444	0.0	12.3	7.9	12.3	01/2004
CRSP US Mid Cap Index		0.0	12.4	7.9	12.3	01/2004
Excess		-0.0	-0.0	-0.0	-0.0	
Small Cap US Equity						
T. ROWE PRICE SMALL-CAP STOCK	687,947,275	1.9	13.6	9.3	12.5	04/2000
Russell 2000		-0.1	11.8	8.4	11.5	04/2000
Excess		2.0	1.8	0.9	1.0	
International Equity						
FIDELITY DIVERSIFIED INTERNATIONAL	315,152,431	-1.7	15.3	5.1	7.5	07/1999
MSCI EAFE FREE (NET)		-1.5	14.8	5.6	6.5	07/1999
Excess		-0.2	0.5	-0.4	1.0	
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	205,006,676	-0.4	17.1	7.0	6.4	07/2011
FTSE Global All Cap ex US Index Net		-1.2	16.5	6.6	6.3	07/2011
Excess		0.7	0.6	0.4	0.2	



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.

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

Balanced Funds

VANGUARD BALANCED INDEX	\$773,917,950	-0.9%	8.7%	6.6%	8.5%	12/2003
Vanguard Balanced Fund Benchmark		-0.9	8.7	6.7	8.6	12/2003
Excess		0.0	0.0	-0.0	-0.0	

Fixed Income

DODGE & COX INCOME	240,150,858	-0.9	2.2	2.3	2.8	07/1999
BBG BARC Agg Bd		-1.5	1.2	1.2	1.8	07/1999
Excess		0.6	1.0	1.1	0.9	

VANGUARD TOTAL BOND MARKET INDEX	210,055,773	-1.5	1.1	1.1	1.7	12/2003
BBG BARC Agg Bd		-1.5	1.2	1.2	1.8	12/2003
Excess		-0.0	-0.1	-0.1	-0.1	

MONEY MARKET FUND	396,914,208	0.4	1.3	0.7	0.5	07/1986
90 DAY T-BILL		0.4	1.1	0.5	0.3	07/1986
Excess		0.0	0.1	0.2	0.2	

Stable Value

STABLE VALUE FUND	1,545,287,094	0.5	2.2	2.1	2.0	11/1994
Fixed Interest Blended Benchmark		0.7	2.1	1.7	1.5	11/1994
Excess		-0.1	0.1	0.4	0.5	

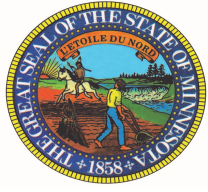
(1) Vanguard Dividend Growth replaced the Janus Twenty Fund in the third quarter of 2016.

(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.



Deferred Compensation Options

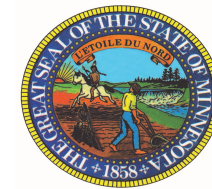
MN TARGET RETIREMENT ACCOUNTS

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>	
SSgA														
2020 FUND	\$118,229,323	-1.0%	5.8%	3.9%	4.8%	07/2011		2045 FUND	\$38,276,961	-0.9%	13.0%	7.3%	8.9%	07/2011
2020 FUND BENCHMARK		-1.0	5.7	3.9	4.8	07/2011		2045 FUND BENCHMARK		-1.0	12.9	7.3	8.9	07/2011
Excess		0.0	0.0	-0.0	-0.0			Excess		0.1	0.1	0.0	-0.0	
2025 FUND	116,102,176	-1.1	7.9	5.0	6.2	07/2011		2050 FUND	28,239,779	-0.9	13.7	7.7	9.1	07/2011
2025 FUND BENCHMARK		-1.1	7.8	5.0	6.2	07/2011		2050 FUND BENCHMARK		-0.9	13.6	7.7	9.1	07/2011
Excess		0.0	0.0	-0.0	-0.0			Excess		0.1	0.1	0.0	-0.0	
2030 FUND	81,344,190	-1.1	10.1	6.0	7.4	07/2011		2055 FUND	15,492,752	-0.9	13.7	7.7	9.1	07/2011
2030 FUND BENCHMARK		-1.1	10.0	6.0	7.4	07/2011		2055 FUND BENCHMARK		-0.9	13.6	7.7	9.1	07/2011
Excess		0.0	0.1	-0.0	-0.0			Excess		0.1	0.1	0.0	-0.0	
2035 FUND	63,085,325	-1.0	11.3	6.6	8.0	07/2011		2060 FUND	14,524,748	-0.9	13.7	7.7	9.1	07/2011
2035 FUND BENCHMARK		-1.1	11.2	6.6	8.0	07/2011		2060 FUND BENCHMARK		-0.9	13.6	7.7	9.1	07/2011
Excess		0.1	0.1	-0.0	-0.0			Excess		0.1	0.1	0.0	-0.0	
2040 FUND	46,031,561	-1.0	12.3	7.0	8.5	07/2011		INCOME FUND	86,507,373	-0.9	4.8	3.3	3.5	07/2011
2040 FUND BENCHMARK		-1.0	12.2	7.0	8.5	07/2011		INCOME FUND BENCHMARK		-0.9	4.8	3.4	3.6	07/2011
Excess		0.1	0.1	0.0	-0.0			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

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: March 31, 2018

Fund Name	Ending Market	3 Months	1 Year	Annualized				Inception Date
				3 Years	5 Years	10 Years	Since Inception	
Managed Ages 0-4	\$29,898,364	-1.07%	11.28%	7.02%	-	-	7.31%	8/12/2014
BM: Managed Ages 0-4		-1.29%	10.72%	7.05%	-	-	7.32%	
Managed Ages 5-8	\$69,824,435	-1.18%	9.85%	6.27%			6.57%	8/12/2014
BM: Managed Ages 5-8		-1.26%	9.51%	6.38%			6.66%	
Managed Ages 9-10	\$67,754,633	-1.20%	8.55%	5.58%			5.89%	8/12/2014
BM: Managed Ages 9-10		-1.24%	8.32%	5.70%			6.00%	
Managed Ages 11-12	\$102,050,417	-1.15%	7.33%	4.88%			5.17%	8/12/2014
BM: Managed Ages 11-12		-1.15%	7.12%	4.96%			5.25%	
Managed Ages 13-14	\$136,711,270	-1.10%	6.26%	4.20%			4.47%	8/12/2014
BM: Managed Ages 13-14		-1.06%	5.92%	4.22%			4.50%	
Managed Age 15	\$78,586,124	-0.70%	5.06%	3.50%			3.72%	8/12/2014
BM: Managed Age 15		-0.82%	4.71%	3.37%			3.59%	
Managed Age 16	\$78,430,748	-0.71%	4.46%	3.08%			3.30%	8/12/2014
BM: Managed Age 16		-0.66%	4.11%	2.92%			3.10%	
Managed Age 17	\$76,105,560	-0.54%	3.93%	2.79%			2.94%	8/12/2014
BM: Managed Age 17		-0.51%	3.50%	2.47%			2.61%	
Managed Ages 18 & Over	\$182,721,218	-0.45%	3.21%	2.36%			2.50%	8/12/2014
BM: Managed Ages 18 & Over		-0.35%	2.90%	2.01%			2.12%	
U.S. and International Equity Option	\$301,009,120	-1.04%	13.47%	8.31%	10.36%	7.11%	7.01%	10/ 1/2001
BM: U.S. and International Equity Option		-1.35%	13.14%	8.38%	10.46%	7.68%	7.90%	

MINNESOTA COLLEGE SAVINGS PLAN

Performance Statistics for the Period Ending: March 31, 2018

Fund Name	Ending Market	3 Months	1 Year	Annualized				Inception Date
				3 Years	5 Years	10 Years	Since Inception	
Moderate Allocation Option	\$65,204,854	-1.21%	8.48%	5.54%	6.76%	5.80%	5.18%	8/ 2/2007
BM: Moderate Allocation Option		-1.24%	8.32%	5.70%	6.93%	6.33%	5.75%	
100% Fixed-Income Option	\$13,603,672	-1.38%	0.78%	1.12%	1.13%	2.93%	3.42%	8/16/2007
BM: 100% Fixed-Income Option		-1.21%	1.27%	1.49%	1.55%	3.56%	4.11%	
International Equity Index Option	\$4,656,155	-0.15%	17.18%	6.37%			6.14%	6/18/2013
BM: International Equity Index Option		-1.10%	16.61%	6.23%			6.31%	
Money Market Option	\$10,788,151	0.29%	0.78%	0.32%	0.19%	0.20%	0.34%	11/ 1/2007
BM: Money Market Option		0.24%	0.66%	0.28%	0.17%	0.24%	0.37%	
Principal Plus Interest Option	\$114,458,213	0.46%	1.61%	1.45%	1.36%	1.95%	2.55%	10/10/2001
Citigroup 3-Month U.S. Treasury Bill		0.34%	1.06%	0.49%	0.31%	0.31%	1.26%	
Aggressive Allocation Option	\$19,699,965	-0.92%	11.38%	7.02%			7.31%	8/12/2014
BM: Aggressive Allocation Option		-1.29%	10.72%	7.05%			7.32%	
Conservative Allocation Option	\$9,566,928	-0.61%	5.20%	3.50%			3.51%	8/18/2014
BM: Conservative Allocation Option		-0.82%	4.71%	3.37%			3.40%	
Equity and Interest Accumulation Option	\$2,528,270	-0.16%	7.56%	5.72%			5.75%	8/18/2014
BM: Equity and Interest Accumulation Option		-0.10%	7.34%	5.39%			5.41%	
U.S. Large Cap Equity Option	\$22,542,520	-0.88%	13.70%	10.53%			11.00%	8/12/2014
BM: U.S. Large Cap Equity Option		-0.76%	13.99%	10.78%			11.25%	
Matching Grant	\$2,455,723	0.46%	1.61%	1.45%	1.36%	1.95%	2.57%	3/22/2002
Citigroup 3-Month U.S. Treasury Bill		0.34%	1.06%	0.49%	0.31%	0.31%	1.24%	

MINNESOTAABLEplan

A member of The National ABLE Alliance

Performance as of
03/31/18

Total Market Value: \$ 2,180,519

<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	\$ 222,008	10.18%	(0.43)	(0.85)	(0.85)	11.27				12.54	12/15/16
ABLE Aggressive Custom Benchmark			(0.72)	(1.03)	(1.03)	11.53					
Variance			0.29	0.18	0.18	(0.26)					
Moderately Aggressive Option	\$ 184,915	8.48%	(0.26)	(0.78)	(0.78)	9.51				10.66	12/15/16
ABLE Moderately Aggressive Custom Benchmark			(0.51)	(0.93)	(0.93)	9.72					
Variance			0.25	0.15	0.15	(0.21)					
Growth Option	\$ 329,037	15.09%	(0.09)	(0.71)	(0.71)	7.63				8.71	12/15/16
ABLE Growth Custom Benchmark			(0.30)	(0.82)	(0.82)	7.92					
Variance			0.21	0.11	0.11	(0.29)					
Moderate Option	\$ 273,960	12.56%	0.09	(0.64)	(0.64)	5.82				6.97	12/15/16
ABLE Moderate Custom Benchmark			(0.09)	(0.72)	(0.72)	6.14					
Variance			0.18	0.08	0.08	(0.32)					
Moderately Conservative Option	\$ 226,558	10.39%	0.09	(0.37)	(0.37)	4.11				4.91	12/15/16
ABLE Moderately Conservative Custom Benchmark			0.02	(0.42)	(0.42)	4.42					
Variance			0.07	0.05	0.05	(0.31)					
Conservative Option	\$ 363,769	16.68%	0.19	0.00	0.00	1.98				2.31	12/15/16
ABLE Conservative Custom Benchmark			0.16	(0.02)	(0.02)	2.16					
Variance			0.03	0.02	0.02	(0.18)					
Checking Option	\$ 580,272	26.61%									03/30/17

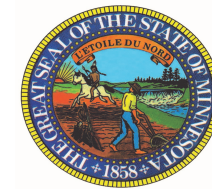
MINNESOTA ACHIEVE A BETTER LIFE EXPERIENCE

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.

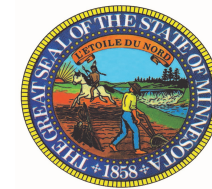
RISK BASED ALLOCATIONS

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

March 31, 2018



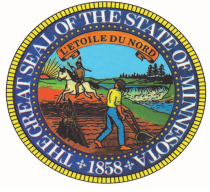
Quarterly Report

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

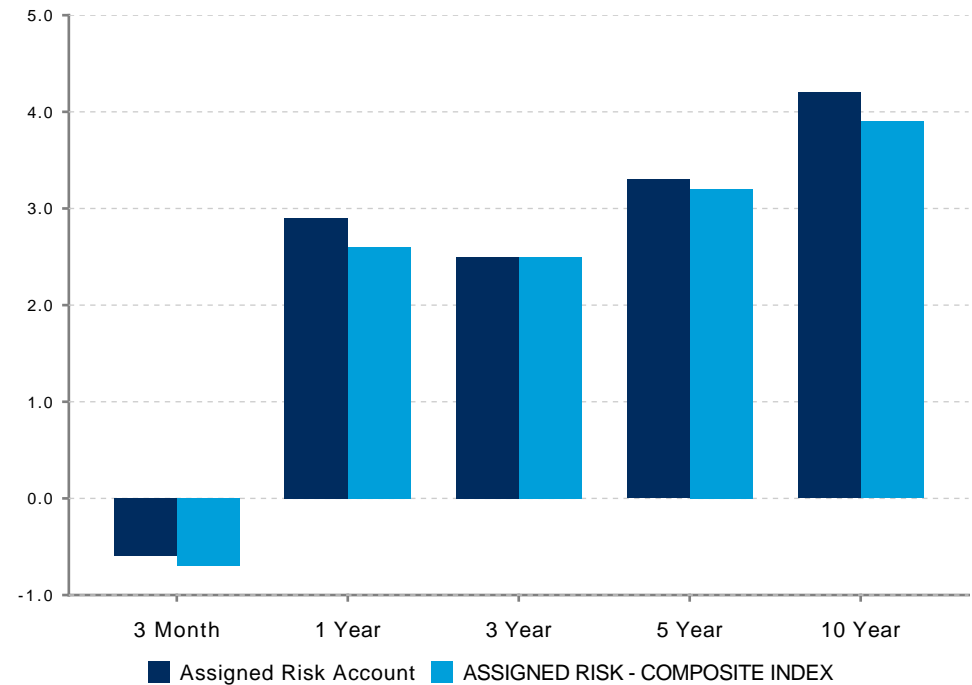
Assigned Risk Plan

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.

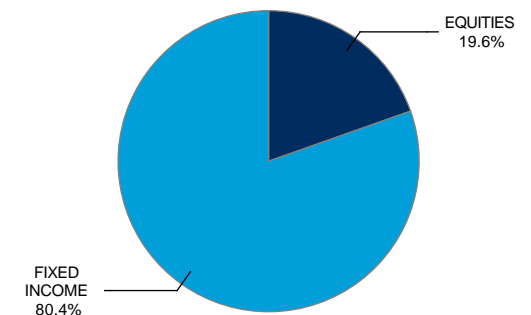
The Assigned Risk Plan is invested in a portfolio of common stocks and bonds

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

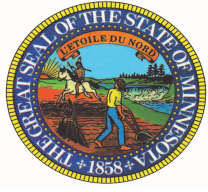
The fixed income benchmark is the Bloomberg Barclays Intermediate Government Index. The total fund benchmark is a combination of the fixed income and equity benchmarks, weighted according to the total fund asset allocation targets of 80% equities and 20% fixed income. The actual asset mix will fluctuate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



	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
Assigned Risk Account	\$316,636,116	-0.6%	2.9%	2.5%	3.3%	4.2%
EQUITIES	61,975,084	-0.7	14.0	9.5	12.7	9.1
FIXED INCOME	254,661,033	-0.7	0.1	0.6	0.8	2.7
ASSIGNED RISK - COMPOSITE INDEX		-0.7	2.6	2.5	3.2	3.9
Excess		0.0	0.2	-0.1	0.0	0.3
S&P 500		-0.8	14.0	10.8	13.3	9.5
BBG BARC US Gov: Int		-0.7	-0.1	0.5	0.7	2.2



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.



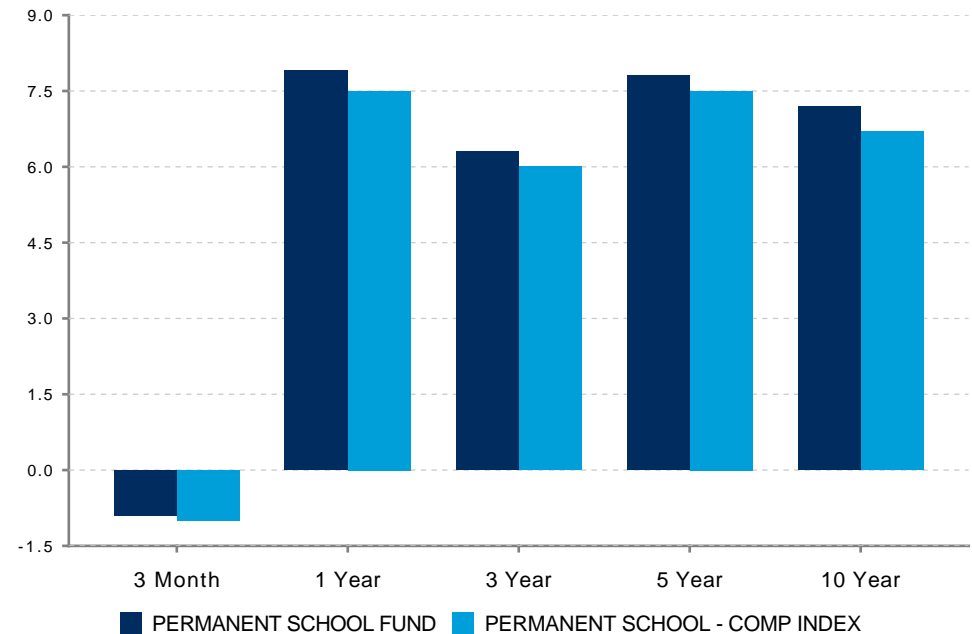
Non-Retirement

Permanent School Fund

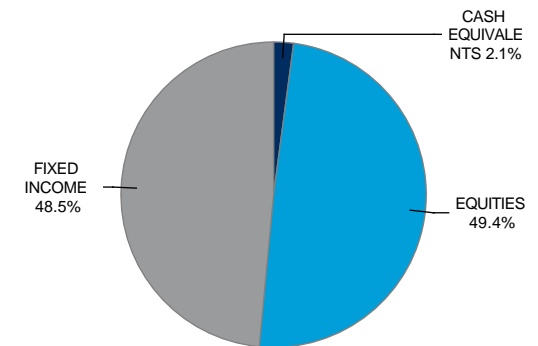
The investment objective of the Permanent School Fund is to produce a growing level of spendable income, within the constraints of maintaining adequate portfolio quality and liquidity. The income from the portfolio is transferred to the school endowment fund and distributed to Minnesota's public schools.

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.

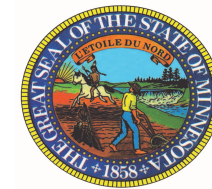
The stock segment is passively managed to track the performance of the S&P 500. The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The fixed income benchmark is the Bloomberg Barclays U.S. Aggregate. The total fund benchmark is a combination 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.



	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
PERMANENT SCHOOL FUND	\$1,370,665,713	-0.9%	7.9%	6.3%	7.8%	7.2%
CASH EQUIVALENTS	28,099,454	0.4	1.2	0.6	0.4	0.5
EQUITIES	677,305,576	-0.7	14.0	10.8	13.3	9.5
FIXED INCOME	665,260,683	-1.5	1.3	1.6	2.4	4.4
PERMANENT SCHOOL - COMP INDEX		-1.0	7.5	6.0	7.5	6.7
Excess		0.1	0.3	0.3	0.3	0.5
S&P 500		-0.8	14.0	10.8	13.3	9.5
BBG BARC US Agg		-1.5	1.2	1.2	1.8	3.6



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.



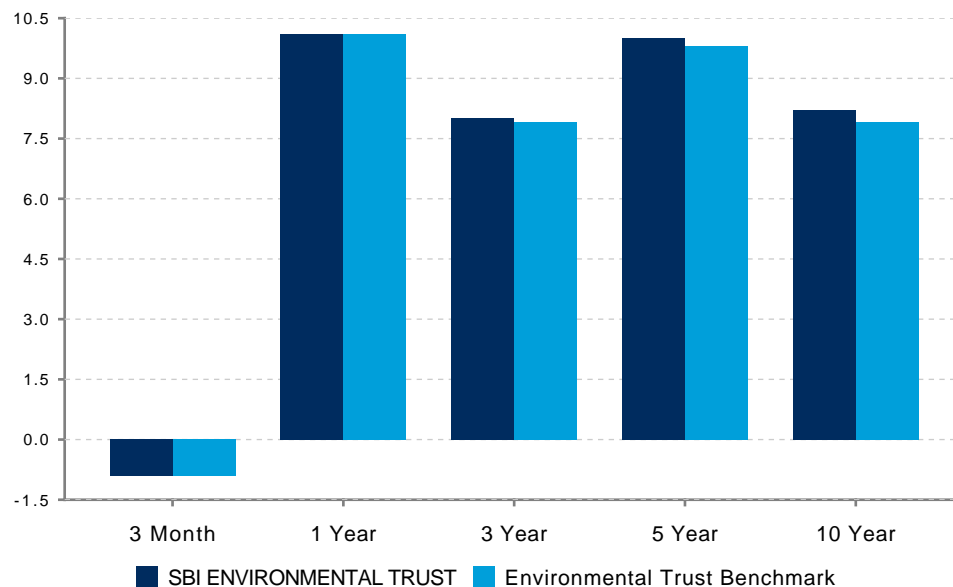
Non-Retirement

Environmental Trust Fund

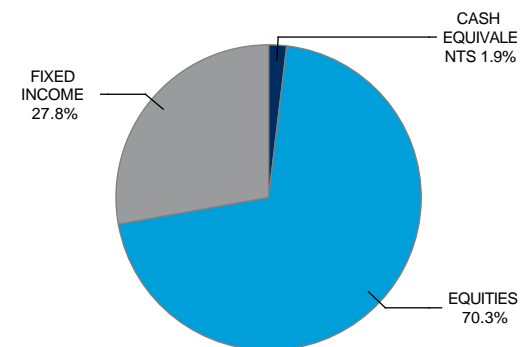
The objective of the Environmental Trust Fund is to increase the market value of the Fund over time in order to increase the annual amount made available for spending within the constraints of maintaining adequate portfolio quality and liquidity.

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.

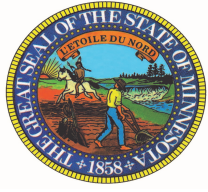
The bond segment is actively managed to add incremental value through sector, security and yield curve decisions. The stock segment is passively managed to track the performance of the S&P 500. The fixed income benchmark is the Bloomberg Barclays U.S. Aggregate. The total fund benchmark is a combination 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.



	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
SBI ENVIRONMENTAL TRUST	\$1,093,048,795	-0.9%	10.1%	8.0%	10.0%	8.2%
CASH EQUIVALENTS	21,169,936	0.4	1.2	0.6	0.4	0.5
EQUITIES	768,299,438	-0.7	14.0	10.8	13.3	9.5
FIXED INCOME	303,579,421	-1.5	1.3	1.6	2.4	4.4
Environmental Trust Benchmark		-0.9	10.1	7.9	9.8	7.9
Excess		-0.0	-0.0	0.1	0.1	0.3
S&P 500		-0.8	14.0	10.8	13.3	9.5
BBG BARC US Agg		-1.5	1.2	1.2	1.8	3.6



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.

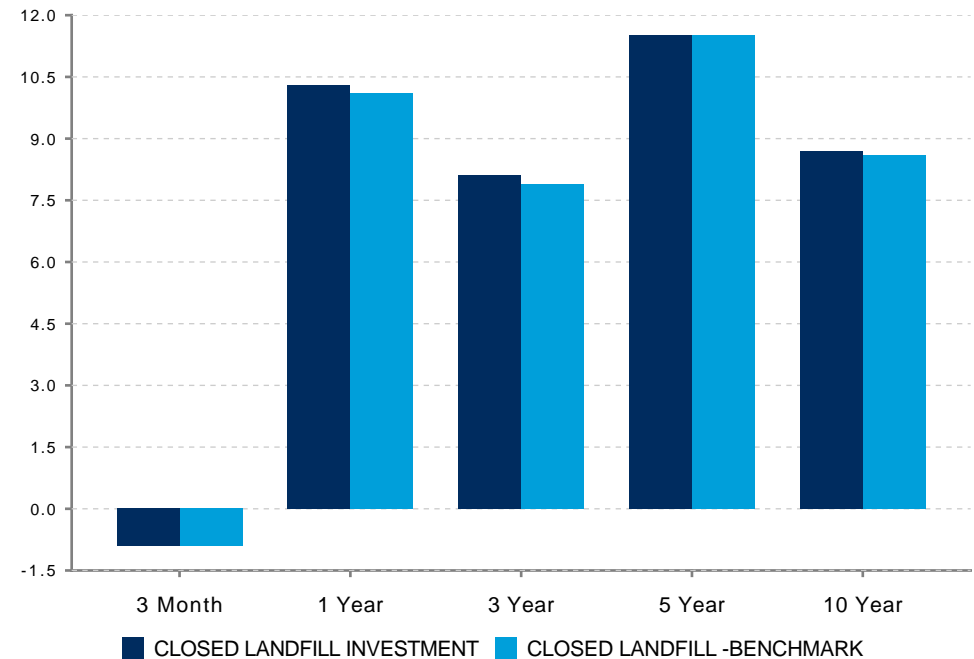


Non-Retirement

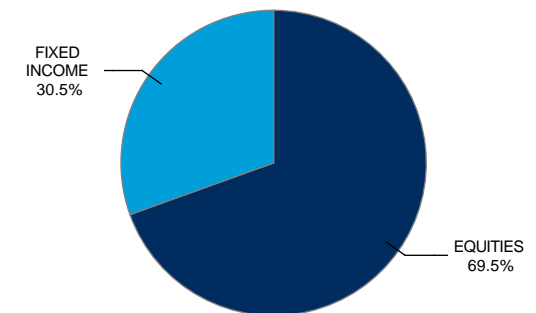
Closed Landfill Investment Fund

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.



	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
CLOSED LANDFILL INVESTMENT	\$87,235,211	-0.9%	10.3%	8.1%	11.5%	8.7%
EQUITIES	60,664,779	-0.7	14.0	10.8	13.3	9.5
FIXED INCOME	26,570,432	-1.5	1.3	1.6		
CLOSED LANDFILL -BENCHMARK		-0.9	10.1	7.9	11.5	8.6
Excess		0.0	0.2	0.1	0.1	0.1
S&P 500		-0.8	14.0	10.8	13.3	9.5
BBG BARC US Agg		-1.5	1.2	1.2	1.8	3.6



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>
MELLON	2,125,949,150	-0.8							12/2017
S&P 500 INDEX (DAILY)		-0.8							12/2017
Excess		0.0							
SBI INTERNAL EQUITY INDEX	309,376								
NON RETIREMENT EQUITY INDEX	2,126,258,526	-0.8	10.6	14.0	10.8	13.3	9.5	9.6	07/1993
S&P 500 INDEX (DAILY)		-0.8	10.6	14.0	10.8	13.3	9.5	9.5	07/1993
Excess		0.0	-0.0	-0.0	0.0	-0.0	0.0	0.1	
PRUDENTIAL	1,154,579,458	-1.5							12/2017
BBG BARC Agg (Dly)		-1.5							12/2017
Excess		-0.0							
NON RETIREMENT FIXED INCOME	1,154,579,458	-1.5	-0.3	1.3	1.6	2.4	4.3	6.0	07/1994
BBG BARC Agg (Dly)		-1.5	-0.2	1.2	1.2	1.8	3.6	5.5	07/1994
Excess		-0.0	-0.0	0.1	0.4	0.5	0.7	0.5	
RBC	254,661,136	-0.7	-0.6	0.1	0.6	0.8	2.7	4.9	07/1991
RBC Custom Benchmark		-0.7	-0.8	-0.1	0.5	0.7	2.3	5.0	07/1991
Excess		0.0	0.2	0.2	0.1	0.1	0.3	-0.1	

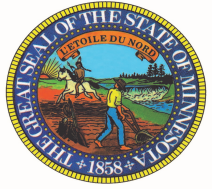
Note:

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.

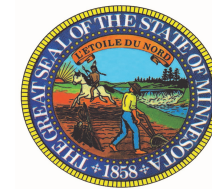
In addition to the Non-Retirement Funds listed on the previous pages, the Non Retirement Equity Index and the Non Retirement Fixed Income accounts also include the assets of various smaller Miscellaneous Trust Accounts and Other Post Employment Benefits.

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State Cash

March 31, 2018



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.

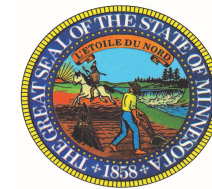
Beginning in January 2003, the Treasurer's Cash Pool is measured against the iMoneyNet, All Taxable Money Fund Report Average.

	<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	11,236,426,747	0.3	1.2	0.9	0.7	1.0
iMoneyNet Money Fund Average-All Taxable		0.3	0.7	0.3	0.2	0.2

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	75,034,408	-1.0	1.2	1.7		
Housing Finance	27,931,193	0.4	1.0	1.0		
Public Facilities Authority	60,793,598	-0.2	2.0	1.8		



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:

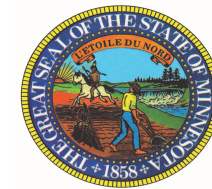
The Composite Index performance is calculated by multiplying the beginning of month Composite weights by the monthly returns of the asset class benchmarks. Effective 1/1/2017, the Combined Funds Composite weight is set as the Strategic Asset Allocation Policy Target with the uninvested portion of Private 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.

